Indigenous Knowledge and Anthropological Constraints in the Context of Conservation Programs in Central Africa

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ABSTRACT
This paper deals with the main sociocultural criteria that conservation programs in tropical rainforests ought to take into account. These criteria are specific to the forest economies of central Africa. The author tackles issues of customary lands, subsistence production, and political power at the village level. She also contemplates the socioeconomic changes brought about by management in protected areas. The paper is illustrated by case studies from projects supported by the ECOFAC program.

The challenge of a trinational conservation project does not focus solely on issues of ecology and administration, but also involves human concerns. The rural populations that rely upon natural resources in the Sangha River region, including the zone of Lobéké in Cameroon, the Dzanga-Sangha Reserve in the Central African Republic, and the Nouabalé-Ndoki Park in Congo, have witnessed a changing ecological, economic, and social reality since the 1970s. The arrival of logging companies, the development of safari-hunting interests, and the initiation of protected areas have contributed to a transformation of the socio-economic context at the local level. Local people have found themselves deprived of their rights to use forest resources; instead, the forest yields profits for logging concessions and sports hunters, and provides the context for integrated conservation programs. At the same time, outside demand for forest products, especially the appetite for bushmeat, has increased significantly.

For those rural communities whose economies depend primarily on forest resources, the issue of access to land is fundamental.

The challenge for conservation projects that wish to integrate local communities into the management of protected areas is situated at several levels, raising numerous problems within the frameworks of development, public health, and the rational exploitation of the forest environment. I will only address one aspect of this problem here: the right to land access and tenure. For those rural communities whose economies depend primarily on forest resources, the issue of access to land is fundamental.

The objective of this paper is to raise the question of how to integrate "customary lands" within the limits of a "village exploitation" zone, organized and administered through integrated conservation programs. Searching for a balance between customary land tenure and integrated land management also raises the question of how to maintain and encourage those elements of local economies that rationally utilize forest resources. In the first part of this paper,

PROTECTED AREA	AREA	POPULATION	DENSITY
Lake Lobéké (Cam.)	3,000 km^2 (ext.)	109,002 (East Province, entire)	1 per/ km^2 (1987 census)
Dzanga-Sangha (CAR)	335,900 ha (1990)*	19,412 (Sangha-Mbaéré)	3 per/ km^2 (1975 census)
Dzanga-Ndoki (CAR)	122,000 ha (1990)*	19,412 (Sangha-Mbaéré)	3 per/ km^2 (1975 census)
Nouabalé-Ndoki (Con.)	n-a	55,800 (Sangha)	0.1-0.8 per/ km^2 (1974 census)

Table 1 Population density in the proposed area of trinational conservation. *IUCN 1991

I will introduce the main characteristics of the rural population affected by the proposed trinational Sangha region conservation area. Second, I will discuss the definition of customary lands in a forest environment. Finally, based on the examples from the ECOFAC (Ecosystèmes Forestiers en Afrique Centrale) Program, I propose to illustrate my remarks by comparing case studies of appropriate and inappropriate zoning.

MAIN CHARACTERISTICS OF THE HUMAN MILIEU IN THE SANGHA RIVER REGION

In the rural zones where the proposed trinational project would be situated, human population density is very low. The official censuses of populations of hunter-gatherer communities are outdated and very approximate. Because of this dearth of demographic information, personnel employed by integrated conservation and development projects are often compelled to update these data themselves. In doing so, it is necessary to take into account (1) individual mobility, (2) dispersed habitat, and (3) peripheral zones. Concerning the mobility of individuals, the village population consists of permanent residents who are relatively constant inhabitants of a given village. In addition, individuals may circulate among villages of their kin, living there as "occasional" residents during holidays, ceremonies, and social visits. Villagers also exploit diverse habitats. All the traditional villages are at the same time comprised of a hamlet as well as temporary hunting, collecting, and fishing camps established on communal land in proximity to the hamlet, or at some distance in the forest.

Some villages are located in zones peripheral to the land that they consider to be their customary land. For example, a traditional village may be established on the margin of the protected area, as the

protected area itself includes the land considered to be the customary soil of the villagers. In addition, local people may live on the periphery of their customary lands, in the semi-urban centers of a project, where the administrative center and workers' compounds are also located. Demand for forest resources, particularly meat, emanates from this zone of habitation located on the edge of the protected area.[1]

The northwestern Congo River Basin, and more specifically the region proposed for trinational conservation, presents a great linguistic and cultural variety. Groups of sedentary and semi-mobile swidden agriculturalists and fishermen include four Bantu and six Oubangian communities. Hunter-gatherers, so-called "pygmy" communities, are represented by one Bantu group (the Aka-Mbenzélé) and one Oubangian group (the BaAka).

Regardless of specific cultural labels, these ethnic groups all share similar living conditions: they are essentially peasant societies whose economies depend directly on the forest environment. They also share a similar concept of nature. As far as these forest communities are concerned, living in the forest implies living in an inhospitable milieu in which one has to use considerable energy and knowledge in order to successfully utilize the forest resources on which they depend. In other words, they "domesticate" nature, both technically and symbolically. This concept of "domesticated nature" is dia-

[1] Very few studies are available (for northern Congo, see Blake 1994).

ETHNIC GROUP	LANGUAGE	LOCATION
Aka Mbenzélé	Bantu, C 10	Dzanga-Sangha, Nouabalé-Ndoki
Baka	Ubangian	Lobéké
Bangando	Ubangian	Lobéké
Bomassa	Ubangian	Dzanga-Sangha, Nouabalé-Ndoki
Kaka	Bantu, A 93	Lobéké, Dzanga-Sangha
Kwele	Bantu, A 85	Lobéké, Nouabalé-Ndoki
Mbomam	Bantu, A 85	Lobéké
Mpiemo	Bantu, A 86	Dzanga-Sangha
Ngundi	Ubangian	Nouabalé-Ndoki
Pande	Bantu, C 12	Dzanga-Sangha
Pomo	Bantu, A 92	Dzanga-Sangha, Nouabalé-Ndoki
Yangéré	Ubangian	Dzanga-Sangha

Table 2 Main ethnic groups living in the protected areas of the trinational project.

metrically opposed to the perspective held by "naturalists," for whom the same forest represents neither a viable surrounding for living, nor a set of resources that fulfills their needs. The forest, to naturalists, represents a space for discovery. A simple example clarifies these opposing perspectives on the forest. For the forest-dwelling peoples, an elephant represents food, money (ivory), and a menace that devastates their plantations (not to mention the dreadful fright it causes families). For the "naturalists," on the other hand, the same elephant reflects a scientific and moral interest (a protected species), and a financial interest (foreign currency influx from tourism and publicity), but never a source of food and rarely a security threat. This duality of meaning is embodied in many species of animals in the forest. Thus within the context of conservation in central Africa, the divergent experiences with the forest inevitably lead to different concepts and representations of nature.

DIFFERENT TYPES OF SUBSISTENCE ECONOMY

Rural economies within the forest zone of the Congo River basin do not comprise a monolithic model of subsistence and commodity economics. Several types of traditional economies are practiced, the basic one being swidden agriculture or "itinerant slash and burn" agriculture. Contrary to commonly-held notions, swidden agriculturalists do not only practice agriculture but also engage in other forest activities such as hunting, gathering, and fishing.

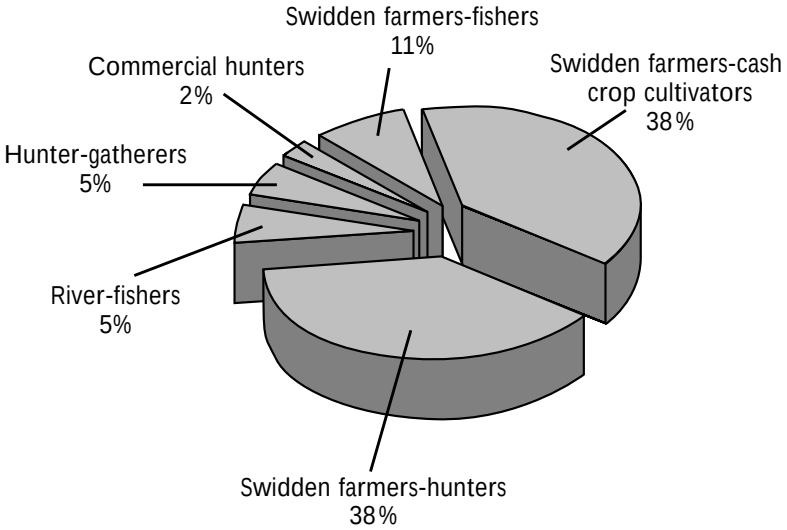

Figure 1 Local economies in the Intervention Zones of ECOFAC Program in Cameroon, Gabon, Congo, and CAR (percentages do not add to 100% due to rounding.

PROTECTED AREA	SWIDDEN AGRICULTURE	FISHING	HUNTING-GATHERING	COMMERCIAL HUNTING	COMMERCIAL FISHING
Lobéké	Bangando		Pygmées	Kaka	
	Mbomam		Baka		
	Kwélé				
Dzanga-Sangha	Mpiemo	Pande	Pygmées		Pomo
	Kaka	Ngundi	Aka-Mbenzélé		
	Bomassa				
	Yangéré				
Nouabalé-Ndoki	Bomassa	Kwélé			Pomo
	Kaka				Bomoali

Table 3 Types of rural economy within the proposed protected area in the trinational region.

Following a general tendency in central Africa, literature on particular ethnic communities is scarce, particularly concerning ethnoecological studies. Agricultural communities are less studied than hunter-gatherer communities, which represent less than five percent of the population within central African forests. A similar dearth of ethnoecological information applies to the Sangha River region. Thus, it is necessary to extrapolate from data collected in societies situated at the periphery of the proposed protected area, and occasionally from zones quite far away (despite different ecological and cultural perspectives) in order to begin to understand the various modes of environmental utilization within the forest.

ACEPHALOUS POLITICAL ORGANIZATION AND LIMITS TO PARTICIPATORY MANAGEMENT

The majority of central African forest societies have political systems without hierarchy, centered on the authority of the kin chief. Relatively weak overall hierarchical organization limits the possibilities for active, participatory management of resources through formal organizational structures. Leadership qualities embodied in the kin chief still represent an ideal system of values, to which the young generation refers. These kin chiefs do not necessarily serve as political officials in contemporary government positions, raising the problem of legitimate representation of local communities vis à vis conservation programs.

In the Fauna Reserve of Dja, where a cultural and political context similar to that of the Sangha River region is found, the ECOFAC program has identified local associations and has conducted studies of their political organization and functions. The managers of the integrated conservation and development project in the Dja Reserve are basing their model of community management on pre-existing local structures.

A major problem concerning collaboration with local associations is the opportunistic disinclination of certain local associations (which are created spontaneously, with the help of village "elites") to submit to restriction. For example, the ecological discourse in favor of environmental protection that is vocalized at association meetings does not necessarily correspond to reformed behavior, such as relinquishing locally-based commercial hunting of bushmeat. Because the advisory committees of local conservation associations control access to communal lands, young people are motivated to participate in the associations. Despite this general enthusiasm for participation, serious logistical problems persist in the organization of the associations and in the allocation of land rights. Because kinship relations extend beyond the village to include those who have moved to other regions, village "elites" may live in towns and cities, but still control access to the communal lands through their traditional and economic influence. Because village associations are such complex political organizations at the local level, it is inconceivable for either the state or conservation organizations to monitor and shape the organizational form of local associations.

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The "participatory management" model utilized by ECOFAC is adaptable according to the socioeconomic and political conditions of different protected areas. The model proposed by Pimbert and Pretty (1995) appears to be essentially a model of participatory management by engaging villagers' participation in information gathering, coupled with a method of inspiring villagers' participation in conservation associations for material incentives. Populations affected by the ECOFAC program participate in conservation "management" by answering questions that the researchers and managers pose through questionnaires and committee meetings. However, the villagers have no opportunity to influence the decisions based on their answers, because they are not informed about research results. In the Lopé Fauna Reserve in Gabon, where the ECOCAF staff is composed primarily of local villagers from the Lopé District, villagers participate in the program by providing manpower and by receiving salaries (which could be seen as a "participation for material incentives" model to generating local involvement). This type of "participant management," which is adopted by many con-

servation and development projects, has the disadvantage of creating financial dependency that may not be supported beyond the end of the project.

LAND TENURE AMONG SWIDDEN FARMERS

As a general rule, central African forest villages are surrounded by a double zone of resource utilization. The first zone corresponds to an area of agricultural production; the second is a wider zone of forest resource utilization. The region of cultivation includes fallow zones of various temporal spans (two to three years, 10 to 20 years, and up to 30 years). The agricultural zone also includes secondary forests that are apparently abandoned, but to which collective as well as individual property laws apply and which will one day be cultivated again by the village community. In the forest zones of resource use, lines of traps follow trails allocated to particular members of the community. In this context, the forest exploitation zone of a village extends beyond the cultivated plots of land and fallow gardens, covering several dozens of hectares on either side of the trail.

Village lands correspond to the vital space of the village. In the forest environment, village lands comprise the area on which local people depend, strategically alternating their exploitation of agricultural zones as well as hunting, gathering, and fishing zones in accordance with indigenous systems of rotation.

Areas considered to be "village lands" vary according to the local economy. For example, at the Boyela in the former Zaire, studied by Sato (1983), a village of 200 people covers about 110 sq. km. The area for hunting hamlets (made up of 24 people on average) represents about 15 sq. km, the hunting area per person being around 0.4 km^2. At Mvae in Cameroon, studied by Dounias (1993), the hunting area is estimated at 100 $km.^2$ In the Dja Fauna Reserve, the zones utilized by villages under study extend a distance of at least 30 km from the trail. Finally, data collected from the Odzala National Park presents a similar picture of land use, although the agricultural lands are less extended and conversely, the forestry lands are vast.

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LAND TENURE AMONG HUNTER-GATHERERS

As for semi-nomadic forest peoples, the inhabitants of a hunter-gatherer camp move within definable limits in the forest. At present, the great majority of hunter-gatherer communities are semi-sedentarized and live in proximity to villages of agriculturalists, with

whom hunter-gatherers carry out exchanges. In southeastern Cameroon, hunter-gatherer families exploit small food plantations and live in the forest seasonally, for varying periods of time. The mobility of hunter-gatherers poses a problem for compiling the data from the various areas of the forest through which they move. At this point, no researcher has produced an ethnoecological monograph on the Aka and the semi-sedentarized BaAka.

ZONES FOR VILLAGE EXPLOITATION: EXAMPLES FROM ECOFAC PROGRAMS

Two examples will help to illustrate approaches to resource management taken by conservation organizations. The first example concerns a protected area managed by ECOFAC, in which village exploitation is not integrated into the management of the zone of protection. In this protected area, the Lopé Faunal Reserve in Gabon, the villages situated in the protected area have been subject to the regulations of the reserve for more than a decade. Hunting and trapping in villagers' plantations are prohibited; only agricultural activities in the outskirts of the villages are allowed. The ban on setting traps in subsistence gardens has not only provoked a great increase of crop destruction by animals, but has also had continuous repercussions on security (increased presence of gorillas and elephants near the villages), public health (pollution of sources of drinking water by increasing animal populations), a sharp decrease of animal protein available in daily diets of villager, and land degeneration by intensification of cultivation near villages (women move their gardens closer to the villages for increased surveillance). The myriad factors of resource management are extremely complex. On one hand villagers, due to a decrease of game species, perceive that conservation limits their access to already limited resources. On the other hand, villagers recognize the need to protect resources from overexploitation by both local users and outside interests. Finally, villagers dread the heavy-handed and often repressive ordinances instituted by the Ministry of the Environment.

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As a counterexample, consider a protected area managed by ECOFAC in which conservation zones are integrated with local village use of resources. In the Odzala National Park in Congo, according to the current management plan, village activities take place in a 5 km "buffer zone" along both sides of the road, as well as in the "common use" zone situated outside the protected area. The ECOFAC program plans to extend the buffer zone to include customary lands. In fact, gathering and fishing zones are now only available to those individuals holding high-priced licenses, and who assume the personal risk of gathering and fishing in areas replete

with animals, without a gun or weapon for self-defense. At the same time, the "common zone" is overexploited because hunting is banned in the protected zones. Note here that the part of Odzala National Park affected by human habitat is only a tiny part of the protected area as a whole; these village areas are far removed from the most interesting ecological and touristic zones.

Where "village exploitation zones" exist, as in the Odzala National Park, they do not necessarily correspond to the needs of local people. In this case, a 5 km buffer zone includes the agricultural lands of the villages but not their forestry lands. This zoning plan was not designed for communities whose economies combine agricultural, hunting, gathering, and fishing activities. Customary lands extend beyond the present demarcation of "village exploitation zones." Consequently the local people are deprived of access to their traditional lands, and must purchase licenses to exploit resources that they believe are theirs by customary right.

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It is also clear that inappropriate zoning, as in the Lopé Fauna Reserve, can easily provoke situations that undermine conservationists' objectives. In the case of the Lopé Reserve, the lack of a "village exploitation zone" around the villages, coupled with the prohibition against trapping animal-pests in the gardens (which normally ensures the protection of the crops), has directly undermined the agricultural system. This weakened agricultural system has compelled villagers to bring their gardens and crops together into larger, communal areas to reduce destruction of crops by animals, which has in turn undermined the system of rotation, resulting in overall agricultural intensification and accelerated environmental degradation. Thus the ban on trapping has literally removed a vital element of the agricultural system and has provoked the emergence of nonsustainable uses of the land.

In the context of human societies that fundamentally rely on the natural environment for subsistence and well being, failure to recognize customary land tenure in conservation management plans is a source of considerable tension. Such an omission has inevitable repercussions concerning usage rights, as local notions of land use are disrupted or banned. During several meetings that we observed, villagers repeatedly expressed their indignation and worry.

Throughout areas targeted for natural resource protection in central Africa, villagers clearly sense that with the arrival of "conservation" their lands no longer belong to them as a community. Instead, the land is now intended for new uses, such as exclusive protection. Local communities are also concerned about aggressive environmental administrators, from whom they solicit help in case of destruction of crops by animals, but from whom it is generally

impossible to ensure intervention in time to protect gardens (or even to assist a person who was injured while trying to protect the crops). The villagers expressed, not without irony, the belief that conservation officials and Ministry representatives force them to live in such insecurity to determine if local people are indeed "less than animals."

CONCLUSION

The question of integrating traditional land tenure and conservation zoning that is adapted to local realities should be at the center of debates on "participatory management." Land management systems directly affect the modalities of resource utilization by local populations. Land management systems also determine the quality of relations between local people and conservation programs. Whatever the status attributed to "village exploitation zones" ("buffer zone," "common use zone," "rural development sector," and so on), it is necessary that these land management strategies be conceived and demarcated in a manner that allows local people to use the environment according to their perceptions of nature and their subsistence needs. This approach requires finding a means of knowing the affected populations and their modalities of environment exploitation.

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See "REFERENCES" for author's publications.

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