Case Study 1 - Community-Based Natural Resource Management Land Use Planning : Lessons Learned from the Lac Télé Community Reserve

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Introduction : Overview of the Lac Télé Community Reserve and periphery

Lac Télé Community Reserve and Likouala swamp forests

In the forests of the Republic of Congo, the confluence of the Sangha, Likouala-aux-Herbes, Oubangui and Congo rivers forms an area of 63,500 km2 of wetlands. Seasonal floods are a characteristic feature of the riparian habitats of both the Congo River and its tributaries, and determine the habitats and species distributions in these areas. The topography is predominantly a featureless alluvial plain at an altitude of 300–320 m; and the soils are classified as gleysols, due to the flooding and waterlogging throughout the year.

The Lac Télé Community Reserve (LTCR) lies in the heart of the swamp forests of the Likouala region of north-east Republic of Congo. The reserve was created by presidential decree on May 10, 2001 with the goals of conserving biodiversity and guaranteeing sustainable use of natural resources. The reserve is situated between the Sangha and Oubangui Rivers and covers 4,400 km2 of which 90 percent floods for at least part of the year. Only an island of terra firma forest divided by the Likouala-aux-Herbes River, and small patches of terra firma on which villages are located, do not flood. The LTCR is surrounded by rivers: the Likouala-aux-Herbes, the Batanga, the Bailly and the Moundougouma. Lac Télé, after which the reserve is named, is in the northern half of the reserve in the middle of the swamp forest. Apart from 5 km of tarmac road, all travel in the LTCR is by boat, although in the dry season some areas are linked by footpaths. The reserve contains a rich diversity of habitats including swamp forest, seasonally flooded forest, riparian

forest, mixed forest and seasonally flooded grassland savannah. The habitats on the periphery of the reserve are generally similar with the addition of large areas of Raphia palm swamp to the east and south-east.

Annual rainfall in the region averages 1,600 mm although there is considerable variation, for example, from 1,200 mm in 2005 to over 2,200 in 2007. There are two rainy seasons, with peaks in August–November and May–June. The main dry season is in December–March, although this varies from year to year and no month is completely dry. Temperatures vary little over the year with an average annual temperature of 26.7°C. The average daily maximum temperature is 32°C and the average daily minimum is 22°C. In the flooded habitats of the LTCR and its periphery, variation in rainfall results in corresponding changes in the water level throughout the reserve. The highest water levels normally occur in September–December and the lowest in February–June. However, the Sangha and Oubangui rivers are linked to the reserve by surface and subterranean aquifers and the water levels in these rivers also have a great influence on levels in the reserve. For example, as the catchments of these two rivers lie partially in the savannahs of Cameroon and the Central African Republic (CAR), very heavy rainfall there in July–September 2007 resulted in severe flooding in the LTCR several hundred kilometres away (Figure 1).

Figure 1. Flooding in the LTCR

Communities

The Lac Télé Community Reserve has a population of over 16,000 (2005 data, WCS unpubl.) of whom over 90 percent are indigenous Bomitaba people. The majority of the remaining inhabitants are Congolese who have immigrated to the reserve with a small proportion from neighbouring countries. On the edge of the reserve, most villages are Bomitaba with a small number of indigenous semi-nomads in the northern periphery. Few semi-nomads reside in or on the periphery of the reserve for any length of time. The population increased at an average rate of 2.5 percent per annum in the period 2001–2005. The majority of people in the LTCR and its surroundings are young: 59 percent of people are under the age of 20. The rate of immigration into the reserve is low as there is scarcely any employment here; swamp forest is of little current value for timber exploitation, and there is little permanently dry land suitable for intensive agriculture. Each Bomitaba family group or lineage has ancestral rights over traditional community territories for use of natural resources through activities such as fishing, hunting and agriculture.

Most of the protein consumed by local communities comes from fish (91 percent) with only 6 percent coming from bushmeat and even less from livestock. This is different from other rural communities in Central Africa where bushmeat is usually the primary protein source. Many local people earn large sums of money during the dry season by catching and smoking fish for export. Only in the terra firma villages is fishing less important as they have limited access to fisheries. Agriculture is practised by most families and the main staple is manioc. Other activities include hunting, gathering non-timber forest products (NTFPs) and small-scale commerce.

Wildlife

Large populations of gorillas were discovered in the Likouala swamp forests in the early 1990s and subsequent surveys have estimated the population of gorillas in the reserve at over 10,000 individuals. Recent surveys of the reserve periphery have identified large gorilla populations to the west of the reserve and also at very high densities (5.3 individuals/km2) in the Raphia swamp to the south-east. The total gorilla population in the reserve and periphery is estimated to exceed 20,000. Chimpanzees are also found in the area's swamp forests, but at a lower density. The three largest mammal species are elephant, hippopotamus and buffalo which were formerly found in their thousands in the reserve, but were decimated by hunting in the 1960s–1980s. These populations are now recovering and may now be seen close to villages. The fisheries are very productive in the Likouala swamps and, although a definitive inventory has not been completed, there may be a number of endemic and undescribed species here. Waterbirds are abundant in the reserve, many of them feeding on fish. Two species, purple herons and darters, are found in internationally important numbers and the site is designated both a Ramsar site and an Important Bird Area because of the size of their populations.

Threats

The principal threats to biodiversity and natural resources in the reserve are: illegal hunting and the commercial bushmeat trade; overfishing (current intensities are unknown and, given the population's reliance on fisheries, this is of huge concern); planned construction of new roads and prospecting for oil; bushfires; population growth; zoonoses (including the epidemic which decimated the Cane rat population several years ago); Ebola which could spread from western Congo; diseases potentially transmitted by livestock to wildlife entering the reserve from Impfondo; and avian influenza potentially introduced by imported domestic fowl.

LTCR project and management

The Lac Télé Community Reserve and its periphery are managed by a partnership of the Ministère de l'Economie Forestière (MEF) of the Congolese Government and the Wildlife Conservation Society (WCS) which has worked here since 1990. This successful collaboration has developed activities to describe the reserve's wildlife, forests and socio-economic characteristics and to address the threats mentioned above.

Specific activities include: the development of community participative management; education and awareness-raising; law enforcement patrols; biological surveys and monitoring of large mammals, waterbirds, fish and herpetofauna; and bushmeat and fisheries off-take monitoring.

Lac Télé community land-use planning methodology and results

Each Bomitaba and semi-nomad family group or lineage in and around LTCR has ancestral rights over traditional community territories for use of natural resources such as fishing, hunting, collection of NTFPs and agriculture. Additionally, each family has customary laws, many of which are related to natural resource management. Social changes with the passage of colonial rule, one-party socialism after independence, civil war and the current regime have resulted in an erosion of traditional authority and a corresponding decline in community management of natural resources.

The Lac Télé Community Reserve has a moderately low human population density as much of the forest and savannah is seasonally or permanently flooded. This factor, along with the very limited employment opportunities compared to areas with logging concessions, results in land being used for non-commercial subsistence activities, and in low levels of immigration. The focus of land-use planning in LTCR has therefore been on community-based natural resource management (CBNRM). WCS in collaboration with MEF has been working with communities to reinvigorate community management of natural resources in the Likouala swamps, including fisheries, forests and wildlife. Our goal has been to develop each community's vision of natural resource management based on traditional management (Figure 2). We have engaged with

Figure 2. Community meeting on traditional land-use rights and customary laws

communities to develop community natural resource management plans which will then be incorporated into the overall LTCR management plan.

The goal of the community land-use planning programme implemented in and around LTCR by WCS and MEF is to reinvigorate traditional land-use rights and use customary laws, reinforced by modern laws, to provide communities with authority over their land. This has three major objectives :

- to create a sense of ownership over territories by local communities which will encourage a long-term view of natural resource management;
- to provide security of tenure for communities over their traditional territories;
- to reduce the threat of marginalization and eviction of communities by immigrants, politicians, land-grabbers and commercial interests.

As part of the process of developing community management, WCS carried out a census of all the inhabitants of the reserve in 2005. This was very intensive, but has given us an unparalleled insight into the socio-economic characteristics of the villages and the changes that have occurred in recent years. The census served two main purposes for the purpose of community land-use planning: (a) to identify the family lineages and heads of families within each community; and (b) to assess the rate of population change within the reserve (the previous census was carried out in 2001). The census also provided detailed information on education levels, diet, livestock numbers and other data which will inform management decisions.

WCS then started a process of working closely with each family lineage in the reserve to identify traditional territorial limits, different use zones and to describe the customary laws which applied to natural resources. Our socio-economic team worked with family leaders to indicate territorial boundaries by creating maps drawn in the sand (Figure 3).

Traditional zoning of territories included villages, agricultural land, fish ponds, lagoons and river

Figure 3. Participatory mapping in the LTCR

pools, hunting and NTFP collection zones and sacred sites. These included both current and historical village locations as many villages were formerly hidden in the forest to escape raids during pre-colonial tribal wars. Subsequently, during the colonial period, some villages were moved to easily accessible rivers and combined with other villages to facilitate taxation. The sand mapping was used to facilitate the participation of the elders and large numbers of the villagers. The LTCR team oriented the discussions where, together with some villagers who were able to read, they drew the sand map sketch on a IGN map of 1/200000 using features such as rivers, roads, or other visual reference points which were easily identifiable on the map and in the field. Some points on limits shown by the populations were collected with GPS. Once in the office, the drawing on the IGN[1] map, with help from the GPS points, was digitized in ArcView to become a georeferenced map as presented in Figure 4. We then returned to the villages to verify the accu-

racy of the mapping with communities. Customary laws related to natural resource management are quite varied, but contain many common themes which will facilitate their implementation and, indeed, many of which should be incorporated directly into the LTCR management plan.

As we were working with so many older people in each village, we also documented the history of each territory in order to understand their origins (some of which have disjunct borders). This historical analysis could provide a solid basis for the delimitation of each territory and could help mitigate future territorial boundary disputes. Territories have been bought and sold in the past and used to pay off debts. This process attracted great interest from many communities and we received comments such as "this will take us back to the time when our ancestors managed their land". The mapping and participatory process required significant investments of time, personnel and logistics.

Community natural resource management plans will be developed for each village and these will include identification of traditional authority and family lineages over each area of land; maps of each traditional territory including different use zones; and customary laws for traditional natural resource management. Each community and its traditional territories and customs will therefore be incorporated into the LTCR management plan. Once approved by the government and signed into law, this management plan will give legal status to community rights over their traditional territories and to their customary laws (within national laws).

Lessons learned

The key factors for successful development of CBNRM here are the following:

- High proportion of indigenous (i.e., non-immigrant) inhabitants (90 percent Bomitaba) with traditional territories and customary

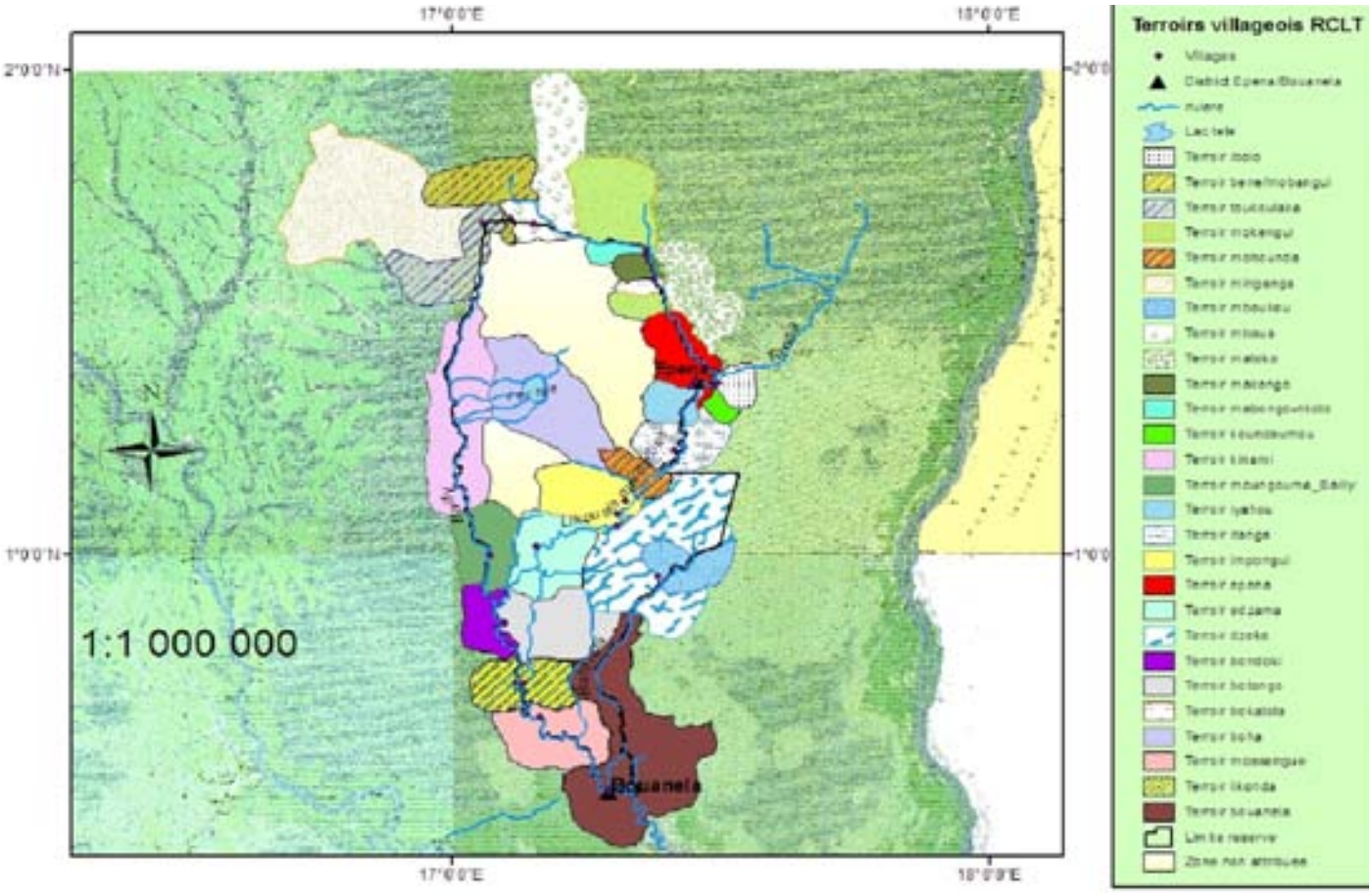

Figure 4: Community territories for all the LTCR villages

[1] Institut Geographique National

laws : the indigenous Bomitaba have strong incentives to manage the reserve for the future as they are not likely to move on, i.e., because they have a long history here, they regard it as their homeland which should be managed sustainably with technical encouragement from WCS and MEF.

- Low potential for immigration and limited land available for immigrants: all villages are located on terra firma islands within the LCTR (and periphery) as flooding is so widespread in the wet season. Almost all islands are currently occupied by villages thus there is little room for further settlement. Additionally, local resource management and ownership of fisheries prevent outsiders exploiting fisheries and hunting is limited compared to other sites. Also there are few clinics, schools, roads and other factors which might encourage local immigration.
- Relatively high productivity of fisheries albeit with limited room for expansion: as mentioned above, all current fisheries are occupied by families with long-term ownership, therefore there is limited room for fisheries expansion. This reduces the potential for overexploitation. Empirical observations indicate that fisheries are probably sustainably exploited.

Our work with local communities in the Lac Télé and Likouala swamps has been essential for the success of the overall project here. However, careful consideration must be given to the resources required for implementation of CBNRM and it must also be understood that natural resource management is not necessary equivalent to or sufficient for conservation management. The goal of community land-use planning is to establish sustainable community-based natural resource management. This is a long-term goal, so here we review our success in attaining intermediate objectives and the factors which have aided or constrained our land-use planning activities. Additionally, we also comment on how this programme has had additional effects which have supported the conservation objectives here.

Our land-use planning team succeeded in their goals of working with all communities in and around the LTCR to identify families holding traditional rights and authority, traditional territorial limits and customary laws. Here we detail how we were able to achieve this with the limited available funding and logistics we are able to deploy in the LTCR :

- Personnel strengths. The socio-economic team consisting of three dedicated and highly motivated individuals [leader Faustin Otto (FO), Gerard Bondeko (GB) and Roger Mobongo (RM)]. Both FO and GB have relevant university degrees, GB and RM are Bomitaba and all three speak Bomitaba, a dialect of Lingala. RM is also a trained boatman, so the team was independent and flexible. The personalities of the individuals in community-related work are always crucial to success and all three members of the team have gained the confidence of the communities. FO, in particular, made it his mission to complete this work and, as he has worked with WCS in LTCR since 2001, he had considerable knowledge of traditional community management. Working with the project management team, he designed the programme based on discussions with communities and this ensured that it was based on the communities' vision and requests, rather than imposed by external management.
- Resource dedication. The team was dedicated to this programme for four years with few other activities to hinder their work; they spent many months in the field, often for more than half the year. Additionally, as the reserve is so large and it can take two days to travel by boat from north to south, significant resources were required for this work. This was particularly important as importing fuel and other supplies to the Likouala swamps is very demanding as there are no roads to this region in the heart of Africa and for half the year the rivers are not navigable by cargo boats. Thus significant investments of time, scientific and logistic personnel, finances and management oversight were required.
- Community motivation. Local communities in the Likouala, although motivated by party politics, receive little investment from national or regional government. As this pro-

gramme was designed to re-invigorate traditional authority and customary rights, it was popular amongst communities who have to be self-reliant for survival. Each community had their own vision for community natural resource management and their requirements for fishing, gathering NTFPs, subsistence hunting, etc. Our role was to ensure a harmonization of community efforts with the national laws applicable to natural resource management and conservation.

As related above, this methodology requires a significant investment of time and resources, outstanding personnel and motivated communities. By reducing the overall level of detail required for understanding communities and traditional management at a site, it may possible to increase the speed of application of community land-use planning to new areas in the Likouala swamps. However, whether this will achieve the same level of community support and success remains to be seen. Community land-use planning outside the LTCR is being carried out using this reduced investment approach. For example, we will not carry out a census and the identification of all individuals in each family lineage will not be required. Thus, the approach is faster and should be completed more rapidly. The personnel involved in such a programme must be very carefully identified as they must not only be able to communicate with communities, but they must also be able to empathize and establish a rapport with them. Additionally, they must have the stamina to carry out such a wide-ranging programme. No mean feat when dealing with 16,000 people over four years.

The primary conclusion of this review of our approach to land-use planning is that it has been successful in its goal of providing a framework of community-based natural resource management acceptable to all management actors, including communities, technical staff (i.e., protected area managers) and local politicians and government. The support given to this process by all actors has been wide-ranging. This is of particular importance in a country which has suffered civil war and experienced limited development in recent decades. As mentioned above, sustainable natural resource management does not necessarily equate to conservation management[2]. Individuals may be motivated by local needs, and external pressure by traders to hunt for ivory and bushmeat is considerable. Thus, CBNRM may reduce threats to forests and wildlife, but localized and targeted threats to some of the world's most threatened species, such as elephants and gorillas, require governance activities such as law enforcement patrols. Education and outreach play a strong role in informing people of their rights and laws, but there is no holy grail of community management without external threats. That means that communities need strong incentives to manage their community territories. Additionally, in the period before colonization, local hunting and trading may have exerted little pressure on local resources. However, modern external pressures on their territories such as illegal non-local hunters and bushmeat traders are omnipresent and difficult to stop. Great demand for bushmeat and ivory, mainly from urban centres, means that local communities can have difficulties in maintaining traditional management. Neither community management nor law enforcement can exist in isolation if conservation is to be successful. As mentioned above, communities are no longer isolated from demands that national and international trade place on them. Large cities create a huge demand for bushmeat and international trade has increased the price of ivory. Thus, traditional management needs to be augmented by modern enforcement and technical input by government and partners to ensure that community natural resources are

[4] Conservation management will focus on species or habitats of conservation concern. For example, we are focusing on gorilla management in the LTCR as the population of this species here is of international importance. This involves patrol teams and community management in combination. If we only carried out CBNRM (community-based natural resource management), we would have few gorillas as this would focus on NTFP and fisheries management. Communities themselves do not have the legal authority to prevent individuals from inside or outside the community from hunting there. They may have the moral authority, but without support from government-authorized patrol teams, they will not be able to prevent hunters with military weapons, or traders illegally buying bushmeat or ivory, from carrying out their unsustainable activities.

not rapidly exhausted by new threats. An additional outcome of the approach we have implemented in the LTCR has been the confidence that the communities now have in the conservation project partnership between MEF and WCS. As each community family has had direct positive contact with members of the conservation project, the level of trust they have in our objectives and presence in their villages and traditional territories is very high. Given the isolation of some of these villages, the welcome given to us by communities and the ease with which dialogue has been opened is hugely important. This goodwill is likely to provide considerable benefits to the conservation project in the long term.