

## The Nouabalé-Ndoki Project: Development of a Practical Conservation Model in Central Africa

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### ABSTRACT

The Congo Forest Conservation Project, established in 1991, is an inter-agency cooperative project aimed at promoting forest conservation throughout Congo, and particularly in the Nouabalé-Ndoki National Park. The project challenges include: highly-mobile human populations; natural systems not corresponding to political divisions; competition for land-use by other interests; political instability; lack of conservation tradition; cyclical nature of funding; communications and logistics; personnel considerations; and lack of appropriate judicial and legislative support. The Ndoki model is based on guidelines intended to support the project's primary goal of perpetuating the physical and biological integrity of the natural systems in northern Congo. Basic model components include: development of and focus on the primary goal; collaborating with local and government stakeholders; constant adaptation and modification; conservation activity promotion based on 'enlightened self-interest'; education and professional training; development activities to take place away from conservation areas; international awareness. Local participation and cooperation are considered in more detail and practical considerations are outlined.

This paper presents characteristics of the goals, design, and actual situation surrounding the Nouabalé-Ndoki Project in the northern Republic of Congo (Brazzaville). Although certain conditions described in this abbreviated case study are rare or even unique in today's Africa, many may be common to conservation areas throughout the continent and the world. An annotated outline of the factors that are considered during project model conceptualization is presented to provide a frame of reference for discussing previous and future activities.

### PROJECT BACKGROUND

Although surveys had been executed in the nearby Dzanga-Sangha area of the Central African Republic, little conservation-related data had been collected in the area of the present-day Nouabalé-Ndoki National Park (NNNP) prior to the late 1980s. Anthropologists from the University of Kyoto, together with scientists from the Congolese Ministry of Water and Forests, began a botanical survey in the Ndoki Forest in 1988 (Moutsambote *et al.* 1994). Based on observations of Heeketsweiler (1990), who identified the area in and around the Nouabalé forestry management unit as a high-priority site for African tropical lowland forest conservation, preliminary faunistic and ecological surveys were conducted during 1989 and 1990 by biologists J. Michael Fay of the Wildlife Conservation Society (WCS) and Marcellin Agnagna of the

Congolese Ministry of Waters and Forests (Figure 1). In 1991, WCS and the Congolese government jointly developed a conservation strategy which resulted in cooperative agreements aimed at promoting forest conservation throughout Congo with a particular emphasis on the Nouabalé-Ndoki forest and its environs in the northern portion of the Republic of the Congo.

The Congo Forest Conservation Project (CFCP), formed as part of the African Forest Program of WCS, received initial support from the United States Agency for International Development (USAID), followed by the Global Environment Facility (GEF-Congo), and then by the Central African Region Program for the Environment (CARPE) along with several other donors. Together with representatives of the government of the Congo and the Gesellschaft für technische Zusammenarbeit (GTZ), the project conducted a series of formal and informal discussions with residents of surrounding villages and the prefectural capitals of Ouesso (Sangha Region) and Impfondo (Likouala Region). During and following this period, extensive biological and socioeconomic surveys were also conducted in the area. Following several field missions by the cooperating parties, proposals were submitted to and accepted by the Congolese Council of Ministers. The Nouabalé-Ndoki National Park (NNNP) was gazetted by President Pascal Lissouba through Decree no. 93-727 on December 31, 1993.

## PROJECT AREA

The northern part of the Republic of Congo (Brazzaville) contains some of the largest expanses of intact forest remaining in central Africa (Wilkie *et al.* 1992). Contiguous with the Dzanga-Ndoki National Park and Dzanga-Sangha Dense Forest Reserve in the Central African Republic, and across the Sangha River from the Lobéké area, the NNNP covers 386,592 ha of forest which is relatively undisturbed by humans, particularly in recent years (Figure 1). The forest in this area is described as *Sterculiaceae-Ulmaceae* semi-deciduous forest, which is representative of the northern fringes of the Guinea-Congolese forest block stretching from west Africa to the Democratic Republic of Congo (formerly Zaïre). Portions of the park's proposed buffer zone are subject to commercial logging, hunting, and shifting cultivation (Ruggiero and Eves 1998).

The ensemble of park and buffer zones contains both primary and secondary forest that can be grouped into three basic types: mixed-species forest, the largest and most diverse vegetation type dominated by species of *Meliaceae* and *Leguminosae*; swamp forest, with a permanently flooded floor, found along streams (*Alstonia*, *Mitragyna*, *Xylopia*); *Gilbertiodendron dewevrei* (family

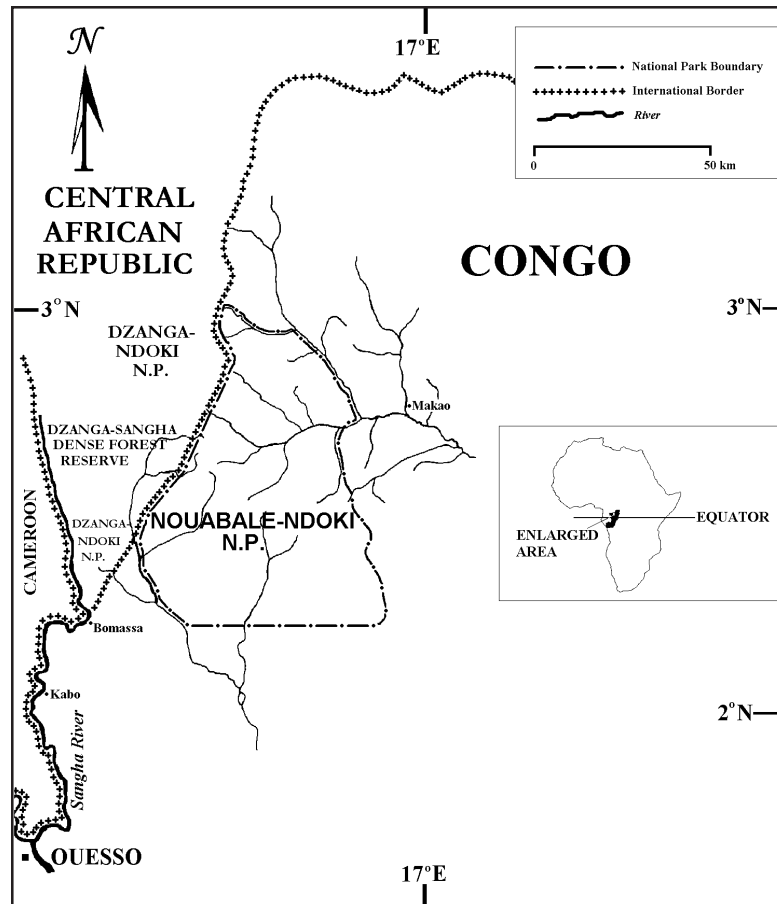


Figure 1 Nouabalé-Ndoki National Park, Republic of the Congo, and surrounding area.

*Caesalpiniaceae*); and monodominant forest, a riverine vegetation type. Gaps of various origins are present in the primary and secondary mixed forests, and terrestrial herbaceous vegetation may be dense in some places, characterized by species of the *Commelinaceae* and *Marantaceae* families (Moutsambote *et al.* 1994). A subgroup of the swamp forest is a type of forest meadow, called “baï” in the native Baka language, which is usually covered by herbaceous species of *Araceae*, *Commelinaceae*, *Cyperaceae*, and *Melastomataceae*.

The NNNP is known for its diversity of large mammals, including forest elephant, *Loxodonta africana cyclotis* (Matschie), forest buffalo *Syncerus caffer nanus* (Sparrman), bongo antelope *Tragelaphus euryceros* (Ogilby), sitatunga *T. spekei* (Sclater), water chevrotain *Hyemoschus aquaticus* (Gould), giant forest hog *Hylochoerus meinertzhageni* (Thomas), bush pig *Potamochoerus porcus* (L.), six species of duikers *Cephalophus spp.*, western lowland gorilla *Gorilla gorilla gorilla* (Savage and Wyman), chimpanzee *Pan troglodytes*

(Blumenbach), and eight species of monkeys, *Cercopithecus*, *Cercocebus* and *Colobus spp.* Two hundred seventy-three bird species have been identified in the NNNP and its buffer zone (Dowsett-Lemaire 1997).

The northern Congo is populated by various groups of Bambenjele and Bangombe Pygmies, collectively referred to as Aka (Sato 1992), who traditionally hunt and gather in the forest for subsistence in addition to carrying out agricultural activities. Numerous distinct Bantu-speaking groups also inhabit the area and practice hunting, fishing, and agriculture, mostly of a subsistence nature (Eves and Ruggiero, in press). These two groups live in a complex, interdependent economic and social relationship (Bailey *et al.* 1992).

### PROJECT STRENGTHS

Most of the features that are considered advantageous to achievement of the goals of the Nouabalé-Ndoki Project are basic considerations that are common to most conservation projects. They are sometimes present *a priori*, and sometimes they must be developed by conscious effort and similarly maintained. They can be referred to under the following seven rubrics:

*As the development of logging and mining continues in central Africa, intact forests are becoming increasingly rare, and the value of the Ndoki Forest is increasing concomitantly.*

**Natural basis:** A primary consideration for the establishment of a conservation project is that it must involve a geographic area with highly desirable natural assets (e.g. an area worth protecting which has relevance to biodiversity, maintenance of basic ecosystem functions and integrity, rare, endemic, or endangered taxa of plants and animals). The site must also be one that can be protected with the means likely to be immediately available and sustainable over the long term. The area in and around the NNNP is considered one of the most valuable intact natural areas in central Africa. As the development of logging and mining continues in central Africa, intact forests are becoming increasingly rare, and the value of the Ndoki Forest is increasing concomitantly.

**Social basis:** Areas having low or manageable levels of human vs. wildlife conflicts are optimal. Another essential component is a positive, or potentially positive, attitude of local people toward conservation. This is enhanced by their perception of use (both consumptive and non-consumptive) and non-use benefits, both immediate and long-term, that result from a conservation strategy. Benefits may be economic, nutritional, cultural, and political. Human population in the area of the NNNP is among the lowest in non-arid areas in Africa. Human habitation of the core area of the national park is non-existent in recent history, and attitudes

concerning conservation among many local residents are essentially positive and have potential to develop further.

**Political basis:** Project activities and personnel must garner and maintain support from host governments at all levels. Awareness and support by government officials in the country(s) that are assisting developing nations is also of paramount importance to assure continued bi- and multilateral support. The reception and support by the Congolese government for proposals for conservation action have been excellent, as reflected by the rapid classification and gazetting of the national park. The interest in conservation efforts on the part of the provisional government formed after the civil war of 1997 is further evidence of continuing support for the NNNP and the Nouabalé-Ndoki Project.

**Economic basis:** Sufficient financial resources (e.g. capital for development, and funds for basic operations, personnel, maintenance, applied research, and ancillary activities) must be obtained and sustained throughout project life and beyond. The project has to date received excellent support from international agencies, which has enabled considerable progress in infrastructure development and scientific research. Attempts are under way to establish a conservation trust fund to support future activities in the area.

**Practical basis:** The physical infrastructure and equipment necessary to conduct project activities must be in place. The project has built an excellent infrastructure at the Bomassa and Makao base camps and at the Ndoki and Mbeli Research Stations and has acquired sufficient scientific and practical equipment to conduct conservation, education, research, and maintenance activities.

**Timing:** Even the best laid conservation and management plans are unlikely to be adopted and succeed if the time is not conducive to such action. As the area of the national park had not yet been attributed to a logging company and had received relatively light hunting pressure at the time of conceptualization, the timing was highly favorable. The conservation activities taking place in the neighboring Dzanga-Ndoki National Park also contributed to the government's awareness of the desirability of conserving the Republic of the Congo's portion of this valuable natural area.

**Valuation:** Those who contribute to the achievement of conservation goals, whether by direct effort or by sacrificing short-term gains of wildlife and mineral exploitation, should perceive benefits in the existence of the project. All stakeholders who do not directly benefit must feel that there is an intangible or aesthetic value in the protected area. Practical and aesthetic valuation are both essential components, and a balance must be achieved to

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satisfy both practical (direct human benefits) and aesthetic considerations.

## PROJECT CHALLENGES

Conditions considered disadvantageous must also be accounted for in the design and execution of a forest conservation project. The following are currently present in northern Congo and are of critical importance in project planning:

**Highly-mobile human populations:** Local residents are readily attracted to areas where economic opportunities or other advantages become available, thereby increasing pressure on the natural environment and potential human/wildlife conflicts.

**Natural systems not corresponding to political divisions:** Forest and wildlife cannot be divided according to national or forestry management unit boundaries.

**Competition for land-use by other interests:** Forestry, commercial hunting, and mining pose formidable competition as they offer immediate lucrative benefits.

**Political instability:** Threats posed by civil war, ethnic strife, and regional instability threaten to undermine conservation projects.

**Lack of conservation tradition:** The concept of the conservation of living resources for future generations has little or no historic precedent in the area, either culturally or politically.

**Cyclical nature of funding:** Financial support of the project is based primarily on funds from bi- and multi-lateral sources and is vulnerable to reductions due to funding cycles and changes in the status of the host government vis-à-vis the foreign policy of donor organizations.

**Communications and logistics:** Isolation and lack of reliable transport and communications infrastructure pose practical difficulties.

**Personnel considerations:** Insufficient numbers of individuals who are experienced in the design and management of conservation projects exist among the Congolese contingent at present. Many host-country nationals prefer working in the bureaucracy of a capital city rather than in the field, where living conditions are frequently difficult. Often, well-trained host-country nationals are lured to higher-paying jobs outside the regional conservation community. Many expatriates working with international conservation projects prefer conducting scientific research rather than performing management and other operational functions.

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**Lack of appropriate judicial and legislative support:** Laws regarding forestry and hunting are outdated, ineffective, and only sporadically enforced. The penal system is virtually non-existent at regional and national levels, and even convicted law-breakers are not effectively punished due to complete lack of detention facilities and adequate prison support.

## MOVING TOWARD EFFECTIVE SOLUTIONS

Although the goals and objectives vary widely among various conservation projects, the general designs fall into two categories: top-down and participatory. The classic approach to wildlife management is top-down and usually implies the establishment of protected areas and their wildlife as resources owned by the state (IIED 1994). Participatory approaches are the result of a growing understanding and consideration of the needs and perceptions of local peoples. Pimbert and Pretty (1994) classified seven types of participation: passive; participation in information giving; participation by consultation; participation for material incentives; functional participation; interactive participation, and; self-mobilization active participation.

At one extreme, passive participation is a system wherein planning and decisions are carried out by experts from outside the conservation area and local people are informed of them without the opportunity to change them. At the other extreme, local people act independently of outside organizations to accomplish their goals. Between the extremes lie various degrees of participation which may include receiving direct and indirect benefits, *a priori* discussions, compensation systems for losses due to wildlife or missed exploitation opportunities, direct involvement in joint initiatives with outside conservation agencies, and the contribution of resources by both local groups and outside parties.

Conservation projects may also be described in general terms as: Protection/Conservation Projects (PCP); Integrated Conservation and Development Projects (ICDP); and Conservation Science Projects (CSP). The PCP is basically top-down and is based on the protectionist model whereby people and wildlife are separated, sometimes by fences and park boundaries, and law enforcement plays the primary role. As such, these top-down projects provide significant benefits for external interests, but the socioeconomic impact on local communities must be clarified and understood (IIED 1994).

The ICDP model is of more recent origin and is frequently promoted as a way to engage and empower local communities to conserve biological resources (Munashinghe and Shearer 1995; Western

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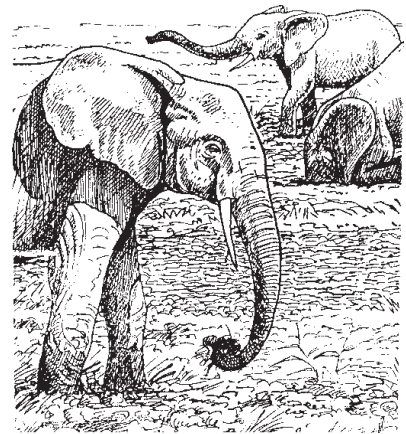
and Wright 1994; Gibson and Marks 1995; Barret and Arcese 1995). Frequently ICDPs include incentives such as agricultural improvements, economy-enhancing activities which are thought to be compatible with conservation goals, and community development, along with more traditional conservation activities. The model has been variously adopted by many international conservation organizations and employed across Africa with varying success. A variant of the ICDP model is to base conservation-dependent development in the community rather than imposing a development project from the outside without prior consultation and input from the community. Referred to as Community-based Conservation Projects (CBC), they are being widely employed across the continent and elsewhere as a means of reversing the top-down approach and focusing on the needs and perspectives of the people who make the sacrifices necessary to conserve wildlife. In addition to economic incentives to conserve living resources, they usually contain a conservation education component. CBCs include both traditional and modern conservation methods and may originate within or outside communities, as long as local communities benefit from them (Western and Wright 1994).

CSPs are based in applied ecological and socioeconomic research and may not directly address the need to protect natural areas but rather attempt to provide the knowledge basis to conserve and manage them (see Hardin, Rupp and Eves 1997 at <http://yale.edu/sangha>). CSPs, along with other approaches, can best be considered tools to be used within a broader conservation framework which may include the PCP, ICDP, or participatory, community-based actions.

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### THE NDOKI MODEL

The Ndoki Model is based on a set of guidelines intended to support the project’s primary goal of the perpetuation of the physical and biological integrity of the natural system in northern Congo.



*Loxodonta africana*.  
(Illustration: Bernardin Nabana)



Development of the model is a dynamic and empirical process which relies on the observation and interpretation of conservation-related efforts in central Africa and in similar places, and the selective application of appropriate concepts within the context of the NNNP and surrounding areas.

Historical and actual conditions and their likely evolution are considered in light of conservation goals and strategies suggested to achieve them. The conditions cited above are deemed relevant to the model's development and are continuously re-evaluated as part of this dynamic process. Certain problems (i.e. political instability or ineffective jurisprudence) are beyond the purview of any conservation project. However, acknowledgment and understanding of the risks posed by these conditions are necessary. Other undesirable conditions may be addressed through effective long-term planning and execution. The following guidelines take advantage of project strengths and seek to address its liabilities. Finally, some practical considerations are offered which may be relevant in model development and evolution.

## PROJECT ETHOS

The core of the NNNP, defined by the boundaries of the national park, is the cynosure for conservation activities in the region. The protection and preservation of its physical environment, biotic communities, and natural processes is the *raison d'être* of the project. The conservation and management of the living resources of the area are means to the end of the perpetuation of the biological integrity of the ecosystem. Working closely and cooperatively with the government and local populations is the best way to assure achievement of these conservation goals.

The design and gazettement of a national park are best done when opportunity cost is low vis-à-vis competing land uses (e.g. forestry, mining). The project model needs constant adaptation and modification. Research and development must be conducted continuously even before onset of and during activities in the field. Our knowledge is limited but is constantly growing, and the evolving situation requires constant reassessment (adaptive management).

The concept of "enlightened self-interest" serves as an effective mechanism to promote activities in buffer zone and peripheral areas which address long-term human needs while remaining ecologically responsible and promoting conservation goals in the region.

Relationships among the conservation projects and governmental agencies should be synergistic. For example, education and professional training helps the project directly and can contribute to the next generation of national leaders, thereby enhancing the country's

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ability to conserve and manage its natural resources.

Stakeholders' interests must be defined, developed, and defended by the project whenever it is judged that these interests are congruent and complementary to project conservation goals.

To the extent possible, large-scale development projects by other agencies should be conducted outside of the conservation area. This draws away from the managed conservation area and reduces human/wildlife conflicts while promoting economic development of the region and the country.

The project should contribute to the nation's institutions, specifically to those related to conservation, sustainable use of natural resources, education/professional training, and scientific research.

The project should also provide positive public relations for Congo and conservation efforts there. International awareness provides an incentive at various levels to support conservation activities.

#### LOCAL PARTICIPATION AND COOPERATION

Regional and national interests must be included at all stages of the decision, design, and implementation processes.

The interest of local people in schools, professional training, employment, other lucrative opportunities, and health care should be addressed to the degree necessary to promote their participation and support of the project. Stakeholders must receive at least the minimum to assure their cooperation and positive attitude toward the project and conservation goals.

The participation in the project by local residents should be maximized. As much as possible, employment opportunities should be offered to them as they make the majority of sacrifices to achieve overall conservation goals. These sacrifices represent a significant investment in the project. When no qualified local person can be found for a skilled position, a qualified individual of Congolese nationality from another community may be employed while necessary skills are taught to local candidates. If highly-technical or experience-demanding jobs cannot be adequately filled with Congolese candidates, expatriates should be employed whose mission should include training host country nationals to eventually fill that post.

A unified group of local communities is optimal. Meetings must address their concerns as well as the project's conservation goals, and a realistic and functional balance must be achieved when discrepancies are encountered.

To minimize disillusionment by members of local communities, promises must not surpass the financial limitations and other practical considerations of the project. Unrealized expectations by villagers and broken promises by project management can induce a spirit

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of disappointment and dissatisfaction with the project by local people.

Management strategies must be adapted to local ecological, cultural, and economic conditions. They should be built around the concept of the maintenance of a sustainable human population level in the project area and the avoidance of significant influxes of people from the outside who lack a bona fide claim of residency.

## PRACTICAL CONSIDERATIONS

- Providing sufficient benefits to local communities to encourage conservation of wildlife may become difficult where competitive and conflicting economic interests exist (i.e. logging, mining, commercial hunting).
- Uncontrolled immigration dilutes the benefits to local inhabitants and may cause dissatisfaction among legitimate local stakeholders.
- Conflict resolution should be practiced when the inevitable need arises.
- Development of a conservation trust fund to support and meet recurrent costs of running the project would assure perpetuation of the funding base in a way that is somewhat more insulated from the vicissitudes of bi-lateral funding.

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The planning of a protected area such as a national park, and its presentation to potential stakeholders, is a complex and difficult task requiring discussion and validation at all levels throughout the process of formulation, planning, and implementation. Discussion with stakeholders must continue throughout the life of the project, and it must be a true two-way exchange of information.

An effective anti-poaching component is an essential part of the protection program. Real disincentives to poaching and destruction of forest resources must be in place because incentives alone cannot assure cooperation with project goals.

Promotion of the trinational conservation initiative is desirable. This larger area allows a more ecosystem-based conservation strategy which corresponds more closely with the natural system. It also provides a degree of security in times of political disturbances in one of the three countries. Experiences among the participating organizations and individuals is usually relevant to others in the group. Continuous communication and cooperation among participants in the Sangha River Network would provide greater efficiency and a greater range of conservation activities such as professional workshops, information exchange, research, technical services, education and anti-poaching activities.

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