

**INTERNATIONAL TROPICAL TIMBER ORGANIZATION
ITTO PROJECT COMPLETION REPORT**

TITLE:	BIODIVERSITY MANAGEMENT AND CONSERVATION IN A FOREST CONCESSION ADJACENT TO A TOTALLY PROTECTED AREA (NOUABALE NDOKI NATIONAL PARK), NORTHERN CONGO	
SERIAL NUMBER:	PD 4/00 Rev. 1(F)	
EXECUTING AGENCY:	WILDLIFE CONSERVATION SOCIETY	
HOST GOVERNMENT:	REPUBLIC OF CONGO	
STARTING DATE:	MAY 2001	
ACTUAL DURATION:	36 MONTHS (plus a no-cost extension of 6 month)	
ACTUAL PROJECT COSTS:	Source	Contribution in US\$
	ITTO:	1,022,084
	WCS :	1,822,222
	CIB:	479,014
	Govn't of Congo:	169,221
	Total cost:	3,492,541

PART I. PROJECT SUMMARY

1. PROJECT BACKGROUND

With private logging companies gaining the rights to harvest timber from most of the remaining Central African tropical forests, the economic advantages of opening previously remote forests must be weighed against the new threats to forest resources and wildlife.

While forestry concessions represent an important source of revenue for local and national economies through timber harvest and processing, they also provide indigenous peoples with the natural resources on which their livelihoods depend. In addition, many concessions contain high levels of biodiversity and/or encompass forest habitats critical for the conservation of threatened species, particularly great apes, elephants, buffalo and bongo. Therefore, forestry management systems must respond to the diverse needs of the local, national and international stakeholders. To be effective, they must also be applied over large spatial extents. This is particularly true where forestry concessions border protected areas with the specific goal of long-term forest ecosystem conservation.

Unfortunately, most logging companies have historically exploited timber with little regard to long-term sustainability, and therefore established few management strategies to cope with the pressures on forest resources and wildlife. Instead, increased access to previously inaccessible forests, population growth associated with company jobs and the resulting economic boom, generally increase bushmeat demand (Wilkie et al. 1992, Eves and Ruggiero 2000). The commercial bushmeat trade not only targets prey species, but also leads to an increase in illegal hunting and the trafficking of protected species and their trophies. Meanwhile, lack of dialogue between stakeholders coupled with poorly planned extraction practices may result in the disenfranchisement of local populations and unnecessarily high levels of damage to the forests on which both human and wildlife populations depend. When logging concessions adjoin protected areas, the potential for human encroachment and disturbance on the protected area is heightened.

An alternative scenario exists in which production forests are not only managed for sustainability of timber, but also managed for forest resources for local communities and conserve biodiversity and wildlife. Such a strategy would essentially enlarge the conservation estate by protecting viable animal populations, threatened species and biodiversity, while simultaneously meeting the needs of multiple stakeholders. This end could be achieved through the development of a multi-faceted ecosystem approach to tropical forest management that includes reduced impact forestry exploitation, land-use planning, wildlife management systems, and social programs. While management of production forests for forest resources and biodiversity has been recognized for some time, previously no field-based project had tested and implemented such a strategy in tropical forest.

The main objective of this project was to design, develop and implement such an approach to the management of a contiguous forest landscape in northern Republic of Congo. PD 4/00 (F) Rev.s 1, locally known as the "Project for Ecosystem Management of the Periphery of the Nouabalé National Park" (or its acronym "PROGEPP" in French) developed a new model of forest management that encourages the sustainable management of forest resources and conserves biodiversity and ecological processes (Elkan et al. 2005). The focal landscape consisted of the Kabo, Pokola, and Loundoungou forestry concessions adjacent to the Nouabalé National Park in the Republic of Congo (Figure 1).

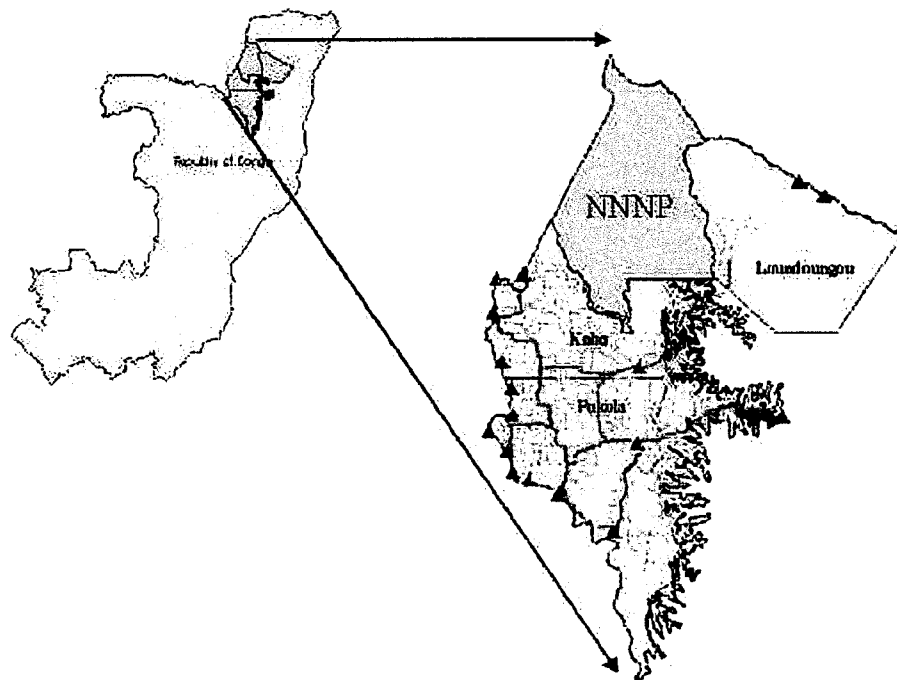


Figure 1. Map of focal landscape (3 forestry concessions – Kabo, Loundoungou, and Pokola) with logging road network representing one of many threats to the Nouabalé Ndoki National Park.

Specifically, this project aimed to create a managed buffer zone adjacent to the Nouabalé Ndoki National Park by promoting sustainable forestry and other land-use strategies throughout the region.

Expected outputs at the close of this project included:

- The establishment of a functioning project and management unit.
- The elaboration, adoption and implementation of a wildlife management plan.
- The elaboration, implementation and monitoring of a reduced impact forestry strategy throughout the concessions.
- The development of an alternative activities strategy and execution of pilot projects
- The development of an ecological and social monitoring program to provide direct feedback regarding management initiatives.
- The development and implementation of an environmental awareness campaign

The planned duration of Phase I of this project was three years (36 months), and the overall cost was anticipated to achieve 2,288,600, including an ITTO contribution of 1,022,084.

The complexities of successfully establishing an ecosystem approach to forest management underscored the importance of building collaborative relationships between multiple stakeholders. Thus, this project was initiated based on collaboration between three major stakeholders working in the region: 1) the Government of Congo, 2) the Congolaise Industrielle des Bois (CIB) logging company, and 3) the Wildlife Conservation Society (WCS). The three parties developed and implemented the project in direct consultation and collaboration with the local communities.

The Government of Congo established Nouabalé Ndoki National Park (NNNP) in 1993, and was interested in preserving this nearly undisturbed forest ecosystem while gaining revenue from the logging concessions surrounding the park. The park was, and is, managed under the collaboration of Wildlife Conservation Society (WCS) and the Ministry of the Environment and Forest Economy (MEFE) of the Government of Congo. CIB was granted commercial timber exploitation rights to the Kabo and Loundougou logging concessions adjacent to the NNNP in 1997, in addition to the Pokola concession which CIB has exploited since 1962. At the conception of the project, CIB had already demonstrated interest in developing a progressive forestry management plan and had entered into a planning process for each of its concessions that included biodiversity conservation, social and economic development objectives. It was our hope that this project would serve as a model for other logging concessions to assure both the conservation and management of biodiversity and the production of high value tropical timber in logging concessions throughout Central Africa.

Additionally, this project strongly converged with the goals of the National Forestry Action Plan of Congo (Plan d'Action Forestier Tropical) and the National Program of Environmental Action adopted by the Government of Congo. These plans require the commercial forestry sector to contribute to the national economy through the sustainable management of Congo's forests. The national Environmental Law 1991 outlines the need for sustainable and reduced impact forest management. This project recognized the need for sustainable economic development through reduced impact forest management practices and applied wildlife management to promote the conservation of biodiversity within production forests. The project objectives and activities were directly related to those outlined in the Forestry Code Decree N° 84/910 of 19/10/84 defining application of the Forestry Code Law 004/74 governing production forest use and management. In addition, the project pursues the same logic of sustainable use of forests and conservation of biodiversity outlined in Article 45 of Forestry Code Law N° 16-2000 du 20 November 2000.

2. PROJECT ACHIEVEMENTS

2.1 Outputs achieved

Output 1. Project coordination and management units are now operational.

A project management team was identified and put in place. Effective administrative, financial, and logistical management and monitoring systems were established. The infrastructure has been constructed and equipment and materials purchased and transported to the project base. All project employees were hired and trained to implement the aspects of the project for which they were retained. A steering committee consisting of representatives from each of the project partners has been established and multiple stakeholder meetings with representatives from CIB, MEFE, WCS and local communities are held on a regular basis.

Output 2. A wildlife management plan has been elaborated and implemented, though it still in the process of being formally completed and legally adopted.

In collaboration with local communities, MEFE, and CIB, a series of hunting and no hunting zones have been agreed upon across the concessions (Figure 2). Hunting rules and regulations within the zones have been established and will be legally adopted with the validation of the CIB management plan for each concession (Appendix 1). To assure that communities are aware of the hunting zones and to promote a better understanding of the

importance of sustainable wildlife harvest, protection of endangered wildlife species, and legal hunting techniques, a multi-faceted environmental education campaign was developed and implemented. Controlled hunts, based on a rotation of hunts to different areas within hunting zones to avoid over-harvesting, are currently organized and monitored by a joint WCS/CIB/MEFE team (PROGEPP 2005a). Together, these activities shift hunting techniques away from non-selective snaring toward more selective and sustainable practices. This shift towards managed hunting, including the creation of protected zones intended to serve as “source” areas to assure the recovery of vertebrate populations in neighboring hunting zones, was important as a basic step to improving wildlife management and providing protection for endangered species. Protected species such as elephants and gorillas are now commonly seen in many areas of the concession and along logging roads. Finally, law enforcement efforts, including a mobile brigade of Ecoguards directed by the Ministry of Forestry and Environment, enforces the national wildlife laws and local hunting restrictions.

Output 3. Reduced impact forestry techniques have been elaborated and are currently in the pilot implementation process (Desmet 2004a, 2004b, 2004c, Desmet and Paget 2004). As part of the elaboration of the RIL program, a GIS based planning process was initiated. Organized, spatially explicit forest inventories are currently being conducted prior to the commencement of logging activities. CIB has carefully evaluated the economic feasibility of adopting a full RIL program, and in response to economic and logistic constraints, has developed a stepwise approach to the full implementation of this program. A land cover map

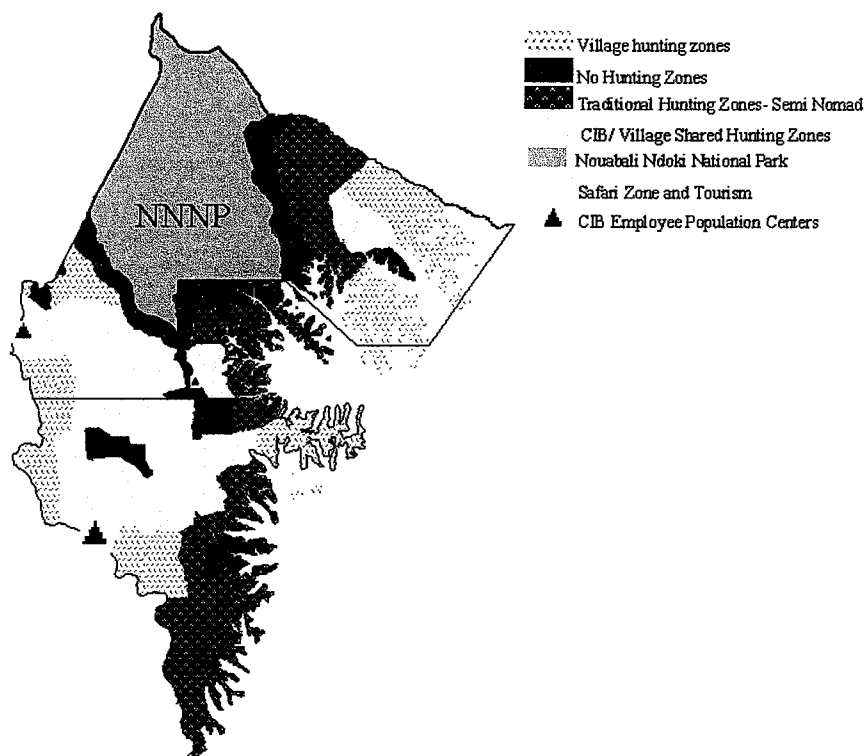


Figure 2. Map of hunting zones in the CIB concessions.



Figure 3. Example of land cover maps and ground truthing exercises conducted as a baseline for RIL planning. From work such as this, habitat classification maps have been created to inform management efforts throughout the region. Landsat-7 ETM+ mosaic: P182-R58 (2001-02-09), P182-R59 (2001-02-09), and P181-R59 (2001-11-12), RVB-543, • Selected sites, ? Sites visited in February 2002. Source: Laporte 2002.

was produced establishing a baseline for RIL and forest management planning (Fig. 3; Laporte 2002, Laporte and Lin 2002). CIB is currently completing management plans for each concession and is engaged in the FSC certification process.

Output 4. Alternative activity studies and pilot projects have been planned, designed and executed.

Management of animal populations and protection of wildlife results in a change in the livelihoods of local communities. First, in large, industrial towns, there may be inadequate protein sources, which cannot be provisioned in a sustainable and legal manner by bushmeat alone. Second, commercial hunting is prohibited, and local people who formerly made their living through hunting may no longer have a ready source of income. Note that both of these changes in livelihoods would likely occur in time, if wildlife were hunted in an unsustainable fashion. The alternative activity program targets solutions to these two problems by: 1) testing and promoting techniques or programs for supplying adequate protein to the major logging towns, and 2) by testing and promoting alternative revenue-generating activities as a substitute to commercial hunting (Annexe 3).

To increase the quantity of protein in large towns, PROGEPP undertook several different programs. A beef, chicken, and fish import and preservation system has been established in all major logging villages and is maintained by CIB. This included helping a local importer provision the villages with beef, chicken, and fish, and the purchase of refrigerator cars to preserve these foods. In addition, a series of fish ponds have been established by three farmers in Pokola. These programs have contributed significantly to the quantity of protein available in logging towns, thus offering an alternative to bushmeat.

At a smaller scale, PROGEPP has experimented with several animal husbandry projects, including raising snails, guinea pigs, chickens, and rabbits as a means of determining the techniques that may be appropriate to transfer to local people. Because guinea pigs and snails are not readily available in the zone, taste tests were conducted. The results of the tests suggest that local people would consume these species if they were available. While the snail project has not yet reached a level at which it can be transferred to local people, several villagers have been trained to raise guinea pigs, and have been given several animals. The first attempt at importing chickens proved to be expensive and many chickens were lost because of the lack of proper care by the local people who received the chickens. This activity will be tested again, but in the meantime PROGEPP concentrates on vaccinating local chickens to decrease their susceptibility to pathogens. In addition, the project provides fishing equipment (nets, hooks, and line) to local fishermen at prices paid in Brazzaville and Douala, rather than the higher local prices. The supply of less expensive fishing materials is meant to encourage fishing over hunting, with the assumption that fishing is more sustainable in the long run.

Output 5. A research and monitoring program consisting of ecological, socio-economic and law enforcement components has been designed and implemented throughout the concessions (PROGEPP 2005c). These monitoring programs are intended to serve as the feedback mechanisms by which all management initiatives are evaluated and adapted.

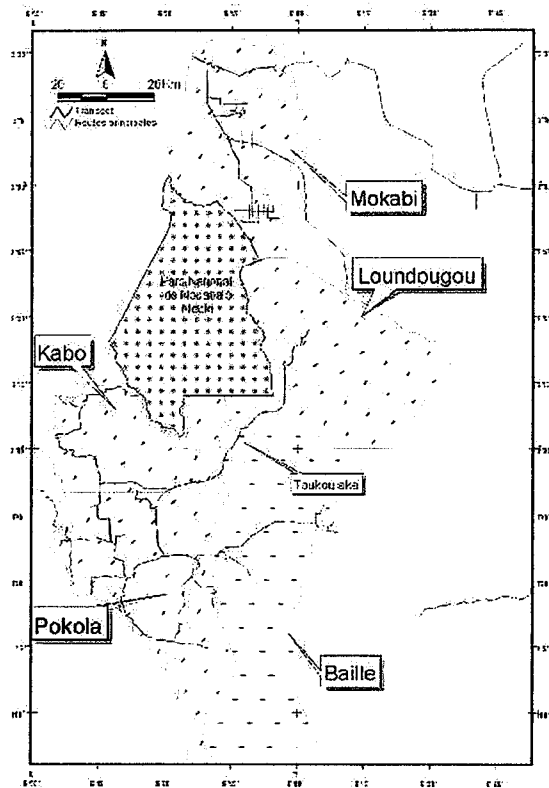
Ecological research monitoring systems consist of several components. 1) Bi-annual monitoring of large mammal populations via a system of recces and line transects. Monitoring of animal populations serves as an early warning system should wildlife populations be negatively affected by habitat degradation from logging or increased intensity of hunting (Figure 4). 2) A series of permanent transects and vegetation plots have been established to monitor the potential effects of logging and hunting on vertebrate communities and to monitor potential changes in habitat or resource availability that may be associated with any observed changes to animal populations (Figure 5). 3) Forest clearings (bais and yangas), believed to offer critical mineral, food and water resources to many animal species are monitored for animal activity.

The socio-economic research and monitoring program also consists of several components (PROGEPP 2005b). 1) An annual census of villages located within CIB logging concessions detects changes in demographic pressure and population structure of communities. The data also guide the environmental education and alternative activity programs. 2) Study of bushmeat entry into villages across the logging concessions monitors changes in hunting pressure with changes in village size and demographic structure. 3) Surveys of household food consumption and preference monitor bushmeat consumption vs. the use of alternative protein sources in village homes. These data guide alternative activities projects to meet the changing needs of local populations. PROGEPP is currently working to establish a research and monitoring program specific to the traditional inhabitants of the CIB concessions. To serve as a foundation for this program, two independent consultants were hired to conduct preliminary analysis of traditional land use practices and the current socio-economic context of these groups throughout CIB concessions (Pierre 2003, Leclerc 2003).



Figure 4 (right). Bi-annual monitoring of large mammal populations via a system of recces and line transects.

Figure 5 (left). Thirty permanent transects and vegetation plots have been established in the northern part of the Kabo concession and in the park to monitor the potential effects of logging and hunting on vertebrate communities, habitat change, and resource availability.



A Law Enforcement Monitoring system has been established throughout the region. This system uses standardized protocols (Jachman 1998, MIKE/CITES 2000, PROGEPP 2005c) to evaluate protection efforts across CIB concessions (Figure 6). Specifically, the program gathers and analyzes data on three principal parameters: 1) effort deployed in anti-poaching activities and wildlife protection (in terms of geographic coverage, number of personnel deployed and number of active patrol days); 2) indicators of illegal, poaching, activity (evidence of hunting camps, location of animal carcasses, snares etc.) and 3) results of enforcement activities (in terms of numbers of arrests, seizures of weapons, cable removal rates, illegal camp destruction, etc). These data are summarized on a monthly basis and transferred to all PROGEPP partners as part of a bi-annual reporting process.

2.2 Specific Objectives Achieved

The specific objective to “design, implement, and monitor the timber company and local community based ecosystem management systems in the contiguous Kabo- Pokola- Loundougou forestry concession adjacent to the Nouabalé Ndoki National Park” has been achieved, as indicated by the previously described project outputs. A management system designed to ensure the ecological integrity of both plant and animal communities inhabiting the logging concessions, as well as a sustainable forestry exploitation program (RIL) has been established (Desmet 2004a, 2004b, 2004c, Desmet and Paget 2004) and is being implemented. Management strategies developed as part of this project are currently being integrated into management plans for each of the logging concessions.

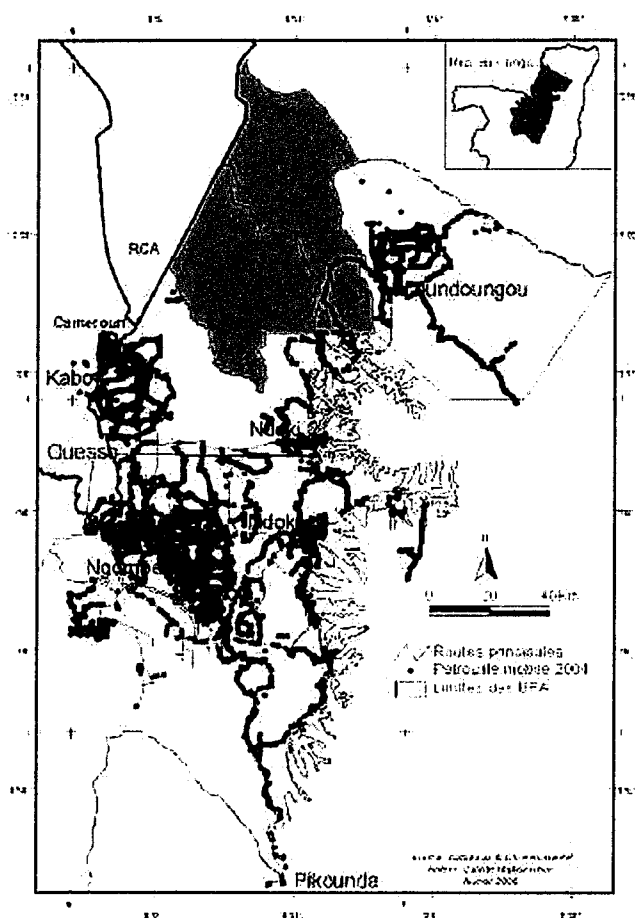


Figure 6. Map of patrols conducted between March and December 2004 as an example of the law enforcement effort and law enforcement monitoring.

2.3 Contribution to the Achievement of the Development Objective

The development objective to achieve the “conservation and management of biodiversity and production of high value tropical timber in a lowland forest concession forming a managed buffer region adjacent to the Nouabalé National Park, northern Congo” has been achieved. Success of the development objective is indicated by the preservation of the ecological integrity of the park, evidence of stable populations of threatened species in the concessions (Poulsen et al. 2005a, 2005b, 2005c, 2005d, Poulsen and Clark 2005 ; Figure 7), and reductions in illegal hunting. Captures of poachers and snares through law enforcement suggests only occasional hunting of protected animals occurs (in strong contrast to the pre-project situation and compared to other logging concessions (Ngombé and Mokabi) where enforcement has not been carried out). These improved situations serve as indicators that biodiversity loss associated with logging is being mitigated.

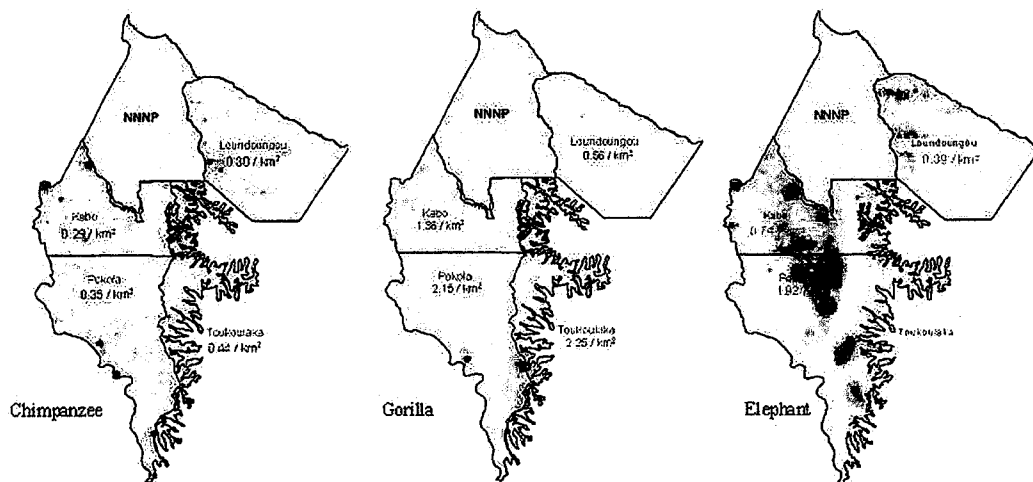


Figure 7. Interpolation of transect data in CIB logging concessions. Darker red areas represent regions of exceptional importance for each of the endangered species (chimpanzee, gorilla, and elephant) mapped above.

Importantly, the post-project landscape has drastically improved compared to the pre-project landscape in the following ways:

- 1) Commercial and illegal hunting of protected species, a serious pre-project threat to the region, has been minimized by a strong law enforcement program that ensures adherence to hunting regulations and Congolese wildlife laws by local people and company employees.
- 2) Alternative protein sources to bushmeat, completely absent in the pre-project situation, are now widely available in village markets.
- 3) Most members of the indigenous community have an increased understanding of the potentially negative consequences of unsustainable resource use due to awareness-raising campaigns and education, including the use of the CIB television station.
- 4) Hunter organizations now exist, and have facilitated the raising of awareness of hunting laws among hunters and the exchange of information concerning illegal hunting between the hunters and the project.
- 5) A formal management system exists to facilitate communications among the government, WCS, and CIB, and to assure that management strategies are officially incorporated into CIB interior regulations and management plans. Management plans will set the national standards for forest management and wildlife conservation in forestry concessions.
- 6) RIL norms have now been tested and established for all CIB concessions and are currently in the early implementation phase.
- 7) Set-asides of high biodiversity value areas in CIB concessions (Goualougou triangle, Djeke Triangle, Mombongo Bai Complex, and Bomassa Triangle) and the hunting zone system, which includes protected zones, guarantee areas where wildlife are nearly free from the threats of hunting. These zones serve as sources of game for zones where hunting is permitted.
- 8) MEFE is currently using project experiences to develop and adjust policy to promote similar management in concessions in Congo. The project is currently being replicated

in the Ngombé concession: an agreement between WCS and the IFO logging company was signed in February 2005.

- 9) Ecological, socio-economic, and LEM programs and databases are established and functioning. The resulting data provide information on human demographics, pressures on different forest areas, and large changes in animal abundance. These data are routinely used to adjust management strategy.

3. Target Beneficiaries Involvement

Beneficiaries of this project include the Government of Congo, the CIB logging company and their employees, the Nouabalé Ndoki National park, and local communities and indigenous forest peoples. The roles of each beneficiary in the implementation of the project were well defined at early stages of project initiation (Appendix 2). WCS was responsible for development and administration of overall project activities in collaboration with the MEFE, including supervision of conservation education, alternative activities, biological and socio-economic monitoring, and adaptive conservation programs. WCS also supported additional PROGEPP activities by locating and securing additional funding. Importantly, CIB financially supported wildlife protection by paying for Ecoguards and providing vehicles for the Ecoguard brigade. CIB also supported wildlife management by modifying its interior regulations and implementing disciplinary measures for violations of these regulations. The development of new interior regulations and disciplinary measures required discussions between WCS, MEFE, and CIB, and company employee labor unions (representing 1500 employees). Employee labor unions agreed to these regulations on the condition of development of alternative protein sources (beef importation, fish, and poultry farms) as a substitute for bushmeat. CIB then played a critical role in the development of the alternative protein source activities. CIB was also responsible for developing the RIL component of the project. The MEFE assigned law enforcement and protection personnel to the project, facilitated Ecoguard training, and oversaw law enforcement. Regular technical meetings among all collaborators helped coordinate efforts and increase government and local support. A steering committee provided a formal platform for information exchange, dialogue on management issues, and project coordination.

A conservation awareness campaign was the first step towards incorporating local communities into the implementation of the project. Over the course of the first two years, every village in the Kabo and Pokola concessions participated in awareness meetings and open discussions regarding project goals and objectives. Additionally, communities were incorporated into the establishment of a wildlife management through the demarcation of hunting zones. This plan was based on traditional community land tenure systems (Moukassa et al. 2001, PROGEPP 2005e) and was discussed with each community. Communities were also encouraged to organize hunting committees. Committees of five major and six smaller communities adopted regulations for community hunting zones. Hunting committees acted as focal points for resolution of wildlife management problems and were responsible for improving hunter respect of regulations (purchase of hunting permits, respect of zoning, collaboration with researchers monitoring off-take, etc...). Finally, all Ecoguards incorporated into enforcement efforts were recruited from local communities. They received training from the MEFE, Congolese military, and WCS staff. All wildlife management interventions and principles were communicated and discussed with communities prior to the implementation of enforcement efforts.

4. Lessons Learned

4.1 Development Lessons

Aspects of the project design that most strongly contributed to its success in achieving the development objectives include:

- Strong integration of government officials in the project validated the importance of the project, offered support at local and national levels, and assured that project goals matched government goals.
- Early development and clarification of the division of responsibility among all stakeholders prevented confusion and overlap between project partners.
- Integration of the private sector offered expertise and resources essential to project success.
- Shared responsibility among stakeholders helped to address the most complicated issues through an increased financial and technical resource pool and presented a “united position” often effective in dealing with some of the most socially contentious activities (i.e. controlling the commercial bushmeat trade).
- Formalized dialogue among stakeholders via regular meetings and the steering committee facilitated a willingness by all partners to appreciate the differing perspectives of other stakeholders.
- Basing wildlife management zoning on traditional territories reinforced traditional tenure systems.
- Integration of local communities into the establishment of hunting zones and the recruitment of Ecoguards and project employees from local communities were paramount to the success of the law enforcement and wildlife conservation component of this project
- The multi-faceted approach adopted for this project, which simultaneously developed education, wildlife protection, research and monitoring, RIL, and alternative activities was essential to gaining and maintaining local support during project implementation.
- The practical and adaptive field-based approach to developing alternative activities, education, and protection activities was essential to assuring local communities’ needs were identified and considered as the project developed.
- The large spatial scale at which the project was implemented strongly contributed to the success of protecting NNNP and conserving biodiversity over 1,800,000 ha of tropical forest.

Aspects of the project design that challenged or slowed project success included:

- The lack of a formal structure for conflict resolution given situations in which the stakeholders cannot reach an agreement occasionally slowed project advancement. Examples included the placement of timber company infrastructure (camps, sawmills, roads), where logistical and economic priorities of CIB contrasted strongly with either the development goals of the government or the conservation goals of WCS and the NNNP management.
- The lack of a formal organ for communication between community leaders and other parties initially slowed communications.
- Lack of a recognized regional development plan (national road placement, town development, etc.).
- Lack of defined buffer zone in areas immediately surrounding NNNP (following the decree creating the park) as part of staged peripheral zone approach to management

Changes in intersectoral links did not severely affect project success, partially because of the adaptive structure of the project design and the open dialogue among partners. Changes in the ministry officials working in the region occasionally set the project back, but were not serious obstacles in the projects success. Proposed intersectoral links between the partners and the safari and tourist sectors were never firmly established. The government of Congo suspended safari hunting in the region by confirming bongo as a protected species and banning it from safari hunting. Should safari hunting be reactivated in northern Congo, this will be a conservation challenge for the project in future years.

Additional arrangements that could improve cooperation between the relevant parties interested in the project include:

- Strengthening of community hunting and conservation committees could decrease village anxiety regarding changing wildlife policies and improve cooperation among local communities.
- Establish norms for the exchange of data and information, particularly regarding intellectual property rights, could facilitate even greater collaboration.
- Formation of a multi-agency task force (involving the project partners as well as other governmental departments concerned (planning, territorial development, health, tourism, etc.) to deal with conflict management regarding development of infrastructure (roads and camp placement) and reconciliation of biodiversity conservation and production forest objectives.

Factors with potential to affect project sustainability after completion include:

- Demographic growth through immigration of new employees and their families, job seekers, and merchants remain a constant challenge to the projects success and sustainability. Of particular concern is the immigration of foreigners (Congolese from RDC and Central Africans) who settle to exploit natural resources (wildlife, fish, forest resources) but have no long-term investment in the area.
- Nutrition of employee populations, specifically in the Pokola concession, and for inventory teams remains a challenge. Even well managed hunting cannot provide adequate protein for urban populations once they grow too large. Thus, the alternative activity aspect of this project must be further developed to assure project sustainability. Moreover, CIB must closely monitor and control hunting by its inventory teams in the field, particularly as they move into areas close to the Nouabalé Ndoki National Park.
- The government is not financially capable of completely supporting the costs of the enforcement aspect of this project should the private sectors and other non-governmental donors cease their financial support of these activities. The enforcement component of the project is critical to project success.
- Government employees still lack the necessary capacity to manage and monitor the project. Most government offices have rudimentary computer skills, little experience managing money and budgets, and little knowledge of wildlife management principles. Further, Government officers have not been stable in the project and may be moved to other posts with little warning, thus disrupting the continuity of the project.
- The development of national road No. 2 will connect CIB concessions to the Central African Republic. The completion of this route (scheduled for August 2005) will result in the movement of human populations across national borders. Enforcement of wildlife policy established by PROGEPP within CIB concessions will be difficult to enforce should residents of CAR become implicated in the traffic of bushmeat along

this road. Though strategically planned controls along the road would allow a mechanism by which bushmeat could be located and confiscated, law enforcement officials may find it difficult to prosecute poachers from other countries.

- The potential placement of a sawmill in the Loundoungou concession would result in the development of a population center. The addition of another large logging town will strain the manpower and financial resources available to protect the concessions from illegal hunting. The government of Congo may not be able to sustain the additional costs without international assistance.

4.2 Operational Lessons

4.2.1 Project organization and management

All aspects of the project organization and management were sufficient to assure project success. At project conception, the structural hierarchy for project staff had already been well defined. This proved to be important in clarifying the roles of each of the partners, especially regarding the approval and allocation of financial resources. Within the project, the designation of team leaders for each project section (education, alternative activity, research and monitoring, and law enforcement) guaranteed efficiency and clarity in execution of the work plan and facilitated a direct line of communication and coordination from the project direction to staff. This also led to development of personnel, planning, and budget management experience and skills amongst the team leaders.

4.2.2 Project Documentation

Documentation of the project protocols, agreements, and reports were developed in the early stages of project implementation to guarantee institutional memory. This was also a critical step in assuring the success of both developmental and operational goals. A strong internal reporting system led to clear communication between team leaders (education, alternative activities, research and protection) and the project direction. This also served as an important means of verification to assure village meetings, educational séances, and law enforcement missions were properly conducted and successful. Though these reports have not yet all been incorporated into a formal digital archive, they offer an important record of successes and failures of each aspect of project implementation and will serve as an important resource from which to draw lessons for better management. Formal reports to CIB and Government counterpart were completed at the end of important socio-economic and ecological studies (Box 1). Other means of documentation regarding PROGEPP activities can be found in the form of meeting minutes, photos, and video productions.

4.2.3 Monitoring and evaluation

Monitoring systems to examine the impact of the project on human and animal populations throughout the concessions were established as part of the research program. These monitoring programs are intended to provide a mechanism by which management initiatives can be evaluated and adapted as needed. Specifically, they offer immediate feedback regarding community attitudes and compliance toward project activities as well as examine the effect management activities have on wildlife populations. In addition to continuing ecological and socio-economic monitoring, evaluation systems for education and alternative activities are currently being established to assure the success of these efforts can be compared to a baseline. With these data, activities will be modified as necessary to meet project goals. More detail regarding the PROGEPP monitoring program have been offered in Output 5.

Box 1. List of Selected Reports and Publications resulting from PROGEPP activities during the first phase of this project.

- Elende A., Kimbenbe, B., Mavah, G. and Auzel, P. 2004. Données préliminaires sur les communautés semi-nomades de l'unité forestière d'Aménagement de Kabo.
- Elkan, P. et al. 2005. Management of bushmeat hunting in a timber forest concession Northern Republic of Congo. In *Emerging threats to Tropical Forests*. Eds. C. Peres and W. Laurence.
- Elkan, S. and Clark, C. 2005. Recommandations pour la protection et la gestion des clairières dans les concessions forestières au nord République du Congo.
- Laporte N. et Lin T. 2003. Stratification forestière de l'UFA Kabo, Pokola, Loundoungou.
- Leclerc, C. 2003. Un plan d'aménagement à l'échelle des groupes humains. Spécificités des communautés semi nomades. Périphérique du Parc National Nouabale Ndoki (Nord Congo).
- Makoumbou, C. 2004. Les clairières dans les concessions forestières de Kabo et Loundoungou.
- Mavah, G. 2004. Synthèse démographique des villages et campements de l'UFA de Kabo sur la rivière Sangha.
- Moukassa, A. 2001. Etude Démographique et socioéconomique dans la zone Périphérique du PNNN. Rapport pour PROGEPP WCS, CIB, MEF.
- Moukassa, A., 2004. Se nourrir dans un camp forestier : suivi de l'alimentation des ménages dans les sites forestiers de Kabo et Ndoki 2.
- Moukassa, A., and Elkan, P. 2003. Collaboration société forestière et ONG de conservation, un model de gestion de la chasse dans une concession forestière.
- Moukassa, A. and Kimbembe, B. 2003. Utilisation de l'espace forestier par la population des terres Mouzouvou (Nord Congo).
- Moukassa, A., Nsosso D, et Mavah, G. 2005. Occupation de l'espace forestiers par les communautes villageoises et semi-nomades dans les UFA Kabo, Pokola, Toukoulaka et Loundoungou.
- Makoumbou, C., Mavah, G. Ngouembe, P., and Kama, P. 2005. Monitoring de lutte anti-branconnage dans la zone peripherique au Parc National De Nouabalé en 2004.
- Pierre, J.M. 2003. Etude préparatoire au volet socio-économique des plans d'aménagements des UFA Kabo, Pokola, Loundoungou et Toukoulaka.
- PROGEPP. 2005. Recommandations pour l'elaboration d'un plan prealable a la mise en exploitation du Triangle de Bomassa par la CIB.
- PROGEPP. 2001. Proposition de zonage des UFA Kabo, Pokola et Loundoungou. Rapport pour PROGEPP – WCS, CIB, MEF.
- Poulsen, J., Clark, C., et Malonga, R. 2005. Recensement et distribution des grands mammiferes et activités humaines dans l'unité forestiere d'aménagement de Kabo, Pokola, Loundoungou, et Toukoulaka.

4.2.4 Quality of Project Planning

The success of this project can largely be attributed to the fact that WCS, CIB, and the government had already acquired years of experience working in northern Congo. For example, WCS was involved in the establishment and management of the Nouabalé National Park with the government of Congo since 1993. Research carried out by WCS and GTZ in the Republic of Congo had demonstrated the need for a community-based approach to wildlife conservation and forestry planning with involvement by the major stakeholders (CIB and the Government of Congo). And, the Nouabalé Ndoki Project (Ministry of Forestry Economy/Wildlife Conservation Society) and CIB have been involved in information exchange and discussion of forest management issues since 1994. Thus, the problems to be addressed and solutions to these problems were well planned and effectively implemented. The fact that there were few actors, and those present have a great deal of experience in the zone, facilitated clear dialogue and relationships. Steering committee meetings also assured that all project partners retained well-planned and critically evaluated annual activity plans.

4.2.5 Definition of roles and responsibilities of institutions in the project implementation:

As previously mentioned, the importance of creating clearly defined roles among institutions was, and remains, of critical importance to project success. The importance of this step can not be over-emphasized.

4.2.6 Actions taken to avoid variations between planned and implemented activities

Regular meetings, both among stakeholders and within individual organizations, facilitated the coordination of and planning of activities. Monthly, formal meetings between team leaders (education, alternative activity, research and monitoring, and law enforcement) and the project direction also proved to be an important avenue to develop work plans and assure the effective implementation of activities. These meetings also assured maximum coordination among teams.

4.2.7 External factors that influenced the project success

Regardless of the formalized planning mechanisms incorporated into all aspects of project implementation, project plans were sometimes derailed - usually by unforeseen situations such as changes in individual collaborators within partner organizations or the development of sensitive situations that required more attention than initially anticipated (e.g. increased Ecoguard training and discipline to ensure sound management). In addition, some projects required adjustments in planned activities or resource allocation in response to complicated management issues (e.g. alternative protein source development or increased patrols in zones with Congolese (RDC) poachers). However, the formal structure of dialogue between parties allowed a reasonable solution to be achieved as each hurdle was encountered.

Some of the more important lessons learned regarding the daily operations and management of the multi-faceted approach include the following:

- Close management of the protection teams was essential to preventing/ reducing employee corruption. Unsatisfactory job performance resulted in high turnover rates of Ecoguard staff (50%) during the first year of the project. Regular evaluations, punctual and clear disciplinary measures, and increased intensity of the training program (followed by regular in-service training), and internal objective monitoring mechanisms, have improved efficiency and overall performance.
- The careful planning of Ecoguard field programs was a pivotal factor in the successful management of these units. Work programs designed to maximize efficiency while simultaneously limiting officer fatigue were difficult to structure and sometimes resulted in contentious situations. Time, experience, and with the inclusion of an officer bonus system eventually assisted in the resolution of these critical operational issues.
- Careful management of CIB truck drivers, who often supplement their salaries by taxing hunters for transport on their vehicles, was also highly sensitive. Strong company disciplinary measures were required to limit this kind of complicity. However, taking disciplinary action and/or firing of drivers sometimes created temporary personnel shortages and interfered with CIB operations.
- Attitudes regarding the implementation of an adequate alternative protein source program were highly divergent, and thus among the most complicated programs to manage. The spatial extent of this project resulted in the incorporation of many regions and cultures in the project landscape, each of which has different dietary preferences and personal motivations. Thus, the development of a strong alternative activities program requires a strong field team and the willingness to try multiple activities. In addition, the achievement of sustainable management of wildlife requires companies to seriously engage in establishing systems for provision of alternative protein sources to their workers. The importation of domestic protein sources is more expensive than bushmeat and could require either an increase in employee salaries or the creation of a company-subsidized program.

- The early establishment of a research and monitoring program is essential to evaluating project success. Developing appropriate monitoring methods depends upon achieving a balance between acquiring the necessary data (and adequate samples sizes) for the least cost in time, money, and staff.
- A strong education program was paramount to mitigating potential conflicts with local populations, especially with regard to enforcement of wildlife laws. However, assessing the impact education initiatives have on local attitudes or understanding can be difficult to do. In addition, education teams must be constantly stimulated with new ideas and materials to assure they do not simply move from village to village repeating the same canned messages. Communities tire of the presentations, and village participation will decline with time. Thus, personnel and budgetary requirements to maintain a strong education program should not be underestimated. Finally, we emphasize that more serious efforts must be taken by CIB to educate their employees regarding the importance of respecting wildlife policies throughout their concessions.

5. RECOMMENDATIONS

Effective biodiversity conservation and management in other Central African timber concessions will require investment in a comprehensive approach that includes wildlife protection, alternative activities, education and awareness, RIL, and research/monitoring components. One activity cannot be undertaken without the others if the fundamental problems are to be effectively addressed. Wildlife protection activities require great investment in personnel and financial resources (e.g. 40% of staff in this project: salaries, uniforms, diesel fuel, field food and supplies, vehicles, guard posts, housing, hospital care, and a personnel management structure). These costs can make up >50% of total budget (Elkan 2003). Thus, measures should be taken to reduce personnel needs and increase efficiency where possible. By taking action to limit the number of accessible roads, avoid logging activity around ecologically sensitive areas, and minimize the number of logging camps, the medium and long-term costs of biodiversity costs could be minimized. We suggest these costs also be incorporated into forestry planning and cost-benefit analyses.

If poorly developed, alternative activities programs can encourage increased in-migration to the region, and thus hunting pressures. However, generally the greatest threats to biodiversity originate around the industrial sites and villages. We suggest that future projects encourage private logging companies to directly incorporate alternative protein provision systems into their social programs (subsidized gardens and domestic protein sources, schools, health care, water, etc...).

Though the end goal of projects such as this should be to encourage private timber companies to take on many of the costs of biodiversity management activities themselves (and thus pass the cost of biodiversity conservation onto consumers), third party oversight fosters transparency and is likely to be most effective in initial program establishment. Potential for corruption and coordination of activities on multiple scales requires extensive technical knowledge and experience; which is increased by the cooperation of multiple partners. We suggest that strong, multi-party collaborations such as the existing relationships between WCS, CIB and the Government of Congo are the most effective way to assure the success of replicated projects. Where strong multi-party collaborations are impossible, a feasibility study should be conducted prior to project initiation.

Future projects based on this model should strongly consider how to best prioritize focal concessions and landscapes. We suggest that priority should be given to concessions with

potential to serve as important buffer zones to regions of high conservation value (high biodiversity, high densities of endangered species, or regions of high endemism). Biodiversity conservation in logging concessions may come at high social cost; especially in areas where the bushmeat market generates much of the revenue for communities. Thus, we underscore the importance of adopting strong education and alternative economic resources for communities located within focal landscapes. In addition, regional and national government support is essential to back-stop field based interventions. Government support should include a willingness to enforce existing wildlife laws, as well as a willingness to actually prosecute violators when enforcement officers identify offenders.

PART II. MAIN TEXT

1. PROJECT DESCRIPTION

1.1 Project Content

Tropical forests in Central Africa are an important source of biological and economic resources. The 2.05 million km² of forests currently covering the Congo Basin support a rich diversity of plants and animals, including many rare and endangered species, and maintain ecosystem processes important at a global scale. At the national and international level, the economies of Congo Basin countries are largely based on natural resource extraction. Much of the remaining tropical forest is under commercial exploitation or designated for future timber, petroleum, and mineral exploitation by private industry. At the local level, tropical forests also support non-timber resources critical to livelihoods of indigenous peoples. However, because forest resources are largely undervalued and regulation and monitoring of industry activities is insufficient, tropical forests are quickly being degraded by private industry that has little incentive to improve environmental management. Thus, biodiversity and ecosystem functioning, development of national economies, and the livelihoods of local peoples are all threatened by poor management of forest resources.

Private logging companies have been granted the timber extraction rights to major tracts of forest in Central Africa; many of which are important for both biodiversity conservation and economic development. Logging activities often lead to a domino effect of increased access to the forest, population growth, influx of capital, increased demand for bushmeat, and escalating commercial hunting (Ape Alliance 1998, Wilkie and Carpenter 1999).

Investigations in areas where logging is selective suggest that the greatest immediate threat posed to wildlife is not the extraction of trees, but the unsustainable hunting facilitated by the logging process (White 1992, Bennett and Gumal 2001, Wilkie et al. 2001), causing the systematic depletion of wildlife populations (Wilkie and Carpenter 1999, Walsh et al. 2003). The indirect effects of logging on wildlife may be particularly detrimental to biodiversity conservation when logging concessions are located next to protected areas. The presence of logging companies and communities next to protected areas heightens the potential for human encroachment and disturbance on them.

To date, few field-based initiatives have been undertaken to attempt to minimize the direct and indirect effects of the forestry exploitation process on wildlife populations (Robinson et al. 1999). However, in 1999, the Wildlife Conservation Society signed an agreement with the Government of Congo Ministry of Forestry Economy and a logging company Congolaise Industrie du Bois to manage the logging concessions surrounding the Nouabalé National Park for high value timber and wildlife. This partnership evolved from a common recognition that the long-term integrity of the park depended upon careful management of its buffer zone, CIB's interest in progressive forest management and biodiversity conservation, and the Ministry of Forestry Economy and the Environment's commitment to sustainable development and environmental conservation as a member state of the ITTO. The project now manages 1,800,000 ha of forest, effecting wildlife and forest conservation on a landscape level (Kabo-Pokola-Loundoungou-Nouabalé Ecosystem). Moreover, the government - private sector - NGO collaboration is a conservation model to be tested and potentially replicated in other concessions with similar management goals.

The objectives of the initiative were to design, implement and monitor sustainable wildlife conservation and management systems in the Kabo, Pokola, and Loundougou concessions that surround the park. Activities focused on education and awareness, development of alternative activities and protein sources, wildlife management and hunting regulation, wildlife protection, socio-economic and ecological research and monitoring, and Geographic Information System (GIS) based planning to improve forestry management. Initially efforts emphasized reduction of hunting pressures in Kabo (closest to the park) and were gradually expanded to Pokola and Loundougou in relation to available resources, adoption of regulations, and taking into account social volatility resulting from wildlife law enforcement.

During the period May 2001- May 2004, ITTO, WCS, GOC, and CIB funded Phase I of the project “Biodiversity management and conservation in a forest concession adjacent to a totally protected area (Nouabalé National Park), northern Congo” (PD 4/00) (locally known as PROGEPP after its French title: “Projet de Gestion des Ecosystèmes Péripheriques au Parc National Nouabalé Ndoki”). Under Phase I the project designed and began implementation of a wildlife management plan over the entire area of the Kabo and Pokola, and the western section of the Loundougou concession in collaboration with local stakeholders. A zoning system for wildlife management and conservation was established. Awareness was raised through environmental education programs, systems to increase the supply of alternative protein sources to replace bushmeat were designed and piloted, and a wildlife protection plan was implemented. Results of socio-economic and wildlife studies were incorporated into the management plan for the CIB concessions. Support to RIL planning and monitoring contributed to the adoption of reduced impact logging practices and the development of a land cover map for forest management planning.

Over 1999-2004 this collaboration extended protection to endangered species (elephants, gorillas, chimps, bongo, etc.) and key forest clearing habitat over more than 800,000 hectares of the Kabo-Pokola logging concession. Commercial hunting has been greatly reduced and community hunting zones and wildlife management established across the Kabo and Pokola concessions. Environmental awareness has been increased and the Government of Congo has used the model to develop formal legal requirements for wildlife management in other forest concessions. In March 2004 CIB made a public commitment to achieve FSC certification by the year 2006 working in collaboration with Tropical Forest Trust and WCS. This initiative will help set the standard for forest management in the Congo Basin.

1.2 DEVELOPMENT OBJECTIVE

Conservation and management of biodiversity and production of high value tropical timber in a logging concession to create a managed buffer zone adjacent to the Nouabalé Ndoki National Park, northern Congo.

1.3. SPECIFIC OBJECTIVE

Design, implement, and monitor timber company and community-based ecosystem management systems in the contiguous Kabo, Pokola, and Loundougou forestry concessions adjacent to the Nouabalé National Park.

1.4 OUTPUTS

Five outputs were defined at the start of the project.

Output 1. The project management system would be put in place.

Output 2. The wildlife management and protection plan would be written, adopted, and implemented.

Output 3. Reduced impact forestry strategies and techniques would be written, tested, implemented, monitored, and evaluated.

Output 4. Alternative activity studies, pilot projects, and plan would be designed and executed.

Output 5. Applied scientific research/ monitoring program systems would be designed, tested and established to provide information for evaluation and adaptive management.

1.4 RELEVANCE TO ITTO

1.5.1 Compliance with ITTO Objectives

The project designed implemented and monitored forest and wildlife management systems as a means to develop an ecosystem management approach to biodiversity conservation in the Kabo-Pokola-Loundougou forestry concessions adjacent to the Nouabalé National Park, northern Congo. Importantly, the project is perhaps the first field-based project to simultaneously manage forestry concessions for high quality tropical timber and wildlife. The project is a model for private sector-government-NGO collaboration for wildlife and forest management, and may be adapted to other sites where the ecological integrity of forest ecosystems, conservation of biodiversity, and the maintenance of natural resources for use by local communities are the goals. Finally, the buffer zone project has contributed to the long-term ecological integrity of the Nouabalé National Park and has made significant steps towards establishing co-management of forest resources in collaboration with local communities.

The proposed project was directly related to the following objectives established in Article 1 of the International Tropical Timber Agreement, 1994:

- Objective c.: To enhance the capacity of members to implement a strategy for achieving exports of tropical timber and timber products from sustainably managed sources by the year 2000.
- Objective f.: To promote and support research and development with a view to improving forest management and efficiency of wood utilization as well as increasing the capacity to conserve and enhance other forest values in timber producing tropical forests.
- Objective l: To encourage members to develop national policies aimed at sustainable utilization and conservation of timber producing forests and their genetic resources and at maintaining the ecological balance in the regions concerned, in the context of tropical timber trade.

1.5.2 Compliance with ITTO Criteria

The proposed project directly met the criteria for project selection described in paragraph 2 of Article 25 of the International Tropical Timber Agreement, 1994:

- Criteria a. Relevance to objectives of the Agreement.
The project works directly towards accomplishment of the above-cited objectives of the Agreement.

- **Criteria b. Environmental and social effects.**
The rational use and conservation of forest ecosystems is the overall goal of this project. Improved forestry and wildlife management systems will contribute directly to the long-term benefit of local communities and indigenous forest peoples.
- **Criteria c. Interests in characteristics of each of the developing producing regions.**
Congo has a strong interest in developing its international commercial forestry sector in a sustainable manner towards the conservation of its natural resources. The Government of Congo views this project as a model for strategy development with potential applications throughout its forestry sector.
- **Criteria e. Cost-effectiveness**
The results of the project are currently being integrated into the management plans for the CIB concessions to be adopted by the Government. The initial investment in this project permitted the development and testing of management strategies to be integrated into resource management policy and practice at a national level with implications for the forestry sector of Central Africa.
- **Criteria g. Need to avoid duplication of efforts.**
The activities and management actions undertaken by this project were not duplicated in the Kabo-Pokola-Loundoungou concession. In fact, the formal agreement signed by the CIB, Ministry of Forestry Economy, and WCS established a unique partnership (PROGEPP) that enabled the project to successfully collaborate with local communities to manage forest resources and wildlife in the concessions (Annex III).

1.5.3 Relationship to ITTO Action Plan and Priorities

The project conformed to the Action Plan of the ITTO in the domain of reforestation and forest management with the primary objective of bringing production forests under rational management by the year 2000. The actions and strategies employed by the project were directly related to those outlined under the ITTO Guidelines on the Conservation of Biological Diversity In Tropical Production Forests (ITTO Policy Development Series No. 5, 1993).

This project employed the following specific strategies described in the ITTO Guidelines:

- Strengthen a national agency to include biodiversity conservation in production forests in their mandate.
- Develop practical biodiversity appraisal systems to guide forest land use allocation at both the landscape level and within the management units of production forests.
- Develop and adapt practical techniques for assessing consequences of different forest management techniques on biodiversity. Incorporate biodiversity monitoring into on-going management programs for all forests.
- Surround Totally Protected Areas with sympathetically managed near-natural production forests to minimize edge effects and ensure the protection of ecological function.
- Link TPA reserves by providing “corridors” of natural forest and ensuring that habitat at known ends of migration routes are maintained.

- Reduce individual gap size as far as possible unless specifically required for the regeneration of key species.
- Management inventories should aim to locate key areas within all production forest units that are known to have higher biodiversity values.
- Local people should be involved in the management of forests.

1.6 PROJECT RATIONALE

Private logging companies have been granted the timber extraction rights to major tracts of forest in Central Africa; many of which have significant importance for both biodiversity conservation and economic development. Not only do forestry concessions represent a source of revenue for developing countries from commercial timber, they also support natural resources for indigenous peoples, wildlife populations (as both a sustainable resource and natural heritage), and key ecosystem processes. Given the large spatial extent of logging concessions and the multiple, overlapping land-use systems, sound management of these forest concessions requires a multi-faceted ecosystem approach that includes reduced impact logging, land-use planning, management of wildlife, and social programs designed to inform and involve local communities. This is particularly true where forestry concessions are located in the proximity of protected areas with the specific goal of long-term forest ecosystem conservation. The presence of logging companies and communities next to protected areas heightens the potential for human encroachment and disturbance on protected areas. At the same time, it could offer an opportunity to enlarge the conservation estate by increasing the area of managed forest. Thus, well managed forests outside of nature reserves may conserve viable populations of endangered mega fauna (elephants, gorillas, chimpanzees, and bongo) that require large areas of habitat (Blake 2002, Elkan 2003). In addition, through protection of species that play important ecological roles, managed forests may also preserve critical ecological processes that maintain and promote biodiversity (Costa and Magnusson 2002).

Historically logging companies in Central Africa have extracted timber with little regard to the management of non-timber resources and wildlife. Worse than a lack of management, timber companies often facilitate commercial bushmeat trade and illegal hunting of protected species by allowing company vehicles to transport hunters to previously inaccessible areas of forest and to help evacuate wildlife to population centers (Ape Alliance 1999, Wilkie et al. 1992). Moreover, forestry camps create markets and staging points for commercial bushmeat. The revenue gained by company employees attracts traders, bushmeat traffickers, job seekers, and family members who secondarily benefit from the company infrastructure and financial boom, contributing to rapid demographic growth. The combination of population growth and ready capital escalates the level of commercial hunting, ultimately risking the defaunation of the forest (Redford 1992).

The management of protected areas and forestry concessions for biodiversity is a socio-cultural problem as much as an ecological problem. Local populations, particularly indigenous people, have traditionally depended on forest resources and wild game for their livelihoods. As immigration drives population growth, demand on natural resources is increased while the supply is reduced, making it more and more difficult for local people to survive while continually increasing pressure on wildlife and forest resources.

Therefore, to ensure the conservation of biodiversity and ecological integrity of protected areas and managed forests in northern Congo, management procedures must respond to socio-economic needs of company employees and indigenous people at the same time that wildlife and natural resources are protected and managed.

1.6.1 Project Location, Historical and Socio-Economic Context

The exploitable surface area of forest in northern Congo is estimated at 8,984,749 ha. In 1982, the entire block of forest was divided into 21 Forestry Management Units (Unités Forestière d'Aménagement (UFA)) ("L'arrêté n° 1146 du 2 février 1982 modifiant l'arrêté n° 3085 du 24 juin 1974 définissant les Unités Forestières d'Aménagement dans la zone I, Ouesso, du secteur forestier nord et précisant les modalités d'exploitation de cette zone; L'arrêté n° 1149 du 2 février 1982 définissant les Unités Forestières d'Aménagement dans la zone II, Ibenga-Motaba, du secteur forestier nord et précisant les modalités d'exploitation de cette zone"). At present, 14 UFA's have been attributed to logging companies (Figure 8). Commercial timber companies selectively extract species with the highest commercial value, with a concentration on mahoganies (*Entandophragma utile* and *Entandophragma cylindricum*). As international market values change and these species become rare, it is expected that logging companies will diversify and extract additional species.

Logging concessions of Northern Congo

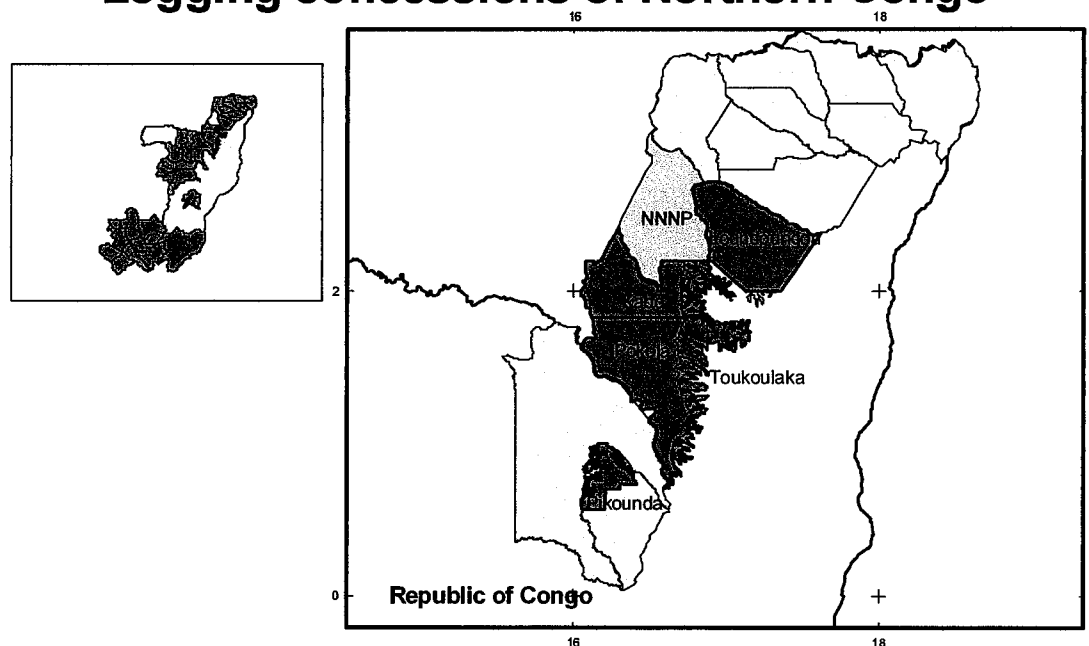


Figure 8. Fourteen concessions in northern Congo.

While rich in valuable mahoganies and other hardwoods, the forests of northern Republic of Congo also harbor some of the most important wildlife populations remaining in Central Africa, including forest elephants (*Loxodonta africana cyclotis*), lowland gorillas (*Gorilla gorilla gorilla*), chimpanzees (*Pan troglodytes troglodytes*), bongo (*Tragelaphus eurycerus*), buffalo (*Syncerus caffer nanus*), leopard (*Panthera pardus*), six species of duikers, and eight species of diurnal monkeys (Fay *et al.* 1990). The climate is equatorial with an annual precipitation of ca. 1600 mm and an average annual temperature of ca. 25.4°C. The geomorphology consists of plateaus traversed by slightly sloped valleys (330-600 m). Rivers have wide floodplains dominated by swamp forest. The soils on the plateaus are ferric oxisols and in the valleys they mostly hydromorphic ferric oxisols with sandy texture. The vegetation is a Sterculiaceae-Ulmaceae semideciduous forest, with monodominant patches of *Gilbertiodendron dewevrei*, and river floodplains are dominated by *Raphia* swamp forest (Letouzey 1968). These forests are also characterized by a large number of natural clearings, locally called “bais” and “eyangas”, that attract high density concentrations of many species of large mammal seeking their mineral and grass resources (Blake 2002, Elkan 2003, Elkan and Clark 2004).

Recognizing the ecological importance of the area, the Government of Congo changed the status of the Nouabalé Ndoki UFA in 1993 to create the Nouabalé Ndoki National Park (NNNP) (ca. 4,000 km²). The park is managed by the Nouabalé Ndoki Project (NNP) under the collaboration of Wildlife Conservation Society (WCS- an international non-governmental conservation organization) and the Ministry of Environment and Forestry Economy. Funding for the establishment and operations of the park came from USAID, WCS, GEF-Congo and the Government of Congo. The Nouabalé Ndoki National Park is contiguous with the Dzanga-Ndoki National Park in Central African Republic and Lobeké National Park in Cameroon (Figure 9). Four forest-management units surround the Nouabalé Ndoki Park: Kabo (3,000 km²) and Pokola (estimated 5600 km²) to the south have been exploited for timber since the 1970's. Timber harvest in Loundoungou (3,860 km²) to the east and Mokabi (3,750 km²) to the north began in 2002. Historically, timber exploitation in Kabo and Pokola has been largely selective, with harvests averaging 2-3 trees per hectare (Elkan *et al.* 2005).

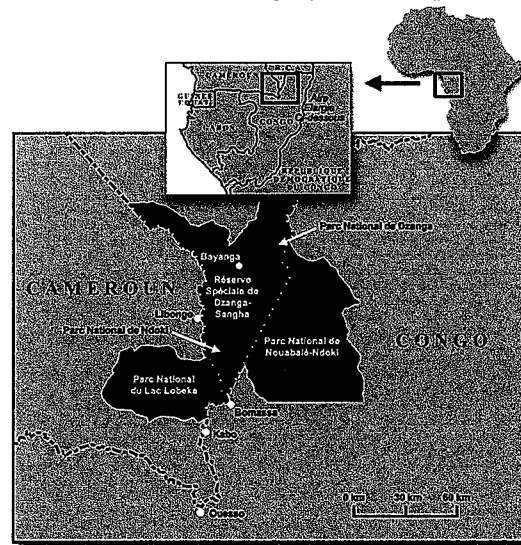


Figure 9. Map of Trinational Zone including NNNP, Dzanga-Sangha, and Lac Lobeké.

The park and surrounding logging concessions traditionally had low human population density (< 0.5 persons / km², Fay et al. 1990). Forest peoples (Bangombé and Bambendzélé pygmies) and several Bantou groups have historically subsisted in the area as semi-mobile hunter-gatherer societies. However, the development of a logging economy in the 1980's and 90's dramatically changed the socio-economic context of the area. The development of sawmills and permanent logging towns in Kabo and Pokola created a considerable bushmeat and ivory trade.

In early 1997, the “Congolaise Industrielle de Bois” (CIB) timber company acquired rights to the Kabo and Loundougou concessions. With the decline of several other timber companies in the region, and the civil unrest in the country in the late 1990's, the acquisition of these two concessions made CIB the major economic actor in northern Congo (Paget and Desment 2003). Although CIB had been logging the Pokola concession since the early 1970's, the expansion of CIB operations to Kabo and Loudougou increased hunting and poaching pressures on wildlife near the Nouabalé Ndoki National Park. CIB rapidly built a dike across the Ndoki River and created an advanced logging camp (Ndoki 2) 30 km south of the Park. A permanent road network was constructed to link the Ndoki 2 camp to the Ndoki 1 camp in the Pokola concession and the sawmill towns of Kabo and Pokola. Moreover, a major access road is also nearly completed (completion schedules for August 2005) in the Loundougou concession, passing just 5 km southeast of the park border. This road will soon link the Republic of Congo and the Central African Republic, serving as the principal route for transnational trade, export of timber from northern Congo, and transport of people.

Despite the increased threats to wildlife and natural ecosystems that come with development of the forestry sector, the Congolaise Industrielle des Bois company has demonstrated strong interest in progressive forestry management. CIB is currently writing a management plan for its concessions and is also seeking FSC certification, taking into account biodiversity conservation, and social and economic development. CIB has invested heavily in the infrastructure in the towns of Pokola and Kabo, including building hospitals, schools, and housing for employees, and providing water, electricity and a local television channel. These investments have improving living conditions not only for CIB employees, but for the community in general. For obvious reasons, Kabo and particularly Pokola have become major poles of attraction for immigrants in northern Congo.

1.6.2 Project Origin and Preparatory Activities

Recognizing that wildlife populations are not static, but move in and out of the Nouabalé Ndoki National Park, the need to protect the areas immediately surrounding, and the importance of conserving certain high biodiversity value forests adjacent to but not within the Park borders, WCS elaborated a proposal for the classification of “buffer zones” in the areas immediately surrounding the park (Fay 1997). The original proposal and the current project were based on research carried out by WCS and GTZ demonstrating a need for wildlife conservation and reduced impact forestry in forestry concessions (Wilkie et al. 1992, Blake 1994, Eves 1995, Fay et al. 1990, Lewis et al. 2001). These efforts are focused toward conserving areas of high biodiversity value within areas adjacent to, but not within, the Park borders. We underscore the fact that the park can only be protected by mediating threats to biodiversity before they reach the park. Moreover, by extending management to forests around the park, local populations would still have access to the natural plant and animals resources on which they largely depend. The original proposal for the establishment of “buffer zones” was submitted to the Government of Congo and CIB in late 1997. However, in early 1998 the government rejected the plan because of conflicting logging and

conservation objectives. Instead the government asked WCS to negotiate with CIB to develop a wildlife management plan that reflected the government's goal of integrating conservation into forestry while maintaining revenue generation from timber exploitation.

In June 1999 MFE, CIB, and WCS, finalized an agreement on the "Project for Ecosystem Management of the Periphery of the Park". The objectives of the initiative were to design, implement and monitor sustainable wildlife conservation and management systems in the Kabo, Pokola, and Loundoungou concessions, forming a broad buffer region for the Park. Activities focused on education and awareness, alternative activities and protein sources, wildlife management and hunting regulation, wildlife protection, socio-economic and ecological research and monitoring, and Geographic Information System (GIS) based planning to improve forestry management. Initially efforts emphasized reduction of hunting pressures in Kabo (closest to the park) and were gradually expanded to Pokola and Loundoungou in relation to available resources, adoption of regulations, and taking into account social volatility resulting from wildlife law enforcement. The goals of the project included:

- halt hunting encroachment and pressures around the NNNP;
- extend protection to endangered and rare species across a large area of important habitat (1,800,000 ha; entire concession area (1,200,000 ha) and park (400,000 ha));
- establish a locally recognized and supported system of community hunting and no-hunting zones;
- identify and protect key wildlife habitat areas (forest clearings) within the concessions;
- create the conditions necessary for sustainable off-take of legally hunted game species in combination with alternative protein sources.

WCS was responsible for development and administration of overall project activities in collaboration with the MFE. CIB modified its interior regulations and management to incorporate and promote wildlife conservation and management measures. WCS provided technical expertise and mobilized operational funding through its own funds and international sources. The Government assigned protection personnel, facilitated Ecoguard training and oversaw law enforcement. The company initially provided support in the form of infrastructure (housing, guard posts, a vehicle), diesel fuel and other equipment for wildlife protection activities, later expanding to include direct funding of anti-poaching and alternative protein activities.

1.6.3 Project Strategy

The project employed an ecosystem approach to management of the contiguous Kabo-Pokola-Loundoungou forestry concession adjacent to the Nouabalé National Park northern Congo. The approach is innovative and required the collaboration of the major stakeholders of the region in the co-management of the forest ecosystem. It recognized the need for improved rational management of forest resources and the conservation of biodiversity to ensure long term ecosystem integrity and processes in the context of sustainable economic development. The Ministry of Forest Economy (Government Congo), the Congolaise Industrielle des Bois, and Wildlife Conservation Society agreed to work together with local communities to implement an integrated project with the goal of sustainable wildlife and forest management as part of a landscape scale ecosystem management strategy. Practical, forest management and company- and community-based resource management systems were

developed, implemented, and monitored to promote biodiversity conservation within the context of a production multiple-use forest adjacent to a totally protected area. The project offered a means to develop practical tools to assist Republic of Congo in meeting the ITTO sustainable forest management objective.

2 PROJECT CONTEXT

2.1 Relationship to sectoral policies affecting tropical timber

The project converged with the goals of the National Forestry Action Plan of Congo (Plan d'Action Forestier Tropical) and the National Program of Environmental Action adopted by the Government of Congo. These plans require increases in the contribution of the commercial forestry sector to the national economy under a policy which aims for sustainable management of Congo's forests. The national Environmental Law 1991 outlines the need for sustainable and reduced impact forest management. The ecosystem management approach taken by this project recognizes the need for sustainable economic development through reduced impact forest management practices and applied wildlife management to promote the conservation of biodiversity within production forests. The project aims are directly related to those outlined in the Forestry Code Decree n° 84/910 of 19/10/84 defining application of the Forestry Code Law 004/74 governing production forest use and management.

2.2 Institutional and legal framework

The project was executed by the Wildlife Conservation Society (WCS) and Congolaise Industrielle des Bois (CIB) under the auspices of the General Direction of the Ministry of Forestry Economy (MEFE). The Ministry of Forestry Economy, Government of Congo, is charged with the management of forests and forest resources. Wildlife Conservation Society, an international non-governmental conservation organization based out of New York, USA, has worked with the Ministry since 1991 to establish and manage the Nouabalé Ndoki National Park. CIB is a private commercial forestry company with shareholders Hinrich Feldmeyer of Bremen, Germany and TT Timber International of Basel, Switzerland. CIB has worked in Congo since 1962. CIB has exclusive commercial forestry exploitation rights to the Kabo-Pokola-Loundoungou concession adjacent to the Park. CIB, WCS, and the MEFE agreed to work towards the collaborative implementation of this project for the improved management of forest resources and conservation of biodiversity of the forestry concession.

The following laws and statutes provided the legal framework for the project:

- The Forestry Code Law (Loi n° 005/74 du 04/01/1974 fixant les redevances dues au titre de l'exploitation des ressources forestières; Loi n° 32/82 du 07/07/1982 portant modification du code forestier; Loi n° 16/83 du 27/01/1983, portant modification de la Loi 005/74 du 04/01/74 fixant les redevances dues au titre de l'exploitation des ressources forestières.
- Environmental impact assessments (Décret n° 86/775 du 7/06/86 rendant obligation les études d'impact sur l'environnement).
- Environment Law n° 003-91 of 23 April 1991.
- Congolese wildlife laws ("Arrêté n° 3772 du 12/08/1972 fixant les périodes d'ouverture et de fermeture de la chasse; Loi 48/83 du 21/04/1983: définissant les conditions de la conservation et de l'exploitation de la faune sauvage; Loi 49/83 du 21/04/1983: fixant les

différents taxes prévues par la loi n° 48/83 du 21/04/83 définissant les conditions de la conservation et de l'exploitation de la faune sauvage; Arrêté n° 3863/ MEFE/ SGEF/ DCCP DU 18/05/1983 déterminant les animaux intégralement protégés et partiellement protégés prévus par la loi 48/83 du 21/04/1983 du conservation et exploitation de la faune sauvage; Decret n° 85/879 du 06/07/1985: portant application de la loi 48/83 du 21/4/83 définissant les conditions de la conservation et de l'exploitation de la faune sauvage; Arrêté n° 114 du 24/06/1991 portant interdiction de l'abatage des éléphants en République de Congo; Arrêté n° 3282 du 18/11/1991 portant protection absolue de l'éléphant sur toute l'étendu de la République de Congo.”)

- Décret of 31 December 1993 creating the Nouabalé National Park (“Décret n° 93/727 du 31 décembre 1993 portant création du Parc National Nouabalé-Ndoki dans les régions de la Likouala et de la Sangha”)

- Article 2 “l'utilisation rationnelle et durable des zones périphériques au parc”

-Article 4 “... une zone tampon au parc seront définis par arrêté du Ministre chargé des Eaux et Forêts”

3 PROJECT DESIGN AND ORGANIZATION

3.1 Adequacy of the Identification Phase

The identification phase was sufficient for two reasons. First, the project design was based on ten years of conservation and forestry experience in northern Congo. WCS was involved in the establishment and management of the Nouabalé Ndoki National Park. Furthermore, research carried out by WCS and GTZ in the Republic of Congo had demonstrated the need for a community-based approach to wildlife conservation and forestry planning with involvement by the major stakeholders (CIB and the Government of Congo). In addition, research conducted in Central Africa by both WCS and independent researchers had largely identified the primary threats to wildlife associated with logging.

Second, the Nouabalé Ndoki Project (Ministry of Forestry Economy/Wildlife Conservation Society) and CIB had been involved in information exchange and discussion of forest management issues since 1994. Therefore, the relationships among the partners were already largely established and the transition to a formal collaboration was therefore easier than it may have been otherwise.

3.2 Conceptual Foundation of the Project

The conceptual foundations of the project were threefold. First, the project was based on the idea that demographic pressure, an influx of capital from the logging company, and the use of company infrastructure would increase the demand for bushmeat, which, if not checked, could drive wildlife populations to the point of ecological collapse. Second, the project was based on the idea that wildlife populations can only be conserved if wildlife management is applied at a biologically appropriate scale. Realizing that both animals and people move across borders, this project recognized the necessity of establishing a buffer zone around the Nouabalé Ndoki National Park to protect it from external pressures. Finally, this project recognized that conservation initiatives could only be effective if they were in the interests of traditional local communities, accounted for traditional hunting zones and practices, and protected traditional community rights over those of immigrants seeking employment opportunities from logging companies.

These conceptual foundations were appropriate and well-founded. As mentioned above, the project benefited from several years of research and experience in northern Republic of Congo. Furthermore, the project was developed with local counterparts and formal partners, and therefore, a great deal of knowledge informed the process.

3.3 Adequacy of Time and Resources

The adequacy of time and other resources for project formulation was appropriate. See “Adequacy of the Identification Phase” for an explanation.

3.4 Understanding and Appropriateness of the Roles and Responsibilities of Partners

The roles and responsibilities in the implementation of the project were well defined at early stages of project initiation. In general, WCS was responsible for development and administration of overall project activities in collaboration with the MEFÉ. WCS also supported additional PROGEPP activities by locating and securing additional funding. CIB financially supported wildlife protection by paying for Ecoguards and also supported wildlife management by modifying its interior regulations and implementing disciplinary measures for violations of these regulations. The MEFÉ assigned law enforcement and protection personnel to the project, facilitated Ecoguard training, and oversaw law enforcement.

The roles of the partners were appropriate and understood.

3.5 Beneficiary Involvement with Project Efforts and Actions

Ministry of Forestry Economy: As one of the partner members of PROGEPP, the MEFÉ was greatly involved in all project efforts and actions. Several MEFÉ agents worked at the project level, helping to guide, execute, and evaluate the project. The MEFÉ Director strongly contributed to coordination of all activities, planning, and acted as the liaison between the government and the project. The MEFÉ officers were particularly effective in establishing and carrying out law enforcement and wildlife protection. MEFÉ involvement entailed government oversight of the project at the national level.

MEFÉ is currently examining how to replicate this project as a model for biodiversity and conservation and management in production forests.

Congolaise Industrie du Bois: As one of the partner members of PROGEPP, CIB was greatly involved in project efforts and actions. CIB involvement was particularly important for the management of timber resources and efforts to adopt better logging methods, culminating in the current effort to adopt a management plan for each concession and to seek FSC certification. While development of management procedures for wildlife is the expertise and responsibility of WCS, CIB was responsible for the application of wildlife management regulations in company procedures as part of their interior regulations. In addition, CIB was a strong financial contributor to the law enforcement and protection program and alternative activities. Some of their contributions to alternative activities included building fish ponds for tilapia farming, chicken coops, and butcher stations, providing refrigeration containers for imported meat, and importing meat from outside of the region.

CIB has benefited from reduced forest encroachment, controls on human immigration and deforestation, and the improved chances for certification of its products as a function of improved forestry and biodiversity management in its concession.

Local communities and indigenous forest peoples: Local communities and indigenous forest peoples were involved in the early establishment of hunting zones in the logging concessions. Both village and semi-nomadic groups were incorporated into this process (cite someone here). They participated in community meetings and yearly censuses that provided the project with the baseline data necessary to implement the project. Local people were also the recipients of and participants in the environmental education and alternative activity programs. Although local community involvement was appropriate for this phase of the project, which entailed the development and implementation of management systems, the second phase should involve them more actively in the development of alternative activity projects. The involvement of local people also occurred at the project level: most project employees came from the project area (traditional peoples), including all Ecoguards.

Wildlife Conservation Society: WCS contributed its expertise in conservation management and research and many years of experience to PROGEPP. WCS was responsible for development and administration of overall project activities in collaboration with MEFE, including education, alternative activities, research and monitoring, and law enforcement. A WCS project director and administrator were responsible for project activities, administration, training of employees, management and human resources, and coordination of efforts among the partner organizations. WCS also supported PROGEPP activities by locating and securing additional funding.

Nouabalé Ndoki National Park: Because NNNP is jointly managed by MEFE and WCS, sharing of information (particularly law enforcement information), ideas, and personnel was its main contribution to the project. Project staff is shared between projects whenever a particular expertise is needed. Law enforcement forces from each project frequently reinforce each other; and whenever possible, NNNP and PROGEPP combine logistical efforts to be more efficient. By working conjointly, the integrity of the park has been protected.

Local Communities: Local communities were involved as participants in most of the project activities, from taking part in education and awareness raising seminars to practicing alternative activities as a means of providing alternative protein sources or gaining supplementary income. Not only are most project employees members of the local communities, but for the most part, non-employees readily accepted changes in their traditional patterns of resource use (such as following hunting laws). Local communities were also active participants in the development of hunting zones and provide the project with informal information about poaching activities within the concessions.

International Forestry Sector: The international forestry sector has been involved through the evaluation process of the project. In addition, the United States Forest Service (USFS) has been involved in aspects of the RIL program being developed by CIB, specifically in a directional felling training for CIB.

The international forestry sector will directly benefit from the experiences of this project's model for concession management and stakeholder collaboration.

4. PROJECT IMPLEMENTATION

4.1 Disparities between Planned and Actual Project Implementation

Overall there were remarkably few differences between planned and actual project implementation. Here the differences are examined element by element.

4.1.1 Costs

In general, project implementation followed the proposed budget lines and actual costs matched forecasted costs. The budget proved adequate for the first phase of the project. Expenditure for equipment closely matched budget lines, with slight deviations due to changes in prices between submission of the proposal and the project execution.

The single greatest disparity was an underestimation of personnel costs, due to a failure to take into account taxes on salaries (CNSS, ONEMA, and IRPP) calculated at 28% of salaries. Fortunately, because the project benefits from several donors, funds from other donors were leveraged to make up the inconsistency.

Spending on personnel salaries matched expected spending, except that spending on Ecoguard salaries was 26% less than expected. However, this discrepancy was not due to an overestimation of the original budget, but rather the fact that early in the project the number of Ecoguards had to be reduced to stamp out corruption. Because the Ecoguards are hired from local villages, they face family and village social pressures that sometime lead them to fail to carry out their duties or to fail to apprehend family members. Once the corruption was dealt with and strict performance monitoring systems installed, the number of Ecoguards was increased to the necessary level. Therefore, a second phase of the project should maintain or even increase spending on Ecoguards.

A second disparity occurred for on-the-ground missions for the alternative activity and education programs: estimated costs were higher than actual costs. Costs to run meetings were less than expected.

Travel and per diems for WCS employees, consultants, and MEFÉ staff differed to some extent from predicted expenses. The greatest discrepancies were the costs of brigade leaders (Chefs de Brigade), who necessarily spent more time in the field than originally expected, and the GIS consultancy, for which less money was spent than budgeted. Spending for GIS and aerial monitoring was low due to lack of availability of an airplane to carry out aerial photography/ videography. Without aerial videography, field missions to verify the photos were not necessary. In the above cases authorization was obtained from ITTO spend the funds on other activity lines.

4.1.2 Outputs and Schedules

Here we examine discrepancies between expected and actual outputs at project completion.

Output 1: Project coordination and management unit in place and functioning soundly.

The project coordination and management unit was established on schedule, including the construction of infrastructure and acquisition of materials, establishment of the steering committee, and the establishment of stakeholder meetings every three months.

A large part of project coordination included the training of employees in administration and logistics. Administratively, the project runs smoothly, and national employees are capable and experienced. In addition, all employees from education officers to researchers to

Ecoguards work within the administrative system and have been trained in logistics. The leaders of each of the project sections (research and monitoring, education, alternative activities, and law enforcement), have been trained in personnel management and reporting.

The largest discrepancy between planned and actual project implementation was the role of the steering committee. Although the steering committee provided critical feedback on reports, it failed to give substantive guidance or support on several important conservation issues. For example, the steering committee failed to take a stance on the placement of the road and sawmill in the Loundoungou concession, despite the fact that both of these are likely to affect the project's ability to protect the ecological integrity of the park.

Output 2: Wildlife management and protection plan is elaborated, adopted, and implemented. PROGEPP successfully completed all activities within this output in the expected timeframe. Wildlife principles promoting rational wildlife use and conservation were developed, adopted into the CIB interior regulations, and promoted at the community level through awareness raising and education. Management techniques, including development of hunting zones and organized hunts, were developed and implemented. Ecoguards were successfully recruited, trained, employed, and managed to enforce wildlife laws (Figs. 10 and 11). Educators were also trained to conduct formal meetings, work with teachers, and to raise awareness in community meetings and through television media.

Output 3: Reduced impact forestry strategies and techniques elaborated, pilot implemented, monitored and evaluated.

Significant progress has been made by CIB on the implementation of reduced impact forestry strategies. A GIS-based inventory of logged tree species has already been conducted and a database compiled. Locally recruited technicians and forestry administration agents were trained in GIS and database management. Training in RIL techniques has been partially completed, including training in direction felling of trees. And, the assessment of potential costs and benefits of RIL has been evaluated for all of the concessions.

Having completed the pilot study during the first phase of the project, CIB is in the process of finalizing norms for RIL in their concessions so that the norms can be adopted into the concession management plans upon approval by the government (Desmet 2004a, 2004b, 2004c, 2004d, Desmet and Paget 2004). Once RIL is executed at a concession-wide scale, monitoring of costs, efficiency, and results of RIL can be evaluated.

Output 4: Alternative activity studies, pilot projects, and plan designed and executed.

Local people are primarily hunter-gatherers, living a subsistence life style, and traditionally practiced very little agriculture or animal husbandry. In addition, before the start of the project, CIB did not import any alternative sources of protein for its workers. Thus, the bulk of the workers' protein came from locally hunted bushmeat. Therefore, the alternative activity program targeted two goals: 1) to develop revenue producing activities for local people, and 2) to provide alternative protein sources so that reliance on bushmeat was reduced.

The first step towards altering the baseline situation included conducting feasibility studies and field experimentation, including testing different animal husbandry techniques. A small difference between the proposed activities and actual activities was that animal husbandry of bush pigs and ducks was not tested, although guinea pigs, rabbits, snails, goats, sheep, and chickens were all examined as potential alternative protein sources. While some

experimentation (snails and guinea pigs) took place primarily at the project base, programs to increase animal husbandry of goats, sheep, and chickens targeted local villages as a means to provide revenue to people not employed by the logging company.

To try to alleviate some hunting pressure on wild game, protein sources were imported (beef, chickens, fish), stocked in refrigerated containers, and sold by local merchants at CIB sites. Industrial-level tilapia farming was established in Pokola, and continues to grow in size. For the most part, the alternative activity studies and pilot projects were executed as planned. Because of the relatively long time period necessary to raise most animals, experimentation with different types of animal husbandry will continue in Phase II.

Although outreach and alternative activity staff were recruited and trained as project staff, the training of alternative activity and community outreach assistants in each village for pilot activity implementation was not completely accomplished. The staff worked directly with motivated individuals in each village to transfer information and technical advice, particularly concerning husbandry of sheep and fish culture. In this way, three fish farmers are currently operating tilapia farms in CIB sites, and villagers from nearly every local village have begun raising sheep. The idea was that the success of a few individuals would raise the interest of others who would be incorporated into the program as they showed interest. Because alternative activities entail a large time and resource expenditure by local people, success in the program depends on self-motivated individuals.

Output 5: Applied scientific research/monitoring program systems designed, tested, and established to provide information for evaluation and adaptive management.

The design and testing of ecological and socio-economic monitoring methods to assess the effectiveness of management actions and plan wildlife protection was accomplished during the project (PROGEPP 2005b, 2005d). Obviously, method design is never fully complete, as scientists and statisticians are continually developing more sophisticated and efficient research techniques. The monitoring methods have been compiled into technical methodological reports so that they can be adopted and used by the government, research projects, and conservation projects throughout the Republic of Congo.

Demographic censuses, resource use attitude surveys, hunting pressure monitoring, bushmeat off-take, forest clearing monitoring and monitoring of large mammals have all been conducted and are ongoing. As proposed, baseline information has been assembled on the potential effects that the project could have on local communities and indigenous forest peoples (Pierre 2004, Moukassa 2005). This information was used to develop programs to integrate semi-nomadic people in natural resource management and the development of community based wildlife management.

The training of researchers in applied data collection has been completed. National researchers are now skilled and experienced at on-the-ground data collection. In retrospect, training in the analysis of monitoring data should have been a greater emphasis of the project. National researchers are skilled at GIS analysis, but are less able when it comes to statistical analyses. At the same time, statistical understanding comes after applied data collection, and therefore training in statistics and analysis should be an emphasis of Phase II of the project.

The study of the direct effects of logging on wildlife populations is currently underway, but was not completely accomplished by the end of the project. This study depended largely on

the availability and timeframe of PhD researchers. Although this research started later than expected, the data will be fully collected and analyzed early in Phase II of the project.

4.1.3 Achievements

Intended Situation After Project Completion	Actual Situation After Project Completion	Achievement / Discrepancy
<p>Reduced biodiversity loss resulting from the impact of forest exploitation and improved forestry management through GIS and biodiversity and forest inventory database planning in the CIB concession.</p>	<p>Forestry inventory and GIS data are compiled in a database, which should lead to more efficient location and extraction of trees.</p> <p>It is difficult to assess whether biodiversity loss is less than before the project without being able to compare before and after loss. However, CIB is developing RIL norms and preparing to adopt FSC certification logging procedures which have shown to reduce biodiversity loss in other forests.</p>	<p>Apparent Success</p> <p>(Need more information to fully assess success.)</p>
<p>The MEFE uses the project experiences to develop and adjust policy to promote similar improved forest management in concessions throughout Congo.</p>	<p>The project is currently proposed for replication in the Ngombé concession.</p> <p>Based largely on the results and experiences of this project, a management plan for the Kabo concession is currently being considered by the government. The plan will set the national standards for forest management and wildlife conservation in concessions. Plans for Pokola, and Loundoungou will immediately follow the adoption of the Kabo Management Plan.</p>	<p>Full Success</p>
<p>Local community, timber company, and safari company based wildlife management systems minimize commercial and illegal hunting, demonstrate sustainable use principles, and protect specific areas and key species in the Kabo-Pokola-Loundoungou concession.</p>	<p>Wildlife management systems have been adopted by local people and the timber company to minimize commercial and illegal hunting.</p> <p>Community and company hunting zones have been established. Annual monitoring of human sign in no-hunting zones suggests that</p>	<p>Full Success</p>

	<p>people are largely following the zoning.</p> <p>Procedures for prohibiting hunting by company employees or the transport of bushmeat or poachers by company vehicles have been adopted into the company interior regulations. Employees that break the wildlife rules are regularly penalized by the company.</p> <p>The safari company no longer operates in the concessions.</p>	
<p>Local community wildlife management committees and trained mobile brigade of forestry agents and Ecoguards monitors and enforces management guidelines and Congolese wildlife laws reducing commercial hunting and human immigration.</p>	<p>Trained mobile brigade of forestry agents and Ecoguards monitor and enforce management guidelines and Congolese wildlife laws.</p> <p>Hunting committees provide information on illegal hunting and the state of the forest to PROGEPP.</p>	<p>Full Success</p>
<p>Increased local awareness (local communities, local authorities, CIB company employees) of wildlife and forest management principles and local support for the management program.</p>	<p>There is much greater local awareness of wildlife and forest management principles and support for the project. This is evident by the wildlife procedures adopted by CIB. Although a formal analysis of local awareness of management principles is pending, informal conversations with local peoples about hunting regulations and conservation clearly demonstrates increased awareness.</p>	<p>Partial Success</p> <p>(Likely be changed to Full Success once the analysis of local awareness has been completed.)</p>
<p>Conservation partnerships developed with schools and local NGO's of the region implement awareness activities and conservation course designed for primary school level in collaboration with the Ministry of Education.</p>	<p>Environmental education staff routinely visits schools and run a nature club for children. However, the partnerships with the schools are weak and the conservation course has not been formalized. The recent completion of an environmental education book for the schools and the writing of an activity book currently underway will strengthen this partner ship.</p>	<p>Partial Success</p> <p>(Phase II will concentrate on formalizing environmental education in the schools and building partnerships with local NGO's.)</p>

	<p>PROGEPP collaborates with local NGO's, including the APEDTS on alternative activities. However, the links have been relatively weak largely due to the lack of capacity of the NGO's.</p>	
<p>Organized community fishing and hunting associations contributing to legal and rational wildlife management.</p>	<p>Hunting associations contribute to wildlife management by organizing the organized hunts, disseminating of information among themselves about hunting laws, providing information about poaching to PROGEPP.</p> <p>There is no organized community fishing associations, although support is provided to local individuals. Efforts to create the associations have not been successful due to the movement of most fishermen to fishing camps during the seasons most critical to their organization. Reinvigorated efforts to establish these committees will occur during seasons of decreased fishing activity as part of the second phase of this project.</p>	<p>Full Success</p> <p>(Community fishing associations could be useful to regulate fish offtake. However Congolese laws currently do not provide adequate guidance for the development of highly organized freshwater fisheries management.</p>
<p>A technically, economically, and ecologically viable alternative activities program decreases dependency on bushmeat, diversifies diet and income activities helping to reduce commercial bushmeat industry pressures in the forestry concession and around the Park.</p>	<p>With strong support from CIB, the project provides alternative protein sources to logging towns (frozen beef, chicken and fish), providing options for diet diversification. Tilapia farming is underway, and animal husbandry has been piloted.</p> <p>Levels of bushmeat in local markets before and after these activities suggest that they have helped reduce levels of commercial bushmeat.</p> <p>The alternative activity program has depended on financial and resource support from CIB. The program, particularly import of</p>	<p>Partial Success</p> <p>(Alternative activity program is in place, but needs to be strengthened. While it probably has reduced pressure on wildlife, it is not yet economically sustainable. Also, future efforts will concentrate on developing these activities in local villages, with less of an emphasis on the company villages.)</p>

	meat, may not be economically feasible without its continued support. However, given that the demand for bushmeat is artificially increased by the influx of CIB employees, it should be incumbent on the logging company to maintain significant support to assure alternative protein availability for its staff and their families for the duration of their as long as the company exploits the concession.	
Increased local awareness of the importance of alternative activities and alternative protein sources.	Local people are aware of the importance and possibilities for alternative protein sources.	Full Success
Alternative activity tilapia and animal husbandry pilot projects are managed by local communities and the timber company. Detailed proposals for the alternative activity programs supported by feasibility study findings including pilot demonstration projects are funded and/or submitted for funding.	Tilapia farms and chicken farms are managed by some local individuals, with support from the logging company. Lessons learned from early experimentation are now being applied to the development of revenue producing projects for local people.	Full Success
A land-use system for the concessions with consideration for natural ecosystem preservation, human settlement, the park, safari interests, and timber exploitation assists in the regulation of rational wildlife use and biodiversity conservation within the concession. High-priority habitat areas for biodiversity are protected within the concession.	A zoning system has been established based on traditional hunting and use zones and animal distributions. The zoning designates areas as hunting zones or no-hunting zones. Special consideration was given to forest clearings and other ecologically sensitive and important habitat areas.	Full Success
Encroachment on the NNNP is prevented and long term buffer zone protection of the park ensured.	Encroachment on NNNP has been nearly eliminated. However, the construction of a road 5 km from the eastern park border in 2000 and the potential construction of a sawmill in the Loundougou jeopardize the long-term success of the project.	Full Success

	An official buffer zone has not yet been clearly established although it is required in Art. 4 of the Decree creating the NNNP. This will be an important element of Phase II. of the project.	
An ecological and socio-economic monitoring program and database provides regular quantifiable information on hunting and agricultural pressures, the status and production potential of game populations, human demographic and perceptions, etc... to provide feedback for management treatments and strategy adjustment.	An ecological and socio-economic monitoring program and database are established and functioning. The resulting data provide information on human demographics and patterns of forest use, pressures on different forest areas, bushmeat consumption, hunting pressures, consumption of alternative protein sources, effects of law enforcement efforts, and changes in animal abundances. These data are routinely used to adjust management strategy.	Full Success

4.2 Measures and Actions to Avoid Disparities

4.2.1. Costs

Disparities between expected costs and actual expenditures could not have been avoided, with the exception of perhaps adding a budget line for taxes. The rest of the budget disparities were no greater than the typical variation in costs and expenditures to be expected of any project. We expect the lessons learned during this project to allow us to more accurately predict expenditures for Phase II.

4.2.2 Outputs and Schedules

Output 1: Project coordination and management unit in place and functioning soundly.

The discrepancy between the expected and actual role of the steering committee could be avoided by clearly and formally defining the role of the committee before project implementation.

Output 2: Wildlife management and protection plan is elaborated, adopted, and implemented.

No disparities.

Output 3: Reduced impact forestry strategies and techniques elaborated, pilot implemented, monitored and evaluated.

No disparities

Output 4: Alternative activity studies, pilot projects, and plan designed and executed.

The disparity between expected and actual outputs in this domain was largely due to an over-estimated expectation of outputs. Because alternative activities entail a large time and resource expenditure by local people, we should have expected a lower level of progress in

the three year duration of the project. In addition, we also learned that alternative activities must be specifically designed for the recipient community, depending on whether the primary goal is to produce revenue (local communities) or develop greater non-game protein sources (CIB villages).

Output 5: Applied scientific research/monitoring program systems designed, tested, and established to provide information for evaluation and adaptive management.

Although we recognized the analysis of data as a weakness of project researchers, this does not represent a disparity between expected and actual outputs. Rather, it is an area that should be given greater attention in Phase II.

The study of the direct effects of logging on wildlife populations is currently underway, but behind schedule. This could not have been avoided, given the output depends on the work of independent PhD researchers. The only possible solution would have been to identify consultants to conduct the study, but this depends on individuals with the expertise and interest in such a study.

4.2.3 Achievements

The inconsistencies between intended and actual achievements are trivial considering the scope of activities carried out, the complexities of finding appropriate solutions to problems occurring early in the project, the magnitude of the threats to wildlife, and the improvements in wildlife use and forestry practices that have been achieved. Some of the disparities do not represent actual differences between intended and realized achievements, but rather are due to an inability to accurately analyze whether progress was made. In general, this could have been rectified by establishing a baseline (knowledge of hunting laws, number of households conducting animal husbandry, number of hunting camps or snares, amount of biodiversity loss during logging) before implementation of the project. Given the pressures on wildlife and natural resources that existed before the project, priority was given to making the project operational rather than collecting many of the baseline data. Several baseline databases were established, including collecting information on encounter rates of animal and human sign in the forest, human population, and entry rate of bushmeat into CIB sites. These data suggest that protection efforts have increased encounter rates of animals and decreased bushmeat entry into CIB sites, despite increasing human population.

Disparities between intended and actual achievements could have been avoided in two arenas:

1. Stronger partnerships could have been developed between the project and schools if school directors had been more willing to invest time and effort in the project.
2. Stronger partnerships with local NGO's could have been developed.

4.3 Appropriateness of Assumptions and Identification of Risks

At the project conception, the following risks were identified:

- commercial bushmeat hunters could revolt against control measures causing unrest;
- unrest in Brazzaville, southern Congo, could upset project activities.

On two different occasions, CIB camp employees threatened to reject all proposed wildlife management procedures and to eject the Ecoguards from the region. This was a serious risk with potential to derail project efforts. However, the project's multi-faceted strategy and the

strong partnership between CIB, WCS, and the government helped overcome these problems. By first raising awareness of Congolese wildlife laws and then offering alternatives to hunting through the alternative activity program, local communities were aware that: 1) wildlife laws were not created by the project, but were the laws of their own government, and 2) the project offered potential alternatives to commercial or illegal hunting. In addition, despite the fact that local people did not like additional regulations on hunting, they also understood the basic principles behind management actions. Both government and CIB support of the project gave it validity in the eyes of local people.

Although isolated skirmishes occasionally flared up in the Pool Department of Congo, none of these have had any influence on project activities.

4.4 Project Sustainability

Despite favorable project implementation conditions, the project is not yet sustainable.

Project sustainability depends upon the following elements:

- well-trained government employees capable of managing the protection and law enforcement program, education and alternative activity programs, and socio-economic and ecological monitoring programs;
- permanent change in the awareness and attitudes of local people concerning nature, natural resources, and wildlife;
- logging company and industry willing to integrate the expense of managing wildlife and reduced impact forestry practices into its ongoing running costs and long term business plan.

Project implementation conditions permitted great strides forward to be made in each of these areas. The strong relationship between each of the partners advanced the project towards future sustainability. For example, collaboration between WCS and the government contributed to training of government employees in project administration and law enforcement and protection principles and techniques. At the national level, the government also demonstrated strong interest in promoting conservation as long as it did not conflict with economic development. Similarly, the willingness of CIB to adopt more efficient and more ecologically-friendly practices strengthened the cooperation and information sharing between CIB and WCS. CIB provided considerable logistical and financial support, particularly for the alternative activity and law enforcement and protection programs. In addition, both the government and CIB agreed to remove the Goualougou Triangle from the Kabo concession for its annexation to the park.

Even though implementation conditions were favorable, achieving sustainability of the project will take considerably longer. Government employees still lack the necessary capacity to manage the project; most government offices have rudimentary computer skills, inadequate experience managing money and budgets, and insufficient knowledge of wildlife management principles. Moreover, because they may be moved to another post with little warning continuity of the project is easily interrupted. This occurred with the Brigade leader change in PROGEPP in 2003 and then again with this same position in 2004.

Early implementation conditions were less favorable when it came to local CIB employees and their dependents, particularly those individuals that made their livelihoods from poaching and illegal hunting. However, strong support of the project by the CIB and the government validated the project to local people. In addition, the multi-faceted strategy towards

conservation also favored acceptance of the project ideas and practices, as did the fact that many people benefited from employment by the project and served as Ecoguards implementing the very wildlife principles that other community members opposed. As the project continued, implementation conditions improved. Most local people have accepted the project principles and have modified their actions to follow the Congolese wildlife laws, and a minority probably left the area to hunt in an area without regulation. However, sustainability of the project depends on a permanent change in attitudes towards wildlife. This will entail long-term awareness raising and education of children in schools and will depend on the ability of local people to find alternative economic activities and protein sources to hunting and bushmeat.

4.5 Appropriateness of Project Inputs

Project inputs (quality and quantity) were appropriate.

5 PROJECT RESULTS

5.1 Situation at Project Completion

Pre-Project Situation	Actual Situation After Project Completion
<p>Conventional selective logging resulted in high residual damage on forest in the Pokola and Kabo concessions.</p> <p>Hunters and poachers used company vehicles and infrastructure to gain access to remote forest areas, resulting in a completely unmanaged (and likely unsustainable) hunting system with poaching of endangered species (elephant, gorilla, chimp, etc.; Figures 10 and 11).</p>	<p>Reduced biodiversity loss resulting from the impact of forest exploitation and improved forestry management through GIS and biodiversity and forest inventory database planning in the CIB concession.</p> <p>CIB is developing RIL norms and preparing to adopt FSC certification logging procedures which have shown to reduce biodiversity loss in other forests.</p> <p>Forestry inventory and GIS data are compiled in a database, which should lead to more efficient location and extraction of trees.</p> <p>The densities/encounter rates and spatial distribution of large mammals and human activities throughout the concessions are known.</p>
<p>Despite government recognition of the need for sustainable and reduced impact forest management manage logging concessions, logging concessions were mostly unmanaged and conventional logging procedures were being practiced.</p>	<p>MEFE is currently using project experiences to develop and adjust policy to promote similar forest management in concessions in Congo.</p> <p>Based largely on the results and experiences of this project, a management</p>

	<p>plan for the Kabo concession is currently being considered by the government. The plan will set the national standards for forest management and wildlife conservation in concessions. Plans for Pokola, and Loundoungou will immediately follow the adoption of the Kabo Management Plan.</p> <p>With the support of MEFE, the project is proposed for replication in the Ngombé concession. The Government of Congo has developed a requirement for the development of “anti-poaching and surveillance brigades” in each logging concession (locally called “USLAB”). However, efforts to develop them in the Enyelle and Betou concessions have not succeeded.</p>
<p>Hunters were using company infrastructure to gain access to remote forest areas as well as to evacuate bushmeat to markets. With increasing populations in logging towns and ready cash from a booming economy, non-indigenous hunters were setting up operations.</p> <p>Elephant poaching and the ivory trade were active and overt.</p> <p>Local communities had little control over their traditional hunting areas and little reason to moderate hunting because of competition with outsiders.</p> <p>Congolese hunting laws were neither followed nor enforced.</p>	<p>Local community and timber company based wildlife management systems minimize commercial and illegal hunting, demonstrate sustainable use principles, and protect specific areas and key species in the Kabo-Pokola-Loundoungou concession.</p> <p>Wildlife management systems have been adopted and supported by local people and the timber company to minimize commercial and illegal hunting.</p> <p>Community and company hunting zones have been established. Monitoring of human sign in no-hunting zones suggests that people are largely following the zoning.</p> <p>Procedures for prohibiting hunting by company employees or the transport of bushmeat or poachers by company vehicles have been adopted into the company interior regulations. Employees that break the wildlife rules are regularly penalized by the company.</p> <p>The safari company no longer operates in the concessions.</p>
<p>Congolese hunting laws were neither followed nor</p>	<p>Trained mobile brigade of forestry agents</p>

<p>enforced.</p>	<p>and Ecoguards monitor and enforce management guidelines and Congolese wildlife laws.</p> <p>Hunting committees and traditional communities provide information on illegal hunting and the state of the forest to PROGEPP.</p> <p>Indices of illegal hunting (snare, trophies) demonstrate that commercial hunting has been reduced.</p> <p>Reduction in CIB employee infractions.</p> <p>Reduction in obstruction to Ecoguard missions.</p>
<p>Local communities, logging company employees, and officials had little knowledge of Congolese wildlife laws and protected species.</p>	<p>There is much greater local awareness of wildlife and forest management principles and support for the project. This is evident by the wildlife procedures adopted by CIB and the reduction of CIB employee infractions over time. Although a formal analysis of local awareness of management principles is pending, informal conversations with local peoples about hunting regulations and conservation clearly demonstrates increased awareness. In addition, local communities regularly approach the project with requests for assistance on issues ranging from human-elephant conflict to project propositions for independently initiated alternative activities.</p>
<p>Environmental education was unknown, with awareness programs lacking in schools or communities.</p> <p>Conservation partnerships developed with schools and local NGO's of the region implement awareness activities and conservation course designed for primary school level in collaboration with the Ministry of Education.</p>	<p>Environmental education staff of project routinely visit schools and run a nature club for children. In addition, local teachers have had rudimentary training to transfer environmental education themes to students in local classrooms. These training efforts will increase during phase II of the project.</p> <p>The recent completion of an environmental education book for the schools and the writing of an activity book currently underway will lead to the formalization of the school-project partnership.</p>

	<p>PROGEPP collaborates with local NGO's to influence awareness of conservation issues and wildlife laws.</p>
<p>Organized community fishing and hunting associations did not exist. Traditional decision-making structures at the village level were weakened by invasions of their territories by outsiders and lack of influence with the logging company.</p>	<p>Hunting associations contribute to wildlife management by organizing the organized hunts, disseminating of information among themselves about hunting laws, providing information about poaching to PROGEPP.</p> <p>There are no organized associations for fishing.</p>
<p>Hunting and fishing were the only means of securing protein. Very little animal husbandry was conducted by local communities or company employees, and no reliable options were available in markets for alternative protein sources.</p>	<p>With strong support from CIB, the project provides alternative protein sources to logging towns (frozen beef, chicken and fish), providing options for diet diversification.</p> <p>Tilapia farming is underway, and animal husbandry has been piloted.</p> <p>Levels of bushmeat in local markets before and after these activities suggest that they have helped reduced hunting to serve commercial bushmeat markets. In addition, alternative sources of protein to bush meat are now available in all villages (e.g. reliable chicken, beef and fish products are stored in freezer storage facilities provided by CIB).</p>
<p>Hunting and fishing were the only means of securing protein. Very little animal husbandry was conducted by local communities or company employees, and no reliable options were available in markets for alternative protein sources.</p>	<p>Local people are increasingly aware of the importance and possibilities for alternative protein sources. Several pilot projects have already been conducted and tested in local communities.</p> <p>Tilapia farms and chicken farms are managed by some local individuals and the timber company. Animal husbandry of goats and sheep by local communities is underway.</p>
<p>No land-use system existed, despite the multiple actors and interests in the area (logging company, local communities, hunters, safari hunter, Nouabalé National Park).</p>	<p>A land-use system for the concessions with consideration for natural ecosystem preservation, human settlement, the park, safari interests, and timber exploitation is</p>

	<p>in place and assists in the regulation of rational wildlife use and biodiversity conservation within the concession.</p> <p>A zoning system has been established based on traditional hunting and use zones and animal distributions. The zoning designates areas as hunting zones or protected zones.</p> <p>High-priority habitat areas for biodiversity are protected within the concession. Special consideration was given to forest clearings and other ecologically sensitive and important habitat areas.</p>
<p>Borders of the Nouabalé National Park were not respected, and poaching within the park, particularly of elephants, was rampant.</p> <p>No management of the forestry concessions around the park for forest resources or wildlife existed.</p>	<p>Encroachment on NNNP has been nearly eliminated. However, the recent construction of a road 5 km from the eastern park border and the potential construction of a sawmill in the Loundoungou jeopardize the long-term success of the project.</p> <p>A broad band peripheral zone has been clearly established and has the strong and sustained support of the government, WCS, and CIB. However, a buffer zone for areas immediately surrounding the NNNP has not been adopted. This presents fundamental problems for the management of the NNNP in areas where CIB exploits in close proximity. As directed in the Decree creating the NNNP, it is imperative that partners work to create a legal buffer zone around the park.</p>
<p>Few data existed on the biological and socio-economic context of the forest concessions.</p>	<p>An ecological and socio-economic monitoring program and database are established and functioning. The resulting data provide information on human demographics, pressures on different forest areas and large changes in animal abundances (see above for other indicators). These data are routinely used to adjust management strategy.</p>



Fig. 10. Pre-project situation.

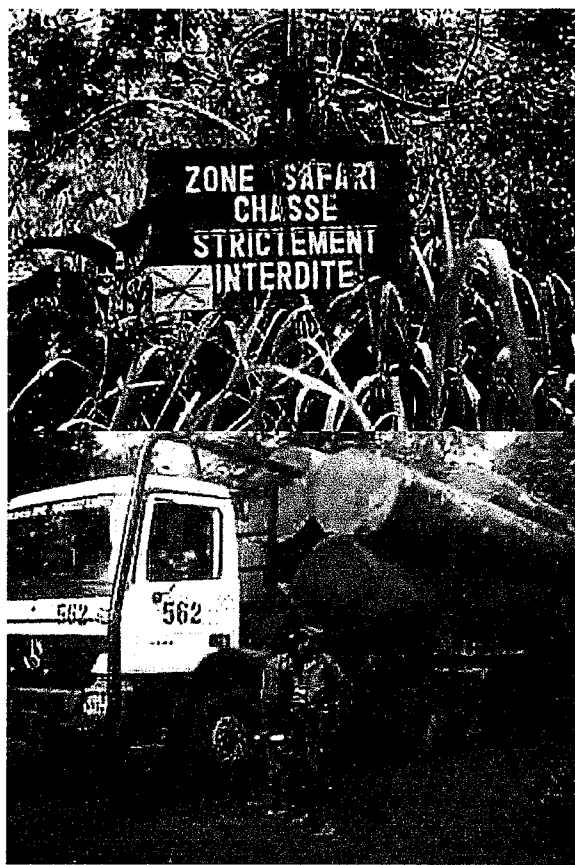


Fig. 11. Situation during implementation of project.

5.2 Achievement of Specific Objective(s)

“Design, implement, and monitor timber company and community-based ecosystem management systems in the contiguous Kabo, Pokola, and Loundougou forestry concessions adjacent to the Nouabalé National Park.”

The specific objective was fully achieved. Before the project there were no management systems operating in the forestry concessions surrounding the Nouabalé Ndoki National Park. At the completion of the project, the management systems were completely operational and functional.

5.3 Impact of Project Results on Sectoral Programs, Etc...

5.3.1 Sectoral Programs

This project converged with the goals of the National Forestry Action Plan of Congo (Plan d'Action Forestier Tropical) and the National Program of Environmental Action adopted by the Government of Congo. These plans require increases in the contribution of the commercial forestry sector to the national economy under a policy which aims for sustainable management of Congo's forests. The national Environmental Law 1991 outlines the need for sustainable and reduced impact forest management. The project aims were directly related to

those outlined in the Forestry Code Decree N° 84/910 of 19/10/84 defining application of the Forestry Code Law 004/74 governing production forest use and management.

The ecosystem management approach taken by this project recognized the need for sustainable economic development through reduced impact forest management practices and applied wildlife management to promote the conservation of biodiversity within production forests. The principles and techniques tested and implemented in this project will soon be adopted in other logging concessions in the Republic of Congo. This project has also contributed significantly to the writing of the Kabo Management Plan which will set the national standard for management of logging concessions and logging practices.

5.3.2 Physical Environment

The project dramatically influenced the conservation of the physical (and ecological) environment.

First, PROGEPP guarantees the protection of the borders of the Nouabalé National Park, ensuring that trees are not accidentally logged or felled into the park and keeping hunters and poachers from penetrating the park. With the combined efforts of the Nouabalé National Park project, the park remains one of the most ecological intact and pristine forest blocks in Central Africa.

Second, through the establishment of zoning, PROGEPP has protected areas with important ecological value (the Mombongo Bai Complex, the Djeke Triangle, and the periphery of the Goualougou Triangle) from future exploitation.

Third, through law enforcement and protection, PROGEPP has greatly reduced illegal hunting throughout 1,400,000 ha of managed tropical forest. By enforcing wildlife laws, destroying commercial hunting camps that once lined the logging roads, and curbing the immigration of hunters and poachers into the concessions, PROGEPP avoided what would certainly have amounted to an ecological disaster. With special emphasis on the protection of endangered large mammals that are particularly susceptible to hunting, PROGEPP has protected biological diversity and maintained the ecological processes that influence forest structure and regeneration.

Fourth, by testing and implementing some reduced impact logging techniques (RIL), the project has helped reduce the amount of residual damage to the forest. While progress made to date falls short of a fully operational RIL program, this program is currently being developed by CIB and will be an important part of their concession management plans and future FSC certification. The completed commercial tree inventory and database alone promises to reduce the number of roads and skid trails and residual damage necessary to find and extract trees

Fifth, because of the management procedures and partnerships put into place, PROGEPP has an ability to influence logging procedures taking into consideration wildlife and biodiversity conservation needs. WCS and PROGEPP advise CIB on issues such as road placement and size, cutting restrictions in regions important for biodiversity conservation, (e.g. bais, yangas and buffer zone around PNNN), and hunting regulations and rotations for CIB organized hunts. This collaboration between MEFE, WCS and CIB will likely improve the logging company's chances of gaining FSC certification.

5.3.3 Social Environment

The project dramatically altered the social environment. At the project conception, there was no control of hunting, local markets were full of bushmeat, including endangered species like elephants and gorillas, and the ivory trade was active. The traditional power base was extremely weak and commercial poachers and elephant hunters used logging company vehicles to access forests, making it difficult for local communities to prevent outsiders from entering their traditional forests without permission.

At the completion of the project there is a strong recognition of wildlife laws. A combination of environmental education and law enforcement has led to a drastic change in behavior. Hunting camps that used to line the logging roads no longer exist, and the majority of hunters conform to wildlife regulations, respecting hunting seasons and hunting laws, licensing their firearms, and respecting hunting zones. By incorporating local communities in the definition of hunting zones, based on their traditional hunting territories, decision-making power for local resource management has been largely returned to the local communities. By ensuring hunting areas for indigenous forest peoples priority has been given to local people over immigrants into the region, giving local communities incentive to manage their forest resources.

5.3.4 Target Beneficiaries

All target beneficiaries have benefited from project activities and outputs.

MEFE officials who participated at the project level benefited from training and experience. At the institutional level, MEFE is in the process of integrating the results of this project into its production forest policy and national management strategy for areas of improvement in biodiversity conservation and management in production forests. MEFE is also using PROGEPP as a model for management of production forests in other parts of northern Congo.

Local communities and indigenous forest peoples benefited from the participatory nature of the project strategy. The project promoted sustainability of community natural resources through the establishment of hunting zones that limit the number of outsiders hunting or extracting resources from their traditional forests. Local communities have been involved in decision making, including the demarcation of hunting zone territories. In addition, local communities have benefited from information about wildlife laws. Alternative activities have benefited local communities by supplying fishermen with at-cost fishing materials, through vaccination of chickens against bird pests and distribution of vegetable seeds, and by supplying local people with information and materials to raise sheep and other domestic animals.

The CIB logging company benefited from reduced forest encroachment, controls on human immigration and deforestation, and the improved chances for certification of its products as a function of improved forestry and biodiversity management in its concession. Information from project research and monitoring has been heavily integrated into both management plans for its concessions and documents for FSC certification.

The international forestry sector in general benefited from the experiences of the project's model for concession management and stakeholder collaboration.

The Nouabalé National Park benefited from protection of its borders and surrounding forests, which has safeguarded the ecological integrity of the park.

5.4 Project Sustainability

After project completion, the project is not sustainable. As stated above, project sustainability depends upon the following elements:

- well-trained government employees capable of managing the protection and law enforcement program, education and alternative activity programs, and socio-economic and ecological monitoring programs;
- permanent change in the awareness and attitudes of local people concerning nature, natural resources, and wildlife;
- a logging company and industry willing to integrate the expense of managing wildlife and reduced impact forestry practices into its ongoing running costs and long term business plan.

Although significant progress has been made in each of these areas, Phase I established the project and tested a model of conservation based on private sector-government-NGO collaboration. Continued support is necessary to fortify the progress made and to prepare the project for eventual sustainability. Sustainability of the project after Phase I was not envisioned at project conception. Thus, neither the project conceptualization nor the assumptions made influenced the long-term sustainability of the project.

It is important to recognize that the context in which the project operates is continually changing, and therefore conditions prevailing at project completion will have an important effect on future sustainability of the project. At the conception of the project, the logging company operations were considerably smaller with fewer employees. As their operations increase, so do the pressures on wildlife, natural resources, and traditional cultures. For example, a major challenge in the coming years will be managing the influx of people along the major logging road that will soon link all of northern Congo with the Central African Republic and continue to Brazzaville. The road has been built just 5 km from the park, and is a serious threat to the ecological integrity of the park. Additional population and hunting pressures will influence the park if CIB builds an additional sawmill in the Loundougou concession. Potential for sustainability of the project would be greatly increased if the road was moved farther from the park and if the sawmill was not built.

6 SYNTHESIS OF THE ANALYSIS

a) Specific Objectives(s) Achievement	Realized
b) Outputs	Partly Realized
c) Schedule	On Time
d) Actual Expenditures	At Planned Level

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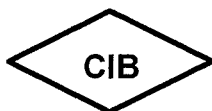
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Appendix 1. Letter incorporating wildlife management policies into the Interior Regulations of CIB (signed 13 Dec. 1999).

CONGOLAISE INDUSTRIELLE DES BOIS
SOCIETE ANONYME AU CAPITAL DE 2 070 000 000 FRANCS CFA.

SIEGE SOCIAL OUESSO (REPUBLIQUE DU CONGO)

B.P. 145 BRAZZAVILLE
Tél. Bureaux : 871 685 053 625
Téléfax : 871 685 053 626
B.P. 41 OUESSO



Banque UCB : 0500 106 094/1
Registre du Commerce 995 B
NIF: 0819500249

Pokola, le 22 juillet 1998

Note de Service

La Direction C.I.B. informe tous ses employés du lancement du " Programme pour la Gestion d'Ecosystème Périphérique du Parc National Nouabalé-Ndoki " dans les UFA's de Kabo et de Pokola. Le programme est mené par la C.I.B., Projet Nouabalé-Ndoki, Congo Safaris, et la Ministère de l'Economie Forestière, en collaboration avec les autorités régionales et les communautés locales. Le but du programme sera d'établir une gestion économiquement viable à long terme et écologiquement saine dans la région.

Suite aux nombreux entretiens avec notre Président Directeur Général, Dr H. Stoll, la C.I.B. est pleine partenaire dans ce programme et tient à sa bonne réussite. Par cette lettre, elle vous informe de la mise en vigueur des directives et programmes de gestion nécessaires pour l'exploitation rationnelle et soutenable de la faune à long terme dans les UFA. Il est demandé à tous les employés de participer à ce programme et à appliquer rigoureusement les principes, règlements (lois congolaises et règlement intérieur), et les mesures suivantes:

1. Principes de la gestion de la faune

- 1.1 Interdiction formelle des pièges (câbles et autres).
- 1.2 Interdiction formelle de l'exportation de la viande (il faut consommer sur place).
- 1.3 Interdiction formelle de la chasse d'espèces intégralement protégées (gorilles, chimpanzés, bongos, éléphants, léopards, hippopotames,...) définies par la loi congolaise.
- 1.4 Interdiction de chasser dans les zones définies ci-dessous:
 - UFA KABO:
 - zone de chasse de Bomassa qui inclue Mombongo bai
 - zone principale de safari/tourisme qui inclue Djadja bai, Bokombela bai,
 - Nyangui
 - zone de Goualogo (Nord NDOKI 2)
 - UFA POKOLA:
 - zone principale de safari/tourisme qui inclue le Lac Djaka et Mombonyo

D'autres zones seront identifiées et communiquées ultérieurement.

2. Directives de la chasse

- 2.1 La chasse de subsistance pour les équipes de prospection suivant les principes (1.1 - 1.4 - 3.) sera permise dans les zones où la prospection a lieu.
- 2.2 Pour fournir de la viande aux employés C.I.B. d'une manière rationnelle et durable, des chasses régulières sous conditions contrôlées seront organisées. Ces chasses seront suivies par les agents MEF et du programme. Un camion transportera les chasseurs (détenteurs de badge) aux zones indiquées selon un calendrier.
Les zones sous gestions communautaires et certaines parties de la zone de tourisme/safari seront ouvertes pour cette chasse officielle. Le protocole et le calendrier de ces chasses seront régulièrement communiqués. Il est conseillé aux chauffeurs qui transportent les chasseurs de se renseigner auprès des organisateurs du programme sur le protocole pour ces chasses.

- 2.3 Pour obtenir l'information nécessaire afin d'assurer une exploitation durable de la faune à long terme, les chasseurs C.I.B. seront obligés de déclarer quotidiennement leur gibier aux postes du programme.
- 2.4 Les chasseurs sont demandés de s'organiser en comités représentatifs (par site) pour participer dans le programme de la gestion de la faune.

3. Système de Chasseur Officiellement Reconnu

3.1 Pour obtenir un badge reconnu par le DREF et la CIB, un employé C.I.B. doit être muni d'un permis de petite chasse. Le DREF adresse ensuite à C.I.B. une ordonnance (demande écrite avec copie du permis de chasse) pour émission du badge. C.I.B. livrera le badge à l'intéressé qui signera un reçu qui sera retourné au DREF. Le détenteur du permis de chasse peut désigner une autre personne pour chasser à sa place et doit lui remettre son badge. Seul le badge sera reconnu sur le terrain. Le permis de chasse peut ainsi être gardé à la maison.

Sur le badge seront mentionnés:

- nom et prénom du détenteur du permis de chasse
- numéro de badge
- photo d'identité
- numéros du permis de chasse et du fusil
- zone de chasse
- date et lieu délivrance

Le coût d'émission du badge est inclus dans le prix du permis de chasse. En cas de perte du badge, un nouveau badge avec nouveau numéro sera facturé 5,000 FCFA. Le badge perdu sera enregistré et ne sera plus valable.

Le badge sera retiré en cas d'infraction aux lois mentionnées sur la présente note.

Les intéressés sont demandés de se renseigner auprès des agents MEF et du programme à Pokola et à Kabo pour plus d'informations concernant ce système.

- 3.2 Les détenteurs de ces badges sont exigés de suivre les lois congolaises gouvernant la chasse et les principes de la gestion de la faune (1.1-1.4) : Interdictions formelles de transport de la viande fumée, d'utiliser les pièges, et d'abattre les espèces protégées. Un quota limite sera fixé en fonction des progrès de la gestion de la faune.
- 3.3 Interdiction formelle de chasse et transport de gibier hors de la zone indiquée sur le badge (consommation locale).
- 3.4 Tout gibier doit être déclaré au poste de contrôle de la zone (ex : Pokola, Kabo, Ndoki 1, Ndoki 2).

4. Directives concernant la circulation des véhicules

- 4.1 Interdiction formelle du transport de la viande sur les véhicules CIB excepté pour les personnes qui détiennent un badge officiel.
- 4.2 Toute arme transportée doit être accompagnée par un badge officiel.
- 4.3 Tout véhicule privé (autre que CIB) sera obligé de signer un protocole de règlement pour circuler sur les routes C.I.B.

5. Contrôles

- 5.1 Il y aura une mise en place d'un système de contrôles réguliers des véhicules. Ces contrôles seront exécutés partout dans les UFA's. Un poste de contrôle sera établi à Ndoki 2, à Kabo et à Pokola. Il est demandé au personnel C.I.B. de coopérer complètement avec ces contrôles.
- 5.2 Il y aura des patrouilles régulières de brigades mobiles. Tous les intéressés doivent faciliter l'exécution de ces missions.

Des sanctions seront appliquées par la CIB à ses employés en cas de violation à ces règlements et par la DREF pour violations des lois congolaises gouvernant l'exploitation de la faune.

LA DIRECTION CIB

**PROTOCOLE D'ACCORD SUR LA GESTION DES UFA
POKOLA, KABO, LOUNDOUNGOU**

Entre:

le Gouvernement de la République du Congo représentée par Le Ministre de l'Economie Forestière Chargé de la Pêche et des Ressources Halieutiques,

D'une part

Et

La Congolaise Industrielle des Bois (CIB), représentée par son Directeur Général,

Wildlife Conservation Society (WCS), représentée par LE Chargé des Programmes,

Et Congo Safaris (CS), représentée par son gérant,

D'autre part,

- Se référant au Protocole d'Accord entre le Gouvernement congolais et Wildlife Conservation International (actuellement nommé Wildlife Conservation Society) signé en date du 21 octobre 1991;
- Se référant à l'Accord entre le Gouvernement congolais et la Banque Internationale pour la Reconstruction et le Développement, chargée de gérer le Fonds pour l'Environnement Mondial (GEF/FEM) concernant la mise en oeuvre du "Projet de Conservation et de Gestion des Aires Protégées" signé en date du 03 mars 1993 ;
- Se référant à l'Accord de Coopération entre le Gouvernement congolais et Wildlife Conservation Society signé en date du 15 octobre 1996 ;
- Réitérant l'engagement du Gouvernement congolais et de Wildlife Conservation Society à conserver et à utiliser de manière rationnelle les ressources naturelles ;
- Se référant à l'Arrêté n° 1965 du 23 août 1996, approuvant le Contrat n°008 du 23 août 1996 autorisant la Congolaise Industrielle des Bois à exploiter et à transformer industriellement le bois ;
- Se référant à l'Arrêté n° 6/MEFPRH/DGEF/DF/SGF du 10 mars 1999 portant approbation du contrat de transformation industrielle des bois entre le Gouvernement congolais et la CIB n°1 MEFPRH/DGEF/DF/SGF du 10 mars 1999;



- Se référant au Contrat Général relatif à l'organisation de Safari Chasse, Photographique et de Pêche n°00584/MAEEFP/CAB du 29 avril 1996 ;
- Se référant au Décret 93-727 du 31 décembre 1993 portant création du Parc National de Nouabalé-Ndoki dans les Régions de la Likouala et de la Sangha ;

Sont convenus de ce qui suit :

Préambule

Les UFA Kabo, Pokola, Loundougou et Mokabi sont d'une importance fondamentale comme complément au Parc National Nouabalé-Ndoki (PNNN) dans la gestion des écosystèmes, la biodiversité et le suivi de mouvements migratoires des espèces fauniques. La majorité des infrastructures du Projet Nouabalé-Ndoki et certains sites d'importance biologique sont situés dans ces UFA.

Les UFA Pokola, Loundougou, et Kabo sont concédées à la CIB pour l'exploitation forestière. Des zones des UFA Kabo et Pokola sont affectées à Congo Safaris pour le tourisme cynégétique. Il est donc nécessaire de mettre en place un cadre de collaboration et de concertation entre les différents intervenants pour une gestion soutenue de ces écosystèmes.

TITRE I : Dispositions Générales

Article 1 : L'Administration Forestière et Wildlife Conservation Society acceptent d'assumer la responsabilité d'exécution du « Programme » relatif à la gestion des zones périphériques au Parc National Nouabalé-Ndoki.

Article 2 : Les parties contractantes du présent Accord approuvent le « Programme » de gestion des UFA précitées.

Article 3 : Le « Programme » est financé principalement par Global Environmental Facility (GEF-Congo), Central African Regional Program for the Environment (CARPE), Wildlife Conservation Society, le Ministère de l'Economie Forestière Chargé de la Pêche et des Ressources Halieutiques, la Congolaise Industrielle des Bois et Congo Safaris. Des financements complémentaires ne sont pas exclus, seront identifiés et sollicités.

Article 4 : Chaque partie est tenue à la transparence dans les échanges d'informations relatives à la gestion des UFA précitées.

Article 5 : Chaque partie contractante aura accès payant aux installations et aux moyens de communication des autres parties pour les besoins couverts par le présent Accord.

Article 6 : L'utilisation des infrastructures sera facturée au tarif appliqué d'ordinaire aux tiers.

Article 7 : Chaque partie contractante sera ampliatrice des correspondances ou autres documents relatifs au « Programme ».



Article 8 : Les parties conviennent de se réunir une fois tous les trois mois pour faire le point de l'exécution du « Programme ».

TITRE II : Objet – Durée - Siège

Article 9 : Le présent Protocole d'Accord est établi pour une durée de cinq (5) ans à compter de sa date de signature et renouvelable par tacite reconduction sauf dénonciation expresse par l'une des parties contractantes avec préavis de six (6) mois.

Article 10 : Le siège du « Programme » est fixé à Kabo. Il peut toutefois être transféré en tout autre lieu sur décision des parties contractantes.

TITRE III : Des obligations de l'Administration Forestière

Article 11 : L'Administration Forestière nommera un Gestionnaire Homologue et un Chef de Brigade assermentés.

Elle autorisera à titre expérimental un quota annuel de prélèvement de la faune sauvage pour les besoins alimentaires des populations de Kabo. Elle facilitera la dotation du « Programme » en munitions et armes militaires pour la surveillance ainsi que l'installation du réseau interne de communications radiophoniques.

TITRE IV : Des obligations de Congo Safaris

Article 12 : Congo Safaris s'engage à :

- contribuer à la valorisation de la faune sauvage à travers le tourisme cynégétique et le tourisme de vision ;
- construire un campement au Lac Djaka ;
- doter le programme d'un système de radiophonie ainsi que d'une pirogue motorisée de 15 CV ;
- maintenir une présence toute l'année sur la zone qui lui est affectée.

TITRE V : Des obligations de Wildlife Conservation Society

Article 13: Wildlife Conservation Society s'engage à :

- prendre en charge l'exécution du « Programme » ;
- exécuter le « Programme » en tenant compte des contraintes de délai imposés à CIB pour la préparation du plan d'aménagement des 3 UFA de Pékola, Kabo et Loundougou ;
- proposer un Gestionnaire du « Programme » de gestion de la faune à l'Administration Forestière ;
- recruter, former et gérer les écogardes, chercheurs, éducateurs, et autres personnels du « Programme » en collaboration avec l'homologue du « Programme ». Les effectifs recrutés se feront selon les besoins ressentis pour l'exécution du « Programme » ;
- verser des indemnités à l'homologue gestionnaire et au chef de brigade congolais conformément au système WCS ;



- équiper les logements de l'homologue et du chef de brigade ;
- mettre à la disposition du « Programme » le matériel technique, les moyens roulants et nautiques ;
- diffuser à l'échelle internationale, avec l'accord du Ministre de tutelle, toutes informations se rapportant au programme ;
- informer les organismes internationaux de protection de l'environnement (UICN, WWF, etc.) sur la mise en œuvre du « Programme » et répondre à toute question et pression médiatique éventuelles relatives à la gestion des écosystèmes forestiers dans la zone du « Programme » ;
- évaluer les résultats et les effets du programme sur la gestion des écosystèmes forestiers des 3 UFA précitées et ses incidences sur le Parc Nouabalé-Ndoki ;

TITRE VI : Des obligations de la Congolaise Industrielle des Bois

Article 14 : La Congolaise Industrielle des Bois s'engage à :

- adopter un règlement intérieur de la société relatif aux activités de gestion et de conservation de la faune sauvage sur les 3 UFA dont elle est attributaire ;
- faciliter le contrôle des moyens de transport, des campements d'exploitation et du personnel ;
- appliquer les sanctions disciplinaires à tout agent de la CIB qui aura transporté des produits de faune acquis illégalement, conformément au règlement intérieur de la société ;
- contribuer à la réalisation du « Programme » :
 - (a) procurer des logements pour l'homologue gestionnaire et le chef de brigade congolais à Kaho ;
 - (b) mettre à la disposition du « Programme » un chauffeur et un véhicule de transport des éco-gardes et autres personnels du « Programme » et assurer régulièrement l'entretien et le carburant (500l / mois) ;
 - (c) fournir au « Programme » un moteur hors-bord (8cv) et une tronçonneuse ;
 - (d) construire un poste de contrôle à Ndoki 2 et à Kaho, et une guérite au carrefour de la Djaka sur l'axe de Ndoki 1-Pokola ;
 - (e) mettre 9 logements à la disposition du « Programme » à Kaho ;
 - (f) médiatiser par les moyens audiovisuels disponibles et vulgariser les objectifs du « Programme ».

TITRE VII : Des dispositions particulières et finales

Article 15 : Wildlife Conservation Society devra produire tous les six mois un rapport d'activités du « Programme » qui sera soumis à l'approbation des autres parties avant publication. Chaque année, un rapport annuel d'activité sera produit.

Article 16 : Le matériel du « Programme » ne pourra en aucun cas être réquisitionné ou aliéné par les services publics.

Article 17 : Chaque partie contractante est tenue de notifier aux autres tout manquement au respect des dispositions du présent Accord.

Tout différend résultant de l'interprétation ou de l'exécution du présent protocole d'accord sera réglé à l'amiable entre les parties. En cas de désaccord, les parties déclarent se confier à la législation congolaise.

Article 18 : Le présent Protocole d'Accord est régi par les lois en vigueur en République du Congo.

Article 19 : Le « Programme » tiendra compte des prescriptions de gestion des écosystèmes forestiers des 3 UFA de Pokola, Kabo et Loundougou décrites dans le plan d'aménagement agréé par l'Administration Forestière.

Article 20 : Toutes les parties s'accordent à respecter leurs engagements respectifs définis dans le présent protocole d'accord sauf « cas de force majeure ».

Article 21 : Sont qualifiés de « cas de force majeure » tous les événements indépendants de la volonté des trois opérateurs techniques, CIB, WCS et CS, et susceptibles de nuire aux conditions dans lesquelles doivent se réaliser leurs obligations.

Article 22 : Le présent Protocole d'Accord entre en vigueur à compter de la date de sa signature.

Fait à Brazzaville, le 2/6 1999

Pour la Congolaise Industrielle des Bois

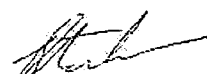
Le Directeur Général,



Jean Marie MEVELLEC

Pour Congo Safaris

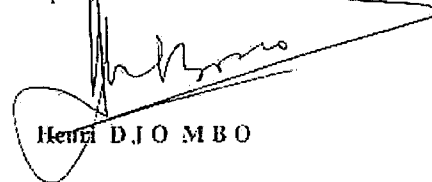
Le Gérant,



Eric STOCKENSTROOM

Pour le Gouvernement

Le Ministre de l'Economie Forestière
Chargé de la Pêche et des Ressources
Halieutiques,



Henri DJOMBO

Pour Wildlife Conservation Society

Le Chef des Programmes,



Paul ELKAN