

A GUIDE TO THE NOUABALE-NDOKI NATIONAL PARK

MARK GATELY

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The cover photo was taken by Thomas Breuer.

For information on how to visit the Nouabalé-Ndoki National Park or to find out more about conservation activities in Congo, visit the WCS-Congo web site at www.wcs-congo.org.

WCS-Congo Program
BP 14537
Brazzaville
Congo
info@wcs-congo.org
www.wcs-congo.org

WCS Africa Program
2300 Southern Boulevard
Bronx, New York 10460
USA
www.wcs.org

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WELCOME TO THE NOUABALE-NDOKI NATIONAL PARK

The Republic of Congo is home to one of the richest and most biologically important forest ecosystems on the planet.

Around 60% of the country is covered by lowland tropical forests, much of which is made up of large tracts of undisturbed virgin wilderness. These areas are home to a diverse range of rare and endangered mammals, insects and plants - forest elephants, chimpanzees, western lowland gorillas, and bongo antelope are just some of the species of large mammals which roam the forests. The country also boasts old growth forests containing mahoganies and other tree species which are many hundreds of years old.

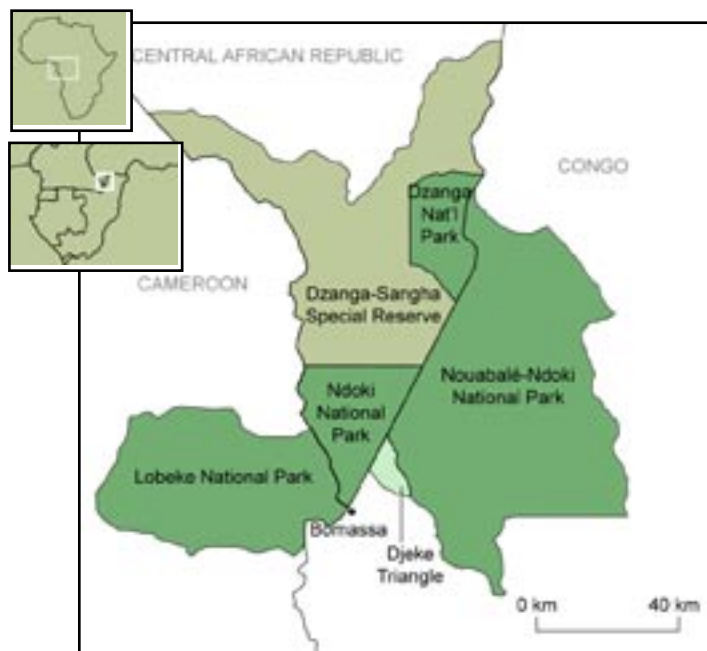
For the last 15 years the Wildlife Conservation Society (WCS) and the Congolese Ministry of Forestry

Economy (MEF) have worked together to manage several of the country's protected areas. This partnership began in the early 1990s with the creation of the Nouabalé-Ndoki National Park, where WCS field staff worked with the government to set aside an un-logged forestry concession as the Nouabalé-Ndoki National Park (NNNP). The national park was extended in 2001 when the government annexed the area known as the Goulougo Triangle to the NNNP.

Congo is home to many species of large mammals and birds, such as the yellow-backed duiker (below) and the Senegal Kingfisher (below, right).



Photo: Ian Nichols



The Nouabalé-Ndoki National Park is contiguous with protected areas in neighbouring Cameroon and Central African Republic, and is situated in the heart of the Congo Basin (left).

Effective protection and management systems are now well established within the NNNP, and so park management are now looking to establish more long-term and sustainable financing mechanisms to ensure the longevity of the NNNP and its wildlife.

To this end, an ecotourism project was established in the NNNP in 2000 with a focus on great apes, and specifically gorillas, and this project has so far proved to be successful. Partnerships with private sector companies have enabled the NNNP to attract a significant number of tourists from Europe, Japan and the US, and ecotourism has also benefitted greatly from the cross-boundary collaboration facilitated by the Sangha Trinational initiative. Many of the visitors that come to NNNP also visit at least one of the neighbouring trans-boundary protected areas as part of

their trip. This guide book aims to facilitate that work by providing information to visitors on all aspects of the national park and its biodiversity, while also promoting ecotourism at NNNP and the wider region.



Photo: Thomas Breuer



NOUABALE-NDOKI: A UNIQUE WILDERNESS

Nouabalé-Ndoki National Park is a rare example of an intact forest ecosystem in Central Africa, completely uninhabited by people, and with extremely low human population densities in the surrounding area.

Photo: Michael Nichols



The Nouabalé-Ndoki National Park (NNNP) was created in 1993 in a bold move by the Government of Congo to protect 4,000 km² of intact forest previously marked for commercial timber extraction.

In re-classifying the area as a national park, they ensured that this vast forest wilderness would remain free from human encroachment and extractive activities such as logging and mining. Today, the Nouabalé-Ndoki National Park is home to important populations of forest elephants, western lowland gorillas, chimpanzees, bongo antelope and many other endangered large mammals. It also boasts over 300 bird species and 1,000 plant species, including a rich diversity of old growth endangered mahoganies. The national park is also important as the source of the head waters of three of the four major river systems which drain the north of the country.

Located in the Congo sector of the Sangha Trinational Zone, the Nouabalé-Ndoki National Park provides complete protection to wildlife and their habitat through a collaborative project between the MEF and WCS. Activities within the national park have focused on developing and implementing effective management systems and strategies for protection, ecotourism, research and monitoring, with substantial capacity building programs in each of these areas. The national park is protected by a cadre of 'eco-guards', who operate under the direct supervision of staff from the MEF, and who ensure that the protected area remains free of illegal human activities, such as elephant poaching. As a



Photo: Thomas Breurer



Photo: Thomas Breurer

result, the Nouabalé-Ndoki National Park boasts an intact forest ecosystem which is completely uninhabited by people and with extremely low human population densities in the surrounding area.

Planning for a National Park

The current limits of the Nouabalé-Ndoki National Park were determined after a series of reconnaissance surveys and walks conducted in the area in the early 1990s by the Wildlife Conservation Society. These surveys were designed to identify those areas of the region that were important for populations of wide-ranging wildlife species such as forest elephants, as well as other endangered species such as gorillas

and chimpanzees.

The Nouabalé-Ndoki National Park is home to important populations of large mammals, such as forest elephants (left); and De Brazza monkeys (above).

At the time, very little information had been collected on the density and distribution of large mammals in

the area, and so it was vital to gain a broader understanding of the ecological landscape in order to ensure that the boundaries of the National Park would be appropriate for the long-term conservation of these species and their habitat.

These surveys also collected information on human activities in the area, to ensure that any future protected area took into account the legitimate requirements of local populations who relied on the area's natural resources for their livelihoods.

These surveys identified the Mbeli clearing as an important site for conservation. This site had been a key site for elephant ivory poaching during the 1980s, and was by the early 1990s showing the first signs of recovery after poachers had been discouraged from using the area.

These reconnaissance surveys were also the first to record encounters with 'naïve' chimpanzees in the area which is known now as the Goulougo Triangle. This term was used to describe chimpanzees that had apparently never seen humans before, and so did not flee when first encountering them in the forest. Instead, the chimpanzees displayed a certain curiosity towards the human observers, and would descend to the lower branches of trees to gain a better view of the new arrivals. This behaviour is thought to originate from the fact that



Photo: Ian Nichols

the area is sandwiched between two natural barriers, the swamps of the Ndoki river to the west and the Goualougo river to the east, which prevented humans, and in particular, hunters, from reaching this area. This behaviour has also been observed in populations of chimpanzees elsewhere in the national park where it is similarly remote

Conserving Biodiversity Across the Landscape

There are a range of different land uses across the larger Ndoki landscape that extend outside the national park. These include biodiversity conservation, timber exploitation, hunting and fishing. In this context it is no longer sufficient to restrict protection activities of large endangered wildlife species to within the park boundaries; effectively managing wide-ranging species such as forest elephants means guaranteeing them protection across the whole of their range, and not just those

parts that fall within protected areas. WCS and national park staff therefore opened up a dialogue with government officials and representatives of the nearby logging company, and began working closely with local people and villages outside of the park. This resulted in the creation of the

Project Gestion des Ecosystèmes Périphériques au Parc National Nouabalé-Ndoki (Project for the Management of Ecosystems Adjacent to the Nouabalé-Ndoki National Park), or PROGEPP, in 1999, a collaboration between WCS, the Government of Congo, the timber company CIB (Congolaise Industrielle du Bois) and the local community. PROGEPP protects endangered species such as elephants and great apes, as well as managing the sustainable hunting of other

Chimpanzees such as those found in the Goualougo Triangle (above) first reacted with curiosity to observers.

EMERGING THREATS ACROSS THE LANDSCAPE

The Nouabalé-Ndoki National Park was created in 1993 when the Nouabalé Forestry Management Unit (FMU) was reclassified as a protected area. The Nouabalé FMU had never been exploited, and formed part of a patchwork of forestry concessions that dominated the north of the country.

The newly created national park was bordered by the Mokabi forestry concession to the north, the Loundougou concession to the east and the Kabo concession to

the south; of these three management units, only one had been allocated to a forestry company for exploitation. However, over the past fifteen years the remaining concessions have not only been allocated for exploitation, but are all currently being exploited, and while these activities bring much-needed development to rural populations, they also bring with them a myriad of threats to the forest fauna and flora.

Logging operations often inadvertently facilitate illegal activities such as the

commercial exploitation of ivory and bushmeat, constructing a road network that opens up previously inaccessible areas to poachers. The large logging settlements that are constructed to house the logging company employees increase the demand for bushmeat and other wildlife products. At Nouabalé-Ndoki, a major road that crosses the Loundougou FMU was opened for public access in 2007 and passes within a few kilometres of the southeastern corner of the National Park, creating an important access route for poachers to transport bushmeat from the remote forest areas to urban markets.

The spread of forestry exploitation across the landscape has resulted in the development of a road network (below) to facilitate the transport of logs (above, left).



Photo: David Wilkie



Photo: Mark Gately

species such as duikers and wild pigs, which are important as food for the local population. Project staff also advise the logging company on reducing the negative impacts of logging on wildlife through the creation of hunting zones, the provision of alternative sources of protein such as beef and chicken, and the development of community conservation education programs. PROGEPP is a successful example of integrating conservation into logging concessions to the mutual benefit of both wildlife and the local community.

Conservation efforts also cross national boundaries. The Nouabalé-Ndoki National Park is part of the Sangha Trinational (TNS), a complex of protected areas which encompasses the three countries of Congo, Cameroon and Central African Republic. Together these countries form one of the most

important biodiversity conservation areas in Central Africa, with over 25,000 km² of contiguous lowland tropical rainforest that harbours some of the largest populations of forest elephants, gorillas and chimpanzees in Africa. Following a decade of transboundary collaboration in the TNS, an official accord was signed by all three member states in December 2000. This accord reflects the commitment of the three countries to collaborate in the management and conservation of this zone.

The TNS is thus not only a regionally and globally important area for biodiversity conservation, it is also a testing ground for assessing and enhancing the effectiveness of collaborative and sustainable approaches to the conservation of wildlife and wild places.



Photo: Emma Stokes



Involving Local Populations

The closest village to the Nouabalé-Ndoki National Park border is the village of Bomassa, situated on the banks of the Sangha river and just 800 metres downstream from the National Park headquarters. Villagers were consulted extensively before the National Park was created, and demonstrated strong support for the creation of the park from the outset. Support has remained strong ever since, and local villagers are key stakeholders in the protected area.

During the 1980s Bomassa village was

The river Sangha is situated at the heart of the Sangha trinational complex (left); Dzanga bai is an important tourism site within the TNS (above).

a major centre for elephant poachers in the area. Poachers hired trackers and porters in the village before travelling

east to hunt elephants in the Ndoki area, and often across the river at Mbeli bai.

After many months of negotiations between local villagers and the Wildlife Conservation Society, the local population agreed to end its support of elephant poachers, and instead become a conservation village supporting the creation of the Nouabalé-Ndoki National Park.

Many of the ex-poachers were employed by the National Park as game guards, maintenance staff and forest guides, and a school and dispensary were constructed in the village for the benefit of local people.

BOMASSA VILLAGE

The village of Bomassa has been situated in its current location since the early 1920s, and was originally known as 'Ngolio', which means 'eagle' in the local Bomassa language. It took its name from an eagle that used to make its nest at the site where the first inhabitants arrived. The name of the village became confused with the ethnicity of the inhabitants during the colonial period (Bomassa is the name of both the ethnicity and language of the founders of the village), and eventually the name Bomassa replaced Ngolio in the colonial records. Before they colonised the current village site, many Bomassans were scattered across the islands that lie on the Sangha river, and further upstream on the Cameroonian bank of the river.

The first person to bring his family to the site was a man named Mokoto, who arrived between 1920 and 1925. Many of Mokoto's descendants still live in the village today, and the current chief of the village is one of Mokoto's great-grandchildren. Around this time, a rival ethnic group, the Pomo, were based on the Ndoki river near the modern-day access point to the national park, about 30 kilometres from Bomassa. The Pomo made sporadic attacks on Bomassa village, and these were only halted when Mokoto returned to the islands of the Sangha to gather together a large group of ethnic Bomassans who were able to repel the Pomo.

Following the death of Mokoto towards the end of the 1920s, one of his sons (named Ndombe) took over as chief of the village. However, it was not long before Ndombe left Bomassa to work on the railway link that the colonial authorities were building in the south of the country to link Brazzaville with the port city of Pointe-Noire, and many of the Bomassans began to leave the village during his absence to set up settlements and fishing camps elsewhere on the Sangha. Most of these settlements still exist today, such as Mombongo, Bounda and Molongodi, and can be seen on pirogue trips between Ouesso, Bomassa and Bayanga.

By the time the Wildlife Conservation Society arrived in the late 1980s, Ndombe's nephew Tambomo had taken over as head of the village, and he was a key player in the subsequent negotiations that led towards the creation of the Nouabale-Ndoki National park. Tambomo's son, Fidele Komaka, succeeded him in 1999.



Photo: Ian Nichols



Photo: Michael Nichols

SEMI-NOMADIC COMMUNITIES IN BOMASSA

Semi-nomadic groups have lived alongside the Bomassans since the village was founded at the start of the twentieth century. These groups are also often known as 'pygmies', with the most numerous ethnic group in Bomassa being the Bangombe group.

Cooperation between Bangombe and Bomassa has developed over many years, and is principally based on economic exchange between forest products such as meat and medicinal plants provided by the Bangombe in return for manioc and

manufactured goods provided by the Bomassans. Traditionally Bangombe would embark on long hunting trips lasting several weeks (termed Molongo), crossing large areas of territory, but these long hunting trips are no longer undertaken. Instead hunters usually go hunting on day trips in hunting zones that are close to the village

The Bangombe way of life has also changed with the arrival of both logging and conservation activities in the area. These activities offer alternative

sources of income and employment for Bangombe populations, although they do often rely on traditional Bangombe knowledge and skills, such as tracking gorillas and botany.

The Bangombe have retained a strong spiritual link with the forest however, and regularly undertake ceremonies and dances in the village which have an important cultural and spiritual function; one such dance centres on Ejengi, a forest spirit that visits the village at night and must be repelled back to the forest by the population.

Bomassa village (left, facing page) was established at its present site in the early 1900s; the village includes a large semi-nomadic population (top, above left).



Photo: Mark Gately



VISITING THE NOUABALÉ-NDOKI NATIONAL PARK

The Nouabalé-Ndoki National Park is one of the only places in Africa where western gorillas can be observed in the wild.

Photo: Ian Nichols



The Nouabalé-Ndoki National Park is one of the only places in Africa where western gorillas can be observed in the wild, with visitors able to view the spectacle of multiple groups of gorillas from the comfort of an observation platform at Mbeli Bai, as well as following a group of habituated gorillas at close quarters in the forests of Mondika.

The focus of ecotourism in the NNNP has, until recently, been gorilla viewing at Mbeli Bai, a large forest clearing that is frequented by western lowland gorillas who come to feed on the aquatic vegetation. These clearings provide excellent viewing conditions for typically elusive forest mammals such as gorillas, forest elephants, forest buffalo, sitatunga and otters. Observations are made from a two-tiered viewing structure that has been constructed on the edge of the clearing, and there are currently 13 known gorilla groups and nine solitary silverbacks that regularly visit the

bai. All the gorillas are habituated to the presence of observers on the platform, and all of them have been individually identified by the research team who maintain a permanent presence on the platform. The tourism experience at Mbeli Bai therefore offers the opportunities to not only observe western gorillas in their natural habitat, but also to learn about their social behavior, life histories, and conservation significance from the researchers who study them.

An outstanding recent addition to the ecotourism activities available in and around the NNNP, is a group of habi-



Photo: Thomas Breuer



Photo: Thomas Breuer

tuated western gorillas which inhabit an area next to the Mondika river. The area is known as the Djeke Triangle, and is situated approximately 20km north of Bomassa (NNNP HQ) and 5km west of the NNNP border.

The Djeke Triangle is of extreme conservation significance, and plays a unique role as a corridor between the three national parks of the Sangha Trinational core protected area. It was also recently classified as a conservation set-aside by the logging company CIB as part of

Large mammals such as this male sitatunga (left) and forest buffalo (above) can be seen at Mbeli bai. Wali bai (right) is often visited by elephants and buffalo.

their application for certification from the Forestry Stewardship Council (FSC) in the Kabo FMU.

The Djeke Triangle is currently the only sector of the Kabo FMU which has not been previously logged, and therefore represents an intact forested zone of approximately 11,000 hectares of extremely high ecological integrity.

The zone contains an extraordinarily high density of gorillas, and following seven years of habituation efforts by a team of Ba'Aka trackers, ex-patriate,

Congolese and Central African researchers, a group of western lowland gorillas (Kingo's group) has been fully habituated to the presence of researchers. This is the only group of western gorillas that has been habituated to the extent that researchers can move freely within the group, and the experience of visiting these gorillas is comparable to that of visiting the mountain gorillas of east Africa.

The final activity which has been developed for tourism by NNNP staff is large mammal viewing at Wali Bai, a clearing which is situated two kilometres north of the national park headquarters in Bomassa. The clearing contains a



Photo: WCS

picturesque shallow lake which is visited by large mammals such as elephants and buffalo, and a small viewing platform has been constructed on the edge of the clearing to allow visitors to view the animals comfortably.

The clearing is ecologically very different from the other bais which are situated in the region, and so offers visitors a contrasting experience to that which is available at Mbeli, for example.

The clearing also provides an opportunity to see a greater range of aquatic wildlife and birds than is available elsewhere, while there are several trails around the clearing which offer the opportunity for guides to take visitors on guided walks in the forest.

A Unique Visitor Experience



Photo: Mark Gately

Rustic yet comfortable visitor accommodation has been constructed at Mbeli and Mondika so that each camp is able to host small groups of visitors throughout the year.

The Mbeli gorilla camp comprises four timber bungalows which have been constructed on raised pillars and include small terraces that offer extensive views

of the forest canopy and its wildlife, including a number of different primate and bird species. Each bungalow has its own forest toilet and shower area, and sleeps two people, while all meals are provided in a rustic dining room that is situated in the centre of the camp. The camp is equipped with solar electricity, and provides visitors with a mix of comfort and privacy in a unique forest setting. The camp is staffed by a team of well-trained guides and cooks, who both manage the camp and accompany visitors on trips to the viewing platform.

Accommodation at the Mondika camp comprises large walk-in tents which have been installed under traditional thatch roofs to ensure that they are fully protected from the elements. The camp is smaller than the Mbeli camp, since restrictions

on visitor numbers following Kingo's group in the forest mean that there is a maximum of four

visitors staying at the camp at any one time. As with Mbeli, each tent has a private toilet and shower area. All visitors to Mbeli and Mondika stay first at the NNNP headquarters at Bomassa.

The base camp has a total of seven bedrooms: two guest rooms that sleep a maximum of six people each, four double rooms that can accommodate a further eight people, and one additional room that can accommodate three people. There are plumbed toilets and showers at the camp, as well as a range of cold soft and alcoholic drinks.

Accommodation at Mbeli camp comprises comfortable bungalows (left), while the journey to the camp includes a trip in a pirogue on the Mbeli river (above right).

Getting There



Photo: Ian Nichols

There are regular domestic flights from Brazzaville to Ouesso. On arrival in Ouesso, it takes between four and five hours to travel up the River Sangha by motorised dugout canoe to Kabo, where tourists are met in a NNNP vehicle which brings them to the NNNP headquarters at Bomassa.

The journey along the Sangha river takes visitors past several small villages and fishing camps which have relied on the river for food and shelter for several generations, and retraces the journey made by colonial paddle steamers many years ago which travelled along the Sangha as far north as Nola, in the Central African Republic

It therefore takes a full day to travel from Brazzaville to Bomassa, and these time constraints mean that it is not possible to travel from Brazzaville to the Mbéli and Mondika camps without making an overnight stop in Bomassa.

It takes a further two and a half hours to arrive at the Mbéli camp from Bomassa, travelling first by truck along a forestry road and then transferring to small dugout canoes to enter the national park and travel along the narrow Mbéli river to the camp.

Access to the Mondika camp is more arduous, and involves a three-hour walk, including the crossing of a small river (thigh-deep), whilst visitors may have to walk over an hour to find the gorillas each day when they leave camp. Tracking the gorillas may involve walking through dense undergrowth or swamps, and so all visitors must be in good physical condition.

Ecotourism and Conservation

Whilst trying to maximise the visitor's experience, we ensure that all ecotou-

rism initiatives minimize the negative impact on the surrounding environment, and respect local cultures and values. Ecotourism generates a sustainable source of income for biodiversity protection and for a number of different stakeholders, particularly local communities. In addition to bringing wonderful wildlife spectacles to the world at large, ecotourism can also provide an educational aspect for visitors to an area.

WCS is ideally placed to ensure that the development of ecotourism activities has as little negative impact as possible on wildlife in the region. The negative impacts of gorilla habituation and tracking are minimised, with particular care being paid to gorilla health issues and vulnerability to poaching. As a result, strict guidelines for visitor health have been implemented, and, more importantly, trackers and guides have been enrolled in a strict preventative health program that includes regular checkups and vaccination against diseases that are transmissible between humans and gorillas. This is conducted in collaboration with the WCS Field Veterinary Program and the Congolese public health official based in Bomassa vil-

lage. Full health and visitor protocols have been developed by WCS and other experts for this and all other ecotourism activities.

We are also keen to ensure that local communities benefit directly from the development of ecotourism. A local village development committee was convened in 2000 which launched a Village Development Fund specifying that a fixed proportion of all visitor fees is directed to this fund, for development projects that contribute to the general wellbeing of Bomassa villagers. Local people also benefit directly from ecotourism through employment with the project, since the NNNP favours people from the neighbouring villages in its recruitment process; guides, trackers, hotel staff, drivers, etc. are therefore recruited locally wherever possible.

Tourists, such as the group below, make a contribution to the village development fund.



Photo: Ian Nichols

WHAT IS ECOTOURISM?

The International Ecotourism Society defines ecotourism as 'Responsible travel to natural areas that conserves the environment and improves the well-being of local people.' The society outlines six principles of ecotourism:

- minimize impact;
- build environmental and cultural awareness and respect;
- provide positive experiences for both visitors and hosts;
- provide direct financial benefits for conservation;
- provide financial benefits and empowerment for local people;
- raise sensitivity to host countries' political, environmental, and social climate.

Other organisations and individuals have attempted to define ecotourism. Author Martha Honey provides seven principles of ecotourism in her book 'Ecotourism and Sustainable Development':



Photo: WCS

1) Ecotourism involves travel to natural destinations. These destinations are often remote areas, and are usually under some kind of environmental protection.

2) Ecotourism strives to minimize the adverse affects of hotels, trails, and other infrastructure on the environment, while also restricting the numbers and behavior of tourists.

3) Ecotourism builds environmental awareness, and includes a prominent educational element, for both tourists and residents of nearby communities.

4) Ecotourism provides direct financial benefits for conservation through a variety of mechanisms, including park entrance fees and tourism industry taxes.

5) Ecotourism provides financial benefits and empowerment for local people and is a tool for rural development. It must also help shift economic and political control to the local community, village, cooperative, or entrepreneur.

6) Ecotourism respects local culture and is less culturally intrusive and exploitative than conventional tourism.

7) Ecotourism supports human rights and democratic movements, and is sensitive to the host country's political environment and social climate.

Groups of ecotourists visit Bomassa village to learn about the arts and crafts that are produced in the village (left).

An aerial photograph of a lush tropical forest. A dark, winding river or stream flows through the dense green canopy. To the right of the river, there is a large, irregular clearing with a lighter green, textured ground cover, possibly a grassy or mossy area. The surrounding forest is thick with tall trees and dense foliage.

MBELI: A WINDOW ON THE GORILLA'S WORLD

Clearings such as Mbeli bai are unique because they offer visitors a rare opportunity to observe forest animals in their natural habitat.

Photo: Jeffry Oonk & Marleen Azink/Fotonatura



Mbeli Bai is a forest clearing of approximately 12 hectares, located in the southwest of the Nouabalé-Ndoki National Park. The clearing comprises a thick mat of swampy vegetation and includes several species of herbaceous plants, herbs and sedges which constitute an important food source for western gorillas.

In total more than a hundred gorillas regularly visit the clearing to feed. The principal food source found in the clearing is the aquatic plant *Hydrochaerus chevalieri*, which resembles a water lily, while they also feed regularly on grass and sedges such as *Rynchospora corymbosa* (resembling a large spring onion).

Bais are natural forest clearings that occur across the forests of northern Congo, the Central African Republic, Gabon, and southeast Cameroon, and although they account for only a small

percentage of the surface area of the Nouabalé-Ndoki National Park, they are extremely important for the western gorillas and other large mammals that inhabit the region. The geological characteristics of these forest clearings vary from one bai to the next, and the ecological significance for different mammal species varies accordingly. Swampy clearings such as Mbeli attract large numbers of gorillas, while there are also several sandy clearings nearby that are rich in salt and other minerals which attract other species such as elephants,



Photo: Thomas Breuer



Photo: Ian Nichols

Gorilla groups regularly visit Mbeli bai to feed (left); visitors observe the gorillas from a wooden platform on the edge of the clearing (above).

buffalo and bongo antelope (such as Dzanga bai in the Dzanga-Ndoki National Park of the Central African Republic). Elephants do visit Mbeli regularly to extract minerals from the beds of the streams that cross the clearing, plunging their trunks deep into the stream beds to extract minerals that lie beneath the surface. Other large mammals that can be seen in Mbeli Bai include sitatunga, red river hog, forest buffalo and the Congo clawless otter.

Observing the Gorillas

Forest animals are notoriously difficult to observe in the dense vegetation that stretches across the Congo Basin, and so clearings such as Mbeli Bai are extremely important because they offer researchers a rare opportunity to observe

forest animals in their natural habitat. Observations at Mbeli are made from an eight-metre high platform (mirador) that is situated on the edge of the clearing and affords observers 100% visibility of all gorillas using the bai. Gorillas are completely habituated to the presence of observers on the platform.

Whilst the mountain gorillas living in the volcanic region of Uganda, Rwanda and the Democratic Republic of Congo have been extensively studied over the years, very little is known about their western cousins in the lowland forests of Central Africa. In Central Africa, western gorillas are particularly threatened by activities such as logging, illegal hunting and the Ebola virus, and so it is important to understand how these dangers may negatively impact gorilla populations in the future and the measures we can take to mitigate these impacts.



Photo: Thomas Breuer

Gorilla Data Collection at Mbeli Bai

Researchers are present on the observation platform every day, and they collect a range of data that enable them to build a detailed picture of western gorilla social dynamics and demography. On average, they record between one and

Researchers first began recording data on gorilla visitation at Mbeli Bai in 1994, and regular observations started in 1997. Observers use high-powered telescopes to identify each gorilla using the clearing, using distinctive physical characteristics such as facial features and coloration of each gorilla to make a clear identification. 'Nose prints' are particularly important in correctly identifying western gorillas, as each animal has a unique set of markings on their nose, in the same way that humans have unique finger prints. Once the nose print of an individual has been recorded, that animal can

Some of the first observations of gorillas wading through water were made at Mbeli (above); researchers are present on the observation platform every day (left).



Photo: Thomas Breuer

two gorilla groups or solitary males visiting the bai each day, with each visit lasting just over two hours - much of which is spent feeding on the highly nutritious aquatic plants. Sixteen different groups and ten different silverbacks were recorded last year, with gorillas seen on 72% of observation days. This means that there is a 75% chance of seeing gorillas on any given day.

be correctly identified on every subsequent visit to the clearing. The accuracy of these observations means that researchers have been able to build up an unrivalled series of family trees for each group using the bai, noting all the births, deaths and transfers in and out of each group for many years. The longevity of the study is particularly important, since gorillas have a relatively slow reproductive rate, producing infants

WESTERN GORILLA SOCIETY

Western gorillas typically live in groups comprising a single dominant male (the silverback), several adult females and their offspring.

Males compete vigorously for females and will seek to protect their females and their offspring from other groups or solitary males seeking mates.

Females can transfer between groups, both to find new mates (if the only adult male in the group is her father), or occasionally during an aggressive interaction

with another silverback who succeeds in enticing her away from her own group.

As young male offspring reach maturity they typically leave to become solitary individuals; during this time they mature physically into the characteristic silverback male.

At this point they can challenge group silverbacks to win their females in order to form their own groups. If a silverback dies, either of natural causes, or in extreme cases following

combat with another male, the group will disband and the females will search for another group or silverback male to join.

This is a risky time for females with young infants, since they run the risk of losing their offspring to the new male; males have been known to kill an infant sired by a competitor in an attempt to breed more quickly with the female and produce his own offspring.

Young silverbacks (left) usually leave their natal groups to become solitary; dependent offspring are particularly vulnerable if a new silverback takes over the group (below).



Photo: Thomas Breuer



Photo: Thomas Breuer



Photo: Thomas Breuer

only once every five or six years, and so it is essential to follow a population for a sustained period of time to understand its social dynamics. Researchers at Mbeli Bai have also witnessed some never-before seen behaviours of western gorillas over the years - including impressive water splash displays by silver-back males, tool-use by a female gorilla using a branch to help cross a deep open stretch of water, and the first ever observation in the wild of western gorilla twins.

Other Species Visiting the Clearing

Researchers also record data on other large mammal species using the clearing, such as forest elephants, sitatunga and buffalo, to improve our understanding of the ecological and social importance of large forest clearings for these mammals. As with gorillas, a long-term research presence at the clearing has

resulted in the compilation of detailed records of the population dynamics of these species, with researchers using the physical characteristics of individuals to identify each individual animal visiting the clearing.

Many other species visit the clearing in addition to gorillas, such as sitatunga (above), Congo clawless otters (below) and forest elephants (right).



Photo: Thomas Breuer

MBELI: A WINDOW ON THE GORILLA'S WORLD

Data collected at Mbeli Bai has been particularly important in understanding the ecology and population dynamics of the sitatunga, as it is the only long-term demographic study of this species in Central Africa. Sitatunga live exclusively in swamps and marshes, and feed on the grasses, herbs and sedges which grow in these habitats. They are semi-social, with adult females forming groups with one or more of their offspring. Males are solitary, although because food supply is so abundant in the swamps, the home ranges of different animals often overlap. Sitatunga are ideally adapted to moving across swampy ground, with long splayed hooves that prevent them from sinking into the mud. As a result they can move quickly across waterlogged ground that would be almost inaccessible to other animals. Eight different individuals cur-

rently visit Mbeli Bai, and the long-term research presence at the clearing means that we have detailed life histories of each of these individuals.

Data is also collected on forest elephants at Mbeli. In 2006 there were a total of 1,434 elephant visits to the clearing, with elephants visiting the clearing on 86% of the days that researchers were present on the viewing platform. Over 120 different elephants regularly visit Mbeli Bai, with individual animals identified by characteristics such as notches and holes in their ears and tusk size and shape. In the 1980s Mbeli Bai was used by poachers to supply the illegal ivory trade, and the elephant population at Mbeli Bai has made a remarkable recovery since the creation of the Nouabalé-Ndoki National Park afforded the wildlife complete protection.



Photo: Thomas Breuer

LIFE-HISTORY OF NOODLES GROUP



Photo: Thomas Breuer

The complexity of gorilla social dynamics can be seen by looking at the life-history of the group 'Noodles', which is currently the group that visits the bai most frequently. Their demographic history does not conform to any typical model of western gorilla society. The group was first seen in 1993, and at the time comprised the group silverback Basil, one additional male, two females, and four younger individuals. Over a period of ten years, the group regularly acquired new members, often welcoming individuals such as younger males, that would not normally be accepted by a silverback, as they may represent potential competitors for females.



Photo: Thomas Breuer

During this period, young males also regularly left the group as they reached maturity to become solitary, including Tarragon, Gretskey, Bayleaf and Coriander, each of which still visit Mbeli bai today. Two of them, Gretskey and Bayleaf, have subsequently acquired females to form groups of their own. Basil eventually died in November 2003, and since that point two unknown silverbacks were seen temporarily with the group. Neither of the two new silverbacks proved to be an attractive mate to the females in

Tarragon (left, top) recently rejoined Noodles as group silverback, while Bayleaf (left, bottom) also grew up in Noodles group. Atticus led the group (below) for several months following the death of Basil.

the group, however, and the last two females left the group in May 2006.

By the end of 2006, Noodles group comprised one young silverback (named Saha), eight male blackbacks (Mahale, Dill, Jaica, look, Lyle, Taila, Scout and Costa), one juvenile male (Whisky) and one sub-adult (Calin) - an unusual all-male group composition. In late 2006, one of the original group members, Tarragon, who had been a solitary silverback for almost six years, came back to Noodles group to take over as group silverback.



ID CARDS FOR NOODLES GROUP



Photo: Thomas Breuer



Name: look

Group history: FFF (1995-97), Mosombo (1997-2000), Noodles (2000-01), Mosombo (2001-02), Noodles (2002-present)

Sex: Male

Date of birth: 1st May 1994 (estimated)

Description: look is a blackback who has a tawny head, white sideburns and ears that are pinned tight against his head. He is often vigilant towards people on the platform, but regularly feeds close to the mirador.



Photo: Thomas Breuer



Name: Lyle

Group history: Clive (1996-2001), Mosombo (2001-02), Noodles (2002-present)

Sex: Male

Date of birth: 22nd October 1996

Description: Lyle is a blackback who has a very red head, white sideburns and pointed ears. He is very active, often chest-beating and playing with others on entry to the bai.



Photo: Thomas Breuer

Name: Whisky

Group history: Clive (1996-2001), Mosombo (2001-02), Noodles (2002-present)

Sex: Male

Date of birth: 5th November 2000

Description: Whisky is a juvenile male and is the smallest member of the group. He originally joined Noodles group with his mother Winona, but she left in 2006, leaving Whisky behind.



WALKING AMONGST WESTERN GORILLAS

The Djeke Gorilla Ecotourism Project is one of the few sites in the whole of the western gorilla geographic range in Central Africa where tourists can track gorillas through the forest, offering a unique insight into the gorilla's world.

Photo: Ian Nichols



The Djeke Gorilla Ecotourism Project is the only field program in the Republic of Congo with a group of wild western gorillas fully habituated to the presence of humans. It is one of only two successful habituation sites in the whole of the western gorilla geographic range in Central Africa (the other is in the Central African Republic) which is currently developed to the extent necessary to enable behavioral research and ecotourism.

Researchers and conservationists have made several attempts to habituate western gorillas at field sites across Central Africa in recent years, but these efforts have been hampered by poor visibility and the difficulties of following tracks in the dense forest vegetation that comprises the majority of their habitat. Western gorillas like to feed on dense herbaceous vegetation, and so often spend much of their time in thickets and other inaccessible areas of the dense

forest understorey. This makes it very difficult for people to approach them. Western gorillas are also very fearful of humans, particularly in areas that are close to human habitation where hunting pressure is often high.

WCS researchers have been working to habituate western gorillas at the Djeke Gorilla Ecotourism Project (below).

Researchers at the Djeke field site have nevertheless succeeded in habituating a group of western gorillas so that they



THE DJEKE TRIANGLE

The Mondika gorillas are located in the Djeke Triangle, a 10,000 hectare forest block which currently forms the northern tip of the Kabo logging concession.

The Djeke Triangle is bordered to the east by the Nouabalé-Ndoki National Park, to the west by the Ndoki National Park in the Central African Republic, and to the south by the remainder of the Kabo forestry concession. It is significant for several reasons.

Firstly, it connects the three protected areas of the transboundary Sangha Trinational Landscape, forming an important conservation corridor between Nouabalé-Ndoki in the east and Ndoki in the west.

Secondly, it has never been logged and contains no human settlements, and so boasts the same level of ecological integrity as a national park. It was recently nominated as a conservation set-aside by the CIB (Congolaise Industrielle de Bois) logging company, who are presently managing the Kabo concession.



Photo: Ian Nichols

Finally, the zone harbours an unusually high density of western gorillas; initial surveys suggest that the area could be home to up to eight gorillas per square kilometre, much higher than the two gorillas per square kilometre discovered in the neighbouring national park.

The Djeke Triangle forms part of the Sangha Trinational zone, and so is important for wide-ranging species such as elephants (left); it is a virgin stretch of forest that has never been logged (below).



Photo: Jeffry Oonk & Marleen Azink/Fotonatura

accept the presence of humans within their group. Research into the behaviour and socio-ecology of the western gorilla was initiated at the field site in 1995 by Professor Diane Doran of Stony Brook University and continues to the present day. As a result of this research program, one group - Kingo - was successfully habituated to the presence of researchers at the site, and researchers were able to collect information on the ecology and social dynamics of western gorillas which provides an important piece in the puzzle of our knowledge of great ape society.

The success of the habituation program can be attributed above all to the exceptional gorilla tracking skills of the forest peoples (Ba'aka), who were able to follow Kingo's group throughout the habituation process, ensuring that the researchers spent many hours each day shadowing the gorillas and maximising

the contact time which is essential to successfully habituate a western gorilla group.

The location of the site also contributed greatly to the success of the research, since the area has a high density of gorillas and no human hunting pressure or other disturbance. Even with these distinct advantages, it still took almost eight years to habituate Kingo's group.

Group description

Habituation of Kingo's group first began in mid-1999, although it is likely that their tracks were sometimes confused with those of other gorilla groups in the early stages of habituation, as gorilla groups often have overlapping home ranges. By early 2000, researchers were confident they were following the same group each day, and the group was considered fully habituated by 2003.



Photo: Ian Nichols



Photo: Ian Nichols

Kingo

The group is composed of ten individuals, led by Kingo, the group silverback. Kingo takes his name from the Ba'aka expression *kingo ya bole*, which means 'he who has a loud voice'; Kingo has a very distinctive bark, and when habituation was still in the early stages, trackers relied on the distinctive sound of his voice to locate the group.

The success of gorilla habituation is in large part a result of the skills of trackers (left); Mekome with her infant Ekendy (above); Kingo is the group silverback (right).

The recent birth of two infants suggests that Kingo is currently in his prime as a group silverback, and he has been fairly successful in holding his group together and preventing other silverbacks from enticing his females elsewhere. Since the group has been fully habituated, only two females have left the group, and four females currently remain.

Mama

Mama's name means 'mother', and she appears to be the dominant female within the group.

Females rarely develop close social ties

with other females in their group, and they often compete with each other for food and mating opportunities with the silverback. Mama often acts aggressively towards other females to prevent them approaching to steal her food. She is the mother of Kusu, born in May 2005, having previously given birth to a youngster that died aged five years.

Mekome

In Ba'aka, the word Mekome is used to refer to a woman that demonstrates an independent disposition.

Mekome spends a disproportionate amount of time in proximity to Kingo,



Photo: Ian Nichols



Photo: Ian Nichols

and is considered to be Kingo's favourite female as he often intervenes on her behalf in disputes between females over food. She is the mother of Ekendy.

Beatrice

Beatrice was the first female to become fully habituated, and her name is derived from the Ba'Aka word Abé, which means 'ripe' and refers to the fact that

ripe fruit is often red in colour. The name refers to the fact that she has an unusually red back, which made her easy to identify during the habituation process. After a long time and a temporary absence from the group she gave birth to a new infant, Gentil, in April 2007, having previously lost her 3-year-old infant in August 2005.

Mekome (above) and Kusu (below left).

Ugli

Ugli is the only female who has never really grown accustomed to the proximity of humans to the group, and she tends to remain slightly aloof from the rest of the group. The one exception to this is when she is close to Kingo, soliciting him for mating opportunities.

She lost her infant in March 2006 after he was attacked during the night by a leopard, but gave birth again in March 2007 to baby Bomo, which means



Photo: Ian Nichols



‘fear’ in the local Ba’aka language, and refers more to Ugli’s effect on the trackers than on Ugli’s behaviour towards humans.

George

George is a juvenile female born around 1999, whose mother emigrated out of the group in 2006. George was initially mis-identified as a male, and so was given a male name, and researchers only realised that ‘he’ was in fact a ‘she’ once the group was fully habituated. By this stage, it was too late to change her name, and so George stuck.

She has grown up with humans alongside her in the group, and so is extremely well habituated to the presence of observers.

Kusu

Kusu is Mama’s son, and was born in March 2005. Like George, he is extremely relaxed in the company of humans as he was born after the group became fully habituated. Kusu is named after a species of termite, as his mother’s favourite food is termites, particularly when she was pregnant with Kusu. As the offspring of the dominant adult

female in the group, Kusu is extremely bold with both other members of the group and with human observers.

Ekendy

Ekendy is the offspring of Mekome, and his name signifies ‘the child whose mother is close to his father’. He was born in October 2005 and is still heavily dependent on his mother, often travelling on her back, but still finds plenty of time to play with his older sibling Kusu.