

## 19. Salonga-Lukenie-Sankuru Landscape

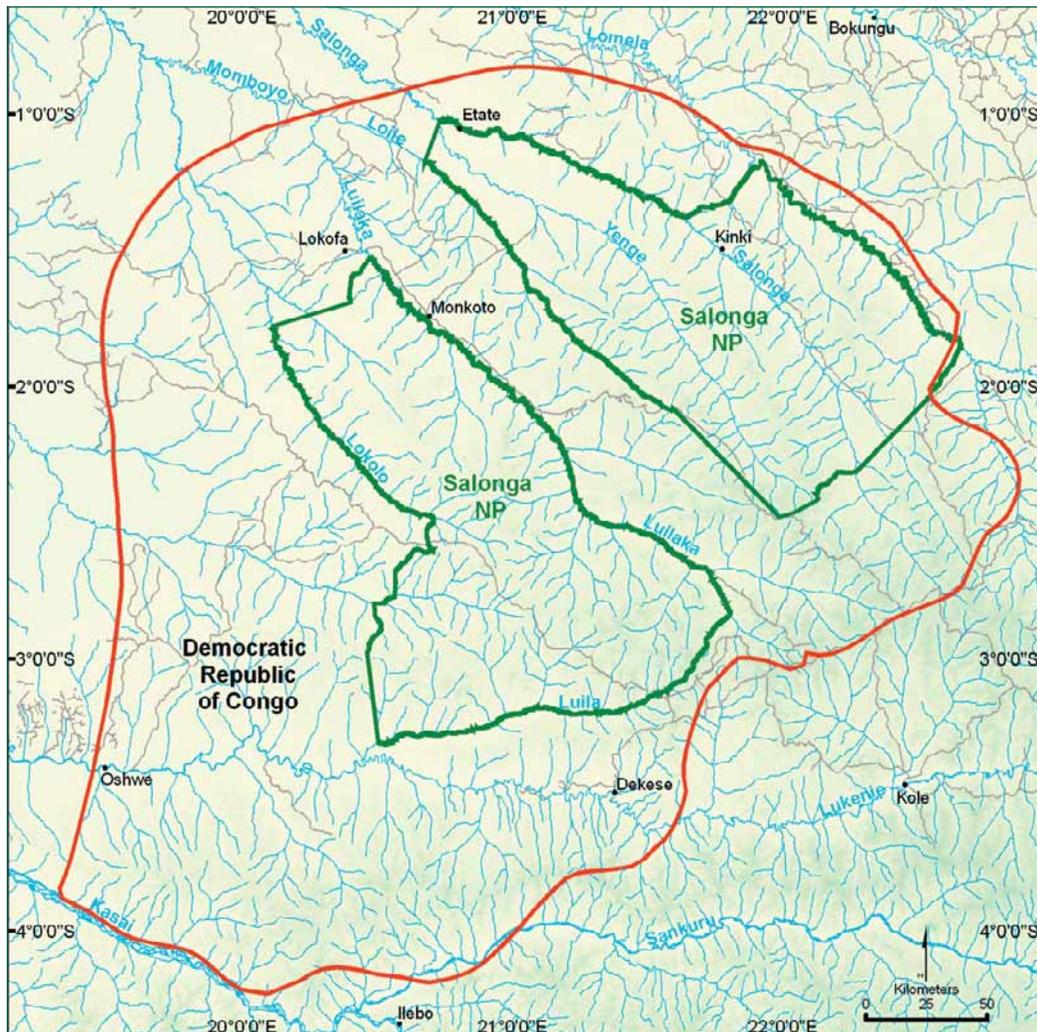


Figure 19.1. Map of Salonga-Lukenie-Sankuru Landscape (Sources: JRC, SRTM, SYGLAP, WWF-DRC).

### Location and area

The Landscape lies in the heart of the central basin of the Congo River in the Democratic Republic of Congo, straddling the provinces of Equateur, Bandundu, Kasai-Occidental and Kasai-Oriental. It covers 102,847 km<sup>2</sup> and is centered on Salonga National Park. The latter has an area of 33,350 km<sup>2</sup> and is the second largest area of protected forest in the world, but it is divided into two separate blocks (Figure 19.1)

### The Landscape in brief

**Coordinates:** 0°49'32"N – 4°13'49"S; 19°19'23"E – 22°52'24"E

**Area:** 102,847 km<sup>2</sup>

**Elevation:** 300-700 m

**Terrestrial ecoregion:** Central Congolese forests ecoregion

**Aquatic ecoregions:** Central Basin ecoregion

Kasai ecoregion

**Protected areas:** Salonga National Park, 33,350 km<sup>2</sup>, 1970

### Physical environment<sup>1</sup>

#### Relief and altitude

The relief comprises low-altitude plateaus, terraces and 'high' plateaus at an altitude of 300 m in the west and 700 m in the east. Most of the

Landscape is occupied by low-lying marshy or flooded land. In places, cliffs reaching 80 m high line the rivers.

<sup>1</sup> This section is largely taken from Evrard (1968).

## Geology and soils

The Landscape lies entirely within the alluvial basin of the Congo River. The youngest sediments are from the Pliocene, Pleistocene and Holocene ages; the oldest, which can be seen in the valleys, are Cretaceous. In the east, south and center of the Landscape, the soils are sandy or sandy-clayey (arenoferrals and ferralsols). The valleys are covered with white sands and the marshy areas are covered by a horizon of organic matter showing little decomposition. In the lower part of the Landscape, in the north and northwest, hydromorphic soils are dominant and cover more than 50% of the surface area.

## Hydrology

The northern half of the Landscape is drained to the northwest by more or less parallel rivers, notably the Lomela and the Salonga (Figure 19.2), tributaries of the Ruki which joins the Congo River at Mbandaka. In the southwest, part of the Landscape is within the basin of Lake Mai-Ndombe. In the far south, it is drained by the Lukenie and Sankuru rivers, tributaries of the Kasai, which flow into the Congo River at Kwamouth. Most of the Landscape is subject to major seasonal flooding.

## Climate

Average annual rainfall is 2,100 mm in the north and 1,700 mm near Lukenie in the south.

Monthly precipitation varies very little, but it does decrease slightly between June and August.

## Vegetation

The Landscape forms part of the central Congolese forests ecoregion and 94% of it is covered by diverse forest formations (Figure 19.3): 23.6% swamp or floodplain forests and 70.8% terra firma forests, which constitute a mosaic of mostly evergreen formations (in the moist lowlands) or caducifoliated formations (on plateau peaks and crests). The different formations include: small expanses of forest with a monodominance of *Gilbertiodendron dewevrei*, *G. ogoouense* or *Brachystegia laurentii*; semi-caducifoliated forests of *Staudtia stipitata*, *Greenwayodendron suaveolens*, *Scorodophloeus zenkeri*, *Anonidium manni* and *Parinari glabra*; riparian forests of *Uapaca heudelotii* and *Parinari congensis*; floodplain forests of *Oubanguia africana*, *Scytopetalum pierrea-num* and *Guibourtia demeusei*; and swamp forests of *Entandrophragma palustre*, *Coelocaryon botryoides* and *Symphonia globulifera*. The forest flora is dominated by legumes of the Caesalpiniaceae subfamily and then by Euphorbiaceae and Apocynaceae (Evrard 1968). Species with a high commercial value include various African mahoganies (*Entandrophragma spp.*) and various species of ebony (*Diospyros spp.*).

In the south, the Landscape has a transition area between the moist forests and the ecoregion of the mosaic of southern Congolese forests-savannahs represented by islands of savannahs (0.9%)

Figure 19.2. The Salonga River.



surrounded by forests. Finally, a very important habitat for fauna is formed by the swampy clearings rich in mineral salts and elephant baths or 'botoka njoku'. Several were identified during the initial survey work for the MIKE program and WCS studies; others have been mentioned by hunters in socioeconomic studies (WWF, 2006; WCS, 2005a; WCS, 2005b).

## Fauna

### Mammals

The Landscape is home to the bonobo *Pan paniscus*, a great ape endemic to the central Congolese forests ecoregion, and which lives in Salonga National Park, the only national park in the DRC to contain this species (Figure 19.4). Its fragmented distribution seems to be linked to the habitat (Alers *et al.*, 1992; Bila Isia *et al.*, 2000; Van Krunkelsven *et al.*, 2000; Reinartz, 2003). Nine other species of diurnal primates are present, notably the golden-bellied mangabey *Cercocebus chrysogaster*<sup>2</sup>, the black mangabey *Lophocebus aterrimus*, Thollon's red colobus *Piliocolobus tholloni* and Wolf's monkey *Cercopithecus wolffi*. The riparian forests also contain Allen's swamp monkey *Allenopithecus nigroviridis*. Other species of particular interest are the forest elephant *Loxodonta africana cyclotis*, the bongo *Tragelaphus euryceros*, the giant pangolin *Manis (Smutsia) gigantea* and the hippopotamus *Hippopotamus amphibius*.

### Birds

The avifauna is not yet well known, but 101 of the 228 species typical of the Guinea-Congolese forests have already been inventoried and the number should rise to 153 (Fishpool *et al.*, 2001). Among the species identified is the Congo peafowl *Afropavo congensis*, whose distribution is limited to the forests in the center and the east of the Congo Basin.

### Ichthyofauna

The aquatic ecosystems form part of two ecoregions: the Kasai ecoregion and the central Congo Basin ecoregion (Thieme *et al.*, 2005), which have over 200<sup>3</sup> and 300–400 species of fish respectively, but are still very little known<sup>4</sup>.

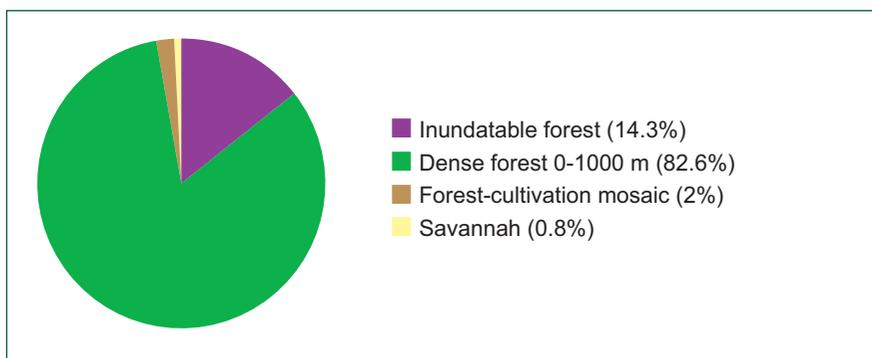


Figure 19.3. Main vegetation types (Source: JRC).

## Human populations<sup>5</sup>

### Density and distribution

The relatively low population density in the Landscape is estimated at 2.4 inhabitants/km<sup>2</sup>, but there are some large human concentrations in the towns of Oshwe and Dekese and between the two sections of the national park, especially to the north of Monkoto. These densities are strongly influenced by the presence of the national park, which covers 35% of the Landscape. Two populations reside entirely or partly within the limits of the park: the Kitawalists<sup>6</sup> and the Iyaelima<sup>7</sup>.

### Ethnic groups

The Landscape is primarily inhabited by one of the largest ethnic groups of the DRC, the Mongo<sup>8</sup>, represented by the subgroups Nkundo (81% of the Lokolama sector), Ndengese (99% of the Ndengese-Ikolombe-Isolu sector), Iyaelima (resident in the southern block of the park) and Isolu. Other groups include the Mbole (55.6% of the Wini sector), the Twa Pygmies (16.5% of the Lokolama sector) and a small population of Ngombe (4.4% in the Luay and Loombo sector).

### Activities

Agriculture<sup>9</sup>, hunting and fishing are quoted respectively as the main economic activities in the Landscape. All the other activities (traditional medicine, gathering, permanent or temporary jobs, retirement) concern fewer than 15% of the participants in socioeconomic surveys, except for in Monkoto where 20% of households say that they earn a living from temporary or permanent jobs. In the territories of Oshwe and Dekese, over 20% of households have only two sources of income: generally agriculture and hunting.

Agriculture is practiced year round, but the

<sup>2</sup> This species is limited to the northwest part of Salonga National Park and its conservation status is largely unknown at present.

<sup>3</sup> The Kasai aquatic ecoregion is very rich, with over 200 species of fish described, of which 25% are endemic. Some species are associated with the savannah watercourses, while others are only found in rivers bordered by flooded or floodplain forests. Little research has been done in recent decades (Thieme *et al.*, 2005).

<sup>4</sup> In two inventories on the edge of Salonga National Park, 32 species of fish were identified by Inogwabini (2005).

<sup>5</sup> A lot of these data come from the findings of socioeconomic studies carried out by WWF (2006) (sample: 836 households) in the Landscape and by WCS (2004) in portions of the park corridor and the northern limits of its southern block.

<sup>6</sup> The Kitawalists are a religious sect of Watchtower origin. They live both inside and outside the park and cite the 1960s as the official date of their installation in the area.

<sup>7</sup> These are members of the Mongo group. Their villages are situated in the southern sector of the national park, where they apparently arrived in the 19th century from the province of Equateur, as did other Mongo groups in migratory movements just before the colonial era.

Figure 19.4. The bonobo *Pan paniscus*.



products grown or harvested vary according to the season. Fishing is almost entirely limited to the low-water season (June to August). Men, families and sometimes entire villages move to temporary fishing camps during the low-water season. In the communities that practice fishing, hunting probably falls off during periods of intensive fishing.

The gathering of non-timber forest products is widespread<sup>10</sup>, but few inhabitants consider this activity as income-generating as the products are sold very cheaply at the village level. Caterpillars, mushrooms and some fruits are offered on the markets during certain seasons, but these products also contribute very little to household incomes. It is only in the Dekese territory that households mention this activity as generating income<sup>11</sup>.

Technological changes are reaching even the most remote communities. While agricultural tools have not developed much, hunting and fishing equipment and methods are changing constantly. Fishing practices include the building of dams on small streams by women and the making of traps by both men and women. The men fish with hooks and nets of natural or synthetic fibers. Meshes are becoming smaller and smaller and some fishermen would now seem to be using mosquito nets. Men and women also fish by using plant poisons or chemicals such as DDT. Increased fishing pressure is also connected with the increase in the number of fishing instruments per family, the extension of the fishing season and the rise in the number of fishermen, particularly in the Salonga and Lomela rivers.

Changes in hunting date back to the end of

the 1970s and beginning of the 1980s, when firearms became more accessible and poachers arrived. Political trouble and civil wars also contributed to the increase in firearms. Other hunting methods include the use of metal wires, nylon thread and liana traps. Men and boys often carry spears, and/or bows and arrows, which are frequently poisoned. The use of hunting dogs is very widespread. However, old people complain that youngsters are no longer interested in collective hunting with nets or in partitioning game according to clan membership and age. Growing individualism and the need for cash are mentioned as the reasons for these changes.

## Trade

Formal markets have only been seen in the largest towns and cities, such as Oshwe, Monkoto and Dekese, and even then they are not very big. There is no system of weekly or twice weekly markets as known in other regions of the country. Trade is also hampered by transport and difficult access. Paradoxically, the lack of economic opportunities elsewhere in the country, as well as the high demand for bushmeat, fish and certain non-ligneous forest products in the expanding urban (Kinshasa, Mbandaka, etc.) and mining centers (Kananga, Tshikapa, etc.), encourages people to travel long distances by foot, bicycle or canoe to trade forest products for products of prime necessity (salt, soap, medicine, etc.). Sixty-five percent of households in the Landscape acknowledge that they barter to obtain products of prime necessity and manufactured goods.

## Land use

Salonga National Park covers 36% of the Landscape, while concessions account for 26% and the remaining 38% can be classified as other land uses (Figure 19.5). The rural complex made up of cultivated land and young secondary forests covers only 2% of the surface area of the Salonga Landscape (Figure 19.3).

## Logging

At present, there are 13 companies with logging or prospecting permits in 21 concessions, which cover 25.7% of the total area of the Landscape. Most have been inactive for the last few years, but at least one concession is preparing to carry out biological and socioeconomic inventories in 2006. With the exception of the Oshwe region, industrial logging is severely handicapped

<sup>8</sup> 99% in the sector of Ndengese-Ikolombe-Isolu, territory of Dekese, western Kasai; 91.3% in the sectors of Luay and Lombo, territory of Bokungu, Equateur; 83.7% in the sector of Lokolama, territory of Oshwe, Bandundu; 44.4% in the sector of Wini, territory of Boende, Equateur.

<sup>9</sup> Most fields are polyculture with an average of 4.5 different products. Their area varies from 0.5 to 1.5 ha. The main products include manioc, groundnuts, rice, maize and, to a lesser extent, beans, gourds, sweet potatoes and sugarcane. Fallow periods vary from 5 to 10 years. Fields are more extensive to offset portions of the harvest destroyed by animals or disease. Destruction of fields is also controlled by traps set around the fields.

<sup>10</sup> Over 95% of households include gathering of non-ligneous forest products in their activities, except for within the Lokolama sector where the figure was only 89%.

<sup>11</sup> Gathering is mentioned as the third biggest source of income by 28% of households in Dekese.

by isolation and difficulties associated with access and removal. Nevertheless, one case of illegal logging was observed recently in the northwest corner of the southern block of the park and other cases of illegal logging, albeit on a small scale, have been reported on the Lokolo River. Timber from this region is floated to Mbandaka.

## Reasons for the identification of the Landscape

- (1) The Salonga National Park region has been designated a priority area for conservation in the Guinea-Congolese forests (Kamdem Toham *et al.*, 2006).
- (2) Although the animal populations are currently threatened by uncontrolled commercial hunting and poaching, the immense size of the forest blocks and the low human population density should offer good long term opportunities for conservation of wildlife endemic to the central Congolese forests ecoregion and important species like the forest elephant and bongo.
- (3) Salonga National Park is an Important Bird Area (IBA) according to BirdLife International (Fishpool *et al.*, 2001).
- (4) The forests in the Landscape play an important ecological role from the hydrological point of view and with regards to carbon sequestration.

## Conservation

### History

The Landscape is centered on Salonga National Park, the second largest protected area of tropical forest in the world, covering about 33,350 km<sup>2</sup> of intact forests and representing 36% of the Landscape. This national park (category II, IUCN) was created by presidential decree in 1970, became a World Heritage Site in 1984 and registered as a threatened World Heritage Site in 1999, but it has received little attention from national and international conservation bodies. At the beginning of the 1990s, Salonga National Park was slated to host the Zaire component of the ECOFAC program, financed by the European Commission, but the political events in 1991 meant that this program did not start up in Zaire<sup>12</sup>. However, during the decades of 1990 and 2000, several organizations (LWRP, MPI and ZSM) have begun research activities in and around the national park and are working to provide support to ICCN.

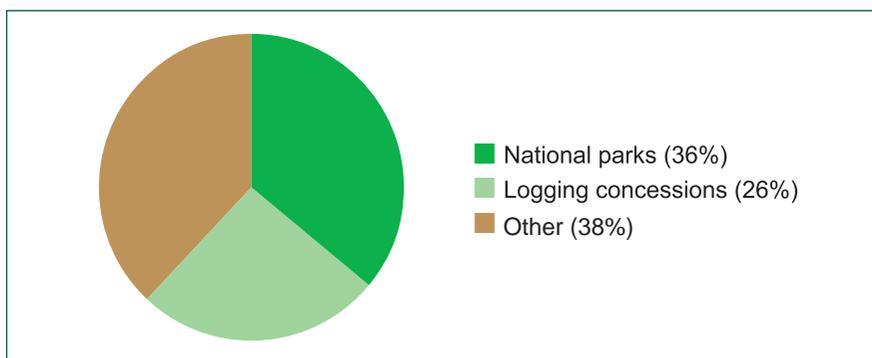


Figure 19.5. Main land use types.

### Players

#### (1) Governmental institutions

ICCN is responsible for the management of Salonga National Park. Outside the national park, management is in the hands of MECNEF.

#### (2) International NGOs

- The Lukuru Wildlife Research Project (LWRP) has been working on bonobos in the south of the Landscape since 1992 and currently supports ICCN.
- The Max Planck Institute (MPI) has been managing a research site just outside the western limit of the southern block since 2000.
- The Zoological Society of Milwaukee (ZSM) has been active since 1997 in monitoring the bonobos and other large mammals in the northern block of the national park, in support of ICCN and actions to combat poaching.
- WCS played an important role in the MIKE surveys in 2003 and 2004. This NGO continues to focus its resources (CARPE/USAID, private donors, UNESCO) on the national park and its buffer zone. It is carrying out inventories of bonobos and other large mammals. In collaboration with ICCN and local communities, it is working on the settlement of disputes related to the limits of the national park. It is also helping to create a GIS unit.
- WWF has supported activities in the national park since 1997 through ZSM. In 2004, it accepted the role of 'Landscape Leader' under the USAID CARPE program with additional financing from the EU. WWF is involved in strengthening ICCN capacities, carrying out basic socioeconomic and biological surveys, exploring the possibilities offered by community joint management and identifying new partners to assist in matters concerning resources and community management.

<sup>12</sup> In 1988, following the tropical forestry action plan (TFAP), the IUCN, with financing from the European Commission, prepared a regional action plan for Central Africa (PARAC) from which the conception of the ECOFAC program derived. The Zairian component of this program was to be concentrated on Salonga National Park. A budget of 3.2 million ECU was written into the finance agreement for the first phase of the program in 1990. The specificity decided upon for this component was 'conservation and management of a forest park through the strengthening of regional infrastructure, the creation of a research station and the start-up of small development initiatives'. Due to the political events of 1991, this program was never started up. However, in 1991 and 1992, the EC financed field activities to prepare for the installation of a new station in Botsima in the northern block. Cartography of the region was also carried out on the basis of satellite images and some equipment was installed, but looted shortly afterwards (d'Huart, 2003).

## Direct threats

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### *(1) Trade in bushmeat*

Surveys by ZSM, WCS and the MIKE program, socioeconomic studies and studies on the capacity of ICCN and direct observation by the managers of Salonga National Park have shown that uncontrolled hunting on a commercial scale and poaching in the park are the most serious threats to wildlife. The demand for bushmeat comes mostly from outside the Landscape, from remote urban and mining areas.

### *(2) Trade in live animals*

Trade in live animals, especially bonobos, is a fact and officials based in the Landscape will issue a certificate of legal capture for a live bonobo for the sum of 4,500 Congolese francs (US \$10).

### *(3) Ivory trade*

There is no precise information on the ivory trade, but ivory hunting continues and several cases were recorded in 2005 and at the beginning of 2006 in Salonga National Park.

### *(4) Military poaching*

Apart from hunting by the civilian populations, the national park is also threatened by the cynegetic activities of troops and armed gangs. This situation is a danger not only for wildlife but also for the human populations and undermines the authority of ICCN. To compensate for this, ICCN and its partners are actively lobbying the military, as well as provincial and national authorities.

### *(5) Destructive fishing*

The use of dynamite, poison and nets with smaller and smaller meshes may contribute towards the increasing rarity of certain species of fish.

### *(6) Lack of regulations for human populations in the national park*

The populations who live in the national park, either permanently or temporarily, clear land, grow crops, hunt and fish freely.

## Indirect threats

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### *(1) Collapse of the agricultural sector*

According to the local communities, the collapse of the agricultural sector, following the civil war, would seem to be the most important reason young people are turning to hunting and fishing.

### *(2) Proliferation of arms*

Hunting and poaching have been facilitated by the proliferation of arms.

### *(3) Limited accessibility*

The Landscape is only accessible by airplane or boat and access to most of the villages is problematic. In the past, merchants and missionaries traveled in vehicles on the roads of the colonial era and a network of navigable rivers crossed all the Landscape and made travel and trade easier. During the 1990s, these transport networks disappeared following the general economic decline and the civil war. Bridges have fallen, ferries were destroyed during the civil war and roads have deteriorated to such a degree that it is even hard to ride bicycles on them. The State owned boats do not run any more and private boats go to some remote sectors just once a year. This problem of access is a serious impediment to obtaining basic data, carrying out activities (including alternative activities to the trade in bushmeat), and monitoring and controlling exploitation of the natural resources.

### *(4) Weakness of government departments*

ICCN capacity is very limited and many wardens have received no training, have no specific knowledge and do not have the means to protect the national park. Furthermore, the authority of ICCN is diminished by its ill-defined involvement in the buffer zone. Outside the national park, the government agents responsible for management of the natural resources have suffered considerably from growing isolation following the war. They have neither the tools nor the knowledge to educate the populations in the field on environmental legislation and methods for managing natural resources.

### *(5) Lack of information*

Other than basic information on the key species (elephant, bonobo), there is very little information on the fauna and flora. The local communities are ignorant of the environmental legislation in force in the Landscape.

## State of the vegetation

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The forests are basically intact.

## State of the fauna

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Although data are rare and probably imprecise, the findings of the MIKE inventories (WCS, 2005a) reveal a worrying absence of elephants in

most of the park and densities are extremely low in areas where the species still exists<sup>13</sup>. This phenomenon probably extends outside the national park because the local communities in savannah areas often refer to the elephant and the buffalo as two species whose numbers have fallen considerably over the last 10-20 years. Even less information exists on the bonobo<sup>14</sup> but more recent reconnaissance in the national park has led to several new populations being discovered. In general, the distribution of the bonobo is very irregular and is probably influenced by the habitat and pressure from poaching (Reinartz *et al.*, 2006). There is a protected population outside the national park in the south of the Landscape, between the Lukenie and Sankuru rivers, where LWRP is supporting efforts by villagers in the fields of conservation and development.

According to villagers in the south of the Landscape, the cane rat *Thryonomys sp.* has appeared over the last 20 years<sup>15</sup>, but the lion seems to have disappeared<sup>16</sup>. The status of other savannah species is worthy of special attention.

As for the widespread small-scale fisheries, which export large quantities of smoked fish outside the Landscape, nothing is known about their impact on fish populations.

## Financing and conservation

The funding agencies:

- CARPE/USAID finances activities at the level of the national park and the Landscape.
- The EU focuses on the national park, but also intervenes at the Landscape level.
- UNESCO/UNF has financed some socioeconomic studies (WCS, 2004) and the payment of bonuses to national park staff.
- UNDP/FEM is going to provide communication equipment to the ICCN stations.
- The Trust Fund of the European Union and the World Bank (No. 050991) is providing equipment to ICCN, through WWF, in addition to the European Union's own program.
- The European Union is going to start activities in the Landscape through the ECOFAC program.

There is no long term funding available, and tourism promotion is unrealistic because of the isolation of the area and the weakness of management structures.

## Environmental education and capacity building

No structured environmental education program exists for Salonga National Park and the Landscape. A few rare consciousness raising concepts are provided by the teams of conservators or researchers during their working visits. The lack of a program does not help promote a good understanding of disputes, such as questions concerning the limits of the national park. To fill this gap, the Landscape partners are collaborating to define and apply an environmental education strategy.

## Management in the field of renewable natural resources

### (1) At the Landscape level

Basic data are necessary before a zoning plan can be produced for the Landscape. Socioeconomic studies have been carried out and will guide the future establishment of local partnerships, the choice of indicators for monitoring living standards and the identification of interventions in the field of sustainable use of natural resources. A map on the scale of the Landscape is being improved at present.

### (2) In the national park

Inventories of large mammals were undertaken within the framework of the CITES MIKE program as of 2003. Since the beginning of CARPE activities in October 2003 and the European Commission's program to strengthen the management capacities of ICCN and support the rehabilitation of protected areas in the DRC in August 2004, the partners involved in the national park have joined forces with ICCN to collect basic data and strengthen management, research and monitoring capacities. Players previously excluded from this process were incorporated. Given the serious threats to this national park, the partners embarked upon the following interventions:

In the field of basic data collection:

- evaluation of ICCN capacities, including recommendations for staff recruitment, the development of infrastructure, equipment and anti-poaching strategies
- finalization of the basic map
- analysis of threats
- socioeconomic studies and surveys

<sup>13</sup> In 1989, the number of elephants in the national park was estimated at 8,300 (>2.2 individuals/km<sup>2</sup>) (Alers *et al.*, 1992) and according to MIKE surveys in 2003-2004, it was estimated at only 2,000 (WCS, 2005a). It should be noted, however, as indicated in the WCS report, that it is difficult to compare these surveys given the enormous potential sources of errors in each of them. (WCS, 2005a, p. 98).

<sup>14</sup> In 1998 the density of the bonobo populations in the northern part of the northern block was estimated at 1.15 individuals/km<sup>2</sup> (Van Krunkelsven *et al.*, 2000). A more recent density estimate indicates 0.73 adults/km<sup>2</sup> according to the surveys carried out in both the southern block (3 sites) and the northern block (8 sites) of the park, between October 2000 and May 2002 (Reinartz *et al.*, 2006).

<sup>15</sup> Villagers living between Dekese and the national park say that this species has apparently arrived in their region from the south over the last 20 years.

<sup>16</sup> In Dekese, villagers talk of the well documented killing of the last lion (a man-eater) on the savannahs between Lukenie and Sankuru or south of Sankuru in 1999 (WWF, 2006).

In the field of training:

- creation of the site coordination committee (CoCoSi)
- support for ICCN as regards equipment, fuel and the training of administrators and wardens

In the field of surveillance:

- creating anti-poaching patrols at the six stations
- payment of bonuses to wardens
- creation of new jobs at Eate, Kinki, Beminyo and Lokofa

In 2006, the partners are going to finalize a strategic management plan for the national park with the technical support of USFS.

### (3) *In the extraction areas*

Many coffee, palm-oil and rubber plantations have been listed, but none are active. Similarly, although 25% of the Landscape is allocated to logging companies, no logging on a commercial scale has been observed. The moratorium in place at present on industrial logging also prevents formal cooperation between conservation agents and logging companies, but the possibility of collaborating on biological or socioeconomic studies has nevertheless been informally discussed.

### (4) *In the rural areas*

Although satellite imaging makes it possible to locate agricultural activities, only field work makes it feasible to identify the hunting and fishing areas. Some of this information was collected during the socioeconomic studies. Additional data will be collected as a part of the biological surveys. Two studies are planned to begin work with the local communities on improving the management of natural resources. Meetings were held with representatives of the communities, particularly with a view to resolving disputes concerning demarcation of the national park. In fact, one of the priority requests by the communities is to be able to fish the rivers that form the boundaries of the national park. During the dry season in 2006, a partner institution is going to carry out a study on the management systems on these rivers in order to put forward recommendations concerning collaborative management between the local communities and ICCN. A second study will explore the economic feasibility of marketing selected agricultural produce and non-ligneous products in the Landscape, in order to ease the pressure on wildlife and diversify the economic opportunities of the local communities. GTZ has

supported MPI for a feasibility study on exporting ornamental fish (Schliewen, 2002).

The CARPE Small Grants Program is supporting local NGOs whose activities deal with the management of natural resources and conservation of biodiversity. The first year's results will allow long term partnerships to be better defined and additional resources and/or expertise to be brought in.

## Governance in the field of renewable natural resources

Governance as regards renewable natural resources is based on a major ambiguity between theory and reality. According to the law, ownership and management of the land and its natural resources are a State mandate. This situation is common in Central Africa. In a Landscape characterized by its isolation and the low level of State services, it is very marked indeed: access to and management of resources are usually determined by the local communities or local authorities, such as the traditional chiefs. The ambiguity between the legal situation and the reality means that the communities come under external pressure from 'outsiders' who do not live in the Landscape and who have greater political and economic means to hunt and fish on village lands through authorizations and the payment of fees<sup>17</sup>. Most communities describe similar systems of local governance of the land and its natural resources.

Salonga National Park could be an exception given the presence of ICCN, a governmental authority. In practice, six ICCN management stations spread over the park are responsible for management of Salonga National Park. However, these stations do not operate well due to an insufficient budget, a lack of sufficient training<sup>18</sup>, lack of equipment, inadequate staff and poor infrastructure. Nevertheless, local communities, displaced before and after the creation of the national park and excluded from its management, continue to demand a right of authority over their former lands and resources. They still gather fruit and other products in their old fields. The vague policies pursued by ICCN have caused much confusion, due to the fact that some cooperatives and individuals have obtained authorization to fish in the park by paying taxes. Another ambiguity concerns the fishing rights for the local populations in the rivers forming the limit to the national park: where does the national park begin? Midstream or on the bank? This exclusion and ambiguity, combined with the feeble capacity of ICCN, the civil war and centralized but inef-

<sup>17</sup> Village lands are separated by known limits, often based on streams or rivers. The inhabitants have access rights to the forests on their land for agriculture, the gathering of non-ligneous forest products, hunting and fishing. Neighboring villages can be invited to join in collective hunts, but this practice is disappearing. Outsiders interested in hunting on these lands must obtain the permission of the chief of the land and pay access fees in cash or munitions. Access to fishing lodges is more restricted: some villages even prohibit access completely, while others demand payment. However, the use of seasonal fishing camps can be extended to family members living as far away as Mbandaka. Gathering non-ligneous forest products is not regulated unless it is for commercial purposes.

<sup>18</sup> Between December 2003 and January 2004, 54 Salonga National Park wardens received paramilitary training in collaboration with the Ministry of Defense and organized by ICCN with financing from ZSM.

efficient governmental structures, have all contributed towards the anarchic use of natural resources in and around the park.

With a view to developing management and decision making capacities, a site coordination committee (CoCoSi) has been set up for management of the park. It includes ICCN and partner organizations (LWRP, MPI, ZSM, WCS and WWF). It is hoped that in time representation on CoCoSi can be extended to include representatives from the local communities. For the immediate future, several wardens have established standing committees for local consultation with the villages. ICCN is also working with partner organizations to better define the concept of community conservation. At the same time, there are also initiatives from the natural resources sector, such as the creation of community forests, which will encourage participation by the local communities at the Landscape level.

## Monitoring of renewable natural resources

MIKE studies carried out in 2003-2004 provided some important basic information that will allow future monitoring of wildlife in the park to be put into place, particularly for forest elephants. These inventories of large mammals will continue and a preliminary study on the potential for biological monitoring is planned.

Several research institutions are studying the ecology, distribution and behavior of the bonobo.

A national database managed by ICCN's SYGIAP (*Système de gestion des informations des aires protégées*) already exists for the World Heritage Sites and a map of the park and its buffer zone has been produced. This database will be directly accompanied by the development of similar capacities for use in the field. A database at Landscape level is to be completed and will serve to produce a map like the one for the national park. The two databases will be the main tools for long term monitoring of conservation activities and sustainable management of natural resources.



*Figure 19.6. Bicycles remain the last available transportation vehicle in many parts of the central Congo Basin.*