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Latin America Program

**PARKS IN PERIL
SECOND YEAR EVALUATION
1992**

**USAID/The Nature Conservancy
COOPERATIVE AGREEMENT
#LAC 0782-A-00-047-00**

October 19, 1992

Submitted by:

Latin America Division

**THE NATURE CONSERVANCY
LATIN AMERICA DIVISION
PARKS IN PERIL PROGRAM**

**PODOCARPUS NATIONAL PARK
EVALUATION REPORT**

Hugo Arnal

ARLINGTON - VIRGINIA

1992

I- INTRODUCTION

Podocarpus National Park is the newest protected area in Ecuador as it was established in 1982. The park is located in the southern region of the country, near the Peruvian border. Politically, it's situated in the provinces of Loja and Zamora-Chinchipec. Covering an area of a little more than 146,000 hectares, this park protects the headwaters of four important basins: Catamayo, Chinchipec, Zamora and Nangaritzac. The altitudinal range of the park lies between 1,000 and 3,500 meters above sea level (masl) with a vegetation that includes different types of wet communities: Premontane wet forest, lower montane wet forest, montane rain forest (cloud forest) and montane moist forest. Less important dry vegetation types are found in the western lower slopes in areas of rain shadow. The fauna of the park is poorly known and only very conspicuous species have been registered: mountain deer, mountain tapir, spectacle bear, cougar, Andean cock-of-the-rock, trogons, toucans, parrots, among others.

The park holds a small population of campesinos and indigenous people in its periphery and a floating variable population of miners in its core. The campesinos groups are distributed in the northern sector near the rivers Sabanilla, Romerillo and Bombuscaro, in the eastern slopes and in the southern sector of Loyola and Numbala. The campesinos aren't located within the park limits but their landholdings occupy part of the area. The campesino economy is based on the traditional land occupation, the "Finca". Extension of these small farms varies from 4 to 10 hectares in sectors with subsistence farming and up to 200 hectares in sectors supporting livestock grazing.

The indigenous community belongs to the Shuars Family. They occupy the eastern flank of the park, near the middle Nangaritzac River. These group depend upon the park resources for their living, mainly through hunting and gathering.

Miners and their associated activities represent the most serious threat to the park. Most of the park area has been granted in mining concessions. At least three companies have formal agreements with the Ecuadorian Government and one of them is firmly established in the San Luis zone. There have been recorded up to five hundred mine workers in this sector. In other zones, like in upper Sabanilla River, small groups of miners work illegally.

Other threats to the park are the opening of a new road connecting the villages of Zamora and Valladolid, the construction of a big tunnel for water transportation toward Loja, poaching and gathering of rare and/or endangered species (particularly orchids and cascarilla), potential invasion by squatters, lack of personnel and budget and the nullification of its park status.

The master plan for this area was written in 1982. Since then it has not been reviewed. To date, there is no topographic map of this park at a proper scale. The official map was drawn before the creation decree, using an hydrologic base chart without altitude lines. It's very imprecise. In the map, the park does not have a polygon with vertexes defined by accurate coordinates. Many names that appear in the map are not known in the park area. As a result, a new map is urgently needed; this is another reason for the study on border design that will be mentioned below.

There is not a specific legislative instrument to reinforce the protection of this park. Borders have not been demarcated and the number of posts or guards houses is very limited.

Because there is no specific scientific research program for the park, a formal list of conflicts or threats has not been elaborated. It's evident that gold mining is the main threat but perhaps many others are waiting for identification. The same situation occurs for monitoring activities, as it will be explained later. There is no official monitoring program for the park resources.

To plan the month or week activities, the park personnel do not have regular meetings. The visit frequency of the manager to remotely located Park Guards is very low and much lower still are the visits of representatives from the central office in Quito. Strategic planning for the park is poor and it seems that MAG works responding to emergency situations.

Park Guards are not well equipped. Supplies traditionally came late and the quality has not been the best for the regional weather. A remarkable point to mention is the excellent relationship between the Superintendent and the Park Guards. He gives a very strong moral support to his personnel.

To evaluate the progress of the annual work plan in Podocarpus National Park as well as the general impact of the Parks in Peril Project, a visit to the area was conducted from June 21 to 25, by a team including the following persons:

- Mr. Ron Ruybal, Environmental Officer, USAID - Quito
- Mr. Fausto Maldonado, USAID - Quito
- Prof. Luis Suárez, ECOCIENCIA
- Lic. Luis Zúñiga, Fundación Natura
- Paulina Arroyo, Fundación Natura
- Lic. César Guerrero, Fundación Ecológica Arcoiris
- Ing. Yolanda Céleri, MAG
- Ing. For. Santos Calderón, MAG
- Biologist Hugo Arnal, TNC

Before the field trip, Hugo Arnal met with Fundación Maquipucuna, the National Park System Director, Dr. Sergio Figueroa, and other NGOs and GOs in Quito that have been involved with the park. Also, a meeting was held with the Administrative Director of Fundación Natura (FN), Mr. César Chevasco, who manages the PIP local fund.

As the work plan for this park was officially approved by USAID-Quito by the beginning of April, AID funds arrived in Ecuador a few days before the evaluation. This means that the evaluation will inevitably reflect a delay in the implementation of the work plan. Two additional factors contributed in a minor degree to that lag. First, Biologist Cecilia Pacheco, formerly FN Conservation Officer for this park, was replaced by Biologist Paulina Arroyo as she left for her postgraduate studies. Second, the inner administrative processes of FN and MAG.

II- TECHNICAL ASPECTS

Achievements

According to the 1992 work plan, FN should contract 5 Park Guards and the Superintendent Assistant. To date, only the Superintendent Assistant is hired. His name is Forester Eduardo Calva. Mr. Calva has been living in Zamora and working in the adjacent park area since last March. According to the Park Guards and other government employees, he is doing a very good job and is very enthusiastic about his responsibilities. He seems to have a proper relationship with the peasants (campesinos) and locals. This is the first time a professional has been visiting the park most of the days. The personnel that remain to be contracted, five Park Guards, have submitted their curricula to MAG. We can expect those new guards to start working soon.

Training activities directed to the communities have not started as the funds to support this part of the work plan came late from AID-PIP. Additionally, FN is waiting for the results of a study on "Conservation Curricula" to design the content and the program of the workshops. However, FN has recently exhibited a film about Podocarpus National Park for the public of Loja. The Governor of Zamora, the evaluation team and many local authorities from Loja and Zamora were present at the exhibition.

FN developed a two days Wilderness Interpretation Workshop for the Park Guards with the help of a Peace Corp volunteer and Fundación Ecológica Arcoiris (FEA). This event was completed at the Cajanuma Visitors Center.

Two Interpretative Trails have been designed and constructed by a Peace Corp volunteer with help from FN and FEA. One of the trails is designed for children while the other is long and steep, more proper for adults.

Thanks to the support provided by TNC, Fundación Ecológica Arcoiris carries out an intense Environmental Education Program for scholars. Almost weekly, during the academic period, groups of students from Loja visit Cajanuma. ECOCIENCIA, from Ecuador, and Wildlife Conservation International are supplying FEA with a four-wheel-drive vehicle. This is the most important equipment for working in that remote area.

In addition to the above mentioned program, TNC has granted US\$ 12,750 to FEA for improvements to the Visitors Center and trails in Cajanuma. This activity is considered a high priority due to the increasing local demand for recreation and education. More than a recreative investment, this contribution must be considered because of its protective significance. The artistic work for the exhibitions is being developed by professionals of the local university. The evaluator had the opportunity to examine part of this work. Additional US\$ 3,000.00 were provided to FN for improvements to the guards house.

New field equipment for the park personnel has been partially bought by FN with funds coming from the debt swap. The equipment will be given to the central offices of MAG in Quito. However, it's not clear when the equipment will arrive to the final users: the Park Guards. Other field equipment for the guards, provided by FN months ago, is still in the

office of Zamora. The furniture for the Romerillos Altos post is also stored in this same place. Forester Santos Calderón, Superintendent of the Park, explained that the implements are still in Zamora because the Park Guard houses are not safe enough to keep them. He promised that as soon as the houses are furnished and the guards inhabit them on a fixed basis, he'll distribute the supplies to the guards. With funds coming from PIP-AID, another set of field supplies will be acquired.

The new park truck was already acquired with funds granted by TNC through the debt swap. It is assigned to Loja as the main management and geographical center for the park. The old truck will be moved to Zamora to allow the Superintendent Assistant greater mobility.

Still the guard post at Loyola has not been built. This is due not only to the late approval of the work plan but also to the need for conducting a short boundaries evaluation in that zone to be sure that the post will be adequately located in relation to the park. Under the same considerations is the border demarcation in the southern tip of the protected area.

The creation decree for the park does not define accurately its borders. Moreover, in many sectors the decree does not indicate specific geographical accidents, bearings or sites; as between the rivers Loyola and Numbala. Many conflicts had arisen because of misinterpretation or subjective interpretation of that decree by the park personnel; as in the region before mentioned. Local attitudes toward the conservation unit and its personnel are still aggressive. Recently the Park Guard at Loyola, Guardaparques José Luzuriaga, was required to leave the zone under threats to his life. Unless meetings with the community are carried out and harmony between park personnel and locals is reached, we cannot anticipate having the post. To have an objective understanding of this conflict, part of the evaluation team visited the regions of El Porvenir (1,450 masl) and Loyola (1,530 masl). In this last locality we had an interview with the community president Mr. Segundo Martínez. Mr. Luis Palacios, another local leader, was also present.

Before leaving Ecuador, the evaluator and representatives from FN and MAG, met to analyze the next steps to solve this problem.

Sub-Secretario Forestal, Ing. Marco Vinuesa, participated in this meeting. One of the conclusions at which we arrived, was that a committee of FN and MAG should visit the area and work closer to the community in order to find a balanced solution. The evaluator recommended to FN and MAG to invest a fraction of the budget for border demarcation, on two brief studies. The first one about the legality of border modification by MAG personnel without National Congress approval. The other study deals with the design of the borders in those sectors where they are undefined or unclear.

The community-based reforestation project has not begun yet. This project is intended to apply the results of a research study on the potential use of autochthonous species for reforestation. As the base research has not been realized, this community activity is on the list of activities to be done.

In relation to the biological monitoring studies, it should be said that the research conducted by FEA about the presence, frequency and abundance of cracid species remains as the only ongoing project in the park. This study began before PIP started and represent the effort of

FEA, ECOCIENCIA and Wildlife Conservation International. The project is not the result of an analysis of the Ecuadorian Park Service about the monitoring needs for this park but it represents the scientific interest of some organizations. Fortunately, the results will help to better manage the park even though actually they are not used as a management tool.

Other important themes for monitoring studies are: water quality in the basins under mining activities (focusing on sediments and heavy metals), poaching and rare plants trading, human activities and dynamics (settlement patterns, number of families, family members, landplot size, agricultural production, living standards). In relation to the last theme, it should be mentioned that a base study about the farmer population on the western side of Podocarpus is actually being conducted.

In the same order of ideas the evaluator has to indicate that an effort should be made in order to know the relationship between the Shuar groups and the eastern side of the park: where are the Shuar living? what do they hunt or gather? how many are they? what are their expectations and plans?.

There are no data on strategic indicators that could show us the general impact of PIP and/or the trends in the conservation of the park. Verifiable indicators such as percent decrease in deforestation, sustainable use of natural resources, improved environment/quality of life, changes in patterns of colonizations, abundance and distribution of key species, are only a few of several possible indicators that are not currently measured in the park. Conservation officers of FN and FEA estimate that there is still an important deforestation process but they cannot assess the rate or the extension of it. There has been a decrease in the number of miners at San Luis, but this should be considered the result of normal fluctuations in this activity.

Land steward personnel and scientists from TNC have been visiting Podocarpus to provide technical advise to the conservation officers of FN and FEA and to the government managers. Every two months, either the park or the different organizations offices are visited. We can objectively affirm that the technical assistance provided by TNC is adequate and regular over the time.

Limitations

As we can realize from the preceding paragraphs, there has been delays in the execution of the annual work plan. The calendar of activities is intended to run from September 91 to September 92 but the funds have been available only recently. Even though this is true, we must admit that part of the work plan could have been done earlier with funds from the debt swap managed by FN; this has not been the case. The Nature Conservancy, FN, and MAG agreed recently upon a revised program for Podocarpus, and prepared a restructured use of AID/PIP and debt swap funding for the period September 1, 1992 to August 31, 1993.

Besides the common problem of populist politics interfering the protection of the park resources, perhaps the more limiting factor for implementing the work plan is the internal bureaucracy at FN and MAG.

In the case of the politics, very often they pass over legal rules governing the National Parks protection and development. Parks seem to represent but the last priority for them or, more than that, obstacles to their electoral promises. The regional plans for development are promoted by politicians, without adequate regard for the importance of natural resource protection in the protected areas. Worse than that, some politicians in the last campaign have offered to alter the parks boundaries and purpose. The Mining Law has a higher hierarchical level than the Forest and Water Law, which governs the parks. This has signified a blank check for some politicians to affect the park resources. All in all, we and our partners should be trained to better understand and influence this politically charged issue.

The inner bureaucracy of FN and MAG slows down the decision making process. We can add that both organizations are very cautious and polite dealing with each other. To show how bureaucracy works in these two organizations, let us briefly review the equipment acquisition process. Once a list of equipment is decided in FN, the administrator of the conservation program checks the availability of funds. After that, the program director approves the purchase and the list is sent to an independent contractor who make the acquisition charging a percentage of the total acquisition expenditure. Then, the equipments are deposited in FN to be inspected. All supplies are given to the central office of MAG in Quito, who will distribute them to the regional administrators.

Another good example of this same bureaucracy is the procedure for hiring personnel. This is done mainly with funds coming from the debt swap. At the end of the PIP support to Podocarpus, it's expected that MAG could absorb the hired personnel. However, MAG has stated that they does not have the funds to accomplish that goal. Due to this and wishing not to have labor conflicts with temporary workers, MAG has left under FN responsibility all contracting issues. But, at the same time, FN does not want to deal with the personnel either. So, FN functions as a bridge providing the funds to a third actor: ECOCIENCIA. This last NGO is very well organized and has taken this responsibility charging a small overhead for managing the personnel. This complex chain of decision making and responsibilities is a frustrating obstacle for some technicians that work under contract. Hiring is done under a six months basis and it includes an automatic extension for another six months period. The contracting bureaucracy takes almost three months to be completed and very often the salaries are equally delayed. To sign the contract and sometimes to receive salaries, workers located in remote parks have to visit Quito. The worker does not know to which of the instances refer in case of problem; one of them told us that he feels forsaken.

A minor limitation is the incomplete park management experience level of some professionals from FN and MAG that are working in this park. To overcome this weakness, training must be provided to increased their skills. Fortunately, they have a very positive attitude toward training and technical support.

Incentives are necessary to fully engage the park superintendent via training and appropriate salary adjustments. In general, salaries are very low, the problem lies more with the system than with individual staff. In other words, improving working conditions through the PIP support, training and encouraging the park personnel, will have a positive effect on the Superintendent effectiveness and his successful management of park staff.

Suggestions

MAG, with the help of FN and FEA must conduct a study to define the borders in the southern sector of the park; between the rivers Nangaritza and Numbala. Also, they have to start working more closely with the community. Furthermore, they should help the community to get their land documents from the IERAC (National Institute for Agrarian Reform) for those region outside the park.

Border demarcation need to be started soon. Priority sectors are those in the south, near Loyola and Numbala, and adjacent to the road in the north. MAG has to decide which road is the official northern border of the park: the old (in existence when the decree was published) or the new (unexplained adopted as the border by the managers). Whatever they choose has to be drawn in a new and precise map.

External help and financial support must be provided to NGOs to study the legislative status of the parks: can they be affected by the government without authorization from the Congress? If so, help should be given to NGOs to make lobby and change the laws according to the principles of the Washington Convention; which was adopted by Ecuador several years ago.

Training for conservation officers from FN and FEA and for the managers of the park should be provided. In the case of the park Superintendent, training must focus on personnel management, park planning and strategic planning. In the case of FN and FEA, instruction has to focus on technical aspects such as monitoring, community relationship and park operations.

The Loyola Post has to be built soon but after agreements with the community have been reached. Miners and mining companies must be displaced from the park. This is a legal struggle that should lobbied by FN and FEA. Either the legislation is not clear or the government employees do not want to assume strong positions but it's evident that the solution will not come spontaneously from the government. TNC and AID should not be involved in this process as politicians may argue that we are interfering national issues. However, we are free to give technical and financial help to institutions asking for it.

III- FINANCIAL ASPECTS

Few information has been collected about the financial condition of the park. The Superintendent does not know the real park budget as the central office in Quito does not provide the regions with reliable information on this subject; this was stated by MAG personnel in Loja and Zamora. Managers are supposed to participate elaborating the annual budget, but later central MAG administration changes all the technical proposals. Government capacity for providing funds is narrow; there are not evidences that this will improve in the future. Investment of the scarce funds that the park receives apparently does not respond to a structured schedule, as the evaluator concludes after seeing the new volleyball court at Cajanuma.

As far as the evaluator knows, no Bilateral neither Multilateral Development Agency but USAID through TNC, is investing money in the park conservation and development. Equally true is that apart MAG, no other Ecuadorian government agency is helping financially to the conservation of this area. Not understandable is the fact that a hydroelectric generation system for the provinces of Zamora and Loja depends on the water of upper Sabanilla River but there is no contribution from the electric company to the park.

The World Wildlife Fund, through its debt-for-nature swap with Fundación Natura and Wildlife Conservation International are both providing support to park management and research programs respectively. Wildlife Conservation International supported a monitoring program of forest birds conducted by ECOCIENCIA and FEA for several years. FEA still collects data on the same issue. The Toyota vehicle provided by WCI to ECOCIENCIA is still in FEA. As it was pointed out before, this car is the most valuable tool for that NGO. The evaluator strongly recommend to negotiate with WCI and ECOCIENCIA transferring definitely the vehicle to FEA. No other organization than FEA has such a strong commitment about the park. Keeping this NGO working in Podocarpus is, at least now, a priority.

As specified by the work plan, USAID is contributing with US\$ 54,500.00 for this park during fiscal year 91-92, while TNC is reporting a contribution of US\$ 23,000.00 and funds coming from the TNC/FN debt swap fund are US\$ 39,800.00. For the next fiscal year, USAID could provide US\$ 45,000 while TNC/FN debt swap fund will provide at least US\$ 30,000.00. There are no notices about financial resources coming from GEF or any other initiative such as trust funds, endowments, debt swap, etc..

What remains clear is that the number of Park Guards and the housing facilities for them are not enough for the protection needs of the area.

Limitations and Recommendations

The only long term financial instrument actually existing for the park is the debt for nature swap by FN/TNC/WWF. In the near future new initiatives must be developed if we want to support the protection activities. Among these initiatives, a program for self-sustaining and income generation is mandatory. This program should include aspects as concessions regime, ecotourism, endowments and trust funds. It's advisable to study the feasibility of a new debt for nature swap in the near future.

IV- ADMINISTRATION

A Memorandum of Agreement (MOA) has been signed between FN and TNC to implement the Podocarpus National Park a program of the PIP project. As in other cases, this MOA has been signed after an agreement between the NGO and the government was reached. Both of the agreements, TNC-FN and FN-MAG, are acceptable working agreements to accomplish the PIP goals for this park. To draw up the work plan, MAG and FN called for a meeting where conservation officers and managers of the park were present. This meeting

represented an exchange of ideas to enrich the work plan. In this sense, the annual activities program should be considered to include real park needs. Nevertheless, there is a point on which institutional changes are urgently needed: to categorize as official government employees these personnel contracted for the parks by FN.

FN administers the funds provided by USAID/TNC and the debt swap. This NGO has the institutional capacity and the commercial relationships to do that.

It is highly probable that inflation will increase abruptly in Ecuador by the next months. Also, exchange rate Sucre/US\$ could increase. Foresight should be taken to avoid a decrease in the investment capacity of FN.

Limitations and Recommendations

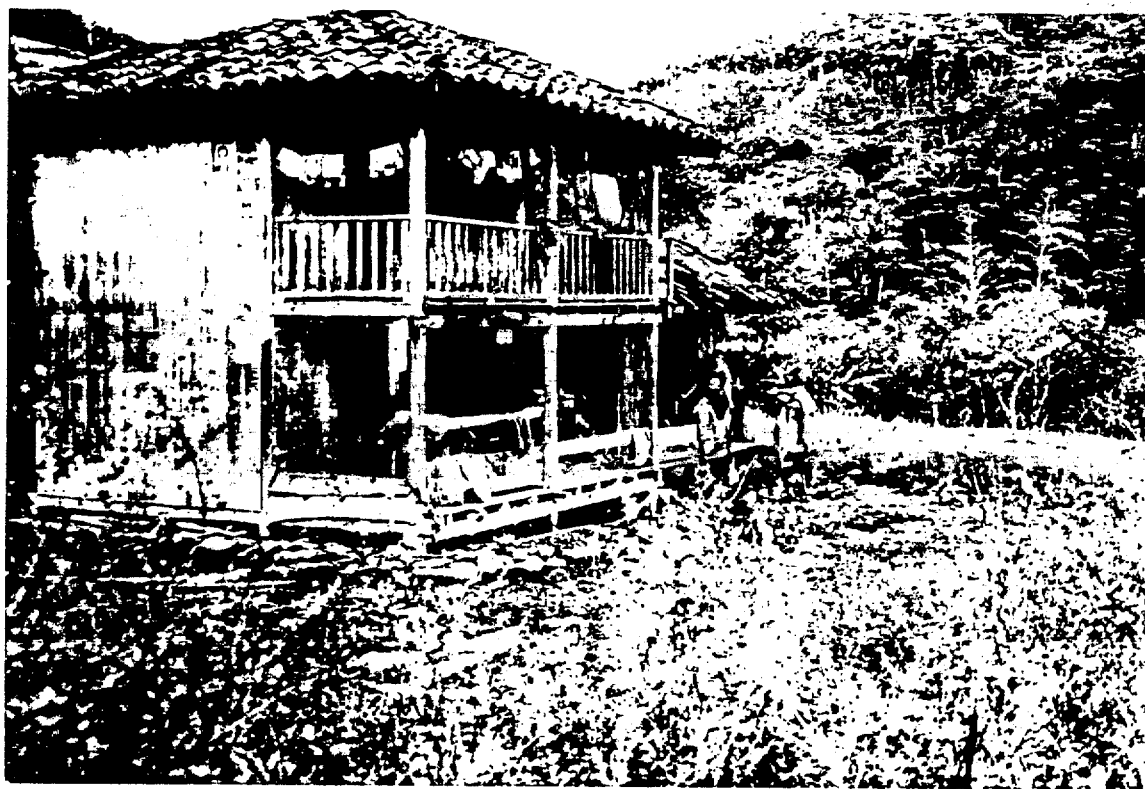
The internal administrative procedures at FN are slow, in large part due to a complex internal bureaucracy. A good example is the lag between the first fund transfer from TNC to FN in last April and the use of these funds. Almost two months after the transfer, FN administration had not yet made the transfer into the appropriate PIP account. It is evident that the conservation program have to manage its own funds and bank accounts. Fundación Natura has recently restructured its programs and it is expected that this will greatly improve priority setting, program management, and reduce the administrative delays mentioned above.

While the evaluation, the PIP account was opened in Banco Popular, Acct. N° 172040.

V- SUMMARY RECOMMENDATIONS

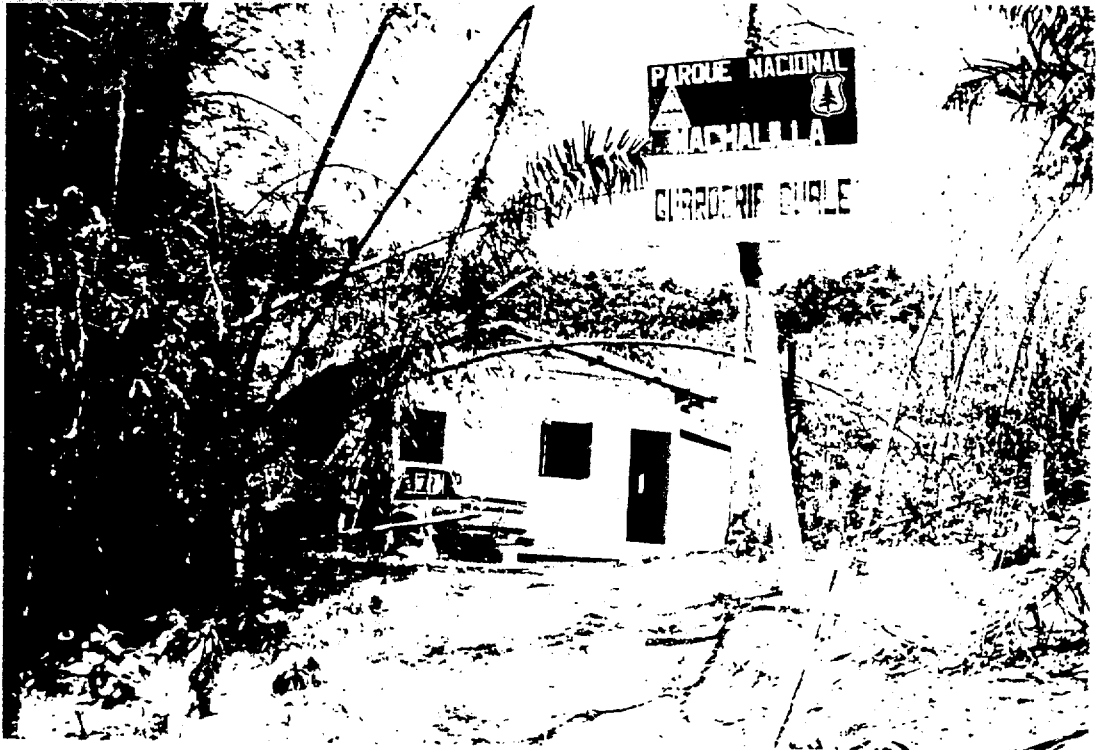
Many recommendations were mentioned above, with supporting explanations. At this point the evaluator wishes to emphasize the need to strengthen the institutional capacity of FEA. As a general policy, to reinforce and help developing local NGOs that have strong commitment with parks, seems to be an important step toward parks well being.

A typical farmer house in Loyola (1530 masl)
PODOCARPUS NATIONAL PARK
(Positive from a slide of the TNC file)



The only existing farmer house in San Sebastián
MACHALILLA NATIONAL PARK
(Positive from a slide of the TNC file)





Park Guards Post in Guale
MACHALILLA NATIONAL PARK
(Positive from a slide of the TNC file)

Archaeological Museum in Agua Blanca
MACHALILLA NATIONAL PARK
(Positive from a slide of the TNC file)





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Latin America Program

October 19, 1992

James S. Hester, A.I.C.P.
Chief Environmental Officer
LAC/DR/E, Room 2242 NS
U.S. Agency for International Development
Washington, D.C. 20523

Dear Jim:

We at The Nature Conservancy are all pleased with USAID's continued support for our Parks in Peril initiative and thank you from all of us for the three million dollar amendment to our cooperative venture. We have much to be proud of this year and on behalf of The Nature Conservancy and respectfully submit this **SECOND YEAR EVALUATION OF THE PARKS IN PERIL PROGRAM** report in compliance with the requirements set forth in the USAID/TNC Cooperative Agreement No. LAC 0782-A-00-0047-00. The project evaluation was performed during the June - September 1992 period by The Nature Conservancy's Latin America Program in coordination with contracted protected areas specialists, NGO partner organizations, government natural resource agencies, and USAID Missions. For this year's evaluation, TNC established a more comprehensive PIP Site Evaluation Guidelines and Procedures that is presented as Section E of the attached evaluation. These guidelines were utilized in site evaluations for a total of nineteen PIP sites. We chose to exclude the twentieth site, Cahuarari National Park in Colombia, from the evaluation because no PIP activities had yet been initiated. Section G of the evaluation details the individual site evaluation teams and timetables that consisted of a total of eight consultants, 14 TNC staff, and three USAID Mission personnel. Each evaluation team made on-site visits to each of the nineteen priority Parks in Peril sites, except where noted because of travel advisories in Colombia.

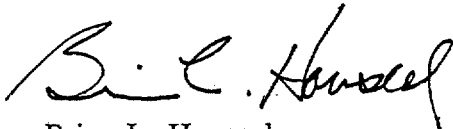
In the second full year of operation, the Parks in Peril program has established a new standard for institutional cooperation and joint objective setting. Work plans and budgets for the twenty priority Parks in Peril sites have been approved and on-the-ground protection and management activities in 12.8 million acres of biologically critical habitat are underway. Pilot community extension support and outreach programs in selected PIP sites increased in size and complexity since the FY 1991 evaluation and have yielded increasingly positive biodiversity protection benefits. We saw a four-fold increase in the number of land stewards trained, and in several sites, critical baseline biological and socioeconomic surveys and inventories have been completed and preliminary monitoring programs have been designed and initiated.

James S. Hester
October 19, 1992
Page 2

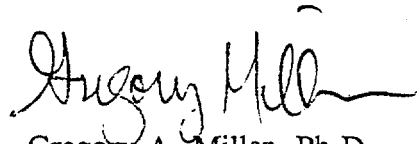
Several innovative national and international conservation partnerships have been developed with universities, indigenous groups, local businesses and development organizations. The Nature Conservancy's conservation finance team has been instrumental in developing and targeting innovative debt-for-nature swaps, national environmental trust funds, bilateral debt reduction agreements, and other more sustainable funding options. In seven PIP sites, there has been considerable success and promise in the identification and development of long-term, sustainable financial options.

Please contact us should you have any questions regarding the PIP evaluation. All best wishes to you and your staff.

Sincerely,



Brian L. Houseal
Director
Parks in Peril Program



Gregory A. Miller, Ph.D.
Regional Director
South America Programs

cc: Geoffrey Barnard

attachments: PIP Site Evaluation Summary
PIP Evaluation Guidelines
PIP Monitoring Review and Recommendations
Individual PIP Site Evaluations (19)

21

INTRODUCTION:

The Nature Conservancy (TNC) respectfully submits this **SECOND YEAR EVALUATION OF THE PARKS IN PERIL PROGRAM** report in compliance with the requirements set forth in the USAID/TNC Cooperative Agreement No. LAC 0782-A-00-0047-00 to "Conduct an in-house evaluation of the project focusing on: (a) the extent to which the outputs are being achieved, and (b) the success of the project in promoting the establishment of "Parks in Peril" throughout the LAC Region, training a cadre of skilled protected areas managers, conserving threatened and endangered species and protecting biological diversity, and establishing innovative financial mechanisms necessary to ensure the long-term maintenance of these protected areas."

The project evaluation was performed during the June - September 1992 period by The Nature Conservancy's Latin America Division in coordination with contracted protected areas specialists, NGO partner organizations, government natural resource agencies, and USAID Missions. For this year's evaluation, TNC established a more comprehensive PIP Site Evaluation Guidelines and Procedures that is presented in Section E. These guidelines were utilized in site evaluations for a total of nineteen PIP sites (the twentieth site, Cahuinarí National Park in Colombia, was excluded from the evaluation because no PIP activities have yet been initiated). Section G details the individual site evaluation teams and timetables that consisted of a total of eight consultants, 14 TNC staff, and three USAID Mission personnel. Each evaluation team made on-site visits to each of the nineteen priority Parks in Peril sites. The individual evaluations focused on the significant achievements, limitations, and recommended actions in the program for the coming year. As outlined in Section E, each site evaluation focused on Technical, Administrative and Financial aspects of each PIP work plan.

This report is divided into the following sections:

- A. Program History
- B. Achievements towards Program Outputs
- C. Major Limitations
- D. Conclusions and Recommendations
- E. Site Evaluation Guidelines and Procedures
- F. Monitoring Procedures Review/Recommendations
- G. Individual Parks in Peril Site Evaluations

A. PROGRAM HISTORY

The Nature Conservancy (TNC) and its partner organizations have designed the Parks in Peril program to conserve imperiled natural ecosystems, communities, and species in Latin America and the Caribbean by ensuring on-site management for biologically significant national parks and reserves. To date, the project has initiated management actions in 20 high priority protected areas. The purpose of the Parks in Peril program is to elevate these areas from "paper parks" to functional protected areas. The program works with nongovernmental organizations (NGOs) to assist government agencies (GOs) in the establishment of a permanent management presence in each protected area. Specifically, the program focuses on the need to survey and post critical boundaries, to recruit, train and equip rangers and community extensionists, to provide protection infrastructure, to promote local community participation in management activities, and to identify and develop long-term financial sources to cover continued management costs.

In September 1990, the United States Agency for International Development (AID) and The Nature Conservancy entered into a Cooperative Agreement No. LAC 0782-A-00-0047-00 to support PIP activities during FY 1991-1993. This original agreement was financed from a \$2 million AID grant. In September 1991 this agreement was amended to provide additional support to the project and incorporate an add-on from the AID/Mexico Mission using funds from the Global Climate Change Project. Under the original PIP Cooperative Agreement and subsequent amendment, USAID has obligated \$5,506,526 that TNC is matching with \$1,750,000 in cash and in-kind support. Host-country counterpart funds will also provide \$1,020,000 of matching in-cash and in-kind contributions. The current total project budget is \$8,276,526. The Nature Conservancy submitted an unsolicited proposal for \$3 million to USAID/LAC/DR on August 3, 1992 which was approved on September 30, 1992 and represents a third project amendment.

The Nature Conservancy and its partner NGO and GO organizations developed individual work plans and budgets in collaboration for each respective country. These plans were submitted on an individual basis to USAID/LAC/DR/E and each USAID Mission for review and approval. Approval for a total of twenty sites has been received by USAID, and on-site protection activities have been initiated in each.

These twenty high priority Parks in Peril sites include:

Bolivia:	Amboró National Park Noel Kempff Mercado National Park
Colombia:	La Paya National Park Chingaza National Park Sierra Nevada de Santa Marta National Park Cahuinari National Park
Costa Rica:	Corcovado National Park
Dominican Republic:	Jaragua National Park
Ecuador:	Machalilla National Park Podocarpus National Park
Guatemala:	Sierra de las Minas Biosphere Reserve
Mexico:	El Triunfo Biosphere Reserve Ría Lagartos/Celestun Wildlife Refuge La Encrucijada Coastal Wetland Reserve El Ocote Ecological Reserve Sian Ka'an Biosphere Reserve
Panama:	Darien Biosphere Reserve
Paraguay:	Mbaracayú Nature Reserve
Peru:	Pampas del Heath National Sanctuary Yanachaga National Park

B. ACHIEVEMENTS TOWARDS PROGRAM OUTPUTS

In the second full year of operation, the Parks in Peril program has established a new standard for institutional cooperation and joint objective setting. The individual Parks in Peril site evaluations included in Section G, provide detailed information and recommendations on PIP activities for each protected area. In terms of the overall Parks in Peril project, several notable achievements can be demonstrated. These include:

1. Work plans and budgets for the twenty priority Parks in Peril sites have been approved and on-the-ground protection and management activities are underway. The provision of basic support and equipment has greatly expanded and enhanced the effectiveness of patrolling and protection efforts, as opposed to a "no action alternative" for the more than 12.8 million acres under protection.
2. In FY 1992, an increasing number of PIP program coordinators (four) in local NGO partners were hired and trained. This has led to measurable improvements in interinstitutional cooperation and coordination and more effective overall program administration.
3. Pilot community extension support and outreach programs in selected PIP sites have increased in size and complexity since FY 1991 evaluation and have yielded increasingly positive biodiversity protection benefits. A review of FY 1992 site evaluations indicates that a broader, more comprehensive project intervention in community outreach and participation is warranted and welcomed by local PIP partners.
4. In several sites, critical baseline biological and socioeconomic surveys and inventories have been completed and preliminary monitoring programs have been designed and initiated. Several Conservation Data Centers (CDCs) are directly involved and are providing critical information management services to enhance priority setting and on-site protected areas management. During this year's evaluation, TNC established and utilized a more rigorous set of project evaluation guidelines and procedures (Section E) and has moved to develop criteria for long-term monitoring programs (Section F).
5. Five NGO and five GO partners received training at the Colorado State University "Wildlands Management Course" conducted during July-August 1992. Over 200 park rangers and community extensionists received on-site training and instruction--a four-fold increase from 1991.
6. Partner institutional and administrative procedures were greatly improved from last year's evaluation. The majority of NGO partners have established sound management systems and have generally submitted PIP reports in a complete

and timely fashion. Accounting systems for PIP financial management are in place, and satisfactory acquisition and procurement procedures have been established. Technical assistance from TNC staff to structure project administration in accordance with AID regulations has been good and a total of eight NGO partners were audited by Arthur Anderson.

7. In all sites, NGO and GO natural resource agencies have signed implementation agreements for the PIP program and host country contributions continue to outperform initial project expectations. Several innovative national and international conservation partnerships have been developed with universities, indigenous groups, local businesses and development organizations.
8. The Nature Conservancy's conservation finance team has been instrumental in developing and targeting innovative debt-for-nature swaps, national environmental trust funds, bilateral debt reduction agreements, and other more sustainable funding options. In seven PIP sites, there has been considerable success and promise in the identification and development of long-term, sustainable financial options.
9. The participation of USAID Mission personnel in the Parks in Peril program has increased from FY 1991 and Mission personnel continue to play an active role in site selection, work plan design, and identification of alternative funding sources.

C. MAJOR LIMITATIONS

1. Many PIP sites lack practical management plan that define long-term objectives, target interventions, costs, and funding sources. Well-defined conservation objectives have not been identified in many cases, as for example, what ecosystems are critical, what are socioeconomic uses and threats, and what management strategies are needed to conserve biodiversity and improve economic options.
2. In many PIP sites, low salaries and morale, high turn-over and inadequate numbers of park guards and limited training opportunities continue to present obstacles to building PIP site management capacity.
3. Differing interpretations by GO and NGO partners regarding their respective roles and responsibilities have slowed project implementation and have lead to institutional conflicts. Clear designation of work plan responsibility and institutional financial management are generally weak and limit overall PIP project implementation.
4. In some countries, depressed economic conditions and an unstable political climate have slowed the implementation of PIP work plan activities. An economic recession limits the government's ability to give priority attention to environmental issues while local civil unrest negatively impacts the consolidation of an effective protected areas management presence.
5. Financial evaluations were extremely variable in quality and detail. In many cases, PIP evaluation teams were constrained by time and the willingness of other agencies to share counterpart contribution information. As a result, information is variable concerning contributions for natural resource management in each site, and the future management costs and long-term income sources are not well-defined.

D. CONCLUSIONS AND RECOMMENDATIONS

1. Conclusion: The Parks in Peril project is meeting expectations, and expansion in the number of PIP sites is warranted.

Recommendation: Continue the project without major modification in structure and management, and incorporate ten new sites during the next two years as financial security is achieved for selected existing sites.

2. Conclusion: Although biological monitoring is currently underway at selected PIP sites, an effective general monitoring strategy is needed to guide our PIP monitoring efforts.

Recommendation: Together with AID, TNC must restructure the Parks in Peril Logical Framework and establish more focused, measurable Strategic "Objectively Verifiable Indicators" and develop monitoring criteria for the overall Project and on a site specific basis. Suggested modifications in our Strategic Indicators include:

- * Change in natural vegetation or land cover;
- * Change in patterns and intensity of uncontrolled colonization and/or other inappropriate land use practices and natural resource (timber extraction, overharvesting of wildlife, mining, oil exploration, etc.) in and around the protected area;
- * Change in the distribution and abundance of key plant and animal indicator species in and around the protected area; and
- * Change in the socioeconomic conditions of local people living in/around PIP sites.

3. Conclusion: Long-term management plans for Parks in Peril sites are often lacking in detail, and in some cases do not contain adequate strategic goals and objectives to effectively program long-term management actions and identify costs and financial options.

Recommendation: Develop protected areas strategies that include resource-use zoning, carrying capacity with quantifiable standards and appropriate monitoring strategies and techniques. PIP planning must be conducted within the broader vision of the protected area as part of the natural and cultural landscape with longer-range goals and objectives.

4. Conclusion: Training opportunities for NGO and GO field personnel need to be expanded to address issues such as natural resource management, community relations, sustainable income generation, personnel management, protected areas planning, and biodiversity monitoring.

Recommendation: Conduct regional field training courses that emphasize strategic planning and management skills. Increase south-south exchanges and more focused technical assistance. TNC has now programmed for FY 1993, three regional field workshops for South America, Mexico and Central America and the Caribbean that will stress field applications in protected areas planning and management, community relations, biodiversity monitoring, and personnel management.

5. Conclusion: The lack of comprehensive, written job descriptions and work plans for protected areas personnel is a significant obstacle to site management activities.

Recommendation: Revise and improve job descriptions for GO protected areas personnel and NGO counterparts and establish needed criteria to assure a salary and benefits structure and long-term stability of competent, experienced individuals.

6. Conclusion: While each PIP site has appropriate project implementation agreements, the spirit and interpretation of these is in need of improvement.

Recommendation: Facilitate and develop more clearly established project objectives and institutional roles for both NGO and GO partners, using conflict resolution and leadership training techniques.

7. Conclusion: NGO partners continue to play an increasingly important role in the establishment and management of PIP site management. As the PIP program continues to expand, NGOs and their GO counterparts are faced with ever more complex administrative and institutional challenges.

Recommendation: Develop and implement rigorous NGO institutional evaluation procedures that will improve the assessment of strengths and weaknesses and improve the delivery of TNC technical assistance and training.

8. Conclusion: Considerable progress has been made in identifying and developing sustainable funding sources for certain sites, but accurate estimation of PIP site management costs are not yet available for the majority of the areas. By measuring and anticipating cash flow and by making appropriate and timely adjustments, we can forecast long-term viability and sustainability in our efforts.

Recommendation: Develop rigorous guidelines and criteria to assess long-term management costs and prepare financial plans for each PIP site. A quantifiable methodology is needed to determine biodiversity management or conservation needs and to develop the appropriate action strategy. Part of this strategy will be to determine GO and other agency "commitment" to demonstrate their willingness to assume a greater share of the recurring costs of management activities.

9. Conclusion: Parks in Peril work plan development and results from FY 1992 site evaluations indicate that ecotourism has emerged as a popular and viable "sustainable development" alternative.

Recommendation: Due to the close link between ecotourism and PIP protection activities and the potential of developing attractive entrance and user fee structures and visitor fund raising strategies, TNC should develop an ecotourism strategy and provide targeted technical assistance to improve NGO partner capacity to develop ecotourism projects and capture increased funds.

SECTION E

SITE GUIDELINES AND PROCEDURES



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Latin America Program

LATIN AMERICA PROGRAM
1992 PARKS IN PERIL EVALUATION
GUIDELINES AND PROCEDURES

May 8, 1992
(revised September 28, 1992)

Prepared by:

Gregory A. Miller

SECTION F

MONITORING PROCEDURES REVIEW/RECOMMENDATIONS

ECOLOGICAL MONITORING IN TROPICAL RESERVES:
ADVANCES AND OPPORTUNITIES

A Preliminary Report to
Mexico Country Program
The Nature Conservancy

Jennifer M. Shopland

15 April 1992
Revised 21 August 1992

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Introduction:

As part of our AID/PIP project, TNC is required to undertake an annual project evaluation. This mandate presents us with an opportunity to refine our PIP program to better achieve our overall objective--the conservation of biological diversity.

The purpose of these guidelines is to:

- 1) provide guidelines to TNC PIP technical staff for a PIP evaluation to measure project impact. These guidelines will be developed around the technical and financial program.
- 2) present a standardized Terms of Reference (TOR) for the PIP evaluation to contract outside technical assistance (TA) specialists and clearly outline project evaluation outputs. A detailed calendar outlining specific park sites, dates, TNC personnel and proposed outside contracted experts was prepared during Regional Team Meetings, May 11-15.

PIP PROJECT INDICATORS

In our evaluation of the PIP project and our review/analysis of the Logical Framework (Logframe) for the project, it is essential to remember that **in project evaluation and monitoring there are two levels or types of indicators: Strategic and Output Indicators.**

Strategic Indicators: These indicators **measure change or direct impact** of overall project activities, as they pertain to the project's overall goal or objective. In our case, the PIP goal is to ensure on-site management in decreed parks and reserves with global biological significance. These become the overarching targets outlined in our overall management strategy and against which progress can be measured. The AID PIP Logframe presents three Strategic "Objectively Verifiable Indicators":

- 1) Percent decrease in deforestation
- 2) Sustainable natural resource uses
- 3) Improved environment/quality of life

I find #2 and #3 to be difficult to measure as stated. In order to measure PIP program impact, we need to: 1) **define** what to measure: 2) establish how to **measure**; and 3) develop the appropriate **monitoring** program. I propose we consider the following alternative strategic indicators to help us monitor and evaluate the impact of PIP on biodiversity conservation:

- 1) Change in natural vegetation or land cover.

- 2) ..Change in patterns and intensity of uncontrolled colonization and/or other inappropriate land use practices and natural resource (timber extraction, overharvesting of wildlife, mining, oil exploration, etc.) in and around the protected area.
- 3) Change in the distribution and abundance of key plant and animal indicator species in and around the protected area.
- 4) Change in the socioeconomic conditions of local people living in/around PIP sites (greater specificity needed).

PIP evaluators need to determine if biological, landuse or socioeconomic baseline studies exist or are ongoing for each PIP site, and how they can be incorporated into a PIP monitoring program.

Output Indicators: These indicators reflect actual project outputs towards the project work plan, but do not measure actual impact or change. The AID PIP Logframe presents nine "objectively verifiable indicators (a-i) which formed the basis for our PIP evaluation effort in 1991. It is essential to realize that these indicators are a measure of how we are doing relative to specific project activities. While we want to know specific project outputs, increasing the number of guards from 5 to 10 does not mean there is a measurable impact on protecting the biological resources of the PIP site. This is measured through verification of one of the strategic indicators.

In other words, our evaluation needs to focus on both indicator types. Strategic indicators will help shape our PIP monitoring program and be the ultimate measures of PIP project impact. Output indicators are essential to tracking specific project activities and progress relative to our work plans.

EVALUATION TEAMS

Each evaluation team will be composed of an external TNC contractor, a TNC/LAD and/or LASP technical specialist, and where possible an AID/W or Mission representative. I feel that it is essential to have the combination of an outside expert and TNC staff for the following reasons:

- * Fresh, outside objective review of progress to date
- * Establish unbiased independent evaluation standards to measure performance
- * TNC staff will bring on-site experience, institutional memory, and cohesion to team-- thus minimizing any potential friction or uncertainty associated with an unfamiliar expert.
- * provides independent "audience" for our partners to review PIP management actions to date and to discuss and justify their outcome.

EVALUATION TEAM TASKS

Each evaluation team will conduct the following:

- 1) **Review of all relevant project documentation**
 - a) Approved PIP Work Plan
 - b) All convenios and/or other appropriate agreements
 - c) 1991 PIP site evaluation (if conducted)
 - d) PIP Quarterly Reports (including new English summaries)
 - e) LAD biological monitoring recommendations (4/15/92 memo and others)
 - f) LAD "Parques en Peligro, Informe de Progreso Evaluación"

- 2) **Site Visits**
 - a) Conduct with on-site personnel
 - b) Review specific progress to date, based on approved work plan
 - c) Prepare detailed site description, commentary and practical recommendations for future action and/or changes in program activities.

- 3) **Interviews**
 - a) NGO Partners
 - b) GO Partners (park superintendent, regional development specialists, etc.)
 - c) AID Mission Environmental Officer
 - d) Other Bilateral and Multilateral Development Officers
 - e) Other NGOs, international NGO reps
 - f) Local communities around PIP site

- 4) **Maps/Photos/Reports**

Collect best available park boundary, vegetation, colonization and other baseline maps, aerial photos, satellite images and other appropriate reports.

EVALUATION REPORT

The evaluation team will prepare both a narrative and financial report in English. Each PIP site evaluation will focus on three major evaluation components: technical, financial and administration.

The PIP evaluation narrative report must be presented using the following format.

- I. Introduction
- II. Technical
 - A. Achievements
 - B. Limitations
 - C. Recommendations
- III. Financial
 - A. Achievements
 - B. Limitations
 - C. Recommendations
- IV. Program Administration
 - A. Achievements
 - B. Limitations
 - C. Recommendations
- V. Summary Recommendations

I. Introduction

Brief presentation of PIP site, evaluation team composition, and evaluation work plan and target institutions and individuals. Emphasis should be placed in the narrative on the evaluation of: 1) significant achievements; 2) major project limitations or impediments to project implementation; and 3) the presentation of practical recommendations for future actions.

II. Technical

Evaluating the effectiveness of our PIP supported management activities is essential and is a recognized part of our overall PIP biodiversity management process. Both a qualitative and quantitative evaluation will be appropriate. This emphasis is also appropriate for the financial and administration components. Useful questions and guidelines include:

- A. What have been the significant on-the-ground protection achievements?
Reference specific output indicators and important assumptions section from logframe, "Informe de Progreso Evaluación".
- B. Has there been appropriate technical input from TNC, AID, other sources?
Were/are technical needs adequately addressed and future needs anticipated?
- C. Does the PIP annual work plan reflect the priority management needs for the site and is this work plan actually used to guide operations in the area?
Document any major changes in the objectives or activities from those presented in original work plans or quarterly reports.
- D. Incorporate a quantifiable analysis of gender and indigenous participation in all

interviews, reviews.

- E. Identify appropriate biological monitoring activities in PIP site and are they being used as management tools? Refer to 4/15/92 memo from Len West and Laurie Hunter;
- F. Refer to attached Example 11.1: Questionnaire for rating the effectiveness of the protected area manager, for many useful questions.

III. Financial

An essential part of our PIP program is the development and implementation of long-term financial plans. By measuring and anticipating cash flow and by making appropriate and timely adjustments, we stand a better chance of long-term viability and sustainability in our efforts. The evaluation team should attempt to determine whether the short and long-term management programs have or will have sufficient financial resources from diversified sources to enable our NGO and GO partners to manage and protect the PIP site.

- A. Are there sufficient human and financial resources programmed/committed to attain our conservation objectives?
- B. What is the current total financial input from TNC and other sources in the PIP site. Quantitative analysis and presentation is required. Sources include:
 - 1. Local NGOs
 - 2. All Government Agencies (local, regional and national level)
 - 3. Bilateral Development Agencies (USAID, all others)
 - 4. Multilateral Development Agencies (IDB, World Bank) in and around the PIP site
 - 5. Other International NGOs (WWF, CI, WCI, IAF, CARE, etc.)
 - 6. Debt swap accounts
- C. Is there a long-term financial plan available or in preparation? And is the PIP program fomenting greater independence or dependence on the part of our NGO and GO partners?
- D. Document all long-term financial commitments such as debt-for-nature swaps, bilateral debt, GEF, endowments, trust funds, etc. as they pertain to the specific PIP site.

IV. Program Administration

- A. Evaluate efficiency and effectiveness of TNC/NGO administrative procedures as they relate to:
- Timely commodities procurement
 - Budget management
 - Financial report preparation/submission
 - Effective financial reimbursement for local NGO and TNC
- B. Analyze current convenios and MOAs between all parties in PIP program. Are they current, do they represent and reflect the current work plan? Are they in need of revision?
- C. LAD Administration will provide a separate set of guidelines for this evaluation.

V. Summary Recommendations

NOTE: Individual PIP site evaluations must be submitted to Monica Ostria on/before August 31, 1992.

- ATTACHMENTS:**
1. PIP Logical Framework
 2. Managing Protected Areas in the Tropics-Questionnaire and Checklist
 3. LAD Biological Monitoring memo from Len West and Laurie Hunter 4/15/92 (distributed separately)
 4. Standardized Terms of Reference (distributed at team meetings)
 5. Refer to B. Houseal memo of June 15, 1991 that provided several useful references that are not included here

PREFACE

At the request of The Nature Conservancy's Mexico Country Program I have prepared the following preliminary summary of recent advances in the design and implementation of monitoring programs. My objective has been to call out opportunities for TNC to incorporate these new perspectives into work with its Latin American partners in conservation. Comments on these suggestions will be most welcome.

Because this review is intended primarily as a springboard for developing a monitoring program in the El Triunfo Biosphere Reserve, I have biased the search for references toward work in the tropics, especially Latin America; toward terrestrial habitats, especially forests; and away from the literature on the monitoring of pollutants. I have focused on studies published from 1986 to the present.

A note about the bibliography: The first section lists sources cited in the text. The second presents case studies, or collections of case studies, stratified by concept, technique, and community involvement. The last gives references to publications that sound promising but were not available for this initial review.

I am indebted to several members of TNC's staff for their help during the preparation of this report. Discussions with Susan Anderson provoked thought and provided a framework; her comments materially improved the original draft. Rick Young has been generous with his experience and his substantial library on monitoring. Talks with Joe Quiroz helped me to clarify focus. Peter Warren provided references and new angles. Victoria Diggins and Dave Gori gave many forms of support.

THE NEED: MONITORING GUIDELINES FOR THE TROPICS

TEMPERATE-ZONE MODELS

Not surprisingly, most programs for monitoring biodiversity have been established in the north temperate zone, and most monitoring manuals reflect this historical geographic bias. Many of the principles and techniques developed and formalized by The Nature Conservancy (Noss 1987; Jenkins 1988), other nongovernmental organizations, and government agencies translate well worldwide. Among the best recent handbooks on monitoring are those edited by Clarke (1986) and Goldsmith (1991). Manuals edited by Cooperrider et al. (1986) and MacDonald et al. (1991) have a strong North American (and governmental) flavor but still give clear, step-by-step procedures that would be useful in thinking through any new monitoring program. With few exceptions (Goldsmith's chapter on Greece's Prespa National Park in his edited volume being notable), the authors collaborating on these manuals apparently take for granted that funds and personnel will be available not only for planning, data collection, and analysis, but also for long-term coordination of each monitoring project.

PRECURSORS FOR THE TROPICS

Conservation organizations in developing countries and their partners in international agencies are finding that the temperate-zone perspective on ecological monitoring loses vigor in the tropics. Huntley (1988) summarizes this frustration succinctly: "There is extensive literature on the philosophy and technology of environmental monitoring. In Africa, much of this is irrelevant." Fundamental differences between North and South--in ecological processes, in levels of biodiversity, in socioeconomic and political realities, even in the logistical challenges of remote, meteorologically inclement, underfunded reserves--can destroy any blueprint for monitoring that does not take them into account. In addition, because research funds and well-trained scientists are often in short supply in the tropics, land managers are likely to play a central role in monitoring programs. Such programs must be designed for their needs and abilities.

The case studies cited in this report show a growing body of trial-and-error experience in tropical monitoring. From this corpus some observers (e.g., Thorsell 1990) are beginning to draw up guidelines for research and monitoring in protected natural areas. The establishment of the World Conservation Monitoring Centre is catalyzing these syntheses.

Evaluación Ecológica Rápida (Sobrevila and Bath 1992), prepared by TNC's Latin American Science Program, is an important milestone on the road to a monitoring handbook for the Neotropics. The authors and their collaborators successfully tailor their approach to the needs and resources of conservation biologists in Latin America. They clearly lay out many thought exercises and techniques for data collection that are appropriate for land managers and that will be valuable in monitoring. The manual's primary emphasis is on assessment, rather than on long-term recording and analysis of change; on products such as maps and species lists, rather than on setting up self-limiting or self-perpetuating processes; and on biophysical data rather than on a blend of biophysical and socioeconomic information. This orientation makes EER an extremely important tool, but not a complete program, for monitoring. Despite differences in goals between assessment and monitoring, EER would be an ideal model for a monitoring handbook useful to TNC's Latin American partners.

RECENT ADVANCES IN MONITORING

Some of the high points of recent work in ecological monitoring follow. For convenience, they are organized into conceptual advances, improvements in technique, and new directions for involving the human community of a protected natural area with monitoring its resources. For applications of these advances, the reader should see the case studies in the bibliography.

For protected areas in the tropics, the challenge is to integrate these advances into simple, effective, inexpensive monitoring programs that track the effects of resource management. To that end, the scale of monitoring must be chosen with the central task of improving management in mind.

CONCEPTS

1. Clarification of distinctions among assessment, monitoring, and basic research

Often, conservationists say "monitoring" and mean "assessment" (Burley 1988; Jenkins 1988). Because designing and legally protecting new reserves have often seemed more urgent than managing existing protected areas, inventory and ecological assessment have taken conceptual precedence over monitoring. Increasingly, scientists and land managers are drawing distinctions between the goals and processes of assessment and those of monitoring and are setting separate priorities for programs in these two areas (Soulé and Kohm 1989). Also, conservation biologists in the tropics are finding innovative ways to draw on--and contribute to--the findings of basic

ecological research and the talents of those who conduct it (Thorsell 1990), even though these two groups of investigators are motivated by essentially different tasks.

2. Integration of long-term research and experimental approaches

Krebs (1991) argues that monitoring of populations (and, by extension, of other ecological units) is "politically attractive but ecologically banal unless it is coupled with experimental work to understand the mechanisms behind system changes." The emergence of Long-term Ecological Research sites in the United States (Callahan 1984; Bildstein and Brisbin 1990; special issue of *BioScience* [40(7), Jul/Aug 1990]) may provide the stability and continuity necessary for experiments within monitoring programs. As more field stations for long-term ecological research are established in tropical protected areas, experimentation will become more feasible at all levels of environmental monitoring. Experimental studies may not be cost-effective or appropriate for all Latin American reserves. Nevertheless, the results of such studies, where practicable, should contribute to our understanding of global climatic change and other ecological processes in the tropics and should be shared throughout the reserve network.

3. Applications of landscape ecology

The emerging discipline of landscape ecology (now with its own journals, curricula, and paper sessions at national and international meetings) promises to contribute significantly to the concepts behind monitoring by expanding focus beyond more traditional emphases on populations and communities to the regional landscape (Noss 1987; de Pablo et al. 1988; Baker 1989; Hansson and Angelstam 1991). Because deforestation rapidly induces change visible at the level of the landscape, the conceptual and technical tools of this trade are catching on just as rapidly in the tropics (Wright 1987). For example, this discipline can provide quantitative measures of how forest fragmentation affects the distribution of animal and plant populations on a coarse scale: pioneering species may consistently lose the battle in successional communities but win the war over the entire regional landscape (Urban et al. 1987).

A caveat: In most cases, data gathering and analysis at the landscape level require expensive, highly technical equipment and well-trained personnel. Before investing in these techniques, land managers should weigh judiciously the direct potential benefits against these costs. Applied indiscriminately, landscape ecology could become a wasteful bandwagon rather than a revelatory tool.

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4. Levels of organization (hierarchy) as a guiding principle in designing monitoring programs

As an outgrowth or perhaps a correlate of landscape ecology, hierarchy theory is becoming a helpful framework for choosing levels of ecological monitoring. Noss (1990) gives an excellent overview of how changes in composition, structure, and function can be monitored at the levels of regional landscape, community or ecosystem, population or species, and gene. He suggests the following ten-step process for implementing a monitoring project, applicable to the tropics as readily as to the temperate zone: (1) establish goals and objectives, (2) gather and integrate existing data, (3) establish "baseline" conditions, (4) identify "hot spots" and ecosystems at high risk, (5) formulate specific questions to be answered by monitoring, (6) select indicators, (7) identify control areas and treatments, (8) design and implement a sampling scheme, (9) validate relationships between indicators and sub-end points (a crucial and often neglected step), and (10) analyze trends and recommend management actions.

5. A call for more rigorous and objective criteria for selecting units of monitoring

a. Emphasis on models

The design of any monitoring project should start with a model of the process of interest, at whatever level of sophistication the available data allow (R. Young pers. comm.). Models can be adapted from forestry (e.g., multiple pathways--Cattelino et al. 1979) and rangeland management (e.g., state-and-transition--Westoby et al. 1989), as well as evolutionary ecology, to tropical systems. Starting even from a simple verbal model, generated by the knowledge and instincts of land managers and other reserve staff, can check the tendency to "monitor" anything and everything in an attempt to find patterns that may eventually be useful for management.

b. Criteria for assessing threats

The debate about qualitative versus quantitative criteria for categorizing the status of individual species continues (Mace and Lande 1991; Master 1991). Such categories must be incorporated into monitoring efforts (for example, deciding which species are most in need of proximate or long-term tracking) as well as recovery actions based on the Endangered Species Act. The outcome of this debate will therefore interest land managers. Nevertheless, for the tropics, constraints on finding reliable quantitative criteria may be severe. In some cases, good qualitative markers may be a manager's best bet. In any case, managers should not allow the search for quantitative criteria to distract them from the main tasks of monitoring.

c. Caution in the use of indicator species

Individual species and higher taxa have been and continue to be used as indicators of change in their habitats and communities (e.g., Powell and Powell 1986; Parsons 1991; Wolseley and Aguirre-Hudson 1991). Recently, some observers have questioned the reliance of some monitoring programs on single indicator species (Cairns 1986; Landres et al. 1988; Noss 1990). Because funds, time, and personnel are often even more limited for tropical monitoring than for projects in developed countries, pressures to rely on indicators may be great. Heeding these recent critiques behooves tropical biologists setting up new monitoring programs.

d. The need to evaluate monitoring projects

Palmer (1987) points out that few programs for monitoring rare plants in the United States are evaluated regularly; the same can probably be said for most other monitoring programs. The need for external peer review is especially acute but sorely neglected. Periodic evaluation can allow conservation scientists and land managers not only to refine concepts and techniques for continued monitoring but also to know when to stop (e.g., Pavlik and Barbour 1988) or when a reserve has not been designed to meet the original goals for protection and management (e.g., Osemeobo 1988). Systematic evaluation of biodiversity projects seems to be on the way (Committee on Criteria and Guidelines for the Evaluation of Projects Designed to Protect or Enhance Biodiversity 1989); monitoring programs will no doubt benefit.

In calling for evaluation, critics do not always specify how this review is to be accomplished. Formal procedures for evaluating public education programs, especially in zoos and museums (e.g., Screven 1986), could direct this quest. Such institutions have often found that independent consultants, with their greater objectivity and cross-institutional experience, are the most effective evaluators. TNC, with its ability to integrate across an international network of protected areas, would be an ideal provider of this service to its Latin American partners.

6. Overhaul of the Biosphere-Reserve concept

Over the past decade, especially, hard-won experience in the designation and management of Biosphere Reserves suggests that the original concepts and conditions for these protected areas must be reexamined (UNESCO-UNEP 1984; Dyer and Holland 1991; Bailey 1991). The international network of Biosphere Reserves will be more effective when standards exist for tracking change at the level of landscape and ecosystem. In setting up monitoring programs, managers of individual reserves should

collaborate with the Biosphere Reserve network in establishing goals and procedures.

TECHNIQUES

1. Rapid advances in remote sensing and geographic analysis

In concert with the growth of landscape ecology, remote sensing of change at the landscape level has boomed. Satellite imagery has increasingly sophisticated uses in recording changes in forest cover (Iverson et al. 1989). Aerial surveys have become more feasible in the tropics with the advent of ultralight aircraft (Treadwell et al. 1985). Aerial videography, with its potential for temporal continuity, for audio recording of landmarks and landscape contours, and for duration without changing film, is supplementing or supplanting still photography (Treadwell et al. 1985; L. S. Anderson pers. comm.).

Conservation scientists can make good use of these satellite and aerial images through geographic information systems, which are computer hardware and software for processing digitized thematic data registered to a common coordinate system (Ripple 1987; Johnson 1990, Johnston 1990, Turner 1990, and other papers in a special issue of Landscape Ecology [4(1)] on GISs). Other systems of analysis are also being field-tested; two examples are a computerized method based on the wilderness continuum concept, using four indicators arising from remoteness and naturalness (Lesslie et al. 1988), and a set of indices based on information theory and fractal geometry (O'Neill et al. 1988).

Sobrevila and Bath (1992) give an excellent, practical summary of techniques for remote sensing and geographic analysis in Latin American conservation programs. The reader can find additional information in the case studies and supplementary bibliography of this report.

2. Refinements of existing techniques for monitoring populations and communities

Methods for determining changes at these lower levels of organization do not seem to have burgeoned like remote sensing. For example, for censusing bird populations, a ten-year-old reference (Ralph and Scott 1981) is still the standard. In the tropics, access to the canopy through adaptation of rock-climbing techniques has opened a new world of inquiry to ecologists; this breakthrough may also carry over to monitoring.

Cooperrider et al. (1986) describe procedures for monitoring animal populations and their habitats. (Although not available for this review, the manual edited by Rodríguez [1987]

may be more pertinent to Latin America.) A synthesis of mark-and-recapture models (Nichols 1992) allows zoologists to estimate population densities with greater accuracy. Advances in radio tagging (Kenward 1987) have brought new types of data on vertebrates. Still, managers of tropical reserves should be cautious about investing in radio tracking, which is labor-intensive while yielding information on few individuals. Like remote sensing, it should be used only strategically.

At the level of the community, ecologists are giving attention to the scaling of interactions, for plants (DeVelice et al. 1988; Bourgeron 1988) and animals (Schonewald-Cox et al. 1991). For other refinements in monitoring populations and communities, the reader should see the case studies and supplementary bibliography.

COMMUNITY INVOLVEMENT

1. Recognition of the human community as an asset, not a liability

Incorporating human needs into conservation programs is not new. Conservation organizations and managers are beginning to realize that the human community of a protected area has both the right and the skills to participate in management (Deshmukh 1989). With respect to monitoring programs, managers will profit from recognizing (a) that socioeconomic monitoring should be a part of every program, and (b) that the reserve's human residents and neighbors should be involved in the monitoring process itself, not just in planning and in implementing management decisions, as is more commonly the case.

2. Applications of human ecology

Drawing on both anthropology and biology, the academic discipline of human ecology provides a theoretical framework for viewing local communities not as obstacles to but as beneficiaries of biological conservation. Of particular interest is common-property theory, an outgrowth of the "tragedy of the commons" idea (McCay and Acheson 1987), which is being applied successfully to the management of marine resources (Renard et al. 1991; Smith and Berkes 1991). Seeing the effects of their decisions through involvement in monitoring can help the community to participate effectively and enthusiastically in managing their resources without overuse.

3. Applications of research on perception and motivation

Though seldom cited by conservation scientists, particularly in tropical work, studies in perception (e.g., Zube and Busch 1990), conflict resolution (Hough 1988), and the emerging field of conservation behavior (De Young and Kaplan

1988; Kaplan 1990) offer powerful tools to managers developing monitoring programs. Data collection over the long term, even more than planning and ecological assessment, requires sustained motivation of the participants. These tools can also be used to refine outreach programs in local communities and to evaluate the success of and potential conflicts with reserve management.

4. Lessons from experience in rural sociology

Conservation scientists can capitalize not only on experiences from the management of protected natural areas (e.g., West and Brechin 1991) but also from community forestry (Arnold 1987; Sanwal 1988; Lee et al. 1990) and other rural development projects (Cruz 1991). The establishment of World Wildlife Fund's Wildlands and Human Needs Program reflects this new experiential exchange between conservation biologists and social scientists. Techniques for socioeconomic monitoring can be adapted from these fields.

5. Participatory evaluation

Now a set of formal procedures (and even a buzzword) in rural development, participatory evaluation (Santo Pietro 1983; Lutheran World Relief n.d.; Uphoff 1991) provides at least two valuable services to biologists developing monitoring programs in reserves. First, it suggests practical, resilient techniques for involving the local community in collecting long-term biophysical and socioeconomic data. Second, it offers a built-in mechanism for internal evaluation of monitoring programs.

6. Contributions of women and children

Even when managers of tropical reserves make the effort to involve the community in management, consciously or unconsciously they often seek out men for decisionmaking and data gathering. By excluding women from these activities, conservation programs lose a pool of knowledge and skills that could contribute to the programs' ultimate success (Hunter et al. 1990). Procedures for participatory evaluation include techniques for selectively involving women. Children also can be perceptive taxonomists (Condon 1991), observers, and data collectors. A case in point is a group of nine Costa Rican schoolchildren (aged 5 to 14) who, within a month, were able independently to set up and monitor mistnets in a bird study (Shopland unpubl.). Any monitoring project would be fortunate to have such assistance.

OPPORTUNITIES FOR TNC

The Nature Conservancy is an international leader in assessing and monitoring biodiversity in natural areas. This preliminary review of recent advances suggests several key

opportunities for TNC in assisting its partners in Latin America, and elsewhere in the tropics, to develop and implement successful monitoring programs.

CONCEPTS

1. Encourage experimental approaches in addition to long-term studies, keeping in mind the logistical constraints in tropical natural areas. Enlist the help of visiting scientists (i.e., those not on the reserve's staff) in this endeavor.

2. Using the structure of temperate-zone-biased manuals as a starting point, produce a monitoring handbook specific to Latin America. Keep in mind the fundamentally different ecological processes and unique human communities of tropical reserves. Adapt approaches and procedures to the human and financial resources, as well as the specific needs, of land managers. Build on the success of Evaluación Ecológica Rápida in assessment.

3. Once goals have been clearly identified, test the applicability of landscape ecology and hierarchy theory to monitoring programs in Latin America.

4. Develop practical, simple methods of internal and external review and formal, quantitative evaluation as part of every monitoring project.

5. In Biosphere Reserves, check monitoring goals for individual reserves against the revised goals for the Biosphere-Reserve network as a whole.

TECHNIQUES

1. Continue to explore applications of remote sensing, GISs, and other techniques for monitoring change at the landscape level.

2. Adapt TNC's tried-and-true methods of plant monitoring to tropical conditions. For monitoring animal populations, seek new techniques that are inexpensive, use appropriate technology, and are directly applicable to management.

COMMUNITY INVOLVEMENT

1. Make participation of the reserve's human community a goal, not just a byproduct, at every level of a monitoring program. Look for innovative ways to make the most of the strengths of human diversity.

2. Experiment with a "gap analysis" (Burley 1988) of the reserve's infrastructure. Who is available to monitor? Where do

the gaps between job descriptions lie? Can the local community effectively fill these gaps?

3. Borrow concepts, techniques, and experience from social scientific research and rural development in the tropics.

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SECTION G

INDIVIDUAL PARKS IN PERIL SITE EVALUATIONS

**THE NATURE CONSERVANCY
LATIN AMERICA DIVISION
PARKS IN PERIL PROGRAM**

ASSESSMENT OF AMBORO NATIONAL PARK

Prepared by Hernán Torres, Consultant

with the collaboration of

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Parks in Peril Program
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and

**Mónica Ostría, Coordinator
Parks in Peril Program
The Nature Conservancy**

August 1992

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I. INTRODUCTION

The present document is the result of the evaluation of the management of Amboró National Park, which is included in the Parks in Peril Program list of The Nature Conservancy. The assessment took place in June 1992 and was carried out by a team formed by Mónica Ostria, Parks In Peril Program Coordinator, Len West, Protected Areas Specialist of the Parks in Peril Program, and Hernán Torres, Independent Consultant, Protected Areas Planning and Management Specialist.

During the evaluation work, the team met with the following persons: Hermes Justiniano, Director of the Friends of Nature Foundation (FAN); Silvia Chalukian, Responsible for the Parks in Peril Program of the Friends of Nature Foundation; Abel Castillo, Responsible for the Management of the Southern Part of the Park; Luis A. Moreno, Director of Amboró National Park; Lic. Ronny Bruun, Executive Director of the Rural Development Program of the Caballero and Florida MM. Provinces (PRODECAF); Lic. Eduardo Forno, Technical Manager of the National Fund for the Environment (FONAMA); Michael Yates, Advisor on Natural Resources and the Environment for AID; Nicole Martínez, Development Officer of the Friends of Nature Foundation; Ing. Walter Landívar, Executive Director of the Decentralized Technical Unit of the Forest Development Center (UTD-CDF); Lic. Marlene Avalos, Head of the Wildlife Department of UTC-CDF; Dr. Mario Baudoin, National Director of Protected Areas of Bolivia; Lic. Gerardo Aguirre, National Secretary of the Environment; Lic. Patricia Ergueta, Coordinator of the Conservation Program of the Institute of Ecology; Dra. María R. de Marconi, Technical Coordinator of the Conservation Data Center; and M.Sc. Juan Pablo Arce, Executive Director of the Conservation Data Center.

II. BACKGROUND

During 1991, FAN and other institutions in the department of Santa Cruz petitioned the Bolivian government to enlarge the Park boundaries. This request was formally presented to the government and was approved by both the President and the Cabinet under Supreme Decree 22938 on October 11, 1991. With the approval of this measure, Amboró National Park was enlarged to 620,000 hectares, now extending into the department of Cochabamba and thus allowing for geographical continuity with Carrasco National Park, creating a continuous protected area of a little over 1,200,000 hectares.

Amboró National Park is located in the mountainous eastern sector of the Department of Santa Cruz, and extends westward to the Department of Cochabamba. The Park protects an area of high biodiversity and lies in an important biogeographical transition zone called "el Codo de los Andes" (the Elbow of the Andes), an elongated finger of land extending eastward from the main Andean range toward the flatlands of eastern Bolivia.

The topography of the Park is variable, with craggy peaks and sheer cliffs in the south, dropping off to smooth alluvial plains in the north. These uncommon natural features and land configurations together with the unique geographical location of the Park have resulted in seven biological life zones, distinct subtropical weather patterns, and an unusual flora and fauna.

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From a physical and climatic point of view, the location of the Park is of great importance and marks an abrupt shift from the southern temperate zone to the northern tropical jungles.

The different natural community types found within the Park include Yungas, Chaco, and Amazonia, providing an interesting mix of flora and fauna. In addition to this characteristic there is a vertical succession of ecological zones along an inclination that ranges from 500 m to more than 3,000 m.a.s.l.

The dynamics of all these convergent factors create a unique opportunity to study a variety of soil types and biological geomorphic and hydrological processes.

Plant species found in the area include: mahogany (Swietenia macrophylla), an endemic cycad (Zamia boliviensis), cedar (Cedrela spp.), various species of Ficus, Guarea, and Inga, serebo (Schizolobium parahybum), and various species of orchids, bromeliads, and palms, among others.

The most notable animal species found in the Park include: the spectacled bear (Tremarctos ornatus), bush dog (Speothos venaticus), crested curassow (Crax unicornus), red-fronted macaw (Ara rubrogenys). Some endemic subspecies include: cock-of-the-rock, (Rupicola peruviana saturata) and military macaw (Ara militaris boliviana). Other species commonly found in the Park include the jaguar, ocelot, margay, jaguarundi, eight different species of monkeys, giant anteater, two species of peccary, and three-toed sloth. Also, more than 430 different species of birds have been spotted in the Park.

Amboró protects the upper watersheds of several important rivers, including the Yapacani, the Ichilo, and tributaries of the Mamore. Many rivers that provide water for the northeastern region of Santa Cruz flow from sources in the Park. Consequently, protection of the Park diminishes the risk of flooding in important agricultural and livestock areas, thereby avoiding, or at least lessening, the processes of erosion and sedimentation in the riverbeds.

Amboró National Park is an area of high genetic and ecological diversity that provides surrounding areas with economically important species (game and cash crops) for use outside the Park.

Amboró is one of the Bolivian parks that has been most affected by the infiltration of colonists migrating from coca farming areas in the lowland area of Santa Cruz. About 1,000 families have colonized the northeastern sector of the Park and have organized agricultural union and cooperatives. The presence of these colonists has resulted in the deforestation of the lowland forests around the hills of Amboró.

Poaching and trapping of animals, as well as gold mining activities, are serious threats to the area.

With the recent enlargement of Amboró, the borders of the southern and western sectors have been pushed forward to include more territory. This enlargement has created a certain

degree of conflict with local populations and colonists who lay claim to these lands. The situation is currently being negotiated with the local communities.

The Inter-American Development Bank (IDB) has financed construction of a highway that runs past the northern sector of the Park and has become an important transportation route between Santa Cruz, Cochabamba, and La Paz, thereby increasing the threat of colonization. The Chimore-Yapacani section of the highway poses the greatest threat due to the fact that it presents easy access to the Park for colonists. Woodcutters operating along the highway are responsible for much of the threat to the flora and fauna in Amboró because each time they cut down trees and clear out vegetation, they open up new access to the Park for the colonists.

Slash and burn agriculture and poaching activities are most prevalent in the southern sector of the Park, but the steep landscape and inaccessibility limit, to a certain degree, colonization of the area.

III. TECHNICAL ASSESSMENT

A. ACHIEVEMENTS

Good Relation with Communities Neighboring the Park

There is a successful relation with the agricultural communities neighboring the southern portion of the Park. This relation has allowed a very useful information exchange to solve problems in the management of the resources that could affect the Park's integrity. The efficient work of Abel Castillo, Responsible for the Management of the Southern Part of Amboró National Park under the Friends of Nature Foundation (FAN), has been very important in the achievement of this relation with the communities. The hiring of rangers from the communities has been a proper decision which has facilitated the achievements obtained in the relations with the communities.

Hiring of a Director and New Rangers

Eleven rangers have been hired for the Southern Part of the Park, of which 7 are hired by FAN and 3 by the Secretariat of Environment. Other 17 rangers have been hired for the Northern Part of the Park by the Center of Forestry Development (CDF). At the same time, CDF has recently hired a Director of the Park, who works in Buenaventura.

Adequate Personnel Training

Rangers hired by both FAN and CDF are receiving periodic training, an activity programmed by FAN. Thus, an adequate coordination of surveillance and patrolling actions has been achieved. The Director of the Park has received training in the course organized by the University of Colorado.

Establishment of the Eastern Borders of the Park

The Park borders have been established on the eastern zone, with participation of the San Juan community. A stability has been achieved in the area of influence in the Southern Part of the Park because the farmers have stable vegetable crops based on irrigation from the river courses that originate in the Park. If the forests of the upper basins disappear, there will be no more water in the future. The farmers know this and do not allow potential colonists into those places.

Permanent Environmental Education Campaign in the Southern Part of the Park

The intensive environmental education campaign programmed for the southern part of the Park has had good results and each day more farmers receive information about the importance of conserving Amboró National Park. This has materialized in a greater support to activities carried out by Park personnel.

Good Reforestation Program with the Community

The Samaipata Conservation and Forestry Program for local schools is developing through the U.S. Peace Corps and FAN. The project is advancing very well, gaining interest and support not only from the children involved in the program, but from their parents and neighbors as well.

Good Extension Program on Sustainable Crops

The community extension, particularly in the southern part of the Park, is gradually changing the ideas local people had about conservation. Agroforestry techniques are being put into practice and local communities are learning both the ecological and commercial benefits of planting fast-growing trees.

Gaining the Support of Catholic Parish Priests to Extension Activities

As a result of this, the Catholic parishes have shown an interest in expanding the program to other villages along the southern boundary of the Park.

Support from PRODECAF to Extension Activities

In addition to this, the newly appointed Rural Development Program for the Provinces of MM. Caballero and Florida (PRODECAF) is working jointly with the Park personnel in giving assistance to farmers on sustainable crops in the buffer area in the southern part of the Park.

B. LIMITATIONS

Director and Rangers Recently Hired

The Director of the Park, as well as the majority of the rangers hired by CDF, have been working for a short time, therefore, they have little experience in facing some management problems, especially those related with the society and culture.

Land Tenure Problems

The western part, that borders Cochabamba, presents serious land tenure problems because the authority is issuing ownership titles within the Park. To the north of the Park there is a community of Quechua settlers brought from the high plateaux who are undergoing an adaptation process. Their ownership borders are uncertain and confusing. The annual rainfall in the area ranges from 2,000 to 4,000 mm and the humidity is very high. No profitable crops are produced in the area, except "ají" or "locoto". The extensive soy plantation and the consequent deforestation of hydrological basins will have tremendous environmental impacts. This community of Andean origin causes a strong expansive pressure towards the Park. Park personnel calculate that there are approximately 200,000 hectares privately owned within Amboró National Park.

Lack of Activity Within the Park

The intensity and size of the current problems affecting the area of influence has distracted attention from the interior of the Park. Due to this, the situation of ecosystems and existing communities, that seem to have a high value in terms of biological diversity, is not known.

Weak Extension Activity to the North and Northeast of the Park

Little or no extension activity is carried out in the northern and northwestern area of the Park, where pressure for the Park's resources are as serious or more than in the southern part.

C. RECOMMENDATIONS

To Prepare Basic Cartography

It is very important to prepare topographic cartography at scales of 1:50.000 and 1:100.000 to establish which are the critical zones in the Park in terms of threats, special ecosystems or communities, high environmentally sensitive zones, traditional crops, invasion, etc.

To Prepare New Aerial Photographs and Interpretation of Satellite Images

It is highly advisable to hire a photographic flight with the air force because the interpretation of recent aerial photographs will facilitate the identification of critical zones for the management of the Park. At the same time, the interpretation of satellite images can provide good-quality information to identify vegetation communities and other important data for the management of the Park. The Conservation Data Center has the capability to interpret both aerial photographs and satellite images for management purposes.

To Carry Out a Rapid Rural Appraisal in the Invading Communities of Colonists

It is advisable to carry out a rapid rural appraisal with the aim of learning about their needs, their capacity to sustain themselves, their capacity to commercially produce agricultural products, etc. This will allow to gather information to make decisions on the following:

- (1) Allow these communities to develop within the Park limits as long as they are able to adopt and practice a low input agriculture based on sustainable crops and agroforestry systems.
- (2) Clear the Park areas invaded by the colonists and issue individual land titles if the incompatibility of their rural development practices with the objectives of the Park is proved.
- (3) To move out the invading colonists because their practices are incompatible with the objectives of the Park and there are still highly valuable resources in the areas invaded.

Broaden Environmental Education Activities in the Northern Sector of the Area of Influence

It is necessary to broaden extension and environmental education activities to all communities inhabiting the northern zone of the area of influence of the Park.

Establish a Monitoring System of Development Activities in the Area of Influence

It is necessary to establish a monitoring system of rural development activities in the area of influence with the aim of determining the advances and retreats in the adoption of systems of sustainable use of natural resources.

To Prepare a Basic Short-Term Management Plan for the Park

It is recommended to prepare a basic three-year-long management plan that will allow to orient the management of resources both within and outside Amboró National Park. This management plan should emphasize the positive and negative social impacts that the management of the resources will have on the local communities. At the same time, this plan should examine

the value of Amboró National Park's biological diversity and the role its conservation has on the development of local communities inhabiting the Park's area of influence.

IV. FINANCIAL ASSESSMENT

A. ACHIEVEMENTS

Restructuring of the Accounting System

Project accounting and bookkeeping has been changed in October of 1991. Recently, Cristián Vallejos, the FAN Accounting Officer, has taken over the finances of the project and has restructured the accounting system. Basic project guidelines have been followed and there are forms and receipts kept in separate folders for every expenditure made.

Problems with the old bookkeeping system, budget lines changes, and mixed budgets are being sorted by Cristián Vallejos. The main problem remains in that the budget for fiscal year 1991 was informally changed many times and it is hard to know which was the originally approved budget. At the time these changes were made, FAN did not document budget line changes and The Nature Conservancy approved them over the telephone without indicating FAN to document the changes.

Project Has Been Managed According to PIP Guidelines

In general, the Amboró National Park Project has been managed according to the Parks in Peril Program guidelines, since it began on February 20, 1991.

Good Perspectives for Long-Term Funding

The National Fund for the Environment (FONAMA) is seeking to provide US\$35 million for five years for protected areas. This would be a trust fund operated separately from the Dirección de Areas Protegidas and Amboró National Park is included in FONAMA's priorities for funding. Additional long-term funding is being sought by FONAMA through an endowment. The German and Dutch governments have shown interest and the amount sought is approximately \$10 million. The Enterprise for the Americas Initiative could provide up to \$50,000/park for 10 years. The J.P. Morgan debt-for-nature swap is a good alternative with \$5.5 million in debt being transferred to TNC, working out to approximately \$1.2 million for actual on-the-ground work. However, the specifics are still under consideration.

Other Sources of Funding

CDF provides \$10-15,000/year in salaries, while SEGMA-BID have allocated \$70-80,000/year in infrastructure, studies and salaries. SEGMA-BID funding ends next year.

Also, PRODECAF provides approximately \$8,000 every three months for food for Park personnel and other miscellaneous Park activities.

The Catholic Church has provided 2 motorcycles, gasoline, a Park Center, and environmental/enforcement activities on the southern border of Amboró National Park.

B. LIMITATIONS

Confusion on the Origin of Budgets

FAN is unclear as to what funds are The Nature Conservancy's Parks in Peril Program match. Disbursement memorandums do not clearly identify funds that are part of TNC's match and, because of this, there is a confusion as to how to report them.

At the end of 1991, budgets for both Amboró National Park and Noel Kempff National Park projects were mixed and the total was divided between both Parks. This transaction has caused some confusion since accounts need to be segregated.

C. RECOMMENDATIONS

To Submit a Revised Version of Budgets

FAN should start working in correcting the errors identified in the limitations section and submit to TNC a revised version of all financial reports which will correct errors and include TNC's match budget.

V. ADMINISTRATIVE ASSESSMENT

A. ACHIEVEMENTS

Efficient Transfer of Funds to the Field

The transfer of funds from the office in Santa Cruz to the field is timely and efficient. FAN has a good administrative personnel who work well by setting priorities and attending to project needs.

Reports Have Been Submitted on Time to TNC

The progress, as well as the financial, reports have been received by TNC on time.

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Good Relations with CDF

The relations between FAN and the governmental organization CDF is good both in Santa Cruz and in the Park. CDF wants to play a greater role in the management of Amboró and there seems to be excellent potential for these organizations to work together.

B. LIMITATIONS

Weak Interchange of Information Between FAN and CDF

Although communication between FAN and CDF is good, there is a need to facilitate the flow of information regarding both finances as well as the use of vehicles in joint patrolling activities and other general activities being carried out in the Park.

C. RECOMMENDATIONS

Additional coordination between FAN and CDF technical and administrative personnel would enhance field work and the efficient use of vehicles and equipment.

V. SUMMARY OF RECOMMENDATIONS

Technical

- Develop a rapid rural appraisal to determine social, economic, and development capacity of the local communities that invaded the northern part of the Park as well as those settled in the adjacent lands in the northeast of the Park.
- Cartographic material should be prepared at scales 1:50,000 and 1:1000,000. This cartographic material is an irreplaceable tool when preparing the management plan.
- Prepare a three-year basic management plan, focusing on the social impacts of the Park's management and on the importance of its biological diversity.

Financial

- Submit to TNC a revised version of all financial reports including the corrections of errors and indicating which funds correspond to TNC's matching funds.

Administrative

- Promote a more active flow of information between FAN and CDF, and between FAN and CERCONA.

**THE NATURE CONSERVANCY
LATIN AMERICA DIVISION
PARKS IN PERIL PROGRAM**

ASSESSMENT OF NOEL KEMPF MERCADO NATIONAL PARK

Prepared by Hernán Torres, Consultant

with the collaboration of

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**Mónica Ostria, Coordinator
Parks in Peril Program
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August 1992

I. INTRODUCTION

The evaluation requested had the objective of learning about the implementation and achievements of the management of Noel Kempff Mercado, in Bolivia, included in the list of the Parks in Peril Program of the Latin America Division of The Nature Conservancy. The assessment took place in June 1992 and the evaluation team was formed by Mónica Ostría, Coordinator of Parks in Peril Program, Len West, Protected Areas Specialist, Parks in Peril Program and Hernán Torres, Independent Consultant.

Persons who are involved in one way or another in the management of Noel Kempff Mercado were contacted during the evaluation period. These persons are Mr. Hermes Justiniano, Executive Director of the Friends of Nature Foundation (FAN), Mr. Néstor Ruíz, Executive Director of the Noel Kempff Mercado Regional Center for the Conservation of Nature (CERCONA), Mrs. Silvia Chalukian, Head of the Parks in Peril Program of the Friends of Nature Foundation, and Ms. Nicole Martínez, Development Officer of the Friends of Nature Foundation.

In addition, meetings were held with Mr. Gerardo Aguirre, National Secretary of the National Secretariat of Environment; Mr. Mario Baudoin, National Director of Protected Areas; Mrs. Cecile Belpaire de Morales, Director of the Institute of Ecology of Bolivia; Mr. Eduardo Forno, Technical Manager of the National Fund for the Environment (FONAMA); Mr. Juan Pablo Arce, Executive Director of the Conservation Data Center (CDC); Mr. Michael Yates, Advisor on Natural Resources and the Environment of the United States Economic Mission in Bolivia (USAID); Mr. David C. Gibson, Regional Advisor on Forestry and Natural Resources for AID; Federico Bascope and Paolo Bettella from Western Ecological Association (ASEO); Mrs. Carmen Miranda of the National Science Academy of Bolivia; and with Mr. Arturo Moscoso, Advisor on the Preparation of a Protected Areas Law of Bolivia.

The field work was possible thanks to the collaboration of the Friends of Nature Foundation (FAN) of Santa Cruz, Bolivia.

II. BACKGROUND

Noel Kempff National Park is located in the northeastern sector of the Department of Santa Cruz, on the border with Brazil. The Park stretches over an area of 706,000 hectares and protects an area of high biodiversity, due to its unique location. The Park area encompasses a large part of the Caparuch mesa, which covers an altitude range from 600 to 900 m.a.s.l. over the surrounding plains. This formation has created diverse habitats for a wide variety of plants and animals, and it includes several mesas, waterfalls, dense forests, and rivers. There is also a buffer zone on the western border approximately 10 km wide and covering about 208,000 hectares.

La Bahía Biological Reserve, a lake ecosystem 25 km west of the Park, is an area of 21,900 hectares that was created to form part of the conservation unit in the area.

The Park is located in an area where the influences of different regions converge: the Amazon from the north, the Chaco from the south, the Brazilian grasslands from the east, and the Andean highlands from the west. The area is part of the Cristalino Chiquitano complex, emerging from the Brazilian Shield. The mesa is one of the highest points in the region, and all of these distinct characteristics make the Park an area of diverse flora and fauna that are unique to Bolivia.

The mesa is covered by a mosaic of different ecosystems such as open fields, grassy plains, gallery forests, montane forests, and rain forests. The lowland region that surrounds the mesa also encompasses a variety of ecosystems, including rain forests, evergreen forests, broad-leaved deciduous forests, dry plains, and marshy areas.

From the floristic surveys that have been carried out in the Park, it has been determined that there is a wide variety of flora, including new species, endemics, and adaptations that are unique to certain natural community types.

Although the only faunistic surveys that have been carried out in the Park are ornithological studies, there is significant evidence of a rich and varied fauna. Three separate bird inventories carried out in four different areas of the Park have counted 550 different species and it is calculated that when the inventory is complete, the number of species registered will be of approximately 700, one-fourth of the total number of bird species that exists in all of South America.

The following fauna inhabit the lowland forests surrounding the Park: jaguar (*Felis onca*), tapir (*Tapirus terrestris*), deer (*Mazama guazoubira* and *M. americana*), spider monkey (*Ateles paniscus*), and howler monkey (*Alouatta caraya*). The alluvial plains to the east of the Park are home to the ñandú (*Rhea americana*), giant anteater (*Myrmecophaga tridactyla*), swamp deer (*Blastocerus dichotomus*), and the maned wolf (*Chrysocyon brachyurus*). Tapirs and pampas deers (*Ozotoceros bezoarticus*) roam the higher plateau areas.

Giant otters (*Pteronura brasiliensis*) and river otters (*Lutra longicaudis*) are commonly observed along the Pauserna and Verde rivers. Freshwater dolphins (*Inia geoffrensis*), yacaré caimans (*Caiman yacare*), and black caimans (*Melanosuchus niger*) inhabit the Itenez river and its many lagoons. During the dry season, when the waters are low, two different species of South American river turtles use the area as spawning grounds: the taricaya (*Podocnemis unifilis*) and the tataruga (*Podocnemis expansa*).

Fish are also abundant in the area. Species range from small ornamental fish to the huge piraiba (*Brachyplatystoma filamentosum*), a type of catfish, as well as several species of pirañas and other fish of great commercial value.

The forests that surround the plateau are rich in timber-yielding trees like mahogany (*Swietenia macrophylla*), "roble" or oak (*Amburana cearensis*), cedar (*Cedrela spp.*), paquío (*Hymenaea stilbocarpa*), serebo (*Schizolobium sp.*), mara macho (*Cariniana estrellensis*), and

cambara (Erisma sp.). The area is also rich in various species of rubber and nut-producing trees. If these products are harvested or extracted in a sustainable way, they could be a constant source of income for the region adjacent to the Park.

The flora and fauna diversity in the area makes it a very important place for biological research. However, in the last few years the population of the southern Brazilian states of Mato Grosso and Rondonia have increased dramatically as a result of nation-wide development that has resulted in the exploitation of the Amazon Region and expansion of agricultural and livestock industries. Both states border the Park and present a serious threat to its conservation.

There is extensive exploitation of aquatic wildlife along the northern border of the Park, next to Brazil. Brazilians living in the area regularly enter the Park illegally to extract fish, caimans, and turtle eggs for commercial purposes.

A short time ago, Brazilian woodcutters infiltrated the eastern side of the Park and built roads and a bridge to extract timber and wildlife. Another important aspect is the expansion of tourist and recreational activities to the north of the Park in Brazil.

On the southwestern part, timber companies have built roads through the forest that give colonists potential access to Park lands. The uncontrolled extraction of timber in the area provides a steady source of income, creates access to pristine areas, and contributes to the consequent exploitation of wild animals for subsistence hunting and commercial purposes. Another threat to the Park is the incursion of gold miners working in the areas that surround Los Fierros and Las Torres along the Itenez river.

The non-governmental organization Friends of Nature Foundation (FAN) supports the management of Noel Kempff Mercado National Park and has the goal of reducing this support as the Noel Kempff Mercado Regional Center for the Conservation of Nature (CERCONA), governmental organization responsible for the management of the Park, improves its financial situation and its managing capacity. Currently, FAN has hired rangers to support the patrol activities and it has built an administrative headquarter and a control post. CERCONA has built control posts and trails that, in addition to those built by FAN, constitute a series of very important facilities for the protection of the Park.

Both FAN and CERCONA are actively promoting a nature-oriented tourism and actions have already been taken, which could bring about the arrival and possible increase of visitors to the National Park, even if there is no management plan to guide and regulate tourist activities within the Park.

The Government is analyzing the regionalization of protected areas management in the country, and it is possible that it creates a Regional Department of Protected Areas or a National Directorate of Protected Areas as a dependency of the National Secretariat for the Environment (SENMA), but with regional representation.

Despite the Park's short period of existence, some important achievements in its management have already been noted, especially in relation to the protection of resources.

III. TECHNICAL ASSESSMENT

A. ACHIEVEMENTS

Control of Poaching and Illegal Fishing

An important decrease in illegal commercial fishing, caiman hunting, and turtle egg extraction along the Iténez and Verde rivers has been achieved. It is less frequent to find fishing equipments and nests in places where a year ago they were frequently found. The existence of a well-designed patrol program and the acquisition of adequate equipment have allowed rangers hired by FAN to do an effective job. It is necessary to point out that the Park personnel does not carry weapons, therefore, their job must be highly valued, since they use persuasion and personal contact with the community as the means to control illegal actions.

Training

Rangers have had a periodic training and they maintain a high morale. The good work carried out by Luis Marcus, ranger of Argentinean nationality, can be clearly observed, since he has introduced quality into surveillance and patrolling jobs.

Impact of Management on Local Communities

Illegal activities have taken place and take place almost exclusively on the border with Brazil, a country that has concentrated an increasing human population in the town called Pimenteira. This human population has based its subsistence on farming and livestock activities, after deforesting a large forest area. Fishing in Iténez and Verde rivers provides a food complement to the town and adjacent areas where fishing of some species is allowed. Nevertheless, commercial fishing, turtle egg extraction and caiman hunting are practically not controlled in the Brazilian territory.

Undoubtedly, the presence of rangers in Noel Kempff Mercado National Park and their surveillance and patrolling work have not been welcomed by the neighboring community at the other side of the border, but the new situation has been accepted and the majority of the people respects the rangers and the job they perform.

Coordination with Brazilian Authorities

In the town of Pimenteira, in Brazil, there is only one officer from IBAMA (Brazilian Institute for the Environment), but he is simply not capable of controlling the entire range of illegalities that occur in his work area, therefore he concentrates his efforts only on illegal

logging activities. A few years ago, Brazilian loggers illegally penetrated 20 km into Noel Kempff Mercado National Park, building a bridge on the Verde river for that purpose. Their presence in this place caused the loss of several forest species in the Park.

Infrastructure and Equipment

The basic equipment for the management of the area has been acquired. Thus, rangers hired by FAN have uniforms, instruments, adequate salaries paid on the date due, and facilities with the necessary comforts. Two new ranger posts have been built in Flor de Oro and in the Pauserna river mouth. In addition, the main administration building in Flor de Oro was substantially expanded. Radio communication equipments, outboard-engine boat, and a Cessna aircraft with capacity for four passengers have been acquired. This material allows to provide an efficient support to the management activities in the Park.

Research

A study is being carried out to learn about the density of larger ungulates in an area of the Park. The study is supported by Dr. Andrew Taber and Wildlife Conservation International. Two young scientists are working in the field, using radiocollars for their research.

Facilities for Nature-Based Tourism

A trail has been designed through a portion of the Park, with collaboration from a Peace Corps volunteer who receives support from some rangers. Other studies on the vegetation have been recently carried out. FAN has also begun the analysis of the Park's potential to receive nature-based tourism.

B. LIMITATIONS

Lack of Planning for the Park

A management plan has not been prepared for the Park. All of the studies being carried out do not follow a program resulting in an analysis of priorities, nevertheless, their results will be of great importance for planning the management of the area. In addition, there is no planning of each physical development site and, therefore, there is much spontaneity in the design and location of infrastructure.

Lack of Cartographic Material

There is no appropriate cartography to identify the management needs or priorities. The available cartography is very old and at a scale (1:250.000) that does not allow to identify in detail the environmental and physical characteristics of the area.

Regarding biological information, there is only one vegetation map based on the life zones proposed by Leslie Holdridge.

Park Administration Located in Santa Cruz

The Park administration is located in the city of Santa Cruz, several hundred kilometers from the area, therefore, the coordination of everyday management problems and activities do not receive the required attention.

Inadequate Facilities, Equipment, and Training for CERCONA Rangers

The achievements of the rangers hired by the Friends of Nature Foundation (FAN) are not extensive to the personnel hired by the Noel Kempff Mercado Regional Center for the Conservation of Nature (CERCONA), organization with the legal authority to administrate Noel Kempff Mercado National Park. CERCONA rangers do not have access to the same facilities of those rangers hired by FAN: boats and the necessary fuel. The buildings where they have established their camps are not of a good quality and do not have an adequate equipment. Patrolling and surveillance activities carried out by CERCONA personnel are, consequently, not as effective.

The programming of patrolling and surveillance activities are strengthened by a periodic training of the rangers hired by FAN. CERCONA rangers have not attended these courses. In a meeting held with Mr. Néstor Ruíz, Executive Director of CERCONA, he mentioned that the cause of the absence from these courses is the lack of personnel, which does not allow the necessary shifts.

Lack of Coordination in Patrolling Activities Between FAN and CERCONA Personnel

Although FAN participates in the board of CERCONA and, therefore, is informed on the program of activities prepared by that authority, the coordination between both ranger staffs on the field is simply nonexistent and, furthermore, there is not even contact among them. This situation weakens their good work in the control of illegal activities and management actions.

C. RECOMMENDATIONS

Mid-Term Actions

1. To Prepare a Management Plan for the Park

A management plan must be prepared for the Park. The management plan should follow a logic planning process and it should be prepared by an interdisciplinary and multidisciplinary team with local capacity, including the Gabriel Moreno University in Santa Cruz.

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An outline to plan the management of Noel Kempff Mercado National Park is proposed below, considering its biological characteristics and the socioeconomic conditions of the neighboring communities in Brazil.

**Proposal of a Process to Plan the Management of
Noel Kempff Mercado National Park**

- PHASE I To gather information and useful data for the planning of the area to be protected (e.g. main ecosystems, communities, species and their "status", geophysical elements, culture, society, institutional capacity to effectively manage the area, political, social, economic opportunity, etc.).
- PHASE II To analyze and interpret the information and data gathered (e.g. identify environmentally sensitive areas, analyze the environmental capacity of a management proposal, analyze the social, cultural, and political factors in favor or against the management of the Park, etc.).
- PHASE III To establish, evaluate, and adjust, if needed, the objectives of the creation and management of the Park. The size of the Park should be considered in order to achieve the identified objectives (the Park area must be large enough to guarantee the self-sustainability of key ecosystems and species that are to be protected).
- PHASE IV To propose an action strategy (e.g. agree on a zoning system and prepare the management plan for the area).
- PHASE V To implement the proposed strategy (this includes budget for management, research, personnel, etc.).
- PHASE VI Monitoring and evaluation of management (it must be carried out with the aim of establishing the success of difficulty in the management of the Park. Research should provide the necessary elements to judge and efficiently evaluate the management from an environmental, social, and cultural point of view, if appropriate).
- PHASE VII A feed back or another management plan (considering the objectives as well as the results obtained from the monitoring and evaluation).

An organization and content of the planning document (Management Plan) is proposed below, according to the local realities and with the following organization:

INTRODUCTION

A. BACKGROUND

a) Objectives of the Creation of the Area.

Conservation policies, and environmental functions of the protected area. Justification of the objectives and management category established, etc.

b) Geophysical Environment.

Geology, geomorphology, topography, soils, hydrology, climate, etc.

c) Biological Environment.

Main ecosystems and their functions, biological communities and their population components (plants and animals), etc.

d) Cultural or Historical Resources.

Cultural or historical features and their relative importance in the local, regional, and international context, if appropriate.

e) The Use of the Protected Area and its Surrounding Area.

Pre-hispanic, colonial, or independence times, relations with other contemporary local populations with the natural protected area, land tenure, tourist demand, external impacts, etc.

B. SYNTHESIS

a) To synthesize the environmental, social, and cultural functions of the protected area. To emphasize its scientific, conservation, tourist, and recreational potential, if appropriate.

C. THE PLAN

a) Zoning.

Zoning must strictly adjust to the objectives of the creation of the national park. The management zones must be established with liberty and imagination, in order to guide the efficient management of the area's resources and capacity's. With that purpose, the more or less environmentally sensible territorial sectors of the Park must be considered. The denomination of the management zones must be simple and its function must be indicated as clearly as possible. Some currently used denominations that could be applied to Noel Kempff Mercado National Park are the following:

Strict Protection Zone

Restricted Use Zone

Restoration of Degraded Environments Zone

Traditional Use Zone

Historical and/or Cultural Value Zone

Recreative or Intensive Use Zone

Buffer Zone of External Impacts

Special Use Zone

Service Zone

b) Environmental Management

This section should include proposals for priorities in the management of the Park's resources, with emphasis on communities of plants and animals, water, erosion control, buffering of external impacts, etc.

c) Management of Recreative Activities and of the Relations with Neighboring Communities

This section should consider the recreation sites, trails, visitor information centers, media to interpret the functions, resources, and values of the Park, environmental education, and relations with local communities.

d) **Operations**

This section should explain the activities to protect the natural protected area, the administrative structure and necessary personnel, the location and characteristics of basic infrastructure for the management and permanent personnel training at all levels.

D. CHRONOGRAM OF THE PLAN

It should be organized by phases\year.

E. BUDGET OF THE PLAN

It should be organized by phases\year.

F. CARTOGRAPHIC ATLAS

It should include the zoning and the geophysical, biological, social, and cultural subjects relevant for the management of the Park.

2) **To build the capacity to manage the area**

There should be only one administrator with authority to coordinate the management activities indicated in the plan. This requires the availability of a good hierarchy of the personnel authority.

3) **To prepare an environmental education program**

An environmental education program should be prepared for the neighboring communities as well as for the city of Santa Cruz. This program should be oriented towards the importance of Noel Kempff Mercado National Park for the region and the country.

Short-term actions

The cartographic material at an appropriate scale should be prepared as a previous task. It is necessary to have aerial photographs and, with that purpose, a flight can be arranged with the Military Geographical Institute. In addition, it is necessary to have a map of vegetation associations. The Conservation Data Center has the capacity to interpret satellite images and

aerial photographs. At the same time, the possibility of arranging a special flight with the air force should be explored in order to obtain a photograph of the Park area at a 1:20.000 scale. Generally, it is possible to prepare initial cartographic material with subjects of analysis such as natural communities, topography, areas with potential to develop nature-based tourism, etc., all this with the aim of preparing support material for the next Management Plan for Noel Kempff Mercado National Park.

Immediate actions

Some facilities and trails have already been built. Since a systematic planning of these works has not been followed to anticipate the environmental impacts they could produce, it is recommended to plan each future physical development site anticipating the impacts that these works could cause the Park.

IV. FINANCIAL ASSESSMENT

A. ACHIEVEMENTS

Reorganization of the Accounting System

The project's accounting and bookkeeping was changed in October of 1991. Recently, Cristián Vallejos, the FAN's Accounting Officer, has taken over the project's finances and has reorganized the accounting system. Basic project guidelines have been followed and there are forms and receipts kept in separate folders for every expenditure made.

Problems with the old bookkeeping system, budget lines changes, and mixed budgets are being sorted by Cristián Vallejos. The main problem remains in that the budget for the 1991 fiscal year was informally changed many times and it is hard to know which was the originally approved budget. At the time these changes were made, FAN did not document budget line changes and The Nature Conservancy approved them over the telephone without indicating FAN to document the changes.

Project Has Been Managed According to PIP Guidelines

In general, the Noel Kempff Mercado National Park Project has been managed according to Parks in Peril Program guidelines since it began on february 20, 1991.

Good Perspectives for Long-Term Funding

The National Fund for the Environment (FONAMA) is seeking to provide \$35 million for five years to protected areas. This would be a trust fund operated by FONAMA instead of the Dirección de Areas Protegidas. Noel Kempff Mercado National Park/Amboró National Park is included in FONAMA's priorities for funding. Additional long-term funding is being sought

by FONAMA through an endowment. The German and Dutch governments have shown interest and the amount sought is approximately \$10 million. The Enterprise for the Americas Initiative could provide up to \$50,000/park for 10 years. The J.P. Morgan debt-for-nature swap is a good alternative with \$5.5 million in debt being transferred to TNC, working out to approximately \$1.2 million for actual on-the-ground work. However, the specifics are still under consideration.

Other Sources of Funding

The Corporation for the Development of Santa Cruz (CORDECRUZ) puts in approximately \$100,000 in Noel Kempff Mercado, but future investments are unsure due to the financial problems CORDECRUZ is facing. The German government promises the allocation of up to \$400,000 to build infrastructure in Noel Kempff Mercado through the Bolivian government but they want to see a management plan first.

B. LIMITATIONS

Confusion on Origin of Budgets

FAN is unclear as to what funds are The Nature Conservancy's Parks in Peril Program match. Disbursement memorandums do not clearly identify funds that are part of TNC's match and, because of this, there is confusion as to how to report them. Such was the case with the purchase of the Flor de Oro property and the Cessna aircraft.

At the end of 1991, budgets for both Noel Kempff Mercado National Park and Amboró National Park projects were mixed and the total was divided between both parks. This transaction has caused some confusion, since accounts need to be segregated.

C. RECOMMENDATIONS

To Submit a Revised Version of Budgets

FAN should start working on correcting the errors identified in the limitations section. It should also submit to TNC a revised version of all financial reports with all errors corrected and including TNC's match budget.

V. ADMINISTRATIVE ASSESSMENT

A. ACHIEVEMENTS

Efficient Transfer of Funds to the Field

The transfer of funds from the office in Santa Cruz to the field is timely and efficient. FAN has good administrative personnel who work well by setting priorities and covering the project's needs.

Reports Have Been Submitted on Time to TNC

The progress as well as the financial reports have been received by TNC on time.

B. LIMITATIONS

Lack of Coordination and Interchange of Information Between FAN and CERCONA

Although FAN participates in the board of CERCONA there is a need to facilitate the flow of information and coordination regarding both financial and patrolling, as well as general activities occurring in the Park.

C. RECOMMENDATIONS

Establish Coordination of Activities Between FAN and CERCONA

Coordination between FAN and CERCONA technical and administrative personnel should enhance field work and the efficient management of the Park.

VI. SUMMARY OF RECOMMENDATIONS

Technical

- The preparation of a workable, long-term management plan for Noel Kempff Mercado National Park is an urgent need.
- The coordination of field efforts between FAN and CERCONA will strengthen the capacity to protect the Park and its resources.
- Training programs for both FAN and CERCONA personnel should be increased in order to improve the effective management of Noel Kempff Mercado National Park.

Financial

- Develop a long-term financial strategy, outlining anticipated demand and availability of funding sources.
- Submit to TNC a revised version of all financial reports which will correct errors and include TNC's match funds.

Administrative

- Coordinate technical and administrative activities between FAN and CERCONA personnel.

**THE NATURE CONSERVANCY
LATIN AMERICA DIVISION
PARKS IN PERIL PROGRAM**

**CHINGAZA NATURAL NATIONAL PARK
EVALUATION REPORT**

Prepared by:

Charles William Wendt, Consultant

July 1992

**FINAL REPORT
PARKS IN PERIL EVALUATION
CHINGAZA NATURAL NATIONAL PARK, COLOMBIA**

1. INTRODUCTION

As a part of the Parks In Peril Program (PIP), an on-site evaluation of Chingaza Natural National Park, Colombia was made by Independent Contractor Charles W. Wendt from June 23 - 7 July 1992 and interviewed 6 women and 12 men. He was part of the team made up by Dr. Cristina Garcia Kirkbride, TNC Director of the Colombia & Venezuela Programs and Mr. Len West, TNC's Protected Areas Specialist.

Chingaza Natural National Park is extremely important because of its proximity to Santafé de Bogotá and its protection of the water and electrical sources for the Capital City. INDERENA is the land management agency responsible for the Park's administration and shares an active environmental education program with the Water And Electrical Company of Bogotá (EAAB) in the Park.

The formal agreement between INDERENA and EAAB could be beneficial for enlarging the Park; taking advantage the considerable resources of EAAB which has purchased some of the land for the Park. Because of water and electrical power rationing in Colombia caused by the current drought, there is great concern about the sources of adequate water and power. For this reason it is important that the surrounding forest reserves be included within the boundaries of the National Park since most of its 345.6 square miles (50,374 hectares) are of a high altitude "páramo" vegetation type with scattered stands of forest.

The forest utilization being practiced in the public lands of the forest reserves is irrational and, even more alarming, commercial timber is being wasted in the conversion of forest to marginal pasture land. Since most of this forest is federally owned, this conversion is relatively simple after a great deal of work is done to establish the exact boundaries of privately owned lands.

1) There has been significant project achievement in the use of a newly acquired and much needed Jeep and contracting 2 full-time employees by the Nature Foundation (FUNATURA) for boundary studies and the addition of additional professionals by INDERENA for the Park. 2) A major limitation is the eastern section of the Park which is compromised by the problems of leftist guerilla activity, cultivation of narcotics and low level extraction of commercial timber. 3) There are 3 windows of opportunity for future action in the Park: a) optimizing the environmental education program, b) increased public use of the Park and c) the enlargement of its boundaries to protect the remaining stands of andean forest in the region.

2. TECHNICAL

A. Achievements: There are now 2 well qualified, full-time employees working with FUNATURA and paid by PIP funds with the potential for good results. They spent 17 days of field work to corroborate the aerial photos and the office work done in Bogotá has yielded several reports. A new 4-wheel drive vehicle was provided to INDERENA for the Park Staff's use when it is not requested by the Foundation.

B. Limitations: Some of the aerial photos are 30 years old and almost permanent cloud cover is a serious problem for obtaining accurate, current information. Unfortunately, much of the work which concentrated on the eastern sector of Chingaza National Park cannot be pursued because of recent invasion of leftist guerilla groups in the area and the field work in that sector has to be discontinued.

The field trip to the San Juanito area with Biologists Héctor Villareal and Hugo Fernando López ended with a vehicle accident and serious injury to the right hand of Biologist William Alfredo Cubillos. Recuperation has been slow and there appears to be the possibility of a permanent disability. The vehicle lacked insurance and is still in disrepair.

We were told that in order to use the new vehicle to do work in the Park, it is necessary for FUNATURA to pay the salary for a driver from INDERENA. Since this cost has not been programmed, it is a problem.

Based on my interviews, there is a serious lack of current knowledge about what is happening in the Park by the people that the PIP program is paying for that purpose. There have been 2 separate draft work plans produced by the 2 organizations.

C. Recommendations: Coordinate additional field time for FUNATURA staff assigned to Chingaza to work with the INDERENA Park Staff. Collaborate on a common work plan for the Park.

If the purpose of the field work is not to any out-of-the-way location, the EAAB/INDERENA bus used for the Environmental Education Program could provide alternate transportation. There are good accommodations for sleeping and eating arrangements might be made with EAAB.

3. FINANCIAL

A. Achievements: Some new equipment has been purchased and professionals are employed.

B. Limitations: More funding is needed for purchase of up-to-date aerial photos and other supply and equipment needs.

C. Recommendations: Coordinate equipment purchases with the INDERENA Park Staff and hire additional staff for working with local communities and the Environmental Education Program.

Housing Facilities:

In the report for the Eastern Sector of Chingaza National Park, there are several items that prompt comment: There should be a married couple living in the adjacent communities, when public order has been restored in a particular community. Hire both persons; one to work as a school teacher or extension person and the other to work as a park ranger. Single persons working in communities are sometimes considered a threat and do not spend as much time on the site as a married couple. The lead person can be paid for 5 days work per week and the spouse for 2 days.

Provide a good house that is either rented, purchased, or built by FUNATURA. The negotiation for rental should include an option to buy at today's market price. It costs a little more, but in this way, the price is not inflated by speculation and one can experiment with the location for a year.

In this respect, the building of a pre-fabricated house is all right as long as it is well done. The strategy of the Argentine and Chilean National Park Systems of building solidly constructed, permanent residences for families has proven successful over time. This does not mean that single employees cannot live in these houses. However, it does mean that decent living conditions exist which tend to keep people on the job; a good house often makes up for low salaries. Bad living conditions have caused more than one good employee to seek employment elsewhere.

Equipment Purchases:

In discussions with PIP Coordinator Claudia Romero, it seems to be a given that mules will be purchased for the park rangers. I would recommend the purchase of horses for the following reasons:

Without a doubt, mules as a hybrid of a mare horse and jack burro, hold up better for heavy work in steep terrain. This is why they are used for packing cargo and routine rides down into Grand Canyon National Park, Arizona. However, they have disadvantages for riding and non-routine activities.

Horse versus Mule:

Mules are a glorified jackass with a psychological dependence on their mother; they love horses. On patrol with a horse and several mules, you can put a bell on the horse and hobble it and the mules will stay with it overnight and all eat their fill of grass. A horse is easier riding and its body holds a saddle on it better in steep terrain. In driving to the Chingaza Park over the weekend, I observed only 1 mule being used as a pack animal and 9 horses being ridden or packed.

Riding mules are the exception, rather than the rule. They make excellent pack animals when led by a horse. In Río Abiseo National Park, Peru, horse mounted wranglers lead pack mules the 4 days necessary to pack into the Park. Pataz, Peru is 6 hours walk or horseback ride and there is no road. For more information on stock use, I would recommend corresponding with:

Biólogo Estéban Alayo Briceño
Intendente, Parque Nacional Río Abiseo
Oficina Correos de Piás.
PATAZ - LA LIBERTAD, PERU

He was raised in the altiplano and his father was a mule and horse trader. Superintendent Alayo could be useful for buying and setting up a program for horse and mule use.

Do not economize on quality. Park rangers can come up with many reasons not to use a bad horse or a cantankerous mule. A good horse or mule will cost about \$1,500 - \$2,000 each, but over time they will amortize out for replacement costs, feed, veterinary costs and shoeing to around \$750 per year whether they are used 1 day or 365 days per year. My recommendation is to buy horses with the following criteria:

- . Age - between 5 and 8 years old (older horses have stiff ankles and tend to fall in steep, wet terrain;
- . Height - Minimum of 15 hands (about 60 inches at the withers);
- . Darker color (not white - can be seen from too far away and have a tendency for sunburn);
- . Gentle, well-trained and athletic. You do not want to be riding a clumsy stumble footed animal when your life may depend on your horse's athletic ability.

4. PROGRAM ADMINISTRATION

A. Achievements: Reports have been sent to TNC in a timely and well organized fashion. In spite of occasional difficulties with budgetary spread sheets, they are presently a model of efficiency.

B. Limitations: Interpersonal relations have been problematical between FUNATURA and INDERENA. This has been recognized in past visits and the problem has deteriorated to the point that the PIP Program in Colombia is threatened.

C. Recommendations: Recently some steps have been taken in FUNATURA which will mitigate and help solve the people problems. A new coordinator for PIP projects is a step in the right direction, but this person should be as independent as the last one and directly supervised by the Executive Director or Subdirector.

In the evaluation team discussions, we agreed that management training would benefit key staff in both INDERENA and FUNATURA. There is a course available that allows the individual manager and peers to identify their principal and backup managerial styles. For this purpose, I would recommend a course called The New Managerial GRID which consists of reading a book by the same name, doing the pre-work and attending a 6 day course offered in Spanish in Venezuela.

While I was working for the National Park Service, we use Juan's brother, Julio Esain 7 times in Spanish in 5 Latin American countries with excellent results. Course availability can be obtained from:

Mr. Juan Esain Tel: 011-58-2-241-6000, TELEX: 21925 ESAIN VC
Esain Asesores, S.R.L. (Desarrollo Organizacional GRID)
Apartado 75145, El Marques FAX: 011-58-2-241-6053
Caracas 1070A, VENEZUELA

If there is interest within The Nature Conservancy in taking the course in English to monitor it, a schedule of course offerings can be obtained from:

Scientific Methods, Inc. Tel: (512) 477-5781
The GRID Company
P.O. Box 195
Austin, Texas 78767-0195

5. SUMMARY RECOMMENDATIONS

Chingaza Natural National Park is an outstanding resource and has the potential to be used as a model area. Through good will, cooperation and coordination between FUNATURA, INDERENA, and EAAB, realistic work plans can be carried out.

Training of key people, as a group, involved in the PIP Program provides technical information, but more importantly, it brings them together for future interaction. I would recommend training for a group of 28 people maximum in Protected Area Management for a minimum of 6 days in one of the parks. It should include the Parks In Peril staffs of INDERENA, FUNATURA, EAAB and other cooperating Non-Governmental entities. In this way, it will be possible to form work teams that will continue to cooperate after the course.



Charles W. Wendt
Consultant in Protected Area
Management And Training

**THE NATURE CONSERVANCY
LATIN AMERICA DIVISION
PARKS IN PERIL PROGRAM**

**LA PAYA NATIONAL PARK
EVALUATION REPORT**

Prepared by:

Cristina García Kirkbride

with the collaboration of:

**Len West, Protected Areas Specialist, TNC
William Wendt, Consultant**

July 1992

INTRODUCTION

Evaluations of three Colombian Parks were carried out at the request of U.S AID, as part of the PIP Program. A team of three people went to Colombia, between June 13 and July 15, to fulfill this request. Bill Wendt, an independent contractor, did the evaluation for Chingaza National Park. Len West, TNC staff -protected areas specialist, evaluated Santa Marta National Park, while I, Cristina Kirkride, TNC's Colombia and Venezuela Country Program Manager, evaluated La Paya National Park.

The U.S. Embassy in Colombia did not grant us travel clearance to La Paya Natural National Park or to La Sierra Nevada de Santa Marta because of the existing problems with the guerrillas, and drug trafficking and cultivation. However, Jim Smith, U.S. AID representative, approved of our working in Bogotá.

Because of the security concern, we decided to modify the project somewhat. It was decided that the evaluations could be carried out in Bogotá by bringing personnel from Sierra Nevada de Santa Marta and La Paya Natural NP to Bogotá to be interviewed by Len West and myself, since we had done respective site visits to these parks in March of 1992.

An interview guide was prepared by the team group in order to ensure retrieval of desired information (Appendix I). For La Paya, interviews were conducted with the following groups (See Appendix II for names):

- 1) La Paya Field Staff: Park Director, and the three Guard-parks contracted by Fundación Natura under PIP;
- 2) INDERENA: General Director, National Park's Director, and PIP liaison; and,
- 3) Fundación Natura: Director, PIP coordinator, accountant, sociologist, and an undergraduate student who is working on her thesis at La Paya NP;
- 4) Departamento Nacional de Planeación (DNP): Three staff members. The purpose of this interview was to get information about possible funding sources for the Ministry of the Environment and explore alternatives for the Park system.

LA PAYA

I. GENERAL

La Paya National Park is located in the extreme south-western region of Putumayo State in the jurisdiction of the Puerto Leguizamo municipality between the Caquetá and the Putumayo Rivers (Appendix III). The La Paya National Park was declared a natural park in April, 1984

and has 442,000 hectares. The average yearly temperature is 25 degrees centigrade, and the precipitation is 2,600 millimeters.

Three large rivers surround the Park: the Putumayo, Caquetá and Mecaya. The Putumayo and the Caquetá are named white rivers because they contain a large amount of sediments and are highly productive. The Mecaya River waters are dark and have low productivity. This river serves as the northern border of the Park, which is 70 kilometers long. Humid and dense forests are the dominant ecosystems in the Park and provide habitat to a wide variety of animal species, most notably fishes.

There are various indigenous tribes that have lived in the region for centuries as well as colonizers (colonos) who have moved there since the 1970's. Currently, the indigenous groups belong to the following ethnic groups: Inga, Huitoto and Siona. They are scattered along the Caquetá, Putumayo and Caucaya rivers, and their total population is about 445 people. There is no census on how many colonos are living within the park or around it. The sociologists contend that there are about 60 families along the Caucaya River. The inhabitants subsistence depends on slash and burn agriculture, hunting, fishing and picking of wild fruits. As a result, there is intense deforestation.

II. TECHNICAL

A. Achievements:

Fundación Natura (FN) has hired two women for key positions. Elsa Matilde Escobar is FN's new sub-director, and Claudia Romero is the PIP coordinator. A professional accountant was also hired on a part-time basis, to work with PIP finances at FN.

A sociologist was hired to do a survey of the indigenous population in the Caucaya area and to study the ways they are using their land and natural resources. An undergraduate is working on the socio-economic assessment of the region, and FN covers all of her expenses.

Four local people were hired as park-guards. They get full work benefits and uniforms, as required by the Colombian work laws. INDERENA recently hired a Park Director and a park-guard (August first), and is now in the process of hiring an additional park-guard.

A colono, Mr. Octavio Vera, built the Vivianococha cabin a couple of years ago on the land he has using. Because Mr. Vera's land is within the La Paya National Park, he signed an agreement with INDERENA permitting the use of this cabin as the Park's headquarters. With PEP funds, building improvements have been made, and the solar panels and the radio-communication equipment were installed. This has made communication with Bogotá and other parks in Colombia possible.

Community relationships have improved since communication has increased between the communities and FN and INDERENA staff. When I visited La Paya in March, there was a meeting in which the inhabitants from the Caucaya area (about 40 of them) participated. This was an open discussion in which the inhabitants mentioned their concerns about land tenure issues and natural resource use, specifically related to the decline of the fish population. At the end of this meeting, it was suggested that the community write a letter to the Ministry of Agriculture stating their views. They sent a letter to the INDERENA office in Puerto Leguizamo, on June 25, 1992 (Appendix IV). This was an important step and an indication of the trust they have placed in the staff who are working together in the La Paya area and their willingness to help solve the problem.

Gaining the communities trust and confidence is a slow process. FN has been successful in working with the Caucaya community, despite the problems existing in the area, in a relatively short time. FN hired a sociologist last year, and a preliminary socio-economic report for the Caucaya area will come out before the end of the year.

B. Limitations:

There are colonists and indigenous families living inside and outside the park and their subsistence depends on clearing land and the use of natural resources. Aquatic fauna, especially fish, are the main source of protein for the community and are also used for commercial purposes. The fish population has decreased dramatically to a level where harvesting in some areas is almost non-existent.

Deforestation is quite intense in this area although there is no quantifiable data as to the actual deforestation rate. Available information is dependent upon the local perception of what exists. Although wood cutting has decreased in the last two years, people continue doing it even though the CAP (Corporación Autónoma del Putumayo) does not give permits to do so.

Growing coca has traditionally been a source of income for several families. It has become increasingly difficult to grow it recently. Military actions have reduced coca cultivation, and in that process, basic staple crops have also been destroyed. Local people get quite confused about these actions.

Assignments of specific duties to be performed by the park-guards have not been clearly defined. They are usually told what to do at the last minute. The three park-guards mentioned that when FN staff travel to La Paya to do the sociological studies, they are asked to come along to help but are not provided with specific information about what to do. There are often last minute changes of plans by the FN staff sociologist, which leaves the park-guards very unclear as to where to go and how to help. On the other hand, the sociologist said that circumstances in the area, combined with the difficulty of reaching isolated communities, makes it hard to program activities.

There is no biological information about the flora or fauna of the park and no studies underway to provide that data.

The park's limits are not well defined on the Northwest side.

C. Recommendations:

Define the specific duties for each of the park-guards and create a monthly schedule of activities. Implement better coordination between the field staff and the people coming to work or visit La Paya. Begin programming of daily activities and discuss these in a meeting with all the staff who will be participating in the field.

Train the La Paya field staff in Bogotá and at another national park. They need training courses in: (a) basic biological and ecological concepts, (b) management, (c) communication skills, (d) and first-aid.

Stock the Vivianococha cabin with first aid supplies and basic medicines. It is important to keep these available here since there is no doctor in the area and local people often come to the cabin asking for various types of help.

Provide the park-guards with basic equipment, such as machetes, lamps, and a boat repair kit. Each of the four guards should have one of these items. Other items which are needed include: maps, materials for making park signs, and a fire extinguisher.

Work with INCORA (Instituto Colombiano de la Reforma Agraria), CAP, INDERENA, PNR (Plan Nacional de Rehabilitación - Putumayo), and NGO on the land tenure issue for the park inhabitants.

Develop community programs to encourage sustainable use of natural resources. A reforestation program that includes plans for building a greenhouse for producing seedlings is necessary. Fishery projects are also needed.

Hire a local Indian to be part of the field staff, in order to foster more community participation in the planning and program development.

Carry out biological studies and ecological assessments to determine land management zones and conservation needs. An ecological field guide can be produced as a result of these studies.

One of the priorities at La Paya is the formulation and implementation of a management plan for the buffer zone area. This plan should include intensive environmental awareness training courses for the local communities and should help to provide alternative solutions for sustainable use of natural resources.

Work on the park's borders for the Northwest side.

III. FINANCIAL

A. Achievements:

1. PIP Budget:

The total two year budget is \$190,592.00 including \$107,497.00 committed from USAID, and \$47,000.00 from TNC. Total funds disbursed to FN total \$75,000.00, while expenditures total \$45,842.59 (Appendix V).

2. Ministry of the Environment and National Funds

Colombia is undergoing rapid social and economic changes that are affecting the natural ecosystems. Deforestation has caused a significant loss of habitats, plants and animals, and has caused serious environmental problems. In response to these pressures, the government is proposing the creation of a Ministry of the Environment and a Fondo Nacional del Medio Ambiente. Congress has yet to approve the creation of the Ministry and the general consensus of the Departamento Nacional de Planeación (DNP) and INDERENA's staff is that this will be approved right before President Gaviria's term ends next year.

There are two proposed "Fondos." One is the Fondo Nacional del Medio Ambiente (referred to as Fondo Nacional or National Fund) and the other is the ECOFONDO. The Fondo Nacional will be used mainly for the operational and administrative costs of the Ministry, although part of it will go to the ECOFONDO. Funding sources for the Fondo Nacional will come from taxes on oil and non-renewable resources, and from bilateral loans and donations from organizations such as the World Bank- Global Environmental Facility, the Inter-American Development Bank (IDB), and the Dutch government.

The ECOFONDO will receive funds from national and international donors. NGOs will be able to receive funding from the ECOFONDO by submitting proposals. Corporaciones Regionales, similar in function to a county office in the United States, can get and provide funding for integrated projects.

3. INDERENA

There are three alternatives under consideration for the eventual integration of INDERENA as part of the proposed Ministry of the Environment. It could become one of the following: the Dirección Nacional del Ministerio del Ambiente or the Unidad Especial Administrativa or simply an Institute ascribed to the Ministry. According to INDERENA's National Park Director, its budget is as follows:

a. Current budget:

There are 255 employees working for the National Parks System, of which 56% earn the minimum salary. This system includes 33 National Parks, 6 Sanctuaries, 2 National Natural Reserves, and 1 Natural Area. In 1990 the overall budget was \$1050 million pesos, in 1991 it was \$1600 million pesos. In 1992, it was reduced to \$1200 million (US \$1 = 625 pesos).

b. Existing and possible external sources of funding:

TNC's Parks in Peril program was the first external source to provide funding for the national park infrastructure through collaboration with Colombian NGOs. The approved total of AID/PIP funds for Colombia is \$140,000.

The World Bank's GEF approved US \$9 million for Colombia's Pacific region.

IDB is considering approval of a US \$9 million dollar loan to be used for the biological conservation of the Atlantic area (Sierra Nevada de Santa Marta, and Salamanca) and the coffee region of Los Nevados.

The European Common Market has approved a US \$4.8 million loan at the Rio summit for biological conservation within the Amazonian countries, of which, Colombia is the coordinator.

The Dutch government has pledged US \$4.5 million for biological conservation in four Andean Countries.

B. Limitations:

Fundación Natura has been very careful in its disbursement of funds due to (a) the lack of sociological and biological information for the area, (b) the need for more institutional cooperation and, (c) the existence of certain social problems, guerrilla, drug trafficking, and land tenure concerns.

C. Recommendations:

Include expenses by GO and NGO in financial reports.

Increase funding for (a) community outreach activities, (b) programs for sustainable use of natural resources, (c) reforestation, and (d) biological monitoring. Remaining funds should be reprogrammed to meet these needs.

Once the Ministry of the Environment is created, one additional funding source may be the Ecofondo. Equally as important at this time is our continued support of the local NGOs.

IV. PROGRAM ADMINISTRATION

A. Achievements:

Quarterly reports, financial and narrative, have been sent on time by Fundación Natura.

B. Limitations:

There is a significant communication problem between INDERENA and FN's staff. According to INDERENA staff members the issues that are affecting their relationship with Fundación Natura are the following:

First, the document which FN wrote recently about the GEF was too strong in its criticism of the government and more specifically of INDERENA. This document apparently delayed negotiations with the World Bank. Secondly, FN's staff is constantly reproaching INDERENA for its actions. Thirdly, Claudia Romero, the PIP coordinator, assumes too much authority, presumes FN is the entity responsible for the park's management and does not understand INDERENA's procedural operations despite having worked at INDERENA in the past.

The problems with INDERENA, according to FN staff are:

The delay in getting a response to FN requests, the slow-pace procedures of operations, cancellation of meetings, and, INDERENA's lack of deadlines for presentation of reports to FN, who then has trouble presenting reports to its donors in a timely manner.

At the moment, there is an INDERENA employee stationed at La Paya on a temporary basis because, Oscar Vargas, former La Paya Director, was asked by Carlos Castaño to resign as of July 15. The reasons for this dismissal were as follows:

First, he lacked good relations with the community or with other organizations in the area. Secondly, in a meeting held at Puerto Leguizamo about a month ago, he told the Caucaya inhabitants (who live inside the park) that INDERENA would buy the land from them. This led to a lot of speculation about land prices and created false expectations within the community. Thirdly, Oscar charged a local person \$12000 pesos (1 \$US = \$630 pesos) for a ride from the Caucaya area to Puerto Leguizamo on the boat he was using which actually belonged to INDERENA.

C. Recommendations:

Staff working with project management from both FN and INDERENA should take a training course in Institutional management, and a course on how to communicate effectively and deal with difficult situations.

FN needs to make an effort toward improving its relationship with INDERENA. One suggestion is that FN avoid reproaching INDERENA's actions and avoid confrontational situations between Claudia Romero, the PIP coordinator, and Carlos Castaño.

Arrange a meeting between INDERENA and FN to clarify this issue.

Environmental education and community extension courses are needed to incorporate the community into the management of the natural resources within the park and to provide economic alternatives for the population living in the park and in adjacent areas.

V. SUMMARY RECOMMENDATIONS

Through the PIP Program, Fundación Natura works in conjunction with INDERENA to manage the La Paya National Park. Important achievements have been gained: hiring of park guards, installing radio-communicators and making improvements to the existing cabin.

As a result of these actions, deforestation has been reduced somewhat in the area and some control of the use of natural resources has been attained.

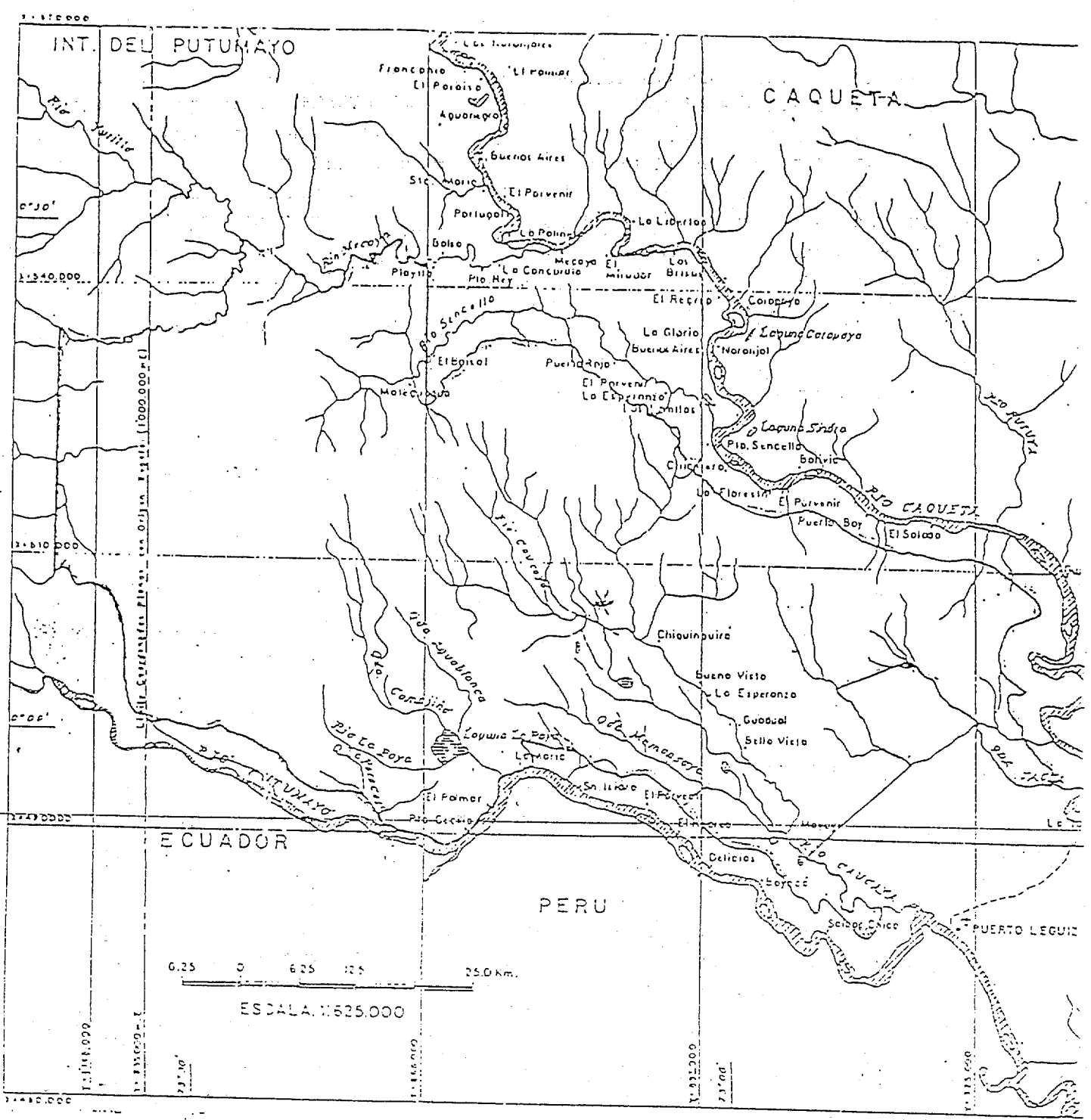
One important achievement has been the community outreach program. Fundación Natura has worked with the Caucaya community to assess their socio-economic status and their use of natural resources. Gaining the community's trust and confidence is a long and difficult process, and FN has achieved it within a year.

Inhabitants of the park and in buffer zones are now aware of their role in conserving natural resources. These actions have provided the basis for developing strategies for the sustainable use of resources. FN has written a proposal outlining the need for a study of the sustainable use of fishes, and they are currently looking for funding sources (Appendix VI).

The sustainable use of natural resources in La Paya can only be achieved through the active participation of the community. This participation is essential to the proper management of the park and in reaching the goal of preserving biodiversity in this area.

Effective management of La Paya is an important step toward good management of all national parks in Colombia. Our continuing cooperation with the program is necessary to achieve a positive outcome. I recommend continued support for the outreach community program and initiation of support for the sustainable use of fishes program. These programs, along with the biological and ecological assessments, must be incorporated as critical components of the overall park management.

Cristina Kirkbride
Cristina Garcia Kirkbride
Director, Colombia and Venezuela
Country Programs



- CONVENCIONES**
- Limite del Parque: _____
 - Corriente: _____
 - Rio, Desembocadura: _____
 - Sitio, Habitación: _____
 - Punto de Aislamiento: _____



**PARQUE NACIONAL
NATURAL
LA PAYA**

LOCALIZACION
INT. del Putumayo
MUNICIPIO _____
VEREDA _____

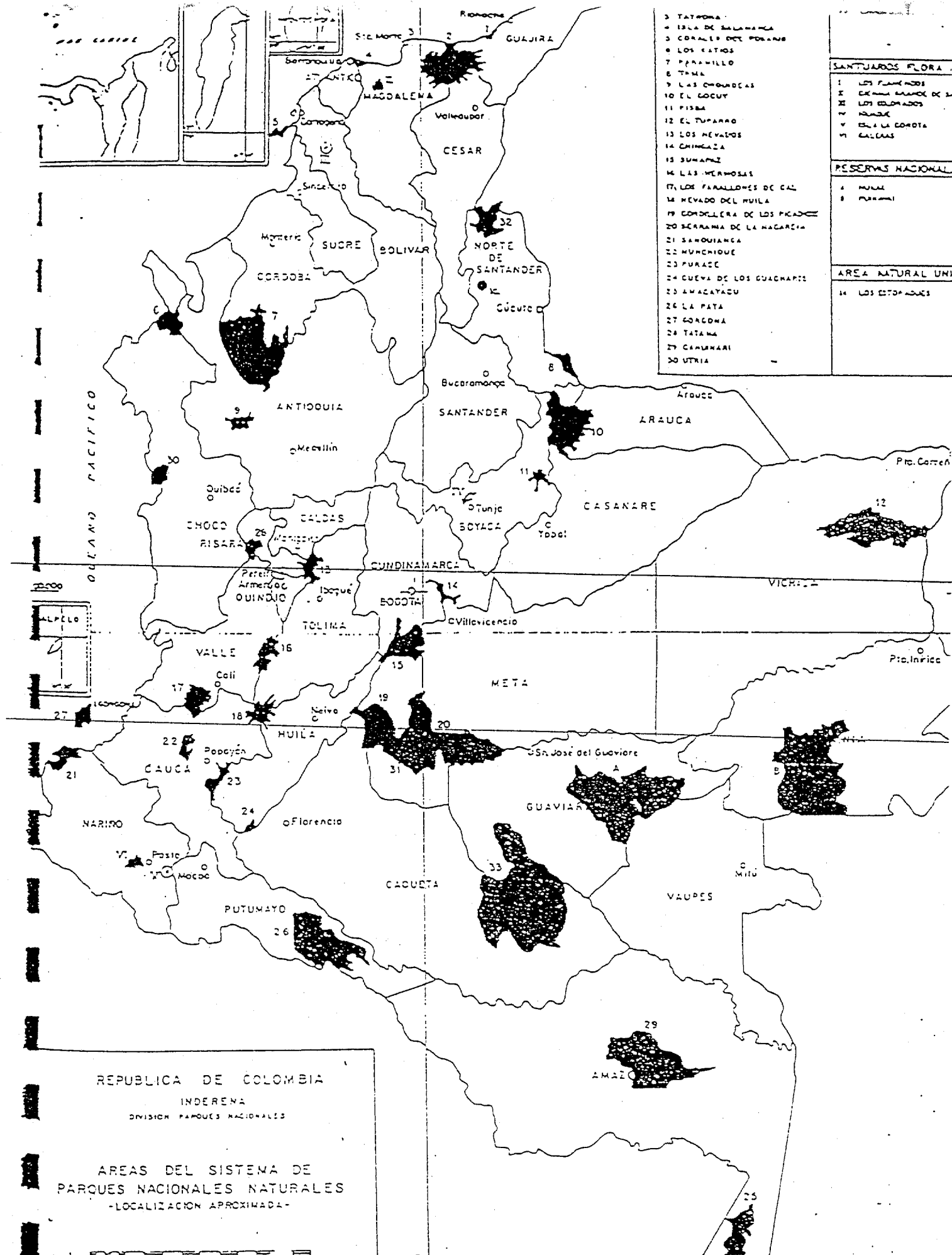
DIVISION
PARQUES NACIONALES

AREA: 4000 HECT.
 LOCALIDAD: 1620 HECT.
 FECHA: Julio 1960

APROBADO: _____
 REVISADO: Enrique Cuestos
 DISEÑADO: _____
 José Francisco Perez E

BASE CARTOGRAFICA
FOTOGRAFIAS IN _____

PLANCHAS No. 543
 Tomado del I.G.A.C.
 Escala del 500,000



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| 3 | TATONA |
| 4 | ISLA DE BALANZAGA |
| 5 | CONDADO DEL PORDAZO |
| 6 | LOS CATOS |
| 7 | PARAVILLO |
| 8 | TAMA |
| 9 | LAS CHORRADAS |
| 10 | EL COCUY |
| 11 | PISBA |
| 12 | EL TUPARAO |
| 13 | LOS NEVALES |
| 14 | CHINGAZA |
| 15 | SUMAPAZ |
| 16 | LAS HERMOSAS |
| 17 | LOS FAJALONES DE CAL |
| 18 | NEVADEL HUILA |
| 19 | CONDOLLERA DE LOS PIRACOS |
| 20 | SARAMBA DE LA MACARICA |
| 21 | SARQUIANCA |
| 22 | MUNCHIQUE |
| 23 | PURACE |
| 24 | CUEVA DE LOS GUACHAROS |
| 25 | AMACATACU |
| 26 | LA PATA |
| 27 | CORDONA |
| 28 | TATANA |
| 29 | CAMUNARI |
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|-------------------|----------------------|
| SANTUARIOS FLORA | |
| I | LOS FLAMENCOS |
| II | EL CAÑO BLANCO DE LA |
| III | LOS ESCOBADOS |
| IV | MOQUE |
| V | EL LA CORDOBA |
| VI | CALEPAS |
| RESERVAS NACIONAL | |
| A | MULLA |
| B | PARANI |
| AREA NATURAL UNI | |
| 14 | LOS ESTOPAYES |

REPUBLICA DE COLOMBIA
 INDERENA
 DIVISION PARQUES NACIONALES

AREAS DEL SISTEMA DE
 PARQUES NACIONALES NATURALES
 -LOCALIZACION APROXIMADA-

THE NATURE CONSERVANCY
LATIN AMERICA DIVISION
PARKS IN PERIL PROGRAM

ASSESSMENT OF SIERRA NEVADA DE SANTA MARTA NATIONAL PARK

Prepared by:

Len West, Protected Areas Specialist

July 1992

**PARKS IN PERIL
YEAR ONE EVALUATION**

PROTECTED AREA: Sierra Nevada De Santa Marta National Park (SNP), Colombia

GOVERNMENT PARTNER AGENCY: Ministerio de Agricultura, Instituto Nacional de los Recursos Naturales Renovables y del Ambiente (INDERENA)

NON-GOVERNMENTAL PARTNER ORGANIZATION: Fundación Pro-Sierra Nevada de Santa Marta (FPSN)

PERIOD OF EVALUATION: October 1991 - August 1992

MEMORANDUM OF AGREEMENT TNC AND FPSN: 18 December 1991

WORK PLAN SUBMITTED TO AID: 23 December 1991

WORK PLAN APPROVED BY AID: 6 February 1992

DATE OF EVALUATION: 25 June - 12 July 1992

I. INTRODUCTION

As part of the Parks in Peril Program (PIP) terms of agreement between the U. S. Agency for International Development (USAID) and The Nature Conservancy (TNC), a technical evaluation of Sierra Nevada de Santa Marta National Park (SNP) was carried out from 25 June - 12 July 1992.

Because of temporary civil disturbances occurring in the region of the park, there was mutual consensus between the USAID Mission, TNC, our local partner, the Fundación Pro-Sierra Nevada de Santa Marta (FPSN), and INDERENA, the governmental agency in charge of natural resources management, that the evaluation would be performed in the capital city of Bogotá. To evaluate field advances, key park personnel were brought to the main office of FPSN in Bogotá for interviews.

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A. Sierra Nevada de Santa Marta National Park

The SNP encompasses 383,000 hectares situated within a zone of massive granite peaks that reach just over 19,000 feet. The region contains an impressive degree of biological diversity and endemism and accomodates nine distinct biotic community types.

Traveling upward through nearly four vertical miles of earth one can encounter dry thorny lowlands, tropical evergreen forests, windswept grasslands, and finally, expansive glaciers - all overlooking sunbaked Caribbean beaches located a mere 26 miles away. Nowhere in the world can one find such a combination of biological and physical wonders in such a concentrated space.

Two indigenoues reserves, the Kogui-Malayo and Arhuaco, overlap the park boundaries. The SNP also features numerous outstanding Pre-Columbian archaeological sites consisting of stone terraces and platforms that have been remarkably well preserved through the centuries.

The two areas chosen as part of the SNP-PIP project were the upper basins of the Buritaca and Guachaca Rivers, regions that have remained relatively virgin since the arrival of the Spanish conquistadors. Unfortunately, areas surrounding the park have suffered a much higher degree of habitat alteration.

B. Evaluation Team Work Plan

The evaluation team met in Bogotá on 25 June and was composed of Charles W. Wendt, an independent consultant contracted by TNC to carry out the evaluation for Chingaza National Park, Cristina García Kirkbride, TNC Country Program Director for Colombia and Venezuela to conduct the La Paya evaluation, and Len West, TNC Protected Area Specialist for the Andean Region, responsible for Sierra Nevada. Due to the nature of the evaluations and proximity of the team, the evaluators backstopped and assisted each other at times during the information search and interview sessions.

Meetings with public and private groups and documentation review was conducted between 25 June and 12 July in Bogotá (see Appendix I for complete list). Information regarding work plan advances in the field was gathered during a previous trip from 10-18 March by L. West with additional on-site progress documented from interviews held with FPSN and INDERENA in Bogotá.

C. Background Information

Despite the biological, hydrological, and archaeological importance of SNP, only recently has attention been directed toward the establishment of an adequate conservation presence in the area. The principal threat is colonist immigration with subsequent deforestation for agriculture and grazing purposes. Since 1950,

about 85% of the original forest found in the Sierra Nevada region has been removed.

Habitat destruction has also resulted from the establishment of coca and marijuana plantations. However, it appears that these activities, especially the latter, are currently decreasing. The drug trade has also created social and political repercussions in the Sierra as guerillas, paramilitary forces, colonists, and indigenous groups vie for land, power, and/or mere survival.

The administrative and social dynamics of the area are further complicated by the huge dependence of the three surrounding political departments (Magdalena, Cesar, and La Guajira) on the Sierra Nevada as their primary water source. Ongoing deforestation has reduced the volume of water generated within the 35 watersheds of the region, directly affecting the lowland agricultural economy of the Cesar valley and the ten northern coastal municipalities dependent on the millions of gallons of water produced annually in the uplands.

In addition, over 30 state agencies work in the region and ten mayorships are located in the immediate vicinity of the park - each of these organizations and municipalities have their own distinct priorities and agendas.

Since 1986, the FPSN has conducted rural development and biological research activities with an impressive degree of effectiveness. Projects have been carried out with rural colonist and indigenous communities focusing on health, education, biological inventories, and agriculture, with the latter promoting the return to traditional cultivation methods and crops. More detailed studies on land use, human demography, animal husbandry, agro-forestry techniques, indigenous traditions, and vegetational surveys have recently begun.

INDERENA currently employs one park director and seven park rangers in the area although lack of both federal funding and local support limits their impact and effectiveness. However, the GOC is interested in developing a more visible presence in SNP.

A management plan was prepared by INDERENA in 1989 but the overall package needs to be revised and updated. Improved coordination and more broad-based participation among federal agencies, private organizations, and local communities will promote the development of a more current plan.

II. Technical Components

This section summarizes the effectiveness of on-the-ground protection activities and progress conducted under the approved work plans. Elements in this process involves two steps. First, are field activities being carried out in accordance with the work

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plans? Next, are those activities ensuring on-site management and the conservation of biological diversity for the SNP? If not, what factors are limiting progress? Recommendations are listed for incorporation in possible future actions.

A. Achievements

1. Personnel/Training

- FPSN has contracted eight persons to work in the two principal PIP sites, five in Filo Cartagena and three in Alto de Mira. Five of those have been contracted by PIP funds (two biologists, one anthropologist, and two general assistants). The organization is currently conducting interviews for one more biologist to be hired as project manager at the Alto de Mira Biological Station.

Specialists and assistants contracted for on-site work are well-focused and aware of PIP objectives and how their work integrates into the long-term conservation strategy for the area. Four of the contractees (50%), including the Filo Cartagena Coordinator, are women. Seven women employed by FPSN in Bogotá and Santa Marta work either on the scientific or administrative aspects of the PIP project. Field assistance on SNP projects is frequently provided by student volunteers from Bogotá and Santa Marta.

- FPSN staff are culturally sensitive and have developed good working relationships with colonists, indigenous groups, and INDERENA staff. Focusing on conservation and community development while remaining politically neutral to the surrounding social conflicts has allowed them to make substantial progress in their project goals.
- The following training workshops have been conducted by and/or for FPSN staff and local communities by means of PIP funding: one course on orchid taxonomy and reproduction (10 persons), and three courses on preventative medicine and general health (approximately 20 participants per course).

A snakebite treatment workshop for local communities is scheduled for September 1992 and the Filo Cartagena Coordinator is currently participating in a wildlands management course conducted at Colorado State University. Other FPSN staff will be selected for participation in the PIP Mobile Training Seminar to be held in October 1992 in Ecuador.

Non-PIP funded courses on health, education, and agriculture are held at El Congo, located on the southern edge of SNP.

2. Equipment/Materials

- The following equipment and materials have been purchased for transportation and construction at Filo Cartagena and Alto de Mira: Toyota 4x4 (used), power saw, calculators, machetes, carpentry tools, tubing for site plumbing, wood for construction and remodeling, cooking utensils, hammocks.
- All equipment/materials are now in place in Filo Cartagena. Some additional materials are still needed for Alto de Mira. These materials greatly facilitate the ability of on-site personnel to perform their duties better, enhance the control and monitoring ability of personnel, and enable a more effective and sustained coordination with local communities.

3. Construction/Maintenance

- Construction and renovation activities are virtually finished at Filo de Cartagena. A house to serve as sleeping quarters for the site coordinator will be built soon. Electrical and plumbing equipment has been installed and a garden plot has been planted with corn, yuca, and fruit.
- The laboratory at Alto de Mira Ecological Station is in the construction phase. Site planning theory has been well-utilized by FPSN staff to enhance the aesthetics of the lab - i.e., traditional indigenous design methods were used to blend in well with the environment. The lab has also been located off the main trail to minimize disturbance to working scientists by visitors to the center.
- PIP funds have been used in developing a fixed schedule for maintaining trails and lodging sites within the Guachaca and Buritaca regions. Previous movement of personnel and supplies between sites had been difficult during the rainy season.
- Stables and pasture sites for mules were renovated and are now regularly maintained.
- FPSN has designed and begun construction of markers to be placed at key park entrances.

4. Activities with Local Communities

- Approximately 40 FPSN employees funded by various sources work on sustainable development projects in and around the park.
- Anthropologists are continuing work with indigenous communities to learn about traditional customs and evaluate inter-community dynamics. FPSN work with both indigenous and colonist groups is facilitating harmonious relationships between the communities.

- FPSN is currently considering a project with women in local communities.
- Work funded by PIP and other groups (principally GTZ [Germany], Inter-American Foundation [IAF, USA], and World Wildlife Fund [WWF, USA]) is playing a key role in providing development assistance in health, education, agriculture, and environmental education to three critical municipalities lying just outside the park - La Tagua, El Congo, and Mamey.

These sites are critical in controlling illegal incursions into the park and FPSN has correctly identified these points as priority areas in gaining local support to defend the park and provide sustainable forest products. People from local communities support FPSN activities in workshops, provide assistance to on-site personnel through the use of local services and materials, and also hire out as guides for tourists.

- See II.A.1 above regarding specific training workshops with local communities.

5. Research Activities

Projects underway will help park personnel monitor environmental changes and analyze the effects of habitat degradation and increased tourism in the region. The overall goal of PIP is to conserve biological diversity and the information being gathered from these and future planned studies will greatly assist tracking park protection and management efforts. Current research programs funded wholly or partly by PIP include:

- Data gathering on the biological, sociological, and physical aspects of the park are providing key information needed to monitor threats to the park. Projects are currently focused on human population censuses, land use, agricultural practices, vegetation profiles, aerial photo interpretation in relation to vegetation cover, and biological inventories. See Appendix 2 for a list of current research programs.

FPSN is developing an excellent series of maps and publications outlining current conditions of the park and developing management strategies designed to minimize conflict with local populations and conserve biological diversity.

- Vegetational surveys are being carried out in cooperation with Dr. Alwyn Gentry of Missouri Botanical Garden.
- Listing/mapping of legal land tenure titles.

- Interviews conducted with indigenous communities to assess current and historical land use practices.
- Analysis of secondary vegetation growth, soils, and geology in areas deforested by slash and burn practices.

6. Ecotourism/Public Relations

- FPSN organized and carried out an excursion for 18 biologists from the University of Tubingen, Germany. The results of the trip made clear the need to develop an internal document defining if, where and how FPSN wants to go regarding ecotourism. Both revenue and impact potential is high.
- FPSN provided logistical support for a Colombian television to produce three videos on current ecological and socioeconomic features of the park.

B. Limitations

- Deforestation from immigrant colonists continues to be a problem. Land is cleared to grow subsistence crops and, occasionally, coca plantations for the drug market. Hunting for both subsistence and international commerce occurs to some degree but no data exists analyzing the environmental effects of these activities.
- Land tenure and park boundaries are undefined in most areas although many local residents are aware that areas have been set aside to protect "the forests and the Indians". Violent conflicts between landholders and outright distrust of anyone representing "official authority" has minimized the ability of INDERENA to make any practical inroads into the management of the park.

Local people tend to trust and accept FPSN personnel because they live full-time in the area and have demonstrated a genuine interest and involvement in local development issues, not just animals and plants.

- Instability resulting from civil disturbance involving illicit drug traffic, guerilla activities, and sociocultural clashes between different ethnic groups inhibits large scale planning and investment. Fortunately, to date there has been no violent activity close to PIP sites.
- No up-to-date management plan exists that defines the long-term goals, objectives, priorities, and policy positions for the SNP. PIP work plans and other regional projects have short-term activities outlined but there is no general well-defined policy statement outlining a long-range project plan with potential financial arrangements designed to address park management and local community priorities.

Public order problems restrict the ability to implement such plans but such limitations could be taken into account when designing a strategy.

C. Recommendations

The following recommendations are presented to enhance the technical capacity of FPSN in the implementation of PIP guidelines.

1. Together with INDERENA, develop an updated management plan for SNP including a policy statement, goals and priorities, and long-term funding potential for the park. TNC technical assistance will be provided, if requested.
2. Provide technical and administrative training in courses dealing with protected areas management, conflict resolution, public relations, and biological field techniques.
3. Coordinate work plan activity schedule on a frequent basis with SNP Park Director and look for innovative ways to integrate INDERENA personnel into park management activities.
4. Develop fixed duty schedule outlining job descriptions and responsibilities for all project personnel.
5. Develop a priority schedule in concert with the work plan to purchase selected field materials and equipment to accommodate sites and field personnel. Coordinate this with the approved PIP budget.
6. Accelerate boundary marking in appropriate sites with INDERENA and local communities sympathetic with park goals and objectives.
7. Reprogram field activities for 1993 with a clear and detailed chronogram coordinated with the project budget.
8. Develop a written document outlining a monitoring strategy so as to link the various sociological, anthropological, and biological studies currently taking place. This could serve as a useful annex to the management plan.

III. Financial Components

The following section summarizes the financial absorption capacity of FPSN, the status of long-term financial plans, and the ability and efficiency of TNC and FPSN to convert funds into on-the-ground management actions in both the short- and long-term. Current and potential future financial sources are noted in Appendix 3.

Environmental politics in Colombia is undergoing rapid change. The government will likely reshuffle names and positions if current plans remain unaltered resulting in the transformation of the Ministry of Agriculture to the Ministry of the Environment sometime before mid-1993.

In addition, there is a move to establish two national environmental funds, one for the government (Fondo Nacional de Medio Ambiente) and another for the private sector (ECOFONDO). Exactly where the money will come from and how it will be allocated is still not totally clear. However, there is little doubt that a large chunk of money will be available for local ngo's working on conservation projects.

A. Achievements

- General Status

Reviewed budget and accounting system with Adriana Rodríguez, Rosario Ortíz, and Antonio Moreno. The accounting system conforms to PIP requirements and FPSN is clear on how expenditures should be recorded.

The total budget for 1992 is \$133,000 including \$100,000 committed from USAID, \$25,000 from TNC, and \$8,000 from local sources. A total of \$50,000 in PIP funds have been dispersed as of 7/92 with total expenditures amounting to \$32,835. See Appendix 4 for a more detailed financial analysis.

- Funding Dispersement and Field Activities

Project activities outlined in the PIP work plans are being completed, although they are slightly behind schedule. Principal actions include:

1. Refurbishment of Filo Cartagena is almost complete and that of Alto de Mira is underway. Some delays occurred as the project was initiated due to difficult trail passage from heavy rains.
2. The salaries of field workers are being dispersed on a regular basis.
3. Local communities are becoming increasingly aware of the existence and purpose of the park and, in some cases, are actively engaged in park conservation and management activities.
4. Trails are being prepared and/or maintained.
5. The project vehicle has been purchased and is being used to accomplish program objectives.

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6. Training courses are advancing on schedule.
7. Research is being carried out at an impressive rate.

- **Long-Term Financial Sustainability**

FPSN has been successful in attracting external funding for projects (see Appendix 3), but additional money in the form of a trust or endowment will be needed to support staff and operations over the long term.

There is only guarded optimism among FPSN staff for the Global Environmental Facility (GEF) of the World Bank and no direct actions have been made to enter into consideration for that funding.

The general feeling is that the money is uncertain and rife with bureaucratic loopholes designed to impede rather than promote project efficiency. FPSN staff want to move quickly and feel waiting through the GEF bureaucracy will delay implementation.

B. Limitations

- PIP budget outline is vague and difficult to follow when coordinated with the narrative list of project objectives. Need to specify work activities in chronological fashion and integrate with budget needs. This will make reporting and report interpretation easier.
- Local match funding has not yet entered into project expenses and there is a little confusion on the part of FPSN on reporting procedures. INDERENA is under extremely tight fiscal controls, especially because of reorganization activities at the ministerial level.
- The SNP park chief and seven park guards figure minimally in the management of the park because of lack of institutional support.

C. Recommendations

- The PIP Work Plan objectives are being accomplished but need to be made more specific in relation to the project budget. Work plans and budget for 1992-93 should be reprogrammed to reflect this need and focus on upcoming priorities.
- Budget tracking will be made easier by incorporating a software computer package, similar to Fundación Natura.
- Reporting procedures must incorporate not only AID column, but TNC and local expenditures also. Additional communication TNC/FPSN will improve coordination in the reporting.

- Additional funding will be needed to create an endowment for FPSN staff and operations. The GEF opportunity should be examined more closely given the attractive aspects of the SNP (geography, biological diversity, endemism, cultural diversity, and archaeological significance) and the accomplishments and potential of FPSN strategy.

There is a question as to the required levels of long-term funding and FPSN's potential for attracting those funds. See Program Administration Recommendations below.

- FPSN should develop a specific plan outlining their long-term financial and technical goals and immediate priorities for the park. It would be advantageous to coordinate this, if not in writing then at least verbally, with INDERENA's vision of SNP management in the next 5-10 years. Important elements of the plan would include a 5-10 year timetable of activities/actions/programs with a set of "success objectives" and the recurrent cost elements needed to realize and maintain success at the site.
- Clarify and correct local funding participation.

IV. Program Administration

A. Achievements

- The transfer of funds from the office to the field is timely and efficient. FPSN has a good mix of field and administrative personnel who work well together by coordinating their priorities and attending to project needs.
- Quarterly reports have been received by TNC with only slight delays in one case. Some information could be more detailed but in general the reports are clear and informative.
- The relationship between FPSN and INDERENA is good, both in Bogotá and Santa Marta. INDERENA wants to play a greater role in the management of SNP and there seems to be excellent potential for working together.

B. Limitations

- Although communication between the Park Director and FPSN staff is good, there is a need to facilitate the flow of information regarding both the technical and financial aspects of the PIP project as well as with general activities occurring in the park.

The Director has limited access to transportation and should be more actively involved in all activities occurring in the park, not only regarding the PIP project, but with other private groups and government agencies, as well. He is an underutilized resource and will enhance FPSN's success with his background and historical knowledge of the park and the surrounding region.

- The FPSN has a small internal staff and numerous projects that limit their ability to attend to all needs and priorities in a timely fashion.

C. Recommendations

- The FPSN Executive Director, Mr. Juan Mayr, requests more direct assistance from TNC in acquiring long-term funding and building a viable campaign, especially within the US. The organization needs between \$600,000 - \$1 million to set in trust for long-term costs. Mr. Mayr demonstrates confidence that if provided the opportunity, he will be successful in meeting financial needs.
- Additional coordination between TNC/FPSN technical and administrative personnel should enhance reporting and solidify priorities. An up-to-date management plan is key.
- There will be an increasing need to coordinate activities between FPSN and INDERENA as the latter increases their focus in the SNP. A well-thought-out and detailed agreement specifying organizational responsibilities and functions will clarify roles and increase project efficiency.
- TNC should make a more conscious effort to facilitate the information flow between the US and both agencies (FPSN and INDERENA) involved in the project.

V. Summary Recommendations

A. Technical Components

- Develop a workable, current, and well-defined management plan for SNP with technical objectives, priorities, and funding needs/potential sources.
- Continue integrating local communities into as many park management activities as feasible.
- Coordinate field efforts between FPSN and INDERENA in anticipation of the latter's increased visibility in the region as well as to take advantage of Park Director's institutional knowledge of the history of the region.

- Increase training opportunities for FPSN staff (i.e., park management, conflict resolution).

B. Financial Components

- Develop a long-term financial strategy outlining anticipated demand and availability of funding sources.
- Incorporate an efficient software package to facilitate PIP (and other projects) tracking and make life easier for the accounts administrator.
- Reprogram funds for 1993 and set up a chronogram coordinating funding categories with specific field activities.

C. Program Administration

- Promote a more active flow of information between TNC-FPSN-INDERENA.
- Provide additional training opportunities for FPSN staff in administration, finance, and fund-raising.

Appendix 1 - List of interviews

1. Fundación Pro-Sierra Nevada de Santa Marta

Executive Staff

Juan Mayr (Executive Director)
 Rosario Ortíz (Biological Diversity Coordinator)
 Adriana Rodríguez (Chief Administrator)
 Antonio Moreno (Assistant Administrator)

Technical Staff

Claudia Patricia Jiménez, Filo Cartagena Coordinator
 Gloria Fajardo, Anthropologist
 Carlos Saenz, Biologist
 Juan Rubio, Biologist
 Marta Lucía Prada, Anthropologist
 Wilson Nieto, Geographer
 Andrés Rubio, Biologist

2. INDERENA

Manuel Rodríguez, Executive Director
 Carlos Castaño, Director of Parks
 Dilver Pintor, Parks Specialist and PIP counterpart
 Ariel Martínez, Chief, SNP

3. Diana Gaviria, Conservation Finance Specialist, Department of Planning (Departamento Nacional de Planeación)
4. Jim Smith, Environmental Officer, USAID
5. Iván Páramo and Lucía Arias, Project Officers, National Integrated Regional Development Agency (Desarrollo Regional Integrado)
6. Hernán Román, Inter-American Development Bank
7. Orlando Rangel and Gary Stiles, Universidad Nacional de Colombia
8. Ernesto Barriga, Coordinator, Forestry Action Plan for Colombia (Plan de Acción Forestal para Colombia)
9. José Vicente Rodríguez, Colombia Representative, Conservation International
10. Douglas Adams, Journalist, Washington Post
11. Sara Defler, Caparú Biological Station, Amazonas, Colombia
12. Claudia Ospina, National Council of Non-Governmental Agencies (Consejo Nacional de ONG's)

Appendix 2 - List of research projects

- Colonization Patterns and Environmental Impacts in the Upper Buritaca River Watershed
- Land Use by the Indigenous Arsario in the Guachaca Watershed
- Communication and Oral History of Communities in the Guachaca and Buritaca Watersheds
- Global Strategies for Watershed Management in the Buritaca and Guachaca River Watersheds - Verification of Vegetation Cover and Soil Use by Aerial Photointerpretation
- The Effectiveness of Agricultural Zones in Determining the Future Conservation of SNP

Additional informal research is being conducted (some by undergraduate students in cooperation with funded researchers working on other projects) involving biological inventories, population censuses, land use, and agricultural practices in indigenous communities.

Appendix 3 - External Funding

- \$1.5m MacArthur Foundation support for internal operations and park infrastructure*
- A project with the GTZ (German Federal Technical Assistance Program) will bring in \$1 million for 1992-94 to assist in preparing a long-term strategy document.
- An agreement with CEBEMO of Holland is providing \$225,000 (1992-94) for agroforestry and technical training assistance for personnel.
- In 1991, the Inter-American Foundation provided FPSN with \$110,000 over two years for programs in sustainable agriculture, reforestation, preventative health care, and training in resource management, nutrition, and small animal raising.
- \$56,000 provided by Natureskidds Foreningen of Sweden for environmental education and fish culture.
- The Tropical Action Forestry Plan of 1989 is an ongoing national environmental strategy of Colombia designed to manage and conserve forest resources and reforest denuded regions. Funding is to be derived from both national and international sources incorporating an aggressive and ambitious agenda to effectively manage Colombia's natural heritage. The FPSN is participating in the planning and implementation of the program in the Sierra Nevada.

Funding and implementation for the project has been slow. Through 1992, approximately \$19.5 million was to have been assigned to the project through the Colombian national budget but it is unclear to what degree this has really happened. Approximately \$21 million in international bilateral technical support has been committed, contingent on national participation.

To date, the total national investment is approximately \$2.2 million for the four principal conservation-related projects in the Sierra Nevada that include:

1. Preparing an updated cartographic analysis of the area,
2. Instituting a geographic information system for planning, management, and monitoring of forest resources in the Sierra Nevada,
3. Implementing the management plan for SNP, and
4. Reforestation of selected upper watersheds in the SN.

* Not yet finalized

Appendix 4 - PIP Financial Status

TOTAL BUDGET	AID	\$100,000
	TNC	\$ 25,000
	LOCAL	<u>\$ 8,000</u>
		\$133,000

DISBURSEMENTS

1/29/92	\$ 20,000
4/03/92	<u>\$ 30,000</u>
	\$ 50,000

EXPENDITURES	<u>AID</u>	<u>TNC</u>	<u>LOCAL</u>
	\$ 22,971	\$ 9,864	\$ 0
TOTAL RECEIVED	\$ 50,000		
TOTAL EXPENDED	\$ 32,835		
TOTAL REMAINING	\$100,165		

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THE NATURE CONSERVANCY
LATIN AMERICA DIVISION
PARKS IN PERIL PROGRAM

ASSESSMENT OF CORCOVADO NATIONAL PARK

Prepared by:

Arthur Pederson, Consultant

with the collaboration of:

Laurie Hunter, Protected Areas Specialist
Latin America Division, The Nature Conservancy

August 1992

1/10

PARKS IN PERIL
SECOND YEAR EVALUATION

PARK NAME: Corcovado National Park, part of the Osa
Conservation and Sustainable Development
Area (ACOSA), Costa Rica

GOVERNMENT
PARTNER ORGANIZATION: Ministerio de Recursos Naturales,
Energia y Minas (MIRENEM)

NON-GOVERNMENT
PARTNER ORGANIZATION: Fundacion Neotropico (FN)

PERIOD OF EVALUATION: October 1990 to August, 1992

MEMORANDUM OF AGREEMENT
TNC AND FN: February 8, 1990

WORK PLAN
SUBMITTED TO AID: February 13, 1991

WORK PLAN
APPROVED BY AID: March 13, 1991

DATE OF EVALUATION: August 3 to 13, 1992

I. INTRODUCTION

A preliminary evaluation of the Parks in Peril (PIP) program for Corcovado National Park was carried out by The Nature Conservancy (TNC) in August, 1991. This second PIP evaluation encompasses the period of time of the first evaluation and the following months up until August 1992.

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A. The Osa Peninsula and Corcovado National Park

The Osa Peninsula contains the largest remaining lowland tropical rainforest on the Pacific coast of Central America. Corcovado National Park makes up its central core. Because of its rich biodiversity the Park has gained a world wide reputation as an important conservation area.

B. Key Institutions

The Ministerio de Recursos Naturales, Energia y Minas (MIRENEM) administers the Area de Conservacion y Desarrollo Sostenible Osa (ACOSA). Corcovado National Park (CNP), is one of six protected areas on the Osa Peninsula managed under the ACOSA mandate. Fundacion Neotropico (FN), a Costa Rican non-governmental conservation organization, administers the funds for the Parks in Peril program. Fundacion Neotropico also administers funds for Project BOSCOSA, the principal NGO on the Peninsula involved in buffer zone development activities. CEDARENA a non-profit organization gives legal technical support to BOSCOSA on land tenure issues.

C. Evaluation Team Members

The evaluation team was composed of Laurie Hunter, the Nature Conservancy's (TNC) Protected Area Specialist and Art Pedersen, an external consultant contracted by TNC to carry out the evaluation.

D. Evaluation Team Work Plan

Monday August 3, 1992 - The team met with Leslie Simmons, Assistant to the Director at the Fundacion Neotropica. Ms. Simmons provided information on the administration of PIP program funds and briefed the team on field trip logistics. Edgar Vargus, Fundacion Neotropica's Administrative Director and Thelsy Arias, of FN's accounting office provided pertinent financial documents. Ana Patricia Obando, Administrative Assistant for Project BOSCOSA provided joint BOSCOSA and ACOSA work plans and reports. In the afternoon the team met with Ann Lewandowski of AID to discuss the PIP project and the evaluation.

Tuesday, August 4 - Hunter, Pedersen, Orlando Montero, Director of Corcovado National Park, and Walter Rodriguez, ecotourism coordinator for ACOSA and BOSCOSA, flew to Golfito and then to Drake. From Drake the group traveled by boat to the Park's San Pedrillo operation center to review new PIP funded construction.

Wednesday, August 5 - The group traveled by boat to Isla del Cano and then to La Sirena operation center to review construction activities. From la Sirena all four returned to Puerto Jimenez

by plane. At ACOSA headquarters Hunter and Pedersen met with Orlando Montero and Luis Barquero, Deputy Director of ACOSA, to discuss ACOSA budget and management issues. ACOSA Director, Miguel Madrigal was out of the county on a training course.

Thursday, August 6 - After a morning meeting with Orlando Montero the team traveled to El Tigre operation center. Hunter and Pedersen then traveled to BOSCOSA headquarters to meet with Jose J. Campos, Director of BOSCOSA. The afternoon was spent in joint and individual meetings with Jose J. Campos, Orlando Montero, Walter Rodriguez, and a representative from Copeunioro a community interested a sustainable development project utilizing reforestation and ecotourism.

Friday, August 7 - The team returned to San Jose. In the afternoon Pedersen met with J.J. Campos.

Saturday, August 8 - Hunter returned to The United States, Pedersen remained in San Jose.

Monday, August 10 to Saturday August 16 - Pedersen in San Jose compiling information and writing the final evaluation report.

D. Background Information

The current threats to CNP continue to be illegal hunting and mining. According to Director Montero these threats will continue even though patrolling has become more effective. CNP is being successfully protected from illegal logging although deforestation continues to plague the buffer zone, including the Golfo Dulce Forest Reserve.

Among Park staff there is a growing concern over the problems of increasing Park visitation. The Osa Peninsula is becoming an attractive tourist destination and a growing number of hotels and pensions are using the Park.

BOSCOSA continues its sustainable development projects in the buffer zone. The joint BOSCOSA/CEDARENA land title program and a new revolving credit project called FIPROSA are being implemented. These programs are designed to provide local people with institutional support and financial incentives to maintain forest cover on their lands.

Coordination of activities between ACOSA and BOSCOSA, a limitation mentioned in the first evaluation, have slowly improved. Technical Committee meetings to discuss integrated planning have been carried out for the last six months. Attendance from the directors of ACOSA and BOSCOSA has been consistent. Joint meetings between ACOSA and BOSCOSA to update the OSA 2000 plan, a Peninsula wide integrated Park and buffer zone plan, have been set for the first week in September 1992.

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A new development for improved coordination has been the appointment of Walter Rodriguez as joint ACOSA and BOSCOA ecotourism coordinator. The position resulted in the need to coordinate tourism activities taking place outside as well as inside the Park. Mr. Rodriguez has also been recently appointed coordinator for the PIP program.

II. TECHNICAL

This section lists and analyzes the achievements and limitations of the current program and makes recommendations for possible future actions. There are two elements to the analysis. The first is a practical evaluation determining if the work funded by the PIP program was successfully carried out. Included are brief evaluations of the effectiveness of the PIP supported activities. A second element to the evaluation determines if these activities are being carried out within a broader plan reflecting an overall strategy for achieving the goal of conserving biodiversity.

A. Achievements

(See Annex I. for a detailed list of the individual projects carried out.)

1. Improvements in the living conditions of park personnel.

Discussion: All Park operation centers were improved through the use of PIP funding. Not all sites were visited by the evaluation team because of time constraints. If the site was not visited, verification of the funds spent was obtained from FN records, i.e. "Gastos Aprobados".

Evaluation: Previous to PIP projects most of the operation centers needed basic improvements. Isla del Cano's center consisted of only a basic structure to house Park guards.

Most of the operation centers in the Park are isolated and without amenities. Upgrading these centers has successfully improved the living standards of the park guards.

2. Improvements in the equipment carried by park protection personnel.

Discussion: Life jackets for ocean journeys, and boots, ponchos, and backpacks for patrolling were purchased for the protection staff. Receipts for the purchases were verified in the records of the "Gastos Aprobados".

Evaluation: This equipment will improve the safety and comfort of the protection staff.

3. Improvement in the training of Park personnel.

Discussion: PIP funds permitted the CNP Director to attend a conservation management course in Panama. Funds were also used to sponsor, in conjunction with CEDARENA, a legal issues training course for park guards and other MIRENEM personnel. During this workshop six members of several of the surrounding communities were asked to attend. The goal of the workshop was two-fold. The first was to train government officials in Costa Rican conservation laws. The second was to open a dialogue on law enforcement between the government and the local communities. Receipts for workshop expenses were located and confirmed.

Evaluation: Training at the directors level will benefit further CNP planning and management efforts. Training of park guards in conservation law will aid enforcement efforts. Involving the communities in this workshop was a positive step in helping to establish better relationships among local groups and ACOSA staff.

4. Improvement in the effectiveness of protection patrols.

Discussion: The PIP program funded the purchase of two vehicles, vehicle repairs, a radio tower to increase the Park's communication system, and boundary demarcation work. PIP financed at least twelve tours of the Park by protection personnel. Funds also purchased additional food for Guardia Rural personnel carrying out joint park protection patrols. These expenses were verified in the receipt records.

Evaluation: Distances on the Osa are relatively long and additional vehicles permit extended patrols and greater resupplying possibilities. Boundary demarcation efforts permit greater control of the Carate/la Leona area, an area threatened by illegal mining. Increased radio communication will greatly improve the coordination of protection efforts and increase personnel and visitor safety.

According to the Park Director these activities have added to the effectiveness of patrolling and protection efforts. They have resulted in a 10% increase in patrol days, detentions and fines.

5. Improved orientation for visitors to the Park.

Discussion: The Park Service contracted a private workshop to make 134 signs.

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Evaluation: Routes into Corcovado National Park are marked with few signs and direction finding can be difficult. Visitation to the Park is increasing and this additional information will help to improve visitor safety.

6. Improved ability of the Park environmental education officers to disperse audio visual information.

Discussion: The Park Service purchased for its environmental education program a television and VHS equipment.

Evaluation: According to Director Orlando Montero the audio visual programs, along with protection campaigns in the surrounding communities have aided efforts in slowing the capture and sale of protected, endangered animals.

7. Legal assistance provided by CEDARENA for Cerro Brujo and Guaymie Reservation.

Discussion: Land ownership in the Indian Reserve has not been accurately defined. Non-Indian immigrants have settled within the Reserve. Tribal members lack confidence in the government Indian agency to assist them in reclaiming their land. In an effort to by-pass the government the Guaymie have formed their own Guaymie Development Association. With this Association they can request legal representation from an outside organization such as CEDARENA to help them settle territory disputes.

Cerro Brujo, another Osa community, is the location for the first communal forest on the OSA. CEDARENA is helping to write the legal constitution for the forest as well as process the necessary documentation needed for a forest concession.

Evaluation: According to the approved PIP work plan, resolution of the Peninsula's land tenure issues are critical to long term conservation. The work of consolidating titles and promoting communal forests are important first steps in this process.

8. The appointment of a PIP program coordinator.

Discussion: To increase coordination between FN and ACOSA the first evaluation recommended the appointment and funding of a PIP program coordinator. Walter Rodriguez has recently been appointed to this position. He will act as liaison between ACOSA on the Peninsula and the FN in San Jose. The position has been funded up to the end of 1992.

Evaluation: This appointment should add increased cooperation and coordination in the administration of the program.

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B. Technical Limitations

1. There is no monitoring system in place to track the condition of the Park's biodiversity.

Discussion: Presently there is no system to help Park management examine the long term environmental effects of mining, illegal hunting, and increasing tourist visitation. A Rapid Ecological Survey carried out by BOSCOA in 1991 did supply some baseline data of selected areas but this was done mostly outside of the Park. The Park director has expressed interest in a biological monitoring program. A high priority for management is to monitor changes in the reef off of Isla Del Cano. However at this time, ACOSA staff do not have the training or experience to carry this out.

Evaluation: Conserving biodiversity is the stated overall goal of the PIP program. A monitoring program for the Park would aid in establishing the information needed to track the success of protection and management efforts.

2. There is no practical management plan for CNP that defines long term Park policies, goals and objectives.

Discussion: The primary planning document for ACOSA is its yearly work plan outlining specific activities to be accomplished within its various program components. The plan and its budget show that the focus of the plan's activities are oriented towards protection and control.

Planning in the context of a larger goal are limited. ACOSA has no vision statement and well defined policies for long term management. There are no well defined management parameters or guidelines on the conditions both physical and social that the Park Service wishes to maintain. For example, does it wish to maintain the Park more as a wilderness area or does it wish to develop it for more intensive use?

With both increasing tourism and scientific research there is presently no long range plan that reflects the broader management problem of protecting and conserving biodiversity in the face of growing human use. This includes a well-developed Park strategy for zoning, carrying capacity with quantifiable standards set so that changes caused by these activities can be measured.

Evaluation: Without a clearer direction of how ACOSA wishes to manage the park the realities of unplanned increasing human use will create management problems instead of benefits. Without a broader planning focus biodiversity will suffer.

Protection activities carried out without a focus on the larger goals of conservation and a broader vision of the Park will create a stagnate protection attitude and ethic that will eventually isolate the Park Service.

The joint meeting in September with ACOSA and other government and non-governmental organizations to update the OSA 2000 plan may help ACOSA define this broader vision. Lack of training in strategy development and park planning may limit the potential of ACOSA staff in these efforts.

C. Technical Recommendations

The recommendations given in the following section are recommendations to improve the technical capacity of ACOSA.

1. Establish a monitoring program on the Osa to track biodiversity baseline data.

It is recommended that a monitoring program be set up to address the monitoring needs of the Park, e.g., monitor environmental impacts on the reef off of Isla Del Cano. The system should be designed and data collected to provide ACOSA staff with the information they need to make management decisions. Park guards should be trained and utilized to collect the data.

2. Make additional training available to ACOSA staff.

The following training courses are recommended: general park planning techniques, strategy and decision making training, Limits of Acceptable Change training (carrying capacity), and training in conflict resolution.

3. Define long term management policies for CNP and develop long range goals and objectives.

The development of these broad goals and objectives should have as a basis a vision of the conditions the Park Service wishes to maintain over the long term.

III. FINANCIAL

This section includes financial background information on ACOSA and its future financing sources. Recommendations are made for improved programing and for possible future PIP funding. A more graphic breakdown of the funding sources is detailed in the

Financial Evaluation Report. Brief mention of the financial condition of BOSCOA is included in the following introduction because PIP funds were requested by BOSCOA for two new projects.

A. Background Information

In 1992, in addition to PIP funds, ACOSA received external financing from the World Wildlife Fund and the Swedish International Development Agency (ASDI). ASDI has helped to finance the construction of several of the operating centers in the Park and the salaries of a number of Park personnel.

Current FN records show ACOSA has \$14,933 of unspent AID, PIP funds and \$1,714.98 in unspent TNC PIP funds. Of this amount it was suggested that the \$1610 of TNC funds left over from the purchase of the two ACOSA vehicles, be spent on a monitoring program. The remaining \$15,039.06, except for \$3,800 programmed for administration purposes, would be used for field operations, equipment and construction. ACOSA has requested an additional \$16,500 of PIP funding for several items of equipment and approximately \$13,500 for training activities.

ACOSA financial assistance from the World Wildlife Fund ends in 1992. Financing from WWF for the coming years is unknown and not expected. PL 480 money which has been budgeted by ACOSA for 1992 has not yet been received. Funds have been directed to the Direccion General Forestal and have not been released to the Park. The probability for new PL 480 funds for 1993 is low. Recently the Costa Rican Constitutional Court has rejected the PL 480 agreement with the United States.

Presently BOSCOA receives its main funding from U.S. AID. These funds are active until March 1993. There is a high probability that AID will renew the BOSCOA project for five more years, (April 1993 to March 1998). BOSCOA has requested between \$1 to \$1.3 million dollars for the first three years and plans to ask for additional funds after the third year. As part of its Osa Peninsula program the Global Environmental Facility of the World Bank has expressed interest in funding BOSCOA projects oriented to sustainable development and scientific research.

During meetings with BOSCOA the PIP evaluation team received requests for \$101,000. Additional funding would be used for three programs: the continued funding of Walter Rodriguez as program coordinator, funds for a monitoring program for the OSA Peninsula, and funds for a community ecotourism project in two villages that surround CNP.

A. Financial Achievements

1. With the available PIP funds ACOSA has successfully completed the protection activities listed in the 1991 PIP Action Plan.

Discussion: Rehabilitation of the field operating centers, purchase of equipment, payment of operating expenses for increased patrolling, the purchase of two vehicles, staff training on the legal aspects of natural resource protection, and boundary demarcation have all been successfully carried out.

Evaluation: Completion of the protection activities within the Action Plan guidelines and with the funds allotted to ACOSA indicate a high degree of PIP program success.

2. ACOSA has been successful in attracting \$2.5 million dollars for use in protection and infrastructure projects from the Swedish International Development Agency (ASDI).

Discussion: ASDI's \$2.5 million funding is for the years 1991, 1992, and 1993. The sum of \$2.5 million is less because of varying exchange rates between Swedish, and Costa Rican currencies. Thirty three percent of this donation is required to be placed in an endowment fund for ACOSA to help insure a secure funding base for the Park.

In 1992 ACOSA used ASDI and PIP funds for the construction or improvement of the Park's operation centers as well as to finance protection and control activities. ACOSA has programmed approximately \$113,203 of ASDI funds for its protection program for 1992.

ASDI has a formal agreement with the Costa Rican Fundacion de Parques to administer the fund. Because of limited administration capacity, the Fundacion de Parques subcontracted Fundacion Neotropica to carry out this function.

Evaluation: Except for the additional equipment requested by ACOSA there is a high probability that ASDI funds will cover most protection activities for the coming year.

3. ACOSA has been successful in attracting funds from the Global Environmental Facility (GEF) of the World Bank.

Discussion: Eight million dollars has been approved for the Osa Peninsula and Amistad Biosphere Reserve by GEF. There is a high probability that the Osa Peninsula will receive approximately four million dollars of this fund. Disbursement of the funds is due in 1993. The program will run for three years.

Presently four programs have been identified for GEF funding. These include research, rural sustainable development,

training, and institutional building. Activities not covered under this program are, land acquisition, rotating credit, and salaries. According to FN staff CNP infrastructure development would be included in the GEF program. A GEF goal is to provide sufficient monies for infrastructure, e.g., a visitor center, to permit the park to generate tourism funds and become more self-financing. Information gathered from BOSCOA staff indicate GEF has a strong interest in funding scientific and social research on the Osa Peninsula. Funding of a monitoring program was discussed by GEF program officers and BOSCOA.

Because GEF does not wish to pay salaries or fees for contract personnel there have been negotiations with MIRENEM over project proposals. The MIRENEM proposal includes over two million dollars in salaries and fees for contract personnel. GEF does not wish to finance new positions that at the end of three years the government may not renew. Because the proposal is in the process of development, it is not possible to give a funding breakdown. FN staff believe that more information on the details of specific GEF funding should be available within the next month.

Evaluation: There is a high probability that conservation organizations working on the Osa Peninsula will receive approximately four million dollars in funding for three years starting in 1993. There is a high probability that ACOSA will receive GEF financial support for its programs. Training for ACOSA staff and extra equipment may be available under the GEF program.

BOSCOA is likely to have its programs supported by GEF monies because of expressed GEF interest in community based sustainable development activities and scientific research. It is possible that the GEF program would fund both the monitoring and ecotourism projects.

B. Financial Limitations

1. There is no clear vision of future financial needs for protecting and conserving biodiversity in the Park and on the Osa Peninsula.

Discussion: There appears to be no written, specific long range financial goals and objectives for the Park. There has been no quantifiable methodology developed to determine the financial needs for protecting and conserving biodiversity.

Evaluation: Although protection activities have been completed, questions still remain as to the required levels of long term funding. In part this is due to the fact that there is no

strategy outlining the long term conditions in the Park that ACOSA wishes to maintain.

C. Financial Recommendations

1. Develop a financial strategy for protecting and conserving biodiversity in Corcovado National Park.

To develop a financial strategy ACOSA must have specific policies on how the Park is to be managed. After these decisions are made, then specific long term financial goals and objectives can be developed.

2. Fund the following activities under the second step of the PIP program if GEF funds are unavailable.

If GEF funding is not forthcoming it is recommended that additional PIP monies be provided to ACOSA and BOSCOA for monitoring, ecotourism, and training projects. There are several reasons for this:

1. There is sufficient institutional support so that the proposed projects have a good possibility for success.
2. The projects can serve as models for other parks in Costa Rica and Latin America.
3. Because of the increasing pressures on the Park, the programs are necessary for effective management.

It is recommended that certain conditions be outlined for these projects before PIP funding is provided. For the ecotourism projects it is recommended that PIP first fund a detailed tourism feasibility study of the two communities. The studies should include, an estimation of potential tourism demand, detail costs with budget justifications, an analysis of community organization, and an analysis of community infrastructure. If study results are positive, further funding should be considered.

If a monitoring program is funded it should first consider the monitoring needs of the Park Service. It is recommended that the system be designed so that guards can be trained and used for the program and that the information collected has utility for park management decision makers.

It is recommended that additional training cover planning and management techniques, e.g., strategic planning, Limits of Acceptable Change, and conflict resolution.

III. PROGRAM ADMINISTRATION

This section evaluates the efficiency and effectiveness of PIP program administration.

A. Program Achievements

1. Trimester reports from ACOSA were submitted on time with clear and detailed information.

Discussion: Reports at the start of the project arrived late and did not contain sufficient information to review the various activities. Current reports arrive on time and offer a good account of the activities carried out.

Evaluation: ACOSA directors and administration staff are complying with set procedure.

2. The problem of local payment of taxes has been resolved.

Discussion: Financing of projects for PIP was delayed because AID regulations do not permit funds to be spent on host country local taxes. As no PIP funds were earmarked to pay for local taxes FN could not release monies to ACOSA. This resulted in delays in project spending. The intervention of MIRENEM with information on the steps needed to bypass these taxes eventually resolved the problem for ACOSA.

Evaluation: ACOSA directors and administration staff are now complying with set procedures.

3. A draft of a new PIP agreement written between MIRENEM, The Fundacion Neotropico, and The Nature Conservancy.

Discussion: The first evaluation recommended the development of an agreement clarifying and defining program responsibilities for MIRENEM, The Fundacion Neotropico, and The Nature Conservancy. The agreement is now at TNC offices in Washington awaiting final comments and approval.

Evaluation: A new agreement will be useful to help clear up any uncertainty over organizational responsibilities. It will provide an opportunity for the organizations to raise any concerns about current administration practices.

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B. Program Limitations

1. The Park Director does not regularly receive current information from TNC and from FN.

Discussion: Information sent to ACOSA from FN and TNC does not always reach the Park Director. This includes updated financial reports on program expenditures. Park Director Montero has requested that he receive PIP information directly from TNC. He has also requested that FN provide him with current spreadsheets on the monies remaining in each of the PIP funding categories.

Evaluation: Because the Director must manage and implement the program, the gap in the dispersal of information impedes better coordination among the key organizations.

2. Agreement between MIRENEM, FN, and TNC defining responsibilities in the PIP program has not been finalized and signed.

Discussion: The writing of a new agreement to better define PIP responsibilities was recommended in the 1991 evaluation. The purpose of the document is to clarify program roles and to improve coordination between the key organizations. Presently the agreement is in TNC offices in Washington waiting to be approved.

Evaluation: Completion of the agreement will carry out the recommendation from the 1991 PIP Evaluation.

C. Program Recommendations

1. Park Director to regularly receive current information from TNC and from FN.

To facilitate better coordination, direct all PIP correspondence from TNC and FN to the Director of ACOSA, Miguel Madrigal, Director of Corcovado National Park, Orlando Montero, and Director of BOSCOSA, J.J. Campos. Supply Director Montero with all the latest financial information.

2. Finalize and approve agreement between MIRENEM, FN, and TNC defining responsibilities in the PIP program

TNC should finalize the draft document and facilitate final agreement.

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IV. SUMMARY OF RECOMMENDATIONS

TECHNICAL

Define long term management policies for CNP and develop long range goals and objectives.

Establish a monitoring program on the Osa to track biodiversity baseline data.

Make additional training available to ACOSA staff.

FINANCIAL

Develop a financial strategy for Corcovado National Park for protecting and conserving biodiversity.

If GEF financing is not available fund the following activities under the second step of the PIP program.

- * Training for Park staff
- * A monitoring program
- * Two ecotourism projects
- * PIP program coordinator

PROGRAMING

Direct all PIP correspondence from TNC and FN to the Director of ACOSA, Miguel Madrigal, Director of Corcovado National Park, Orlando Montero, and Director of BOSCOA, J.J. Campos. Supply Director Montero with all the latest financial information.

Finalize and approve agreement between MIRENEM, FN, and TNC defining responsibilities in the PIP program

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Annex I.

Detailed List of Technical Achievements of PIP Program

1. Improvements in the living conditions of park personnel.

List of improvements at the various operation centers.

San Pedrillo operation center

- * Reconstruction of the old living quarters with a new floor and new rooms for park guards.

- * Construction of two new showers and two new toilets.

- * Purchase of a new Yamaha generator for center's power.

Isla de Cano operation center

- * Construction of a new center with new concrete floor and rooms for park guards.

- * Construction of bathroom and showers for park guards

El Tigre operation center

- * Construction of a new storeroom for supplies.

- * Construction of a new kitchen at the station.

- * Purchase of a lawn mower.

- * A well was dug and a well cover constructed.

La Sirena operation center

- * Construction of a new kitchen

- * Construction of an extension to the original supply shed.

- * Construction of six closets in the rooms of park

personnel.

- * Construction of two dormitories for researchers.

- * Installation of new electric wiring in the main operation center.

Los Planes operation center

(This center because of time and its distance from our travel route could not be visited.)

- * Construction of bathrooms

- * Purchase of a water pump and new water pipes.

Los Patos operation center

(The team did not visit this center during August however A. Pedersen visited Los Patos in June 1992 and can verify construction activities.)

- * Construction of compartments to store equipment and food.

- * Construction of two new rooms for park personnel and/or visitors.

- * Construction of a case to house water pump.

- * Purchase of office equipment.

La Leona operation center

- * Carried out repairs to the center.

- * Purchased office equipment.

ACOSA Central Office

- * Purchase of a washing machine
- * Purchase of office equipment, desk and chairs.

2. Improvements in the equipment carried by park protection personnel.

- * Purchase of 60 pairs of rubber boots for park guards.
- * Purchase of life jackets for park guards.
- * Purchase of 15 ponchos.
- * Purchase of 36 backpacks.

3. Improvement in the training of Park personnel.

- * Financed a four day course on conservation for the Park Director in Panama
- * Park guards course on legal training.

4. Improvement in the effectiveness of protection patrols.

- * Purchase of two vehicles. (mentioned in the first evaluation)
- * Purchase of gas and oil to carry out increased patrols.
- * Financed at least twelve tours of the Park by protection personnel.
- * Purchased additional food for Guardia Rural personnel carrying out joint protection patrols with the Park Service.
- * Paid for repairs of vehicles.
- * Construction of a radio tower at La Leona.
- * Park boundary measured and marked at la Leona.
- * Horse purchased for Los Patos operation center.

5. Improved orientation for visitors to the Park.

- * Contracted the with a private workshop to make 134 signs for the Park.

6. Improved ability of the Park environmental education officers to disperse audio visual information.

- * Purchase of a new television and VHS equipment.

7. Funds provided for PIP coordinator allocated.

8. Legal assistance provided by CEDARENA for Cerro Brujo and Guaymie Reservation.

ANNEX 2.

Documents relevant to the PIP program.

- * OSA 2000 - A general management plan for the peninsula written primarily by Richard Donovan, former BOSCOSA Director.
- * 1988 Corcovado National Park Management Plan - This plan describes the area and gives its planned recommendations for Park management.
- * The Golfo Dulce Management Plan - A plan covering the buffer zone area.
- * The PIP Action Plan - This lists in general terms the direction of activities that will be carried out with funds from the PIP program.
- * Plan Operativo 1992, ACOSA - The basic work plan used by ACOSA that details specific projects along with a financial breakdown of the necessary funding and funding sources.
- * ACOSA Trimester Reports - These reports describe the activities carried out with PIP funds.
- * FN financial spreadsheets listing current spending and remaining available funds.

FINANCIAL EVALUATION FOR ACOSA

Sources of Funding for CNP

1. Source: Swedish Agency for International Development (ASDI)
Status: ACOSA will receive approximately \$800,000 to \$900,000 for 1993
Probability: High
Amount: \$2.5 million for 1991, 92 and 93.
Timing: Currently spending disbursement for 1992.

2. Source: Global Environmental Facility of the World Bank
Status: Conservation agencies and NGOs on the Peninsula de Osa, including ACOSA and BOSCOA, are eligible to receive approximately \$4 million for the years 1993 to 1998.
Probability: High
Amount: \$4 million for 5 years. Detailed breakdown of funds unavailable at this time.
Timing: First disbursement will probably be made in March 1993.

ACOSA Financial Profile

1992 ACOSA Funding: (From FN records)

WWF	\$37,756
PL 480	\$45,112
MIRENEM	\$212,355
PIP	\$64,285
ASDI	\$885,347 (does not include endowment fund)
SUBTOTAL	\$1,244,855
funds from the PL 480 money did not arrive	
TOTAL	\$1,199,743

Potential 1993 ACOSA Funding not including PIP funds and GEF funds.

WWF	\$0
PL 480	\$0
MIRENEM	\$212,355
ASDI	\$885,347
TOTAL	\$1,097,702

The difference between 1992 - \$1,199,743 and
1993 - \$1,097,702
is \$102,041.

With the high probability of GEF funds arriving in 1993 it is likely that the deficit will be covered.

Breakdown of Remaining PIP funds:
\$14,933 AID
\$1,714.98 TNC funds

TOTAL: \$16,649.06 - of which \$3,800 is programed for administration purposes and \$1610 of TNC funds will go to any monitoring program. The remaining \$15,039.06 could be used for field operations, equipment and construction.

ACOSA Requests for Additional PIP Funding:
\$16,500 in additional second installment of PIP funding to financing for several items of equipment not covered under other funding sources.

\$13,500 for training

TOTAL \$30,000

BOSCOSA Requests for Additional PIP Funding:
Monitoring program
\$25,000 for the program
\$20,000 for a program vehicle.

Ecotourism projects in two communities

Breakdown of cost for Copeunioro project.
\$6000 for consultant for 6 months
\$9,500 for the purchase of land for organic crops
\$9,500 for recuperation and restoration management.

\$25,000 for Cerro Brujo ecotourism project.

PIP coordinator

\$6,000 for continued funding for a PIP coordinator

TOTAL \$101,000

**Parks in Peril Program
Evaluation for
Jaragua National Park, Dominican Republic
September 8, 1992**

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ATTACHED REPORTS

1. Informe Sobrevuelo Parque Nacional Jaragua - Grupo Jaragua
2. Taller Interno Grupo Jaragua Inc. Monitoreo Ecológico en el Parque Nacional Jaragua
3. Relación Equipos Adquiridos para el Proyecto Parques en Peligro "Parque Nacional Jaragua" PRONATURA
4. Aporte Regular del Grupo Jaragua al Proyecto Parques en Peligro - Parque Nacional Jaragua
5. Plan de Acción para la Conservación del Parque Nacional Jaragua, Grupo Jaragua: Las Experiencias del Primer Año

MAPS

1. Limites Terrestres del Parque Nacional Jaragua - Dirección Nacional de Parques
2. Identificación Preliminar del Impacto del Uso de la Tierra en el Límite Norte del Parque Nacional Jaragua - Direna

**Parks in Peril Program
Evaluation for
Jaragua National Park, Dominican Republic
September 8, 1992**

Park Name: Jaragua National Park, Dominican Republic

GO Partner: Direccion Nacional de Parques (DNP)

NGO Partners: Grupo Jaragua, Inc. and PRONATURA

Dates of Agreement
TNC and Grupo Jaragua: March 13, 1991
TNC and PRONATURA: July 24, 1991

Work Plan
Submitted to USAID: March 14, 1991
Approved by USAID: July 5, 1991

Period of Evaluation: September 1991-August 1992

Dates of Evaluation: August 3-17, 1992

Evaluation Team: Jose Ottenwalder, Ph.D.
Domingo Marte, Ing. Agron.
Gina Green, Ph.D.
Brad Northrup, Caribbean Regional Director

Jose Ottenwalder, external TNC contractor, travelled to the Dominican Republic on August 3-17, 1992, to conduct a PIP evaluation for Jaragua National Park, with the assistance of team members Gina Green (August 7-11), TNC Caribbean Protected Areas Specialist, and Domingo Marte, local TNC representative. Brad Northrup joined us August 2-5 in support of the initial stages of the evaluation. Institutions and individuals directly involved in the implementation of the project were contacted and interviewed. Interviews were held in Santo Domingo, Oviedo, and Parque Jaragua to assess technical, administrative, and financial aspects of the project and to gain recollection of the strengths, weaknesses, and progress of the work plan implementation. In some cases, written reports were requested by the team leader as appropriate for the purposes of the evaluation. Prior to the evaluation visit, definition of an adequate biological monitoring program received special consideration at a planning meeting held in Washington by TNC staff and team members. Appraisal of the current status of resource protection and institutional development were also identified as priority objectives for the evaluation.

Executive Summary

I. Achievements

A. Actions resulting from PIP funds

- Park boundaries entirely marked
- 4WD pick-up truck purchased for work at park site
- Construction of three park guard stations completed (total = 4)
- 8 additional park guards hired for a total of 15
- 1990 Landsat image obtained for assessment of changes in vegetation cover and trends in land use
- One motorcycle purchased for use of local GJI coordinator
- Construction of dock at Laguna de Oviedo
- Monitoring - one aerial survey
- Professional staff from DNP, GJI, and PRONATURA attended the IV World Park Congress in Caracas
- Jaragua park administrator (DNP), and local GJI coordinator attended training course on protected areas in Colorado.
- Two workshops held to promote the importance of the park for the communities and to identify potential development projects.
- Monthly/quarterly planning and coordinating meetings were regularly held by participating GO and NGO's (GJI, DNP, PRONATURA, TNC)
- DNP and GJI received administrative-accounting training from PRONATURA
- Improvement of GJI administrative capacity since start up of PIP
- Office space rented, office equipment purchased, and personnel hired in Santo Domingo and Oviedo for GJI's administrative and technical programs
- Audiovisual equipment (color monitor, video, video recorder) purchased for GJI educational and monitoring programs.

B. Activities not directly financed by TNC-USAID

- Construction of one park guard station by WWF
- Monitoring of waterfowl at Oviedo Lagoon by DED (researcher, salary, and vehicle included).
- Park guards training course by WWF; partial support from TNC-USAID
- Environmental educational program for Oviedo schools and community groups by PEACE CORPS.
- SOEBA/FEDOMASEC community support and environmental education programs by WWF
- DNP park guards training program by WWF
- One motorcycle for DNP park guard staff in Oviedo by WWF

II. Limitations

- Discrete park protection; marine, coastal areas, and islands not protected Control of exotics not implemented yet
- High desertion rate of park guards due to premature hiring before support infrastructure was

- in place(posts, equipment, transportation, water and supplies), and to salary complaints
- Shortage of radios and firearms
- Deficient local leadership, discipline, and supervision
- Lack of clear awareness of duties and responsibilities
- Poor knowledge of threats to park resources, species of special concern, and legislation
- Insufficient training (one course); preparation of training manual pending
- Discrete park protection; marine, and coastal areas, and islands not protected
- Only five park signs in park
- Heavy exploitation of species traditionally harvested in park still unsolved (sea turtles, sea birds, wading birds, pigeons, land crabs, iguanas, lambi, lobsters)
- Marine fisheries not controlled
- Lack of clear definition of the roles of volunteers and local personnel
- Monitoring program not completely defined yet
- Although NGO and GO might appear to agree on overall management objectives, different approaches arise concerning the methodologies that should be adopted to achieve such goals

III. Recommendations

Our overall evaluation is that Parque Nacional Jaragua is a successful PIP project. By Dominican standards, the program has achieved goals by far unaccomplished in other parks in the Dominican system of protected areas. Today, Jaragua is the only park in the country with marked boundaries, potential management infrastructure, and strong community development programs. Further strengthening of the present framework and programs will be determinant for the maintenance of the park's integrity against the challenges of population and development pressures (e.g., tourism, real state, entertainment, people influx, hunting, increased exploitation of marine species, loss of critical habitat for endangered wildlife). In achieving these goals the following recommendations are made:

Construction:

- Build additional park stations along the coasts and offshore islands, and increase number of park signs

Protection:

- Develop a management/protection manual for park resources as guidelines for park managers
- Stress protection program at all levels as priority, from training to actual enforcement
- Develop a coastal management plan for Jaragua
- Seek cooperation of Dominican Navy for park guard support on offshore islands, Beata and Alto Velo (offer incentives for service in Alto Velo)
- Develop program for control of exotics inside park

Park guards and equipment:

- Resume training courses for park guards.
- Develop written description of duties for each guard post, detailing specific jobs and work schedule for each park guard according to potential threats to resources of the area.
- Increase supervision of park guards and posts.

- Acquire additional support equipment needed for park guards and stations (radios, firearms, binoculars)
- Consider salary increases (trust fund) and incentives (food co-op, clothing donations, government housing, health care, awards) for park guards. Categories based on experience, years of service, and individual skills would help stratify salaries.
- Review current rotation system of parks guards and avoid single man patrols
- Increase number of park guards along with the construction of new posts and training courses
- Avoid hiring of family-related park guards as much as possible.

Training:

- Emphasize protection programs in training courses for park guards; address plans for the protection of heavily exploited and threatened species, poacher's techniques and strategies, areas of illegal activities and protective legislation.
- Promote encouragement, team work, leadership, discipline, and self-esteem.

Monitoring:

- Preparation of monitoring proposals need to be completed prior to allocation of funds for monitoring and biological inventories.
- TNC should provide further technical assistance to GJI in the development of the monitoring program.
- In choosing indicator species for monitoring programs, select resident species (preferably breeding in the park). Fluctuations in populations trends of migratory species might not be necessarily related to local conditions (suitability of park habitats or protective status of species in park during winter residence). Not taking into account external factors (on the breeding grounds, post-breeding dispersal range, or migration routes) might be responsible, is to overlook very important assumptions.
- For short-term inputs, monitoring program should emphasize threatened and economically important species being exploited to directly measure effectiveness of PIP protection program, but formal biological inventories of the park vertebrate fauna, needed for establishment of a sound ecological baseline, should be outlined in the near future. Data yielded from monitoring studies should be readily incorporated into management to correct deficiencies.
- Monitoring techniques should be practical enough to be conducted by non-technical GO and NGO personnel. In addition to GJI, DNP (park guards), and local community, participation of other partners in the monitoring program is encouraged.
- Develop methods to assess effects of human disturbance or exploitation of target species and/or its habitat, e.g.:
 - Sea turtles - percent of nests poached (of known total)
 - Wading birds - number of breeding pairs; % nests poached
 - Sea birds - nests density/area
 - WC pigeon - number of breeding pairs in "banco"
 - Iguanas - population densities using marking-recapture
 - Land crabs - densities of harvested size classes
- Determine human population, socioeconomic trends, and wildlife use inside the park.
- Review and update land tenure conflicts.
- Predict impacts of regional development projects (ongoing and forthcoming, e.g., Canal Nizaito, tourism) upon the park, and develop possible strategists to armonize and take

advantage of projects for the park and community programs.

- Review series of resource assessments, development projects, and socioeconomic and feasibility studies concerning the Juancho-Oviedo plains prepared under "Plan de Desarrollo de la Zona Fronteriza" (available in ONAPLAN), for incorporation in Jaragua baseline data.

Public Relations, Education and Extension:

- Develop program to minimize impact of livestock inside park.
- Extend environmental education and extension programs to coastal areas.
- Construction of an additional dock on the southwestern shore of Oviedo Lagoon, at Oviedo Viejo (requested by local community groups).

Long-term Financing:

- GJI, PRONATURA, and DNP should become more active and effective in the preparation of sound grant proposals and securing seed money.
- To maximize the chances to obtain significant funding, it is important that GJI, DNP, and PRONATURA strengthen their technical and administrative skills further (add depth to professional staff, work on the promotion of a solid, more reliable image) to become more attractive recipients of funding.
- Strengthening of institutional relationships to increase credibility.

Institutional Development:

- Further support and training to GJI from PRONATURA. Set aside specific day for weekly advice/training meeting.
- Job descriptions for all key personnel at the park site, including local personnel, guard parks, and volunteers. In the case of volunteers, it would be advisable to sign collaborative agreements defining specific goals.
- Differences concerning management policy should be openly addressed in the working meetings.
- Revise and determine best possible criteria for park guards eligibility as to assure the long-term stability of competent and experienced individuals.
- Review agreement between DNP and GJI concerning specific roles for each.
- NGOs and GOs should identify alternative representatives and decision making situations for delegation of authority in the absence of key individuals.
- Strengthen relationships between GJI and PRONATURA and between GJI and TNC.
- Since a new Memorandum of Agreement has to be signed, it is recommended that all partners (GJI, DNP, PRONATURA, and TNC) sign it. The new MOA should reflect experiences and lessons learned from the first year. The strengthening of PRONATURA and DNP should be added to the MOA as part of the project objectives.

ORGANIZATIONS AND INDIVIDUALS INTERVIEWED

DNP - Direccion Nacional de Parques

Arq. Miguel Amaro, Director
Ing. Agron. Gabriel Valdez Depto. de Parques Nacionales
Agron. Jose Manuel Mateo, Depto. de Parques Nacionales
Eduardo Herasme, Guardaparque
Bienvenido Perez Turbi, Guardaparque
Maximo Perez, Guardaparque
Cesar Matos, Guardaparque
Victor Samboy, Guardaparque
Clemente Batista, Guardaparque
Jose Cuevas, Guardaparque
Rosario Perez, Guardaparque
Epifanio Pina, Guardaparque
Castor Ruperto, Guardaparque

DED - Servicio Aleman de Cooperacion Social-Tecnica

Dr. Hannelore Bendsen, DIRENA
Lic. Esther Clauss, Grupo Jaragua

DIRENA - Inventario y Evaluacion de Recursos Naturales/SEA

Ing. Agron. Jose Martinez Guridy
Ing. Agron. Luis Tolentino
Lic. Rafael Santiago

FEDOMASEC - Federacion Dominicana de Asociaciones Ecologicas

Dr. Domenica Abramo, ASOECI

FUNDACION SAN JOSE

Dr. Alfonso Ferreiras

GJI - Grupo Jaragua Inc.

Lic. Sixto J. Inchaustegui
Lic. Rosa Lamelas
Lic. Ivonne Arias
Lic. Cecilia Hernandez
Sr. Pericles Mercedes, Local Coordinator (Oviedo)
Sr. Marcelino Hernandez
Sra. Olga Vidal, secretary (Oviedo office)

IDEAL DOMINICANA, S.A.

Ing. Ramon Caceres, Presidente-Gerente General

LOME - Lome Agreement, European Economic Community

Lic. Joaquin Diaz

ONAPLAN - Oficina Nacional de Planificacion

Ing. Agron. Eleuterio Martinez, Depto. Medio Ambiente

PRONATURA - Fondo Integrado Pro-Naturaleza

Ing. Juan Mancebo

Lic. Milvio Coiscou

Ing. Orlando Amargos

Lic. Rosa Rita Alvarez, MUDE

PEACE CORPS

Todd Miller, PRONATURA/Grupo Jaragua

SOEBA - Sociedad Ecológica de Barahona

Lic. Virgilina de Dominici

Ing. Agron. Matos Feliz

SOEO - Sociedad Ecológica de Oviedo

TNC - The Nature Conservancy

Mr. Bradford C. Northrup, Vice President/Caribbean

Dr. Gina Green, Caribbean Protected Area Specialist

Ing. Agron. Domingo Marte, TNC Representative/Dominican Rep.

Dr. Gregory Miller, Regional Director/South America

Mr. Hugo Arnal, PIP Technical Advisor

Ms. Monica Ostria, Parks in Peril Program

Ms. Gioia Palmieri, Volunteer at Jaragua Nat. Park site

UNDP - United Nations Development Program

Ms. Elena Ferreti

USAID - United States Agency for International Development

Mr. Larry Laird, Environ. Officer, USAID/Santo Domingo

Dr. Gene C. Wilken, Regional Environ. Advisor/Caribbean

I. Introduction

Jaragua National Park is located in the southwestern end of the Dominican Republic. It includes a diversity of terrestrial, coastal and marine environments, and two continental islands, Beata and Alto Velo. The marine area extends out to sea more than 14 km beyond Beata island to a point approximately two km beyond Alto Velo island. The terrestrial area of the park is 46,900 hectares and the marine portion an additional 90,500 hectares. With 137,400 hectares, Jaragua is the largest protected area in the Dominican Republic and insular Caribbean. Although characterized by a dry forest and scrub land on reef limestone, the park contains 12 different types of plant communities, including semi-deciduous elfin, mangroves, and savanna forests. A significant proportion of the native fauna of Hispaniola, including the most relevant endemic are found in the park. The main threats to the park are poaching, limestone open mining, livestock grazing, and exploitation of the forests for charcoal and construction materials. A management plan for Jaragua National Park was completed in 1985. The Dirección Nacional de Parques (DNP) in the Dominican Republic is the government authority responsible for the management of protected areas. A private sector non-profit organization, Grupo Jaragua, Inc. (GJI), based in Santo Domingo and Oviedo, is working together with DNP in the protection and management of Jaragua. GJI and DNP signed a five year agreement stating their mutual objectives and goals. In addition, both organizations have signed a MOA covering the responsibilities and activities associated with the USAID-TNC Parks in Peril Project. To implement this GJI and DNP project, TNC has also signed MOA with DNP and PRONATURA, a non-government organization (NGO) formed by a consortium of Dominican conservation organizations, that will provide assistance in financial management and administration of project funds.

II. Technical Evaluation

The primary purpose of The Nature Conservancy's PIP Program is the conservation of biological diversity. The following goals were listed as primary technical objectives of the 1991-1993 work plan of the USAID/TNC Jaragua National Park PIP site approved on July 5, 1991:

Land protection and biodiversity management

- Survey and post boundary
- Control feral dogs and cats
- Increase park guard staff and equipment

Public relations, education and extension

- Hire community outreach officer (extensionist)
- Develop community support programs

Applied research and monitoring

- Complete set of baseline data for monitoring project success and provide critical trend data

In addition, the following threats or impacts and their corrective actions were identified in the conservation action plan:

Threat	Mitigating Action
Charcoal	Promote use of solar stoves and fuelwood lots
Cattle farming	Intervention of Government agencies
Land tenure	Marking and posting park boundaries
Fisheries	Marking of marine park boundaries
Wildlife exploitat. sea turtles/eggs land crabs	Intervention of Government agencies: Ministry of Agriculture and Dominican Navy
Mining	Intervention/overseeing by local communities
Insecticide/Pestic. Agricult. product.	Water analysis/Coordination with Gov. agency Marking park boundaries, meetings w/ farmers and coordination with Ministry of Agriculture
Coconut plantations	Elimination
Hunting	Strengthening park protection program. Coordination w/ DNP, Ministry of Agriculture, and the Dominican Army
Destruction of archaeological sites	Protection
Hurricanes	Hurricane construction methods

A. Achievements

As of August 1992, the first year of life of the project, most of the goals set up in the work plan have been achieved.

Land Protection and Biodiversity Management.

Survey and post boundary: TNC-USAID funded the survey and demarcation of park boundaries. This demarcation represents a significant accomplishment in the Dominican Republic considering that this is the only physical boundary marked of a protected area in the Dominican National Park system. A 1:50,000 map showing the newly marked boundaries of Parque Nacional Jaragua (excluding marine portion and offshore islands) is enclosed. During the process of demarcation of the park boundaries, conflicts were minor with livestock and crop farmers, but the D.R. army supported the crew during their work in the IDEAL mining area. As a result of this incident, IDEAL suspended the transportation being given to the park guards in service at the Bahia de Las Aguilas post. During our visit to the park, DNP was making arrangements to replace several posts damaged by locals.

Construction: A total of three park guard stations are now in place; Fondo Paradí, Bahía de las Aguilas and Trudillé posts, built with TNC-USAID funds, as well as financial support from WWF, and El Cajuil (office/headquarter in Oviedo Viejo). A design of DNP was used to build the facilities. A dock on the northeastern shore of the Oviedo Lagoon has also been completed.

Equipment: Transportation and logistics for the project has been greatly enhanced with the purchase of a 4W drive pick up truck to be based in Oviedo for exclusive use of the park. Purchase of the vehicle was made abroad in May 1992, and was taken out of customs June 17, 1992, because of the red tape involved. With this acquisition Jaragua has become the first National Park of the country with full-time access to a service vehicle. A motorcycle, also contribution from

TNC-USAID, was acquired for the work of the local coordinator (GJI). In addition, equipment for the park stations (beds, table, chairs, first aid kit, cookware), park guards (uniforms, boots), and GJI office in Oviedo (typewriter, cabinet, table, and chairs) were in place at the time of the visit. Audiovisual equipment (color TV, video, and projector) have also been acquired with TNC-USAID funds to assist GJI in monitoring and extension activities. Two outboard motors, to transport park guards, staff and researchers in and across the Oviedo Lagoon, and a motorcycle, to facilitate the mobility of DNP park administrator were contributed by World Wildlife Fund. Provisions have been taken for the adequate maintenance of the existing equipment. A complete list of equipment purchased with PIP funds up to June 15, 1992, is enclosed.

Park guard staff increase: An additional 8 park guards have been hired by DNP with TNC-USAID funding, increasing the number of guardaparques in service since October of 1991.

Training: One training course for park guards was conducted during the first year of the project. The course was designed by GJI with the coordination of PRONATURA and TNC. The course was given two months after the approval of the work plan (September 1991) with the participation of the 6 guards already in service plus 17 park guards candidates. The fact that local community groups were involved in the search for candidates to attend this course is refreshing and positive innovation for the DR. DNP training activities in Jaragua and other parks have been in part supported by WWF.

For the training of the local managing staff, arrangements were made for the DNP park administrator and the GJI local coordinator to attend the Protected Area Management Program, a one-month course in Colorado. DNP park administrator has had two years of previous experience as administrator of the Bahoruco National Park, an area without a management plan and with very few park guards. The Park administrator was not available for assessment of the course as a learning experience since he was absent in Colorado due to the coincidence of dates with the evaluation visit. The local GJI coordinator was however accessible for a meeting before our departure from Santo Domingo. Although he does not seem aware of the basic principles of protected areas management, the local coordinator appears to be quite capable for the job expected from him; promoting and enhancing linkages between the park and the local communities. Our perception from this meeting is that for both staff, the course has had a timely impact on their knowledge, motivations, and creativity, and should result in the improvement of their supervisory capacities and overall interest; building in addition their confidence and reinforcing perhaps even an incipient conservation ethic. Not to be overlooked, encouragement and recognition are also favorable side effects received from the incentive of the trip itself that could facilitate positive changes in attitude.

Also with support from TNC-USAID, the PIP general coordinator for GJI attended two training meetings abroad, in 1991 and 1992, designed to build leadership among neotropical conservationists. Representatives of DNP, GJI, and PRONATURA also participated in the IV World Park Congress in Caracas early this year. As expressed before, exposure to international activities and programs contribute the greatest incentive value and training potential independent of staff hierarchy.

One of the most significant achievements of the project is the on-the job training and experience given to all individuals involved in Jaragua, particularly for those without previous exposure, on how to develop a park from the beginning stages.

Protection: In addition to the marked boundaries, the development of the existing park infrastructure in the first year of the project represents an outstanding achievement. Effective

protection, however, has been only partially accomplished during this period. While park guards and infrastructure were concentrated, as expected, in the northern boundaries; where the larger communities and sources of pressure are found, the rest of the park is unprotected.

Based on previous field experience with the park and nearby populations, it is evident that protection in JNP has improved. No significant changes in vegetation cover were noticed in the park areas inspected during our visit. Examination of the mangrove to the northeast and the forests to the southwest of Laguna de Oviedo on November 1991, indicate that in fact, previously disturbed areas are ongoing regeneration and old trails utilized by people are closed. Cattle paths remain however quite active. During an aerial survey conducted in July 1992 over the entire park, GJI personnel also concluded that the forest was well preserved.

It is also true that the forests of the park have persisted with little disturbance in the past due to limiting factors making the land unsuitable for agriculture (e.g., lithic/shallow soils, poor water availability, erratic rainfall regimes). Instead, traditional exploitation trends in the region have consisted in vegetation grazing by free-ranging livestock and extraction of forest products, primarily for charcoal production and construction materials. Therefore, the forests of the park have never been considered particularly threatened, and a sudden heavy pressure upon the vegetation is not to be expected.

We were unable to obtain current rough estimates of charcoal production in the region of influence of the park, but our guess is that charcoal exploitation inside park boundaries have probably declined since the present PIP infrastructure was established. Data is also lacking on existent livestock (numbers, habitat use, and spatial distribution). The human population around the park is still relatively small, and their impact upon the park forests could be predicted and controlled. Guard posts on/or near access roads (Tres Charcos, main road) are an important deterrent to massive extraction of charcoal, fuelwood, or logs by trucks or other vehicles.

As a result of habitat protection and stability, wildlife species of the forest interior (with some exceptions) could be considered well protected from human strain for the time being, and until formal biological inventories are conducted to establish composition, structure, status and densities of plant and animal communities.

The mining conflict with Ideal Dominicana, concession approved in 1985 by the Dominican Government for limestone exploitation inside Jaragua is still unsolved. The heart of the current operation (referred as "Mina Nueva" or new mine), is located at about 4 km from the mine headquarters at Cabo Rojo. Exploitation activities are concentrated in an area comprising approximately 9 km², where the landscape and natural habitat have been heavily impacted both by extractive action and by a network of roads lay out in grid-like fashion. The old limestone mine, located at the Cabo Rojo-Pedernales crossroad, was abandoned to reduce production costs in the transportation of the material. According to Ideal senior managing staff, it would take ≥ 100 years to exhaust the limestone accessible in the plots under exploitation at the Mina Nueva. Formal negotiations to look for solutions to the conflict were initiated with a meeting held in May 1992 between IDEAL and DNP with endorsement from the Government. The next step, as concluded from these talks, was a meeting of the Director of National Parks with President Balaguer, since the settlement of the conflict would require the decision of the Executive. As of August 20, this meeting had not yet taken place. If the Dominican Government rules in favor of Jaragua National Park and, therefore, the cessation of mining inside the park, IDEAL would expect and seek financial

compensation from the Government. Based on the contract between IDEAL and the Dominican Government for the concession it could be a long process.

Public Relations, Education and Extension

Develop community support programs and hire community outreach officer (extensionist): An excellent job has been done with the agenda of community support programs. The foundation work developed by FEDOMASEC and SOEBA in the region is to be commendable. This project started about two years ago with the financial support of WWF and concluded in August 1992, with one of the activities held during our visit in Oviedo. With the initiation of the PIP Program, Grupo Jaragua became active in extension with local community groups. These include farmers, teachers, students, housewives, church, political, and military sectors. A local coordinator, which is also the director of the local school, and a secretary have been hired by GJI for the program with TNC-USAID funds. Since then, two workshops on development alternatives, one in June and another one at the time of the evaluation visit in Oviedo, have been organized by GJI with the assistance of SOEBA, FEDOMASEC, DNP, TNC, and PRONATURA. As a result of the workshops, a series of development projects were identified to be of interest to more than 20 regional NGO and GO's. These included both production focused (bees, rabbits, hydroponic cultures, stoves, livestock improvement program, school programs for chicken/pig breeding, local crafts, industrialization of economically important plants, and maintenance of adjacent secondary roads), and projects of particular concern to park management programs (inventory of farmers living inside park boundaries, land crab culture, fuelwood plots, socioeconomic diagnosis of region, tourism, and nursery of native/endemic plant species). Suggestions to incorporate environmental education and teaching unit into the local school curriculum at Jaragua National Park were also discussed. It is expected that the pressures of the surrounding communities on the park resources would be mitigated with the implementation of these and other projects.

Community support programs have also benefitted from the assistance of two volunteers. The first to arrive, an ex-TNC staff, came to work on the PIP on her own resources to gain on-the-job experience for about a year, which concluded August 1992. At the request of PRONATURA, a Peace Corps volunteer is presently working with schools and community groups in environmental education and have plans to introduce a stove program.

Applied Research and Monitoring

Complete set of baseline data for monitoring project success and provide critical trend data: GJI is responsible for the monitoring component of PIP. The original work plan outlined aerial and ground surveys to inventory flamingos, iguanas, terns, and marine turtles, and surveys to assess land use patterns on the northern boundaries of the park. GJI was also seeking additional funding for a socioeconomic assessment of the park. So far, one aerial survey and the vegetation cover assessment are funded with PIP funds.

Three aerial surveys were planned for every year. An aerial survey was conducted by GJI during the first year, on June 11, 1992. The following observations were recorded: forest in good condition; 300 flamingos estimated at Bucán de Base were considered low numbers and interpreted as a declining trend (but number is about right and expected for this time of the year, when breeding colonies are concentrated in Inagua and Cuba); large numbers of unidentified terns were found near Alto Velo. The survey was recorded on video for further interpretation. PIP funding is available for

two additional flights. GJI also made a trip to Beata, with the assistance of the Propescar Sur Project, recording damages to the vegetation by fishermen.

For the establishment of a baseline on vegetation cover, the interpretation of several sets of data is currently under contract with DIRENA. These sources include cover data from 1966 (OAS), 1984 (MARENA), 1989 (GTZ), and the 1990 spot image contributed by PIP. To avoid unwanted bias, the interpretation will be processed using the same methodology, unifying scale, and taking seasonal periods into account.

A survey of land use trends on the northern park boundaries (buffer zone only; park areas were not included) conducted on November 1991 by DIRENA with GJI's assistance indicated an expansion of lands devoted to crops in the Ultima Razón-Los Cacos y Bucán Ble-Limonal (areas under cultivation since 1966), without significant penetration beyond park boundaries (not yet marked). Vegetated fragments, secondary growth and "conucos" on rotation were cleared to allow for the increase in crop area. Practice of subsistence agriculture in this zone is possible by the existence of pockets of deeper, alluvial soils. Agricultural expansion into the park is prevented by the rocky surface of Jaragua. Nevertheless, the northern boundary is densely populated (≥ 200 people in Los Cacos alone), and their activities should be supervised. Fencing and number of cattle heads are on the rise. Honey production is also an important activity in the area. Water wells have been perforated to mitigate limitations for traditional agriculture, and roads have been opened or improved for vehicular access to allow for the extraction of crops to markets. The results of the survey are summarized and illustrated in an enclosed map. Aerial photos (1:40,000) from 1984 were used for interpretation. Survey was done in cooperation with DIRENA, and field expenses (3 technicians/3 work days) were covered by PIP Project (José Martínez G., pers. comm.). A survey of the people living inside the park and their occupation has been assigned to the Park Manager and GJI's local coordinator.

Wading birds are being monitored since 9 months for three days every 15 days at specific sites at Oviedo Lagoon (Cayos de la laguna, Los Chupaderos de La Rabiza, y Caño Escobín). Number of birds, climatic conditions, activity, and time of day, among other data, are recorded. Nests and eggs are not being counted. Research, vehicle, and financial support are being provided by the DED (German Service for Technical-Social Cooperation).

In an internal workshop held on July 11, 1992, to plan monitoring activities, but methodology and funding was yet to be established (enclosed). A follow up meeting would be held on 29 August GJI identified major objectives below:

- Relocation of families/individuals living inside park boundaries
- Control of feral dogs and cats inside the park
- Incorporate park guards and community to monitoring activities
- Protection and conservation of natural resources (species/vegetation)

B. Limitations

Land Protection and Biodiversity Management

Boundary: At the time of the evaluation team visit to Jaragua, several boundary posts have been vandalized suggesting the persistence of land tenure conflicts within the park, particularly in the

buffer zone. It is not impossible that some of the posts might have been destroyed by opportunistic locals seeking some sort of compensation.

Control feral dogs and cats: A program to control introduced species within JNP, one of the goals of the work plan, has not been implemented yet. Some of the most endangered wildlife of the park (and of the whole West Indies), keystone species such as Solenodon, Plagiodontia, and Cyclura are highly threatened by exotics in the interior forest and in some coastal areas.

Park guards and equipment: A number of problems have plagued the effectiveness of guards in the protection of Jaragua. Almost since the beginning of the project, there has been high desertion rate of park guards to the extreme that all 17 training course participants have been employed at one time or another and at least one hired twice. At the time of the evaluation visit, two of the original participants of the course were fired and replaced by untrained men.

Park guard predicaments escalated with the hiring of candidates (in October) before the park infrastructure was in place to support basic needs (posts, transportation, food, water, equipment). Most frequent complaints are about low salaries, insufficient food stipend, deficiency of transportation to and from job sites, and lack of training courses. Morale is low. Most guards rank about the minimum salary for government employees. There are not enough firearms, and some of the existing ones are old and unsafe. Several guns assigned by DNP for JNP were confiscated about 10 months ago by Dominican Army soldiers and have not yet been returned.

On the other hand, some of the internal difficulties affecting the unity and optimal performance for team work among park guards derive from common personality problems and silly disputes (old vs. new guards, old vs. young, some reluctant to do better because others don't work hard enough, etc.) reflecting poor local leadership, discipline, and supervision. Most guards interviewed lack a clear discernment of their duties and responsibilities. For instance, beach patrols at Bahia de las Aguilas are not made daily, but every other day. The nearby beach between Las Cuevas and Cabo Rojo, a confirmed sea turtle nesting site, is not being patrolled, but only Bahia de las Aguilas. Furthermore, one of the guards at the same post does not work on Sundays claiming religious principles. Enforcement has been made by the guards at Bahia de las Aguilas since the post opened 9 months ago. In two of the three stations inspected, garbage was dumped around indiscriminately, and no one had a garbage basket. Most guards had poor knowledge of the species they are supposed to protect or why, or where or at what time they should go to find them (and therefore to find poachers too). Few even remember which legislation they are enforcing, and most do not appear fully aware and confident of the authority they are invested with.

DNP has had bad experiences in the past with vandalized posts left alone by park guards. As a result, it is DNP standard policy that park stations must have guards in service at all times. Two of the four JNP park posts have only two guards on duty. Since one must stay in the station, the other goes on patrol alone, on foot and perhaps without a firearm. Some parks guards admitted turning around if alone when local hunters or poachers involved in illegal activities are in groups. They also admitted not reporting all illegal activities or notorious people (sometimes acquaintances) they detect.

The radio equipment, which might help solve some of the problems and enhance effectiveness of protection programs, have not been acquired yet. The actual cost of the equipment requested is twice the amount of what was originally budgeted.

Training: The only training course of the project was given almost a year ago. Plans to carry out other training courses as scheduled were suspended after a proposal from GJI, until the factors affecting the stability of the park guards could be mitigated. Also holding training is the production of a manual by GJI and DNP.

Protection: Only a portion of the park is currently under management and effective protection has been partially accomplished. Excluding guard posts at Trudille and Bahia de las Aguilas, the actual managed area is practically restricted to the northern buffer zone, where park guards and existing park infrastructure are concentrated. Physically, Park presence is conspicuously missing from the whole northwestern and southern regions of the mainland and from the offshore islands, Beata and Alto Velo. At present there are only five (5) park signs in JNP.

The coastal vegetation between Cabo Beata and Trudille is being impacted by a rough estimated population of ≤ 500 people dispersed in fishing villages on beaches along the coast, particularly at Piticabo. There is no control of their fisheries, nor of the sea turtle nesting beaches in that area. A similar population of fishermen was claimed to be settled on beaches of western shore of Beata, occupying Cyclura iguana and sea turtle nesting habitat. In this island, Rhinoceros iguanas are predated by fishermen and dogs, and captured to sell in Haiti where the animals are highly appreciated for food. The significant sea bird nesting colonies of Alto Velo remain as vulnerable as before.

Coastal (e.g., mangrove, Guanal forest, beaches, brackish lagoons, dunes) and marine habitats are poorly or not protected at all. Protection is insufficient along the coast, where most of the economically important and traditionally exploited species of the park are found (e.g., sea turtles, sea birds, wading birds, land crabs, white-crowned pigeon). Colonial breeders or species that concentrate seasonally in discrete areas for reproduction, are specially attractive to hunters and food collectors. Because of their biology, these species are particularly prone to local extirpation and eventually extinction. Sea turtles continue to be exploited at Bahia de las Aguilas, San Luis, Mosquea and Inglesa beaches. Inspection of Bahia de las Aguilas nesting area during the evaluation visit indicated that $\geq 85\%$ of the 48 nests recorded so far this year (up to August 5, 1992) were poached. Sea turtle egg shells from poached nests were easily found at several sites randomly selected and at a fishermen shack strategically erected halfway along the beach. It is possible that at least part of the eggs and turtles taken are removed from the beach by boat. Turtle decoys ("folas") to catch mating males are still in use offshore San Luis, Mosquea and Inglesa. Collection of sea birds eggs at Alto Velo island and of wading birds at Laguna de Oviedo and Bucan de Base lagoons are still common practice among fishermen. Collection of land crabs by locals have declined, but outside collectors are known to come in buses by night in groups of up to 30 individuals. Some collectors carry permits issued by The Department of Fisheries Resources of the Ministry of Agriculture. The nesting colony of white-crowned pigeon (Columba leucocephala) recorded in the park this year suggest this vulnerable species might be making a comeback in the area, but shooting of "coronita" pigeons has been one of the challenges testing the constant protection efforts in the park. There is more control of visiting hunters, but enforcement of park regulations could be further improved.

Public Relations, Education and Extension

In addition to park guards, lack of clear definition of the roles of volunteers and local personnel has limited their potential contribution to the project.

An extensionist was not hired for the project, as requested in the work plan. The coordination of an extensionist from the Ministry of Agriculture was an option proposed and agreed at working meetings, so that the salary budgeted for that position could be used as complementary stipend of local project staff. Reportedly, efforts to locate a suitable candidate were unsuccessful.

Applied Research and Monitoring

Monitoring: On October 1991, GJI drafted a monitoring scheme requesting US\$9,616 in addition to the US\$11,000 already budgeted for monitoring. TNC restricted the use of the budget to aerial surveys and Landsat image for vegetation analyses, and requested detailed proposals for sea turtles, iguanas, and other species. GJI has not yet submitted these proposals to TNC. As of August 1992, US\$1,370 from PIP have been expended locally for monitoring (not including the Landsat image recently purchased by TNC). So far, only aerial surveys and assessment of vegetation cover (Lansat) have approved PIP funds.

C. Recommendations

Land Protection and Biodiversity Management

Construction:

- Construction of at least four additional guard posts. Completion of the unfinished facility started with support from the Center for Marine Conservation at Playa San Luis will provide the needed infrastructure for the continued presence of park guards and the protection of the sea turtles nesting on the beaches of San Luis, Mosquea, and Inglesa.
- Increase number of park signs. Place signs along road to Cabo Rojo, in coastal areas of the Barahona Peninsula, and in Beata and Alto Velo islands.

Protection:

- Develop a protection program for exploited wildlife species, indicating their critical areas in the park, vulnerable (breeding) seasons, hunting/harvest techniques used by poachers, basic natural history data, and protective legislation.
- Address and emphasize protection program in training courses for park guards.
- Protection of coastal and marine habitats require immediate and detailed attention. The development of a coastal management plan for the JNP is urgently needed if these habitats and their wildlife are to be preserved. After the legislation of a Government decree including Bahia de las Aguilas among the most potential areas for tourist development in the Barahona and Pedernales provinces, proposals for development projects from the private sector are expected in the near future.
- Request logistic support from the Dominican Navy to allow for room and board for the park guards at the Navy station in Beata, as well as transportation to and from the island together with sailors.
- Consider possibilities to put park guards on Alto Velo during the sea birds nesting season. There is a lighthouse formerly used by Navy men. Offer bonus salary for the assignment.

Park guards and equipment:

- Resume training courses for park guards.
- Written description of duties should be developed for each guard post, detailing specific jobs and work schedule for each park guard according to potential threats to resources of the area.
- Increase supervision of park guards and posts. Unexpected and frequent visits by the park administrator (and DNP senior staff from central office) are highly desirable.
- Acquire radio equipment/firearms for park stations/guards and provide binoculars for guards working on beaches.
- Consider salary increases (trust fund) and incentives (food co-op, clothing donations, government housing, health care, awards) for park guards. Categories based on experience, years of service, and individual skills would help stratify salaries.
- Review current rotation system of parks guards so that three guards instead of two are in service and at least two guards go on patrols. With one-man patrols, it is also difficult to establish if a man is carrying on his duties as expected. This was discussed with a DNP senior staff (J. Mateo) who offered to look at the possibilities of establishing a new shift system to solve the problem.
- Increase number of park guards along with the construction of new posts and training courses.
- Hiring of family-related park guards should be avoided as much as possible.

Training:

- In training courses for park guards, address and emphasize protection of heavily exploited and threatened species, poacher's techniques and strategies, areas of illegal activities and protective legislation.
- Promote encouragement, team work, leadership, discipline, and self-esteem.

Applied research and monitoring.

Monitoring:

- Preparation of monitoring proposals (requested to GJI by TNC) need to be completed prior to allocation of funds for monitoring and biological inventories. TNC should provide further technical assistance to GJI in the development of the monitoring program.
- In choosing indicator species for monitoring programs, select resident species (preferably breeding in the park). Fluctuations in populations trends of migratory species might not be necessarily related to local conditions (suitability of park habitats or protective status of species in park during winter residence). Not taking into account external factors (on breeding grounds, post-breeding dispersal range, or migration routes) might be responsible, is to overlook very important assumptions.
- For short-term input, monitoring program should emphasize threatened and economically important species being exploited to directly measure effectiveness of PIP protection program, but formal biological inventories of the park vertebrate fauna, needed for establishment of a sound ecological baseline, should be outlined in the near future. Data yield from monitoring studies should be readily incorporated into management to correct deficiencies.
- Monitoring techniques should be practical enough to be conducted by non-technical GO and NGO personnel. In addition to GJI, DNP (park guards), and local community, participation of other partners in the monitoring program is encouraged.

- Develop methods to assess effects of human disturbance or exploitation of target species and/or its habitat, e.g.:
 - Sea turtles - percent of nests poached (of known total)
 - Wading birds - number of breeding pairs; % nests poached
 - Sea birds - nests density/area
 - WC pigeon - number of breeding pairs in "banco"
 - Iguanas - population densities using marking-recapture
 - Land crabs - densities of harvested size classes
- Establish number of fishermen along southern coasts of the park (Piticabo, Manuel Matos, Bucan Tui, Trudille, Ticaletón, Lanza Brigó) and in Beata (presumably expelled from the island by the Navy during the first half of August 1992).
- Document socioeconomic trends and use of park resources by communities.

Public Relations, Education and Extension:

- Extend environmental education and extension programs to fishing villages and develop educational campaign with posters.
- Vandalized boundary posts should be replaced immediately to indicate park is there to stay. Status of land tenure conflicts should be reviewed and previous survey data updated. The involvement of the local community groups in this issue is a most desirable input in the search for a long-term solution to the problem.
- Construction of an additional dock on the southwestern shore of Oviedo Lagoon, at Oviedo Viejo (requested by local community groups).
- Describe roles of local personnel at project site.

Exotics:

Informal conversations with Research and Planning staff of Dirección General de Ganadería, Ministry of Agriculture, revealed they would be receptive to offer technical support for the development of an improvement breeding project using the goats of Beata in the park. This could be a Government program in support of the local community groups development projects. It should not be difficult to find local volunteers to catch the animals. A similar program could be developed with wild pigs considering the advantage of resistance developed by the feral breeds. There is a resource so far unexploited that could be used to the benefit of many. It would make a lot of sense to develop a project along this line. Financial support could be obtained from cooperation agencies and private foundations. The market feasibility of this endeavor is probably very high. These exotics might represent a source of income for the park. Among other alternatives are the implementation of an annual cropping quota to control population, and to allow supervised hunting for a high price per head.

III. Financial Evaluation

On behalf of the evaluation, a report on the financial management of the project was requested by the team leader, Domingo Marte, in his capacity as member of the evaluation team and his involvement in the project as local TNC representative. Financial and administrative aspects of the project were discussed in detail on several occasions. This report is included following the comments below.

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A. Achievements

During July 1991 and June 1992 PRONATURA has received from TNC-USAID US\$92,000 and has disbursed \$89,891.66. Implementing agencies have spent \$77,371.58 (see enclosed table). Contributions from all other sources during the first year were \$29,700 (it does not include DED assistance; see enclosed tables). A report detailing the regular contribution of GJI to the PIP project (work time, office equipment, and vehicle) is also enclosed.

The direct achievements of PIP financial contribution have been described in the technical (work plan, personnel, institutions, physical infrastructure, equipment, technical assistance, community development) and administrative (work systems, managing procedures, training, equipment, etc.) sections of this evaluation, and would not be duplicated here. A list of equipment received from PIP is enclosed (these should be codified for further inventory).

1. Financial Analysis

a. Human and financial resources to attain conservation objectives¹

After one year of operation it is evident that AID-TNC financial contribution to the project has helped to achieve certain components of success for conservation stages. However, it was known since the beginning that contributions included in the work plan was not enough to develop and manage a park of the size of Jaragua National Park and that other funding mechanisms will be developed in the process.

For a better management and conservation of coastal and marine areas of the park, additional physical infrastructure, personnel, equipment and others will be needed.

¹ SOURCE: Financial information gathered and analyzed by Domingo Marte, TNC Representative for the Dominican Republic. See memo - appendix.

Estimate of needed capital for previous year to the project and next 10 years is as follows:

	YEARS					Total
	0	1	2	3	4-10	
	US (\$000)					
1. Personnel	\$6.6	29.8	36	40	300	412.4
2. Logistic	0.2	4	10	11	70	91.2
3. Training	2.5	8	12	15	119	152.5
4. Infrast. & equipment	0.4	56	62	10	80	208.4
5. Monitoring and T.A.	5.5	5	14	15	115	154.5
6. Adm. cost & Inst. Strength	2	12	15	15	110	154
Total required	17.2	114.8	149	106	790	1173
PIP contribution/AID	0	65.1	37.7	31.4		
PIP cont. (TNC-others)	0	12.2	34.6	14.8		
Other cont. and commit.	17.2	29.7	34	35	140	
Deficit to be raised	0	7.8	42.7	24.8	650	

NOTES:

Year 0 is the previous year before the project

Additional Park (12), guard stations (4) and equipments are included on year 2 of the project.

b. Current total financial input from TNC and other sources in the PIP site.

As could be seen from the chart above on the first year of operation of the PIP/Jaragua National Park, the total financial input was \$107,000, contributed by AID (61%), TNC (11%) and other sources (28%). This represents an increase of \$90,000 over the previous year of the project.

Current main contributors for the first year, other than TNC-AID are: NDP(\$13,000), WWF(\$8,600), Grupo Jaragua(\$6,500) and DED(\$1,600).

c. Is there a long-term financial plan available or in preparation

Preliminary attempt to develop a long-term financial plan has been completed (see chart above). A more detailed plan will be done this year.

Although a uniform capital flow from TNC-AID will be required to make visible and funds attracting success on the site, this will not create a long-term dependence from PIP. Caution should be exercised, in not increasing the fix cost items unless the Total capital needs from the fourth to the tenth year of the project is estimated as \$790,000.

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d. Long term financial commitment

At this time, there is not a long-term and sizeable financial commitment for Jaragua after the third year of the project other than projected contribution of NDP and G.J., and other local NGOs.

If current commitments hold, an additional \$43,000 and \$25,000 will have to be raised for the second and third year of the project to keep and expand conservation activities. An average of \$93,000 per year will have to be raised during the fourth and tenth year of the project.

The presence of PRONATURA as one of the partners and its achievements on debt-for-nature swaps and others fund raising mechanism on other projects increase the possibility of establishing a long-term financial commitment for the park.

Establishment of a National Trust Fund, specializing one Administrative committee or account for Parks and Protected Areas, and specialized Trust Funds for Jaragua National Park are under consideration. Contributions could come from a GEF Project which will start working in the Samana Coastal areas and extended later to other coast; bilateral debt (German, Canadian and US debt mainly) and others.

B. Limitations

With the current projected financing the park would suffer serious shortcomings considering present needs and expected growth.

Support from WWF to DNP for guard training and reinforcement will conclude at the end of the year (current extension to November is due to delays in disbursements); renovation is uncertain. WWF support to FEDOMASEC/SOEBEA for environmental education and community support programs ended early August; extension is unlikely.

Present perspectives for long term financing for Jaragua is still unclear. Contributions from the EAI, debt-for-nature swaps, AID Co-financing project, and Canadian bilateral debt, among others, are being considered as potential seeds for the establishment of a protected area Trust Fund. No concrete source of funding have yet been committed.

The impression left from meetings with USAID's local mission is that extension of projects on natural resources is not likely until the Trade & Investment issues could be solved with the Dominican Government. In the best case, environmental programs have a 50/50 chance assuming that trade and investment successfully unravel, but the scenario might not be clear until 1993. AID has available some \$20 million for natural resources that are not being expended fast enough.

Three Caribbean countries, including the Dominican Republic, have received initial approval of support from UNDP's Global Environmental Facility (GEF) Program for protection of biodiversity. So far, a protected area project for Samana Bay-Los Haitises was already selected for implementation among the proposals submitted locally (starting date unknown yet), but representatives expressed GEF would still be receptive to other proposals in support of national parks.

On the other hand, no local NGO has yet been clearly selected for potential administration of the eventual Trust Fund.

C. Recommendations

GJI, PRONATURA, and DNP should become more active in the preparation of sound proposal and securing seed money. PRONATURA could certainly contribute in this direction having in its record successful debt-for-nature negotiations and grant pledges. GJI has recently submitted two proposals (one to WWF-Europe-LOME for community projects, and another to a Swiss cooperation agency for a marine park component), and is currently working on a proposal for USAID. GJI has also finished a biodiversity implementation project for Dominican Republic with the support of WWF, in which a large biosphere reserve comparison Lago Enriquillo (and Cabritos NP), Jaragua NP, and Bahoruco NP. The Dominican Republic MAB committee has been also formed (for second time), and eventual support from MAB could be a possibility. The LOME Agreement, which is seeking proposals for integrated development projects with strong socioeconomic impact, is developing very slowly. Reportedly no funds will be available for any of the projects already identified for LOME until the end of 1993, that is, with luck. Other funds from the agreement that might be available for natural resources have not been well defined yet.

In maximizing chances to obtain significant funding, it is important that GJI, DNP, and PRONATURA to strengthen their technical and administrative skills further, add depth to their professional staff, and work on the promotion of a stronger, more reliable image to build the necessary clout (the institutional re-organization, expansion, and opening observed in the DNP are signals of the agency's interest to increase its credibility). Furthermore, if all project partners have the ability and mechanisms to settle differences and unify their organizations, efforts, and resources in a joint proposal, chances would increase considerably.

IV. Program Administration

The following goals were identified as major administrative objectives in the PIP work plan for Jaragua National Park:

Organization and administration:

- Strengthen the administrative capacity of Grupo Jaragua
- Promote a strong cooperative relationship between DNP and GJI in the implementation of the project

A report prepared by GJI describing their experiences and reviewing the role of the group in the implementation of the work plan during the first year of PIP is enclosed.

A. Achievements:

Strengthen Administrative Capacity of Grupo Jaragua and DNP.

PIP project partners, with the assistance of TNC, formulated an operational plan which has facilitated project administration. Cooperation and coordinated decision making were promoted at

monthly and quarterly planing/coordinating meetings with DNP, GJI, PRONATURA, and TNC representatives. The quarterly meetings are being held in Oviedo to assess progress of work plan objectives. Monthly meetings are held in Santo Domingo. There is agreement concerning the contribution of the meetings as to facilitate continuous programming and execution of activities, as well as maintaining representatives and organizations in contact. A new operational plan for October 1992 - September - 1993 is scheduled to be formulated.

The accounting system in use for the financial management of PIP is practical. Mechanisms for purchases and requisitions were considered satisfactory by both DNP and GJI.

GJI has had some difficulties with their accounting, but their records are now updated and computerized after contracting a private firm. DNP has done a good job with their bookkeeping both with PIP and WWF funds.

DNP and GJI received administrative/accounting training from PRONATURA. GJI has now a bank account and check books in the group's name. A suitable file system has been organized in their office in Santo Domingo, and office equipment and furniture were purchased for the recently opened branch in Oviedo. In July 1992, GJI rented another office space in the same building for expansion in Santo Domingo. A part-time clerk was hired for administrative duties under the institutional support component of the project.

PRONATURA has had an important role in the implementation of the administrative procedures of the project (e.g., reimbursements, financial reports, budget management, commodities acquisition). After successful lobbying PRONATURA has been granted space at the new ONAPLAN offices.

Promote Strong Cooperative Relationship Between DNP and GJI.

An agreement overseeing the use and maintenance of the vehicle purchased with PIP funds has been signed by representatives of DNP, GJI, and PRONATURA. GJI and DNP will share the use of the truck for park work (patrols, transportation of park personnel, equipment, and supplies). GJI will be responsible for its driver and maintenance with PIP funds.

Much has been accomplished towards cooperation between DNP and GJI. Despite apparent difficulties there is a close working relationship that will seemingly improve with time. Both DNP and GJI recognized the achievements and problems of the project and expressed interest to continue supporting cooperation for the work on Jaragua.

B. Limitations:

It is not very clear for GJI what they can or can not do under institutional support. They are requesting from TNC an increment in the amount being received for institutional support to pay the rent increase due to their additional office space, but are uncertain whether this could be done. Although GJI has shown improvement in their bookkeeping, they might not be ready for an AID comptroller yet.

In paper, decision making and responsibilities of NGO and GO have been clearly defined; in practice, this is not always the case. For instance, there is disagreement concerning the criteria for selection of the guards, though participation in training courses was proposed as a prerequisite. For

DNP, their election and termination is prerogative of the government park authority; for the GJI, their election should be a joint responsibility of all organizations involved, including the local communities.

Different and/or opposed interpretations of established roles and agreements have been perceived as failure to honor accorded terms leading to occasional distrust. Definition of some project goals have also been affected by dissenting opinions and approaches in management policy (e.g., protection vs. elimination of goats and pigs in the park).

NGOs and GOs blame each other for centralization of authority within their organizations. Both GJI and DNP have both limited technical staff available for decision making. All protected areas of the Dominican park system under DNP administration are practically managed from Santo Domingo. Since most areas lack management plans and adequately trained staff, the role of local administrators is chiefly bureaucratic. Administrative and/or technical matters out of the ordinary, often require consultation and authorization from the two senior staff running the Departamento de Parques Nacionales at the central DNP headquarters in Santo Domingo. Their responsibilities demand frequent and sudden trips to other protected areas. Although with a large membership, GJI consist of a core of only 5-6 active members with technical knowledge. Because of jobs and family burdens, most of them are only involved with the project on a part time basis (time contributions in enclosed report). Of the professional staff, only the group leader, has a salary from the project and devotes considerable more time than the others. The remaining GJI personnel on PIP funds lack knowledge on natural resources (local coordinator, secretary, field and administrative assistants). Occasionally, failure to locate key individuals that have caused postponements of agreements and solution of impending issues. Is it possible that this problem will be solved since the project director for GJI will be in sabbatical leave to teach for the next 10 months.

While institutional development between DNP and GJI have improved, relationships between GJI and PRONATURA and between GJI and TNC, have deteriorated considerably.

The role of PRONATURA has been at times diminished due to its problems in finding a durable executive director, affecting its fund raising potential. PRONATURA's executive director position was vacant during the evaluation visit, but a new staff for this position was hired during the last week of August.

C. Recommendations

- Additional support and training to GJI from PRONATURA. Clarify limitations of institutional support funds. Set aside specific day for PRONATURA's weekly advice/training visit to GJI.
- Job descriptions for all key personnel at the park site, including GJI personnel, park guards, and volunteers. This is highly recommended. In the case of volunteers, it would be advisable to sign collaborative agreements defining specific goals.
- Differences concerning management policy should be openly addressed in the working meetings. Dissenting points of view among park professionals are only a small part of the job and everyday challenges in protected area management elsewhere.
- Revise and determine the best possible criteria for park guards eligibility as to assure the long term stability of competent and experienced individuals (not excluding traditional problems of government changes and political affiliations). Otherwise, considerable investments would be

lost.

- Review agreement between DNP and GJI concerning specific roles.
- NGOs and GOs should identify alternative representatives in the decision making process for delegation of authority in the absence of key individuals.
- Strengthen relationships between GJI and PRONATURA and between GJI and TNC.
- Since a new Memorandum of Agreement has to be signed, it is recommended that all partners (GJI, DNP, PRONATURA, and TNC) sign it. The new MOA should reflect experiences and lessons learned from the first year. The strengthening of PRONATURA and DNP should be added to the MOA as part of the project objectives.

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**THE NATURE CONSERVANCY
LATIN AMERICA DIVISION
PARKS IN PERIL PROGRAM**

**MACHALILLA NATIONAL PARK
EVALUATION REPORT**

Hugo Arnal

ARLINGTON - VIRGINIA

1992

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I- INTRODUCTION

Coastal Ecuador possess only two protected areas: Manglares Churute Ecological Reserve and Machalilla National Park. The first occupies a mangrove region near Guayaquil, while the other includes small mangrove forests and a greater diversity of dry tropical forest, cloud forest and tidal ecosystem diversity. Machalilla National Park holds a gradient of different forest formations and, in the marine zone, the only protected coral reef in the continental part of the country. These two protected areas, however, do not come close to representing and protecting all the marine diversity of Ecuador. As a result, adding the high diversity of Machalilla as a marine-continental area and the lack of potential sites for new conservation units as the transformation of the coastal ecosystems have been intense, we can conclude that it's a first priority to protect this park.

Machalilla National park was established in 1979 enclosing almost 55,000 hectares in the Province of Manabí. According to the Holdridge life zone system, Machalilla supports four life zones: tropical xerophilous matorral, tropical dry brushwood, tropical dry forest and lower mountain dry brushwood. The first life zone is the most extended and occupies as much as 46,000 hectares. The wettest life zone is the lower mountain dry brushwood which is located at high elevations and receives the influence of humid winds. An important fraction of the park territory has been transformed or degraded by human action. However, this protected area comprises the only natural refuge for many animal and plant species.

In Machalilla there has been recorded 7.9% of the total birds fauna of Ecuador (1,550 bird species total) and 2.5% of the total of mammals; to date there are not studies to assess the status of the species populations. Without hesitation, native vertebrate species populations are generally low due to frequent and intense poaching.

The marine ecosystems, including the islands of Salango and La Plata, are relatively diverse with an elevated number of economically important fish and seashell species. Up to now, no fisheries inventory has been conducted though the local production is very high and supports the regional economy. In addition to the marine life, the islands are inhabited by big populations of seabirds, mainly pelicans and piqueros (or boobies, in the family Sulidae).

The park is also important from the socioeconomic point of view. This unit protects the Ayampe River watershed which provides water to many communities in the coast. Even though the water caudal is not very high and can be almost null in the dry season, underground water can be pumped up from wells.

This conservation unit occupies an important territory between Guayaquil and Manta. These two cities are connected by a net of paved roads. The roads allow an important movement of people and resources that affect the park. Due to the high quality of its beaches and to its accessibility, the park receives a very high number of visitors throughout the year.

Within the park limits there are a number of small communities: Agua Blanca, El Pital and Casas Viejas, being the most important. Also, there are a few scattered families well spread through the park area. In relation to the number of inhabitants living in the park, there are discordant data. Some documents mention the existence of 277 families with around 1,000 people. Another document points out a total of 566 inhabitants. A research study about the socioeconomic dynamics of the park population has been recently finished by researchers of the Instituto Benjamín Carrión. This study shows that the human population has dropped in recent times from 4,000 to 1,100 inhabitants. The study results will clarify all aspects regarding human communities. Still the park managers have yet to receive and study from Fundación Natura who sent it to the central office of Ministerio de Agricultura y Ganadería (MAG).

This occupation inside the actual conservation unit is not new as is shown by several ruins and relics of ancient cultures. Some artifacts collected in the area, belonging to the Mantena, Machalilla and Chorrera periods, are as old as 6,000 years. An interesting archaeological museum has been opened in the adjacent town of Salango and a smaller exhibition can be seen in the community of Agua Blanca, within the park.

The park is threatened by the human occupants and by an elevated number of grazing animals: 1,000 cows and almost 1,500 goats. Around 15% of the park area has been early transformed, either for agriculture (1,200 hectares) or for pastures (5,881 hectares). Until recently, there were some 500 feral goats in La Plata Island. In the recent past the most intense disturbing factor was timber extraction. Wide sectors of the park show a diminished tree diversity. Also, in many sectors the forest was logged and subjected to slash-and-burn agriculture. Still today, illegal logging is detected very often though it does not appear in the official statistics.

Two other factors threaten the integrity of the park. First, it is used as a service corridor for power lines, oil and gas pipelines. Second, tourist developments in La Plata Island and Los Frailes Beach. About this last site, many Ecuadorian technicians pointed out that having a good number of excellent beaches outside the park it does not make sense to sacrifice the only nesting beach for turtles in continental Ecuador. In La Plata Island, Metropolitan Touring Inc. (a tourism company) has gotten a concession to carry on operations. Trails and resting posts will be constructed or improved. An estimated of 80,000 visitors/year have been planned. The first investment budget rises to US\$ 25,000. It is worrisome that no carrying capacity for the island has been established. The study conducted by the company just establishes their capacity to serve tourists: the 80,000 visitors/year before mentioned. The evaluation team did not mention or acknowledge any study documenting the influence of this plan on the nesting colonies of seabirds of the island, as the trails proposed would pass by the middle of those colonies.

The marine area is seriously affected by drag fishing and by collectors of turtles eggs. The evaluator observed a series of depleted turtles nests in Los Frailes Beach. A study on this problem is being conducted by Mario Hurtado of Fundación Charles Darwin.

Management of the park is directed by the Departamento de Areas Naturales y Vida Silvestre of the Ministerio de Agricultura y Ganadería (MAG). Some other organizations are also involved in different aspects of the management. Fundación Natura (FN) contributes hiring personnel for the park and conducting studies and evaluations. The Universidad de Guayaquil has done considerable scientific research in the area as has done Instituto Benjamín Carrión. CETUR (Corporación Ecuatoriana de Turismo) is responsible for the tourism sectorial planning. Banco Central del Ecuador has given economical support to the Agua Blanca community for building a small museum and for maintaining the archaeological sites. The Nature Conservancy (TNC) has been providing funds and technical support to MAG and FN to improve the status of this park. Funds provided by TNC come either from the debt-for- nature swap or from Parks in Peril (PIP).

There is a master plan for this park but according to Lic. Carlos Zambrano, chief manager of the park, this document is outdated as it was written before 1986 and does not take into consideration the marine area of the park. As many of other master plans in Latin America, this one lacks precise scientific information. Also the plan lacks detailed management programs (monitoring, operations, visitor management). Good cartographic information does exist for the park. This information is available to the guards and managers. Enclosed with this report it can be found a topographic chart at 1:50.000 scale.

No specific legislative instrument to reinforce the protection of this park exists. Borders have not been demarcated and the number of posts or guards houses is very limited.

Because there does not exist a comprehensive scientific research program for the park, a formal list of conflicts or threats has not been elaborated. The same applies to the monitoring activities.

An ecotourism development plan for La Plata Island was drawn up by Metropolitans Inc; the plan was mentioned before as a threat to the park. The study is very detailed in terms of their objectives but lacks of an assessment of potential impacts and of impacts mitigation program. Although the island is used by the locals as a fishing center and though it is an important resource of the park, the Metropolitans Inc's project has not been discussed openly with the communities neither with the Universities of Guayaquil and Portoviejo. There is not a democratic process for taking crucial decisions in parks.

Perhaps because park personnel see each other very often in the headquarter at Puerto López, they do not have regular planning meetings in order to plan the month or week activities. The visit frequency of the manager to the few remote located Park Guards is very low and

much lower are the visits of representatives from the central office in Quito. Strategic planning for the park is poor and it seems that MAG responds mainly to emergency situations. Most of the Park Guards are based in Puerto López, where they use this small town as the center from where all inspection trips start. The headquarter at Puerto López consists of an infrastructure containing the chief manager house, the office and the visitors information center.

Park Guards are not well equipped. Supplies traditionally came late and the quality has not been the best for warm weather. Sometimes, implements belonging to the park are lent to third parties. The boat is out of order but will be repaired soon. The four wheel drive vehicle is functioning but is not in very good conditions.

As Superintendent Carlos Zambrano is a "Professor" by degree, emphasis has been placed on environmental education. In general terms, we can affirm that the relationship between park staff and almost all the human communities, but El Pital, is acceptable.

To evaluate the progress of the annual work plan in Machalilla National Park as well as the general impact of the Parks in Peril Project, a visit to the area was conducted from June 22 to 24, by a team including the following persons:

- Lic. Luis Zúñiga, Fundación Natura
- Biologist Leonardo Maridueña, Fundación Natura
- Lic. Pablo Morales, Fundación Natura
- Biologist Hugo Arnal, TNC

Before the field trip, Hugo Arnal met the Director of National Parks in Quito, Dr. Sergio Figueroa. Also, a meeting was held with the Administrative Director of Fundación Natura (FN), Mr. César Chevasco, who manage the PIP local funds.

As the work plan for this park was officially approved by USAID-Quito by the beginning of April, AID funds arrived to Ecuador few days before the evaluation. This means that the evaluation will inevitably reflect a delay in the implementation of the planned activities.

II- TECHNICAL ASPECTS

Achievements

An important increase in personnel for the park has occurred since the beginning of PIP support. With the matching funds from FN/TNC debt swap, biologist Patricia Galeano was hired as the Vice-Superintendent for the park. Also, Foresters Gonzalo Ocanto and Jesús Pinargote were contracted. Ocanto is the Protection Coordinator while Pinargote is based in La Plata Island. Another five Park Guards will be hired soon as MAG expedites the

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bureaucratic process. The new guards will work at Piñas, Mate, Casas Viejas and San Sebastián. As the evaluator will explain later in the limitations section, the procedure for hiring personnel is very complex and potentially conflictive.

New field equipment for the park personnel has been partially bought by FN with funds coming from the debt swap. These supplies will be given to the central offices of MAG in Quito. However, it's not clear when the equipment will arrive to the final users: the Park Guards. In the budget, there is another US\$ 4,200 for field equipment, though the workplan does not indicate the list of equipment to be purchased.

The "Guardería del Guale" has already been finished. Not only its quality is good, but it is located in a beautiful riparian spot in the Ayampe River.

Improvements and modifications to the Superintendent house are almost completed. The new house has a traditional design and is roofed with local grasses. Once the Zambrano Family moves to this new building, the office and the old house will be joined and rebuilt to have a greater and better working space.

The evaluator has the opportunity to visit Architect Rido Pacheco who is designing the infrastructure for Casas Viejas. The building is a big multi-space house with a pretty front. In an attempt to be ecologically designed and to accord with the local idiosyncrasy, the house does not have either toilets or showers. In the first case, Architect Pacheco proposes a methane producer type water-closet for all the house. In relation to the showers, the architect and FN officers pointed out that as the local inhabitants do not use showers and because the Park Guard will be a local, it's not necessary to include a shower; a small space where people could take baths with a "pot" should be enough. The evaluator strongly recommended to design normal facilities for any infrastructure to be developed. It is hard to imagine any normal family (as that of a guard in the near future) sharing its facilities with visitors, scientists, other government employees, etc.. What convinced FN officers to reexamine the project was the fact that for the FN room there has not been planned a bathroom with a toilet and a shower!.

Also, Pacheco is reevaluating the infrastructure for La Plata Island that once was designed for MAG by Forester Enrique Lazo. In his work, Lazo proposed to modify the existing building to make a hotel of it. Only one room would be allowed for the Park Guards. As the reason for this PIP investment is to provide housing for the guards and the protection activities, the evaluator indicated that priority should be given to Park Guards. In other words, the new design should consider a whole house for a guard and his/her family, plus room for an extra guard who will seasonal or on weekends helps the first.

The cost of the designing work is US\$ 5,000. The building budget is underestimated, according to Architect Rido Pacheco; this may diminish the size of the infrastructure.

As the evaluator has stated earlier in other internal reports for TNC-LAD and as it has been indicated to the officers of FN and MAG, it is of prime importance to clarify the use, definition and ownership of the buildings in Machalilla National Park.

The budget for the "models" of the Agua Blanca Museum has not been invested yet. Carlos Zambrano proposed to expend these US\$ 1,500 in the maintenance of the ruins area which are being invade by grasses and bushes. The decision have to be taken soon.

According to the workplan, the border demarcation should start in Casas Viejas and El Pital. However, El Pital community is in conflict with the park interest. Due to this, it's advisable to shift toward the Salaite sector. In Salaite the length of the demarcation is 65 km and in Casas Viejas it is of only 5 km.

The creation decree for the park does not define accurately all the borders. In certain cases, the decree does not indicate specific geographical accidents, bearing or sites. The northern border description, between Cerro El Rodeo and the coast shore, demands imagination from those trying to represent it on the map. In El Pital, local attitudes toward the conservation unit and its personnel are still aggressive. In Punteros, near Machalilla town, a small extension of the park has been invaded in the last two to three years. Carlos Zambrano proposes to exclude this area (0.25 hectares) from the park and to compensate this loss by adding new territories to the north, up to Jipijapa River. The evaluator is concerned that some technicians have a perception of protected areas as land trading banks, where the objective is to keep a constant unit size without regards of quality and legal or management precedents.

The evaluator recommended to FN and MAG to invest a fraction of the budget for border demarcation, on two brief studies. The first one about the legality of border modification by MAG personnel without National Congress approval. The other study deals with the design of the borders in those sectors where they are undefined or unclear.

An inspection to the interpretative trails of Los Frailes Beach and La Plata Island was done. Both trails do not fit to the technical specifications for interpretative trails. The trail at Los Frailes is not loop, as it's normally recommended. At the same time, they are excessively long: some 3 km that at Los Frailes and several kilometers those at the island. In fact, the evaluation team, that is supposed to be in adequate physical conditions, hardly could complete the shortest trail of the island. This misconception of interpretation is showing us that there is a lack of expertise on this theme. Yet, the evaluator considers that the agreed investment for these trails should be done. The only point to ponder about is that Metropolitan Inc. will invest near US\$ 25,000 in the island to make a commercial use of it and to obtain an appreciable return from this investment. So, we should wonder if spending these funds represent or not, a help to this company rather than a service to the general non-tourist user.

Different studies are being carried out at the park in this moment. As formerly said, the study on human communities has been completed recently. The fisheries inventory is undertaken by Dr. Segundo Cuello from Guayaquil. The dendrological inventory was finished by foresters Ocanto and Pinargote, when they were students of Universidad de Portoviejo. The Ayampe Ecosystem study has not been defined in terms of its theme, neither are the other studies budgeted with US\$ 15,000 from the debt swap. MAG has not responded to FN in relation to a proposal of a scientific research about the seabirds and turtles of the park. Until MAG authorizes this research, scientists will not start. The archaeological resources inventory is still pending.

There are no data on any kind of strategic indicator that could show us the general impact of PIP and/or the trends in the conservation of the park. Verifiable indicators such as percent decrease in deforestation, sustainable use of natural resources, improved environment/quality of life, changes in patterns of colonizations, abundance and distribution of key species, are only a few of several possible indicators that are not currently measured in the park. Conservation officers of FN estimate that there is still an important logging process but they cannot assess the rate or the extension of it. As was said before, there has been a decrease in the number of inhabitants of the park but this does not mean a decrease in disturbance or impact. This fact cannot be used to evaluate general PIP effectiveness as it had happened before the project started. Also, FN officers and MAG managers estimate that there is an increase in the size of the seabirds colonies at the island although this could be the result of a normal seasonal change.

Brief comments have are necessary regarding the technical input from TNC. Land steward personnel and scientists from TNC have been visiting Machalilla to provide technical advise to the conservation officers of FN and to the government managers. The park has been visited twice in the first half of 1992 while FN and MAG offices were visited almost every month. Though the evaluator is a TNC employee, we can objectively affirm that the technical assistance provided by TNC is adequate and regular over the time.

Limitations

As we can realize from the preceding paragraphs, there has been a minor delay in the execution of the annual work plan. The calendar of activities is intended to run from September 91 to September 92 but the funds have been available only recently. Even though this is true, we must admit that part of the workplan could have been done earlier with funds from the debt swap managed by FN; this has not been the case. As a result, together with FN and MAG, TNC has reprogrammed the entire AID/PIP year one support to begin September 1, 1992 to August 31, 1993.

Besides the common problem of populist politics interfering with the protection of the park resources, perhaps the most limiting factor for implementing the work plan is the internal bureaucracy of FN and MAG.

In the case of the politics, very often they pass over legal rules governing the National Parks protection and development. Parks seem to represent but the last priority for them or, more than that, obstacles to their electoral promises. The regional plans for development promoted by politicians, include several parks affectations. Is the concession on La Plata Island a compromise of some politician? Is ignoring or not soliciting the consultation of NGOs, local universities and communities a proper management strategy?.

The inner bureaucracy of FN and MAG slows down the decision making process. Both organizations are very cautious and polite dealing with each other. To show how bureaucracy works in these two organizations, let us briefly review the equipment acquisition process. Once a list of equipment is decided in FN, the administrator of the conservation program checks the availability of funds. After that, the program director approves the purchase and the list is sent to an independent contractor who makes the acquisition charging a percentage of the total acquisition expenditure. Then, the equipments are deposited in FN to be inspected. All supplies are given to the central office of MAG in Quito, who will distribute them to the regional administrators. Acknowledging of this procedure, it has been a surprise for the evaluator to find that the park managers have lent all the life vests of the park to a tourism company. So when the personnel, including the evaluator, needed this equipment, it was not available for our field trip.

Another good example of this same bureaucracy is the procedure for hiring personnel. This is done mainly with funds coming from the debt swap. At the end of the PIP support to Machalilla NP, it's expected that MAG could absorb the hired personnel. However, MAG has stated that they does not have the funds to accomplish that goal. Due to this and wishing not to have labor conflicts with temporary workers, MAG has left under FN responsibility all contracting issues. But, at the same time, FN does not want to deal with the personnel either. So, FN functions as a bridge providing the funds to a third actor: ECOCIENCIA. This last NGO is very well organized and has taken this responsibility charging a small overhead for managing the personnel. This complex chain of decision making and responsibilities is a frustrating obstacle for some technicians that work under contract. Hiring is done on a six months basis and it includes an automatic extension for another six months period (this is changing to one year period). The contracting bureaucracy takes almost three months to be completed and very often the salaries are equally delayed. To sign the contract and sometimes to receive salaries, workers located in remote parks have to visit Quito; this is the case of Patricia Galeano. The worker does not know to which of the instances refer in case of problem. Another of the contractors told us that he feels forsaken.

A minor limitation is the low park management experience level of some professionals from FN and MAG that are working in this park. To overcome this weakness, training must be provided to increase their skills. Fortunately, they have a very positive attitude toward training and technical support.

Suggestions

Because there was included a budget for ecotourism planning and Metropolitan Inc. has completed a plan for La Plata Island and has obtained a concession from MAG, it's strongly recommended to use part of the funds to carry out an open workshop to evaluate this plan. The rest of the budget should be spent on its original purpose.

Public consultation workshops should be developed; this is the case for the plan for La Plata Island. Even more technical issues, as the projected Park Guard house in San Sebastián, should be consulted with community members, not just park specialists.

FN should send copies of research studies directly to the managers. It's not only a matter of fulfilling a bureaucratic requirement sending a copy to MAG headquarters in Quito. As the real goal is to help preserve the area, a copy of the study must be in the area itself. We all know that if Quito pass the report to the area's managers, it will be done very slowly. It is technically and diplomatically correct to deal with the central and field level simultaneously.

External help and financial support must be provided to NGOs to study the legislative status of the parks: can they be affected by the government without authorization from the Congress?. If so, help should be given to NGOs to lobby and change the laws according to the principles of the Washington Convention; which was adopted by Ecuador several years ago.

Training for conservation officers from FN and for the managers of the park should be provided. In the case of the park superintendent, the training should focus on ecology and natural resources management, personnel management, park planning and strategic planning. In the case of FN, instruction should emphasize technical aspects such as ecology and natural resources management, monitoring, community relationship and park operations.

III- FINANCIAL ASPECTS

Few information has been collected about the financial condition of the park. The Superintendent does not know the park budget as the central office in Quito does not provide the regions with reliable information on this subject. Managers are supposed to participate elaborating the annual budget, but later central MAG administration changes all the technical proposals.

Government capacity for providing funds is narrow; there are not evidences that this will improve in the future. Investment of the scarce funds that the park receives apparently does not respond to a structured schedule. This was demonstrated in this park while making a visit to San Sebastián sector. The park master plan does not recommend to build a guard house in this site as there are other urgent priorities. However, the managers have decided to build it even though that place is visited once or twice a year and only two persons are living there.

As far as the evaluator knows, no Bilateral neither Multilateral Development Agency but USAID through TNC, is investing money in the park conservation and development. Equally true is that apart from MAG, no other Ecuadorian government agency is helping financially to the conservation of this area even though it's a small but extremely important water reservoir.

Apart from the TNC/PIP and debt swap contributions, no other international NGO is investing or granting funds for this area. Metropolitan Inc. will invest US\$ 25,000 to improve visitors facilities and trails in La Plata Island. This company will pay a leasing cannon to MAG; we do not know the amount to be paid.

What remains clear is that the number of Park Guards and the housing facilities for them, are not enough for the protection needs of the area. With the actual budget no further improvements can be done.

Limitations and Recommendations

The only long term financial instrument actually existing for the park is the debt-for-nature swap by FN/TNC/WWF. In the near future new initiatives must be developed if we want to support the protection activities. Among these initiatives, a program for self-sustaining and income generation is mandatory. This program should include aspects as concessions regime, ecotourism, endowments and trust funds.

As the Ecuadorian national oil company uses the park area as a corridor for its oil pipeline, a maintenance fee should be charged. The concession given to Metropolitan for the touristic use of La Plata Island, must establish a significant leasing cannon. It's also advisable to study the feasibility of a new debt for nature swap in the near future.

IV- ADMINISTRATION

A Memorandum of Agreement (MOA) has been signed between FN and TNC to implement Machalilla National Park a program of the PIP project. As in other cases, this MOA has

been signed after an agreement between the NGO and the government was reached. Both of the agreements, TNC-FN and FN-MAG, are adequate agreements for accomplishing the PIP goals for this park.

To draw up the work plan, MAG and FN called for a meeting where conservation officers and managers of the park were present. This meeting represented an exchange of ideas to enrich the work plan. In this sense, the annual activities program certainly includes real park needs. There still exists considerable confusion in the establishment of conservation objectives and the preparation of work plans that can be agreed to by all parties. In essence, we still see two separate work plans prepared by FN and MAG, and these are compared only at the occasional joint institutional sessions. Both organizations are, however, making a renewed effort to meet more frequently and to establish more agile communication lines. Trying to keep a political balance between the two parties and convinced that the workplan, written at a higher hierarchical level, is convenient for our goals, the evaluator has said that we'll have an opportunity for amendments the next year.

There is a point on which institutional changes are urgently needed: to categorize as official government employees these personnel contracted for the parks by FN.

FN administers the funds provided by USAID/TNC and the debt swap. This NGO has the institutional capacity and the commercial relationships to do that.

It is highly probable that inflation will increase abruptly in Ecuador by the next months. Also, exchange rate Sucre/US\$ could increase. Foresight should be taken to avoid a decrease in the investment capacity of FN.

Limitations and Recommendations

The internal administrative procedures at FN are slow as a result of its complex bureaucracy. A good example is the lag between the first funds transfer from TNC to FN in last April and the use of these funds. It took almost two months after the transfer for FN administration to establish the needed PIP accounts. It is evident that the conservation program should manage their own funds and bank accounts. Fundación Natura has undertaken an extensive reorganization that should greatly improve project management and reduce administrative delays.

During the evaluation, the PIP account was opened in Banco Popular, Acct. N° 172040.

V- SUMMARY RECOMMENDATIONS

Many recommendations were mentioned above, almost all them have been supported with explanations.

Lobbying should be done at the central government in Quito to convince them to legalize the necessary mechanism to ensure that important decisions affecting the protected areas will taken with the participation of the local communities and all interested sectors.

BOUNDARIES DESCRIPTION

Undefined borders or confuse texts have been indicated

Taken from the Park Master Plan

MAP OF THE PARK

Borders without clear definition in the decree are indicated



White headed Piquero and its chicken, La Plata Island
MACHALILLA NATIONAL PARK
(Positive from a slide of the TNC file)

BEST AVAILABLE COPY



White headed Piquero, La Plata Island
MACHALILLA NATIONAL PARK
(Positive from a slide of the TNC file)

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Sector of La Plata Island accessed by the interpretative trails
MACHALILLA NATIONAL PARK
(Positive from a slide of the TNC file)



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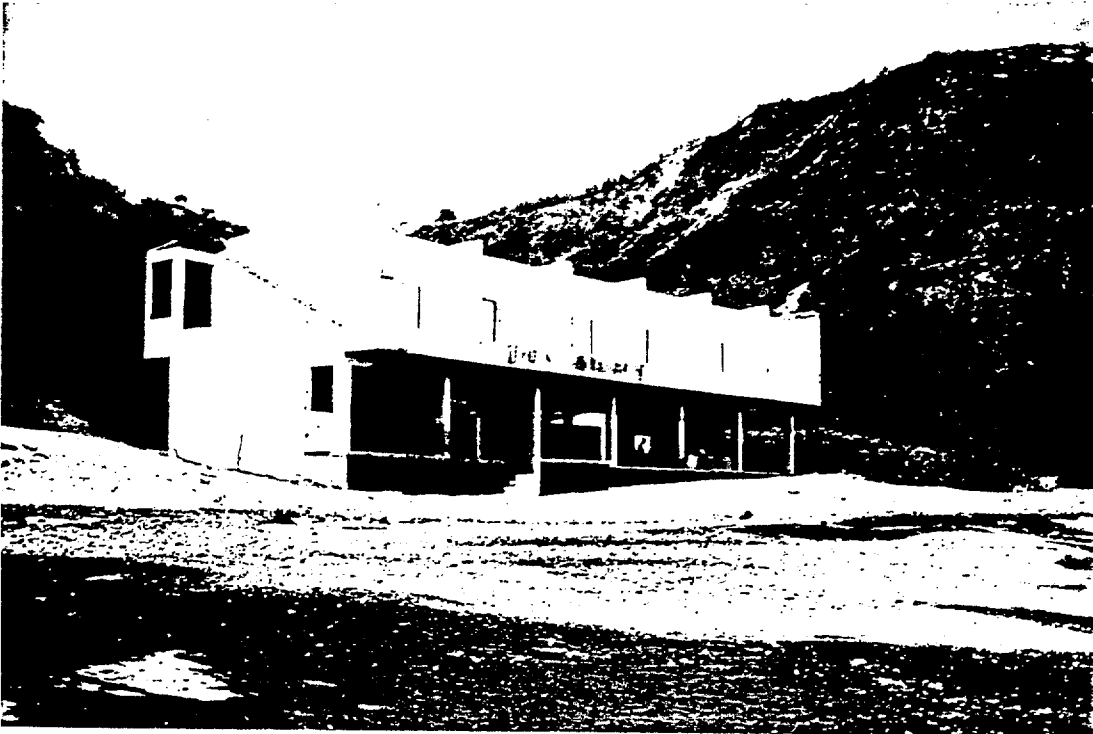
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Beach in the northern sector of La Plata Island
The infrastructure is located here
MACHALILLA NATIONAL PARK
(Positive from a slide of the TNC file)

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Old infrastructure at La Plata Island
MACHALILLA NATIONAL PARK
(Positive from a slide of the TNC file)



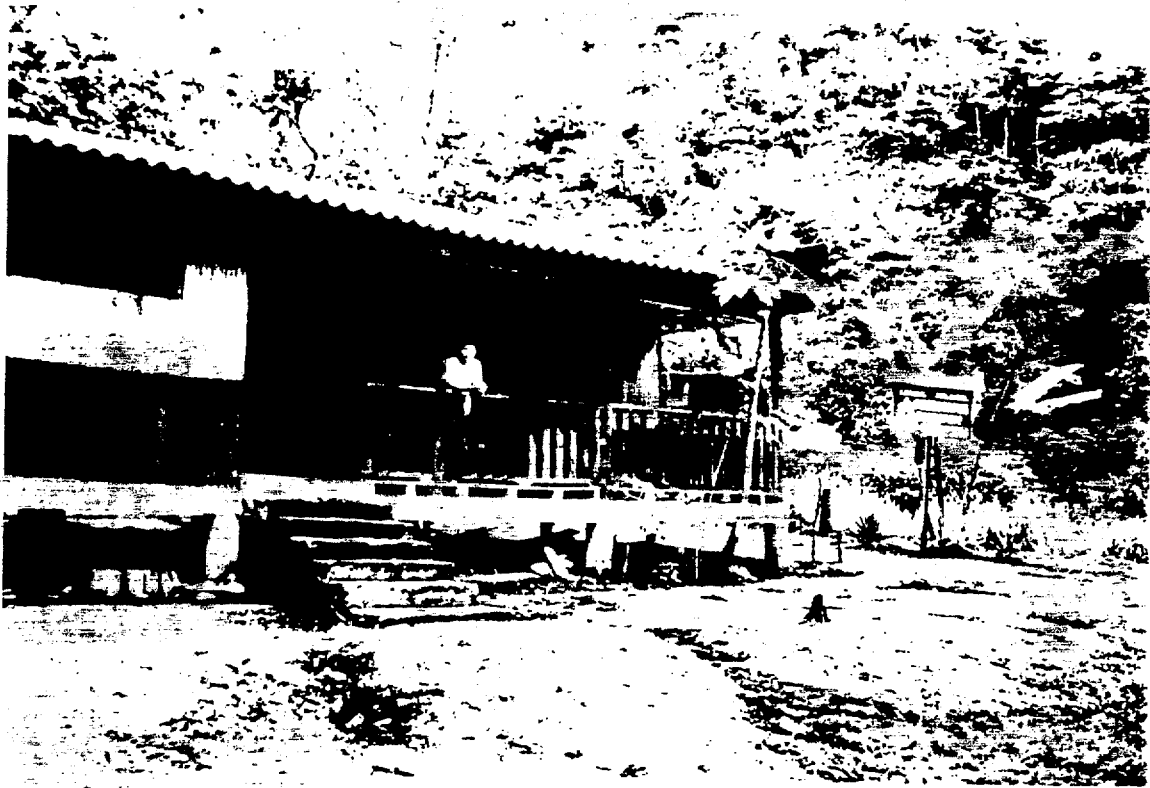
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Impoverished Forest in San Sebastián
MACHALILLA NATIONAL PARK
(Positive from a slide of the TNC file)

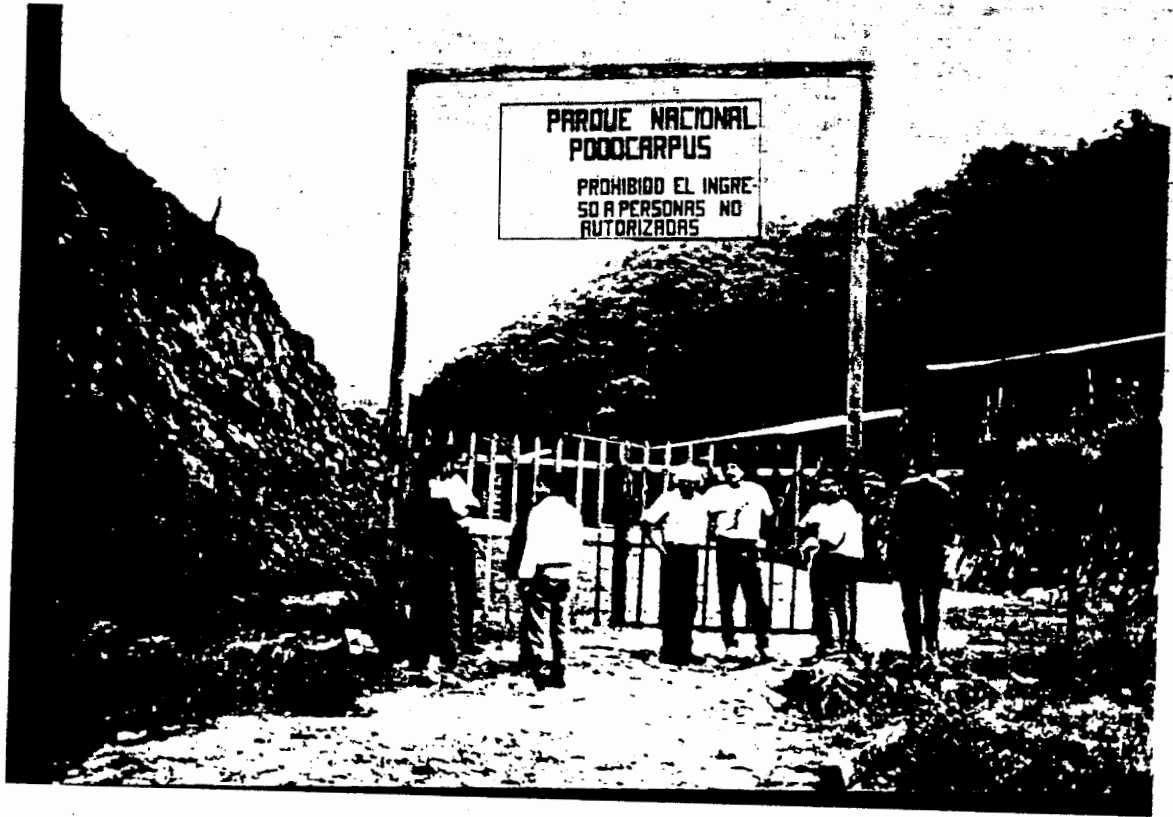
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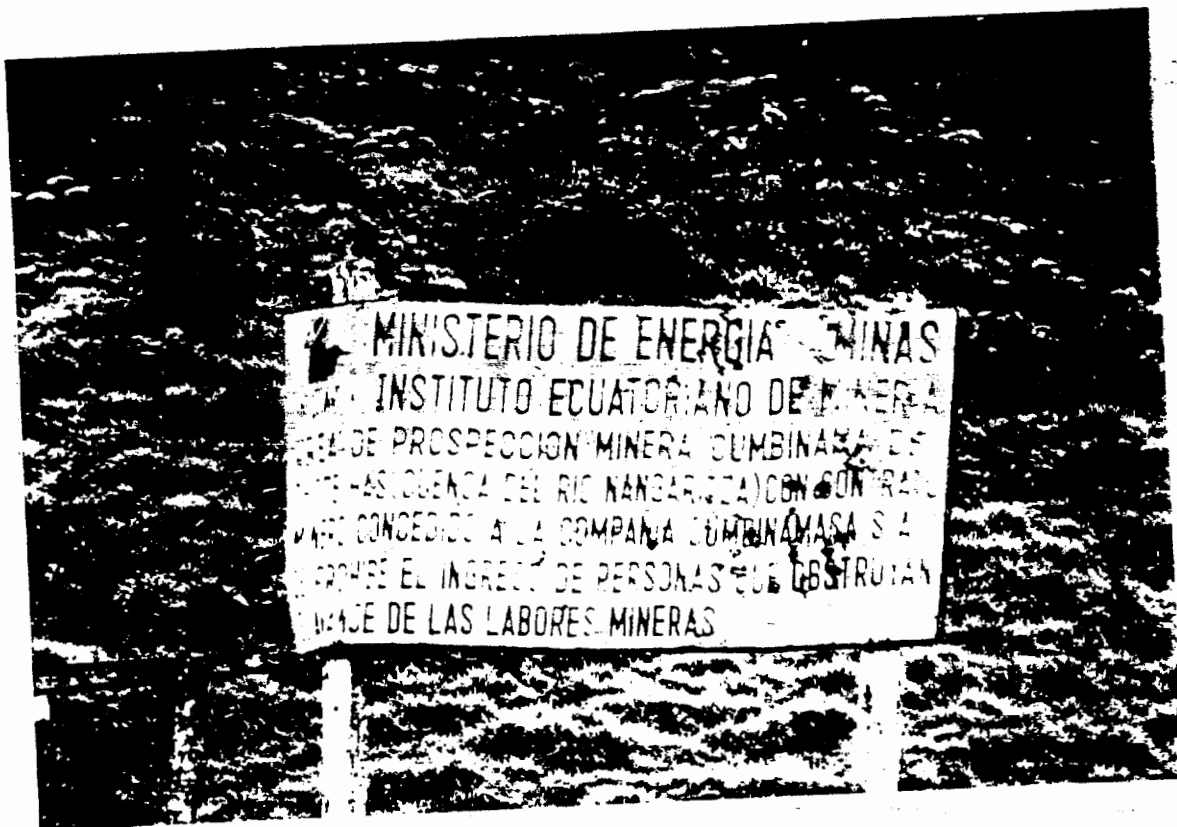
Guards post at Bombuscaro River
PODOCARPUS NATIONAL PARK
(Positive from a slide of the TNC file)

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Access to the park is closed
The area is controlled by mines companies
In the picture, Ron Ruybal and Fausto Maldonado from USAID
PODOCARPUS NATIONAL PARK
(Positive from a slide of the TNC file)



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A sign by the Mines Ministry
Park border in Romerillo Alto
"no one should disturb the mining activities"
PODOCARPUS NATIONAL PARK
(Positive from a slide of the TNC file)

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Park Guard house in Romerillo Alto
Distance from the post to the park is 600 meters
This is the access sector for miners
PODOCARPUS NATIONAL PARK
(Positive from a slide of the TNC file)



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Cloud forest at the northern park boundary
Road from Loja to Zamora, near Sabanilla River
PODOCARPUS NATIONAL PARK
(Positive from a slide of the TNC file)

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Infrastructure at Cajanuma
White section to the left will be the visitor center
PODOCARPUS NATIONAL PARK
(Positive from a slide of the TNC file)



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Sign at the park boundary in the road to Cajanuma
PODOCARPUS NATIONAL PARK
(Positive from a slide of the TNC file)

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1. The construction of the bridge over the river at the site of the dam. The bridge is a concrete structure with a steel truss design. The dam is a concrete structure with a steel truss design. The bridge is a concrete structure with a steel truss design.



2. The construction of the dam. The dam is a concrete structure with a steel truss design. The dam is a concrete structure with a steel truss design. The dam is a concrete structure with a steel truss design.

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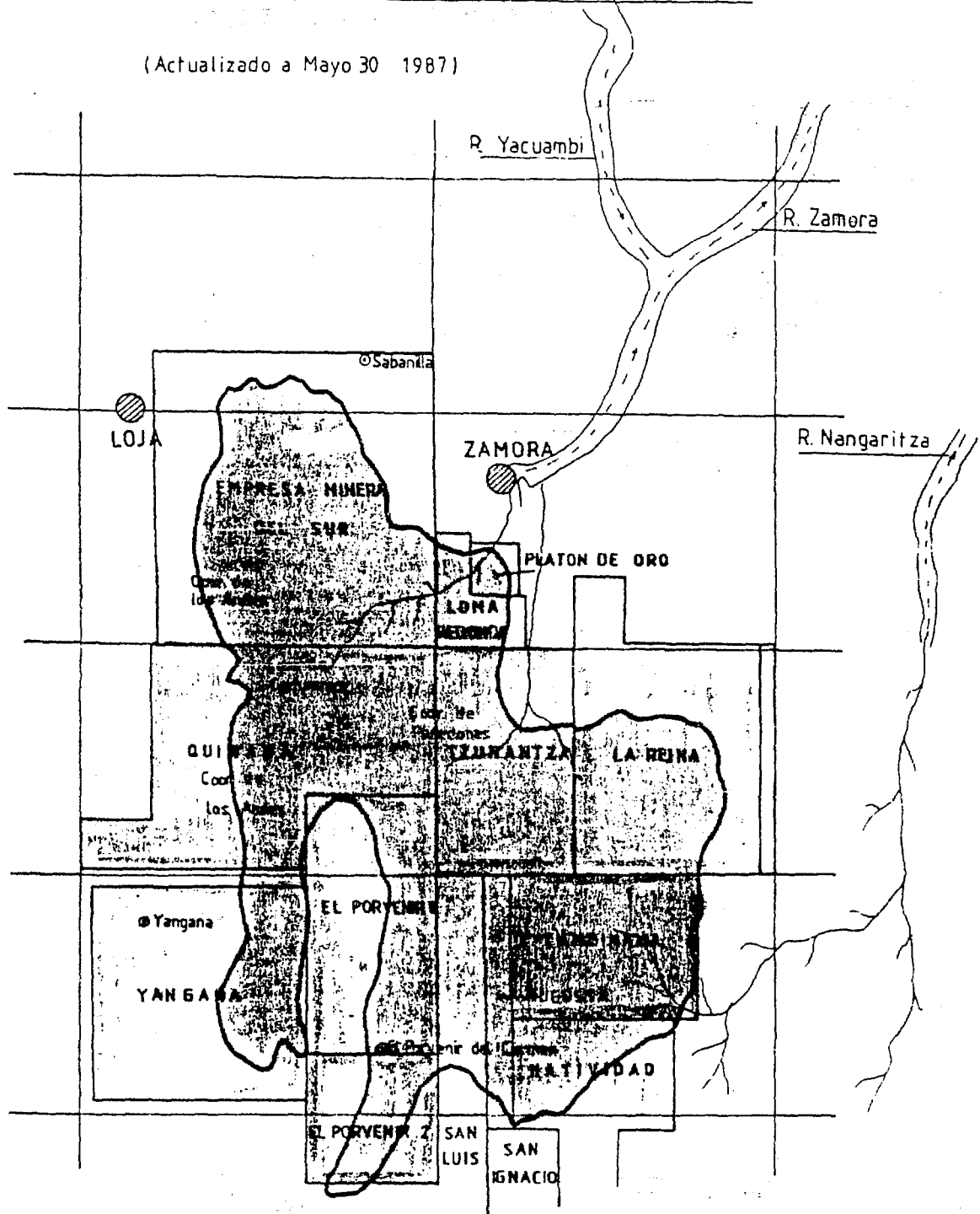
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MAP OF THE PARK

Borders without definition in the decree are indicated

CONCESIONES MINERAS EN
PARQUE NACIONAL PODOCÁRPUS

(Actualizado a Mayo 30 1987)

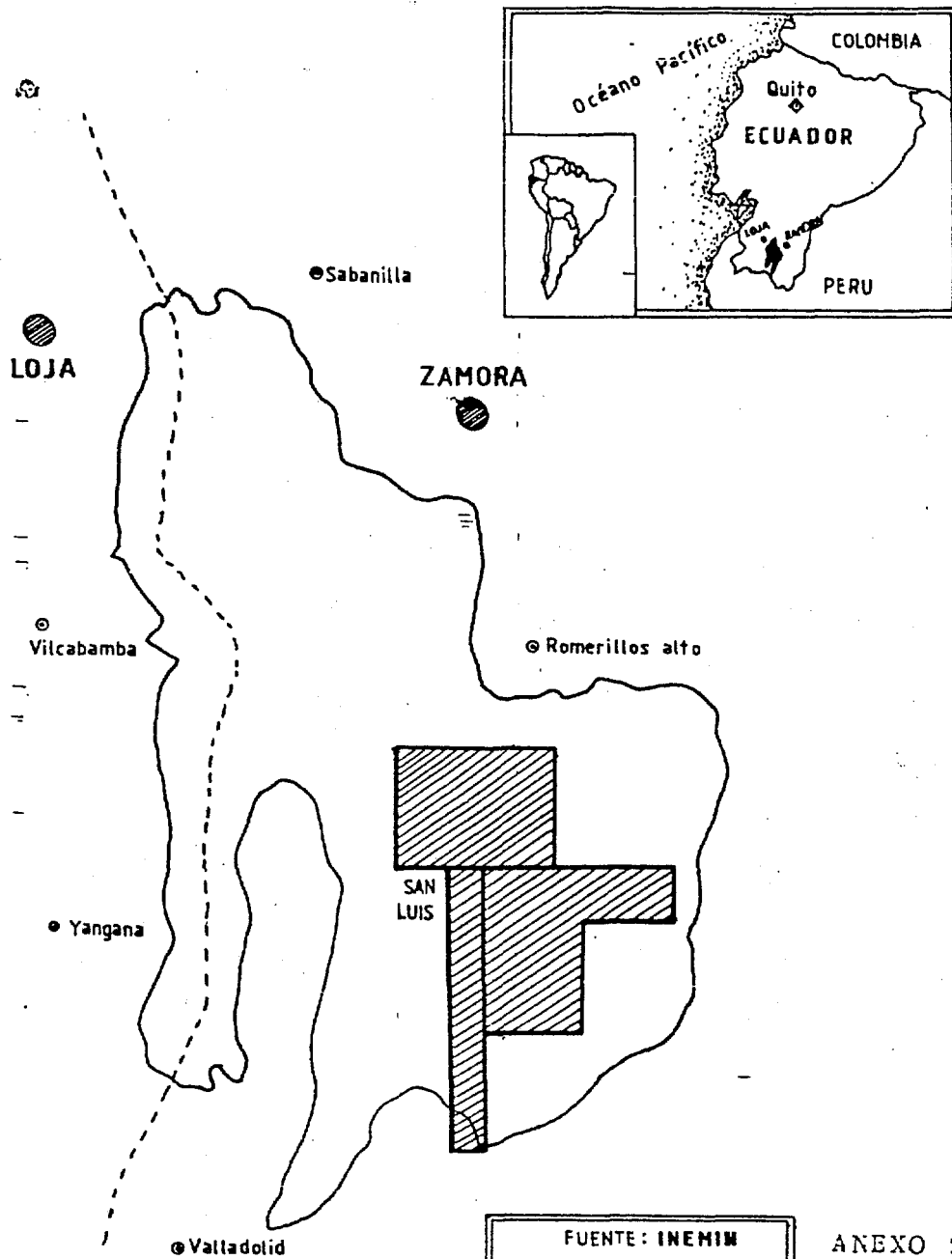


Fuente: INEMIN
Elaboracion: ARCOIRIS

ANEXO 1.

AREAS

CONCESION MINERA DE LA EMPRESA CUMBINAMASA S.A.
EN EL PARQUE NACIONAL POBOCARPUS



FUENTE: INEMIM
ELABORACION: ARCOIRIS

ANEXO 2.

PARKS IN PERIL PROGRAM

SIERRA DE LAS MINAS BIOSPHERE RESERVE

EVALUATION

Prepared by:

Charles W. Wendt, Consultant

with the collaboration of:

Kathy Moser, Guatemala Country Program Director, TNC

August 1992

FINAL REPORT
PARKS IN PERIL EVALUATION
SIERRA DE LAS MINAS BIOSPHERE RESERVE, GUATEMALA

INTRODUCTION

The selection of the Sierra De Las Minas Biosphere Reserve as a part of the Parks In Peril Program (PIP) was very wise. Its East to West orientation runs perpendicular to most mountain ranges in the Americas. This upthrust occasioned by the collision of the North and South American tectonic plates contains Paleozoic rocks and soils making them the oldest in MesoAmerica.

The Sierra De Las Minas Biosphere Reserve (236,300 hectares or 911 square miles) is located in Northeastern Guatemala between the Polochic and the Matagua River basins ((4,000 mm and 500 mm precipitation per year respectively). It takes in most of the Sierra De Las Minas stretching 80.6 miles on its longitudinal axis and varying in width from 6.2 - 18.6 miles with 5 life zones represented in elevations varying from 492 - 9,889 feet. It contains 70% of the species registered in Guatemala and Belize and because of its relative isolation, considerable endemism.

Most of the northern portion of the mountain range is inhabited by an indigenous people called the Q'eckchi. Traditional farming methods on the 40-80% slopes is precarious with the agriculture frontier advancing as soils are worn out or washed away. Extension programs are making a start in reversing this vicious cycle of poverty and natural resource degradation.

Within this Biosphere Reserve the following zoning is used to define specific goals and objectives: Nucleus Zone: Contains 105,700 hectares and is covered by primary forest. Its principal goal is the preservation of biodiversity, research and limited ecotourism use. Multiple Use Zone: Surrounds the Nucleus Zone, with an extension of 34,600 hectares for sustainable development of natural resources and extension services serving the indigenous Q'eckchi and ladino (mestizo) populations. Buffer Zone: These 91,800 hectares are generally located below the multiple use zone and are designed to protect the previous two with the sustainable use of natural resources and an ample environmental education and extension program. Recuperation Zone: Occupies 4,200 hectares within the nucleus zone with the expressed objective of recuperating its forest mass.

As an independent contractor, I made an on-site evaluation of the Reserve from August 3 - 15, 1992 together with Ms. Kathy Moser, TNC Director of the Guatemala, Honduras and Nicaragua Programs and during an intensive 6 day field trip (See Appendix A). I interviewed 5 women and 16 men and reviewed the PIP documents on file.

1) There has been significant project achievement by employing personnel necessary to begin boundary signing, protection of the nucleus zone and begin model agricultural programs (green fertilization, terracing and erosion control) that require at least one growing season.

The results in less than 2 years are nothing short of amazing. Of course there has been input from other programs and of a total of 41

employees, the Director and 8 of these are employed by Parks In Peril.

2) A major limitation is the letter dated 11 August 1992 in which the Guatemalan Government's National Council of Protected Areas (CONAP) proposes to withdraw 10 employees from the Reserve. It would be a shame if CONAP could not participate in the successes that are sure to continue. However, the proposal has questionable legality which prejudices it from the start and it may not happen.

3) There is some opportunity for future action in enlarging the Reserve to extend the life zones to their lower limits to include some of the unoccupied shoreline of Lake Izabal.

TECHNICAL

A. Achievements: There are now 41 well qualified, full-time employees working with Defensores De La Naturaleza with the Director and 8 others paid by PIP funds with outstanding results.

B. Limitations: Some of the aerial photos are old and almost permanent cloud cover is a serious problem for obtaining accurate, current information concerning the borders of the agricultural frontier. There may be solutions to this by using recent overflight photos. Personnel need additional technical training to allow more independent action in such areas as first aid, trail construction and maintenance, fire control, agricultural and other extension services, etc.

C. Recommendations: These are found interspersed throughout Appendix A with the majority under General Recommendations on Page 5.

FINANCIAL

A. Achievements: Some new equipment has been purchased and professionals are employed. There are more than 10 substantial projects that are funding Sierra De Las Minas Biosphere Reserve.

B. Limitations: More funding is needed for employing new employees as programs grow, build physical infrastructure, purchase vehicles and capitalized equipment and other supply needs.

C. Recommendations: Continue to coordinate equipment purchases with the Reserve Staff and hire additional staff for protection programs and working with local communities and the Environmental Education and Extension Programs.

PROGRAM ADMINISTRATION

A. Achievements: Reports have been sent to TNC in a timely and well organized fashion. The budgetary spread sheets are a model of efficiency using the PC Program of Lotus 123.

B. Limitations: There are disagreements of a technical nature between DN and CONAP, but interpersonal relations problems have been kept to a surprisingly low level.

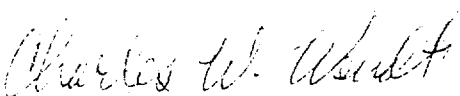
C. Recommendations: In the evaluation team discussions, we agreed that training would benefit the Reserve staff.

SUMMARY RECOMMENDATIONS

Sierra De Las Minas Biosphere Reserve is an outstanding resource and with continued progress can be used as a model area. Further strengthening would ensure future well being and success. Every effort should be made to strengthen the ties between Defensores De La Naturaleza (DN) and the National Council of Protected Areas (CONAP) even though the latter wants to withdraw its only support of 10 employees. Through good will, cooperation and coordination between DN and CONAP, everyone will realize the benefits of being a part of what is already a highly successful program.

Training of key people, as a group, provides technical information, but more importantly, it brings them together for future interaction. I would recommend training a second, more advanced training course for a group of 28 people maximum in Protected Area Operations and Extension Services for a minimum of 10 days in a location outside Guatemala City. It should include the Parks In Peril staffs of DN together with other NGOs and the Reserve Staff including CONAP. In this way, organizational ties can be strengthened through the work team produced by the course and the individuals that interacted there will continue to cooperate later in the work place.

Defensores De La Naturaleza is a dynamic, non-governmental organization with legal designation of authority from the Guatemalan Congress to administer the Sierra De Las Minas Biosphere Reserve. They are doing an excellent job and it is my extreme pleasure to be able to wish them well in keeping up the good work.



Charles W. Wendt
Consultant in Protected Area
Management And Training

Enclosures

APPENDIX A

3214 Adams Court
Fairfax, Virginia 22030
FAX & Tel: (703) 273-3151
August 20, 1992

**TRAVEL AND DAILY DIARY FOR FINAL REPORT
PARKS IN PERIL EVALUATION
SIERRA DE LAS MINAS BIOSPHERE RESERVE, GUATEMALA**

3-5 August 1992, Mon.- Wed.:

Traveled from Fairfax, Virginia to Guatemala City and was met at the airport by Mr. Juan Skinner, Director of the Sierra De Las Minas Biosphere Reserve. Read the Parks In Peril files, met and interviewed the following people:

Defensores de la Naturaleza (DN) Tel: 011-502-2-325-064
7a. Avenida y 13 Calle Zona 9, Edificio La Cúpula
01009 Guatemala, (Central America) FAX: 011-502-2-322-671
Arg. Andreas Lehnhoff, Director Ejecutivo
Juan Skinner, B.S. (UC Davis), Director
Reserva De La Biósfera Sierra De Las Minas
M.Sc. Richard Margoluis, Public Health & Ph.D. Candidate
Hector Centeno, Presidente de la Junta Directiva de DN
Lidia de Vasquez, Administradora

Ing. Scott Wilber, Maya Reserve * Send Scott copy of training budgets.
7 Av. 4-35, Zona 1
01001 Guatemala, GUATAMALA (C.A.)

Ing. Alfredo Nakatsuma Vaca Tel: 011-502-2-311-541
Encargado de Asuntos Ambientales Y Recursos Naturales
Agencia para el Desarrollo Internacional
USAID/GUATEMALA
APO Miami, FL 34024-3190 USA
1a Calle 7-66, Zona 9
Ciudad de Guatemala, GUATEMALA (Central America)

Arturo Duarte Ortiz, MA in Anthropology (SUNY, Albany, NY)
Secretario General, Vicepresidencia De La Republica
6A. Avenida 4-19, Zona 1 Tel: 011-502-2-539-203
Casa Presidencial, Ciudad de Guatemala, GUATEMALA (Central America)

I was greatly impressed with the dedication and interest shown by everyone I interviewed. Their professional qualifications are impeccable and are being put to good use.

We traveled from Guatemala City to Sierra De Las Minas Biosphere Reserve and return (6-11 August). I accompanied Reserve Director Juan Skinner (PIP & DN), Kathy Moser (TNC) and Alfred Nakatsuma (AID). We left on a trip that would use vehicular travel, ford rivers, use a boat to cross Lago Izabal and walk to selected sites where a vehicle could not pass; travel completely around the Reserve and penetrate into its nucleus zone in a few places.

The differences in elevation and distance versus time indicate the severity of the terrain and quality of the road. The following people that were interviewed are highlighted in **bold** letters. The 3 Districts of the Reserve are divided according to vertical access by hydrographic drainages, state (departamentos) lines and ethnic groups.

6 August 1992, Thursday:

<u>Time</u>	<u>Speedometer</u>	<u>Location & Observations</u>	<u>Elevation</u>
0730 hours	1283 km	Defensores de La Naturaleza, Guatemala (Magnetic Declination: 5 degrees East)	1560 mtrs.
0830 h	1349 km	Sanarate	990 m
	1369 km	El Progreso (Obsv: Elevation of succulent cactus)	600 m
0914 h	1396 km	Puente Shentumal (Río Matagua)	400 m
1015 h	1413 km	Teculután (Ate Breakfast)	350 m
1037 h	1440 km	Malpaso (Turnoff to Reserve)	330 m
1100 h	1446 km	Reserve Boundary at Jones	640 m
1113 h	1447 km	Town of Jones	650 m

Río Matagua District

District Coordinator **Edin Barrera**, Resource Guards (RG) Jorge Isaac Morales (PIP), José Morales Vargas (PIP), and **Fidelino Vargas**.

There are 13 communities that depend on the 30 water sources in this drainage. I was impressed by the Matagua District Office which serves as an environmental education meeting place. The billboard in the town of Jones is no longer vandalized and public relations are good in this very conflictive area.

Mules are in general use in this area and purchase of horse and mule combinations could help mobilize the resource guards and pack loads for work away from roads. Box panyards can be used to haul rock (unloaded by hand) and dump dirt through the hinged door on the bottom of the box. We use them for trail construction and they might be helpful for building terraces. Pack animals are useful for supplying crews working on forest fires.

1530 h	1512 km	Turnoff, Carretera al Atlántico	470 m
1540 h	1515 km	San Agustín	430 m
1635 h	1526 km	Chancayo	730 m
1644 h	1528 km	El Cimiento	920 m

The owner of this property is thinking about surface mining low grade marble from a spectacular cliff. It is in a multiple use area, but the scenic damage would be considerable.

1715 h	1538 km	Albores (RG Don Carlos Méndez)	1700 m
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7 August 1992, Friday:

0920 h			
0954 h	1540 km	Reserva (Zona Núcleo)	2100 m

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It was in this area on 29 April 1991 that RG Don Carlos Méndez Montenegro and his son Alex Rudolfo Mendez del Cid were ambushed. They were returning from the Reserve and stopped at a gate. Their attackers were waiting and had cut sticks to support the barrels of their weapons. The shotgun blasts from uphill came through the window of the vehicle wounding Don Carlos in the right arm and critically wounding Alex in the abdomen. Fortunately, their assailants fled without finishing the job and both men survived. Almost a year later, Alex accidentally drowned in a pond near his home. In spite of a nerve transplant in the USA, Don Carlos will probably have limitations in the use of his right arm, but at least the extreme pain he was living with has subsided. Director Skinner and Defensores are to be congratulated on providing travel to the USA and paying for the cost of the specialist that did the operation.

1000 h	1542 km	Boundary of Defensores De La Naturaleza	2320 m
1030 h	1544 km	Campamento	2560 m

The camping area consists of 2 thatched huts (1 for sleeping and a smaller one for cooking) and benches and small table for an outside fire. I would recommend a low table with washbasin and pit behind it for waste, soapy water. Otherwise the water source will be fouled with much use.

We walked to Piedra del Angel with RG **Don Carlos Mendez Montenegro** and his 19 year old daughter **Lilian Anabela Mendez del Cid** who wants to study to be a nurse practitioner for rural people. Trail signing is needed in this area. Local people and tourists are easily confused in the dense forest and some have been lost for days. An 11 mm cable is needed to be fixed in 2 steep sections (20-40 feet each) of the ascent of Piedra del Angel. The cable is used more as a rope than a hand rail, should be new and expansion bolts used to loosely bolt it to the rock in at least 3 places per section with "bomb proof," solid anchors at the top.

There were once deer and bear in the Sierra De Las Minas. We discussed the possibility of a reintroduction program of white tail deer.

8 August 1992, Saturday:

1300 h	1573 km	San Agustín	430 m
1310 h	1576 km	Turnoff, Carretera al Atlántico	470 m
1315 h	1579 km	El Rancho (Stopped for Lunch, Lv:1410h)	450 m
1500 h	1640 km	Turnoff - gravel road to Chilascó	1550 m
1520 h	1648 km	Entering Buffer Zone	1950 m
1526 h	1651 km	Town of Chilascó	1910 m
1700 h		Base of Waterfall	1710 m

Chilascó District

District Coordinator Horacio Marroquín and Resource Guards **Esteban Hernandez**, Herme Rchildo Garcia, **Felipe Perez**, Cristino and Ebelio Hermegildo.

We walked to the waterfall and returned with the last light in a driving rain. We were very graciously offered coffee in the home of Felipe Perez. About 6 weeks ago, 4 armed men came looking for the District Coordinator. They did not reach the town, but it is supposed to be in

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connection with illegal logging activity. Subsequently, Moisés Fialco Castillo was arrested and Victor Jiordani and there is a warrent out for Victor Jiordani who is out of the country (see enclosed article). This is a precedent setting case and the first of its kind in Guatemala.

The roads and foot trails to the waterfall all need draining in the worst way. Because the side hill water is allowed to run freely down the trails, there is erosion and washing down to rock and the hard clays. Part of the extension service should be the construction of water bars on trails and roads (or culverts which may be too expensive). The trail adjacent to the waterfall is much too steep and should be switchbacked so that people cannot see the next switchback to avoid shortcutting. In this way, erosion may be avoided and both the large and smaller waterfalls can be developed. There is a good handout in El Manual Para La Capacitación Del Personnel de Areas Protegidas on "Trail Construction and Maintenance" by Dr. John Schelhas who worked on Yosemite National Park Trail Crews for many seasons. There are also good ideas in the handout by the Appalachian Trail Club.

2014 h	1665 km	Junction with Paved Highway	1550 meters
2027 h	1674 km	"La Posada" (near Biotopo Quetzal)	1680 m
2245 h	1744 km	Coban	1360 m

9 August 1992, Sunday:

We returned to Chilascó to retrieve my camera which I left in Felipe Perez' house and returned to the turnoff to El Estor (approx. 16 km north of "La Posada" and just south of San Julián).

1315 h	1880 km	Turnoff main paved highway to El Estor	1550 m
1540 h	1971 km	Papalha Experimental Farm	250 m
1621 h	1953 km	Telemán	160 m

Polochic District

Ing. **Eric Barrientos**, District Coordinator

Pancalá: Extensionists Cornelia "**One**" **de Fernandez**, Pedro Rax, Felipe Cuc Botzoc, Peace Corp Volunteer Brita Muieznieks, and Resource Guard Rafael Maaz Xi.

San Lucas: Extensionists Marcelino Tun, Manual Pop & Josefina Carcamó

Santiaquilla: Guardarecursos **Sebastian Caal** and **Emilio Chub Caal**

1640 h	1960 km	Bridge into Finca La Constancia-Droege	165 m
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Ing. **Hans Peter Droege** Lützow and his wife, **Luisa Teresa**

Presidente Y Gerente General Tels: 317-009 & 325-307

Arrocera del Polochic, S.A. (APOSA)

Finca La Constancia, Panzos, Telemán, Alta Verapaz

Ciudad Guatemala: 9a. Calle 5-34, Zona 4

According to Hans Droege, in 1920 there were few people in the area because of malaria, but a banana company started developing 46,000 hectares (177.5 square miles) without much success. In 1944 the company sold the land to a general partnership made up of Guatemalans who contracted with Hans' father, Mr. Droege Brandt, to administer the farm which was gradually sold off in small parcels from 1951 until the '60s as one after another of the partners became disaffected. They experimented with cotton, but mildew took it. Finca la Constancia grows and processes rice and lemon grass oil.

The immigration of the Q'eckchi began in the '60s. This indigenous group is nomadic and if there is money, the women dress well with as much as 12 yards of material in their dresses (a poor dress would only have about 4 yards). Today there is less alcohol abuse than the '60s because 50% of the population are members of the evangelical church. They know how to say "good day", "good afternoon" and "goodbye" (Adios), but they are generally illiterate and not many of them speak Spanish. There are a few Pocomchi families in the eastern part of the Reserve. In general, there is a serious lack of school teachers in the Sierra De Las Minas.

2000 h 2027 km El Estor

130 m

10 August 1992:

Permits were issued by CONAP for capturing and selling live iguana. There was a good market and it got out of hand with people copying the permits. As a result, the population is now almost non-existent and there have been some negative consequences with the increase of the melalonta population and subsequent damage to the rice crop due to this imbalance of nature. Fortunately, Eric was able to salvage 70 iguana and is working with CONAP to begin much needed salvage of the situation.

Consejo Nacional de Areas Protegidas (CONAP)

2a. Avenida 0-69, Zona 3

Tels: 011-502-2-518-951 & 500-454

La de Bran, Ciudad de Guatemala, GUATEMALA (Central America)

From El Estor we caught a ride with the Shell Oil boat and after one missed channel, followed the Río Chinebal to the disembarkation of the village of Chinebal. We were met by armed Q'eckchi who guard the cattle and the farm. Most communities have civil defence posts where men of each town has this duty every 15 days.

We were accompanied by Eric's 15 year old daughter **Patti Barrientos** and "One" de Fernandez and walked for about 4 hours across recently worked fields and through many small groups of families. The fields in the valley appear fertile and are farmed by mechanization while adjacent hillsides are farmed by hand because of the steepness. There is little rolling terrain. Either it is flat or quite steep.

In Pancalá, there is a thatch building for "One" de Fernandez who works with the village women on artisan crafts like embroidery. A second thatch building houses an example of a fuel efficient stove built by Peace Corps and a separate fuel efficient oven.

We were met in Pancalá by Eric Barrientos in the 4-wheel drive crewcab Toyota pickup. Although they are noisier, mud tires could prove beneficial by avoiding the need to chain-up on the steeper, muddy roads. An electric winch is also advisable for getting unstuck and out of trouble; even a hand operated cable "come-along" with a long cable would be good emergency gear. Forging the rivers is no joke and can only be done when there has been no rain in the mountains or until the water level goes down. Considerable experience with the local conditions is needed just to get around. Eric has been working 11 years in the area, speaks Q'eckchi and seems to be liked and respected.

11 August 1992:

0850 h	2158 km	Finca La Constancia	170 m
1201 h		San Lucas	500 m

Because the Río Pueblo Viejo was at a high water stage due to the hard rain (1 inch) the previous night, we crossed by dugout canoe and walked 3 hours to San Lucas. On the north side of the Sierra I did not observe any mules. I would recommend purchasing horses for the resource guards on the north side and mostly mules with a few horses for the south side of the Reserve. They should all be trained for riding and packing cargo.

There is a demonstration plot of green fertilization (abono verde) which uses a vigorous bean (frijole terciopelo) which is planted in the same row between the corn stalks. After harvest, the corn leaves wilt and allow additional light and the bean vines take over and produce their crop. A mixture of 50% bean flour and 50% wheat flour is used to produce a bread which has the additional benefit of slightly lowering the blood pressure. By mixing this locally produced bean flour, the dependence on imported wheat flour is cut by half.

The beauty of these extension projects is that a proven and growing example shows people how they can reduce their work load and avoid the heavy labor involved cutting forest and clearing land at higher and higher elevations with shorter growing seasons and less sun due to the ever present clouds. They end up showing their neighbors how to efficiently use the technique of green fertilization (abono verde) and terracing.

There are 30 families in the Nucleus Zone of SanTiaguila. They are 5 hours walk from San Lucas and have asked to exchange their lands for titled lands at a lower elevation and in the buffer zone. They have asked for title to 225 hectares (555.75 acres). There has been discussion about a bad precedent, but there is little communication from drainage to drainage and none over the crest of the Sierra De Las Minas so this fear may be exaggerated. The credibility of the Reserve in the minds of the Q'eckchi may be at stake.

GENERAL RECOMMENDATIONS

I have made several technical recommendations and have several more of a general nature.

Training:

There is a great need for a Second Guardarecurso and Protected Area Management and Extension courses of 7-10 days for 20 minimum and 28 maximum people. At least 70% of the people should be from the Reserve. The cost in time away from the job is more than made up by greater efficiency and enthusiasm. Having more technical knowledge of subjects like trail construction and maintenance allows for independent action with constant supervision which is physically impossible due to the difficult access into the work sites. The team building produced by these course reduces turnover and experienced people are not lost as readily.

Uniforms:

A good cowboy style hat that is in common use in the area with an insignia and a uniform shirt with insignia are needed to adequately identify the resource guards. I would recommend distribution of the uniforms after a 10 day resource guard course in protected area operations and extension services.

Housing Facilities:

Good housing for the District Coordinators and Director of Sierra De Las Minas Biosphere Reserve is imperative. Additional housing can be rented or built for additional resource guards so that rotation of jobs can be accomplished to give them additional experience in other areas. There should be a married couple living in the communities inside the Reserve. Hire both persons; one to work as a school teacher or extension person and the other to work as a resource guard. Single persons working in communities are sometimes considered a threat and do not spend as much time on the site as a married couple. The lead person can be paid for 5 days work per week and the spouse for 2 days or 5 days as the case may be.

Provide a good house that is either rented, purchased, or built by Defensores de la Naturaleza. The negotiation for rental should include an option to buy at today's market price. It costs a little more, but in this way, the price is not inflated by speculation and one can experiment with the location for a year. The strategy of the Argentine and Chilean National Park Systems of building solidly constructed, permanent residences for families has proven successful over time. This does not mean that single employees cannot live in these houses. However, it does mean that decent living conditions exist which tend to keep people on the job; a good house often makes up for low salaries. Bad living conditions have caused more than one good employee to seek employment elsewhere.

Equipment Purchases:

In our discussions for the Matagua District, it seems to be a given that mules will be purchased for the resource guards. I would recommend the purchase of a few horses for the following reasons:

Without a doubt, mules as a hybrid of a mare horse and jack burro, hold up better for heavy work in steep terrain. This is why they are used for packing cargo and routine rides down into Grand Canyon National Park, Arizona. However, they have disadvantages for riding and non-routine activities and are sterile, in case one dreams of raising foals.

Horse versus Mule:

Mules are a glorified jackass with a psychological dependence on their mother; they love horses. On patrol with a horse and several mules, you can put a bell on the horse and hobble it and the mules will stay with it overnight and all eat their fill of grass. A horse is easier riding and its body conformation holds a saddle better in steep terrain. In our 6 day field trip into and around Sierra De Las Minas, I observed that mule use predominated in the Motagua District and horse use in the Polochic District. Local preferences should prevail, but it would be useful to have at least one good horse in the Motagua District.

Riding mules are generally the exception, rather than the rule. They make excellent pack animals when led by a horse. In Río Abiseo National Park, Peru, horse mounted wranglers lead pack mules the 4 days necessary to pack into the Park. Pataz, Peru is 6 hours walk or horseback ride and there is no road. For more information on stock use, I would recommend corresponding with:

Biólogo Estéban Alayo Briceño
Intendente, Parque Nacional Río Abiseo
Oficina Correos de Piás.
PATAZ - LA LIBERTAD, PERU

He was raised in the altiplano and his father was a mule and horse trader. Superintendent Alayo could be useful for buying and setting up a program for horse and mule use.

Do not economize on quality. Resource Guards can come up with many reasons not to use a bad horse or a cantankerous mule. A good horse or mule in the USA costs about \$1,500 - \$2,000 each, but over time they will amortize out the replacement costs, feed, veterinary costs and shoeing to around \$750 per year whether they are used 1 day or 365 days per year. My recommendation is to buy horses with the following criteria:

- . Age - between 4 and 10 years old (older horses have stiff ankles and tend to fall in steep, wet terrain;
- . Height - Minimum of 15 hands (about 60 inches at the withers);
- . Darker color (not white - can be seen from too far away and have a tendency for sunburn);
- . Gentle, well-trained and athletic. You do not want to be riding a clumsy, stumble footed animal when your life may depend on your horse's athletic ability.

The use of good pack animals will allow the resource guards to do favors for the communities which will help with public relations.

Use of Dogs:

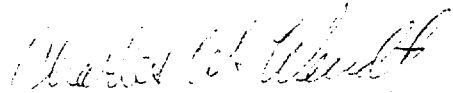
Because of the ambush mentioned above, the threats of violence, and the fact that the resource guards are not armed, I would recommend the use of trained german shepherds for use in searching for lost persons and alerting the resource guard of human presence. They can be taught not to chase wildlife. Few people will try to rob a vehicle or its contents with a large dog present. However, because they represent an additional food cost, an additional allowance should be provided.

Communications:

Since there seems to be a problem in obtaining frequencies, I would recommend experimenting with modular telephones for emergencies. Many of the sites are at a high enough elevation that they might hit the repeater sites. Another solution would be the use of low frequency HAM (amateur) radio systems. The small generator could be used for environmental education while providing power for the radio. From Río Abiseo, I used a HAM radio to patch through a telephone call to my home. This location on the Amazon side of the Andean Mountain Range is one of the most remote in the world, but still the signal got through to Costa Rica. The antennae specifications seem to be the key to success and require a semi-permanent installation, but it works.

The Defensores de la Naturaleza, and Reserve Director Juan Skinner have taken a difficult mountain range, full of colonists in a violent and conflictive environment and have installed a working infrastructure with buildings and people in a little less than 2 years. It is nothing short of amazing, given the difficulties. Because of this success, the strategy for using the start-up money from the Parks In Peril Program of The Nature Conservancy to employ people has been successful in creating the critical mass that has attracted additional donations. However, principal ingredient that has produced this remarkable program is the dedication and hard work of all of the people mentioned above and many more.

I would like to thank Director Skinner for his patient attention in our travels and wish him many more years of spending his focused intellect and energy in the cause of conserving one of the World's greatest natural resources - The Sierra De Las Minas Biosphere Reserve.



Charles W. Wendt
Consultant, Protected Areas
Management And Training

Enclosures

bcc:

Brian Houseal
Andreas Lehnhoff
Kathy Moser
Bill Wendt

Investigan depredación en Sierra de las Minas

El Ministerio Público (MP) investiga la posible participación de personas que podrían estar financiando la deforestación del área de la Sierra de las Minas, la cual tiene carácter de reserva de biosfera, conforme lo prescrito en el Decreto 49-90 del Congreso de la República.

En febrero de este año se presentó la denuncia ante el Juzgado Primero de Primera Instancia de Instrucción de El Progreso, con la cual dieron inicio las acciones judiciales tendientes a procesar a los depredadores de la Sierra de las Minas. Como consecuencia de ello, fueron detenidas 15 personas "infraganti", en el momento "en que arrastraban madera".

Asimismo, ese tribunal otorgó la libertad de esas 15 personas tras imponerles una fianza de Q20,000.00 a cada una de ellas, cantidad que fue cancelada de inmediato.

Estas personas, al ser indagadas, vincularon en el delito a Moisés Fialco Castillo y Víctor Jiordani, por lo que el MP solicitó la orden de detención de ambos. El primero de los mencionados fue capturado el 31 de julio recién pasado, no así Jiordani, quien está fuera del país.

Fialco Castillo prestó declaración indagatoria en el referido tribunal, y está pendiente que resuelva su situación jurídica.

El MP sostiene que existen suficientes elementos racionales de prueba para que Jiordani siga sujeto a la acción judicial, iniciada en febrero del año en curso, por la deforestación llevada a cabo en la Sierra de las Minas.

La depredación ha sido efectuada en las fincas El Cedral, Louisiana y Las Nubes, entre otras. Una de las fincas perjudicadas pertenece a la empresa Vig. S.A. y otra a la Asociación de Madereros.

THE NATURE CONSERVANCY
PARKS IN PERIL PROGRAM

El Triunfo
Biosphere Reserve

Chiapas, Mexico

Evaluation Report
August 1992

Róger Morales
Consultant

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I. INTRODUCTION

1. Brief PIP site description.

El Triunfo Biosphere Reserve (ETBR) covers over 119,593 Has.

(94,245 Has. of Buffer Zone and 25,347 Has. of Core Zone) in the Southern Sierra Madre de Chiapas, and it encompasses tropical forest habitats from low elevation semi-deciduous forest up to high elevation cloud forest at 6,500 feet. The mountainous canyons and streams are some of the last extensive refuges for spider monkeys, tapirs and kinkajous; also, this mountain top forests are home of rare cloud forest endemic such as quetzals, horned guans, and azure-rumped tanagers.

The ETBR contains the last significant remnant of the Southern cloud forest of Mexico, it also protects a significant portion of the watershed of the Chiapas Sierra Madre. This watershed also supports the most important agricultural area in Chiapas; moreover, it is an important source of water for the productive marine estuaries, the fishing and shrimping industry on the West coast. More than 24 rivers drain from El Triunfo into the coastal wetlands.

El Triunfo region is the most important coffee production area in Chiapas. It supports some of the largest private

coffee plantations as well as communal (ejidos) plantations. Coffee and small corn fields are the principal human activities within the buffer zone of the Biosphere Reserve.

El Triunfo was officially decreed as a Biosphere Reserve in March 1989. The Chiapas Natural History Institute (IHN) has worked to protect El Triunfo. They wrote the Biosphere Reserve proposal and promoted its declaration.

IHN is a semi-autonomous branch of the State Government of Chiapas and have the responsibility for natural resource conservation. Five years ago IHN formed a partnership with Foundation Miguel Alvarez del Toro (FUNDAMAT) a local conservation NGO to raising funds for IHN's conservation activities, including those of the ETBR. Since 1991 FUNDAMAT was no longer involved and related with IHN, instead the IHN established another NGO denominated "State of Chiapas Natural History Institute Patronage" as a civil association, this NGO is from December 1991 on in charge of the ETBR funds raising and administration. The present Patronage president is the head of the IHN's Natural Areas Department.

In El Triunfo, IHN carries out protection activities such as surveillance, monitoring and research, local community

outreach and management planning.

2. Team composition.

Roger Morales, Consultant.

3. Evaluation working plan.

18 August 1992.

- Consultant arrives in Tuxtla Gutiérrez.
- Meeting with Victor Hugo Hernández, Head of IHN Natural Areas Department; Ignacio Alvarez Head of IHN Planning Department and José Hernández, Manager of El Triunfo Biosphere Reserve. Outline of the consultant activities and trips were defined. Several key documents were delivered to the consultant.

19 August 1992.

- Reading documents at the Hotel.
- Invited to a meeting at the ZOOMAT (Miguel Alvarez del Toro Zoo) between Juan Manuel Mauricio, Assigned Fullgate from SEDESOL (Secretary of Solidarity) former SEDUE, and the IHN staff to explain the new policies and administrative regulations of SEDESOL related to natural resources and protected areas administration and management. Supposedly the SARH (Secretaría of Agriculture y

Hydraulic Resources) will take care of management and operation of the protected areas and SEDESOL will be the responsible for the development of policies and regulations for protected areas management.

At the end of the meeting the consultant have had the opportunity to explain to the IHN staff the evaluation mission objectives and a date were established (24 August) for another meeting to share with them the consultant findings, conclusions and potential recommendations for the administration and management of El Triunfo.

20 August 1992.

- Trip to Jaltenango.
- Visit to Mr. Oscar García, Leader of the Ejido Benito Juárez and strong supporter of ETBR. He made special emphasis on the good management of the ETBR and establish the significant reduction of fires as a parameter to judge the good management.
- Visit to Mr. Alfonso Ramirez, Jaltenango's Municipality President.

21 August 1992.

- Visit to ETBR main office in Jaltenango.
- Meeting with ETBR program chiefs and assistants.
- Meeting with Mr. Maximo Robelo H. former municipal president and PACONAT member, and professor Reynaldo Morales, PACONAT member
- Departure to ETBR (04:30 p.m.). Arrival to El Triunfo Station (09:00 p.m.).

22 August 1992.

- Visit to Palo Gordo Station.
- Meeting with field workers in the Palo Gordo and El Triunfo stations

23 August 1992.

- Departure from El Triunfo to Tuxtla Gutiérrez.

24 August 1992.

- Meeting with Mr. José Hernández and Mr. Víctor Hugo Hernández, with the objective to check up the execution of the ETBR action and operative plans
- Meeting with the IHN professional staff (Chiapas Natural History Institute), with the objective to analyze the current and future ETBR management.

25 August 1992.

- Meeting with Mr. Ricardo Hernandez, Mrs. Lula Avila and Mr. Jose Hernandez about the Ecoturism Feasibility study results for the ETBR.
- Meeting with Mr. Alejandro Hernández, Mrs. Ana Laura Aranda and Mr. José Hernández (Planning Section, IHN Department of Natural Areas) , about the techniques and mechanisms for the operative plan evaluation.
- Departure to Costa Rica (04:00 p.m.).

4. Target Institutions and individuals.

■ IHN Department of Natural Areas:

- Víctor Hugo Hernández, Chief.
- Carlos Pizaña, Chief of the Protection Division.
- Javier Jiménez, Chief of Broadcasting and Environmental Education Division.
- Anameli Villatoro, Broadcasting and Environmental Education Division.
- Alejandro Hernández, Chief of Planning Division.
- Ana Laura Aranda, Planning Division.
- Hugo Alberto González, Environmental Promoter
- Guadalupe Cancino, Environmental Promoter.

■ Jaltenango Municipality:

- Alfonso Ramírez, Municipal President.

■ Secretary of Solidarity:

- Juan Manuel Mauricio, State Representative.

■ Chiapas State Secretary of Rural Development and Ecology:

- Froilan Esquinao, Assessor.

■ Chiapas Natural History Institute:

- José Carlos Fizaña, Chief of Protection Section
- Gerardo Cartas, Chief of the Scientific Research Unit.
- Juliana Maruz, Chief of Broadcasting and Public Relations.
- Ignacio Alvarez, Chief of Planning and Evaluation Department.
- María de Lourdes Avila, Scientific Research Unit.
- Becky Alvarez, Chief of Ecologic Orientation Department.

■ Santa Rita Artisan Cooperative:

- Several members.

■ PACONAT Patronage:

- Máximo Robledo.
- Reynaldo Morales.

■ Benito Juárez Ejidos (Communal Plantations):

- Oscar García, Community leader.

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II. TECHNICAL

A. Significant on the ground management achievements.

1. Current Situation.

1.1 Personnel:

1 Director, 1 Administrator, 1 Secretary, 3 Program Coordinators (Community Development, Public Use and Environmental Culture, Operative), 1 Researcher, 3 Community promoters, 4 environmental promoter and 6 park rangers that total 20 people.

It is important to say that two park ranger salaries are been paid by two of the main coffee farms in the ETBR buffer zone.

From october 1992, there will be Social Security coverage for the whole reserve personnel; this transaction was initiated in may 1992 by the Direction of IHN Natural Area Department.

1.2 Training:

The annual three week course was cancelled to 1993

The Director and other ETBR professional personnel went to short courses in Costa Rica, Honduras and Yucatan. In El Triunfo, It was developed a course for leaders and personnel about organic agriculture

The researcher and the Director of The Natural Areas department went to international courses about ecoturism in Mexico, Ornithology in Ecuador and the Park World Congress in Venezuela.

1.3 Management Activities:

The Treats to the ETBR are:

Non-controlled Colonization by guatemalans and mexicans. Even though there are controls, This is a continuous problem; for instance, during the coffee grain harvesting in the ETBR buffer zone, there are a "floating" population; just one farm could have 1,500 "floating". On the other hand, It was mentioned that there is a strong migration of young people (less than 20 years) from the buffer zone to the main cities due to difficult economic situation in the region and the coffee low prices.

Deforestation and erosion. According to ETBR person-

nel and neighbors, deforestation has decreased. Until now, there is any type of soil conservation management.

Forest Harvesting without reforestation
Reforestation activities are incipient, and as mentioned before, forest harvesting has been reduced. It is important to say, that for two years there's been a pine beetle outbreak which has not been controlled.

Induced Fires caused by Agricultural Development The most critical part of the year for wildfire treat is between april and may. In 1991, about 2,500 Has. ere affected by wildfires, 700 of them were inside the ETBR core zone; for 1992, just 100 Has. burned.

Pesticide and Herbicide Use in Coffee. The use of these chemicals continue; however, ETBR has a program in one of the coffee farms about biological control about some coffee diseases like "Broca".

Road Construction for harvesting and logging. This activity has been controlled completely; however, it is programmed to open a electrical line opening through ETBR towards Tapachula. A small environmen-

tal impact study was made. This opening in the forest would have 15m wide and 10 Km of distance. About 3 Km will be ETBR old growth forest.

A new treat, that could be temporal, and it should be paid attention, it is the low international prices of coffee grain which could imply the plantation abandonment with its social impacts and the change in land use by a less suitable use for that land.

Finally, although it is not a treat, it is important to mention that the federal government has changed the constitution in the article 27. This change does not allow neither new farms nor the allocation of land for new "Ejidors" and the expansion of the existing ones. The future consequences for ETBR, either positive or negatives, should be carefully managed by the reserve direction.

About protection, in this moment, there is a process of establishment of a sixth core zone which boundary has already been outlined. This area is located in the south part of the reserve. In addition to this park expansion, It may be considered as an indirect park expansion, the creation of a "Zone aimed to Conservation" (provisional category) named La Sepultura

with an area of 177,000 Has. According to IHN Natural Areas Department, La Sepultura area will be declared as a Biosphere Reserve. Thus, almost the whole Chiapas Sierra Madre would be protected and managed under this category.

There are three park stations (Palo Gordo, Quetzal, El Triunfo), and a new station will be build in La Angostura.

In addition to the 6 park rangers, there are 2 park rangers authorized and financed with PIF funds. Also, there are 7 extension workers, 2 of them are paid with PIF funds.

About labeling; in addition to the 175 established label in 1992, 20 labels were established this year.

It has not been established a visitor center yet; however, Palo Gordo station has fixed one of the cabins in order to host visitors. Moreover, It has been planned to established an exhibition hall in El Triunfo and other in Jaltenango main office.

The established communication system, it's been increased with 10 walkie-talkies, 4 bases, 1 movil and

1 repeater.

In Toluca, Las Nubes, Cuxtepec and La Tigra has been established local protection councils. Each one with five to seven members.

Also, It has been established cooperation agreements with land owners in Liquidambar, Cuxtepec y Catarinas and Jaltenango Municipio. The agreements with land owners are directed mainly to organic coffee production and mushroom production with coffee residues.

The annual ecological week as an educational, extension and public relation event was celebrated in Cofre lake.

Some of the research and monitoring activities are:

- Vegetation type maps are been mapped in a 40%, and it's expected to be finished by 1993.
- Land use maps are done in a 30%
- Activities detecting seasonal changes in vegetation and land use have not been initiated.

- An ETBR flora inventory that identify plant with potential uses in medicine and commerce is finished.
- Habitat and endangered species studies related with azure-rumped tanager, pavon de cacho and quetal are in process.
- Monitoring about land use, agricultural and health problems are been executed.

ETBR operation and administration in under IHN responsibility; however, an agreement with the state for boundary definition has not been signed. It is important to say that the change from SEDUE to SEDESOL, this one is planning to give management and operational responsibilities to SARH for the country protected areas. It is not clear that IHN will have the official responsibility for El Triunfo.

The reduction of fires, illegal hunting and forest exploitation are ETBR positive impacts in the region.

The ETBR influence in Chiapas state about the environmental problems could be measured when the state has used this reserve as an example of.

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protection given to La Sepultura watershed (177,000 Has.) next to ETBR.

ETBR negative impact to the communities' economy by controlling the natural resource uses, is seen in the reduction in the logging industry and fauna trafficking which were very important industries in the area. These activities have not been controlled completely. Another effect due to constant patrolling and over flights by the reserve personnel, is the important reduction of illegal crops like amapola and marihuana. According to the gathered information this has produced a negative impact in the region economy.

The ETBR positive effects in the local and regional communities are not significant yet; however, The ecoturism induced by the reserve has already started to favor some families in the region for meal sales, mule rentals, lodging etc. The pilot projects were related mushroom production, organic coffee, "coffee's broca" biological control, definitively, they will bring economic benefits to the local and regional communities in the next years.

Patrolling cover around 80% of the reserve area, 40%

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of those are permanent rounds. There is labeling in
40 Km. of the core zone boundary, about a label every

III. FINANCING

A. Current Situation.

WWF available funds for ETBR annual management are US\$120,000; however, in 1992 due to the FUNDAMAT conflict these funds were not given.

Mc Arthur Foundation gave US\$30,000

International Conservancy contributed with US\$22,000 to finance 1991-1992 ecotourism studies.

For the Quetzal study, RARE contributed with US\$15,000

For 1993, It is expected that WWF support would be stabilized; The Mc Arthur foundation will give the same amount; and the FORD foundation will give US\$60,000 for community development. The National Fish and Wildlife Foundation will contribute with US\$33,400 for bird migration monitoring. Moreover, It is expected other minor donations for a total of US\$15,000.

The process for the instant lottery contribution to the ETBR was approved. Still a trust creation is in

process. This lottery contribution will generate US\$4,000,000 which will help to cover ETBR salaries.

In the medium and long run, the financial plan will be elaborated by IHN Natural areas Department staff. For this plan, the consultant gave some consideration elements to be considered in it.

It is expected in the future that the Chiapas State increase its contribution from 30% of the total budget to 50-60% and IHN increase its contribution from 10 to 20%. It is expected that ecotourism will contribute with 10% of the financial needs. FACONAT is expected to contribute with 2%. The ETBR operational budget in the medium run will be approximately US\$300,000 yearly.

IV. ADMINISTRATIVE PROGRAM

A. Current Situation.

ETBR administration, at a IHN Natural Areas Department level as well as their Jaltenango main office could be considered as excellent.

The goods and equipment purchase is carried efficiently according with the required necessities.

The IHN patronage responsible of the ETBR administration and budget management has an accounting system and adequate and efficient budget control

ETBR administration has completed efficiently its technical and financial reports

The consultant do not consider necessary neither any changes nor any adjustments to the current TNC-IHN ETBR agreement related to FIP program.

V. SUMMARY AND RECOMMENDATIONS

There is no doubt that the Natural History Institute, through its Natural Areas Department, is managing this reserve in an excellent way from a technical and administrative stand point. The field personnel mystic and The IHN technical staff and reserve director attention and permanent supervision to the reserve necessities, allow and facilitate the development of the programmed activities.

We could deduce that the more relevant management achievements are: A decrease in the frequency and spread of wildfires; the reserve expansion with a new core zone as a consequence of a land use and land tenure studies in the south east sector; The establishment of a new protected area next to ETBR named La Sepultura; and finally, Improved infrastructure, a better communication system, and a motorcycle fleet in El Triunfo and Palo Gordo stations have contribute to an efficient and better field management

The existing political will from the central government in environmental issues, the improvement in the management of protected areas, and the sustainable development of rural communities in buffer zones are playing an important role for the consolidation of a State protected area system. ETBR is a model

protected area and its the best managed in the country and is on of the three best protected areas (El Triunfo, Manatlán and Sian Kan)

PIP has been very important for the advance and obtained the ETBR consolidation because as said before most of the action described were financed by this program.

As a final recommendation from this consultant, PIP should continue its financial support to ETBR, and improved, with IHN Natural Areas Department, the technical assistance in order to manage the reserve and reduce some symthom of in-breeding and lack of internal debate, and improve the planning, design and execution of management actions of ETBR organic programs

VI. CONCLUSIONS Y FINAL RECOMMENDATIONS

Due to lack of communication and a more organic internal discussion about planning and action execution, the program chiefs and the reserve director should have a meeting at least once a month to discuss the achievements, problems, action proposals in the execution of the management plan. Moreover, The program chiefs should do the same with their personnel under their responsibility. It is important at least twice a year to have a 2-3 day meeting including the director of the Natural Areas Department and the technical staff in order to check and reflect about the operative plan execution and make the respective adjustments, and discuss the new administrative and technical policies and normative about the reserve management.

It is necessary that IHN promotes the participation of other state and federal institutions in the buffer zone in function of the regional sustainable development.

In the short run, it is necessary to apply an exercise in order to define the priority critical areas in the buffer zone for each program, and then among them, select the most important ones in the reserve. Thus, each program will concentrate in a reduce number of critical areas well distributed in the buffer zone.

This will insure a better impact and integral work of the actions. A broadcasting and information program will maintain informed the rest of non-priority areas in the buffer zone.

It is necessary to identify and train community promoters and teachers.

As proposals, the consultant believes that it is convenient to dedicate the Palo Gordo Station mainly for researchers and to improve the installations in order to use them as a biological station. This means that the researchers will install their transects, study parcels and instruments in this area. El triunfo station should be dedicated for ecotourism and visitors, so it is necessary to either identify and design interpreted natural trails or provide access to particular interest sites

It is important that IHN Natural Areas Department promotes an increase in new members that reflects a broad representation in the FACONAT.

It is necessary to improve the meteorological net in all the core zones especially in the zone 1 (It is necessary to reallocate the site for the meteorological station due to forest shading.)

It is necessary to make a diagnosis of the training needs and program this function in order to give the park ranger of techni-

cal and positional growth options in the reserve structure. The tutorial distance training could be an option for El Triunfo personnel.

The consultant has the impression that the field personnel spend too much time in report preparation (possibly due to IHN staff influence which formation is as researchers) these could be reduce to a brief report in every monthly meeting of the program chiefs and the reserve director.

It is necessary that IHN define its role, functions and responsibilities related to the sustainable development in the protected areas buffer zones in order to promote the participation of other federal, state and local institutions in the sustainable socii-economic development in those regions.

Finally, this consultant believes that the moment is set to developed a Strategic Plan (Development Strategy) for ETBR in order to create a systematic plan using the gained experience until now and project it for 10 years

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EL TRIUNFO BIOSPHERE RESERVE (ETBR)

Chiapas, Mexico

PERSONNEL LIST

■ José Hernández, Director ETBR.
■ César Velázquez, Community Development.
■ José Domínguez, Community Development.
■ Juan Hernández, Community Development.
■ Uriel Trujillo, Community Development.
■ Martín Castillo, Environmental Promoter.
■ Uriel Ramírez, Environmental Promoter.
■ Guadalupe Cancino, Environmental Promoter.
■ Héctor Velázquez, Environmental Promoter.
■ Pendiente Cuxtep, Environmental Promoter.
■ Roberto Escalante, Protection.
■ Ismael Gálvez, Protection.
■ Enelfo Gálvez, Protection.
■ Rafael Solís, Protection.
■ Isain Roblero, Protection.
■ Ramiro Gálvez, Protection.
■ Juan Nuñez, Protection.
■ Andrea Velasco, Administrative.
■ Rosalba Vázquez, Administrative.
■ María de Lourdes Avila, Researcher.

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THE NATURE CONSERVANCY
PARKS IN PERIL PROGRAM

Evaluation Report
El Triunfo Biosphere Reserve

Support Documents

1. Informe de Actividades del Instituto de Historia Natural al TNC Abril-Junio, 1992 en la Reserva de la Biosfera El Triunfo.
2. IHN/Departamento de Areas Naturales-Reserva de la Biosfera El Triunfo. Condensado de Financiadores para la Reserva 1992.
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6. Protocolización de los Estatutos del Patronato del Instituto de Historia Natural de Chiapas. Diciembre 06, 1991.
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13. Plan de Trabajo de Promotoría Ambiental (Cronograma y Presupuestos): Martín Castillo, Guadalupe Cancino, Hugo González, Uriel Ramírez Reyes.
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17. Presentación del Proyecto Estudio de la migración del Quetzal (Pharomachrus mocinno), en la Reserva de la Biosfera El Triunfo, Chiapas, Mexico. María de Lourdes Avila y George Powell.
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20. Asociación Mexicana de Arte y Cultura Popular (AMACUP). Artisans and the Ecology. Octubre, 1989.
21. IHN/Proyecto: Planificación y Desarrollo Comunitario en la Zona de Amortiguamiento de la Reserva de la Biosfera El Triunfo, Chiapas,

Mexico.

PARKS IN PERIL EVALUATION REPORT:
EL OCOTE ECOLOGICAL RESERVE, MEXICO

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August 12, 1992

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**PARKS IN PERIL EVALUATION REPORT:
EL OCOTE ECOLOGICAL RESERVE, MEXICO**

I. Introduction

A. The PIP Site

El Ocote Ecological Reserve (El Ocote, the Reserve) is located in the northwest portion of the State of Chiapas, Mexico, approximately 40 km northeast of the municipality of Ocozocuatla. The Reserve was decreed as a Representative Natural Area by the State of Chiapas in 1972, and federally decreed as a Forestry and Faunal Refuge in 1982. The 48,140-ha Reserve protects the northernmost extension of rainforest in Mexico.

The predominant forest type in the areas which have retained their original forest cover is tall evergreen forest, characterized by trees over 30 meters in height. Other vegetational associations are tall and medium-height semideciduous forest (a vegetation composition where between 25 and 50% of the trees lose their leaves on an annual basis), successional (i.e., second growth) forest, and agricultural lands. Key faunal species which have been documented to occur in the Reserve include spider and howler monkeys, jaguars, tapirs, and harpy eagles. Finally, the Reserve is contiguous with two other relatively pristine forested areas, Los Chimalapas (States of Chiapas and Oaxaca) and Uxpanapa (State of Veracruz). These three areas combined represent one of two remnants of tall evergreen forest in Mesoamerica.

Approximately 40% of the El Ocote Reserve area which was decreed in 1982 has since been deforested or otherwise severely altered. Although the Reserve area is inadequate for agricultural uses and legally protected from such activities, communities around and inside the boundaries of the Reserve have continued to practice traditional agricultural practices of clearing forest for agriculture and cattle ranching; illegal hunting and selective extraction of timber resources is also occurring in and around the Reserve.

A recent project which threatened to further reduce forested areas in El Ocote Reserve was the proposed highway between Sayula, Veracruz, and Ocozocuatla, Chiapas. The proposed alignment for this highway, which was envisioned to serve as the principal connection between Chiapas and the rest of Mexico, would have passed through the Reserve close to the southwest boundary and divided the Reserve from the contiguous forested area to the west in Oaxaca. The project was proceeding without respect for the El Ocote Reserve decree or for Mexican environmental review requirements, when the staked alignment was discovered by IHN field staff and brought to the attention of

conservation groups in Chiapas. An environmental impact study was subsequently prepared and alternative routes for the highway explored. The project is on indefinite hold.

Through a cooperative agreement with the federal government, management of the Reserve is the responsibility of the Departamento de Areas Naturales (DAN) of the Instituto de Historia Natural de Chiapas (IHN). IHN is a semi-autonomous branch of the state government of Chiapas, which is supported by the State government. The first operative plan for the Reserve was produced in 1986, as a product of IHN's First Workshop for the Planning and Management of Protected Wildland Areas. DAN is currently preparing a management plan and an updated operative plan.

While initial PIP funds for El Ocote were disbursed to IHN in July of 1992, The Nature Conservancy has been supporting activities of protection and management of the Reserve since 1990. The period covered by this evaluation is June 1991 to July 1992.

Other groups working in the El Ocote Reserve include Ecosfera and ProNatura. These two groups are collaborating on projects related to environmental education and community development in the northern portion of the Reserve; additionally, they have conducted several baseline studies of flora and fauna and have compiled extensive geographic and bibliographic databases related to Reserve management.

B. Evaluation Work Plan and Composition of Evaluation Team

The evaluation for El Ocote Reserve was conducted between the dates of July 9 and July 24. A pre-site visit meeting was held at the Mexico TNC office on July 9 and 10 to discuss the scope of the evaluation; this meeting was attended by Susan Anderson, Mexico Program Co-Director, and Pamela Hathaway, contractor and preparer of this report. Additional consultation was provided by Jennifer Shopland, TNC contractor working on evaluation and monitoring programs. The in-country evaluation was conducted primarily by Pamela Hathaway, in collaboration with Victor Hugo Hernandez O. and the staff of DAN. A site visit to El Ocote was conducted on July 19 and 20, and included interviews with field staff and the Reserve Manager at the field station, and visits to sites of primary field activities. Consultation with staff of Ecosfera/ProNatura, to determine parallel and complementary activities in the Reserve was also conducted.

C. Target individuals for El Ocote Reserve

- 1) Victor Hugo Hernandez Obregon: Director of DAN and interim president of the IHN Patronato
- 2) Milton Morales Mendoza: Director of the Reserve

- 3) Filemon Mendoza Gomez: Head of Community Development and Environmental Education Programs for the Reserve
- 4) Adrian Mendez Barrera: Head of Operations Program
- 5) Margarita Ventura Cinco: Environmental Education Program (will assume direction of this program within the next year)
- 6) Jose Ignacio Aguilar Ruiz: Community Development Program
- 7) Avetnego Morales Alegria: Park Guard
- 8) Carlos Morales Perez: Park Guard
- 9) Samuel de la Cruz Lotes: Park Guard
- 10) Alcides Caraveo Chavarria: Park Guard
- 11) Refugio Velasquez Perez: Park Guard

II. Evaluation of Technical Components of Program

A. Achievements

1. Initial relationships with communities and landowners in the region established. Indicators: Community members approach DAN representatives for assistance in natural resource management and land tenure issues; landowners approach DAN for assistance with fruit tree reforestation project.
2. Establishment of a physical presence in the southern portion of the Reserve. Indicators: Functional and livable guard station (water-harvesting system, solar-powered radio communication system); established five trails with regular periodic patrol schedules to monitor illegal activities (hunting, woodcutting, burning).
3. Pilot rural development projects established. Indicators: Construction of three coffee nurseries, three demonstration plots for green manure, and pilot reforestation project with 800 mahogany and cedar trees.
4. Contribution to basic conservation information for the Reserve. Indicators: Land use, land tenure, and population census information has been collected and is currently being compiled for release within the next quarter.

B. Limitations

1. Transportation for staff to and from Reserve and within Reserve. Two vehicles have been purchased with TNC funds for use in the Reserve; one is used exclusively for transport of materials for construction, etc., and one is used for transport of personnel. This logistical problem was further addressed in the PIP budget request for 1992; currently, Reserve staff are purchasing mules which will aid in mobilizing staff (particularly guards) within the Reserve.
2. Focus on southern portion of Reserve; reconnaissance visits to northern portions of Reserve. This potential limitation has been addressed in the current PIP budget request which has allowed the number of staff to increase and initiate plans to establish a presence in the northern portion of the Reserve (see Recommendations section).

3. Weak relationships with other groups working in the Reserve. There is a longstanding problem with communication and coordination between DAN and the principal groups working in the northern portion of the Reserve (i.e., Ecosfera/ProNatura). While the goals of these two efforts are similar, the expertise of each group and the geographic focus within the Reserve have differed (DAN has more experience in protection and has worked in the southern portion of the Reserve, while ProNatura's programs have focused more on environmental education and community development in the northern portion). Strengthening of the communication and collaboration among all groups working in the Reserve will contribute to comprehensive and efficient Reserve management.

C. Recommendations

1. Do not dilute the presence in the southern portion of the Reserve by expanding too quickly into the northern portion(s), where the socioeconomic and resulting resource management situation is distinct.
2. Collaborate with other groups working in the Reserve to establish a comprehensive biological and socioeconomic baseline necessary for effective Reserve management.
3. Complete the operative and management plans to guide Reserve management, with comprehensive representation of all interests in the Reserve.
4. Involve local women in conservation activities.
5. Support studies and legal actions to expand the boundaries of the Reserve to encompass adjacent forested areas in Oaxaca and Veracruz.

III. Evaluation of Financial Components of the Program

Note: A comprehensive audit of the programs administered by IHN was conducted by US-AID during the period of June 22-26, 1992. The following evaluation of the financial components of the El Ocote Reserve PIP program focuses on accounting procedures which the administrator of the Patronato is in the process of developing currently.

A. Achievements

1. Establishment of a new accounting system at DAN which is organized by project and funding source. This system will allow DAN to monitor project administration and reporting requirements, expenditure of funds and restrictions on expenditures, and status of project budgets.
2. Hiring of a full-time accountant by the Patronato (see following section on Administrative Evaluation for discussion of the Patronato) to track all projects from administrative and fiscal perspectives.
3. Development of a comprehensive, diversified, long-term financing plan by DAN (see section on Summary Recommendations).

B. Limitations

1. Transfer of responsibilities for management of outside funds (from FUNDAMAT to DAN, and eventually to be transferred to the Patronato). Changes in accounting responsibilities and systems has resulted in occasional confusion regarding tracking of proposals, funds and budgets on the part of DAN staff. However, with the new system currently being finalized by the Patronato administrator, monitoring of budgets, timely budget requests and quarterly reports should become more routine.

C. Recommendations

1. Monitor the new administrative systems being established by the Patronato to ensure that TNC needs for monitoring of funds and project activities are being met.
2. Evaluate the necessity of establishing a petty cash reserve for El Ocote (as La Encrucijada and El Triunfo have).

IV. Evaluation of Administrative Components of Program

A. Achievements

1. Initial establishment of management team for the Reserve. Indicators: Naming of Reserve Director; contracting of new personnel for management of Reserve programs.
2. Initial steps in the establishment of a new NGO, the Patronato, which would have as its mission the support of DAN. The primary function of the Patronato will be to channel funds to programs administered by DAN (organization of the Patronato is discussed under Summary Recommendations).

B. Limitations

1. Historically, within the management team, there was occasional confusion regarding responsibilities and authority. However, with the recent appointment of a Reserve Director and program managers and the establishment of communication procedures, program management should improve.

C. Recommendations

1. Consolidate the existing management team through active participation by all in management activities. Resist the temptation to expand too quickly into new geographic or thematic areas prior to establishment and initial training of management team. Monitor leadership within the team and assess needs for leadership training.

V. Summary Recommendations

A. The southern portion of the El Ocote Reserve consists of several small agricultural parcels juxtaposed with remnants of tall and medium stature forest. DAN would support a project to purchase and restore several of these agricultural parcels, along with developing the most remote parcel (i.e., El Aguajito: the parcel nearest the nuclear zone of the Reserve) as a

research/guard station. There are several interesting research questions in the El Ocote Reserve, including soil-water relationships to forest type (i.e., tall and medium stature forest), plant species indicator for shallow water tables, etc. Recommendation: Prioritize parcels for purchase and begin fundraising and indemnization process with current State of Chiapas administration.

B. Several archaeological sites exist in the southern portion of the Reserve, including areas associated with caves and those uncovered in the recent opening of the proposed highway alignment through the Reserve. Currently these sites are not being actively explored or protected and much looting of sites has already occurred. Recommendation: Rapid Cultural Assessment of the Reserve and prioritization of sites for possible exploration and protection. Incorporate cultural reconnaissance into guard patrol responsibilities.

C. The lack of clean water for people living in the southern portion of the Reserve is the critical Human Needs issue. There are two permanent springs: one is an open pond area near the clustering of habitations designated La Providencia and the other is located near one parcel and is accessed with buckets (i.e., like a shallow well). While the scarcity of water has minimized the human population, health conditions for those residents who have settled in the area are poor due to the scarcity of clean water. Recommendation: Incorporate water harvesting systems in rural development projects, once a decision has been made regarding the carrying capacity of the zone.

D. The Reserve and the Chiapaneco conservation community have achieved recent prominence due to the analyses which led to the realignment/postponement of the proposed Mexico City-Chiapas highway. Discussions are currently underway to create a lottery for the State of Chiapas, the proceeds of which will go to conservation of protected areas. The State Administration has prioritized conservation of El Ocote for receipt of management funds.

As part of a comprehensive financing plan for conservation of protected areas in Chiapas, Victor Hugo Hernandez O. is actively involved in exploring the possibility of creating a trust fund for protected area conservation with the lottery proceeds. Other target programs and sources of funding include:

- protection/operations (TNC PIP funds);
- community development (Ford Foundation: for small projects with rapid turnaround; seed money for particular projects from the Instituto Nacional Indigenista and/or the municipalities, through the federally-funded Programa Nacional de Solidaridad);
- Departmental and protected area planning (State of Chiapas);

- special studies (for management studies: TNC PIP funds; for scientific studies: UNAM and the Centro de Ecodesarrollo; for studies of individual species: NY Zoological Society/Wildlife Conservation International);
- environmental education and information dissemination (TNC PIP funds; WWF; MacArthur Foundation; Mexican government; Instituto Chiapaneco de Cultura); and
- programs for generating funds from products in the Reserve (e.g., vanilla, decorative palms, ecotourism).

Recommendation: Capitalize on the State's current interest in conservation. Provide immediate short-term technical assistance to prioritize conservation needs for the State of Chiapas and to establish the most effective funding mechanism for meeting these needs.

E. The unique ecosystem of the Reserve could potentially support ecotourism of the type currently administered in El Triunfo. However, many basic issues remain unresolved (e.g., access, protection). Recommendation: Support consolidation of the management of the Reserve. Analyze the possibilities of ecotourism in the Reserve based on carrying capacity studies for the ecosystem of the Reserve and for the "system" of Reserve administration (i.e., institutional capacity).

F. The Reserve is contiguous with two other relatively pristine forested areas, Los Chimalapas (States of Chiapas and Oaxaca) and Uxpanapa (State of Veracruz). These three areas combined represent one of two of the last remnants of this type of vegetation (tall evergreen forest) of considerable size in Mesoamerica. Recommendation: Provide technical assistance and additional funding to support efforts to study the possibility of expanding the Reserve to encompass forested areas in contiguous states.

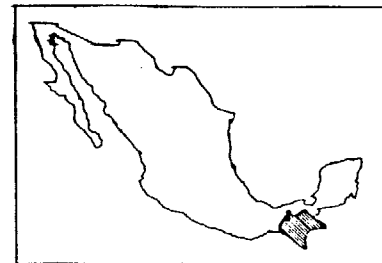
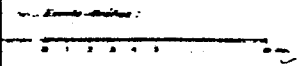
G. The Patronato is currently envisioned to function as a membership organization with a general assembly, a Board of Directors, and a small administrative staff. The primary objectives of the Patronato, beyond those which are shared with DAN (i.e., scientific investigation, environmental education, natural resource conservation, and protected area administration and management), are to establish strategies for fundraising and for collaboration with other groups in the accomplishment of DAN goals. Recommendation: Monitor the consolidation of the Patronato to assess potential technical assistance needs. Formalize the MOU between TNC and the Patronato for the administration of the PIP project.

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Simbología:

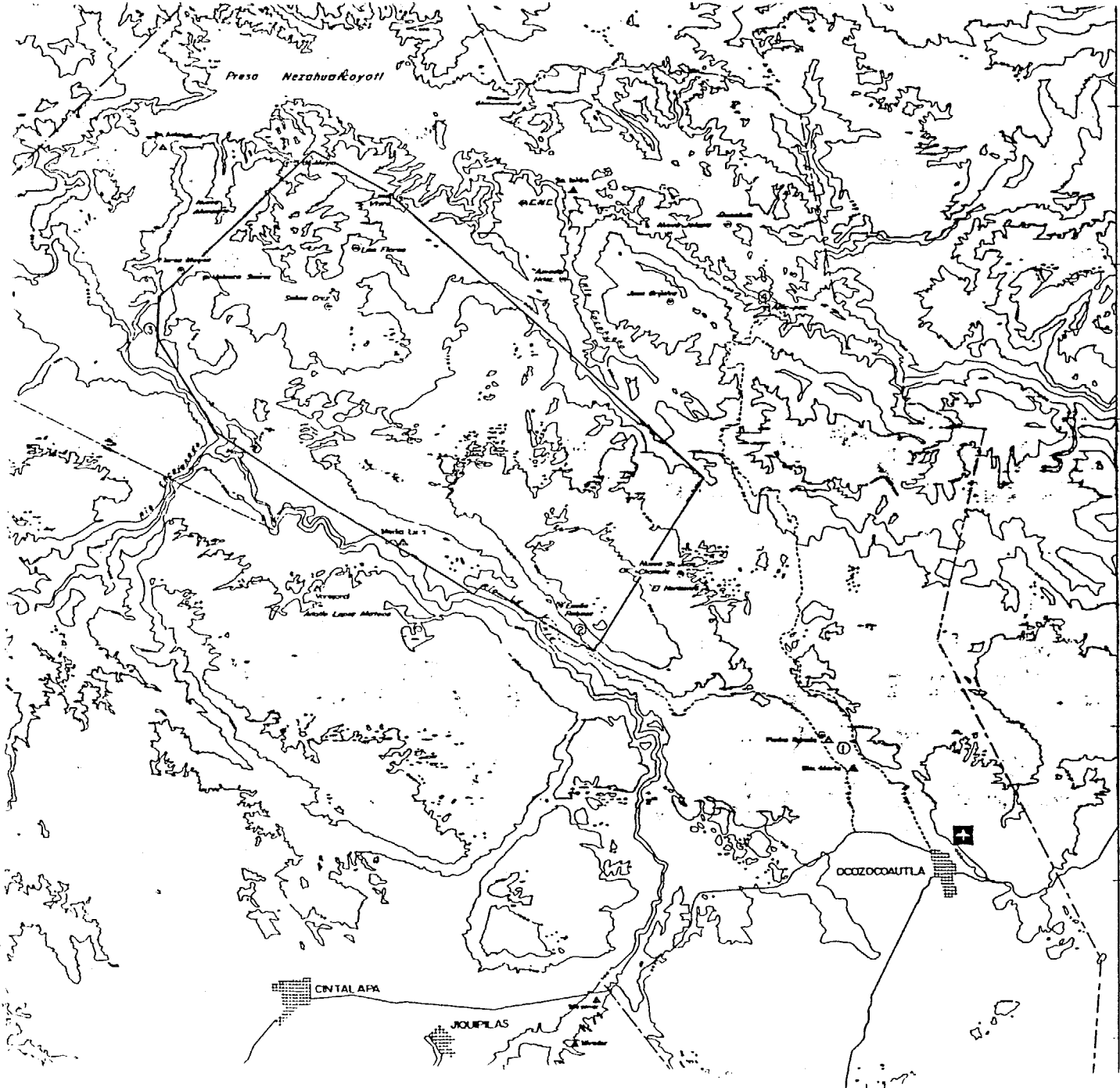
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- ② Subestación La Colmena.
- ③ Subestación La Junta.
- ④ Subestación Apic-pac.

- ⊙ Poblado
- ▲ Sitio arqueológico
- Límite Estatal
- Límite Municipal
- Límite de la Reserva
- Carretera Pavimentada
- Camino de Tercería
- Contorno de nivel a cada 250 mts.








ELABORADO POR: INGENIERO EN GEOMÁTICA Y CARTOGRAFÍA: JOSÉ ANTONIO LÓPEZ R.

INSTITUTO NACIONAL DE INVESTIGACIONES
 SOBRE RECURSOS BIÓTICOS
 XALAPA, VER., 1980



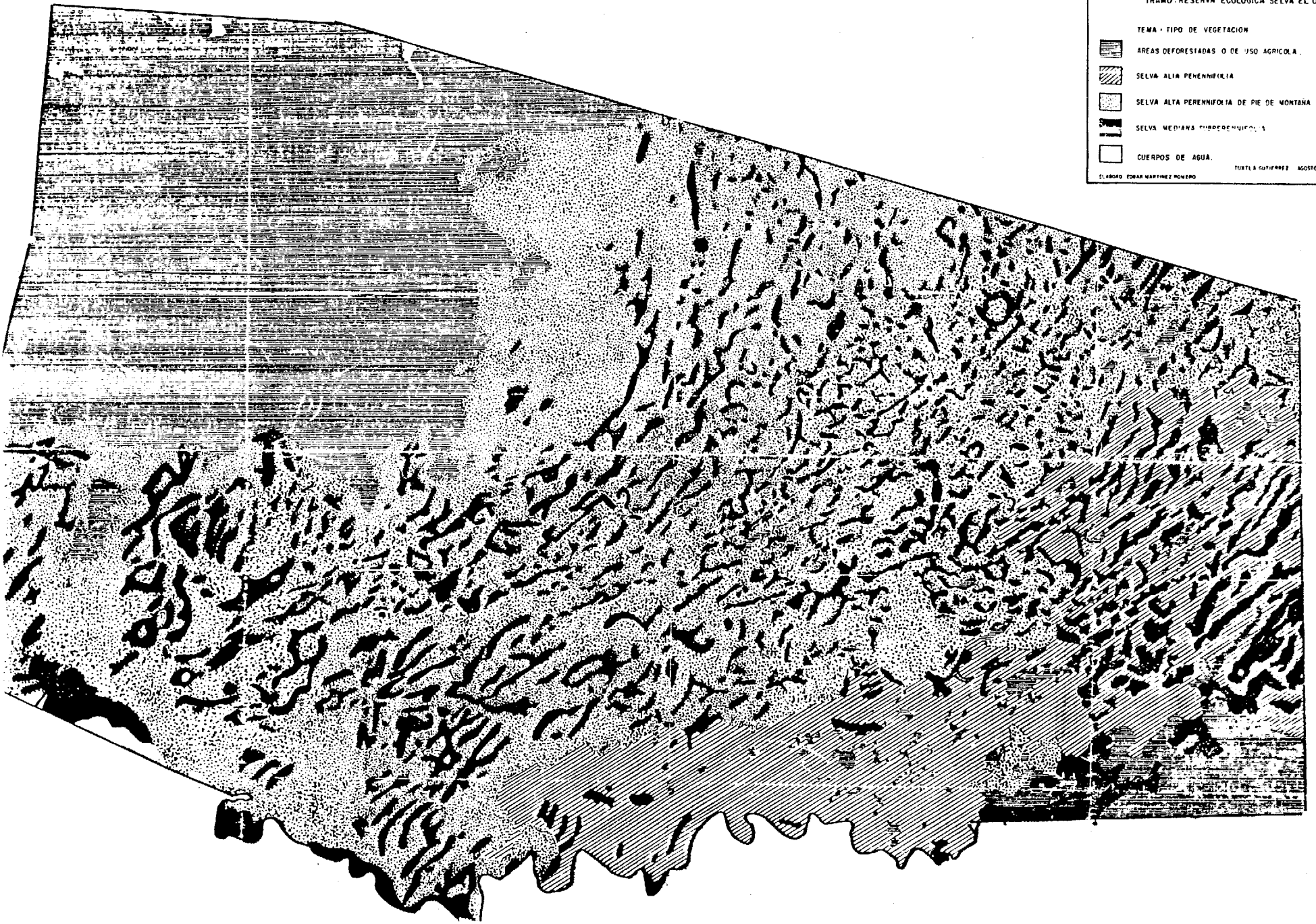
MANIFIESTO DE IMPACTO AMBIENTAL
CARRETERA SAYULA, VER-OCOZOCUAUTLA, CHIS
TRAMO: RESERVA ECOLOGICA SELVA EL OCOTE

TEMA - TIPO DE VEGETACION

-  AREAS DEFORESTADAS O DE USO AGRICOLA.
-  SELVA ALTA PERENNIFOLIA
-  SELVA ALTA PERENNIFOLIA DE PIE DE MONTANA
-  SELVA MEDIANA DECIDUENIFOLIA
-  CUERPOS DE AGUA.

ELABORO EDUAR MARTINEZ MONERO

TUXTLA GUTIERREZ AGOSTO 99



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PARKS IN PERIL EVALUATION REPORT:
LA ENCRUCIJADA ECOLOGICAL RESERVE, MEXICO

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August 12, 1992

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PARKS IN PERIL EVALUATION REPORT:
LA ENCRUCIJADA ECOLOGICAL RESERVE

I. Introduction

A. The PIP Site

La Encrucijada Ecological Reserve (La Encrucijada, the Reserve) is located along the southern coastline of the State of Chiapas, Mexico. The Reserve was decreed by the State in 1972 with a size of 2,000 hectares; studies are currently underway to support a proposal to expand the Reserve to approximately 80,000 hectares. The Reserve was established initially to protect the most important estuaries and mangrove stands in the State of Chiapas; the expanded Reserve would protect an array of wetland habitats, including estuaries, mangrove stands, water-sapote stands, tulares (cattail marshes), coastal lagoons, and tidal zones. These vegetational associations provide critical habitat for resident and migratory waterfowl, marine and freshwater turtles, several species of reptiles and amphibians, large cats, fish, and marine and upland invertebrates.

The primary land and resource uses in the vicinity of the Reserve are: fishing, both subsistence and commercial; agriculture, which is practiced at a subsistence level in a few isolated localities within the boundaries of the Reserve, and at a large, commercial scale on the coastal plain to the north of the Reserve; and cattle ranching, also practiced at a commercial level on the coastal plain. The primary threats to resource management and protection of the Reserve include:

- pressures to increase the harvests of shrimp in the lagoon and estuary system within the Reserve (including harvesting of larva by parties from outside the area);
- harvesting of turtles and iguana from the marsh area of the Reserve, through the use of fire;
- expansion, on a potentially grand scale, of agriculture and cattle ranching in the coastal plain through which flows all fresh water for the Reserve (the source of which is another PIP-project National Park, El Triunfo). These projects, which are supported by the Mexican and State of Chiapas governments for the economic development which they would bring to the State, would potentially affect both the quantity (i.e., through diversions for irrigation) and the quality (i.e., through discharges of agrochemicals and other contaminants) of water available to sustain the wetland ecosystems of the Reserve.

The Reserve has been protected historically by low population pressures and the difficulty of access and use of the zone due to its semipermanent state of inundation. Currently, population centers and related areas of intensive land use are limited to a small percentage of the total area of the Reserve; however, as

the population grows and the pressures for intensive agricultural development of the coastal plain increase, potential impacts to the Reserve will undoubtedly increase. Data on the human population, socioeconomic and biological status, and land use patterns will be available at the completion of the study for the proposed expansion of the Reserve (which is due to be completed in September of 1992).

Through a cooperative agreement with the federal government, management of the Reserve is the responsibility of the Departamento de Areas Naturales (DAN) of the Instituto de Historia Natural (IHN). IHN is a semi-autonomous branch of the state government of Chiapas, which is supported by the State government. The first operative plan for the Reserve was produced in July of 1991, with support from TNC, the North American Wetlands Conservation Council, the U.S. Fish and Wildlife Service, and the Secretaria de Desarrollo Urbano y Ecologia (SEDUE). DAN has received small grants from the MacArthur Foundation (for purchase of equipment), and has received in-kind support from the State of Chiapas (for overflights of the Reserve), SEDUE (donation of the building at La Concepcion, which houses the field station), and the Sociedad de Historia Natural de Soconuzco (donation of office space for the Tapachula office).

While initial PIP funds for La Encrucijada were disbursed to IHN in July of 1992, The Nature Conservancy has been supporting activities of protection and management of the Reserve since 1990. The period covered by this evaluation is June 1991 to July 1992.

B. Evaluation Work Plan and Composition of Evaluation Team

The evaluation for La Encrucijada Reserve was conducted between the dates of July 9 and July 24. A pre-site visit meeting was held at the Mexico TNC office on July 9 and 10 to discuss the scope of the evaluation; this meeting was attended by Susan Anderson, Mexico Program Co-Director, and Pamela Hathaway, contractor and preparer of this report. Additional consultation was provided by Jennifer Shopland, TNC contractor working on evaluation and monitoring programs. The in-country evaluation was conducted primarily by Pamela Hathaway, in collaboration with Victor Hugo Hernandez O. and the staff of DAN. A visit to the Tapachula field office was conducted on July 15. A site visit to the Reserve was conducted on July 16 and 17, and included interviews with field staff and the Reserve Manager at the field station, community visits and visits to sites of primary field activities. Consultation with staff of the Sociedad de Historia Natural del Soconusco (Araceli Rivera Parada), to determine parallel and complementary activities in the region was conducted on July 15. Consultation with staff of the Patronato (Victor Aquino) was conducted on July 23 to review the newly established

accounting system being established for administration of DAN/Patronato projects.

C. Target individuals for El Ocote Reserve

- 1) Victor Hugo Hernandez Obregon: Director of DAN and interim president of the IHN Patronato
- 2) Edmundo Reyes: Director of the Reserve
- 3) Alejandro Lopez P.: Head of Protection and Operations Program
- 4) Gladis de los Santos: Head of Public Use Program and Diagnostic of Marine Turtles Project
- 5) Valentin Rodriguez Ortuno: Head of Studies for the Proposed Expansion of the Reserve (natural resources inventory, land use, population census, and socioeconomic analysis)
- 6) Joel Escobar: Environmental Education and Extension
- 7) Carlos Ilario: Park Guard (the other Park Guard recently resigned and was in the process of being replaced during the time of the evaluation)
- 8) Student researchers: Ana Maria, Marine Turtles Project, and Ruth, Studies for the Expansion of the Reserve

II. Evaluation of Technical Components of Program

A. Achievements

1. Baseline socioeconomic and ecological inventories to support proposed expansion of Reserve 80% complete (estimated date of completion: September 1992).
2. Initial relationships with communities and landowners: Initial contacts (consisting of a brief explanation of the project) have been made with four of the six municipalities which have jurisdiction over the Reserve area and with 23 communities in the proposed Reserve area. In five priority communities, follow-up visits have been conducted. Indicators: Residents of the communities within the Reserve have approached Reserve managers with requests for information and assistance in resource management. The mayor of the municipality of Huixtla created a large sign announcing the presence of the Reserve along the main highway through the municipality.
3. Temporary signs have been posted in six locations along one of the primary river-lagoon systems.
4. Four patrol routes have been established and patrols are conducted to all areas on a regular basis (i.e., one or more times per week).
5. Improvements to the guard station at La Concepcion, including: installation of solar-powered radio for communication within the Reserve and between the Reserve and the Tapachula office; installation of screens in three areas of the central building; upgrading shower and latrine areas; general maintenance and repair of structure.

6. Initial steps in the establishment of monitoring systems for biological and social information for the Reserve.
Indicators: Incorporation of biological observations in all community visits and patrols, and reporting of observations in logs of all personnel.

7. Compilation of baseline biological and socioeconomic conditions in the Reserve through study for Reserve expansion.

8. Establishment of sea turtle monitoring program.

Indicators: Identification and establishment of field station on one of the critical nesting beaches.

Establishment of regular patrols of beach areas to monitor conditions for potential nesting sites. Initial dissemination of information regarding biology and protection needs for sea turtles.

B. Limitations

1. Equipment needs for land- and water-based transportation within the Reserve. Some transportation needs will be met by currently budgeted (i.e., FY 92-93) PIP funds.

2. Resignation of one park guard. Ongoing discussions among Reserve personnel have resolved the circumstances of the resignation and a search for new guard(s) is underway.

3. Location of existing field station (La Concepcion) is remote from some critical areas of the proposed Reserve area. The establishment of one or two additional stations has been proposed; the location of these stations is currently being studied.

4. Limited work to date with women in the communities. Planned programs in environmental education and community development will incorporate more women into resource management practices.

5. Personnel in charge of sea turtle monitoring program have little formal training in establishing or monitoring such a program.

C. Recommendations

1. Technical support in the following areas:

- development of a comprehensive monitoring program for the Reserve, to include use of existing GIS software and other field- and office-based techniques.

- staff training opportunities, especially in the areas of biological monitoring, community outreach, and environmental education.

2. Provide opportunities for exchange of expertise and experience between personnel of La Encrucijada Reserve and other protected wetland areas in Mexico and Central America.

3. Support the establishment of additional remote sites for protection, monitoring, and environmental education activities.

4. Support continued planned improvements to guard station at La Concepcion.

III. Evaluation of Financial Components of Program

Note: A comprehensive audit of the programs administered by IHN was conducted by US-AID during the period of June 22-26, 1992. The following evaluation of the financial components of the La Encrucijada Reserve PIP program focuses on accounting procedures which the administrator of the Patronato is in the process of developing currently.

A. Achievements

1. Establishment of accounting systems in three critical areas: in the field at the Reserve, in the field office at Tapachula, and in the Tuxtla Gutierrez DAN office.
2. Establishment of a revolving petty cash fund for the Director of the Reserve.
3. Establishment of a new accounting system at DAN which is organized by project and funding source. This system will allow DAN to monitor project administration and reporting requirements, expenditure of funds and restrictions on expenditures, and status of project budgets.
4. Hiring of a full-time accountant by the Patronato (see following section on Administrative Evaluation for discussion of the Patronato) to track all projects from administrative and fiscal perspectives.
5. Development of a comprehensive, diversified, long-term financing plan by DAN (see section on Summary Recommendations).

B. Limitations

1. Receipt of FY 92 PIP funds in July of 1992 with September 1992 deadline for expenditure. This is the first disbursement of PIP funds to La Encrucijada and, with new accounting systems in place, both requests and disbursements should be more efficient and timely.
2. Transfer of responsibilities for management of outside funds (from FUNDAMAT to DAN, and eventually to be transferred to the Patronato). Changes in accounting responsibilities and systems has resulted in occasional confusion regarding tracking of proposals, funds and budgets on the part of DAN staff. However, with the new system currently being finalized by the Patronato administrator, monitoring of budgets, timely budget requests and quarterly reports should become more routine.

C. Recommendations

1. Continue to work with DAN in developing and monitoring the accounting system to ensure that request and reporting needs for administration of the PIP funds are met.

IV. Evaluation of the Administrative Components of the Program

A. Achievements

1. Establishment of communication systems within management team. Indicators: Regular submittal of monthly reports by all personnel. Open and regular communication among field staff and between field staff and Reserve Director. Clear understanding on part of all personnel of areas of responsibility. Regular communication by radio between field station and office in Tapachula.
2. Establishment of regulations for maintenance and management of the field station at La Concepcion.
3. Initial steps in the establishment of a new NGO, the Patronato, which would have as its mission the support of DAN. The primary function of the Patronato will be to channel funds to programs administered by DAN (organization of the Patronato is discussed under Summary Recommendations).

B. Limitations

1. Relative inexperience of personnel in management of protected areas (majority of personnel have no prior experience in Reserve management; management team is recently incorporated). The level of professionalism and enthusiasm of the management team is high; with leadership from the central DAN office and additional training, personnel should become a strong management team over the course of the project.
2. Change in responsible NGO: FUNDAMAT to Patronato; this change caused temporary discontinuity in program administration. Formal establishment of the Patronato, with its strong links to DAN Direction, should result in more efficient program administration.

C. Recommendations

1. Provide training opportunities for all field and program management personnel. Prioritize training opportunities for field personnel, ensuring equal opportunities for attendance at short-courses. Investigate intensive training opportunities (e.g., coursework leading to a master's or bachelor's degree) for program management personnel.
2. Develop comprehensive evaluation and monitoring system for all aspects of Reserve management, including operational aspects as well as database management. Ensure that all personnel are involved in feedback regarding program administration (i.e., planning and budgeting for grant proposals).

V. Summary Recommendations

- A. Support the expansion of the Reserve to encompass the study area currently under consideration. Incorporate baseline information collected during the study for the expansion of the Reserve into a comprehensive monitoring program for the Reserve.

B. Provide training for all personnel involved in program management at the Reserve. Design carefully the training opportunities so that Reserve leadership is not hindered during training events/periods. Provide diverse and comprehensive training opportunities, including short courses, personnel exchanges with other wetland reserves, and coursework leading to professional degrees.

C. Support the incorporation of La Encrucijada Reserve into the network of wetland Reserves in Mexico, Central America, and the Caribbean (i.e., by inviting Reserve and DAN management to workshops and other regional events pertaining to wetlands, and by supporting information exchanges and affiliation with wetland agreements and treaties, e.g., RAMSAR).

D. The Patronato is currently envisioned to function as a membership organization with a general assembly, a Board of Directors, and a small administrative staff. The primary objectives of the Patronato, beyond those which are shared with DAN (i.e., scientific investigation, environmental education, natural resource conservation, and protected area administration and management), are to establish strategies for fundraising and for collaboration with other groups in the accomplishment of DAN goals. Recommendation: Monitor the consolidation of the Patronato to assess potential technical assistance needs. Formalize the MOU between TNC and the Patronato for the administration of the PIP project.

E. As part of a comprehensive financing plan for conservation of protected areas in Chiapas, Victor Hugo Hernandez O. is actively involved in exploring the possibility of creating a trust fund for protected area conservation with the lottery proceeds. Other target programs and sources of funding include:

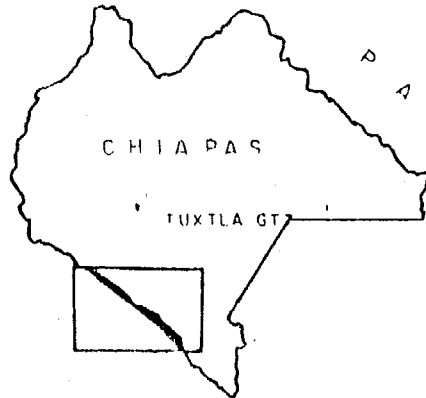
- protection/operations (TNC PIP funds);
- community development (Ford Foundation: for small projects with rapid turnaround; seed money for particular projects from the Instituto Nacional Indigenista and/or the municipalities, through the federally-funded Programa Nacional de Solidaridad);
- Departmental and protected area planning (State of Chiapas);
- special studies (for management studies: TNC PIP funds; for scientific studies: UNAM and the Centro de Ecodesarrollo; for studies of individual species: NY Zoological Society/Wildlife Conservation International);
- environmental education and information dissemination (TNC PIP funds; WWF; MacArthur Foundation; Mexican government; Instituto Chiapaneco de Cultura); and
- programs for generating funds from products in the Reserve (e.g., vanilla, decorative palms, ecotourism).

Recommendation: Capitalize on the State's current interest in conservation. Provide immediate short-term technical assistance to prioritize conservation needs for the State of Chiapas and to establish the most effective funding mechanism for meeting these needs.

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S I M B O L O G I A

-  CARRETERA
-  TERRACERIA
-  VIA DEL TREN
-  RIO
-  POBLACION
-  LAGUNA ESTERO
-  MANGLARES
-  TULARES
-  POTREROS PALMAPES
-  AREA DE ESTUDIO
-  RESERVA ESTATAL "LA ENCRUCIJADA"
-  SELVA MEDIANA SUBPERENNIFOLIA



P L A N O N o 1

AREA DE ESTUDIO DE LOS HUMEDALES EN LA COSTA DE CHIAPAS

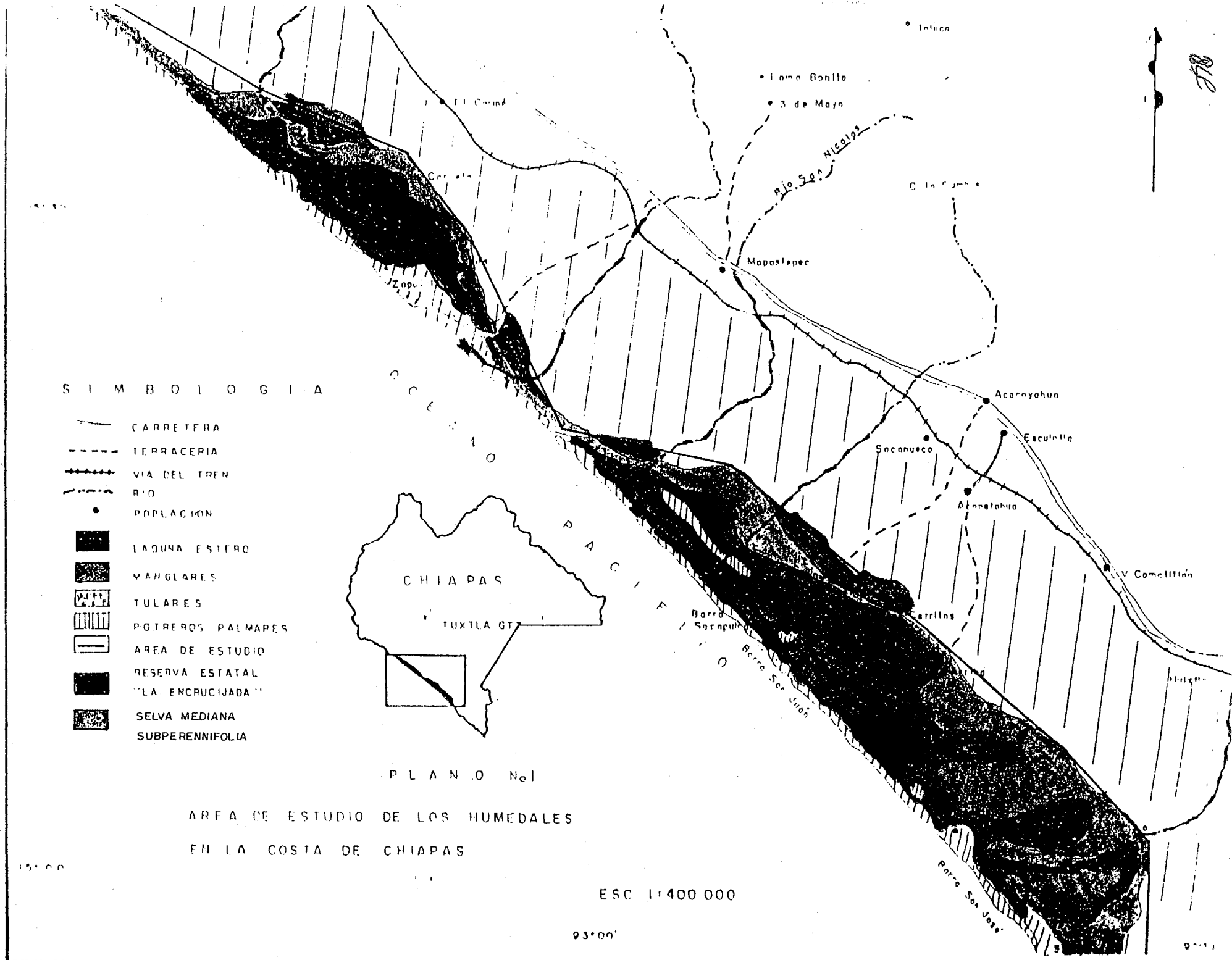
ESC 1:400 000

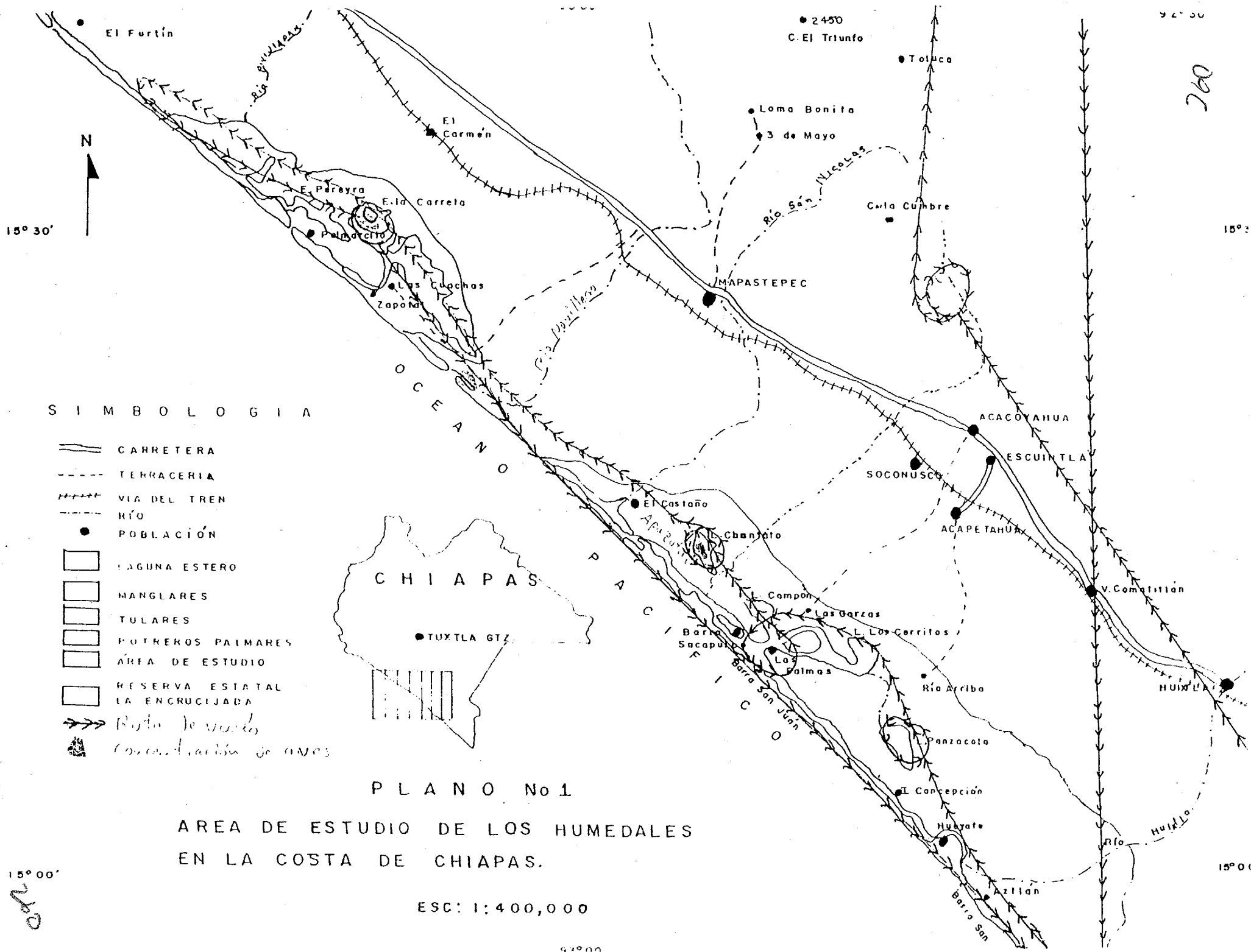
15° 00'

93° 00'

9° 11'

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PARKS IN PERIL PROGRAM EVALUATION

RIAS LAGARTOS AND CELESTUN
YUCATAN, MEXICO

SUBMITTED TO:
The Nature Conservancy

SUBMITTED BY:
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Plymouth, MA 02360
(508)-224-6521
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DATE:
August 29, 1992

I. INTRODUCTION

The present evaluation covers two Parks in Peril (PIP) Program sites: Ría Celestún and Ría Lagartos, Yucatán, México. The two sites, previously classified as wildlife refuges under Mexican legislation, are now considered "special biosphere reserves". Celestún (59,530 ha) and Lagartos (48,840 ha), contain representative coastal ecosystems of the northern Yucatán Peninsula, including sandy beaches, estuaries, mangrove swamps, seasonally flooded marshlands, and scrub forests. Some of the noteworthy fauna include the Greater Flamingo, the hawksbill and green sea turtles, and large populations of waterfowl and waders. The economy of the villages within the reserves is based on the rich fisheries sustained by the estuaries. There is one village within Ría Celestún (Celestún pop. 3,039), and four within Ría Lagartos (El Cuyo, pop. 793; Las Coloradas, pop. 799; Río Lagartos, pop. 1,619; and San Felipe, pop. 1,158). Additional information relating to these sites is presented in the documents "Informe de Progreso, Evaluación" (Appendix 1), and the conservation action plan (Appendix 4).

The PIP Program at these reserves is carried out through a memorandum of agreement between TNC and Pronatura Península de Yucatán (PPY), a Mexican NGO based in Mérida, Yucatán. PPY works through an agreement ("convenio") with SEDESOL, the Mexican GO responsible for the management of the areas (previously SEDUE).

The evaluation team was integrated by:

- Luis González, Executive Director, PPY.
- Federico Nava, PIP Program Coordinator, PPY.
- Joe Quiroz, TNC's Mexico Program Officer.
- Gonzalo Castro, external TNC contractor.

A site visit to Mérida and Rías Celestún and Lagartos was made between August 16 and 22, 1992. Interviews were conducted with government officials, park directors and rangers, local people, and NGOs staff (Appendix 2). Many of these interviews were tape-recorded (tapes are available upon request). Noteworthy passages of some of these interviews are presented on Appendix 3. Documents and materials relating to the PIP Program at these sites were collected, reviewed, and are enclosed with this report (Appendix 4).

The PIP Program has been clearly successful, with significant progress towards the proper management and protection of these sites. Tangible achievements include the purchase of radio-communications equipment, uniforms and basic field supplies for reserve directors and rangers, a field vehicle, several on-site public education campaigns, and direct support to reserve personnel through food packages. The remaining activities contemplated in the action plan are about to be completed, including site signs (terminated and in the process of being installed), the delineation of the reserve limits, and infrastructure.

These tangible achievements could not have been possible, however, without substantial "behind-the-scenes" negotiations between PPY and SEDESOL that culminated in the signature of a "convenio" that allows PPY to implement these actions. This is especially remarkable in a country with a long tradition for strong governmental control, and it is in itself an extraordinary achievement. In addition, fluid communications between TNC and PPY have allowed the program to advance swiftly, and to implement corrections to the original action plan when it was necessary. PPY has developed efficient organizational capabilities to manage and supervise all administrative and financial aspects related to the PIP Program.

Notwithstanding the progress achieved, there are still major structural deficiencies, seemingly outside the scope of the project, that could negatively affect the long term survival of these areas. Population migrational patterns, poverty, unsustainable land-use practices, and lack of long-term financial commitment by the GOs are some of these shortcomings. Although the ultimate protection of these sites depends on the commitment by the federal and state governments, the commitment of the local people living within these reserves is also crucial. Only if these people can benefit directly from these protected areas, it will be possible to ensure their long-term protection. It is also clear that without the PIP Program these areas would be in a complete abandonment, eroding the few possibilities left to design an effective long-term conservation plan.

Strong governmental control remains an important potential hindrance to PPY's work, a situation that requires extremely close coordination between PPY and SEDESOL. Being politically savvy, PPY has been able to weather the tides successfully. PPY needs to continue advancing through the narrow path that allows action without upsetting the political framework. This close coordination with SEDESOL is paramount to the continued success of the program. Finally, the design of a long-term management plan and the identification of funding mechanisms is a critical issue that needs to be addressed.

II. TECHNICAL

A. ACHIEVEMENTS

The original action plan (February 1991) was expanded with the addition of a new component (AID México) through 1994. The additional funding to be provided by AID México will reinforce the original budget, but will serve primarily to fund portions of a Rapid Ecological Assessment, infrastructure at the sites, and administrative expenses in Mérida (Appendix 4). This change was made with the approval of TNC.

The progress has followed the original action plan fairly closely. There was an initial delay due to the slow turnaround time in the Mexican GO's, but most of this time was subsequently recovered. According to the original action plan, the main achievements have been:

- A project coordinator has been hired and is responsible for all PIP activities.
- A PIP vehicle has been purchased.
- A package of uniforms and field equipment has been distributed to Park Directors (2) and rangers (7). Each package includes 2 uniforms, field boots, swiss army knives, compasses, etc. In addition, the first food package to support the reserve personnel has been distributed. Additional packages will be distributed twice every month.
- A complete radio-communications infrastructure has been set up. It includes major stations at PPY in Mérida, SEDESOL in Mérida, Ría Celestún, El Cuyo, Las Coloradas, and Ría Lagartos; mobil units at the PIP vehicle, and on each of the two SEDESOL jeeps; and portable units to be used by the guards. This equipment has facilitated communications tremendously.
- A package of basic equipment has been donated to each reserve, including flashlights, tents, lamps, etc.
- An environmental education program has been functioning, and there are plans to expand this activity.

In addition to these "on the ground" achievements, substantial "diplomatic" advances have been made:

- A "convenio" between PPY and SEDUE (SEDESOL predecessor) was signed to allow PPY to implement the PIP actions. This is one of a very few instances in Mexico in which the GO allows an NGO to support conservation actions at a protected area, a major victory in itself for PPY.
- There are excellent working relations between PPY and SEDESOL at all levels.
- With the recent changes in the Mexican governmental structure, including the disappearance of the SEDUE and the creation of the SEDESOL, PPY has successfully re-negotiated all convenios with SEDUE-SEDESOL, and has developed working relations with the new authorities.

The remaining activities contemplated in the action plan that are about to be completed include:

- All site signs have been completed, and are in the process of being installed. A total of 145 signs should be fully installed before the end of 1992.
- Some advances have been made regarding physical infrastructure at the sites, including basic support for building maintenance, etc. Major structures to be erected include guard stations at Ría Lagartos, and the purchase of a building in Celestún to serve as reserve headquarters. A boat will also be purchased for Celestún.
- The delineation of the reserves limits will be performed during 1992-1993. This is a complex issue because it requires coordination between several GO's, including the federal government, the state government, and the geographic institute (INEGI).

There is very substantial progress in the area of long-term monitoring. PPY has a modern GIS center with the capabilities to analyze satellite images, aerial photographs, maps, videos, etc. A preliminary analysis of land-use in Ría Lagartos has been completed (Appendix 4), and could serve as the baseline for future comparisons. A Rapid Ecological Assessment program, with TNC's technical support, will be initiated shortly. The combination of the Rapid Ecological Assessments and the GIS information should

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be sufficient to ensure adequate monitoring activities at these sites.

The best ratios for gender participation were found within the PPY staff, and of indigenous participation within the SEDESOL.

B. LIMITATIONS

Because all activities have to be implemented through SEDESOL, PPY is not authorized to perform any on-site operations without the previous consent (almost always in writing) from SEDESOL. The complex nature of the SEDESOL requires that many decisions be made in Mexico City. Although the Salinas de Gortari administration has clearly opened the doors to a more substantial participation by the private sector in Mexican affairs, this new spirit is not yet present at all levels within the SEDESOL.

This predicament puts PPY in a delicate situation. Ideally, PPY should work as close to the reserves as possible, maintaining intimate contact with the local communities and the reserve personnel. SEDESOL on the other hand, requires all coordinations to be made in Mérida, and dislikes PPY staff communicating directly with the reserve personnel, perhaps for fear of losing authority. This political circumstance slows activities substantially. In addition, there is a degree of discomfort on the reserve personnel because of lack of information about the program and the feeling of an uncertain future.

Another important shortcoming stems from the lack of resources for protected area management within the GO's. SEDESOL does not have the capability to provide maintenance to its equipment. In addition, the rangers have not been paid since January 1992. This is clearly a decisive factor because it influences the morale of the most critical element in the whole scheme. Again, and because of strong GO control, there are no legal mechanisms available for PPY to help pay their salaries. The creative solution implemented by PPY is to donate SEDESOL food packages for the rangers' use. Being a new program, the general reaction from the rangers towards this mechanism is positive, although they would rightly prefer to be paid in cash for their work.

In the long run, the only way to ensure the protection of these areas is by addressing the living conditions of the local communities. Poverty, lack of opportunities, lack of education, and lack of access to basic health services makes the living conditions for

these populations very difficult. These social pressures translate into environmental degradation through poaching, contamination, unchecked resource extraction, and lack of interest to enforce conservation laws. Therefore, the maintenance of these sites as protected areas is not a priority for the local communities. PPY is addressing this problem by developing programs (many outside the scope of PIP) that aim at enhancing the living conditions of the local people by utilizing the resources sustainably. A pilot tourism program, for example, allows fishermen in Celestún to guide tours to observe the colorful wildlife of the refuge. This program is currently benefiting about 20 families, making these fishermen strong defendants of these resources, since their livelihoods depend on healthy wildlife populations. Additional programs of this kind are being developed, and need to be given priority and support.

C. RECOMMENDATIONS

In the short term, the following actions could help ensure the continued success of the program:

- Fluid communications need to be maintained between PPY and SEDESOL. Ideally, monthly meetings between SEDESOL authorities (including the reserve directors) and PPY personnel could help fine-tune many activities and ensure timely response to unforeseen problems. This will also reduce the level of uncertainty experienced by reserve personnel.
- Monitoring activities are currently being carried out by PPY. These activities could be made an integral part of the PIP Program. Technical assistance by TNC to these monitoring activities would also be beneficial.
- A mechanism needs to be worked out to allow the rangers to be paid on time. Although the food packages are definitely a positive development, nothing can replace a timely check that has been earned for work performed. A mechanism to pay the reserve personnel on time must be found, working at a higher level if necessary.

In the long run, two actions seem to be crucial:

- More pressure needs to be applied "from above" for a better commitment by the GO's to protected area management. Instead of a higher financial commitment by

the GO's, what is needed is a long-term, steady commitment to absorb recurring costs, especially maintenance and salaries. In addition, the PIP Program could benefit from less GO control.

The economic and social problems being faced by the populations living within the reserves need to be solved as a pre-requisite to gain their support for the conservation of these areas. This requires a much larger investment by the federal, state, and local governments, the Mexican private sector, and the international community.

III. FINANCIAL

A. ACHIEVEMENTS

In general, the PIP Action Plan reflects the short-term conservation needs of these sites. There are no other NGO's currently supporting the management of these sites. The total financial input to both sites combined is in the order of \$110,000/year:

1991-1993	SEDESOL (\$41,000/year)	\$123,000
1991-1993	PIP	\$215,000
1991-1993	TOTAL	\$338,000

PPY is making rapid progress to ensure its long-term financial independence. This is done through a combination of:

- Increased local and international membership.
- Increased corporate donations within Mexico.
- A growing trust fund, currently at ca. \$80,000.
- Profitable ventures including the sale of forest products, etc. Proceeds are returned to program development, allowing PPY to maintain its non-profit status.

PPY is studying the mechanisms to establish a parallel, sister corporate structure to market additional products, with all proceedings donated to PPY. The long term financial independence of PPY will help ensure continued support for these PIP sites. PPY is also negotiating a \$1.0M project to address some of the most pressing needs for the local populations, including sanitation, waste disposal, recycling, etc. In addition, PPY has successfully obtained additional funding from AID-Mexico for these reserves.

The Mexican government has negotiated an \$80.0M package with the World Bank to support protected areas in Mexico. A large portion of these proceeds will go to these two sites. Additional details regarding this mechanism are not available.

B. LIMITATIONS

Even though some funds are committed by the GO's to these sites, these funds do not reach the reserves on time (see above). Urgent needs not contemplated in the PIP plan include new vehicles for each reserve, and equipment maintenance. In general, the human and financial resources programmed to attain the short-term conservation objectives of the PIP Program (patrolling, law enforcement, signalization, etc), are in the right order of magnitude.

PPY has not been involved in negotiating long-term funding mechanisms for these reserves, and lacks specific information about potential sources. The central government restricts the information regarding these potential sources. PPY for example, does not have access to detailed information on the World Bank package.

According to PPY, debt swaps are not attractive in Mexico due to high debt prices in the secondary markets and high redemption prices. No information is available on other potential sources, such as the Enterprise for the Americas Initiative, the IDB, and the World Bank.

C. RECOMMENDATIONS

Small amounts of additional funding could increase efficiency of operations. Immediate needs include the purchase of one ATV for each reserve for patrolling, and funds for equipment maintenance.

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- PPY is advancing rapidly to ensure its long-term financial independence. PPY is also working at high political levels to obtain long-term financial commitments to these sites from the GOs. PPY deserves all the support it can get from TNC to this end.
- TNC should put a very high priority in identifying and developing long-term financial support to these sites in the form of trust accounts from bilateral and multilateral sources. Training should be provided to key PPY personnel to allow them to participate in negotiations directly.

IV. PROGRAM ADMINISTRATION

A. ACHIEVEMENTS

- The work plan accurately reflects the needs of the areas and the activities necessary to address these needs.
- PPY is a well established organization with excellent control mechanisms in place that allows for efficient financial and administrative operations. PPY is staffed and managed professionally.
- The working relation between PPY and TNC have been excellent. Communications have been fluid, and PPY has obtained all necessary resources on time. PPY has satisfied all narrative and financial reporting requirements.
- Both TNC and PPY have shown enough flexibility to fine tune activities as priorities change.
- PPY meets all PIP administrative requirements: a separate bank account has been set up for PIP funds (Appendix 4); PPY maintains a list of all equipment purchased with PIP funds (Appendix 4); An american carrier was used for travel outside Mexico; both grant management procedures and the transaction process are appropriate.

B. LIMITATIONS

The main limitation observed was the inordinate amount of time required to complain with PIP reporting and administrative requirements. The costs in staff time and others associated with this activity are high. Although still very efficient, PPY lacks sophisticated financial and administration hardware to perform these actions in less time.

C. RECOMMENDATIONS

PPY needs support to implement a state of the art administrative and financial control system. Ideally, and with the help of professional consultants, the appropriate hardware and software systems could be identified and acquired. Key PPY could be trained in the use of this system. This will allow PPY to continue administering a growing budget without the need to increase the size of its administrative department, and thus avoiding bureaucratization, a common malady to Latin American conservation NGOs.

The standardization of the narrative and financial reports produced by PPY could also be very beneficial. Ideally, all reports could follow U.S. Congress guidelines. In this way, PPY could submit the same reports to all funding agencies, avoiding the need to re-configure reports to meet the requirements of each funding agency.

V. SUMMARY RECOMMENDATIONS

- Fluid communications need to be maintained between PPY and SEDESOL. Ideally, monthly meetings between SEDESOL authorities (including the reserve directors) and PPY personnel should be carried out.
- Monitoring activities (currently performed by PPY) could be made an integral part of the PIP Program. Technical support is also needed.
- It is imperative to find a mechanism to allow the rangers to be paid on time.
- More pressure needs to be applied "from above" for a better commitment by the GO's to protected area management.

- The economic and social problems being faced by the populations living within the reserves need to be solved as a pre-requisite to gain their support for the conservation of these areas.
- Small amounts of additional funding could increase efficiency of operations. Immediate needs include the purchase of one ATV for each reserve for patrolling, and funds for equipment maintenance.
- TNC should put a very high priority in identifying and developing long-term financial options for these sites.
- Although currently very good, the implementation of a state of the art administrative and financial control system would allow PPY to enhance operations and to avoid bureaucratization.
- The standardization of the narrative and financial reports produced by PPY, following U.S. Congress guidelines, could be beneficial.
- Clearly, without the PIP Program these areas would be in a complete abandonment, eroding the few possibilities left to design an effective long-term conservation plan. This program must continue.

APPENDIX LIST

1. Informe de Progreso, Evaluación.
 - 1A. Celestún.
 - 1B. Lagartos.

2. List of people interviewed.
 - 2A. SEDESOL
 - 2B. PPY
 - 2C. DUMAC
 - 2D. TNC
 - 2E. Other

3. Noteworthy passages of interviews with reserve directors:
 - 3A. Víctor Hugo García, Celestún Director
 - 3B. Jesús García Barrón, Ría Lagartos Director

4. Documents and materials collected and reviewed.

5. List of slides submitted.

ZB

APPENDIX 1

Informe de Progreso - Evaluación

These documents were completed by Federico Nava, PIP Program Coordinator at PPY:

- 1A. Ría Celestún
- 1B. Ría Lagartos

PARQUES EN PELIGRO
INFORME DE PROGRESO
EVALUACION

Nombre del Parque: Reserva Ecológica de Río Celestín

I. ANTECEDENTES

A. Nombre de organización no-gubernamental (ONG) trabajando en este parque:

Pronatura Península de Yucatán, A.C.

B. Nombre de organización gubernamental trabajando en este parque:

Secretaría de Desarrollo Social Delegación Yucatán

C. Objetivos de conservación para el parque: Sitio de alimentación y descanso del Flamenco rosado (*Phoenicopterus ruber*). Cuenta con 230 spp de aves de las cuales aprox. 70 son migratorias. En él habitan varias spp amenazadas y en peligro. Además presenta una gran diversidad de ecosistemas desde el marino, estuarino hasta selva baja.

D. Breve descripción del parque:

1. tamaño en hectáreas: 59530

2. Tipo de hábitat: Cuenta con humedales con influencia marina y aguas subterráneas, Selva inundable, selva baja Petenera (Selva Mediana), sabanas, carrizales y tulares, de igual forma con vegetación de duna costera

3. Flora/fauna en peligro: Plantas *Cchites yucatanensis* y la palma *Cocotrinax roadii*, el endemismo de peces es muy alto, debido a que hay petenes con cenotes aislados

4. Flora/fauna endémica: _____

5. Otra flora/fauna o estadísticas interesantes sobre hallazgos en el parque: Zona de alimentación y descanso del pelicano rosado (*Phoenicopterus ruber*). Se han reportado 230 spp de aves, 71 son migratorias. Se han identificado 31 spp de anfíbios y reptiles

6. Amenazas al parque: la primer amenaza es el crecimiento poblacional que está ocupando las zonas inundables de la ciénega rellenando con basura, la interrupción de flujos de agua de mar, la pesca en las cercanías de la boca del estero.

II. PROGRESO EN EL PARQUE

FECHA DE ESTE INFORME: 21/Agosto/1992

A. ACCIONES DE CONSERVACION EN SITIO

1. Personal:

a. Cantidad de personal para el área 3
Cuantos trabajan para ONGs 1, cuantos para OGs 3.

b. Número de guarda parques contratados en este año _____
Nombres, cargo que desempeñan y funciones/responsabilidades:
Las guardaparques son contratadas por la O.G.

2. Capacitación:

a. Cursos de entrenamiento, talleres, visitas técnicas al campo y capacitación individual (uno-a-uno) realizados este año:
1 Curso Corto de Manejo de Areas Silvestres y Protegidas en Fort Collins Col. U.S.V. 17 de julio a 14 Agosto 1992

b. Nombres de empleados/funcionarios que recibieron capacitación en este año:
Federico Nueva Maria

3. Actividades de Manejo:

a. Existe plan de manejo/trabajo para el parque? Sí _____ No X
Duración (meses/años) de este plan: _____

b. Fecha de elaboración del plan:

c. Sírvase enviar una copia de este plan a The Nature Conservancy, a cargo de Mónica Ostrá. Fecha de envío del plan: _____

d. Cuales actividades delineadas/trazadas en el plan de manejo/trabajo se implementaron exitosamente durante este año? Especifique: _____

e. Problemas en la implementación de acciones de manejo emprendidas en este año. Brevemente describa problemas/ atrasos y que solución se les dió: _____

4. Acciones de Manejo:

a. Equipo: compra de equipo durante el último año (qué equipo y costo aproximado). Equipo base de radio, Radio para el jeep 2 radio portátiles. Equipo para el trabajo de campo y un formón para guardar paques

b. Demarcación: Están los límites fronterizos del parque demarcados? Sí No . Extensión que se encuentra demarcada (has./km.): _____

Lugar del parque que se demarcó durante este año: _____

Area que se planifica demarcar durante el próximo año: Se demarca toda el area para el año siguiente.

c. Construcción/Edificación: Construcciones nuevas y/o renovaciones en el último año.

Breve descripción de actividades de construcción realizadas este año: Está pendiente la adquisición de una construcción que opere como estación y vivienda para los guardaparques y el director

Planes a corto plazo para construcciones nuevas. Breve descripción: _____

- d. Adquisición de Tierras: Existen planes para adquisición de tierras dentro o en zonas cercanas al parque? Sí No .
Descripción breve de esfuerzos emprendidos para compra/adquisición de tierras: _____

Tamaño de la(s) parcela(s) (has., km.):

Costo por ha./km. (en dólares americanos):

Descripción de parcelas importantes y justificación de importancia:

5. Actividades de Monitoreo:

- a. Breve descripción de mayores amenazas y como éstas son monitoreadas: Se monitorean la población de flamencos, se desarrollará una Evaluación ecológica rápida

6. Participación de Comunidades:

- a. Vive gente en/o alrededor del parque?: Sí No . Breve descripción de características de poblaciones (indígenas, colonos, etc.): La mayoría son migrantes de la zona agrícola (henequenera) para ocuparse en la pesca
- b. Existe censo de esta(s) población(nes):
Sí No
- c. Participan las poblaciones que viven en el área de amortiguamiento (aledaña) en la protección del parque?: Sí No .
Qué papel desempeñan estas comunidades en la protección del parque?: La ONG ha nombrado a guardaparques honorarios para el apoyo en la vigilancia
- d. Cuantos funcionarios de la ONG trabajan actualmente en proyectos de apoyo a comunidades del parque? 0. Cuanto tiempo (horas, días o meses) dedican a estos proyectos? _____.

Brevemente describa el tipo de proyectos en los que trabajan y el progreso obtenido en este año: _____

- e. Cuantos funcionarios de la ONG trabajan actualmente en proyectos de reforestación en el parque? _____. Cuanto tiempo (horas, días o meses) dedican a estos proyectos? _____.

Brevemente describa el tipo de proyectos en los que trabajan y el progreso obtenido en este año: _____

- f. Cuantos funcionarios de la ONG trabajan actualmente en proyectos de educación ambiental en el parque? 1. Cuanto tiempo (horas, días o meses) dedican a estos proyectos? _____.

Brevemente describa el tipo de proyectos en los que trabajan y el progreso obtenido en este año: Se desarrolló el programa de educación ambiental para las ALP

- g. Cuantos funcionarios de la ONG trabajan actualmente en proyectos de desarrollo sustentable en el parque _____. Cuanto tiempo (horas, días o meses) dedican a estos proyectos? _____.

Brevemente describa el tipo de proyectos en los que trabajan y el progreso obtenido en este año: _____

7. Participación Gubernamental:

- a. Qué papel desempeña la entidad gubernamental en el parque? Es la responsable del manejo, administración y vigilancia del Refugio

- b. Cuantos guarda parques reciben (haberes) salarios del gobierno? 3. Cuantos empleados del parque reciben (haberes) salarios del gobierno? 0.

- c. En que otras actividades del parque trabajan funcionarios del gobierno? _____

- d. Cual es el presupuesto (monto) del gobierno para el parque? (en dólares americanos): 160.00 aprox.
- e. Qué servicios o apoyo financiero provee la ONG a la entidad gubernamental (OG)?: Apoyo en Seguridad y deslinde, equipamiento y uniforme para guardaparques, programa de Radiocomunicación

III. NECESIDADES

- A. Cuales son seis necesidades inmediatas del parque?:
1. Se requieren vehículos para vigilancia y monitoreo
 2. Faltan 2 embarcaciones (se comprarán con recursos de P.P.)
 3. Desarrollo de un Programa de Mejoramiento Sanitario para viviendas
 4. Construcción de Tubos que permitan el paso de agua entre el mar y r
 5. Carece de Plan de Manejo
 6. Integrar a la Comunidad en la Conservación
- B. Describa tres puntos fuertes del parque:
1. Tiene potencial para Ecoturismo
 2. Los prestadores de Servicios Turísticos se han organizado
 3. Se pueden desarrollar actividades económicas de uso compatible
- C. Describa tres puntos débiles del parque:
1. La comunidad está habitando dentro del humedal
 2. Quien existe la cacería furtiva
 3. La población es de bajos Recursos económicos

PARQUES EN PELIGRO
INFORME DE PROGRESO
EVALUACION

Nombre del Parque: Refugio Faunístico de Ria Lagartos

I. ANTECEDENTES

- A. Nombre de organización no-gubernamental (ONG) trabajando en este parque:
Fronatura Península de Yucatán, A.C.
- B. Nombre de organización gubernamental trabajando en este parque:
Secretaría de Desarrollo Social (SEDESOL)
- C. Objetivos de conservación para el parque: El sitio de Anidación del flamenco rosado (*Phoenicoptes ruber*), tiene una gran diversidad de ornitofauna, también habitan especies en peligro, amenazadas. Recibe a proximadamente a 10 spp de aves migratorias en el invierno. Presenta 8 tipos de Vegetación.
- D. Breve descripción del parque:
1. tamaño en hectáreas: 48,840
 2. Tipo de hábitat: Cuneta con humedales costera que se comunican con el mar está bordeado de manglar; existe una barra arenosa donde se desarrolla la vegetación de duna; cuenta con selva inundable, petonés (selva mediana), selva baja, pastizales
 3. Flora/fauna en peligro: Tortugas marinas *Chelonia mydas* y *Eretmochelys imbricata*, Cocodrilos *Crocodylus moreletii* y *C. acutus*, ~~bagre~~ *Pathora anca* y otras felidas
 4. Flora/fauna endémica: Palmas Hu'ika *Pseudophoenix sargentii*, *Chirt-Tinax radiata*
 5. Otra flora/fauna o estadísticas interesantes sobre hallazgos en el parque: Se han reportado 260 especies de aves, 1 de estas son migratoria, 22 especies de mamíferos, 90 de peces, 240 spp de ~~mas~~ plantas. Zona de nidación del flamenco rosado *Phoenicopterus ruber*

6. Amenazas al parque: La explotación salinera se está realizando de manera extensiva, reclamando cada vez mayor extensión de humedad y destruyendo la duna costera y mangle. La población Andro del A.P. se interesa en la pesca

II. PROGRESO EN EL PARQUE

FECHA DE ESTE INFORME: 21 agosto 1992

A. ACCIONES DE CONSERVACION EN SITIO

1. Personal:

- a. Cantidad de personal para el área 6.
Cuantos trabajan para ONGs 0, cuantos para O.Gs 6.
- b. Número de guarda parques contratados en este año _____
Nombres, cargo que desempeñan y funciones/responsabilidades:
Los guarda parques son contratados por la O.G.

2. Capacitación:

- a. Cursos de entrenamiento, talleres, visitas técnicas al campo y capacitación individual (uno-a-uno) realizados este año:
1 Curso Corto de Manejo de Areas Silvestres y Protegidas en C.S.U. Fort Collins
- b. Nombres de empleados/funcionarios que recibieron capacitación en este año:
Federico Nava Mejia Coordinador de Programa Lagarter Celestia

3. Actividades de Manejo:

- a. Existe plan de manejo/trabajo para el parque? Sí _____ No X
Duración (meses/años) de este plan: Existe un plan Operativo Anual
- b. Fecha de elaboración del plan: _____

c. Sírvase enviar una copia de este plan a The Nature Conservancy, a cargo de Mónica Ostrá.
Fecha de envío del plan: _____

d. Cuales actividades delineadas/trazadas en el plan de manejo/trabajo se implementaron exitosamente durante este año?
Especifique: _____

e. Problemas en la implementación de acciones de manejo emprendidas en este año. Brevemente describa problemas/ atrasos y que solución se les dió:

Se ha encontrado lentitud en la toma de decisiones de la O.G. para apoyo económico a las guardaperqu se decidió entregar despensas.

4. Acciones de Manejo:

a. Equipo: compra de equipo durante el último año (qué equipo y costo aproximado). 3 Equipos de Radio Base 1 equipo en el Jeep de la O.G. 2 equipos portátiles (12,000) Equipos para trabajo de campo (1500)

b. Demarcación: Están los límites fronterizos del parque demarcados? Sí No . Extensión que se encuentra demarcada (has./km.): _____

Lugar del parque que se demarcó durante este año: _____

Area que se planifica demarcar durante el próximo año: Todo el Area Protegida

c. Construcción/Edificación: Construcciones nuevas y/o renovaciones en el último año.

Breve descripción de actividades de construcción realizadas este año: Se construyeron letreros de madera para señalización

Planes a corto plazo para construcciones nuevas. Breve descripción: Se construirán 2 puestos de vigilancia

- d. Adquisición de Tierras: Existen planes para adquisición de tierras dentro o en zonas cercanas al parque? Sí ___ No
Descripción breve de esfuerzos emprendidos para compra/adquisición de tierras: _____

Tamaño de la(s) parcela(s) (has., km.):

Costo por ha./km. (en dólares americanos):

Descripción de parcelas importantes y justificación de importancia:

5. Actividades de Monitoreo:

- a. Breve descripción de mayores amenazas y como éstas son monitoreadas: Se monitorea la producción salinera, se vigilan las playas para proteger la cría de tortugas marinas

6. Participación de Comunidades:

- a. Vive gente en/o alrededor del parque?: Sí No ___. Breve descripción de características de poblaciones (indígenas, colonos, etc.): Hay 4 comunidades que se dedican a la pesca, extracción salinera, ganadería, las pobladores son mestizos y de origen maya.
- b. Existe censo de esta(s) población(nes):
Sí No __.
- c. Participan las poblaciones que viven en el área de amortiguamiento (aledaño) en la protección del parque?: Sí No __.
Qué papel desempeñan estas comunidades en la protección del parque?: Se han nombrado a visitantes honorarios, quienes auxilian en la vigilancia del A.P.
- d. Cuantos funcionarios de la ONG trabajan actualmente en proyectos de apoyo a comunidades del parque? 0. Cuanto tiempo (horas, días o meses) dedican a estos proyectos? _____.

Brevemente describa el tipo de proyectos en los que trabajan y el progreso obtenido en este año: _____

- e. Cuantos funcionarios de la ONG trabajan actualmente en proyectos de reforestación en el parque? 0. Cuanto tiempo (horas, días o meses) dedican a estos proyectos? _____.

Brevemente describa el tipo de proyectos en los que trabajan y el progreso obtenido en este año: _____

- f. Cuantos funcionarios de la ONG trabajan actualmente en proyectos de educación ambiental en el parque? 1. Cuanto tiempo (horas, días o meses) dedican a estos proyectos? _____.

Brevemente describa el tipo de proyectos en los que trabajan y el progreso obtenido en este año: Se desarrolló un programa para aplicarse en las comunidades.

- g. Cuantos funcionarios de la ONG trabajan actualmente en proyectos de desarrollo sustentable en el parque 0. Cuanto tiempo (horas, días o meses) dedican a estos proyectos? _____.

Brevemente describa el tipo de proyectos en los que trabajan y el progreso obtenido en este año: _____

7. Participación Gubernamental:

- a. Qué papel desempeña la entidad gubernamental en el parque?:
Es la responsable de la Administración, manejo y vigilancia del A.P. También es la que establece las normas

- b. Cuantos guarda parques reciben (haberes) salarios del gobierno?:
5. Cuantos empleados del parque reciben (haberes) salarios del gobierno?: 1 (director)

- c. En que otras actividades del parque trabajan funcionarios del gobierno?: tiene un director

APPENDIX 2

The following people were interviewed during this evaluation:

A. Secretaría de Desarrollo Social (SEDESOL)

SEDESOL is the Federal Agency in charge of the management of these parks:

- Raúl Casares, Delegate
- Víctor Alcántara, Sub-Delegate
- Juan José Durán, Chief of Protected Areas
- Jesús García-Barrón, Ría Lagartos Director
- Víctor Hugo García, Celestún Director
- Rangers (2 in Celestún and 5 in Lagartos)

B. Pronatura, Península de Yucatán (PPY)

PPY is the NGO PIP partner:

- Joann Andrews, President
- Luis González, Executive Director
- Federico Nava, PIP Program Coordinator
- Víctor Quijano, GIS Program Coordinator
- Emilio Varguez, Accountant
- Armando Sastré, Administrator
- Elvia Rodríguez, Marine Turtle Project Coordinator

C. Ducks Unlimited Mexico (DUMAC)

DUMAC is a Mexican NGO with a research station in Celestún:

- David Alonzo, Celestún Station Coordinator

D. The Nature Conservancy

- Joe Quiroz, Mexican Program Officer

E. Other interviews

Other interviews were conducted with a variety of people, including:

- local fishermen
- local store owners
- local restaurant waiters
- scientists conducting research at these sites
- United States Vice-Consuls (informal)

There is no AID mission or other bilateral or multilateral development officers in Mérida.

APPENDIX 3

Noteworthy passages of interviews with directors:

- A. Víctor Hugo García, Celestún Director.- "I have been Director for 8 months..... I have seen a concrete difference thanks to the PPY support.....SEDESOL does not have the resources to support our activities, funds arrive late or are insufficient.....the communication equipment purchased is of great help.....our needs are still large, we definitely need a boat....."

"Another problem that we have is the lack of the four-wheel drive option in our jeep, that prevents us from patrolling remote areas within the reserve. We have access to information, and SEDESOL is good at providing us with current technical information about this site....."

"There is no management plan for this site, although we use an operational plan..... we have convenios to regulate management options, although there are always problems, including poaching, timber extraction, etc..... the uniforms have helped us because people now identify us as the authorities.

"Poaching is especially serious during difficult economic times because of decreased fishing. Fishermen kill flamingos to eat, although the numbers involved are not very large. Because the guards are from the local community, there tends to be peer pressure to weaken law enforcement. There is a clear need for public education, and we do some of it.

"Another major problem is the lack of payment for the guards. They are all under contract, and the payment arrives as late as July or August. This year it is still not here! This creates problems.....one of the rangers resigned last year because of lack of payment...."

- B. Jesús García Barrón, Ría Lagartos Director.- "I have been here for 18 years, on and off.... I came here to do research on birds. From the beginning, the biological richness of this area became very evident. These studies were the base for the establishment of the reserve. The problem was that cattle ranching was advancing rapidly and threatening the few remaining pristine areas. The population pressure was towards the coast. There are now good studies on birds, mammals, and a little bit on reptiles....."

"We have five guards and a network of several volunteer guards (without authority)....."

"We have a fairly good feeling on how to use birds as indicators of the health of the ecosystem. For example, we noticed that the Jabiru Stork disappeared from one area. After three years, the area dried up completely. The birds noticed the decrease in water flux into this area, which resulted on it drying up.....

"We have been doing wildlife management here without resources. For example, the Jabiru nests on high trees. When the trees were cut down, I proposed to erect nesting structures for them. Nobody heard me..... There is a clear tendency towards diminishing biodiversity within the reserves. For example, my first bird list had 285 species, and this has been decreasing to 263 a few years ago, and today there are perhaps less than 250 species.....

"The long-term survival of the reserve depends on controlling the advancement of unsustainable land use practices, such as cattle ranching..... The growing human populations is another problem, because these populations keep expanding into natural areas, especially in the cases where they expand into the wetlands themselves. In the last 15 years, the population has expanded 3-4 fold. We now have a population of 12,000 people within the reserve. With the arrival of new fishermen from areas that were previously exhausted, new species of fish are exploited. In bad fishing years, people have to use other resources, in most cases in an unsustainable way, such as timber extraction, poaching, bird capture for the bird trade, orchid extraction etc.

"The other major problem is salt extraction, especially with the new NAFTA, more salt will be exploited..... The long term future of the reserve depends upon the local support. The local people already have enough knowledge and is helping us with the enforcement, especially here in el Cuyo.

"Another problem that I have is that I am disconnected from what happens in Mérida. I definitely need to be involved in the process. I was unaware of the PPY environmental education program.....I am limited in my capability to travel and go to Mérida for coordination. The most pressing need relates to infrastructure for patrolling. Our jeep is always broken down. We urgently need an ATV.

"The radio-communications equipment has helped, but it is really worthless unless we can enforce the law. What good is it for somebody to tell us via radio that there are poachers, if we cannot go and check them out? Without a vehicle, this is impossible.....

"We also need infrastructure for research. We don't have any capability to do good monitoring ourselves. I don't have mist nets to monitor bird population trends. We have two projects (flamingos and sea turtles), but I would like to

monitor insectivorous birds because they are better indicators of change....

"I have had the chance of visiting other reserves in Mexico and in other countries. In most cases there is a lot of emphasis on the human resources. The staff receives benefits in the form of training, etc... Here my guards don't even get paid! We don't even know if they will get paid at all. There are no training opportunities at all..... (Mr. García was unaware of the courses for guards recently negotiated by PPY, to be held in December in Chiapas). The human resource is the base of any conservation program.....

"There have been concrete advances. The radios, the uniforms, etc., are concrete help and also support the people's morale....

"I also understand that there was going to be direct support for us but this has not happened. We have gotten one food package but that's it. I am completely unaware as to whether or not there are going to be more packages.....

"I would like to see periodic meetings to enhance the communications among all the different parts of the program and to ensure the timely delivery of the support. We are completely unaware of what is going on. I am afraid that because of political reasons all institutions are losing sight of their reason to exist. After all, they exist to do conservation....

"I understand that there are political reasons why things have been slow, but to be honest, I really don't care how much money this program costs, unless I can see concrete support to the reserve and its personnel. Everything else is just a dream.....

"I cannot communicate directly with PPY because SEDESOL does not allow me to do it. They don't like me to talk to PPY directly. I have to do all my communication through SEDESOL channels. I would also like to talk directly to TNC.....

APPENDIX 4

The following documents and materials were collected and reviewed. Documents provided by TNC in package "Ría Celestún and Ría Lagartos wildlife refuges, México" are marked with an asterisk:

- A. Celestún map (Calkini F15-9-12), scale 1:250,000
- B. Ría Lagartos map (partial, Tizimin F16-7), scale 1:250,000
- C. Ría Lagartos map (partial, Cancún F16-8), scale 1:250,000
- D. Aerial photograph of Celestún, digitalized
- E. Satellite view of Ría Lagartos (land use)
- F. Parks in Peril First Year Evaluation *
- G. Parks in Peril Second Year Evaluation, agenda of activities in Yucatán
- H. Conservation Action Plan 1990-1993 *
- I. Conservation Action Plan 1992-1994 (revised)
- J. TNC-PPY Memorandum of Agreement *
- K. PPY-SEDUE "Convenio de Concertación" (general) *
- L. PPY-SEDUE "Convenio de Concertación" (for PIP)
- M. June-December 1990 Report
- N. January-March 1991 Report
- O. April-June 1991 Report *
- P. July-September 1991 Report *
- Q. October-December 1991 Report *
- R. January-March 1992 Report *
- S. April-June 1992 Report *
- T. Rapid Ecological Assessment Proposal (Celestún)
- U. PPY Organizational chart
- V. PPY Board of Directors
- W. PIP Bank Account statement
- X. List of equipment purchased with PIP funds

MERIDA, YUCATAN A 12 DE AGOSTO DE 1992

AGENDA DE TRABAJO PROPUESTA EVALUACION PIP PRONATURA YUC.

PARTICIPANTES

THE NATURE CONSERVANCY

- Joe Quiroz
- Gonzalo Castro

SEDESOL

- Victor Alcantar
- Juan José Duran

PRONATURA PENINSULA DE YUCATAN

- Federico Nava
- Luis Gonzalez

AGOSTO 1992

Domineo 16

- Llegada de personal de TNC

Lunes 17

- 08:00 - Desayuno en el Hotel Montejo Palace
- 10:00 - Reunión de organización en oficinas de PRONATURA
- 13:00 - Almuerzo Restaurant Flamboyanes.
- 16:00 - Reunión de trabajo en oficinas de PRONATURA.
- 19:00 - Coctel de bienvenida en casa de Joann Andrews.

Martes 18

- 07:00 - Desayuno en el hotel Montejo Palace
- 08:00 - Viaje a Celestún.
- 09:00 - Recorrido en lancha por el estuario, observando lugares de señalización.
- 12:00 - Recorrido por tierra limite de la reserva del Palmar.
- 14:00 - Comida lunch en la playa tortugas.
- 15:00 - Visita a la estación de SEDESOL (radiocomunicaciones)
- 16:00 - Regreso a la Ciudad de Merida.

Miercoles 19

- 07:00 - Desayuno en el hotel Montejo Palace.
- 08:00 - Viaje a el Cuyo.
- 12:00 - Visita a la estación de SEDESOL.
- 14:00 - Registro y comida en las cabañas Conchita.
- 16:00 - Reunión de trabajo con personal campamento tortuguero

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20:00 - Salida a inspección nocturna de playas de anidación.

Jueves 20

04:00 - Regreso de la inspección, dormir en las cabañas.

09:00 - Desayuno en las cabañas.

10:00 - Viaje a Rio Lagartos.

12:00 - Recorrido en lancha por el estuario.

15:00 - Comida en el restaurant Payaso.

16:00 - Regreso a la Ciudad de Merida.

Viernes 21

08:00 - Desayuno en el Hotel Montejo Palace.

10:00 - Reunión de trabajo en oficinas de PRONATURA.

13:00 - Comida Restaurante los Almendros.

16:00 - Continua reunión de trabajo.

Sabado 22

07:00 - Regreso a USA del personal de TNC.

PARKS IN PERIL EVALUATION

SIAN KA'AN BIOSPHERE RESERVE
QUINTANA ROO, MEXICO

Submitted to:
The Nature Conservancy

Submitted by:
Victor Hugo Hernandez O.
A. P. #6
Tuxtla Gutierrez, Chiapas 29000, Mexico

Date:
September 30, 1992

I. INTRODUCTION

This document is an evaluation of the Sian Ka'an Biosphere Reserve Parks in Peril (PIP) site and is based on the Amigos de Sian Ka'an workplan for June 1991 to May 1992. This evaluation was performed by Biologist Victor Hugo Hernandez, external Nature Conservancy contractor. Literature research was done at the library of the Instituto de Historia Natural. Visits were made to the office of Amigos de Sian Ka'an at Plaza America local 50, 2º piso Cancun Quintana Roo 77500 Mexico, a visit to the office of Secretaria de Desarrollo Social (SEDESOL) at Circulo Cultural, Carrillo Puerto, Quintana Roo, Mexico and a site visit to Sian Ka'an Biosphere Reserve from July 23 to August 4, 1992.

Interviews were conducted with the following system, take a notes of the activities and talks with the personal of the Reserve.

A. Government officials:

1. Federal SEDESOL

Instituto Nacional de Ecologia
Dr. Ezequiel Ecurra
Direccion general de Conservacion de los Recursos
Naturales

Lic. Sebastian Estrella Pool
Director of the Reserve

B. Amigos de Sian Ka'an staff:

In this evaluation interviewed directly Juan Bezaury.

1. Juan Bezaury - Director
2. Adela Samper - Self-sufficiency Program Director
3. Pedro Ramirez - Technical Coordinator
4. Cesar Barrios - Investigator and Coordinator for Ecotourism
5. Mario Gonzalez - Project Coordinator for Community Development
6. Candido Camal - Extensionist
7. Rufino Ucan - Extensionist
8. Santos y Catalina - Project Coordinator for Community Development Project
9. Norma Alicia Chan - Administrative Assistant
10. Fidel Perez - Accountant
11. Gerardo de la Cruz - Administrative Assistant

C. The Nature Conservancy:

1. Joe Quiroz, Director, Mexico Country Program
2. Susan Anderson, Director, Mexico Country Program

Background:

Sian Ka'an Biosphere Reserve was decreed by the president of Mexico on January 16, 1986. The 528,147 hectares (1.2 million acres) reserve is located along the Caribbean coast of the Mexican state of Quintana Roo (see map 1), 95 miles south of Cancun in the municipal of Felipe Carrillo Puerto. Rich in biological diversity, including both terrestrial and aquatic habitats, the reserve is composed of one-third lagoons, bays, and coral reefs, one third marshes and mangroves, and one-third lowland tropical forest.

The 60 mile Sian Ka'an barrier reef forms part of the second longest barrier reef in the world. The shallow bays are Mexico's most important Spiny Lobster Nurseries. Keys scattered throughout the bays provide nesting sites for thousands of water birds, including Roseate Spoonbill, Wood Stork, Magnificent Frigate Bird, Boat-billed Heron, and Jabiru Stork. Over 300 species of birds have been sighted at Sian Ka'an, many North American migrant species resting and feeding. Manatees and two species of crocodile are found in the lagoons and bays and the beaches provide critical nesting sites for sea turtles.

Terrestrial species such as jaguar, crocodile, tapir, howler and spider monkeys, ocellated turkey, great curassow and other species of forest birds inhabit the lowland tropical forests of Sian Ka'an. Over 1,200 plant species are found within the boundaries of the reserve.

The most prominent extractive use of the reserve's resources is lobster fishing.

A memorandum of understanding (MOU) for the protection of Sian Ka'an Biosphere Reserve was signed by Graciela de la Garza Garcia and Carlos Constandse Madrazo on 16 August of 1991. In 1987, the federal agency of Secretaria de Desarrollo Urbano y Ecologia (SEDUE), and the state of Quintana Roo developed a management plan for the reserve. (See appendix 1.)

The reserve is 99% federally owned, therefore, SEDUE, now SEDESOL, was granted responsibility for reserve operations and management. SEDESOL maintains a local office at Circulo Cultural of Carrillo Puerto, Felipe de Carrillo Puerto, Quintana Roo, which is staffed by Sebastian Estrella Pool. The office contributes to the protection of Sian Ka'an through patrolling and guarding the four reserve access points (see map 2). they have 9 rangers in this points.

Amigos de Sian Ka'an is responsible for the implementation of The Nature Conservancy's Parks in Peril Program. On November 4 of 1991 Brian Houseal, director of PIP program and Juan Bezaury, Director of ASK signed an agreement to work in Sian Ka'an Biosphere Reserve. (see appendix 2).

PIP program for Sian Ka'an cover two of the three programs of ASK: Programa de Conservacion y Uso Sustentable de Recursos Naturales and Programa de Apoyo Comunitario e Institucional.

Since the implementation of the Parks in Peril Program workplan, from June 1991 to May 1992, the following activities had been accomplished:

1. Installation of a radio communication system and repeater station
2. Purchase of an all-terrain vehicle
3. Initiation of a hydrologic study of Espiritu Santo Bay
4. Implementation of monitoring program for indicator species and ecosystems
5. Initiation of Casuarina Eradication Program.
6. Acquisition of continued funding from The Nature Conservancy
7. Progress with the community awareness and environmental education program for major cities in Quintana Roo
8. Development of teacher/student workbook on species and ecosystem of the reserve

Institutional integration of local and regional organizations has resulted in an expanded research program at Sian Ka'an Biosphere Reserve. The following organizations are currently involved in projects at the reserve:

1. Econcienza A.C. - environmental education
2. Biocenosis A.C. and Biosilva A.C. - research on management of the flora, fauna, and reefs
3. Centro de Investigaciones y Estudios Avanzados del Instituto Politecnico Nacional (CINESTAV) - reef, hydrology, and fishery research
4. Centro Regional de Investigaciones Pesqueras (CRIP) - fishery research
5. Instituto de Ciencias del Mar y Limonogia de la UNAM - marine ecology research
6. Centro Investigaciones de Quintana Roo - Ecology research

Further progress with the implementation of the workplan has been hampered by a lack of coordination of activities. on a local level, between the administrations of SEDESOL and ASK. Principally Reserve directors had not made a relationship with ASK, but ASK has relationships with guards of the Reserve and has an agreement with

the deputies of SEDESOL in the Quintana Roo and Mexico city.

Although the reserve currently receives limited funding from federal and state governments, as well as private organizations such as The Nature Conservancy and foundations, there is no plan for long-term funding from the federal and state governments.

A very significant problem is the lack of involvement of the local communities in the reserve's protection. Without the commitment and sense of responsibility for the survival of the ecosystems and species of the reserve by the population living within and around reserve the future protection of Sian Ka'an is at risk.

Improvement needs to be made in the communication between Amigos de Sian Ka'an and SEDESOL. The development of a long-term strategy for financial support of the reserve would facilitate the success of future activities at the reserve.

B. TECHNICAL ASPECTS

Achievements:

With approval from The Nature Conservancy, the initial action plan was modified in March 24 of 1992, to reflect the improved radiocommunication system, funded by the Parks in Peril Program. There are now three base stations. They are in Carrillo Puerto, Cancun, and Rancho El Ramonal. Four vehicles have been equipped with radios. In the near future radios will be installed at each of the four ranger stations, as well as in the administrative office in Felipe Carrillo Puerto. Research Program has a portable radios and others will be purchased for staff that work in boats.

Ask had worked knowledging a lot of the natural resoures of the reserve, this is important because they have more tools to plan and develope programs.

Additional advances have also been made in the following areas:

1. Purchase of a motorcycle to facilitation transportation of staff in the field
2. Continued payment of the Parks in Peril Program General Coordinator's salary
3. Recent federal changes have improved the relationship between SEDESOL and Amigos de Sian Ka'an. There have been meetings to discuss ways to improve communication and facilitate the coordination of reserve activities and

planning.

4. All Parks in Peril projects in Sian Ka'an Biosphere Reserve have been authorized by SEDESOL via convenio.

5. Amigos de Sian Ka'an has been actively promoting environmental awareness and the Sian Ka'an Biosphere Reserve in the communities in and near the reserve as well as in the major population centers of Quintana Roo across of diffusion activities in the radio, TV and newspapers. Besides ASK do brochures, panflets and posters about the reserve.

Research on sustainable uses of the reserve's natural resources continues. There aren't any projects have been completed.

6. The following projects have been initiated during the last fiscal year:

Casuarina eradication in the Reserve, Hydrologic basin of Espiritu Santo and Forest flesh.

7. Monitoring programs are underway on the following species:

In the Tropical forest, using a Chiroptera family like a biological indicator, and Coral reef for to know the actual situation

Limitations:

A lack of communication between the SEDESOL administration of Sian Ka'an Biosphere Reserve and Amigos de Sian Ka'an is adversely effecting the daily and long-term management and protection of the reserve. Amigos de Sian Ka'an has been working directly with the SEDESOL office in Mexico City, by passing the Felipe de Carrillo office. The poor relationship between the local-level administrations has impeded progress of the Parks in Peril Program. This has impacted the reserve guards.

SEDESOL has been delinquent in paying reserve staff salaries. The staff has not been paid since January 1992. Other problems result from a lack of funds for reserve infrastructure, equipment, and structures. These deficiencies have caused a lack of moral as well as put the protection of the reserve at risk. On my visit I observed a lack of enforcement by reserve rangers of regulations in some of the zones, as well as at the access areas, because the guards don't have a patrol program of the Reserve, they only stay in the cabin area for control the access, and they don't have a equipment for field and personal protection.

Recommendations:

Short-term:

Develop a process to strengthen communications between all parties involved in the protection of Sian Ka'an. Continue meeting to discuss ways to improve this situation, as well as the impact it is having on the staff. A neutral, outside moderator could facilitate the sessions as well as make recommendations for improvement.

Develop a system to ensure that reserve staff receive their salaries. A budget is needed to address the minimum infrastructure and equipment needs necessary for the proper protection of the resources and habitats. Funds should be allocated to train and improve working conditions for the guards, patrols, and other staff.

Revise the management plan to redefine a monitoring strategy for the reserve, and develop a permanent program for to evaluate the environmental changes in the reserve.

Mid- and long-term:

I strongly recommend evaluating the impact of El Ramonal, Punta Herrero and Punta Allen on the reserve and the natural resources. Many activities of the residents are clearly effecting the reserve. El Ramonal is a cattle ranching zone in the center of Sian Ka'an. A problem within the reserve is predation of the cattle by jaguar, which are being hunted to protect the cattle. I saw rifle cartridges along the access road from El Ramonal within the reserve. The possibility of relocation of the settlement should be considered.

Evaluate the potential and possible impacts of ecotourism in the reserve. Many of the fragile beach and river habitats, access points, and species could be at risk if tourist activity exceeds the carry capacity of the reserve. The current infrastructure is substandard and would need to be improved and designed to be environmentally compatible to minimize the impact.

C. FINANCIAL ASPECTS

Achievements:

The Parks in Peril Program has come to play an important role in the budgeting process of Sian Ka'an Biosphere Reserve. PIP funding of \$135,000 cover 45% of the total budget expenses of the

over \$300,000. SEDESOL contributed \$70,000 Mc Arthur Foundation, WWF, Friend of Mexican Development, and others have contributed an additional \$165,000. Local membership contributions have increased significantly over \$20,000 last year (see appendix 3).

Limitations:

This currently funding is enough for to work with the actual projects, but it is'nt if ASK wants to increase the cover of diffusion and comunity development programs.

Amigos de Sian Ka'an lacks information on potential sources of funding (e.g. the World Bank). There is a significant absence of a long-term financing plan for the reserve.

Recommendations:

If well planned, ecotourism could be a real boast to the financial stability of the reserve. A stronger community education and membership program would increase local donations and hopefully generate support from local businesses. Analysis of mid- and long-term funding is needed. Reliable, consistent sources of funding should be identified and approached.

D. ADMINISTRATION

Achievements:

Amigos de Sian Ka'an is working to increase the efficiency and effectiveness of protecting Sian Ka'an by developing a better relationship with the regional SEDESOL staff. Several meetings have taken place to discuss ways to improve communication and trust between the two parties.

The relationship between The Nature Conservancy and Amigos de Sian Ka'an is very strong. This partnership has allowed for adjustments in the reserve work plan as the need has arisen.

Parks in Peril support has strengthen the local efforts to conserve the reserve's resources, by mean of the radiocomunication and the application of activities of ASK. By this way, another organizations can see they could to help to make a new funds for the reserve.

Limitations:

The lack of communication between SEDESOL and Amigos has hindered the implementation of the Parks in Peril Program. As discussed above, this problem is being addressed. Interinstitutional coordination, at the local level, needs to be improved.

Recommendations:

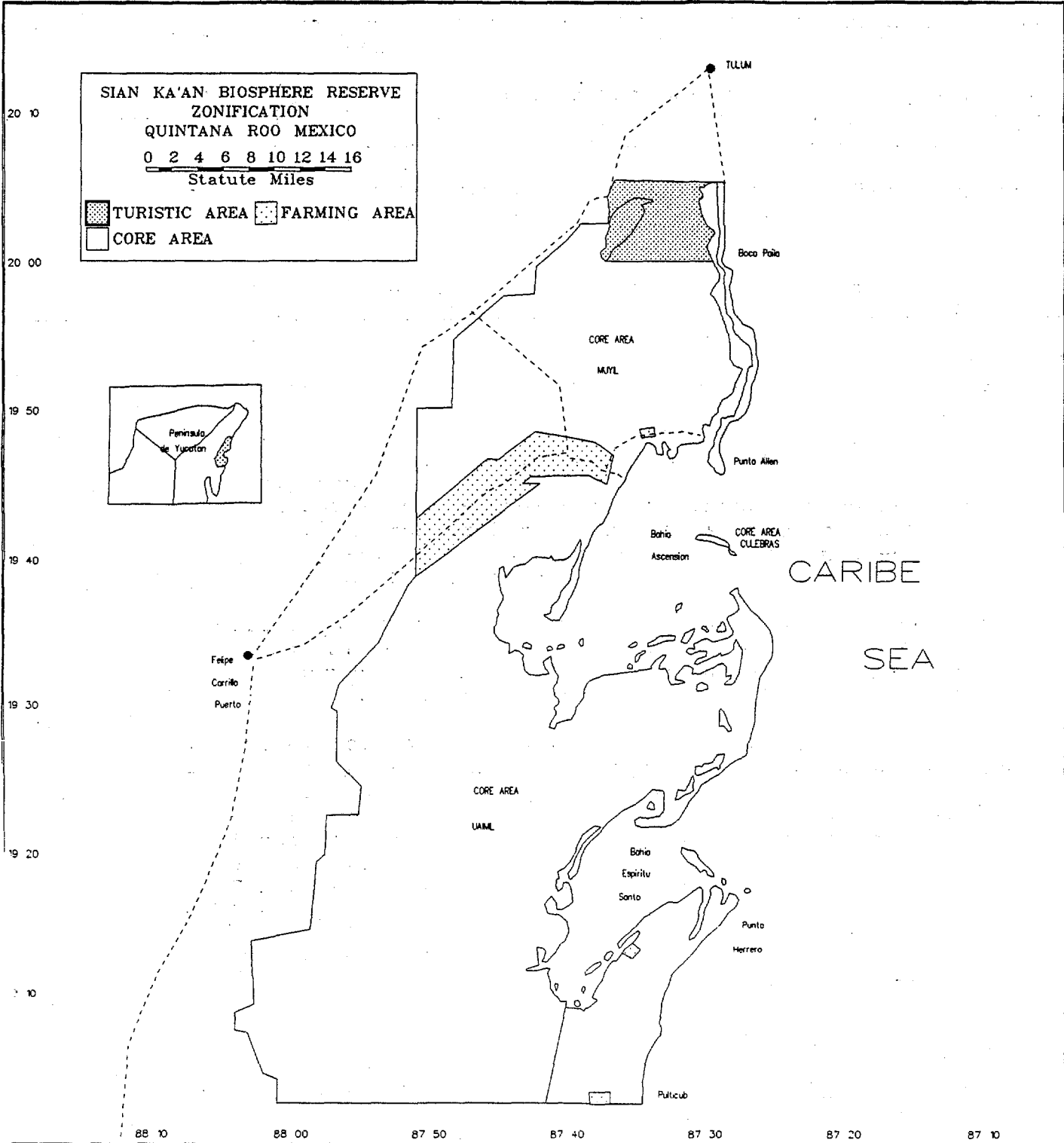
Address the needs of the reserve's SEDESOL staff. Develop a mechanism to ensure they will be paid on time. Job security needs to be assured.

Develop an integrated monitoring plan for the reserve.

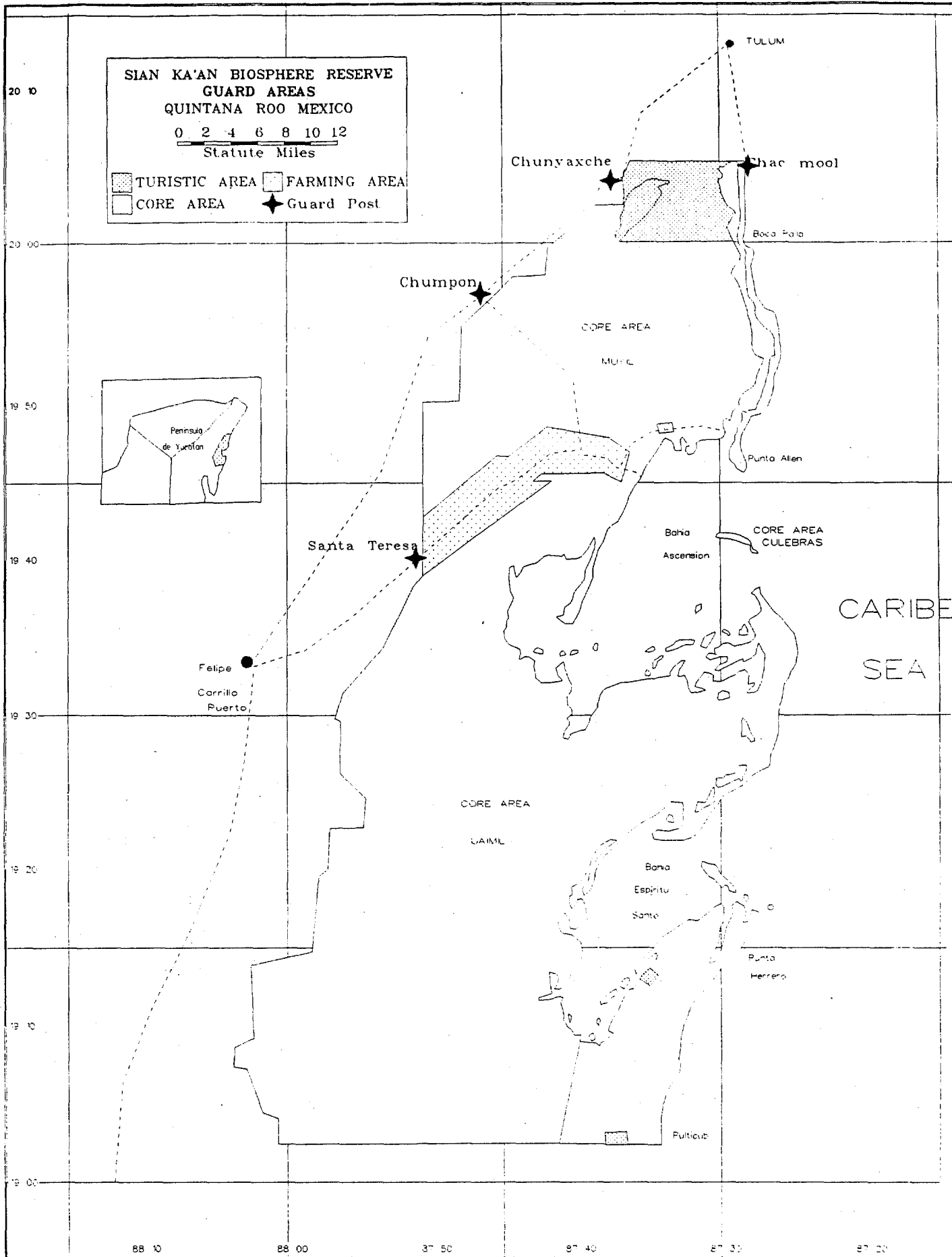
Evaluate the zonification of the reserve and analyze the management plan.

To continue with the relations between the new federal and state staff of SEDESOL, the future governor of Quintana Roo was a principal leadership for constitute ASK.

MAP 1



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APPENDIX 3

AMIGOS DE SIAN KA'AN
PROJECTS IN APPLICATION
VIGENTS PROJECTS JULY 1992

PROJECT	Budget	Source	Applicant
Lobster postlarves collect		WWF-UK	2
Juvenile lobster management	12,705	WWF-UK	2
Fishery evaluation Pta. Allen		MCA	3
Fishery implementation		MCA	3
Shark evaluation of use	20,000	MCA	3
Reef research and monitoring	10,000	TNC/McA	2/4
Ornamental plants management	14,500	MCA/Mori	1/4
Forest flesh	20,000	TNC/Mori/McA	1
Hydrologic basin Espiritu Santo	12,000	TNC	1,4/6
Monitory de swamps	6,000	TNC/8	1/6
Monitoring aquatic ecosystem	18,250	TNC	4
Monitoring tropical forest	5,000	TNC	5
Casuarine eradication	12,000	TNC	1
Marine turtle program	9,800	USFWS/9	1/7
Extensionism and rural development		WWF-UK	1
Women in the development	43,000	WWF-UK	1
Diffusion	7,000	MCA	1
Amigos news	5,000	FMD	1
Amigos work book	2,400	MCA	1
Brochures and papers	2,000	GG	1
100 birds book	1,000	ASK	1
Bird poster	7,000	Xcaret	1
Membership	5,000	FMD	1
Management plan of Sian Ka'an	100,000	WB	2
Radiocomunication	51,000	TNC	1
Ecotourism	8,000	MCA	1
1 Amigos de Sian Ka'an	2 National University	3 CRIP	
4 Biocenosis	5 Biosilva	6 CINVESTAV	
7 Ciencias Facultad UNAM	8 Lighthawk	9 Casablanca	
FMD Friends of Mexican development	WB World bank		
Mori Moriah foundation			

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THE NATURE CONSERVANCY
PARKS IN PERIL PROGRAM

Darien National Park,
Biosphere Reserve
and World Heritage Site

PANAMA

Evaluation Report
July 1992

Róger Morales
Consultant

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I. INTRODUCTION

1. Brief PIP site description.

The 575.000 ha. Darien Biosphere Reserve and World Heritage Site (1985) is located in the Darien Province along Panama's border with Colombia. This protected area extends from sea level on the Pacific coast to 1500 meters on Pirre mount. This reserve contains marine habitats, mangrove estuaries, riverine cativo forest, freshwater wetlands, tropical rain forest and elfin cloud forest. It has been characterized as most diverse forest in Central America and is an important center of endemism and a known pleistocene refuge. Fauna includes 15 endemic bird species, bush dog, felines, giant anteater, monkeys, harpy eagle, and possibly spectacled bear. Poorly known botanically, the area is anticipated to contain many plants new to science.

Since 1987, the National Institute of Renewable Natural Resources (INRENARE) and ANCON (National Association for Nature Conservancy) have been working closely to establish the minimum infrastructure necessary for the protection, conservation and management of this vital natural reserve. They have trained and equipped rangers, control points, ranger stations, nature trails and community development and support programs. Nevertheless, Darien's extensiveness, its difficult accessibility and the resulting complications in its management and development require substantial support in order to ensure an adequate protection,

management and development programs for the park.

2. Team composition.

Roger Morales, Consultant and Brian Housel, TNC.

3. Working plan evaluation.

18 July 1992: The consultant arrived in Panamá at 3:30 p.m. He had a Brief meeting with Raúl Fletcher, Sub-director of Conservation and Science, and Oscar Vallarino, Subdirector of Administration, Environmental Education and Development at the ANCON Central Office. The Working Plan for the Consultant was developed and several administrative and technical documents were delivered to him.

19 July: (Sunday) All day was dedicated to check, read and analyze the on hand documentation.

20 July: Meeting with Juan Carlos Navarro, Director ANCON, and Raúl Fletcher, the discussion was centered on objectives and logistics for the evaluation mission.

Meeting/Interview with Graciela Palacios, Head of ANCON Science Department. She made a summary of field studies related with the inventory of flora and fauna species made at Pirre mount, Cruce de Mono to Cana mount; Sapo mount and Balsas area.

Meeting/Interview with Oscar Vallarino and Madeline Lescure, Head of Environmental Education and Development Division. The discussion was centered on the different

sources and strategies of ANCON for local and external fund raising activities.

Meeting/Interview with (Botanist) Jorge Aranda new Darien Officer. The last Officer was Fernando Dominguez who resign from this position several months ago. Jorge Aranda was involved during the last year in the Darien's flora inventory as a member of the ANCON CDC. Now he took this new position.

21 July: Meeting with COPFA (Corporación para la Prevención de la Fiebre Aftosa, Gobierno de Panamá-USDA) Co-Directors Esteban Giron, Panamanian Co-Director, and Kelly Preston, USDA Co Director. They are very interesting in an agreement with ANCON and/or INRENARE to be more involved in the protection of Darien. They also, are preoccupied by the renewed movements of this year toward the construction of the last section of the Panamerican Highway.

Meeting/Interview with Noel Morón, Sub Director of INRENARE and Roberto Arango, Head of the Protected Areas of INRENARE. They area waiting for the implementation of MARENA project, meanwhile they have government funds just for covering ranger salaries and MAB funds in order to built two more ranger stations: Garachine and Jaqué.

For the consultant was clear and agreed with Morón and Arango's statement about the strong gap of communication among the Protected Areas Department and the Forest Service

policy related with the forest lumber concessions in Darien.

Meeting/Interview with Alan Smith, researcher of Smithsonian Tropical Research Institute. Darien is an important research site for STRI, but the amount of efforts and funds assigned so far are quite weak and poor coordinated. Smith offer his knowledge and time to develop with the ANCON CDC staff an adecuated biological monitoring program for the Darien area.

22 July: Trip to Darien, B. Houseal and R. Morales arrived at the Perresenico ranger Station at 6:00 p.m.

23 July: Darien, Perresenico Ranger Station.

Meeting/Interview with Carlos Brandaris, head of Conservation Division ANCON, and Marisol Dimas who was in charge of Environmental Education at INRENARE. The TNC/ANCON Action Plan for Darien and its implementation was detailed revised and commented. There were also outlined several components for a Protection Strategy for Darien.

Late in the afternoon we went back to El Real ANCON Regional Office.

There was a short interview with Narciso Bristan, Darien Administrator at INRENARE and Jorge Botello, ANCON Conservation Officer. Deforestation issues, regular activities of field management and administration were discussed.

24 July: Trip from El Real to Panamá City.

25 July: homework at the Hotel.

26 July: Meeting/Interview with Luis Cardel, Forester ANCON, and trip to the Agroforestry Cabuya farm. The discussion was centered on the deforestation issue at Darien and the related INRENARE forest concessions. According with his estimations, in Darien, during this year the forest exploitation has been much bigger than the entire last five years.

The Cabuya Farm is a really good and a practical demonstration plot for different agroforestry systems and wildlife species management which proved results could be applied to several Protected Area's Buffer Zones in the country.

27 July: Meeting with Oscar Vallarino, revision of 1991 and 1992 expenses reports and accounts.

Meeting with Raúl Fletcher and Oscar Vallarino, discussion on an schematic proposal to develop an scenario for future needs on management and investments in the Darien area with a group of ANCON staff.

Meeting/Interview with AID's staff David Garndella and Jesús Saéñz. They do not have any direct relation with Darien Project. They are informed trough the regular reports from ANCON, and from time to time they made a trip to Darien. This is so because AID funds to the PIP Programme were assigned from AID/Washington.

Meeting: Juan Carlos Navarro, Brian Houseal, Roger Morales with the lawyer Luis Shirley to discuss general points on

the Punta Patiño property and its potential acquisition by ANCON. It was clear for the consultant that such a property is ecologically important and economically cheap but the question lays on priorities; the consultant is convinced that ANCON needs to consolidate many other actions in Darien, and the investments ought to be addressed to those actions. After the meeting with Shirley, Houseal, Navarro and Morales in an working lunch defined a set of priorities criteria for land acquisition that could be used by ANCON, such as:

1. Private lands inside The Protected Areas.
2. Private lands adjacent to the protected areas border to reduce or close access of poachers and to develop agroforestry techniques and sustainable land use as demonstrative farms.
3. Neighbor private lands covered with primary forest of high ecological value.

Meeting with Guillermo Archibold (PEMASKY) to discuss several issues of the PEMASKY Project and current and future situation of it. Archibold will send a proposal asking TNC to considered it.

28 July: Consultant spend all day at the Hotel preparing recommendations of management for Darien during the next meeting of July 29 with ANCON technical staff.

Brian Houseal return to USA.

29 July: Meeting with Raúl Fletcher, Graciela Palacios,

Jorge Arango (INRENARE), Madeline Leseure on consultant recommendations about the management for the Darien National Park. It also was pretended by the consultant to develop with the INRENARE and ANCON staff the financial strategy for Darien during the next 5-10 years, but R. Fletcher advised to develop such strategy later with ANCON staff with the commitment to send it to TNC as soon as they finish it. The consultant offered during the meeting a simple methodology to develop such strategy and the variables and parameters to be consider to create the desired scenario of Darien in five years.

30 July: Meeting with Oscar Vallarino on consultant recommendations related to technical and financial reports and some tips about administrative procedures.

Dinner meeting with Alan Randall and Randall Curtis about debt swap for Panamá and several issues on the MARENA AID Project.

31 July: Return to Costa Rica.

4. Target Institutions and individuals.

ANCON: Juan Carlos Navarro, Raúl Fletcher, Oscar Vallerino, Carlos Brandaris, Jorge Aranda, Graciela Palacios, Madeline Leseure, Jorge Bottello, Luis Cardel, Maritza Jaen.

INRENARE: Noel Morón, Roberto Arango, Marisol Dimas, Narciso Bristan.

COPFA: Esteban Girón, Kelly Preston.

STRI: Alan Smith (Ira Rubinoff was out of the count-

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ry).

PANAMA UNIVERSITY: Mireya Corella, Luis Carrasquilla.

AID: David Gardella, Jesús Sáenz.

II. TECHNICAL

A. Significant on the ground management achievements.

1. Current Situation.

1.1 Personnel:

INRENARE Personnel: 1 Director (He was, during the evaluation period, in USA in a training course), 1 Administrator, 1 Professional in Environmental Education, 1 Biologist as Researcher, 1 Clerk in Charge of the El Real Office, and 20 rangers.

ANCON Personnel: 1 full time Darien National Park Officer, 1 part time Land Acquisition Negotiator and General Supervisor of border demarcation, 1 Forester as part time Supervisor of Agroforestry Activities at the farms owned by ANCON and acting as Extension workers to the neighborhood communities, 1 part time Conservation Officer, 1 Administrator for the agroforestry farms, 2 Field Workers Supervisor, and 22 field workers at the agroforestry farms.

COPFA Personnel: 1 Inspection Zone Director, 8 Field Stations each one with 1 Inspector, and 1 motorist (Unfortunately they do not support the park protection).

1.2 Training:

The Director of the National Park was, during the evaluation period, in USA as a participant of a short park ranger course in Colorado State University.

It is planned, with all the logistic almost finished, to develop from August 31 to 8 September a refreshment park ranger course in the area. The majority of Darien park rangers will participate as well as other rangers from different panamanian protected areas.

1.3 Management Activities:

In 1988, it was finished the elaboration of the Master Plan for Darien Biosphere Reserve, in spite, it was widely consulted, the formulation of the Plan was made by a single specialist (not a planning team), and it was revised by all institutions related with the management of the protected area but this plan was not officially endorsed by INRENARE.

Since 1987 ANCON and INRENARE work together in the Darien management and protection through a annual working plan for the activities to be developed and coordinated in the protected area. These working plans are based mainly on the proposed actions identified in the Master Plan. The INRENARE - ANCON annual working plan for Darien correspond to the proposed activities (March - December 1992) financed by the Parks Peril Program.

The activities identified in the working plan for 1992 (March - December) that has been successfully implemented are:

Permanent presence, patrolling and trails maintenance. In each of the three Ranger Stations Pirre, Cruce de Mono and Balsas there are permanent personnel assigned and police guard in two of them. There are frequent patrolling trips along the trails that connect the Ranger Stations and other border marked paths, at least once a month there are planned patrols, plus those done with visitors and other unexpected trips for special activities as maintenance. These trails are: From Pirre Station to Cruce de Mono Station (30 Km.), from Pirre Station to Balsas river Station (40 Km.), from Sapo mount to the Pacific Coast (10 Km), Pirre Station Trail (4 Km), Pirre Peak Trail (10 Km), Cruce de mono Station Trail (25 Km), from Cruce de Mono Station to Paca (10 Km), and Sábalo River Trail (15 Km).

Overflights. With the cooperation of Lighthawk Association, the directive personnel made 16 hours of overflights in the Park to check the borders, forest concessions, international border, Cana Area and the other strategic areas inside and outside the Park.

Photographic and filming activities were done during several flights.

Land purchase. About 2000 ha. have been purchased along the Park Buffer Zone border in the Perresenico - Pejibasal area.

The last purchased farm had an area of 500 has. in Perresenico which was bought with TNC funds; This farm has to be registered and lacks of a cadastral drawing in ANCON name.

Almost all the farms that were bought, have a 50% of primary forest, a 25% of degraded forest and other 25% under pasture and abandon land.

Equipment and materials. Food and field equipment (tools and boots) was provided for 20 park rangers and local field workers. Metal sheets were bought in order to build 250 inscription to be posted in 45 Km. along the newly marked park boundary. Moreover, a 30 feet canoe and two 25HP engines were purchased.

Reforestation Program 24,000 seedling from native species have been planted in 80 Has. in the buffer zone and other purchased land. Also, there is a

nursery that produces around 50,000 seedlings.

22 local campesinos have been contracted with funds from the government (Employment Program) to do reforestation, maintenance in boundary trails and purchased farms.

Environmental Education There is just one person (a biologist) to cover this program, and the job is done irregularly between El Real and Perresenico areas.

Research and monitoring CDC/ANCON staff makes field trips for the recollection of the biological information, irregularly. The University of Panama Herbarium personnel often participates in those field trips.

There is not a real structural program and a systematic monitoring about the park biodiversity.

Community Participation in the Park Management. In the Embera Indian Reserve and the Garachiné Sambú area, there is an active community participation from reserve members in the boundary of the protected areas as a mutual support in the protection of the

park.

The Pirre communities are more aware about the management and reforestation actions because the management activities are concentrated in this area; however, their participation is still weak.

Governmental Participation. INRENARE as the park responsible party, participates by operating it very actively with 20 employees among them there are: A Director, a researcher, a Environmental education coordinator, and a secretary in the Park See in El Real.

IRENARE Forest Service has had a negative participation in the buffer zone until now, by giving forest harvesting concessions without previous studies and monitoring.

The program for the Aftosa fever control (COPFA), even though they are active in their mission, unfortunately, they have not participated in the park management and its protection due to lack of communication, and agreements with ANCON and INRENARE.

III. FINANCING

A. Current Situation.

1. Human y Financial available Resources.

ANCON e INRENARE have enough staff in order to meet the objectives established in the operative plan settled with PIP.

This does not mean that the management plan will cover all the required necessities for the park management.

Moreover, It has to be recognized that giving the big dimensions, the internal financial limitations and the support that PIP is able to provide, It obvious that the objectives met are those of priority order.

This also apply to ANCON and INRENARE financial availability in order to work with the required actions.

2. financial contributions.

The PIP approved budget for 1992 (march-december 1992) is of US\$50,000; plus US\$30,000 for the purchase of a farm in the area. ANCON has the compromise

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of contributing to the budget with US\$50,000

The total Budget of US\$130,000 allowed the adequate development of the majority of the programmed activities.

IRENARE contributions for the Park management are specifically oriented to pay personnel salaries (20 people) and basic equipment; The main source of funding is UNESCO.

According to the provided information, The Park has the following funds for 1992:

a.	TNC	US\$	80.000
b.	Green Gold Foundation (Germany)		30.000
c.	WWF (England)		35.000
d.	Mac Arthur Foundation		30.000
e.	INRENARE (Salaries) Aprox.		45.000
f.	INRENARE (Operation) Aprox.		18.000
g.	French Embassy		25.000
h.	ANCON		50.000

TOTAL US\$ 313.000
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Except for the TNC, Green Gold Foundation (Germany) and WWF (England); the evaluation equipment could not check effectively incomes from the other mentioned sources.

3. Financial Plan.

ANCON and INRENARE do not have a financial plan in the long run, and they are not considering to elaborate one either.

However, INRENARE is waiting the starting of the MARENA Project which will finance partially the country's protected areas, specially in infrastructure.

ANCON hopes to have financial support in the medium and long run from the current sources

Given the country and government current situation, the financial support for the protection and management of Darien National Park will depend mainly from the grants from international institutions like TNC.

General calculations among the evaluating team and INRENARE staff, the annual park operation will re-

quire US\$350,000 as in the current conditions.

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IV. ADMINISTRATIVE PROGRAM

A. Current Situation.

1. Goods and Equipment Purchase and administration

There is no doubt that the ANCON participation in the park management, has given efficiency to the park administration, specially in the gathering of required goods and services. Unfortunately, INRENARE has not been the case; for instance, INRENARE has assigned a petty cash to the park administration for US\$500; however, The INRENARE central office in Panama city takes up to three months to do the respective reimbursement. Other example is that an audiovisual equipment for the environmental education program, after a year of being requested, just part of it recently arrived at the park.

2. Budget Management.

ANCON efficiency in order to solve the park necessities about equipment, materials and other expenses carries a risk and in fact a problem in the execution of the budget approved by PIP; for instance, ANCON Director of Conservation as well as the Park official do not know the budget execution stage in their

different expense lines while continuing the same spending rhythm. This is translated in to an imminent risk of over executing the approved budget.

On the other hand, the Operative plan and budget for 1992 was elaborated in november-december, 1991. The budget was US\$125,000 approved by PIP; and until march 1992 TNC approved the work plan with a reduction in the budget. TNC approved US\$50,000 for park management plus US\$30,000 for land purchase. In this budget adjustment, the operative plan activity adjustments were not taken into consideration, and ANCON Conservation Director accepted that he continued working until july 1992 under the first (non approved) budget.

There is not an efficient internal information system in ANCON about the budget execution stage for the public.

3. Technical and financial Reports.

ANCON administration has demonstrated to be very efficient in the elaboration of the technical and financial reports; however, frequently text technical reports are very schematic and do not report executed activities, in this sense there is no way to relate

them to the financial report

Other important aspect is that the financial reports are given upon the TNC contributions and they do not take into consideration the ANCON contributions; moreover, there is not report of INRENARE financial expenses.

The expense detail next to the financial report for the first trimester of 1992 (march-june,1992) detail expenses until july 14, 1992.

In the financial report, it should be erased the USAID name, and leave only the TNC because ANCON has received direct funds from TNC, and not from USAID.

4. Current Agreements with PIP.

Base on the financial Strategy proposal that ANCON will present, as well as the park protection strategy suggested in this report; It's convenient to check up the agreements among TNC-ANCON, and ANCON-INRENARE.

V. SUMMARY AND RECOMMENDATIONS

1. Significant on the ground management achievements.

1.1 Personnel:

The relationship among INRENARE and ANCON personnel is excellent and of mutual collaboration. The personnel assigned by both institutions are 26; moreover, there are 22 field workers from the agroforestry program that unfortunately are located in Pirre y Cana areas, leaving the most part of the park without the proper attention; for example, Jaque, Pucuro and Sapo Sectors. However, we have to recognize that the attended sector are the priority ones in the park.

INRENARE has programmed the construction of 10 stations for the park rangers using funds from MARENA project.

As a recommendation, its important to build the Park ranger stations in Pucuro and Garachiné, and designate permanent personnel in the Jaque sector

COPFA personnel in the area could play an important role for the protection of the area, but it's important to sign an agreement for this.

1.2 Management Activities:

Permanent presence, patrolling and trails maintenance. The activities developed for the establishment of the boundaries in the field reaches until now about 80 km, this show an extraordinary and excellent activity in this sense.

However, the patrol frequency and quality requires a systematization according with the necessities and established infrastructure specially in Sabalo river, pacific coast and the Pucuro and Paya sectors.

In addition, It's necessary to make at least 4 annual exploration expeditions in the more remote sectors in the park. These ones could be designed as a complement for the already programmed flights.

Land purchase. It should be established a land purchase program. This program should dictate the criteria that help identify, select and prioritized the farms and parcels to be obtained.

Among these criteria, it's important to define the ecological meaning of these land units, access

control in areas of strong demographic pressure, control of land uses and the priority selection for strategic parcels for demonstration purposes on agroforestry systems and other sustainable development techniques in the buffer zones.

It's obvious that most of the limiting farmlands should not be bought, on the other hand, they should serve for efficient environmental education activities and forestry and agricultural extension work by ANCON and INRENARE.

Territorial ordering is an activity that should go parallel to the purchase of land and the buffer zone management. This activity includes a census, socio-economic and community structural diagnosis as the basis for the ordering and land tenure consolidation, other aspects to be included in this diagnosis are development plans for every farm that include forestry, ecotourism, and other productive alternatives for the communities

Environmental Education. These activities have not obtained a strong impact in the park and buffer zone communities. It was already said that there is just one person in charge of this program.

this is an indicator of the little importance that it's been giving to this activity.

The environmental education program should be supported with trained personnel and equipment. This program must be structured so it will work for the park communities about the importance of conservation and the park philosophy. In the buffer zone communities, the program should teach about environmental education, agroforestry, and land tenure ordering.

An important component of the environmental education program is to strengthen and promote the community organization, legal of land ownership and identification of the basic necessities in these communities. In consequence, they should serve as mediators to obtain these goals.

The census and the socio-economical diagnosis in these communities should be a basic activity to be implemented in order to accomplish the rest of the mentioned activities.

The cultural sensitivity that this program should

have in relation with the different native groups is fundamental; as an option, it should be considered to contract native personnel, so they are the ones to develop the actions in their own communities.

The environmental education program should develop a training component for their staff which it has not been developed in an efficient way until now. In the training component and as part of the extension activities, it should be considered the training of local leaders, teachers and technicians who work in the area in agroforestry, tourism, biology education, and organization and administration of small enterprises, etc.

Research and monitoring. The park does not have a research and monitoring program. The developed activities are done by CDC/ANCON and other institutions.

INRENARE has assigned a researcher in the park without necessary equipment and personnel for the execution of activities.

Monitoring is one of the actions of more impor-

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tance in the program of endangered parks. This activity is deficient in this park. It is recommended that ANCON and INRENARE develop a modest program that in a systematic way could create the basis for this monitoring activity. Monitoring could be at basic permanent inventories level and selection of indicator species.

Moreover, it's important to consider as an option, park ranger and local people training as parataxonomist (as in Costa Rica) so they will be part of a permanent team in this program.

Panamerican Highway. In the last 10 years the conclusion of the panamerican highway has been a permanent threat to the park stability. In 1992, this threat will be reactivated under declaration of USDA, by colombian pressure, a broad corridor in the colombian sector, free of aftosa fever, next to the Panama border which they will use for the continuation of the highway not only in the colombian side but also in the panamenian side.

The evaluation team could not detect any preventive action from ANCON and INRENARE about the highway construction. It very important that ANCON

take leadership in the development of a strategy which considers the necessary elements to reduce the social, economic, and environmental impacts that this construction would carry.

Community Participation. As mentioned in the Environmental education program, the extension and broadcasting component in the communities should be strengthened because this will promote a more active community participation in the protection and management of the park. This participation should be considered as an objective to be met in the long term. If the park administration does not support this communities to achieve their basic necessities, in that sense, the community interest and participation would be difficult to obtain. That's why, that the agroforestry activities are a good start in order to achieve community participation. In consequence, the environmental education program should enlarge its horizons by including extension activities, community organization, and environmental education.

Governmental Participation. In the last years, It's not a secret that INRENARE has been suffering political, technical and financial difficulties.

those problems have decrease the efficiency in their park management activities as well as with other protected areas in the country.

Thanks to the participation of institutions as ANCON, TNC, WWF, UNESCO, etc.; INRENARE has had the opportunity to give the minimum conditions to manage the park.

The hope that INRENARE would better off its current conditions are centered in the MARENA project.

Giving the weak situation of INRENARE have induced many forest exploitations in the park buffer zone which are in conflict with the zone objectives. The internal communication problems between Wildlife and Park Service and the Forest Service are part of the same conflict.

As an example, It is estimated that in a national level, there are approximately 60,000 has. located in 50 forest harvest concessions. Thus, In the Darien area between the El Real and Pirre sectors, there are 7 legal concessions with 17,000 has. assigned, and 7,000 of those are already under

exploitation. In the Balsas-Pigüila rivers, there are 9 legal concession of 12,000 has assigned. the illegal exploitation could be a similar amount as the legal concessions.

Given the mentioned conflict, It's important that ANCON promotes in INRENARE, the establishment of a forest harvest policy that is congruent with the buffer zone objectives, the technical management, and the current and future concession controls. This policy should be supported and conditioned by the international funding agencies in order to continue the financial and technical support for the park management. I recommend that ANCON take leadership in this issue.

Final Recommendation. The evaluation team recommend the following strategy for the park protection:

- I. To establish an appropriate protection of Darien National Park
 - a. Boundary demarcation and labeling.
 - b. Control station installation and maintenance.
 - c. Hiring and training of personnel.

d. Operational support.

e. Research and Monitoring gradual transferring to INRENARE

II. To obtain and manage key buffer zone farmlands

a. To identify and purchase land next to the boundaries of areas under pressure.

1. Pirre Mount (Colonization and concessions)

2. Boca de Cupe (Panamerican Highway)

3. Criteria: Ecological meaning, access control and demonstration.

b. To take control of national land in the park boundary to avoid concessions and demonstrate the adequate forest management.

c. Land tenure stabilization and help natives and communities.

III. To establish alternatives in the buffer zone

a. To establish self-reliant agroforestry lines.

b. To demonstrate and train new alternatives - in-situ.

c. To do extension work in the native communities Pirre 1 and 2 and others.

d. Credits (Natura - Rotative credit fund, traditional - new incentives).

e. Ecotourism. Services, community and park benefits, signals, access.

IV. To establish new areas in El Darien.

a. Mangroves.

b. Marismas.

c. Fresh water swamps

V. Institutions.

a. INRENARE, MINESUC, COPFA, EMBERA, ANCON, Church.

It important recall a possible decentralization of efforts and resources from ANCON in the buffer zone, specially related with agroforestry, ecotourism, land purchase activities because ANCON needs to prioritized its attention to sectors inside the park.

It's recommended TNC active participation in the technical advisory to ANCON for the implementation of a protection strategy as well as in other issues of general park management. This is important because there is a weak internal debate and

lack of critical evaluation about the management and the advance of programmed and developed actions in the park, in this sense TNC participation would be very productive.

1.3 General Comments about PIP participation in the park management.

The main significant achievements in the protection of the park have been the physical demarcation of 84 Km of limits and the purchase of land in the buffer zone next to the boundaries.

TNC though its permanent communication with ANCON, offer technical advise in the area management.

There is no doubt that the PIP annual work plan reflects the priority management necessities for the area; unfortunately, the park size does not allow PIP to cover all its necessities.

Among the important supposed statements we can mentioned the political will to protect the park. This is lost among the declared intentions and the real actions in the park; for instance, the forest harvest permissions.

ANCON ability to work with INRENARE is excellent; however, its attitude to attract new GO and NGO member, to help with the park management, is not

the best; with the exception of the support created by the Catholic Church..

In the short run there is not an adequate self reliance by ANCON and INRENARE for operating and managing the park without the PIP technical and financial support

2. Financial Aspects: Conclusions and Recommendations.

ANCON has a program of fund raising by different ways, among them, there is a "Adopt your hectare" Campaign, which has been very successful even though the evaluating team could not assess the amount collected in this campaign. Also, they are planning with other partners an Ecoturism development program for El Darien. This program would provide funds not only for the park, but also direct and indirect benefits for the communities involved in the program. This ecoturism program requires some basic studies specially about current legislation and the way ANCON will participate in it.

ANCON does not have a clearly structured strategy in the short run, in order to cover the financial needs of the park.

The evaluation team presented to the technical ANCON staff a draft to developed the strategy, considering the objectives, programs and necessary actions and identifying the legal, institutional, administrative, socio-economic and biological necessities.

It should be identified the possible national and international sources of donations and fund generation; moreover, the possible sources of help in goods and services at a national level by agreements (COPFA: Use of their infrastructure and equipment located in EL Darien). To develop a list of projects with the objective of fund raising in order to achieve the protection and biodiversity actions, monitoring and environmental education for agroforestry, community organization and pilot projects; funds for ecotourism, land purchase, territorial ordering, park operation, and the establishment of a park patrimonial fund; and funds that allow ANCON and INRENARE to participate actively in the management of the area.

Soon, this strategy will be presented by ANCON in a report to TNC.

3. Administrative Aspects: Conclusions and Recommendations.

It is recommended that ANCON promotes at INRENARE Direction level that the park director gets to use a petty cash of at least US\$1,500 in order to insure sufficient funds for the required minor expenses; in addition, we suggest that ANCON be in charged to buy the equipment, and INRENARE provide ahead of time, necessary funds for this purchases.

ANCON administrative division should maintain park personnel informed using a trimestral expenses report. This report should reflect the total budget (TNC, ANCON and INRENARE shares), with the objective to organize the acquisition of goods and services.

The technical report should be done by the ANCON Conservation and administration Chiefs to make sure that all the activities applied in the field are included in this report. Moreover, We suggest that every activity reported, be clearly identified in its executable process because it's been difficult to identify if the activities are either starting, executing or final actions

In addition, The technical report should include a second part about those activities developed that do not belong to the PIP, but they give general information

about the situation in the management of the park.

The financial report should demonstrate not only the execution of the approved project in one column, but also, the part provided by ANCON, and in a third column the expenses that INRENARE has had in the reported period.

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VI. FINAL CONCLUSIONS

The park management development in the last 10 years has been extraordinary, and recognizing that ANCON participation has been determining; however, as in any activity there are many things to improve, this implies that the available budgets are not enough to cover the main necessities of the area. It is convenient the participation of TNC with ANCON and INRENARE in the development of the annual operative plans with the objective of diversify the actions in the long run and not necessarily the immediate management demands; for instance, education actions, environmental extension, and impact prevention in the Panamerican Highway construction.

The exponential growth experienced by ANCON in the last two years shows their leadership and efficiency; however, the activism at all levels and the quantity of personnel in the institution, allow to speculation; Thus, the planning and functional organization processes are not considered strongly in the institution. In consequence, continuing speculating, this could derive that the project proposal and execution obey more to an expansion tendency than to an institutional objective that will have a corrective impact in the current tendency of misuse and abuse of the country's natural resources.

It's assumed that ANCON with its participation in the park management has as an objective, to leave an installed capacity, so INRENARE, gradually, would assume all the responsibilities in the park management; however, this is not happening due to 2 factors:

1. INRENARE financial-administrative situation.
2. There is little effort from ANCON to leave this installed capacity.

It's fundamental for the future management of the park, to make a revision and actualization of the Park Management and Development plan (Webber); There is no doubt that this should be done by national personnel with experience in the park; however, TNC partial and active participation in this process is necessary. This revision should be proposed in function of a long run strategic plan and not in a ordinary plan.

THE NATURE CONSERVANCY
PARKS IN PERIL PROGRAM

Evaluation Report
Darién National Park, Biosphere Reserve
and World Heritage Site

Support Documents

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**THE NATURE CONSERVANCY
LATIN AMERICA DIVISION
PARKS IN PERIL PROGRAM**

ASSESSMENT OF MBARACAYU NATURAL RESERVE

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INTRODUCTION

The assessment of the management of Mbaracayú Nature Reserve, in Paraguay, was carried out between August 11 and 22. The assessment team was formed by Shirley Keel, Chief Botanist in the Science Department, Gregory Miller, Regional Director for South America, both members of the Latin America Division of The Nature Conservancy's International Program, and by Hernán Torres, independent consultant. During the evaluation of Mbaracayú Nature Reserve, the team contacted Raúl Gauto, Executive Director of Moisés Bertoni Foundation for the Conservation of Nature, Enrique Amarilla, Operation Manager, and Eliana Guggiari, Institutional Development Manager. The members of the team also met with Richard Nelson and Claire Sorenson of the AID office for Paraguay, with Mr. Raúl Torres, Minister of Agriculture, and with Víctor Vidal, the Subsecretary of Nature Resources. The team visited Mrs. Kristine Bacon, Director of the Peace Corps Office in Asunción, Paraguay, to gather information.

Working meetings were held with Flaviano Colman, John Kochalka, and Darío Mandelburger in the National Museum of Nature History to discuss subjects of maztozoology, invertebrates, and ichthyology relevant for the management of Mbaracayú Nature Reserve, and with Oscar Ferreiro, National Parks and Wildlife Director, and the biologist Celeste Acevedo, Director of the Conservation Data Center. At the National University of Paraguay, the team held a working meeting with Hugo Huespe, Director of the Forest Engineering major, and Lucio A. Spinzi, of the Nature Resources and Environment Department of the Forest Engineering major of the Agricultural Engineering Faculty of the University.

In the field, the team worked with Dr. Miguel Morales, Director of Mbaracayú Nature Reserve, and with Ramón Villalba, Chief of Rangers. The control posts were visited in Ñandurokai, located to the northwest, Karapa, in the northeast, and Jejuí-Mi, located west of the Reserve. Due to the bad climate in the area, it was not possible to visit the other control posts, particularly the one in Lagunitas, located at the center of the Reserve, which has an air field, because it was completely flooded by the rainfall.

The team visited the Aché indigenous community, in Chupa Pou, where the chiefs and representatives of the community were contacted in the presence of the national authorities. The bad weather did not allow the team to visit other communities adjacent to the Reserve, such as the Guaraní communities and farming settlers.

GENERAL BACKGROUND

Mbaracayú Nature Reserve is a private initiative to conserve natural ecosystems and communities of great biological and cultural importance in Paraguay. The Reserve covers an area of 57,715 hectares. The land was purchased from the International Finance Corporation/World Bank and is under the direct control of Moisés Bertoni Foundation, which is supported by the Parks in Peril Program of The Nature Conservancy and by the United

States Agency for International Development (AID). It is located in the Canindeyú Department at 23°59'41"S and 29°16'10" S and 55°19'13"W and 55°31'33"W.

According to the Conservation Data Center (CDC), Mbaracayú Nature Reserve corresponds to a transition zone between semi tropical forest to temperate forest and contains 19 plant communities which, in turn, constitute the habitat of several plant and animal species threatened with extinction or with highly reduced populations in other parts of the country. Some studies that have not yet been definitely confirmed indicate that Mbaracayú Nature Reserve still presents populations of large herbivores such as the tapir (Tapirus terrestris), peccaries (Tayassu tajacu) and (Tayassu pecari), three deer species (Mazama americana), (Mazama rufina), and (Mazama gouazoubira), predators such as the jaguar (Panthera onca), mustelids such as the giant otter (Pteronura brasiliensis) and the bush dog (Speothos venaticus) and dasipodidae such as the giant armadillo (Priodontes maximus) and the nine-banded armadillo (Dasybus novemcinctus). Regarding the birds registered for the area, they include the king vulture (Sarcoramphus papa), large macaws such as (Ara chloroptera), and the bare-throated bellbird (Procnias nudicollis). These species require undisturbed habitats to ensure their existence. The presence of some species of the Cracidae family, such as the black-fronted piping guan (Aburria jacutinga) and the bare-faced curassow (Crax fasciolata). Summarizing, Mbaracayú Nature Reserve represents the only opportunity to conserve an important biological diversity refuge in Paraguay. The area corresponds to the last remains of the High Paraná forests, which include some species of the Brazilian Atlantic Forest area that are also highly threatened.

In Mbaracayú Nature Reserve's area of influence there are some Guaraní and Aché indigenous communities, as well as some farming settlers, particularly in the south. It should be noted that the Aché community is the only one with gathering and hunting rights within the Reserve's territory. Its traditional practices consist in the gathering of "hierba mate" (Ilex paraguariensis) and the hunting of monkeys (Cebus apella), tapir (Tapirus terrestris), deers (Mazama americana), (M. rufina) and (M. gouazoubira), and other species of dasipodidae (Dasybus novemcinctus).

TECHNICAL ASSESSMENT

A. ACHIEVEMENTS

The project began in January 1992, but was significantly hampered by the heaviest rainfall in more than a decade. Nevertheless, the assessment team identified some activities that indicate a good start for the project.

Relations with the Neighboring Communities and Local Authorities

This was particularly evident during the visit to the Aché indigenous community called Chupá-Pou. The relations with the Aché community were very dynamic and friendly when the assessment team visited it. The chiefs and other authorities of the community

received the evaluating team and demonstrated their warm hospitality.

In addition, the assessment team had the opportunity to observe the importance that the regional military authority has given to the accusation of an illegal act in Mbaracayú as well as the positive way the local judge received an accusation of illegal timber extraction from Mbaracayú Nature Reserve. This did not occur a few years ago in the region.

Patrolling

Despite the bad condition of interior roads in the Reserve and the lack of appropriate vehicles, there has been patrolling of the outer boundary roads. This has allowed the initiation of routine patrols to control hunting and timber extraction.

Preparation of a Three-Year Operative (Management) Plan.

A three-year operative, or management, plan was prepared as the result of a workshop attended by representatives from several organizations, many of them represented by women. The implementation of this plan will provide the tools to guide the appropriate management of the Reserve.

Public Awareness Campaign through the Press and Television.

A constant public awareness campaign has been developed to inform about the Reserve and its importance through the newspapers and television in Paraguay. This campaign is supported by the journalists and the communication media which have voluntarily become involved in the campaign for the conservation of Mbaracayú Nature Reserve.

Good Basic Information

There is good basic information on Mbaracayú Nature Reserve and the surrounding area. Moisés Bertoni Foundation has requested the study: "Socioeconomic and Cultural Analysis of Populations Settled in the Area of Influence of the Mbaracayú Project" and has also developed, together with the National Forest Service, a forest inventory of the project for Mbaracayú Nature Reserve. The Foundation has also prepared a preliminary list of birds for the Reserve and the Conservation Data Center prepared a document titled "Biological Studies in the Mbaracayú Project Area" which contains a characterization of the natural communities, the vegetation, and the birds of the Reserve.

The National University of Asunción, particularly the Schools of Chemistry and Biology, has developed some studies that provide useful information for the management of the Reserve. In addition, the National Museum of Nature History has also developed studies and research on animals and plants in the area adjacent to Mbaracayú.

Extension and Technical Transference Assistance in the Area of Influence.

Some technical transference works have been developed with the aim of introducing citrus and Ilex paraguariensis crops that would diversify the income of communities adjacent to Mbaracayú Nature Reserve. These technical assistance activities are carried out by personnel hired by the Moisés Bertoni Foundation, who are also in charge of coordinating efforts with the National Service for Professional Promotion (SNPP), a governmental organization that trains farmers of the area of influence in the cultivation of self-sustaining crops and in basic agriculture. The extension workers hired by the Moisés Bertoni Foundation are planning to introduce the honey bee among the farmers. In the Aché indigenous community, in Chupa Pou, a domestic pig and poultry breeding project has begun, with an adequate acceptance from part of the indigenous community. This eventually will reduce the pressure on key wildlife species within the Mbaracayú Nature Reserve.

Hiring and Training Personnel.

Six rangers have hired and the Director of the Reserve, Dr. Miguel Morales, was provided support from AID/PIP sources to participate in the protected areas management training course organized by Colorado State University in July/August, 1992.

B. LIMITATIONS

Lack of Training for Rangers.

The rangers that have been recently incorporated, as well as those that were previously hired by the World Bank, have not been trained. The chief of rangers, Ramón Villalba, attended out of his own initiative a course on the management of protected areas that Ducks Unlimited and the U.S. Fish and Wildlife Service sponsor in Mexico.

Lack of Adequate Signs.

Despite the fact that the project began in January 1992, the signs placed by the World Bank still remain. There is no single sign indicating that the property is the Mbaracayú Nature Reserve. There is a lack, as well, of signs indicating interior and exterior roads. The Nature Conservancy and the Moises Bertoni Foundation have designed adequate sign posts and they should be in place within the reserve by early fall, 1992.

Exodus of Qualified Personnel.

A few months ago, the sustainable harvesting projects came to an end, therefore causing the departure of seven qualified specialists in subjects related with rural development. This will bring about some adjustments in the future work to be carried out in the area of influence of the Reserve.

Operative Plan Does Not Consider Social/Cultural Impacts of the Management of the Reserve on the Local Communities.

The operative Plan that has been prepared for the Reserve does not consider the analysis of positive and negative impacts that the management of the Reserve could have on the local indigenous as well as non-indigenous communities.

Security Problems.

The personnel in the Reserve cannot perform their job undisturbed due to the fact that the region surrounding the Reserve is affected by increasing crime, which materializes in assaults in the outer boundary roads patrolled by the rangers.

Problems in Access Roads.

Access roads into the Reserve are often interrupted as a result of the rainfall, which makes the access to the Reserve practically impossible during some periods of the year.

Lack of Adequate Infrastructure.

The existing infrastructure does not allow the adequate management of the Reserve. There is no central administration building to concentrate the management of the Reserve. Currently, the Director and the Chief of Rangers of the Reserve do not live within it.

Difficult Control of Entrance to the Reserve.

The entrance to the Reserve cannot be controlled because the borders touch with different spots that do not allow a permanent control of the entrance of illegal hunters and loggers.

Lack of Knowledge of the Biological Capacity to Sustain Subsistence Hunting and Gathering Carried Out by the Aché Indigenous Community.

The recruitment capacity of the species collected and hunted within the Reserve by the Aché indians is not known. The population dynamics, the recruitment capacity, and the home range of the tapir, deers, monkeys and birds is unknown, but they are nevertheless hunted with a certain intensity. In addition, the extraction of Ilex paraguariensis is taking place without control in certain areas of the Reserve. The sustainability of this type of harvesting is not known.

Constant Threats to the Resources of the Reserve.

In addition to the increasing deforestation of the south of the area of influence, there is an increasing coal production that is sent in large amounts to Brazil. The massive

collection of butterflies that are also sent to Brazilian territory involves a serious threat for unique species for which the Mbaracayú Nature Reserve and its area of influence provide habitats. Poaching carried out by hunters and farmers severely threatens some mammal species. Marijuana crops within the Reserve are reported as a difficult factor to control.

C. RECOMMENDATIONS

Revision and Broadening of the Management Recommendations in the Operative Plan.

The Operative Plan that has been prepared for the Reserve needs to be revised with the aim of making it more practical and functional. In this sense, the following is suggested:

- Section I. Introduction. It must be modified to include general information about the document and what is expected from it. Duration, contents, and expected results.
- Section II. Objectives of the Operative Plan. It should simply be eliminated because it would already have been included in Section I. In addition, it may confuse the reader when the objectives of the Reserve are examined.
- Sections III, IV, and V should be reduced to only one section called "Regional Analysis", with subtitles to describe in a general manner the eco-regions and their relation with the management of Mbaracayú Nature Reserve. This regional analysis should emphasize the relation of the culture and society of the Aché and Guaraní communities and the farming settlers with the management of the Reserve and the likely impact, positive as well as negative, that this relation might bring about.
- Section VI. Information on the Reserve. It should be included after the description of the objectives of the Reserve.
- The objectives of the Reserve should constitute a single and outstanding section. Regarding this crucial point in planning, the Plan should closely examine what is expected from the creation and consolidation of Mbaracayú Nature Reserve. With the exception of objective N°1, the others are rather necessary activities required to achieve that objective. In this section it is convenient to identify one or two general objectives for the Reserve and then prepare the respective plan to achieve them, which should be described in another section of the document.
- Another section should be included to describe the Reserve, taking advantage of the information already contained in the current Operative Plan. In addition to the biological data already existent, more information needs to be included to establish the relation of the Reserve with the Aché indigenous community. E.g. plant and animal species important for their survival.

- The following section should briefly summarize the importance of Mbaracayú Nature Reserve from a local as well as a global point of view. Continuing, a brief description of the present limitations to achieve the objectives established for the Reserve should be included. This section could be simply called "Summary" or "Synthesis".
- Section VII, "Activities to be Carried Out in the Operative Plan of Mbaracayú Nature Reserve", actually corresponds to the plan itself and should be titled "The Plan". The subtitles indicated as "programs" are not necessary and only confuse the reader. The "program" is a tool that allows to put in practice a "plan", therefore, it is not correct to use this subtitle in the document. The sections should be organized in such a way that they follow a logic sequence of actions that will allow to achieve the objectives identified for Mbaracayú Nature Reserve. In the current state, the draft Operative Plan in each recommendation, called "subprogram" in the document, places first the activity to be developed and then the objective pursued. This should be reorganized by placing first the "objective" and then the "activities" to be developed to achieve the main objectives established for Mbaracayú Nature Reserve.
- The last section, called "Integrated Development Plan", should not be included as an annex, but the recommendations it contains should instead be included in the previous section, for which the title "The Plan" has been suggested.
- Incorporate a chronogram for the management activities proposed and a three-year budget in two different sections.
- As a last section, it is necessary to add in annexes a cartographic atlas with the theme maps that were used in the analysis and preparation of the Operative Plan. This includes: map of natural communities, topographical map also indicating the Reserve's borders, map of location of the existing posts, proposal of location of future buildings, a very simple zoning, and maps identifying the most environmentally sensitive areas, as well as those appropriate for physical development and recreation.
- Following, the Plan should be placed in a binder with the aim of allowing the replacement of sheets each time a section is revised by the Director of the Reserve and its personnel, suggesting useful changes for the implementation of the Plan and the achievement of the effective management of the Reserve.
- Credit should be given to all the persons involved in the preparation of the Plan and it should be indicated that it is the result of a participative, interdisciplinary, and multidisciplinary workshop held in the Reserve itself.

Training Rangers.

Basic training for rangers is a high priority, but it is not possible yet to organize a simultaneous training course for all of them. It is recommended, therefore, to program weekly working meetings to analyze and control the job carried out and take advantage of the opportunity to introduce some simple subject for verbal training and written in the way of a "hand out" of no more than five pages, containing training material on management. Thus, after a few months the rangers will have a file with material to support their work.

Site Planning.

Each physical development area must be carefully planned with the aim of causing the minimum environmental impact. The design of buildings and their location should consider the landscape, the removal of solid waste, and the treatment of organic waste.

Designing Signs and their Location in Strategic Points.

The signs indicating roads, location of facilities in the Reserve, and identifying the Reserve itself should also be carefully designed, in order to ensure that they serve their purpose and offer an opportunity of easy maintenance. With that in mind, it is recommended to use plates or varnished boards with the inscription of the letters in low profile and highlighting them with orange or dark yellow paint. This widely used technique in protected areas in many countries has proven to have a low building cost and it is also easy to maintain and an efficient identification, since the colors indicated can be seen from a large distance.

Maintenance of Roads and Bridges.

A maintenance program for roads and bridges should be prepared, with the aim of increasing the effectiveness of patrols within the Reserve.

Preparing a Biologic Monitoring Program.

It is recommended to prepare a biological monitoring program within the Reserve and in accordance to the following priorities:

- Population studies in key mammal species, such as the tapir (Tapirus terrestris), the weeping capuchin (Cebus apella), the howler monkey (Alouatta carava), and the jaguar (Felis onca). Possible participant: National Museum of Nature History of Paraguay.
- Studies on the extension of bambuzal (Bambusa guadua) and (Guadua angustifolia) through aerial pictures (1:20.000) or through overflights. Possible participant: Forest Engineering Major, National University of Asunción.

- Study on the "hierba mate" population (Ilex paraguariensis). Possible participants: School of Chemistry of the University of Asunción, rangers and Guaraní indians.
- Survey of butterfly species by types of habitat. Possible participant: National Museum of Nature History of Paraguay.
- Examine the extension of "cerradon" through the image spot (1:50.000) every five years. Possible participant: Forest Engineering Major, University of Asunción.

Prepare a Plan to Control Crime and Other Illegal Activities.

- A plan to control crime and other illegal activities should be prepared jointly with the police and the army.

ADMINISTRATIVE ASSESSMENT.

A. ACHIEVEMENTS.

- The budget and accounting were revised jointly with Eliana Guggiari, Institutional Development Manager, and Enrique Amarilla, Operation Manager, of Moisés Bertoni Foundation. Generally, the financial management of the funds has been adequate in the short time since the project began.
- The financial reports have been issued timely and presented according to the PIP standards. The financial and operational information to and from the Reserve has been adequate. The evaluation team made several recommendations to improve the budget summary presentation format, with these changes expected in the next PIP quarterly report.
- The basic equipment to operate has been bought and it is already in the Reserve. These consist of a four-wheel-drive pick-up truck and other equipment for the Reserve's personnel.
- Due to the purchase of two motorcycles, a third was donated by the company Diesa. This represents a strong commitment on the part of the commercial sector and is a small, but important financial success. This additional equipment will greatly strengthen the patrol work carried out in the Reserve.

B. LIMITATIONS.

- The system used to prepare the expenses and fund-request reports involves a huge time investment to part of the Reserve's personnel. The Director of the Reserve, as well as the Chief of Rangers, must carry out a constant and intense administrative work that takes up much of their time.

C. RECOMMENDATIONS.

Optimize the Administrative Support to the Management of the Reserve in Igatimí.

- Although it is understood that a good control of the budget and expenses is absolutely necessary, it is recommended to look for a way to reduce the load of administrative work for the Director of the Reserve as well as for the Chief of Rangers, without losing the efficiency in the control of those items. Perhaps it would be useful to hire a part-time administrative assistant in Igatimí to take off some of the load of administrative work that falls upon the Reserve's personnel.

FINANCIAL ASSESSMENT.

A. ACHIEVEMENTS.

The first priority of the Bertoni Foundation was the purchase and consolidation of the Mbaracayu Reserve. With this successfully completed, FMB and TNC have put together a ten year financial plan for the consolidation and management of the Reserve. A number of long-term financial support options have been identified by FMB and the evaluation team examined these options to determine their potential, timetable and viability in supporting FMB and Mbaracayú management costs in the medium and long-term. A brief description of these options is listed below:

World Bank

The evaluation team met with Roberto Ronchietto, local representative with the World Bank. Paraguay is currently not on the Global Environmental Facility list to receive funding, but the Bank has a considerable natural resource management portfolio in the eastern or Oriental part of Paraguay. The World Bank is providing the Government of Paraguay with a \$50 million loan (with another \$20 million counterpart expected) to map and manage the natural resources of the Region Oriental and Chaco Sur of Paraguay. This program began in 1990, and began implementation in 1991. Currently they are completing the full mapping and land use planning effort, all at the 1:100,000 scale. This comprehensive effort includes watershed management, land titling, deforestation and pollution control, and has a parks and environment component. The World Bank did loan their recent Landsat images to the evaluation team (May 1992) which were enormously useful for the field team overflights.

It is unlikely that this project would provide major financial support to Mbaracayú, but crucial technical support, mapping capabilities, and state-of-the-art technology is available. TNC conservation finance team will monitor closely any changes in GEF programming.

InterAmerican Development Bank (IDB)

The evaluation team met with Sr. Augustin Rivero, IDB representative for Paraguay. IDB is working on a \$500,000 loan that FMB may receive for extensive technical assistance to work on enhanced agriculture productivity programs in the Mbaracayú buffer zone. IDB is also in the planning stages of a "Proyecto de Medio Ambiente" that will be a \$30-40 million loan to the Government of Paraguay to support the identification and management of Paraguay's natural resources. This will be a nationwide effort, in contrast to the more regional World Bank project. This loan is still in the development stage and would not begin implementation until sometime in 1993. It was unclear whether any funding could be programmed to assist in the management and operations of Mbaracayú.

This support may be available to conduct needed monitoring and evaluation in and around Mbaracayú, but it is currently unclear of when this might be approved and with what restrictions.

Private Fund Raising

The FMB has developed a number of fund raising proposals to both cover general operating costs of the foundation, and to provide for the effective management of the Mbaracayú Reserve. These proposals include:

MacArthur Foundation: two proposals have been submitted for \$540,000 to identify and manage a system of private reserves, which have Mbaracayú as the centerpiece. MacArthur Foundation recently approved a grant for \$165,000.

USAID/Paraguay: FMB submitted a \$450,000 three-year proposal for a country level environmental education program. This proposal will utilize Mbaracayú as a pilot area and includes considerable salary support. USAID/Paraguay has approved this grant in September 1992 which will provide \$60,000 over a three year period to Mbaracayú.

TNC Adopt-an-Acre Program: Through this TNC program, joint projections indicate that perhaps \$80,000-100,000 per year may be available for Mbaracayú management and purchase of further inholdings, depending on the success of the fund raising campaign.

Emerald Forest Canopy Society: A donation of between \$60,000-100,000 is possible to support the field station at Lagunita. If approved, this station would become the central management office for the reserve.

Overseas Development Agency (ODA): A \$180,000 proposal is in preparation to submit for funding the sustainable development activities in the western buffer zone of the Reserve.

AES Corporation: A \$1.5 million pledge has been made by AES, of which \$500,000 has been spent. This total pledge is dependent upon FMB and TNC preparing a three year

operational plan (in progress), developing a buffer zone management and outreach program and designing and implementing a biomass monitoring program.

REM Rock Group: The rock group REM visited Mbaracayú recently and have pledged to raise \$500,000 for the Reserve management. No specific timetable has yet been presented.

B. LIMITATIONS.

Uncertain Funds in the Long Term.

- It is not possible to rely on Moisés Bertoni Foundation's possibility to obtain funds in the long term for the Reserve. It will not be possible, as well, to receive any funds from the Government because Mbaracayú Nature Reserve is not and will not be among its budget priorities. Once responses are received for the above financial proposals, a revised financial plan and fund raising strategy must be prepared.

C. RECOMMENDATIONS.

- To begin a fund-raising campaign to create an endowment that will support the management of the Reserve.
- TNC conservation finance team and regional program must monitor closely the World Bank and IDB options and identify where to provide technical assistance.

SUMMARY OF RECOMMENDATIONS

Technical

It is advisable to make a revision and reorganization of some chapters of the already prepared Operative Plan. It is also important to prepare a comprehensive sign system for the Reserve and an informal training program for the rangers. A monitoring system to gather basic biological information should be established for the Reserve.

Financial and Administrative

A long-term financial plan and fund raising strategy is required that includes both operational needs of FMB and management actions for the Mbaracayú Reserve. The creation of an endowment for the Reserve is being examined and needs to be completed. The administrative work should be reorganized in order to reduce the load that falls upon the Reserve personnel.

PIP Site Evaluation

Shirley H. Keel

September 12, 1992

The purpose of this report is to provide an account of various monitoring strategies needed to manage the Mbaracayú Reserve and to point to human resources in Paraguay capable of carrying out monitoring activities. The report will also discuss, briefly, the participation of women and members of indigenous tribes in this effort to manage the Reserve.

Biologists in Paraguay

Nearly 80% of biologists in Paraguay are employed by the Dirección de Parques Nacionales y Vida Silvestre, working either for the Department of Biological Inventory, also called the Museum of Natural History, or the Department of Conservation Data Center. Many of the trained biologists have joined the Museum of Natural History in the past five years after completing their graduate studies abroad, in Brazil, Costa Rica, or the U.S.

I was fortunate to live in Paraguay between 1987 to 1990. During my stay, I became acquainted with the young, newly hired professionals on various field trips and witnessed the dramatic improvement of Paraguay's scientific infrastructure. On this visit, I was happy to learn that there are now trained professionals in Paraguay for each monitoring activity we proposed.

Biological Monitoring

Using the principle of Rapid Ecological Assessment (REA), CDC-Paraguay conducted an inventory of the flora and fauna in Mbaracayú between 1989 and 1990 to identify natural communities and verify their state of preservation. The REA study established the baseline for tracking Mbaracayú's "cerradão."

During the CDC's inventory project, we found a small "cerradão" (less than 40 ha.) which is located near the center of Mbaracayú, and was surrounded by low forests. It seems that the "cerradão" will be gradually taken over by the forests surrounding it. The "cerradão" is the habitat of wild pineapples (Ananas ananasoides). The objective of tracking the "cerradão" is to preserve this rare natural community in Paraguay and protect the wild crop relative. Our knowledge of the surface area of the "cerradão" is based on 1986 SPOT images at the scale of 1:50,000. To detect any changes in the extension of the "cerradão," we

could use aerial photographs or SPOT images at same scale every five years. The Carrera Ingeniería Forestal or the CDC could easily do the work.

To obtain the baseline information that the REA of Mbaracayú did not provide, the following investigations are needed:

1. Survey the population of key mammal species hunted by the Aché Indians. This includes two species of monkeys, (Alouatta caraya and Cebus apella), the tapir (Tapirus terrestris), and the jaguar (Panthera onca).

As stated in the Mbaracayú workplan (November 12, 1991), the objectives of surveying game population is to determine the carrying capacity of the Reserve and the rate at which the Aches will be allowed to hunt.

This survey could be conducted by the Mammalogy Department of the Museum of Natural History. Flaviano Colman and Nora Neris are trained mammalogists.

2. Survey of the growth and expansion of "bambusal."

During the PIP evaluation, Raúl Gauto arranged an overflight over the Reserve for us. The view from the air revealed an overwhelming dominance of "Guadua" (Bambusa guadua, also known as Guadua angustifolia) in some areas of the Reserve. "Guadua" grows in wet soil along riversides or in low humid areas. It flowers approximately every twenty years. At a given locality, the entire population of "guadua" flowers simultaneously, sets seeds and dies. Last massive flowering time, according to Ing. Hugo Huespe, was 1978.

As Mbaracayú's forests in the past were subject to selective extraction for valuable timber species, the composition and dynamics of the exploited forests have undergone changes. I suspect the current abundance of 'guadua' is due to reaching its peak in the 20-year life cycle and its expansion into areas where selective extraction left ample open space. Raising the issue with Ing. Juan Alberto Lopez, the author of Arboles Comunes del Paraguay, further confirmed my viewpoint. Ing. Lopez, a retired forester, has witnessed the expansion of "guadua" in eastern Paraguay in his lifetime. He believes that the dominance of this species in eastern forests is symptomatic of an unbalanced forest ecosystem.

It is important that somebody surveys the extent of "guadua" growth in the Reserve and check its advance to restore the health of the forest ecosystem. The distribution of the "bambusal" can be easily determined with the aerial photographs that the Dirección del Servicio Geográfico Militar is currently preparing for eastern Paraguay to update its topographical maps. Digital

tapes other than aerial photographs could also be considered, if the budget permits, because the "guadua" can be detected by its specific reflectant.

Remote sensing technology is available from the Carrera Ingeniería Forestal of the National University of Asunción. Receiving technical assistance from the German International Development Agency (GTZ) in the past three years, the Carrera has developed GIS capacity. The Germans installed Erdas and Arc/Info, MIPS equipment, and a trained technician is now operating the machine. Ing. Hugo Huespe and Lucio Spinzi, ex-botanist of CDC-Paraguay, are in charge of the remote sensing lab. Hugo was involved in the preparation of vegetation and land use map of Mbaracayú Reserve and would be willing to continue the work if needed.

3. Survey of the population of Ilex paraguariensis.

Mbaracayú has been subjected to the exploitation of "yerba mate" for decades. On various field trips to Mbaracayú in 1989, CDC-Paraguay staff and I encountered "yerba" collectors in the Bioreserve and observed "yerba" plants being killed by overharvesting. "Yerba" harvesting has now been banned to allow for recuperation.

A survey of the distribution of this most important non-timber resource of Paraguayan forests should reveal its in-situ conservation status in the Reserve. If extractive activities are permitted in the Reserve, "yerba mate" would be an ideal species to test the practice of sustainable resource management.

This survey could easily be done by collaborating with botanists from the Facultad de Química of the National University of Asunción and the communities of Guanani Indians living near the Reserve. In the past they have been allowed to enter the Reserve to collect "yerba." They know where sizable populations of "yerba mate" are located.

4. Preliminary inventory of butterflies.

John Kochalka and Carlos Aguilar Julio, entomologists of the Museum of Natural History, related to us their encounter with Brazilian butterfly traders on one of their field trip in the vicinity of Mbaracayú. Butterflies are captured in Paraguay, made into specimens, and sold in Brazil. Mbaracayú is the only large, protected forest in the area and without doubt serves as a natural refuge for butterflies. While there is an active trade near the Reserve, we do not know what butterfly species exist in the Reserve. Thus a species inventory by habitat is urgently needed to control the trade and lay the groundwork for the conservation of the species diversity of the butterfly. Besides, some butterflies may serve as useful indicators of specific

habitats. John and Carlos are interested in carrying out the inventory.

Women's Participation

Paraguayan women have traditionally played an important role in the local economy, in farming, small business, as well as artisans. Today, in a newly growing middle class women are assuming greater influence in education, the arts and sciences. They have become prominent journalists, school principals, university professors and doctors. Increasingly, mid-level managerial positions are open to women.

The Mbaracayú project exemplifies the rapid emancipation of the Paraguayan woman. In the workshop, held by Fundación Moises Bertoni (FMB) in Igatimí in July to develop an operational plan for the Reserve, seventeen out of seventy-seven participants, nearly a fourth, were women. They were women representatives from Aché and Guaraní communities from the Igatimí municipality, research institutions, governmental, non-governmental and international conservation organizations, international development agencies, and the media. Women offered a great range of expertise, from grass-root social work to membership on a NGO board.

On several occasions during this evaluation trip, our team conducted interviews with representatives of the Ministry of Agriculture and Livestock, USAID, National University of Asunción, and the Peace Corps. As it turned out, we met at least one woman in each organization who held a managerial position.

Indigenous Participation

Though we only visited one Aché settlement, Colonia Chupa Poú, July's workshop on the operational plan made it quite clear that the indigenous are interested in our project. The workshop was attended by four Aché and ten Guaraní Indians, representing two communities of Aché Indians - Colonia Chupa Poúd and Arroyo Bandera, and three communities of Guaraní Indians-Ita Poty, Itanara-mí, and Mboi Yagua. When members of indigenous tribes were present, the workshop was conducted in Guaraní. Miguel Morales commented that he was not sure whether they understood some of the more abstract terms used in the discussion of strategic and operational plans, but they seemed to be sincere and excited to get involved in the project to preserve Mbaracayú.

**THE NATURE CONSERVANCY
LATIN AMERICA DIVISION
PARKS IN PERIL PROGRAM**

ASSESSMENT OF PAMPAS DEL HEATH NATIONAL SANCTUARY

Prepared by Hernán Torres, Consultant

with the collaboration of

**Len West, Protected Areas Specialist
Parks in Peril Program
The Nature Conservancy**

August, 1992

I. INTRODUCTION

The evaluation of the Pampas del Heath National Sanctuary Project was carried out from July 14 to 29, 1992. The assessment team was formed by Hernán Torres, Independent Consultant, and Len West, Protected Areas Specialist of The Nature Conservancy's Parks in Peril Program. During the evaluation work, the team contacted Gustavo Suárez de Freitas, Executive Director of the Peruvian Foundation for the Conservation of Nature (FPCN); Francisco J. Estremadoyro, Project Coordinator for FPCN; and Fabiola Garcés, Head of Finances for FPCN. An informative meeting was held with Carlos E. Ayala, Environmental Matters Officer and Project Manager for AID in Perú.

The assessment team also held a working meeting with Jorge Ugáz, General Executive Director of the National Program of National Parks, and with Silvia Sánchez, President of the Peruvian Association for the Conservation of Nature. A special meeting was held with Manuel Ríos, Director of the Conservation Data Center. At the local level, working meetings were held with Rodrigo Arce, Héctor Vilchez, and Alejandro J. Farfán, from the Puerto Maldonado Regional Promotion and Research Center (Centro Eori), as well as with Marcia Tijé and Visitación Iretania from the Native Federation of the Madre de Dios River and its Tributaries (FENAMAD). These two are non-governmental organizations with a social and anthropological orientation.

During the field work, the team was accompanied by Fernando Rubio del Valle, Coordinator of the Pampas del Heath Sanctuary, by Luis A. Yallico, Representative of FPCN in Cuzco.

II. BACKGROUND

The Pampas del Heath National Sanctuary protects the northern border of the South American savannah formation that includes northern Argentina, western Paraguay, and eastern Bolivia. As is characteristic of this ecological zone between the savannah and the sub-tropical rain forest, the sanctuary presents islands of forest between typical formations of savannah and swampy areas. The climate is continental, with summer rains (December-March) between 500 and 1,200 mm. The average annual temperature varies between 20 and 23 degrees C. The terrain is flat, with small hills, and the soils are alluvial with poor drainage.

Perú contains approximately 6,000 hectares of savannah ecosystem, all of which are included in the Pampas del Heath National Sanctuary.

The Sanctuary protects threatened species such as the marsh deer (Blastocerus dichotomus) and the maned wolf (Chrysocyon brachyurus), both species only recently reported for Peru (Hofmann, Ponce, and Otte, 1975). Jaguar (Felis onca) populations are also supposed to live in the area.

There are other species which, within Peru, are only found in this protected area: Graham (1977) reports 17 species of birds and O'Neill (1980) reports two parrot species.

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Although the region around Pampas del Heath is not densely populated, there are native populations which utilize some of the savannahs of the Sanctuary to graze their cattle. In addition, illegal hunting takes place within the borders and rubber and Brazil nut concessions exist in the region. The Sanctuary has reasonable potential for tourism development.

Pampas del Heath National Sanctuary is highly diverse and rich in species. It provides a source of genetic and biological resources which supplies surrounding areas with animals for hunting and seeds for the propagation of economically important species outside the Sanctuary. Access to the Pampas del Heath National Sanctuary is possible mainly by the Heath river.

The area is under pressure from poachers. Sportsmen in search of trophies endanger the small populations of marsh deer, maned wolf and jaguar. Approximately a dozen contracts for the extraction of rubber and Brazil nuts within the reserve have been granted to private interests by the Government.

III. TECHNICAL ASSESSMENT

A. ACHIEVEMENTS

Good Relation with the Sonene and Palma Real Indigenous Communities

A good relation has been achieved with the Sonene and Palma Real indigenous communities that are neighboring the Sanctuary. This has been the result of public relations work carried out by Fernando Rubio, Coordinator of the Pampas del Heath Sanctuary, and by the rangers. The communities appreciate the personnel's surveillance work because it has reduced illegal hunting, which benefits them because the competition for the resources has diminished.

Good Relations with Governmental Organizations

The Sanctuary personnel generally maintains good relations with police, military, and development institutions. Thus, the surveillance work is supported by police and military authorities. In addition, the Sub-regional Office for Development in Madre de Dios (OSDEMAD) considers the support to the Sanctuary of great importance for the region, although it does not have the budget to materialize this support.

Other Non-Governmental Organizations Have Become Interested in Intensifying Their Activities in the Sanctuary's Area of Influence

The Puerto Maldonado Regional Promotion and Research Center has declared its interest in intensifying its work of promoting a sustainable development in the Alto Candamo area, as a way of supporting the existence of the Sanctuary. At the same time, the Native Federation of the Madre De Dios River and its Tributaries (FENAMAD) wants to work more intensely with

the Sonene and Palma Real indigenous communities. They promote to prohibit the entrance of settlers into these communities neighboring the Pampas del Heath National Sanctuary.

High Morale, Great Capacity and Team Sense Among Rangers

The rangers have a very high morale, a great capacity and an efficient team sense which strengthens their field work. Despite the fact that they have not had a systematic training, their performance on the field, especially in surveillance work, is very efficient.

Good Patrol and Surveillance Work

The surveillance and patrolling work is carried out with great efficiency and dedication. This is evident in the decrease in captures of illegal hunters and loggers.

Transfer of Legal Authority to Sanctuary Personnel to Enforce the Law

The Ministry of Agriculture has given legal authority to the entire Sanctuary personnel in order for them to enforce the laws protecting the Pampas del Heath National Sanctuary. Thus, the personnel is certain of enforcing the law during their patrolling and surveillance work.

Appropriate Facilities

The design of both the Post in San Antonio, Palma Real, and the shelters of ... is very appropriate for the Sanctuary's management activities. These facilities provide comfort for the Sanctuary personnel as well as to visiting scientists.

Outboard Motor Boats Have Been Acquired

Two outboard motor boats have been purchased. They are very appropriate for patrolling along the Heath and Palma Real rivers.

B. LIMITATIONS

Lack of a Good Communication System

Despite the fact that the purchase of a radio communication system was approved, it still does not arrive in the Sanctuary due to customs problems. This lack of radio communications seriously limits the management of the area, particularly regarding patrolling and surveillance.

Lack of Work Tools

The rangers do not have binoculars, compasses, etc. This is basic equipment that greatly supports management work in the Sanctuary.

Unnecessary Deforestation During the Construction of the San Antonio Post

A little more than 2 hectares of primary forest were deforested during the construction of the San Antonio Post to place the main buildings. The site was not planned, therefore, the environmental impact was not anticipated. As a consequence, the area surrounding the buildings presents an unnecessary and lamentable deforestation that could have easily been avoided. The job was left to the workers, without direction from the Sanctuary personnel.

Lack of a Long-Term Management Plan

The Sanctuary does not have a planning document to guide its long-term management policies. Thus, the construction of buildings, shelters, trails, etc. is carried out without a previous analysis by an interdisciplinary team. Undoubtedly, there are decisions that cannot wait, but there are others in which the analysis of the opportunities and limitations to make management decisions requires the preparation of a management plan.

Commercial Incentive for Illegal Hunting Within the Sanctuary

In Puerto Maldonado there are "habilitadores" who promote illegal hunting of mammals and birds within the Sanctuary for commercial purposes.

Road-Building and Colonization Projects in Bolivia

Although it is still not official, it is known that the Bolivian authorities plan the construction of a road to facilitate the colonization of a vast region bordering the Pampas del Heath National Sanctuary. If this plan materializes, it will undoubtedly have a negative impact on the Sanctuary and it will be an enormous pressure on the existing ecosystems and communities.

Lack of Basic and Applied Research

There are no basic studies to support management decisions, particularly those related to key species. It is frequently mentioned that the Pampas is important for communities of herbaceous vegetation which is the basis for the marsh deer (Blastocerus dichotomus) and the maned wolf (Chrysocyon brachyurus), but there are no systematic studies to back up the possible presence of these species. Except for the capture of both species by Hofmann et al (1975), there are no reports of direct observation of both species in the pampas, not even by the rangers.

Regarding the pampas themselves, the evaluating team was informed on the presumption of traditional burns of pasture carried out by the indians. Unfortunately, there are no studies confirming the existence of these spontaneous practices of interrupting the ecological succession of this plant community for indigenous people community purposes.

Rangers have not observed this during their entire life in the region. The systematic burns of pastures by Indians occurs in other places of the world, but it always has a reason, be it practical, to allow the development of grasses useful for domestic cattle or for wildlife, or ritual. During the evaluating team's visit it did not learn of any type of reason for the presumed burn and its benefits.

On the contrary, the burn of any segment of the pampas, which has a reduced area of 6,000 hectares that does not allow a density above 40 individuals of marsh deer (Hofmann, 1975), it would diminish the fodder for the deer that depends on this plant community. At the same time, it would cause several rodent species to move out, but the maned wolf depends on them for its subsistence in a reduced and fragile habitat. In addition, the impact on invertebrate fauna and even on the soil could be very strong and they do not always recover from the effects of artificially induced fires.

Lack of Appropriate Cartography

Although there is an excellent map of forest types and vegetation association, scale 1:100,000, there is no topographic cartography at larger scales.

C. RECOMMENDATIONS

Site and Trail Planning

It is recommended to begin immediate planning of each physical development site, no matter how small, with the aim of reducing to the utmost the environmental impacts that constructions could cause on the natural environment surrounding it. This involves anticipating the least possible deforestation, sewage disposal, solid waste disposal, etc. What happened during the construction of the San Antonio Post should not be repeated.

Prepare a Good Patrolling and Surveillance Plan

Although patrolling and surveillance activities are developed with great efficiency, it is necessary to prepare a patrolling and surveillance plan to include work based on randomness as a means of making as effective as possible the scarce resources and personnel in the Sanctuary. It must never be known when a couple of rangers will appear, either by the rivers aboard a "peque peque" (outboard engine boat) or on patrol through the trails. Thus, control will be even more efficient.

Establish a Basic Monitoring for Key Species

It is necessary to begin monitoring the presence of marsh deer (Blastocerus dichotomus) and of maned wolf (Chrysocyon brachyurus) in the pampas. This monitoring could be practiced by rangers through systematic day and night observations, recording data such as time of

observation, habitat of observation, number of animals observed, behavior observed (eating, resting, etc.), and location of the habitat observed, preferably at a scale of 1: 20.000 or less. The places and frequency of appearance will allow to have a preliminary idea of the situation of both species in the Sanctuary.

The Ese'Ejas indigenous communities of Sonene and Palma Real are authorized to hunt animals and gather plants and fruits, particularly Brazil nuts, within the Sanctuary. These traditional practices must be monitored as well and, with that purpose, it will be important to know the animal and plant species preferred by the Indians and the frequency with which they are hunted or collected. This study must be carried out to decide on the guidelines for the management of the species on which there is greatest pressure and to make the extraction compatible with the recruitment capacity of the preferred species.

Prepare an Initial Five-Year Management Plan

It is urgent to prepare a five-year management plan that will consider the analysis of the animal and plant communities protected in the Sanctuary and their conservation needs. At the same time, this five-year plan should analyze the relation of the indigenous communities and their hunting and gathering rights within the Sanctuary, as well as their biological and social/cultural impact. The Plan should also analyze the Sanctuary's potential to promote and receive selective nature-oriented tourism. Following the analysis of the factors mentioned above, the Plan should gradually propose actions to manage the resources in order to achieve the objectives of the Sanctuary, which must be previously established by the pertinent authority.

Improve the Personnel Equipment

The Sanctuary personnel should have binoculars, compasses, at least three uniforms of quality and color according to the characteristics of their work, shoes or boots for field work, field note pads, radio communication equipment, etc. Currently, the uniform that has been chosen does not meet these requirements and the shoes are not the most appropriate for their work. It should be born in mind that a good job also depends on the quality of the equipment available for the protected area personnel.

Personnel Training

Several personnel training courses must be urgently organized. These courses should cover subjects related not only with patrolling and surveillance, but also with basic monitoring of biological, physical, social, and cultural elements. Perhaps a training program for Sanctuary personnel could begin with short courses for the entire personnel, taking advantage of the facilities in the San Antonio Post.

To Enlarge the Borders of the Sanctuary to Include the Heath River Watershed

It is necessary to explore the possibility of enlarging the Sanctuary's borders to include the Heath River watershed, which will soon suffer from pressure of colonists in both Peru and Bolivia.

To Establish Joint Actions with Bolivia to Protect the Pampas

TNC can collaborate in the preparation of a joint strategy with governmental and non-governmental organizations of Peru and Bolivia to protect the Heath pampas in both sides of their frontier.

IV. FINANCIAL ASSESSMENT

A. ACHIEVEMENTS

Good General Status

The budget and accounting system was reviewed with Fabiola Garcés at FPCN in Lima. The accounting system is being managed according to Parks in Peril requirements and the Peruvian Foundation for the Conservation of Nature is clear on how expenditures should be recorded.

Building of Ranger Posts and One Shelter on Schedule

The building of the San Antonio Post was finished and the building of the Palma Real Post is underway. One shelter has been built in Quebrada Juliaca and a trail demarcating the northern part of the Sanctuary has been opened with the assistance of the Ese'Ejas' indigenous communities of Sonene and Palma Real.

Hiring of Additional Park Rangers

According to the work plan, FPCN hired 6 additional Park rangers, completing the total of 8.

B. LIMITATIONS

Lack of Long-Term Financial Sustainability

In a meeting with Jorge Ugáz, General Executive Director of the National Parks Program, he informed that Pampas del Heath will not necessarily be in FONANPE's (Natural Protected Areas National Fund) priorities, unless its richness in biological diversity is objectively

demonstrated. The National Parks Program has an annual budget of US\$73,000 of which no amount is allocated for Pampas del Heath National Sanctuary.

Confusion on Reporting Procedures

There is confusion on how to report to TNC. The financial reports indicated only the budget already spent and documented, but not the expenses compromised that lack the proper invoices. This budget appeared as not spent when, in fact, is pending the reception of the invoices to be paid. As a consequence, TNC is releasing less money than is needed because they consider FPCN still has money in cash. This means FPCN is receiving a budget far smaller than the one actually needed.

C. RECOMMENDATIONS

Improve Coordination Between FPCN and TNC

Additional coordination between FPCN and TNC technical and administrative personnel should improve the reporting procedure and consolidate priorities.

V. ADMINISTRATIVE ASSESSMENT

A. ACHIEVEMENTS

Halt of Logging and Chestnut Exploitation Within the Sanctuary

The Government organization, Forestry and Wildlife Directorate, has agreed to halt issuing logging and chestnut (*Bertholletia excelsa*) exploitation permits inside the Sanctuary.

Official Government Recognition of Park Rangers

Park rangers hired by FPCN have received the official government recognition, which now makes their operations secure and efficient because they are viewed as official personnel.

Improvement in the Relation with Indigenous Communities

The relations with the indigenous community Ese'Ejas have been tense and, as a result of this, Park personnel have made a great effort to improve the ways of interpreting to the indians the value of the Sanctuary and the benefits it will provide them. Several meetings with members of the Palma Real and Sonene communities were held in order to discuss the creation of the Ese'Eja Indigenous Community Reserve near the Sanctuary. Other issues discussed included the sustainable use of wild species from the Sanctuary, community support for

demarcation activities, and naming the Park rangers Darío Cruz and Arturo Chaetá to represent these communities in the management of the Sanctuary.

B. LIMITATIONS

Excessive Administrative Work of Project Coordinator

The project coordinator in Puerto Maldonado, Fernando Rubio del Valle, must invest much time in administrative work of the management of PIP funds, at the same time that he carries out work related with the Sanctuary's management. Many times, the overload of administrative work causes the weekly financial reports to be sent late. In addition, there is a complex situation because the coordinator must submit weekly reports of PIP funds or he will not receive new funds from Cuzco or Lima. This limits the management of the Sanctuary because there if is no money, he is unable to buy fuel for the boats and other necessary elements to operate the project. There have been times when it was not possible to buy fuel for the boats, therefore, causing a delay in some programmed patrolling activities.

Confusing Role of Project Coordinator

The Project Coordinator, Fernando Rubio, communicated the assessment team that a Director will be hired for the Sanctuary and will be based in the San Antonio Post. This causes confusion, sin the evaluating team understood that the Project Coordinator would, in practice, be the Director of Pampas del Heath National Sanctuary. It is not understood why it is necessary to increase personnel at the upper levels when there is a need for more rangers. This will only increase the bureaucracy to four reporting levels: San Antonio Post of the Pampas del Heath National Sanctuary-FPCN office in Puerto Maldonado-FPCN office in Cuzco-FPCN office in Lima. If a Director is hired for the Sanctuary, the role of the current Coordinator will not be clear.

C. RECOMMENDATIONS

To Improve Administrative Procedures

It is recommended to improve administrative procedures to enable the Project Coordinator to prepare monthly financial reports and, at the same time, receive monthly operation funds.

To Clarify the Role of the Project Coordinator

The future role of the Project Coordinator, Fernando Rubio, should be clarified because it doesn't seem convenient at this moment to hire a Director of the Sanctuary, leaving Mr. Rubio del Valle to perform administrative work in Puerto Maldonado. Perhaps it would be a more efficient solution to hire a part-time administrative assistant rather than removing Mr. Rubio del Valle from his technical responsibilities, in which he has expertise and training.

To Speed Up the Purchase of Field Equipment

The purchase of radios and other field equipment that were requested a long time ago should be sped up. This equipment is highly important to achieve a more efficient work on the field.

IV. SUMMARY OF RECOMMENDATIONS

Technical

- To prepare a five-year management plan, considering the fact that the neighboring Ese'Ejas indigenous communities depend upon the Sanctuary's resources.
- To plan the physical development of every site, in order to avoid negative environmental impacts.
- To explore the expansion of the borders of the Sanctuary to include the Heath watershed.
- To coordinate joint actions with Bolivian governmental and non-governmental organizations to protect the pampas ecosystems on both sides of the Peruvian-Bolivian border.

Financial

- Additional coordination between FPCN and TNC technical and administrative personnel should improve the reporting procedure and strengthen priorities.

Administrative

- It is recommended to improve administrative procedures to unload some administrative work from the Project Coordinator. It is also recommended to clarify the role of the Project Coordinator if a Director is hired for Pampas del Heath National Sanctuary. It is recommended, as well, to speed up the purchase of radios and other necessary equipment to improve the management of the Sanctuary.

THE NATURE CONSERVANCY, PARKS IN PERIL PROGRAM

EVALUATION OF YANACHAGA-CHEMILLEN NATIONAL PARK, PERU

I. INTRODUCTION

A. Site

Yanachaga-Chemillen National Park is located in central Peru, east of the cordillera oriental of the Andes Mountains. Park headquarters is in Oxapampa on the western edge of the park. Oxapampa is the largest town close to the park. The park encompasses the Yanachaga mountain range, the headwaters of the Palcazu River to the east of these mountains, and parts of the headwaters and canyon of the Huancabamba River to the west of the mountains. Elevations within the park range from about 400 masl at Paujil on the Iscozacín River to 3,400 meters at the summit of the Yanachaga range, to about 3,900 meters at Santa Barbara in the extreme western part of the park. The eastern part of the park receives annual precipitation of 4,000 to 6,000 mm, whereas the western part of the park receives about half that much rain. Representative life zones inside the park include tropical premontane rain forest, tropical lower montane rain forest, tropical montane rain forest, and tropical lower montane wet forest.

Most of the park is in nearly pristine condition. There are no people living permanently inside the park and entry for hunting, fishing, and other extractive uses appears to be minimal. Although some modification of the park's environment has taken place in the past, this modification has occurred at small scale, near the edges of the park. The park shows no major permanent scars from human activities inside it. The park does show signs of natural catastrophe. Natural landslides occur frequently, given the park's steep terrain, very high rainfall, and shallow soils. Sometimes landslides clog streams, producing mud flows which wipe out vegetation along stream banks and may even alter the courses of streams.

Location near the equator, high rainfall, and large variations in altitude over short horizontal distances form an environment in the park conducive to extremely high biodiversity. Complete inventory of species occurring within the park has never been made, but several expert taxonomists have observed and collected specimens from the park. Partial collections exist for birds, amphibians, ferns, and angiosperms.

B. Composition of Evaluation Team

The evaluation team consisted of:

Mr. Pedro Aguilar, Park Director;
Mr. Ricardo Gutierrez, of the PNP, Programa de Parques Nacionales del Peru;
Mr. Francisco Estremadoyro, Parks in Peril Coordinator for FPCN, Fundacion Peruana para la Proteccion de la Naturaleza; and
Mr. Dennis McCaffrey, Senior Project Manager, The Nature Conservancy.

Several park guards who work in the park accompanied the evaluation team on the site visit to the park. A professional photographer also accompanied the team.

C. Evaluation Work Plan

The first phase of the evaluation consisted of planning meetings between McCaffrey and Estremadoyro and between Estremadoyro and Aguilar. This phase established the objectives of the evaluation, its methodology, and the calendar for carrying it out.

Field work for the evaluation took place between August 3 and August 14, 1992. Field work included overflight of the park, visiting several sites inside the park and near its boundaries, and interviewing people in Lima and in Washington. An annex showing the itinerary for field work for the evaluation is attached.

The preparation and submission of this report completes the evaluation.

D. Target Institutions and Individuals

Target institutions of the evaluation were FPCN, PNP, Programa de Parques Nacionales del Peru, and The Nature Conservancy. FPCN provides administrative services to the Park. The park guards are FPCN employees. FPCN maintains financial accounts for the Park, handles purchases other than local purchases, maintains liaison with TNC, raises funds for the Park, and coordinates with PNP.

PNP provides political support to the Park and coordinates the Yanachaga program with the overall national program for parks. PNP will have a central role in determining how funds from FONANPE, Fondo Nacional de Areas Naturales Protegidas por el Estado, will be allocated. Although the decree which will create FONANPE has not been issued officially yet, it should be approved in the very near future.

The Nature Conservancy provides fundraising and financial support and technical assistance to the Park via FPCN. For the past few years, USAID has been a principal source of finance for the Park. AID is aware of the evaluation process and will receive the results of the evaluation, but did not participate in the field trip to the park.

The following people were interviewed during the evaluation and are interested in its results:

Mr. Pedro Aguilar, Park Director;
Mr. Jorge Ugaz, Director, PNP;
Mr. Ricardo Gutierrez, PNP;
Dr. Carlos Ayala, Environmental Officer, USAID/Peru;
Mr. Gustavo Suarez, Executive Director, FPCN;
Mr. Francisco Estremadoyro, Parks in Peril Coordinator, FPCN;
Mr. Eulogio Herrera, Administrative Coordinator, FPCN;
Mr. Daniel B. Quinn, Peru Country Program Director, TNC;
Ms. Monica Ostria, Coordinator, Parks in Peril Program, TNC.

E. 1991 Evaluation.

Yanachaga-Chemillen National Park was evaluated in November 1991. Three of the members of the team for the 1991 evaluation - Pedro Aguilar, Francisco Estremadoyro, and Dennis McCaffrey - participated in the current evaluation. Len West, the fourth member of the 1991 evaluation team did not work on this evaluation. The general purpose of the 1991 evaluation was similar to that of the current evaluation but the earlier evaluation was not part of a comprehensive review of Parks in Peril sites and program. It did not proceed from terms of reference applicable to the whole Parks in Peril program and it was somewhat less comprehensive than the current evaluation. The 1991 evaluation did, however, describe and comment on field conditions at the park and did discuss long-term financing needs. Only nine months elapsed between the occurrence of the two evaluations. The second evaluation, therefore, notes relatively little change at the park. This arises from two factors: by November 1991, Yanachaga-Chemillen National Park had already benefitted from several years of investment in infrastructure and personnel so park operations were no longer expanding rapidly; and existing social and economic conditions in Peru are not conducive to expanding the program at the park.

This evaluation report makes various references to the earlier evaluation, especially to note changes or lack of changes in conditions, and to comment on new initiatives. Reading the report of the 1991 evaluation as an adjunct to this report will give a fuller view of the park than would be obtained by reading either report alone.

II. CONCLUSIONS

A. Technical

1. Yanachaga-Chemillen National Park has a full complement of well trained, capable, dedicated staff.
2. The park has adequate infrastructure and equipment, satisfactorily maintained in good working order.
3. The park's natural environment and the flora and fauna it supports are protected satisfactorily. Park boundaries are adequately demarcated and trespass into the park appears to be minimal. Human activities outside the park do not appear to be causing environmental degradation inside the park.
4. Deforestation inside the park is minimal. Deforestation continues to increase outside the park but does not appear to pose a serious threat to the park right now. Some deforestation represents recurring use for shifting agriculture of land which had been cleared and has grown up in second-growth forest. Other deforestation represents an expansion or intensification of shifting cultivation and some is clearing of primary forest. The ratio of forested land to cleared land outside the park is decreasing. Deforestation contributes to secondary environmental problems outside the park like erosion and seasonal air pollution from burning.
5. Outside the park, natural resource use does not appear to be fully sustainable and resource deterioration is damaging the environment and affecting quality of life adversely. In this setting, the presence of the park has a positive effect both on environmental quality and quality of life.
6. There is little visitation to the park.
7. There is little interaction between the park and the Yanesha Native Communities which adjoin it.
8. The park does not have an active research program.

B. Administrative

1. Administrative procedures for reporting and accounting for the park appear to be well designed and well understood by the people who apply them.
2. The way in which administrative procedures are applied causes delays in the flow of funds to the park.

3. Although annual funding level for the park conforms to amounts programmed in the annual work plan, funds actually available for operations fluctuate over the course of the year, sometimes leading to short-term scarcity of funds.

C. Financial

1. Substantial investment in the past in Yanachaga-Chemillen National Park has provided basic infrastructure to support effective operations.
2. In the short-run, the park has adequate financial support.
3. Long-term financial support for the park has not been secured; prospects for obtaining long-term financing are limited.

III. RECOMMENDATIONS

The recommendations set out here reflect consultation with the evaluation team and with knowledgeable persons in PNP, FPCN, and TNC.

A. Technical

1. It is important to maintain park staff, equipment, infrastructure, and operations at least at current levels.
2. TNC, FPCN, and PNP, should prepare and carry out a plan for promoting research in the park. Such a plan would put the facilities at Paujil to fuller use and would make available to researchers some logistical support from park staff and operations. (See attached document on research possibilities prepared by Pedro Aguilar.) I believe the plan should emphasize opportunities for Peruvian scientists and research institutions, reserving a smaller, support role for international scientists and research institutions. It is important to construct the plan in such a way that it can be implemented in easily separable parts and phases. This will limit risk of disruption of research should security problems or other conditions in Peru require suspension of research activities.
3. During 1993, park staff, with the active involvement of PNP and FPCN, should work with the Yanesha to:
 - design and implement a management plan for the Yanesha Communal Reserve;
 - determine whether to build a Yanesha Community Center and the purpose and design of such a center;

- begin construction of a community center if such a center has been agreed upon between the Yanasha and park officials.

B. Administrative

1. Each person involved in the chain of preparing and approving requests for disbursement of funds should make a point of processing such requests as quickly as possible.
2. Persons with responsibility for approving disbursement requests should designate a person who has authority to approve requests in their absence. The person with approval responsibility can ratify such approvals later on.
3. Requests for funds should be initiated well in advance of the time when the funds will be needed in the field.
4. A calendar of scheduled disbursements should accompany the budget in the annual work plan as an aid to preventing short-term scarcity of funds in the field.

C. Financial

1. TNC, FPCN, and PNP, within the framework of FONANPE, should develop a two-part proposal to raise funds for long-term financial support for the park. One part of this proposal, for which The Nature Conservancy should take the lead, should sustain basic operations in the park at a constant level with a small cushion for growth. The other part of the proposal should fund a new research venture to be carried out by a combination of Peruvian and overseas scientists. At least one Peruvian and one US research institution should participate actively in designing and raising funds for this second part of the proposal.
2. The photographer who accompanied the evaluation team in the field photographed about two hours of video tape and also a large number of still photographs. FPCN and TNC should consider editing this photography into short presentations to prospective donors to Yanachaga.

IV. TECHNICAL ASSESSMENT

A. Achievements

Personnel: Yanachaga-Chemillen National Park has had a stable complement of full-time personnel for several years. Regular personnel include the park director and seven park guards. Since November 1991, this complement of personnel has held constant except that one guard/boat operator resigned and one new park guard was hired to replace him. One

contractee makes periodic patrols of the upper Chuchurras and Lagarto rivers on the northeast side of the park.

Training: The park director has received long-term training abroad, notably a four-month-long course in New Zealand which he attended in 1989-90. All of the park guards have received on-site training and several have attended the annual course for park personnel from around Peru offered annually by PNP. This course was not offered in 1992, however, and no one on the Yanachaga staff has had any new formal training since 1991.

Equipment and materials: The park's pick-up truck and two motor bikes were completely overhauled this year and should provide several more years of service. Purchase of a third motor bike was scheduled for early this year but has been deferred in the expectation that prices in Lima for new motor bikes will drop from current exorbitant levels.

The two boats and two motors in use on the east side of the park are in good working order. The three radios and their power plants function well. Park staff have adequate tools and equipment to perform their basic tasks of patrolling, trail building, sign making, and so on.

This year all the park guards received new uniforms. These uniforms consist of boots, trousers, shirts, jackets, and caps adequate for climate and field conditions in the park. The guards like their uniforms - so much so, that they do not wear them on the job but reserve them for special occasions when they want to dress up and look sharp.

Boundary Surveying and Marking: All the park's boundaries have been stated in the legal description of the park and drawn on maps. The most important boundaries have been surveyed and marked in the field, especially along the ridge on the east side of the Huancabamba valley where the park adjoins cultivated land and at certain points along the eastern boundary of the park where it adjoins the Yanasha Communal Reserve. Remote boundaries have not been surveyed or marked but there seems to be no need to do so.

Construction of Facilities: Little progress has been made since November 1991 in expanding park facilities. The trail network near Paujil has been extended and two bridges have been constructed on the trail that leads to the Paujil Research station. Larger projects have not advanced, however. Work on finishing the visitor center at park headquarters in Oxapampa has stagnated. Sites have been chosen for building several remote guard posts but construction has not begun.

Community programs: 1991 marked the 100th anniversary of the founding of Oxapampa as a modern town. The park participated in the celebration and received a prize for its display and presentation. This year park officials attended the annual meeting of FECONAYA, Federacion de las Comunidades Nativas Yanasha. Park staff were responsible for the production and airing during 1992 of several radio spots on environmental themes. Two NGOs, APECO, with headquarters in Lima, and a local group in Oxapampa, attempt to sponsor environmental education programs in and around Oxapampa. The two groups

cooperate informally with the park. They operate on such limited budgets, however, as to have only a minor presence in the area.

Cooperative agreements: Management of Yanachaga-Chemillen National Park proceeds from two cooperative agreements, one between FPCN and PNP, and one between FPCN and The Nature Conservancy. Under the agreement with PNP, FPCN receives delegated authority to manage the park consistently with Peruvian national policy for protected areas. The park director is an employee of the Peruvian government but FPCN provides his salary. The other park employees currently work directly for FPCN. PNP has stated that in the future it might be able to put the park guards on its roster of permanent employees. Such a move would facilitate use of funds from FONANPE to pay the guards.

The FPCN-TNC agreement enables field implementation of activities at the park as part of the Parks in Peril program. It also establishes TNC technical support to FPCN and joint responsibilities of the two organizations for fundraising.

Park in Peril Work Plans: Each year, as is true for all Parks in Peril sites, a work plan is prepared for Yanachaga-Chemillen National Park. The planning process consists of meetings between park staff, especially the park director, and FPCN staff and between FPCN staff and TNC staff. The basic goals for protection and management of the park were established by mutual consultation several years ago. These goals have not changed much over time so there is little need to reexamine them during the annual planning process. Rather the process consists of determining a list of priorities for maintaining existing activities and incorporating new ones. The plan for each year seeks to accomplish as many priorities as available funds will allow while still maintaining basic staff and operations. In practice, this means setting aside as much annual budget as necessary to pay salaries for the full staff, cover operating costs for basic patrols, and pay for maintenance of buildings, vehicles and equipment. Funds available after basic costs are met can be applied to training, purchase of new equipment, construction of additional infrastructure, and expansion of programs like environmental education.

Once the annual work plans are agreed upon by the park director, FPCN, and TNC, they are sent to PNP and to USAID for approval. Thus far, the annual work plans have been approved routinely. The current work plan carries the signatures of the director of PNP and the technical director of FPCN.

B. Priority Management Needs under the Current Work Plan

The current work plan for the park, which was prepared in late 1991, covers two fiscal years - 1992 and 1993. It proposes actions under three programs - park management, public use, and natural resource planning and management. The plan's budget allocates resources to personnel, training, equipment, construction, field operations and community extension. Fifteen percent of the total annual budget is allocated to FPCN for administration.

The work plan for fiscal year 1992 calls for keeping the complement of personnel constant at one park director, seven park guards, and one contractee. This staff seems adequate, especially given that its members are fairly well trained and equipped, moderately well paid, and highly motivated.

Training this year consisted only of preparing training materials and distributing them to the guards. Training budgeted for next year is similarly meager. Although park personnel are adequately trained, they would appreciate additional training, both to improve skills and as recognition of their dedication to their work.

This year, park equipment has been augmented with the purchase of computers and furniture for park offices in Oxapampa. The new motor bike, which is sorely needed, should be on hand soon.

Construction during 1992 has fallen short of projections set out in the work plan. One proposed item of construction, a small warehouse in Iscozacín, was scratched because the park has worked out an arrangement to rent adequate space and does not need a building of its own. Construction has proceeded as planned on trails, signs, and office improvements in Oxapampa. But construction has lagged on three items - the research station at Paujil, the Yanesha Community Center, and the visitor center at park headquarters. Together, these three items comprise nearly 60 percent of this year's budget for construction. Although it is not urgent to complete construction at Paujil because there is currently no demand to use the station for research, it would be a good idea to complete finishing touches once and for all and have it ready for eventual expanded use. The deferral of construction on the Yanesha Community Center results in part from lack of agreement between the Yanesha and the park as to what kind of construction is needed, where to build it, and so on. The delay has not been critical but, again, it would be good to accomplish this item. Delay in finishing the visitor center is serious. Much of what the park would like to do in environmental education and public outreach hinges on having the center's facilities available. Apparently, the only obstacle to moving forward with construction of the visitor center has been lack of timely availability funds, an administrative problem discussed below.

Field operations have also suffered from lack of timely availability of funds. Vehicle maintenance and repair was performed this year but building maintenance and replenishment of office supplies was not. Most serious, park patrol was reduced and thrown off schedule because of erratic availability of funds.

Community extension was programmed under the plan but no funds were made available in 1992 to do any extension work.

C. Effectiveness of the Annual Work Plans

Annual work plans for Yanachaga-Chemillen National Park and the process by which they are produced seem to function well. The planning process appears to identify priorities well and consolidate agreement among PNP, FPCN, and TNC on what to do, when, and at what level of commitment of resources. When problems arise, as this year when funds were late, the plan document and the planning process help allocate what funds are available and help focus on the most important things to accomplish. From a technical point of view and in light of the annual plan for 1992, I think park and FPCN technical staff handled park management well this year in spite of administrative problems. I believe the annual plan and the history of working together as a team of respected colleagues helped them perform effectively.

In my opinion, the annual work plans really do work well as a channel for technical input from TNC and FPCN and policy input from PNP and USAID. For Yanachaga-Chemillen, future technical needs will probably continue to center around the areas of staffing, training, equipment, construction, and field operations. At this point, there do not appear to be any technical obstacles to meeting these needs. This statement does not imply that all of the park's technical needs will, in fact, be met. Much more could and should be done as regards biological monitoring, community extension, and interaction with the Yanasha. Constraints to advancing on these points are not primarily technical, however, but financial and administrative.

D. Limitations

There are at least two important technical goals which have not been achieved at Yanachaga-Chemillen National Park. One of these is the institution of a research program. Such a program should focus initially on collecting basic data about the park - meteorological data, inventories of plants and animals, hydrologic and geologic data, etc. Subsequent research should expand to cover ecological, ethnic, and social topics. Some future research could have a pragmatic orientation, e.g. how to increase tourism or management of faunal resources in the park and the adjoining Yanasha Communal Reserve.

The other unrealized goal, somewhat related to the first, is increasing public interest and awareness of the park and encouraging more visitation. Completion of the visitor center and construction of scenic trails in Oxapampa would advance this goal from a technical perspective. So would publication and distribution of more literature about the park and closer work with local and national NGOs engaged in environmental education.

The major impediments to approaching these two goals are not technical. To some extent limited funds contribute to the problem and so do administrative snags. I believe the biggest impediment, however, lies entirely beyond the control of any of the organizations working with the park. That impediment is the current social and economic turmoil which grips all of

Peru. A few years ago civil unrest and violence occurred near the park. Now the security situation in the park area has been fairly calm for over a year, though people remain on alert and the presence of soldiers and militia is prominent. But a deep economic recession, locally and nationally, inhibits individuals and organizations from starting new ventures or from making expenditures for any but the most essential items.

V. ASSESSMENT OF PROGRAM ADMINISTRATION

A. Achievements

The Parks in Peril program with regard to Yanachaga-Chemillen National Park has established a set of administrative procedures which function reasonably well. That is, the several people who operate the system - park director, administrative and accounting staff at FPCN, country program and administrative staff at TNC - all seem to understand the procedures and know how to apply them. Financial and technical reports produced according to the procedures apparently meet USAID specifications. The administrative system is supported by a computerized information processing network operated by people who seem capable, dedicated, and well trained.

B. Limitations

The administrative support system for the park does not accomplish its most fundamental purpose as well as it should. That purpose is to deliver operating funds to the park on time and in sufficient amounts to cover costs fully. Once an annual work plan and budget for the park have been approved, the park director should be able to rely on funds being available for the purposes and in the amounts stated in the approved work plan. During 1992, funding to the park was not reliable. Funds reaching the park came in sporadic disbursements, most of which were behind schedule.

Part of the problem is fairly easy to explain. Disbursement requests require the approval of several individuals at FPCN and several more at TNC. All the people whose approval is required juggle heavy workloads. Sometimes they are unable to attend to the disbursement requests for several days after receiving them. Some people travel frequently, so they may be out of town when a request reaches them. A few mini-delays at the desks of several people in the approval chain add up to macro-delays in the arrival of funds in the field. Another factor which aggravates delay in arrival of funds is that checks are sent, slowly, from Lima to Oxapampa. But sometimes the bank in Oxapampa does not have enough cash on hand to be able to cover the checks. More delay occurs waiting for money to arrive at the local bank.

Whereas the causes of slow movement of funds are fairly obvious, the causes of erratic amounts of funds are obscure. Speeding up the funds delivery process will partially alleviate the funds availability problem. An additional way to assure that adequate levels of funds are

available when needed might be to prepare a calendar that projects future need for funds. This would enable preparation of funding requests, well in advance of the time when funds run low, that fully anticipate the whole amounts needed to keep operations on target.

VI. FINANCIAL ASSESSMENT

A. Achievements

The former USAID/Peru project for Yanachaga park, which operated from 1986 to 1990, provided enough funding to Yanachaga-Chemillen National Park to place it on the stable footing it now enjoys. This funding provided the buildings at park headquarters, the research station at Paujil, the vehicles, boats, motors, radios, tools, and office equipment currently in use, salaries and training for the park director and park guards, as well as other items.

Current funding through the Parks in Peril program will carry through to September, 1993. This funding will allow the park to maintain its current complement of personnel and equipment and current level of operations as well as provide some expansion of infrastructure and programs.

The park, then, is up and running and has attained financial stability for the short term. Maintaining the minimum level of funding to keep operations at current levels, but without any expansion whatsoever, requires \$75,000 or \$80,000 annually plus occasional infusions of cash to cover replacement of exhausted vehicles and other equipment. Raising annual available funds to \$120,000 allows for full maintenance of current operations plus modest growth in infrastructure and programs.

B. Limitations

At this point there is no provision for long-term funding for the park when the Parks in Peril commitment ends in 1993. Money to maintain a constant level of operations is simply not available in Peru - not from PNP, not from FPCN, not from any other currently identifiable source. The most PNP can do is place park personnel on their payroll and hope that funds become available, either by direct appropriation in the national budget or through FONANPE. All of Peru's Amazonian protected areas, Yanachaga among them, will receive priority status under FONANPE. But Yanachaga has not been singled out for special priority under FONANPE and, reportedly, the German government, the most likely source of early funds for FONANPE, has declared that it considers the Yanachaga area too dangerous to work in.

Debt swaps, of either public or commercial debt might present a possible source of long-term funding. But the Peruvian government is unlikely to approve any such a swap because it is so short on cash that it would probably be reluctant to make local currency available even in exchange for debt forgiveness.

Appealing to multilateral or bilateral sources, to private foundations, or to individual donors is another possibility for procuring the long-range funding Yanachaga needs. These prospective sources will probably not be persuaded, however, by a proposal which simply maintains the status quo in the park, bolstered by the argument that it would be a pity to lose the fruits of the investment already made in it. Rather an appeal to such donors should build on the existing investment by adding an attractive new program in addition to sustaining current operations.

EVALUATION ITINERARY

Tuesday, August 4: Lima to San Ramon by commercial flight;
Overflight of park and surroundings.

Wednesday, August 5: San Ramon to Iscozacin by local charter
flight;
Iscozacin to Paujil by boat.

Thursday, August 6: Paujil to Rio Pescado on foot.

Friday, August 7: Return to Iscozacin;
Iscozacin to Oxapampa by local charter
flight.

Saturday, August 8: Reconnaissance by road in vicinity of
Oxapampa.

Sunday, August 9: Oxapampa to San Ramon by local charter
flight;
San Ramon to Lima by public overland
transport.

Tuesday, August 11: Meetings in Lima with FPCN staff.

Friday, August 14: Meetings in Lima with national park,
USAID officials.

August, September: Interviews in Washington with TNC staff.