

EVALUATION OF THE EFFECTIVENESS OF MANAGEMENT  
OF NOEL KEMPFER MERCADO NATIONAL PARK, BOLIVIA

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## EXECUTIVE SUMMARY

Independent outside consultants, invited by the Government of Bolivia through the U.S. Agency for International Development, spent two weeks in Bolivia in May 1993, reviewing the management and administration of the Noel Kempff Mercado National Park (NKMNP). The work involved a series of some twenty personal interviews carried out at the national, regional and local level, with government authorities and others associated with that park's management. The interview format was adapted by the advisors to the particular needs of the Bolivian park. The interview consisted of topics relevant to effective management of national parks, which were originally developed through the Commission on National Parks and Protected Areas of the International Union for the Conservation of Nature and Natural Resources. In carrying out the interviews, visits were made to key institutions and offices associated with the park's management, to local communities near the park, and to nearly all of the park guard stations. Particular attention was paid to the respective roles of the Friends of Nature Foundation (FAN) and to the Regional Center for the Conservation of Nature (CERCONA), the management entity generally responsible for NKMNP management. The substance of the interview topics has been included in the report, with a focus on CERCONA and FAN, and a synthesis of strengths and weaknesses concerning management effectiveness has been drafted. Four possible management alternatives, together with some of their likely advantages and disadvantages, are discussed. The advisors recommendations address: (1) Role of the central and regional government, (2) NGO involvement, (3) Concept of "one park", (4) Training, and (5) Cooperation among the managers of NKMNP and international donors, national and international NGOs, and other institutions with relevant expertise.

## INTRODUCTION

In April 1993, the Government of Bolivia requested, through its National Secretariat for the Environment (SENMA), an outside review of the management of Noel Kempff Mercado National Park (NKMNP). The request was made through the U.S. Agency for International Development (USAID), and included a Terms of Reference (Appendix 1) which, in summary, specified the following:

- (1) Institutional evaluation of existing park management structure within its local, regional, national and international context.
- (2) Evaluation of the administration and management of the NKMNP including present management practices, personnel, relations with local communities, infrastructure, equipment, and institutional relationships.
- (3) General identification and evaluation of problems associated with the park's management.
- (4) Proposal of recommendations concerning institutional and legal aspects compatible with implementation priorities for the NKMNP.

In particular, the independent review was to consider the efforts that had been undertaken to date through the two entities which have been most involved with the management of the NKMNP. These are the Regional Center for Nature Conservation (CERCONA) and the Friends of Nature Foundation (FAN).

CERCONA is the public entity charged with management and administration of the NKMNP and the nearby NKM Biological Reserve. CERCONA was established by Supreme Decree No. 22231 of June 23, 1989. It is closely associated with the Santa Cruz Development Corporation (CORDECRUZ), and is overseen by a CERCONA Board of Directors which includes representatives of: CORDECRUZ, the Santa Cruz Mayor's office, the Gabriel Rene Moreno Autonomous University, Forestry Development Corporation (CDF, which, until very recently, was responsible for all parks and wildlife in Bolivia), the Civic Committee of Velasco Province, and FAN.

FAN is a non-profit, non-governmental conservation organization with primary interest in national parks and their implementation.

The following maps are included as Appendix 4: 1) Location of Noel Kempff Mercado National Park in South American and Bolivia, 2) Noel Kempff Mercado National Park, 3) Existing and Planned Guard Camps in Noel Kempff Mercado National Park.

## METHODS

The US Forest Service and the USAID/Washington Bureau for Research and Development/Office of Environment and Natural Resources fielded a team of two individuals to conduct the requested management review. The team developed a questionnaire (Appendix 2) based on International Union for the Conservation of Nature (IUCN) guidelines for evaluating the effectiveness of national park management, developed as a result of the Third World Congress on National Parks and Protected Areas held in Bali, Indonesia in 1982. It was adapted slightly for the particular circumstances and issues prevailing in the administration and management of NKMNP, and it was employed through interviews with nearly twenty individuals involved with that park (see Appendix 3). The purpose of the questionnaire was to create a standardized format to collect information about the park's management. It also provided both an indication of the state of various relevant parameters important to park management, and a measure of the uniformity among park personnel in their perceptions of the purpose, management, and availability of resources for the park. The questionnaire stimulated further conversations on general topics related to park management. It was reviewed by Mario Baudoin (SENMA) and Michael Yates (USAID/Bolivia) prior to its use.

During a temporary duty assignment May 2-12, 1993, the team conducted the interviews. This included most members of the CERCONA Board of Directors, actual or potential funders of activities in NKMNP, and other individuals who have been engaged in activities in or concerning the park. In the latter two categories, interviews did not follow the structure of the questionnaire, but were more free-flowing and aimed at evaluating the general national and international climate for activities in NKMNP. The team visited sites in La Paz, in Santa Cruz, and in NKMNP itself to conduct interviews, as well as to examine facilities and equipment. Institutions visited were USAID/Bolivia, PL 480, FONAMA, SENMA, Peace Corps/Bolivia, FAN, CERCONA, CDF, CORDECRUZ, and Universidad Gabriel Rene Moreno. Park sites visited were, Los Fierros, Flor de Oro, Boca de Pauserna, the guard station near the Federico Alhfeld Falls, and Mangabalito. This included most sites currently administered by CERCONA and FAN. Nearby park communities visited were La Florida and Pimentiera.

## MANAGEMENT EFFECTIVENESS REVIEW

### 1. Management Objectives of Noel Kempff Mercado National Park

The Law of Conservation of Biological Diversity, expected to be promulgated in the near future, defines a national park as "a protected natural area of national significance, with little human intervention, established on public lands with a size sufficient to guarantee the

continuity of ecological and evolutionary processes of their ecosystems" (Article 56, Chapter III). That article goes on to say that the fundamental objective of national park management in Bolivia is "...to strictly and permanently protect: samples of biogeographical regions, genetic resources, species of singular importance, geomorphological sites and/or natural landscapes which they may contain." The article further states that "the national parks will provide opportunities for nature-based recreation, scientific research, and the monitoring of ecological processes...No direct utilization of any renewable or non-renewable resources, except for qualified scientific research duly authorized by the respective Environmental Secretariat (SEDEMA), will be permitted."

The National Environmental Fund (FONAMA) and National Environmental Secretariat (SENMA) in 1992 released a document entitled "Project for the Conservation of Biodiversity and Ecosystems in the Protected Areas of Bolivia." That document identifies NKMNP as being located within the "Campos Cerrados Savannah" Biogeographical Province of Udvardy (1975), and the "Inundated Savannah" and "Lower Sub-humid Rainforest" Ecoregions of Ellenberg (1981). The document makes the important point that the ecological significance of the area is due primarily to its location in a convergence zone of the Amazon to the north, the Chaco to the south, the Brazilian broadleaf savannah (cerrado) to the east, and the Andean region to the west. This, coupled with the pristine condition of the area and its historical significance relating to the work of Noel Kempff Mercado, underscores how important preservation of the park is to Bolivia's national heritage.

Consistent with national goals, park management objectives expressed in interviews with park and GOB personal generally included preservation of the flora and fauna, and of the scenic beauty associated with the rivers, waterfalls, and tablelands. However, a strategy statement associated specifically with NKMNP, based on national policies, and from which annual work plans should tier, does not appear to exist at this time.

The "1993 Management Operational Plan" of CERCONA, and their "1991-2001 Ten Year Plan", do identify general objectives for CERCONA's various subprograms. Management effectiveness is difficult to evaluate unless it can be measured against well-defined management objectives. The CERCONA Operational Plan objectives tend to be broad ("safeguard ecosystems and biological resources", "protect scenic beauty"). More specific targets or indicators of success for future evaluations might include such things as "phase out, within two years, all commercial fishing in the Itenez River bays in the park" and "establish a working

agreement with IBAMA in Brazil within one year, to jointly manage river turtle resources." At the present time, a detailed management plan for NKMNP outlining specific measures to be taken to achieve goals relevant to national objectives, and listing specific indicators that will measure progress towards achieving those goals, does not exist.

## 2. Legislation

The General Forestry Law (Decree Law No. 16646 of August 13, 1974) provides for protection and conservation of natural forest resources in Bolivia, for the economic and social benefit of the country (Article 1, Chapter 1).

The Law of Wildlife, National Parks, Hunting and Fishing (Decree Law No. 12301 of March 14, 1975) provides for declaration by the National Government of National Parks and Wildlife Reserves (Article 28), based on studies by the Center of Forestry Development (CDF).

Part of what is now the NKMNP was established in June 1979 by Supreme Decree No. 16646 as Huanchaca National Park, with a land area of 541,000 hectares. In February 1988, the National Congress passed Law No. 978 which changed the name to Noel Kempff Mercado National Park. In August of that same year, through Supreme Decree No. 21997, the park boundaries were expanded to include 706,000 hectares.

On June 23, 1989, the Regional Center for Nature Conservation of Noel Kempff Mercado (CERCONA) was established through Supreme Decree No. 22231, and put in charge of the administration of both the NKMNP and the nearby NKM Biological Reserve including Laguna La Bahia. The Organic Statute of CERCONA gives it its functions and attributes. CERCONA also has internal regulations, consisting of 193 articles, approved by its Board of Directors.

Supreme Decree No. 22710 of January 1991, created the General Environmental Secretariat (SEGMA), attached to the Office of the President of the Republic, and a National Directorate for Protected Areas and Wildlife.

Law No. 1333 of April 27, 1992, the General Environmental Law in Chapter VIII, Title IV, declared protected areas as patrimony of the State and of social and public interest. It also gives the Departmental Secretariats (SEGMA) responsibility for "normalizing and fiscalizing" the integral management of protected areas. The law indicates that public and non-profit private entities, as well as traditional communities and indigenous groups, can participate in the management of protected areas. It further provided for the National

Environmental Secretariat (SENMA) and the Departmental Environmental Secretariats (SEDEMAs) to organize the National System of Protected Areas (SNAP) to achieve conservation objectives.

The Senate Environmental Commission is in the process of drafting a new law, expected to be passed in 1993, entitled the Law of Biological Diversity Conservation. This will promote the establishment and administration of protected areas.

### 3. Resource Information

Species inventories for NKMNP are only in an embryonic state. Some of the most detailed work has been three surveys of birds which identified some 550 species, according to a 1992 publication of SENMA and FONAMA. Around 700 species are expected to be found which would be about a fourth of those found in South America. Basic forest cover types have been identified, and a corresponding map prepared, by the British/GEOBOL survey, as has a geological map of the park with a mineral focus.

Other studies are currently underway or have been limited to certain areas within the park, through the work of individual scientists. At least four of these have been through CERCONA agreements with universities. Mammal surveys have been undertaken in the park by Andrew Taber, including radio telemetry of tapirs and peccaries. Tim Killean has done an initial botanical survey of the entire park and hopes to eventually publish a "Flora of NKMNP". FAN has cooperated with logistical support of the scientists. Some plant studies have been carried out by Robin Foster and Marcelo Pena. A "Rapid Assessment" of flora around Flor de Oro was carried out by Conservation International, in cooperation with FAN, in 1991. Limited work has apparently been done with invertebrates of the park in the Los Fierros/El Encanto area of the park by Spaniards from Donana Reserve. One person indicated that specimens collected in the park must, by law, be left with a Bolivian natural history museum, and he felt this generally was not being done.

Maps of the park are scattered between offices and are not readily available. Good topographic coverage at a scale useful for local management decisions, apparently does not exist. Aerial photographs (believed to be from the early 1980s) do exist for the park, but most persons interviewed felt that new ones would be useful. Several individuals mentioned that good 1992 satellite coverage of the park exists. Climatic data in the area of the park is mainly recorded in nearby towns such as San Ignacio and Concepcion. Limited weather data is recorded by CERCONA at the Los Fierros weather station and radioed

to Santa Cruz. Hydrological data for the park is nearly non-existent, as is a bibliography of publications about resources found in the park.

#### 4. Ecological Information

Given NKMNP's early stage of development and its remote location, it is not surprising that little is known of ecological relationships within the park. With the exception of some work done by Andrew Tabor in the area around Flor de Oro, those interviewed were not aware of studies of wildlife population dynamics, species status and trends, predator-prey relationships, animal or plant diseases, succession, or fire history and effects.

#### 5. Watershed Management

The NKMNP has the geographical good fortune to include the entire watershed of the Pauserna River, which originates on the tablelands in the heart of the park. Along the Itenez River, the northern boundary of the park and the international boundary with Brazil, various bays exist within Bolivia which contain fish populations sought by Brazilian commercial and sport fishermen. The park also includes the headwaters of various other streams flowing west, out of the park towards the Paragua River, and north, into the Verde River, along the international boundary with Brazil. As such, the park has no watersheds flowing through it which originate outside of its boundaries and therefore no likely future problems due to upstream contaminants. Because of its relatively remote location, the park watersheds are only incidentally important for drinking water, irrigation and flood control. Channelization, check dams or other means of manipulation do not exist in the park.

#### 6. Genetic Resources

With the exception of anecdotal information on traditional uses of plants in NKMNP, there exists no body of knowledge on genetic resources within the park. Paolla root is a plant product that is exported for medicinal uses, matico is a local plant used for treatment of heart disease, and copaio is used for high blood pressure. But the abundance of these plants in NKMNP is unknown. As a result, it is impossible for the existence of genetic resources to affect park management in any focussed way. It is likely that the earliest information that will be available on this subject will come from taxon inventories being performed (e.g., Tim Killeen, Missouri Botanical Garden, plants; Terry Yates, University of New Mexico, mammals; Scott Gardner, University of California, Davis, nematode parasites of

mammals) that may provide taxonomic information leading, eventually, to the inference of potential uses of genetic material.

## 7. Management Plan/Zoning

The CERCONA document "Memoria: Gestion 1986-1992" describes what are the initial steps of a national park management plan in its section entitled "Plan Decenal 1992-2001". The document contains forward-looking programs, related to environmental management (protection and conservation, research, resource management), public use (recreation, environmental education, public relations), works and services (construction), and administration. While too sketchy to be considered a park management plan, this 10-year plan none-the-less provides a starting point for one. National park planning is a dynamic process that needs to recognize all relevant planning efforts existing in a park, and move forward in accordance with new knowledge and management plan norms adapted to the particular needs of the country. The CERCONA Directorate has approved a "Use and Management Regulation of the NKMNP" which establishes the following zoning scheme, which may also serve as a useful point of departure:

- Prohibited Zone (Zona Vedada)
- Restricted Zone (Zona Restringida)
- Primitive Zone (Zona Primitiva)
- Recreation Zone (Zona de Recreacion)
- Recuperation Zone (Zona de Recuperacion)

Most individuals interviewed seemed to agree that a formal park management plan is a necessary and immediate imperative for NKMNP. In fact, one of the conditionalities for disbursement of P.L.-480 funds for park infrastructure was to have been the generation of a NKMNP Management Plan. Such a plan, usually generated by an interdisciplinary team of specialists, would provide the basis for decisions being made currently in a more ad hoc fashion. The most appropriate course of action, for example, would be for the management plan to determine the location of strategic sites for park guard stations and tourism developments. Such a plan should also guide future investments, research priorities, and other management activities. It would give rise to annual operational plans ("PAOs"). Monthly and weekly work plans developed by the park guards should contribute to implementation of the park management plan, and not be generated in an unrelated fashion according to the guards' own perception of work needed. In NKMNP, urgent management concerns have resulted in guards developing workplans without any guidance from a long-term management plan.

The FONAMA/SENMA 1992 "Project for Conservation of Biodiversity

and Ecosystems in the Bolivian Protected Areas" envisions preparation of a NKMNP Management Plan starting in 1993. The team for such a plan could appropriately be led by the Department of Natural Resources of CORDECRUZ, in close cooperation with SENMA, CDF, and other authorities, as well as FAN.

## 8. Park Boundaries

There was fairly good consensus among those interviewed regarding the extent of demarkation of park boundaries. The park is bordered on the north on east by the Rio Itenez and the Rio Verde, which constitute conspicuous boundaries. In 1987, a trail was established along the western and southern boundary of the park with the help of one of the logging concessions. This boundary is variously marked with hitos, at least some of which are built of cement. The fact that hitos are not visible from the air, however, complicates aerial surveillance for incursions into the park. Responsibility for patrolling park boundaries has fallen, by default, to FAN, which conducts overflights of NKMNP and whose guards enforce park regulations.

No one questioned felt that the existing park boundaries were sufficient to maintain populations of important animals present in the park. To the west and south, the park extends only about 15 km past the base of the escarpment, and 10 km of this is buffer zone where the range of legal activities is poorly defined. Populations of large animals (peccaries, tapirs, jaguars), constrained to the east by the escarpment, must range outside the park, where they are hunted by local populations and employees of logging companies. Many of those interviewed advocated extending the park to the natural boundaries of the Rio Paragua and Rio Tarvo (to include home ranges for viable populations of large animals), to the flooded savannah that is the northern-most extension of the Brazilian Pantanal in Boliva (and home to the swamp deer), and to include the Laguna Bahia Biological Reserve.

## 9. Resource Protection

Resource protection has been a problem in the recent past in NKMNP. This has included forest exploitation along the Verde River by Brazilian woodcutters, hunting and wood extraction along the western Bolivian side of the park, and removal of turtles and turtle eggs as well as fish stocks by Brazilians along the Itenez River. Park authorities have confiscated some guns and nets. Because of heavy rains in 1992, these activities are believed to have diminished somewhat. Several of the persons interviewed indicated that resource protection and management can only take place with functional equipment, particularly at CERCONA sites, and adequate numbers of

personnel to enable individual safety during routine patrols. CERCONA park guards, as employees of the competent legal authority for the park, have credentials necessary for enforcement and resource protection. FAN park guards have been temporarily given legal credentials through a cooperative agreement with CDF. In both cases, the legal credentials consist of an identification card which, on the back, requests full cooperation of local authorities in helping the guards carry out their functions. Law enforcement to protect the NKMNP resources does not seem to be a high priority issue. Both CERCONA and FAN employees favor community education as an appropriate alternative.

## 10. Research

Research in the park has been basic research, usually conducted by foreign researchers, sometimes with national collaborators. The University of Gabriel Rene Moreno has sent some students along on research expeditions into the park, but Bolivia is not without the common complaint of lesser-developed countries: there needs to be more collaboration with national scientists, and some specimens and publications resulting from research need to stay in Bolivia for use by Bolivian scientists. Research in the park has typically not provided information in a format that makes it usable by park guards.

FAN has facilitated research by providing transportation (air, ground, and water) in the park, and by housing researchers primarily at Flor de Oro, all for a charge. CERCONA has facilitated research by making its camps (primarily Los Fierros) available for lodging. Neither organization has specifically sponsored research to provide information relevant to park management. The park does not charge any sort of use fee for research conducted within its boundaries. In fact, visitors who overnight at Los Fierros pay no fee for lodging.

## 11. Formal Educational Use

Formal educational use of the park for classroom instruction is heavily constrained by the inaccessibility of the NKMNP. Local grade schools in nearby communities, themselves very small and rural, do not use the park for classes. The nearest major university, Gabriel Rene Moreno University in Santa Cruz, is hundreds of kilometers away over seasonally usable roads, accessible only to the southern, Los Fierros Guard Station. Access to other points in the park would need to be made by prior arrangement with boats to go upstream along the Itenez River from Piso Firme, or by light plane. Both would add considerably to the expense of such a trip, making it out of reach of most Bolivian students. Some students, however, have accompanied researchers such as Andrew Taber. Agreements between the University and CERCONA have been

put in place to provide for such use, particularly in the areas of agronomy, forestry and biology.

## 12. Informal Education

This category includes interpretive facilities and information for visitors to the park, such as brochures, maps, trails, guides, and visitor centers. A clear conclusion is that this area is in an early stage of development. Representatives of both CERCONA and FAN recognized the need for these material, and both organizations put at least some resources into these facilities. Both organizations provide park guards for informal education, and both have constructed or are constructing trails.

CERCONA has established a trail between Los Fierros and El Encanto Falls. Another CERCONA trail, from Pauserna camp to Arco Iris Falls, is nicely maintained and pleasant to walk on. FAN has coordinated and provided funding for construction of about 40 km of trails under the directions of a Peace Corps volunteer. There is one two-kilometer trail with numbered stations and an interpretive booklet that will soon be printed in english, spanish, and portuguese, a 2.5 kilometer nature trail with no booklet, and a trail from Flor de Oro to Pauserna camp is under construction by Brazilian workers (funded by PL 480 through FAN) under Peace Corps Volunteer Ali Wood.

Although both organizations pay and equip park guards, FAN provides regular training for its guards, and facilities and equipment seen were in good condition. CERCONA has arraigned one training course for its guards, two CERCONA park guards each attended one FAN training course, and much CERCONA equipment has fallen into disrepair, leaving CERCONA guards in unpleasant and isolated situations.

## 13. Tourism

The potential for nature tourism in the NKMNP is good, and is the topic of an independent analysis presently underway by Hernan Torres, a consultant of The Nature Conservancy working with FAN. Primary tourism facilities presently in the park are found in Flor de Oro, a scenic site on the Itenez River at the Brazilian border, built and operated by FAN. That location provides ready boat access to such features as the bays along that river, readily visible nesting trees of numerous bird species, the Pauserna River with its associated waterfalls, and various trails being designed for visitors. The area is under study by the Swiss bilateral aid program for possible further enhancement. One area which is likely to have increasing tourist interest is the tableland airstrip where Noel Kempff Mercado was killed

by drug traffickers and a small memorial has been erected to his memory. Many Brazilian visitors come to the northern part of the park to fish. A moderate tourism industry may be developed in the park, based on the combination of scenic, historical, and wildlife and plant resources it contains. However, the two major waterfalls themselves are unlikely to become an "end destination" for international visitors who, for about the same cost, can visit the Iguazu National Park in nearby Argentina and Brazil. Scientific tourism will likely radiate out from both Flor de Oro and Los Fierros guard stations, which provide access to distinct ecosystems. Facilities were generally regarded by interviewees to be inadequate to meet the increasing demand.

#### 14. Political Support

The extent of political support for the park from the central GOB was a subject that received very mixed answers from those interviewed. On the one hand, government officials appear to be very supportive of efforts to improve management and conservation in the park. For example, one current and one former president attended the inaugural ceremony for Los Fierros camp, government and international funders express support and cite the symbolic importance of the park and its association with the national hero Noel Kempff, and the Minister of MACA was responsible for passage of the supreme decree that created the park. On the other hand, park personnel feel largely that the government has neglected the park: they do not perceive a level of funding commensurate with the statements of politicians or with what they feel is necessary for proper park management. Apparently, no funds from the national treasury have gone into NKMNP.

Support at the regional level received slightly better reviews. CORDECRUZ supports the park publicly and has provided funds to develop infrastructure and pay salaries of CERCONA personnel. However, the enmity that has developed between FAN and the former director of CERCONA has left FAN personnel feeling abandoned by the regional authority, and the difficulty that CERCONA guards have experienced in maintaining equipment, obtaining uniforms, and participating in training has engendered some question of CORDECRUZ's commitment to the park. In addition, government support was not regarded as dependable, as the entire political structure (and its policies) can change with an election.

Personnel expressing an opinion on the degree of local support indicated that local communities, where FAN and CERCONA do business or have offices, are supportive of the park and are grateful for the local business and employment opportunities it generates.

There is a clear need for verbal support by government officials to be translated into tangible signs of a real commitment. The implementors of park policy--the personnel in the park camps--depend on logistical support, site visits by their superiors, training opportunities for personal improvement, and interaction with management planners leading to collaboration in park policy to maintain morale and to continue to go about their work responsibly and with commitment.

#### 15. Local Participation

Although no local park advisory committee presently exists, a mechanism is in place which could provide local participation in park management decisions. All of the Bolivian towns near the park are located in San Ignacio Province of the Santa Cruz Department. The Civic Committee of San Ignacio is a full member of the CERCONA Board of Directors. Piso Firme, a nearby town of some 80 families, appears to be a park supporter according to interviewees, because of employment and of a guest house constructed there. CERCONA has held seminars in Piso Firme to become sensitized to regional problems, and to sensitize local populations to the special circumstances of the NKMNP. About two dozen families, mainly hunters and rubber tappers along the Itenez River, have left the park and moved across to the Brazilian side of the river. FAN assertion of authority over the Brazilians in Pimentiera seems at best marginally legal. For example, a major concern expressed during a visit to that town was whether or not FAN guards would authorize their Annual Beach Festival, held on the Bolivian side of the river. This, regardless of whether or not appropriate, does not engender local participation in a positive way. There exists what might be perceived as a potential conflict of interest because income generated by the Festival might be diverted from FAN facilities, it would be better to have official government representatives of CERCONA making such determinations.

#### 16. Benefits to Local People

Nearly all park personnel are hired from the Santa Cruz Department. Few of the guards, however, are from communities bordering the park. However, local communities appear to benefit from the increase in tourist trade, the increase in business associated with movements of park personnel, and the purchase of goods and services. Local communities do not appear to suffer from the presence of the park, with the exception that Pimentiera is no longer allowed to do commercial fishing in the river. FAN commonly hires laborers from Pimentiera, the nearby community in Brazil, and also purchases food and fuel there. When large shipments of food become available in Santa

Cruz (as through PL 480), CERCONA will truck and boat the food to its sites, going around the north end of the park; otherwise, CERCONA officials report that provisions have been made for park guards to purchase food locally (but see equipment, below). CERCONA guards have transported ill individuals in CERCONA boats and trucks, and CERCONA maintain employees in Saint Ignacio and Piso Firme.

In general, local communities appear to benefit at least a little from park activities. This is a component that could be strengthened with beneficial, long-term effects for the park.

## 17. Budget

The locally provided budget for 1993, given to CERCONA through CORDECRUZ, is about US\$ 138,000. This is used to support personnel in Santa Cruz, San Ignacio de Velasquez, and employees at various guard stations throughout the park. It also covers travel and per diem, rentals, phone, light, insurance, maintenance of three vehicles, gasoline, and building repairs. It is worth noting that the Senate Commission report characterized the CERCONA budget as being nearly half spent in maintaining the distant offices in Santa Cruz and San Ignacio, with only 50% of the funds actually reaching the park. These, in turn, must be spread over the approximately 90% of the park area directly administered by CERCONA. (An earlier tranche of about US\$ 110,000 was provided for construction of CERCONA guard camps at Los Fierros, Mangabalito and Pauserna, through PL 480, in cooperation with USAID. These funds also were utilized to equip the camps with radios, refrigerators, stoves, boats, gloves and hard hats.)

The FAN budget for 1993 is on the order of US\$ 100,000. This is primarily used to support the base camps at Flor de Oro and the Mouth of the Pauserna River. These two areas account for about 10% of the land area of the park. This budget include some moneys from USAID and The Nature Conservancy through the Parks in Peril Program. Under the Enterprise for the Americas Initiative, an additional US\$ 50,000 is going to FAN to support the herbarium work of Tim Killeen, with the Missouri Botanical Garden. USAID/Bolivia has provided a grant to The Nature Conservancy for short term technical assistance, also handled through FAN.

## 18. Maintenance

The situation is very clear: facilities and equipment maintained by FAN are maintained very well, and those maintained by CERCONA are maintained very poorly. At three CERCONA sites, we witnessed as out-

of-service with no scheduled date of repair three boats, one water pump, and one generator (which left its associated water pump broken). At one CERCONA site, we were asked to fly out the water pump because with the boat out of service, there was no way to get the pump to shop. On five CERCONA guards, we saw the following evidence of uniforms: two hats, one shirt, and one pair of pants. At two FAN sites, we saw three working boats and uniforms for all guards. At Flor de Oro, all the facilities appeared to be working.

Poor maintenance of facilities leaves park personnel isolated, and persistent mechanical problems erode morale. The CERCONA guards we saw were visibly pleased to see the Interim Director present at there sites and concerned about there situations.

## 19. Personnel

CERCONA presently has 14 park guards, 2 secretaries, 1 accountant, and the Director, for a total of 18 individuals. The number of employees was considered inadequate by many of the persons interviewed. Because of the relatively harsh environment, safety precautions would require a minimum of three guards per existing station. This would permit two to patrol together, having a backup in case one is injured or equipment fails. The other would maintain the camp and radio contact. Infrequent short training courses have been held. The present Director considers his staff member opinions to be very important.

FAN currently has a staff of 10 people in the park, including 6 guards and a cook. FAN has organized training courses for these and other park guards during the past two years, and has sent at least one person (the Director of Amборо NP) to a Spanish-language Wildlands Training Course held annually at Colorado State University.

## 20. Equipment

CERCONA: Vehicles, 3 (Santa Cruz, Los Fierros, Piso Firme); boats 6 (3 launches, 1 large boat, 2 outboards [out of service]); airstrips at Mangabalito and Florida; housing at all sites (that observed at Los Fierros, Mangabalito, and Pauserna was comfortable and serviceable), uniforms, ? (most are apparently old, worn out, and/or discarded), radios working at every site, and first aid kits unknown (but not present at Los Fierros). Los Fierros guards commented that a motorcycle would facilitate there activities.

FAN: boats, 3 launches observed at two sites; airstrip at Flor de Oro; very commodious housing for personnel and tourists at Flor de

Oro, and housing comparable to that of CERCONA sites at Boca de Pauserna; uniforms for guards; working radios at both camps; first aid kits with anti-venin present at both camps.

No one challenges the fact that FAN is better equipped and maintained than CERCONA. Securing funding for equipment, and efficient conversion of the funding into equipment, is a skill at which FAN excels, and which can be turned to benefit throughout the park.

## 21. Role of External Support

Individuals interviewed generally believed that external support will be necessary for the next five years or so to get the park fully staffed and operational. They recognize the dangers inherent in dependency created by outside funding sources, as well as possible moral obligations also involved. One interviewee indicated that conditions attached to outside funding sources can be really helpful by bringing problems needing immediate resolution to the attention of the national government. Nearly all agreed, though, that in the long term, the Government of Bolivia will need to bear the responsibility for management and administration of the NKMNP. Once an adequate infrastructure is in place, though, some of the park costs may be offset by reinvesting monies earned through such things as nature tourism and certain user fees.

One potentially good sign for the future of NKMNP is the fact that it has been identified as one of nine priority Bolivian protected areas being considered by the authorities of the National Environmental Fund (FONAMA) under the Biodiversity Conservation Project. FONAMA handles most outside funding sources such as those coming from debt swaps, the Global Environmental Facility, and bilateral aid missions. FONAMA is presently establishing a fund, with a principle investment of some US\$ 35 million. Interest and investment gains from that fund will potentially be used to work with all institutions involved with park management.

## 22. Oversight

In general, FAN has a very strong administrative presence at its sites, and CERCONA has a very weak administrative presence at its sites. FAN employees are guided by weekly activity plans, which are developed by the guards themselves, and cleared or modified by the Santa Cruz office. FAN activities are planned within a monthly budget originating in the Santa Cruz office. Although the system does not nest management activities within the context of more long-term planning, the system does involve all levels in park management,

providing for a system enlightened by on-the-ground experience and for obvious benefits to morale.

Perhaps CERCONA's strongest accomplishment is the construction and outfitting of 4 camps, and maintaining a presence of 14 guards in the camps. However, oversight has been minimal, and guards do not have any sort of guidance from a plan related to park policy. Although this places the guards in the position of deciding largely for themselves what activities should fill every day, it does not give them input into long-term planning that will accomplish the goals of park management.

#### SYNTHESIS OF MANAGEMENT EFFECTIVENESS

Proper management of NKMNP will require a cooperative effort that makes the best use of each organization's strengths, and marshals support to compensate for respective weaknesses. To date, the main institutions involved in management of NKMNP have been CERCONA and FAN. Below are described the strengths and weaknesses of these two organizations in the context of management of the park. Some of these qualities are properties of the particular institutions. However, some are properties of any NGO or any government entity, and should be considered in reorganizations of park management structure that may be implemented in the future.

CERCONA has been very successful in establishing a presence in the park, thereby sending a message to those who would exploit resources there that NKMNP is a protected area. CERCONA has built adequate housing and has kept it staffed with park guards, and it has marked the park boundaries in most places where obvious physical boundaries are not present. Beds for visitors are available in its camps, and although the facilities would not be plush even if fully functional, they are comfortable and may serve to make the park accessible to a broad economic spectrum of visitors, including many Bolivians for whom a stay at Flor de Oro would be too expensive. Through its Board of Directors, CERCONA has established a structure for securing guidance on park management from relevant authorities. This includes the presence on the Board of a representative of the Civic Community of San Ignacio, which represents communities around the park. Finally, CERCONA, as an institution appointed by CORDECRUZ expressly for the purpose of managing the park, is in the best position to represent the policies of SENMA and CORDECRUZ and to enforce park rules and regulations.

CERCONA has not demonstrated a capacity for a number of aspects of park management. Some of this could change under the influence of CERCONA's new director, but it is still necessary to identify these institutional weaknesses so that they can be targeted for improvement.

Although guard stations have been manned, they have not been adequately maintained, and guards have not received adequate support or training. CERCONA guards have not been able to perform wide-ranging patrol duties. Short-term planning has not spoken to the long-term goals of park management, and park guards are without sufficient guidance. CERCONA has not engaged in any fundraising activities that we were able to discover, and this has been criticized at many levels. Finally, coordination of activities with FAN has not been sufficient to make best use of the experience and capacity available there.

FAN has become a fairly high-profile recipient of international funding, and it excels at fundraising activities. FAN places a strong emphasis on the value of nature tourism, and it apparently has a good feeling for appropriate subjects for environmental education and nature interpretation. FAN organizes frequent training for its staff and makes them a part of planning for site management. Through its fundraising activities, FAN has secured sufficient resources to improve and maintain in excellent condition its facilities and equipment. FAN has encouraged its guards to perform enforcement duties sanctioned by CDF, and has identified incursions into the park by loggers.

FAN is not an appropriate enforcer of government policy in NKMNP. Although it has assumed this responsibility with the authority of CDF, in the long term it will not be possible for FAN to avoid at least an appearance of conflict of interest in interpretation and enforcement of park regulations. Also, because FAN has not been made a part of a government planning process, its activities, although well-organized, have not been part of a long-term plan for management of NKMNP. FAN, too, has not coordinated its activities sufficiently with government agencies involved in NKMNP and Amoro NP.

#### MANAGEMENT ALTERNATIVES

The administrative organizations under which national parks are managed vary from country to country. Some countries have retained the same basic pattern for many years while others change patterns frequently, adapting to evolving circumstances. No standard model exists. Each nation, with its own cultural adaptations, and its own particular constraints, must seek its own "correct" solution. No one is necessarily right or wrong.

Several possible options were considered for NKMNP, and four are discussed below with consideration of some of their possible advantages and disadvantages. The options are derived from wide ranging discussions during the interviews. Very few persons advocated the more extreme alternatives, although strong feelings were evident for both.

The options considered were: (1) No change, (2) Government Focus Option, (3) NGO Focus Option, and (4) Government/NGO Cooperation Option.

1. No Change

Advantages

No change would be the least disruptive way to continue management of the NKMNP. Respective roles of CERCONA and FAN would continue in place, and employees would not note significant changes in the way they currently perform their tasks.

Disadvantages

The NKMNP would increasingly be perceived as two distinct parks with probable growing disparity between the facilities, equipment, and responsibilities of CERCONA and FAN. Conflicts over park management would likely intensify. The park, as part of the Bolivian national patrimony, could be put at risk because of increasing focus on only certain aspects of park management and at only certain sites.

2. Government Focus Option

Advantages

Giving the entire responsibility for management and administration of the NKMNP to CERCONA would be in keeping with a primary obligation of a government authority to serve as a guardian of national patrimony. Appropriateness of law enforcement functions and resource protection would be unquestionable.

Disadvantages

Loss of a significant role for FAN in the NKMNP would mean loss of a highly motivated and efficient collaborator. The ability of the governmental authorities to maintain adequate budgets needed for the ongoing management and development of the park has not been demonstrated by past actions.

3. NGO Focus Option

Advantages

Giving the entire responsibility for management and administration of the NKMNP to FAN would probably result in immediate, short term increases in infrastructure, especially in those areas of the park where nature tourism

has greatest potential. FAN's proven record in attracting funding, building and maintaining facilities, and keeping equipment operational, has clearly made it stand out from CERCONA. Even though FAN has only been actively responsible for about 10% of the land area of the park, that is the most highly visible portion. The well run and functional conditions in Flor de Oro can readily suggest to the casual observer that FAN would be the best management entity for the park.

#### Disadvantages

Bolivian legislation clearly indicates that national parks are to be representative samples of the national patrimony. The long term care of this natural heritage, in the Review Team's opinion, does not belong under the control of a private sector NGO. Priorities and individuals in a NGO are likely to change even more rapidly than government agencies. An NGO, such as FAN, may have specialized skills or interests, such as nature tourism, which could lead to development of that facet of a park, at the expense of others.

#### 4. Government/NGO Cooperation Option

##### Advantages

Closely linking a government management authority for the NKMNP with an active and viable NGO offers the potential of bringing the advantages of each to the good of the park. National government interests, on behalf of Bolivian society as a whole, are not compromised. At the same time, the flexibility and special talents of the NGO can be productively brought to bear on park needs. While this may include the NGO playing somewhat of a "watchdog" role over the government agency, it also includes the opportunity for an independent entity to lobby on behalf of that agency for annual budget appropriations.

##### Disadvantages

The disadvantages inherent with either option focusing on just the government or the NGO tend to be mitigated by building on the strengths of each. One disadvantage of this option is its dependence on personalities in both organizations to productively work together. In addition, it is more complex than a single management entity, and therefore requires clearly specified roles for each.

In the Review Team's opinion, the most viable option is number 4, a variation of the present situation, but with more clearly specified functional roles for each entity (see Recommendations). This will allow maximization of the capacity that each entity has to offer, and will provide for appropriate, national stewardship of the patrimony of NKMNP. The majority of the persons interviewed also believed in the probable success of the fourth option. And, more importantly, they indicated a willingness to make it work.

## RECOMMENDATIONS

1. The Role of Central and Regional Government Authorities: The primary responsibility for administration and management of NKMNP should rest with the GOB authorities in charge of parks and protected areas.

a. To the extent that Bolivia's policy of decentralization of government activities requires regionalization of authority for administration and management of NKMNP, this responsibility should be vested in a regional park authority guided by, and acting within, the policies of the National Environmental Secretariat (SENMA). Presence of a park authority will assure that there is one, clearly-recognized head of park administration and management. To date, the regional park authority has been CERCONA, and it is recommended that CERCONA, or a CERCONA-like entity, fill the role of park authority for NKMNP. It is recommended that the regional park authority have a Director whose primary responsibility is management of the park through implementation of policies and directives of a Board of Directors, acting within the policies of SENMA. In keeping with the findings of the February 1993 findings of the Bolivian Senate Commission on Ecology and Environment, the regional park authority Director should strive to focus at least 75% of the annual budget of NKMNP on work in the park itself as opposed to the current 50% going to the offices and personnel in Santa Cruz and San Ignacio.

b. Park management attributes that should belong to the regional authority for NKMNP management and administration include:

- i. Responsibility for a general management plan for NKMNP developed in cooperation with the CORDECRUZ Department of Natural Resources, including zoning and development of all management functions;
- ii. Natural resource protection functions for entire park, including enforcement of regulations governing legal uses of the park, certification of park guards, and maintenance of

- park guard facilities and infrastructure;
- iii. Oversight and approval of all park activities;
- iv. Management of natural resources of NKMNP;
- v. Monitoring of natural resources and of the effects of park programs designed to implement park policies and the park management plan.

c. The Board of Directors of the regional authority for NKMNP should be constituted based on the experiences of CERCONA. This proposed restructuring would help implement a primary recommendation of the 1993 Senate Commission Report, which suggested immediate action to restructure the Board. It should include representatives of the following bodies, at least:

- i. CDF (non-voting member)
- ii. The Civic Association of Saint Ignacio (which represents communities bordering the park);
- iii. Fundacion Amigos de la Naturaleza (FAN);
- iv. CORDECRUZ;
- v. CODEMA and/or SEDEMA
- vi. FONAMA
- vii. Other entities with relevant expertise or interest.

It is recommended that CDF be present only as a non-voting member; because CDF derives income from concessions in the land it controls, there is the potential for conflict of interest between CDF's forest management objectives and national conservation objectives important in NKMNP. At the same time, interaction between the CDF and the regional park authority is anticipated, and coordination will be valuable, particularly as it relates to buffer zones around the park. It is suggested that a representative from CODEMA or SEDEMA chair the Board of Directors, as the mandate of these bodies is more consistent with the goal of preservation within the park than that of the former institutional chair, CORDECRUZ. The presence of the Santa Cruz Mayor's Office and Zoo on the Board may be unnecessary, especially considering its relative lack of participation at Board meetings during the past year.

d. The Director of the regional park authority should:

- i. Provide yearly progress reports to the Board.
- ii. Prepare yearly operational plans for Board approval.
- iii. Implement directives and policies of the Board.
- iv. Supervise park guards and park activities.

v. Solicit and coordinate feedback from park personnel, and incorporate it into yearly operational plans to improve park management.

2. NGO Involvement: Responsibility for certain aspects of management of national parks in Santa Cruz Department, and probably others in Bolivia, should be vested in formal, fixed-term, and renewable agreements with appropriate NGOs.

a. In the case of NKMNP, FAN has undeniably valuable experience and should participate in park management within the policies and directives of the regional park authority and SENMA.

b. For NKMNP, responsibilities that should be vested in FAN, and for which FAN has a demonstrated capacity, are:

- i. Development of a visitor use program, including nature tourism activities. These should be developed in accordance with a general park management plan and in cooperation with the GOB authorities in charge of parks and protected areas, whose local representative is the regional park authority. In keeping with its status as a non-profit organization, profits derived from FAN's nature-tourism activities would be appropriately invested (in descending order of priority) in maintenance of FAN tourist facilities; NKMNP infrastructure, including that needed for priority sites which may presently be unassociated with FAN (radios, boats, generators, park airplane, vehicles, etc.); community development around the NKMNP; and other Bolivian parks.
- ii. Environmental education for local communities, school groups, and other Bolivian citizens, and park interpretation for visitors.
- iii. Training of park authorities in cooperation with the regional park authority and SENMA. This would include periodic training courses for all park guards and administrators and less formal training pertinent to issues that arise in the course of park management.
- iv. Fundraising for special projects, including (as appropriate) those falling under the responsibility of the regional park authority, those that are a collaboration of the regional park authority and FAN or other NGOs, and those that fall under the responsibility of FAN.

3. Concept of One Park: Above all, the concept of one park, guided by a single government authority acting within the provisions of

national laws and regulations, and making use of all resources available to it, including national and international NGOs, local communities, universities, and international donors should be fostered and reinforced. Specific recommendations pertinent to this goal include:

- i. Upgrading park guard facilities currently maintained by CERCONA to a level of parity among sites, insuring an appropriate level of comfort and safety for park guards, and fully supporting the responsibilities of their employment. While current housing facilities in CERCONA sites are judged adequate, provision of boats, motors, water pumps, generators, uniforms, and improved provisions for maintenance of these items, is imperative.
- ii. Once sites have been improved as suggested in (i) above, rotation of park guards through the different park facilities will insure a sense of equality among guards.
- iii. Ongoing training activities for all park guards as a cooperative effort among all participants in park administration, especially the regional park authority and FAN.
- iv. Enunciation of the responsibilities of different park personnel, with clear explanation of how different positions are to facilitate and support each other. In particular, it is strongly recommended that only those park guards who are employees of the regional park authority be vested with the responsibility of enforcing park policy and policing the park, and of managing park resources in the interest of the people of Bolivia. Park guards who are employees of the regional park authority should share with personnel employed by FAN the responsibility for environmental education and park interpretation. Government guards should rely on FAN personnel for support in their responsibilities, especially in environmental education and interpretation, and FAN personnel should rely on government guards for support in their activities, especially where interpretation of park policy is an issue.

4. Training: The importance of ongoing training of park personnel cannot be understated. Training creates and maintains in park personnel the ability to function properly as stewards of Bolivia's natural heritage. It also boosts morale by reinforcing each employee's position as an integral and valuable part of park management. In addition to training courses offered by FAN, international training courses may provide important experiences for key personnel. A number of international training opportunities exist,

including those at CATIE (Tropical Agronomic Center for Research and Education (CATIE) in Costa Rica, the Organization for Tropical Studies (OTS) in Costa Rica, the International Institute for Tropical Forestry (IITF) in Puerto Rico, and degree training at universities. In particular, GOB should consider sending a representative to the annual Wildland Management Training Course, held (in Spanish) at Colorado State University in Fort Collins, Colorado in 1993, to accompany the individual being sent by FAN. Training through such courses might be an appropriate opportunity through the soon to be launched "Sustainable Forestry Management Project" of USAID.

5. Cooperation with International Donors, National and International NGOs, and Other Institutions: The GOB should be ready to interact with many institutions to obtain the best park management. The government must be prepared to generate adequate resources to fund activities falling under its responsibilities. To the extent that financial resources may prove to be limiting, collaboration with other institutions to obtain funds, leverage funds, or complement activities is highly recommended. Even when levels of funding appear adequate, it is recommended that opportunities be sought to cooperate with other institutions to avoid overlap and increase efficiency. Possibilities include:

- a. Cooperation with FAN, which has proven ability in generating international funding, to generate funds for site improvement, etc.
- b. Cooperation between CDF and IBAMA, the Brazilian institution in charge of natural resources, to manage and conserve resources on the national border with Brazil. A starting point for this cooperation could be IBAMA's ongoing work in turtle conservation, in the area of NKMNP, and it might be expanded to joint patrols along the common international border to control illegal logging.
- c. Cooperation between FAN and FUNATURA, a somewhat comparable Brazilian NGO, could be a natural complement to the intergovernmental cooperation envisioned above.
- d. Cooperation with local communities, including employing local citizens, both Bolivian and Brazilian, for short-term work in the park. It is especially important to foster a presence of park personnel in nearby Brazilian communities through the purchase of equipment and supplies, to engender support of the park among these communities.
- e. Research in the park will be of two kinds, basic and applied,

implemented by researchers operating with external funds or with funds from the GOB. Interaction and cooperation with researchers is vital to management of biological resources in the park, and the GOB should be ready to draw on the experiences of NGOs, universities, and other institutions for advice in this area.

APPENDIX 2  
QUESTIONNAIRE

Wetterberg/Rieger  
Bolivia May 1-13, 1993

EVALUATION OF ADMINISTRATION AND MANAGEMENT EFFECTIVENESS  
Noel Kempff Mercado National Park

Individual Interviewed:  
Institution/Organization:

Date:  
Location:

1. MANAGEMENT OBJECTIVES (OBJETIVOS DE MANEJO DEL AREA)

Written in establishment law or management plan? Why does NKMNP exist?  
Is there a strategy statement? How do activities reflect the strategy?  
Annual work plans?

2. LEGISLATION (LEGISLACION)

National law, Decree? Regulations? Enforced evenly? Special  
situations regarding regulations?

3. RESOURCE INFORMATION (INFORMACION EN CUANTO A LOS RECURSOS)

Inventories of mammals, birds, plants, invertebrates? Maps of  
vegetation, geology, soils, topography? Climatic data? Hydrological  
data? Aerial photos? Bibliography?

4. ECOLOGICAL INFORMATION (INFORMACION ECOLOGICA)

Wildlife population dynamics, species status and trends, predator-prey  
relationships, disease, succession, fire history and effects.

5. WATERSHED MANAGEMENT (MANEJO DE CUENCAS HIDROGRAFICAS)

Park protect watersheds important for drinking, irrigation, flood  
control, fisheries? Levels of manipulation through channelization,  
check dams or others.

6. GENETIC RESOURCES (RECURSOS GENETICOS)

Plants or animals of known medicinal value? Does their existence  
affect management decisions?

7. MANAGEMENT PLAN/ZONING (PLAN DE MANEJO/ZONIFICACION)

Approved Park Management Plan? Being implemented? Not needed?

8. BOUNDARIES (LIMITES DEL PARQUE)

Physically or narratively defined? Just in key areas? Needed?  
Ecologically sufficient relative to species ranges, watersheds?

9. RESOURCE PROTECTION (PROTECCION DE LOS RECURSOS)

Exploitation? Grazing, logging, animal poaching?

10. RESEARCH (INVESTIGACION)

Basic and applied which contribute to management needs? Use fees?  
Facilities?

11. FORMAL EDUCATIONAL USE (USO PARA EDUCACION FORMAL)

Facilities for local/national educational institutions? Incentives?

12. INFORMAL EDUCATION (USOS EDUCACIONALES INFORMALES)

Brochures, maps, trails, guides, visitor centers?

13. TOURISM (TURISMO)

Facilities adequate or needed? Transportation to Park?

14. POLITICAL SUPPORT (APOYO POLITICO)

Central Government committed? Regional, local support?

15. LOCAL PARTICIPATION (PARTICIPACION LOCAL)

Local advisory committee? Mechanisms for using local recommendations  
and dealing with disputes?

16. BENEFITS TO LOCAL PEOPLE (BENEFICIOS A GENTE LOCAL)

Employed as guides, park guards? Local economy improved by Park?

17. BUDGET (PRESUPUESTO)

Sufficient to attain objectives? Locally provided or dependent on  
outside sources?

18. MAINTENANCE (MANUTENCION)

Equipment, facilities?

19. PERSONNEL (PERSONAL DEL QUADRO)

Sufficient number? Adequately trained? Feedback mechanisms to Park management based on their experiences? Incentives? Administration stands behind staff?

20. EQUIPMENT (EQUIPAMENTO)

Vehicles, boats, airstrips, housing, uniforms, radios, first aid?

21. ROLE OF EXTERNAL SUPPORT (PAPEL DE APOYO EXTERNO)

Requested or needed? Long term implications for autonomy of Bolivian Park management?

22. OVERSIGHT (PAPEL DE LA OFICINA NACIONAL)

Checks and balances to make sure activities accomplish intended goals? Use of staff in problem solving and decision making?

COMMENTS (COMENTARIOS)

APPENDIX 3  
PERSONS CONTACTED

A. USAID

Dr. Michael Yates  
, Natural Resources Advisor  
Ing. Jorge Calvo, Environmental Specialist  
William Baucom, Director, Office of Agriculture and Rural  
Development

B. U.S. Peace Corps

Diane Hibino, Director of Programming and  
Training  
Alice Woods, Peace Corps Volunteer, NKMNP

C. Bolivian Government Authorities

SENMA (National Environmental Secretariat)  
Dr. Mario Baudoin, Director

CORDECRUZ (Corporacion de Desarrollo de Santa Cruz)  
Ing. Jaime Suarez Mendez, Director of Unit of Planning  
and Projects\*

CERCONA

Esteban Cardona, Interim Director\*  
Nestor Ruiz Ibanez, former Director\*  
Carlos Rober Sanchez, Park Guard\*  
Ignacio Gomez Pena, Park Guard\*

CENTRO DE DESARROLLO FORESTAL (CDF)

Ing. For. Maximo Vera Maza, Chief, Department of  
Forests\*

D. Bolivian Non-Governmental Organizations

FAN (Fundacion Amigos de la Naturaleza)

Hermes Justiniano Suarez, Executive  
Director\*  
Abel Castillo  
Jesus Antelo Roman, Guardeparque Flor de Oro\*  
Arturo Figueroa, Guardeparque Flor de Oro\*  
Armando Pena Vacdiez, Guardeparque Flor de Oro\*  
Roger Gomez Parada, Guardeparque Flor de Oro\*

FONAMA

Carlos Arce, Acting Director of Enterprise for the  
Americas

Dr. Curry, GEF biodiversity project

PL 480

Luis Jordan, Technical Director  
Carlos Murillo  
Juan Carlo Rodriguez

UNIVERSIDAD GABRIEL RENE MORENO

Dr. Alfredo Perez\*  
Dr. Alberto Vazquez E.\*

ESTANCIAS EL CARMEN

Dr. Alberto Vazquez E., Gerente General\*

E. Others

MISSOURI BOTANICAL GARDEN

Dr. Timothy Killeen

UNIVERSITY OF CALIFORNIA, DAVIS

Dr. Scott Gardner, Department of Nematology

UNIVERSITY OF NEW MEXICO

Dr. Terry Yates, Department of Biology

WILDLIFE CONSERVATION SOCIETY

Dr. Andrew Taber, Pigs and Peccaries  
Specilist Group IUCN/SSC

INDEPENDENT CONSULTANTS

Hernan Torres, consultant to The Nature Conservancy

\* Indicates individuals who were asked to respond to the questionnaire.