

# Case study 1 - Protected Area Land Use Planning : Lessons Learned from the Okapi Faunal Reserve

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## Introduction : Overview of the Okapi Faunal Reserve

The Okapi Faunal Reserve (OFR) is a protected area in the Ituri Forest of north-eastern Democratic Republic of Congo (DRC) that covers more than one third of the Ituri-Epulu-Aru Landscape. The OFR, created in 1992 and added to the list of UNESCO World Heritage sites in 1996, boasts high levels of biodiversity and endemism. The Reserve harbours several high-profile species including Okapi, Forest elephant, Chimpanzee, 13 monkey species, Leopard, several species of forest antelope, and Buffalo. The Ituri forest is valuable because of its biogeographic history as a Pleistocene refugia with endemic plant communities found in rocky outcrops, or inselbergs, in the Reserve.<sup>1</sup>

In addition to being a world-class site for the study of tropical forest dynamics and wildlife conservation, the OFR is home to ethnically diverse human communities<sup>2</sup> including hunter-gatherers (Mbuti and Efe Pygmies) and Bantu and Sudanic-speaking shifting cultivators (Bila, Ndaka, Lese, Mbo, Manvu and Budu) who participate in social institutions based on exchange relations and reciprocity. The Reserve is unique among protected areas in DRC because it is a high-profile high biodiversity site where, unlike national parks, livelihood activities, such as farming and hunting, are permitted by the resident population. People may practise hunting and gathering, fishing and farming but they may not carry out activities that are permitted in villages outside of the protected area such as gold mining, timber exploitation, plantation agriculture, and commercial-level bushmeat hunting and

<sup>1</sup> The OFR covers 1,376,000 ha of the Ituri-Epulu-Aru Landscape which spans a total of 3,600,000 ha.

<sup>2</sup> 17,000 people inside OFR borders and an additional 37,000 people within a radius of 15 km around the OFR, according to a 2003 population census conducted by the Wildlife Conservation Society Community Conservation Program (WCS-PCC).

trade.

The Okapi Faunal Reserve is under the management authority of l'Institut Congolais pour la Conservation de la Nature (ICCN). ICCN is joined by two conservation NGOs, Wildlife Conservation Society (WCS) and Gilman International Conservation (GIC), and together the three organizations constitute the Reserve's management committee. In this paper when reference is made to "the OFR" as a stakeholder, the OFR is shorthand for this management committee.

Although ICCN has the management mandate for the Reserve, they generally lack resources to carry out the Reserve's conservation and livelihoods objectives. Land-use zoning is facilitated by Wildlife Conservation Society's Community Conservation Program (WCS-PCC) which is composed of 11-full time staff members including four agronomists.

The Reserve is situated on a settlement frontier where the population density is increasing in part due to immigration from the highly populated Kivu regions where densities surpass 100 people/km.2 Since the 1980s with such events as the liberalization of mining (especially gold) and two civil wars, the region has seen an influx of migrants who come in search of arable land and economic opportunities. People have very few employment options and must rely on their farms and the forest for all of their needs.

In the period following the end of the war in 2003, Reserve managers worked to secure the forest and stop illegal activities. Mixed teams of ICCN eco-guards and the Congolese Army effectively evacuated active gold mines and poaching camps in the Reserve. Despite the fact that certain efforts by local farmers, such as seed storage and increased food productivity, were completely wiped out during the conflict period, people had the courage to try again – which has enabled land-use planning and agricultural activities to proceed. Alongside progress with land-use zoning, the Reserve management plan is being revised including detailed guidelines on access to and use of land and natural resources.

In 2006, DRC held its first presidential election in

<sup>3</sup> Route Nationale 4; or National Road No. 4 in English.

over 30 years; and since then, institutions and government agencies have begun to regain some of their functions and widespread national road rehabilitation is underway. The government is revising conservation laws and drafting implementation guidelines for the national forestry code. National efforts to repair dilapidated infrastructure are being carried out in the Landscape. The main road (RN4)<sup>3</sup>, that bisects the OFR, and another road, that forms the Reserve's eastern boundary, are being repaired. Most villages and agriculture clearings are located along these two principal roads. Improved roads will facilitate increased immigration to the area and enhance market access as people come in search of land and forest resources.

## Land-use planning in the Okapi Faunal Reserve

In order to manage the OFR effectively for biodiversity conservation and sustainable livelihood support for the resident population, a land-use zoning plan, supported by USAID-CARPE, is being implemented. The micro-zoning includes areas for hunting, agriculture and settlement, and conservation. The zoning system formalizes limits to agricultural expansion and subsistence hunting, limits that are based on the number of resource users. As mentioned above, the OFR is unique because it is a protected area managed with community-based natural resource management "micro-zones" in its interior.

### Protected area land-use planning methodology and results achieved

Box 1 provides a summary of the land-use planning steps used for agriculture zones in the Reserve; after a detailed explanation of the agricultural zoning process, a brief description of the methodological considerations for hunting and conservation zones is provided.

### BOX 1. SUMMARY OF AGRICULTURAL ZONING PROCESS IN THE OKAPI FAUNAL RESERVE

1. Conduct sensitization meetings
2. Sign collaboration protocol
3. Conduct census of agricultural households and socio-economic studies
4. Agriculture zone limits proposed by village elders (customary land owners) and documented with GPS
5. Identify and map the extent of agricultural clearing with GPS
6. Produce map; present map and zoning recommendations to community members
7. Negotiate agriculture zone to be delimited
8. Agreement reached between representatives of village and OFR authorities on the zone limits
9. Ceremony to place boundary markers and signposts and signature of agriculture zone agreement
10. Delimitation: clear the perimeter of the agriculture zone and demarcate zone borders where natural boundaries do not occur
11. Validation of land-use zones in protected area management plan
12. Zone management

1. **Sensitization** : The first step in the land-use zoning process is to introduce the notion of zoning in the Reserve through a series of formal and informal meetings with village chiefs, landowners (people who have ancestral claims to land), and various members of the community, especially indigenous farming groups.

2. **Signature of collaboration protocol** : A collaboration protocol is signed between representatives from the OFR (ICCN and WCS-PCC) and the local community (usually village chief and/or elders) that states that the village is ready to proceed with the process of zoning. This document does not mention limits or area; it is only a step to formalize the beginning of the process.

3. **Census of agricultural households** : A census of agricultural households, those heads of household who have farmland in the village, is conducted in order to estimate the area of land required for farming. The size of agriculture

zones is based on the number of agricultural households.

Socio-economic studies: The order of steps 2–4 is flexible. For instance, a census of agricultural households and socio-economic studies may be conducted before a collaboration protocol is signed to begin the zoning process. Socio-economic studies are conducted to document village history, ethnic groups present, sources of revenue, hunting and farming methods, agricultural production, educational level, social problems, conflicts between different groups, and the relative power of chiefs and landowners.

4. **Proposal of agriculture zone limits by village elders (customary landowners)** : The village elders, who are recognized as the customary land owners, make the first proposal regarding the size and outer limits of an agriculture zone. Often they propose natural limits such as rivers and hills that lie beyond the forest that has been cleared in recent history. WCS-PCC reviews their proposal in terms of area (ha) and limits, and evaluates it based on estimated land-clearing rates which take into consideration factors such as age of the fallows, number of consecutive years a field can be farmed, average field size, number of agricultural households, and population growth rate. The proposed agriculture zone (size and limits, number of agricultural households) is presented to the Reserve management committee.

Participatory mapping of outer limits proposed by village elders with GPS: A team composed of village representatives and WCS-PCC field technicians maps the limits proposed by the customary landowners using GPS units.

5. **Identification and mapping of the current extent of agricultural land clearing with GPS** : A mapping team of WCS-PCC field technicians and village residents walks along the perimeter of active fields and fallows to create a map of the current limits of agricultural land clearing – where fields and fallows meet primary and secondary forest.

6. **Create map of current agricultural clearing and outer limits proposed by village elders and chiefs** : After prospecting the outer limits of an agriculture zone and the limits of agricultural clearing, the geo-referenced data collected during the field missions is transferred from GPS units to a computer at the main office for

clean-up and analysis, first in Excel and Map-source, and then in ArcView. WCS-PCC technicians also make a poster-sized map of the proposed agriculture zone using the geographic way points collected in the field and translating them into angles and distances on the map for presentation to the community.

Presentation of map and zoning results to community members: Community members representing different groups (Bantu men and women, Pygmy men and women, etc.) are trained to present zoning objectives and to use the map to explain the village agriculture zone to others. They facilitate meetings on the new agriculture zone and its proposed limits and present the map to local communities for discussion.

7. **Negotiation of zone to be delimited** : After the proposed limits have been mapped and the results presented to representatives of different groups in the village, the official agriculture zone limits are negotiated. In some cases people may feel compelled to argue for more area based on fear that they are losing their land – or in other cases WCS-PCC may advise them to extend the proposed limits based on estimated land-clearing rates or population size. The final decision depends on approval from both the Reserve management committee and village leaders.

8. **Agreement reached between representatives of the village and OFR over zone limits** : It may take several meetings before a final agreement on the zone limits is reached; then a date is set for the ceremony to place cement posts and signs marking the limits of the agricultural zone along the road.

9. **Ceremony to place boundary markers and signposts and to sign the agriculture zone protocol** : During the ceremony the zoning process is reviewed, and the protocol which states the area (ha) and boundaries of the agriculture zone is read aloud before an audience of local authorities, Reserve managers and other community members. Signature of the protocol by Reserve and village representatives is followed by a shared meal.

10. **Delimitation** : clearing the perimeter of the agriculture zone : Where natural limits such as rivers do not exist, field teams clear a 3 m band in the underbrush of the forest in order to make the artificial agriculture zone limits visible. Small teams of village residents, led by a WCS-

PCC technician, are hired to clear the perimeter when the zone is first created, and there is annual upkeep. This activity provides multiple benefits including: revenue for hired teams, awareness of zone limits by villagers and OFR personnel, and it facilitates monitoring of zone limits by ICCN.

**Demarcation of zones** : Erecting cement posts and signs along the borders of agriculture zones has been completed for five zones, but it is an expensive undertaking that costs an average of US\$4,000 per zone (including the purchase and transport of materials and labour) plus long-term maintenance. Whenever natural limits, such as rivers and roads are present, it is not necessary to mark the borders with posts and signs. However, zone limits in the forest must be marked so that farmers and OFR managers alike can respect and monitor zone limits. This kind of physical demarcation has been suspended at this time and we hope to find less costly alternatives.

11. **Validation of land-use zones in the Reserve management plan** : Once the Reserve land-use plan is complete, and all micro-zones have been created in the OFR at the local territorial level, the land-use plan will be officially considered part of the OFR management plan and should be recognized by ICCN at the national level.

12. **Zone management** : This paper will not elaborate on the long-term management of agriculture zones; but briefly the objectives of zone management are to ensure the effective use of land and resources in order to ensure that local people's livelihood needs are met while decreasing deforestation and biodiversity loss. Once agriculture zone protocols are signed, agronomists work with farmers to optimize land use in order to increase crop productivity using less land area, to encourage the use of fallow land, and to limit forest clearing for agriculture.

### **Special methodological considerations for hunting and conservation zones**

The land-use planning process for hunting and conservation zones follows similar steps to those listed in the agriculture zone methodology section above, including a series of meetings, participatory mapping, negotiation and communication with different community groups to reach a final agreement on zone limits. However, certain mo-

difications are necessary due to the nature of the resource being exploited (wildlife vs. farm land); and the fact that hunting zones are larger with territories organized by clan, whereas agriculture zones have more individual property claims (such as fallow land) and farming is organized at the family level.

For conservation zones, field teams composed of representatives of local communities, and WCS and ICCN staff will map local forest claims and collect social and biological data in the proposed zone. These data will be used to create a map showing how local land claims (forest hunting territories) overlap with the conservation zone. The map and the results of the social and biological assessment will be presented to stakeholders in order to negotiate a management agreement for the conservation zone.

## Results achieved

**Agriculture zones:** Eleven agriculture zones, covering 30,700 ha, have been delimited with agreement from local communities and zoning is in progress in two more villages. Technical assistance and improved seed varieties have been provided to farmers to increase productivity and to reduce the need to clear primary forest.

**Hunting zones:** Participatory mapping of hunting territories has been accomplished for six villages covering more than 195,000 ha.

**Conservation zone:** An inventory of key large mammal populations and selected human activities was conducted from 2005–2007. Significant populations of Forest elephant, Okapi and Chimpanzee were found and most of the Reserve's unique habitats, including the spectacular inselbergs that harbour endemic flora, remain intact. Most faunal populations were more abundant in the centre of the Reserve, in a zone proposed for core conservation, than in the zones designated for hunting and agricultural activities. The exceptions were elephants, which remain concentrated in south of the OFR in areas that suffered less poaching during the period of conflict, and monkeys (12 species) that were most abundant in

agricultural zones, in secondary forests near fields and villages.

## Lessons learned

### Zoning as a way to secure indigenous land rights on a settlement frontier

As explained above, the OFR is located on a human settlement frontier that is already home to more than 15,000 people who depend upon the forest for most, if not all, of their resource needs. Within this management context it is important to understand the indigenous-immigrant<sup>4</sup> dynamic surrounding access to land and natural resource use. Indigenous groups perceive the forest to be an abundant resource, and one of the goals of the zoning system is to empower these groups to understand the value and limited nature of their land and resources, and to manage them accordingly.

The zoning steps enumerated above enable indigenous groups to document and manage their land in collaboration with ICCN; and to prevent the false impression that land and natural resources are limitless. Immigrants prefer the informal land tenure systems and easy access to land that they find in the Ituri forest; this situation makes it possible for them to open large fields, usually by cutting primary forest. Immigrants tend to be more economically powerful and can recruit labourers from indigenous ethnic groups to clear the forest and work in their fields. Local landowners gain an immediate benefit from selling farming rights to immigrants from neighbouring regions where land is scarce; others may benefit from being hired as day labourers. In this sense, immigrants provide immediate benefits in exchange for access to land and natural resources, whereas ICCN's zoning system may be seen as a hindrance to these short-term gains. In a context where immediate gain is highly valued, protected area managers have the task of conveying the value and limited quantity of land available; hence the benefits of the zoning system are projected on a longer time-scale. The

<sup>4</sup> In this paper, indigenous is a general term for the ethnic groups who have the longest history in the area that is now the OFR, notably: Mbuti and Efe Pygmies and Bila, Ndaka, Lese, Mbo, Manvu and Budu; whereas immigrants are generally those ethnic groups that originate from other regions such as Nande, some Budu, and others.

steps of land-use zoning which require local landowners to discuss and document their land claims can instigate conflicts with immigrant groups who wish to have easy access to land without oversight by protected area authorities. In cases where immigrants feel threatened by the zoning programme, they have advised indigenous landowners to refuse to cooperate with the OFR. This requires that the OFR be proactive with community education so that the resident population understands that zoning is a management tool whose goal is to ensure their long-term use of resources. Thus far zoning in the OFR has been effective in this sense. In some villages where locals have already determined agricultural zone limits, immigrant communities have decided to look elsewhere for farmland, beyond the protected area limits. If zoning can be replicated for all farming villages in the OFR, as is the plan by 2011, new settlements should occur outside of the protected area, thus ensuring that the agriculture zones already established may continue to serve the subsistence needs of OFR residents for several generations into the future without compromising zone integrity by leading to deforestation. In some areas, chiefs have remarked upon the trends of deforestation and declining wildlife populations; these local spokespeople are important allies in passing the conservation and land-use planning message onto local communities.

### **Importance of sensitization and communication to avoid misconceptions**

It is important to communicate the goals and regulations of subsistence zones within the context of the protected area as a whole. Signing land-use agreements is not a way of signing away their land to the OFR; it is still their land, over which they have customary rights, but it is a recognition that they live in a protected area and that agricultural expansion and hunting, to name two of the most common resource uses, need to be planned and monitored. Another interpretation is that by mapping agricultural land and negotiating the limits of an agriculture zone, the Reserve is, in effect, ceding that land back to the community. This is also not the case; zones are still under the mandate of ICCN, and they are subject to the regulations of a protected area. Zoning

aims to document, and validate, local claims to resources – namely by the Mbuti and Efe Pygmies and indigenous shifting cultivators – in such a manner that despite being located on a settlement frontier, immigrants will arrive to find that the local populations understand that land is a limited resource and it is in their best interest to manage it well.

Erecting signs listing OFR interdictions such as mining and plantation agriculture created the impression that once an agriculture zone is created and the sign erected, these activities are illegal, but these activities are prohibited throughout the Reserve both in and out of established agriculture zones. In order to counteract the view that agriculture zones have specific resource restrictions, which could cause negative attitudes towards zoning, we stopped linking general Reserve-wide regulations to the specific process of creating an agriculture zone.

It is not uncommon for village representatives, especially chiefs, to change their positions more than once during the process. Even on the eve of an inauguration ceremony for a new agriculture zone, we have received letters threatening to call off the ceremony if certain demands are not met; for example the construction of a school, medical care for village elders, or a motorcycle for the village chief. It is important not to respond to this kind of political manoeuvring with false promises. We have found that the appropriate response to such demands is to assure local communities that OFR representatives are not in a hurry to sign the protocol creating the zone, but rather it is a document that should be signed when both parties are ready.

### **Conclusion**

It is important to stress that this land-use management tool is, in many ways, experimental and that subsequent monitoring of results and adaptive management are key. We strive to make decisions based on the most complete information presently available and to consider possible demographic, ecological and social changes. Once an agriculture zone is created and an agreement is signed with village representatives establishing

the outer limits of agricultural expansion, monitoring how people use the agriculture zone is very important. Trust between local communities and Reserve managers is equally important; communities must be convinced that the OFR will work with them to find solutions to zone management problems and that, if necessary, zone limits may be re-evaluated in the future.