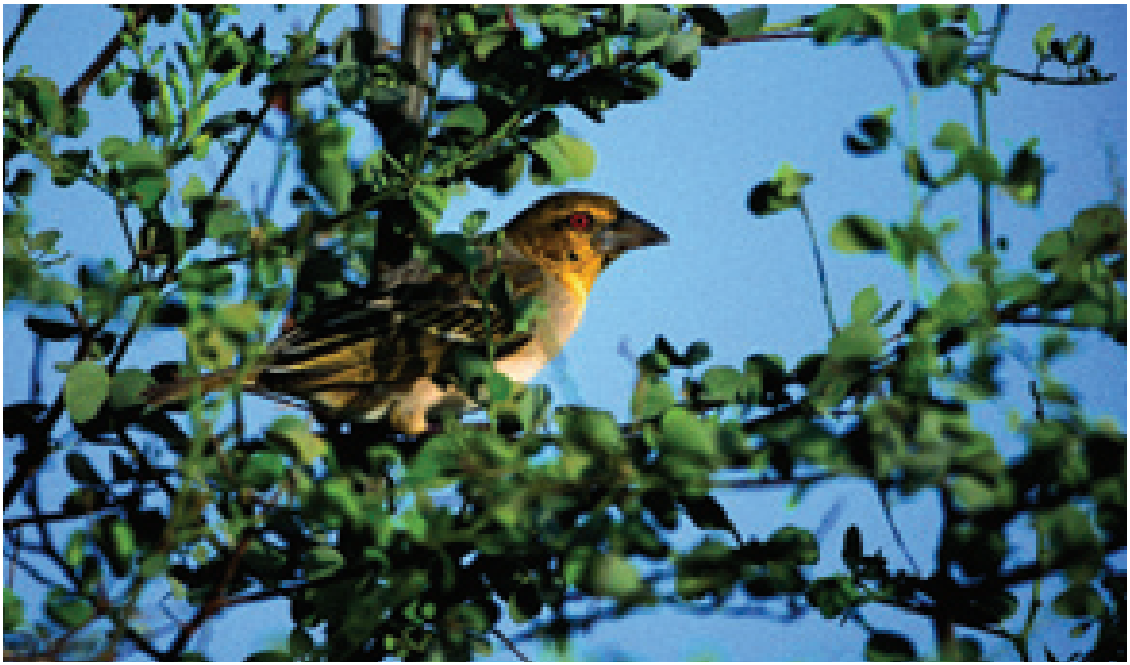
NEAR GUITTE (N'DJAMENA), CHAD



QUELEA IS CONSIDERED TO BE A PEST OF CULTIVATED CEREALS

WILDLIFE CONSERVATION AND WISE USE

Worldwide there is increasing recognition that the only way to ensure the survival of wildlife is by giving it a monetary value, thus providing incentives for its conservation and wise use. The variety of experiences in the Lake Chad Basin should inspire future initiatives for optimizing the use of its wildlife both in and outside protected areas. Some examples of this are shown in the following pages.

THE RED-BILLED QUELEA: A PEST OR A RESOURCE?

The red-billed quelea (*Quelea quelea*) is traditionally considered a pest of cereals, particularly of millet and irrigated rice [8.21]. In the past, various attempts have been undertaken around the Lake Chad Basin to eradicate the species [8.22] or to study its migratory behaviour in order to develop successful strategies for control or damage prevention [8.23], [8.24]. Such strategies include a simple adaptation of the crop calendar of irrigated rice so that the vulnerable crop stages occur during the absence of the quelea [8.25]. This is possible because queleas have a well-defined migration pattern and, in some periods of the year, they are almost absent [8.23], [8.24]. Various methods have been employed to control queleas. The most rigorous, which are still in use, involve the application of avicides, such as fenthion or cyanophos [8.21]. These avicides belong to the organophosphate family of chemicals and are characterized by a high acute toxicity. They are not only toxic to the quelea, but may also pose risks to any humans, livestock and non-target species entering treated areas [8.21]. Perhaps less obviously, another group is exposed to the residues: consumers of queleas.

Populations of the countries of the Lake Chad Basin consume queleas in large quantities. In the recent past, when chemical treatments were used more commonly than they are nowadays, it was not unusual to see villagers entering a roost after it had been treated in order to collect dead or dying birds. These were

DELTA OF CHARI RIVER (NDJAMENA), CHAD

QUELEA IS ALSO A RESOURCE BECAUSE IT IS TRADITIONALLY EATEN BY LOCAL PEOPLE

degutted and dried on the roofs of their houses for later consumption. It was mainly children who collected the birds. During aerial treatments of large roosts in the Niger, crop protection agents had to spend the night near the roost in order to prevent children from entering.

Queleas are also captured in large numbers by indigenous methods for marketing in western Chad and northern Cameroon. These birds are free from chemical residues and are a highly prized, protein-rich addition to the daily menu. The history of quelea-trapping in the Lake Chad Basin probably goes back many decades, but it certainly received a major boost when Hadjerai from the Guera in central Chad settled in western Chad during the major drought period that hit the Sahel in the late 1960s to early 1970s. Hadjerai *piégeurs*, as they are called locally, use triangular nets on moonless nights to trap birds in their roosts. Such a net was once shown to elderly Mousgoum and Kotoko fishermen along the Logone in Maga, northern Cameroon, and they immediately recognized it as a net that they had used in the past for fishing; some of them produced their nets, which they had kept for 20 years in their houses. These nets became obsolete after the dams along the Logone were constructed in the 1970s, cutting off 600 000 ha of the Waza–Logone floodplain from annual flooding. Their nets no longer had any use until the Hadjerai gave them a second life: to "fish" for the quelea.

Fishermen in northern Cameroon have adapted another fishing method to trap queleas: that of the *épervier*, or castnet. They discovered that queleas roosting in *Typha* marshes could be trapped at night by throwing a castnet over the roosting birds. Although using this net did not trap as many birds as the triangular net, the method was good enough to produce some benefits. Meanwhile, these methods have spread to other areas of northern Cameroon [8.26].

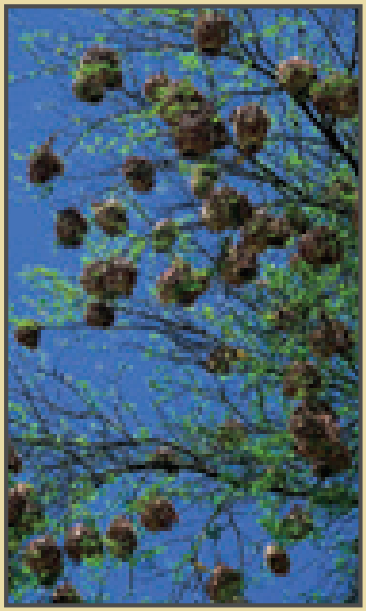
"Fishing" for queleas deserves attention from crop protection departments, which traditionally regard the bird as a pest rather than as a resource. Bringing together the farmers, trappers and crop protection agents may be the start of a fruitful cooperation leading to sustainable use of a bird hitherto considered as Africa's feathered locust [8.27].

"Fishing" for the quelea: Hadjerai *piégeurs* show that pest species are valuable resources

Going out with the Hadjerai at night is certainly a special experience. Clad entirely in black, they wait until the moon has disappeared and, when the owner of the net climbs on the shoulders of two of his companions, to fold the net backwards around a tree where queleas have gathered, he looks more like a huge bat than a human being. The queleas, startled, fall into the net and are rapidly collected in empty millet bags, where they simply suffocate. Usually, the throats of the first 20 or 30 birds are cut, to comply with religious obligations. They are representatives for the other 20 000 birds that a team easily traps in a couple of hours.

At first light, the birds are being plucked, roasted and dried. Then they are packed in bags and, on donkeys and trucks, are taken to the markets of N'Djamena or Maroua, where they are sold by Hadjerai women. In 1993 and 1994 sales of queleas in N'Djamena were estimated to be worth up to 38 million CFAF * [8.28]. This was of an estimated 10 million birds sold annually – a very conservative estimate, since *piégeurs* in the Zakouma area showed that 700 000 queleas could be trapped in a single night! Such revenues are important when compared to capitalized crop losses: based on these conservative estimates, they could compensate for 23–40 percent of millet crop losses [8.28]. An economic analysis further demonstrated that the market was not yet saturated and that realistic potentials for the use of "quelea flour" for fish and poultry feed existed [8.26].

* 1 000 CFAF are equivalent to 1,52 euros.



NEAR BAGA, NIGERIA

QUELEA NESTS

WAZA NATIONAL PARK, CAMEROON

PHOTO: COURTESY OF P.SCHOLTE

YEAR-ROUND AVAILABILITY OF WATER HAS INCREASED QUELEA POPULATIONS

>> RIGHT: QUELEA HUNTERS CAN CATCH AS MANY AS 700 000 BIRDS IN A SINGLE NIGHT
DELTA OF CHARI RIVER (N'DJAMENA), CHAD

DELTA OF CHARI RIVER (N'DJAMENA), CHAD

SUPPORT AND TRAINING SHOULD BE PROVIDED FOR HUNTERS SO THAT THEY CAN DEVELOP NILE MONITOR RANCHING AS A SOURCE OF INCOME

RANCHING OF THE NILE MONITOR

The Nile monitor (*Varanus niloticus*) deserves particular attention because it already generates benefits for local people and these could be increased by appropriate interventions. This lizard grows up to 1.5 m in length, lives in burrows and, like all monitors, is a daytime predator, feeding on insects, molluscs, fish, birds, eggs, snakes and small mammals. The semi-aquatic monitor can undergo aestivation for several months during the cooler drier season. High densities of the Nile monitor have been recorded around Lake Chad [8.29], where it finds an ideal habitat in the prolific aquatic vegetation, mostly between the islands, where fishing is limited and the few inhabitants tend to be mainly subsistence farmers and pastoralists.

The Nile monitor is hunted for its meat and skin, a practice based on an age-old and thorough understanding of the lizard's movements and habitat. In a single day, a team of hunters, often using baited hooks, may catch up to 30 or 40 Nile monitors. The captured animals are kept alive until the following day, when they are killed, often as part of a ceremonial sacrifice, skinned and the meat is smoked. Once the Nile monitor season is over, the hunters return to their farming, fishing or pastoral activities.

Nile monitors are eaten or sold in local markets; their meat is considered a delicacy by the local people, who also use their organs and tissues for medicinal purposes. Traditional methods of salt-drying and smoking the meat are known but no information is available on the consumption and potential market of dried meat. The skin, which is very durable and extremely beautiful, is highly prized on the international market. If managed

N'DJAMENA, CHAD

THE SKIN OF THE NILE MONITOR IS DURABLE AND HIGHLY PRIZED ON THE INTERNATIONAL MARKET

BALATUNGUR VILLAGE (BOSSO), THE NIGER

NILE MONITOR MEAT IS CONSIDERED A DELICACY ON LOCAL MARKETS AND ITS ORGANS ARE USED FOR MEDICINAL PURPOSES

sustainably, this reptile could be a useful source of extra food and income for communities living in the Lake Chad Basin.

Despite research on the monitor's reproductive biology [8.30], little is known about how to increase monitor production. One option might be the ranching of Nile monitors, which would provide new working opportunities for local hunters without affecting wild populations. However, more needs to be understood about trading practices in Nile monitor meat and skins. The villages that sell the skins are registered, but the traders deal directly with the hunters, fixing the prices and establishing the rules of the market. The hunters sell Nile monitor skins for 400 CFAF*, while the intermediaries sell them on for an average of 600 CFAF. Records show that, between 1980 and 1985, trade in skins averaged over 400 000 per year. Between 1985 and 1991, Cameroon exported 806 522 skins, and Chad 200 082 skins. Since 1993, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has limited the annual export quotas to 80 000 for Cameroon and 75 000 for Chad. Ostensibly, these quotas have been respected, but information is lacking on the illicit international trade, local craft uses of the skins, and especially meat consumption and other uses of organs and body parts, which have been estimated to be three to four times as high [8.30].

Proper regulations should be put in place before any action can be undertaken. Support will be needed to help hunters in the development of Nile monitor ranching in order to maximize profits while maintaining an ecological balance. Awareness campaigns should be devised and launched to ensure that local people use hunting techniques that guarantee the long-term preservation of the species.

* 1 000 CFAF are equivalent to 1,52 euros.

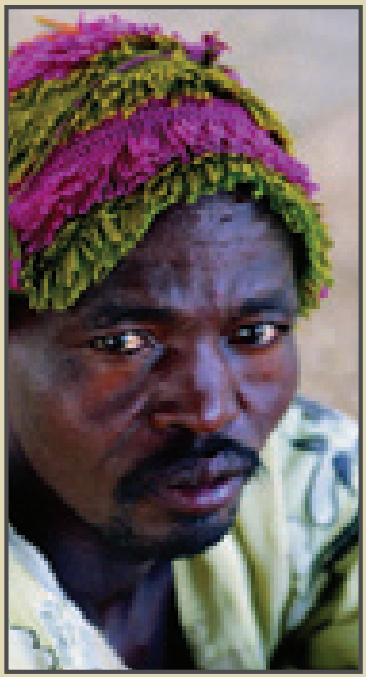
On the trail of Lake Chad's last hunters

17 October 2001
Port of Kaniram, Nigeria

Here we encounter for the first time a "professional" hunter. His name is Awalé Mohawan. We try to strike up a conversation, but we read mistrust in his eyes. He has an understandable reluctance, as a great many restrictions have been imposed on hunting, in an effort to curb the anarchy and the excesses that have followed the recent fighting. And it is traditional hunters like this man who pay the heaviest price. Awalé Mohawan and his like are a dying breed; once venerated and considered heroes, who protected the villages from wild beasts, today they have been reduced to the role of poachers and pursued by the law. We make an appointment for the following day. But we will wait in vain.

DELTA OF CHARI RIVER (N'DJAMENA), CHAD

THE NILE MONITOR IS HUNTED BY PROFESSIONAL HUNTERS AND ALSO OCCASIONALLY BY FISHERMEN AND FARMERS AS A SOURCE OF EXTRA FOOD AND INCOME



KANIRAM VILLAGE, NIGERIA

AWALÉ MOHAWAN, PROFESSIONAL HUNTER

17 March 2002
Hadidé, Chad

After several attempts, we manage to make contact with another "professional" hunter, Mohamed Issa, who seems happy to talk to us. He has a permit from the Direction de la protection de la faune et des parcs nationaux to hunt varans (monitor lizards). These large lizards are found throughout Chad and are hunted – or should we say fished – by virtually all lake dwellers. For some of them it is also an important source of income in the off-season. But for professionals like Mohamed Issa, the best season for this activity is between March and June. We follow him as he makes his daily rounds, checking his fishing lines placed along the lakeshore, hidden by the reeds. He uses size five hooks, with meat-based bait (although the precise recipe will remain a secret).

We start the rounds in the boat: nothing. Fish have nibbled at the bait but not a trace of varans. As we approach the third line, we see movement in the water: something big is snapping at the bait. We silently observe the hunter as he expertly hauls aboard a fine example of varan, about 1.2 m in length. Throughout the operation, Issa keeps a close eye on the lizard's tail. For, although provided with very sharp teeth, jaws with a deadly grip and exceptionally long claws, varans use their tails as swords, to deliver rapid and violent thrusts. The hunter is especially careful not to damage the skin, for it is this which will earn him the greatest profit when he sells it at the N'Djamena market. The meat will be sold, preferably fresh, but if there is a great quantity, it will also be preserved – dried or smoked – to be exported to Nigeria. The varan is used in traditional medicine as well, while the Peul tribe uses it as a gri-gri to ward off poisonous snakes.

The law has set a limit of 80 000 on the annual catch of monitor lizards, and such is the number of skins that are said to be exported from Chad to France each year. All of them pass through the warehouse owned by Mustapha Kuimé, the only trader in varan skins operating in N'Djamena.

>> RIGHT: HUNTING TECHNIQUES MUST GUARANTEE THE LONG-TERM PRESERVATION OF THE SPECIES

DELTA OF CHARI RIVER (N'DJAMENA), CHAD

From enemies to discussion partners in conservation

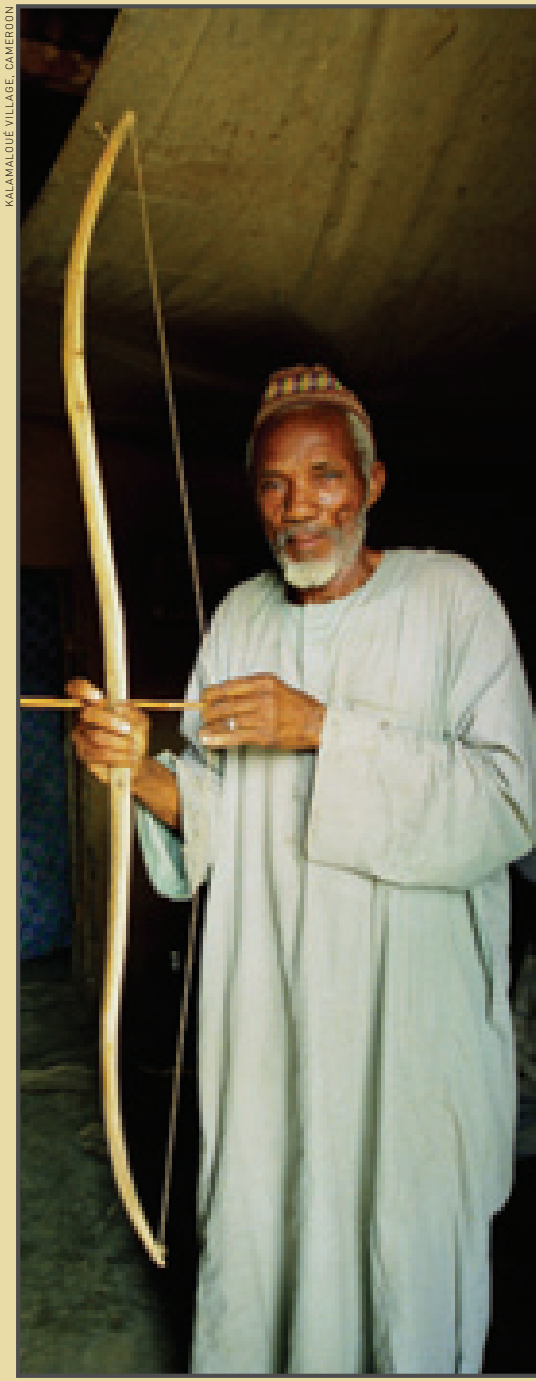
Waza National Park is one of the many protected areas where contacts between local communities and park authorities have for a long time been under considerable strain. Many local communities still bear the emotional scars of being evicted from their villages and of being banned from exploiting the traditional resources that now lie in a "protected area". Moreover, they are frustrated by their low revenues from tourism, as young men from the cities have taken up the jobs at the tourist camps. On the other hand, park authorities complain about the complicity between local communities and poachers, as well as the stubbornness of villagers and herders who continue to exploit grazing and fishing inside the national park.

During field controls, tensions regularly rise. For example, park guards who are trying to stop the herding of livestock inside the park may be confronted with the sudden disappearance of the herdsmen on their arrival. Frustrated, the guards try to chase the cattle, or to take one or two with them in order to make the owner reveal himself. Yet cattle are not easy to catch and so, after some bad experiences, instructions are issued to shoot one of the cows, provoking strong reactions. Another example is that of the fishermen, who generally enter the protected area during flooding, when the roads are inaccessible and when they can exploit the rich fishing without being bothered by the park authorities. However, when these fishermen have dried the fish and transported it to local markets, they are chased by the park guards, who confiscate all the fish, even if some of it came from outside the national park. Even more complicated is the situation regarding villages situated right on the park boundaries, where every activity in their surroundings is formally "illegal".

This was the situation in 1993, when the Waza–Logone project started working with local communities to enhance their involvement in the management of Waza National Park. Participatory discussion sessions in each village and pastoralist's camp were held in order to understand further what was going on and, above all, to gain the confidence of local communities. Intensive cooperation with the park authorities was also needed, because they were afraid of losing control of the situation. With the agreement of all parties, a management plan was drawn up in 1996/97, and clear rules were subsequently formulated regarding activities in the park; these included activities allowed under guidance (grasscutting, gum Arabic collection), activities allowed under conditions laid down in a contract (fishing), and activities that were strictly forbidden (hunting) [8.31]. Ecodevelopment activities were initiated to equip villages with basic sanitation. A committee of representatives of local communities was created, and the park authorities were obliged to consult the members on all matters related to the national park, as well as giving them a stake in some of the revenues from the tourist camps.

Six years after the approval of the management plan by the Minister of the Environment, poaching and illegal exploitation still exist in Waza National Park. However, the atmosphere between park authorities and local communities has improved dramatically, as all now realize that they mostly share a common interest. In 1999, for example, the low number of park guards motivated the local communities to approach the Minister of the Environment, because they were worried about the low level of surveillance. In the meantime, they selected village guards to assist the park authorities, a situation unimaginable ten years ago.

KALAMALOUÉ VILLAGE, CAMEROON

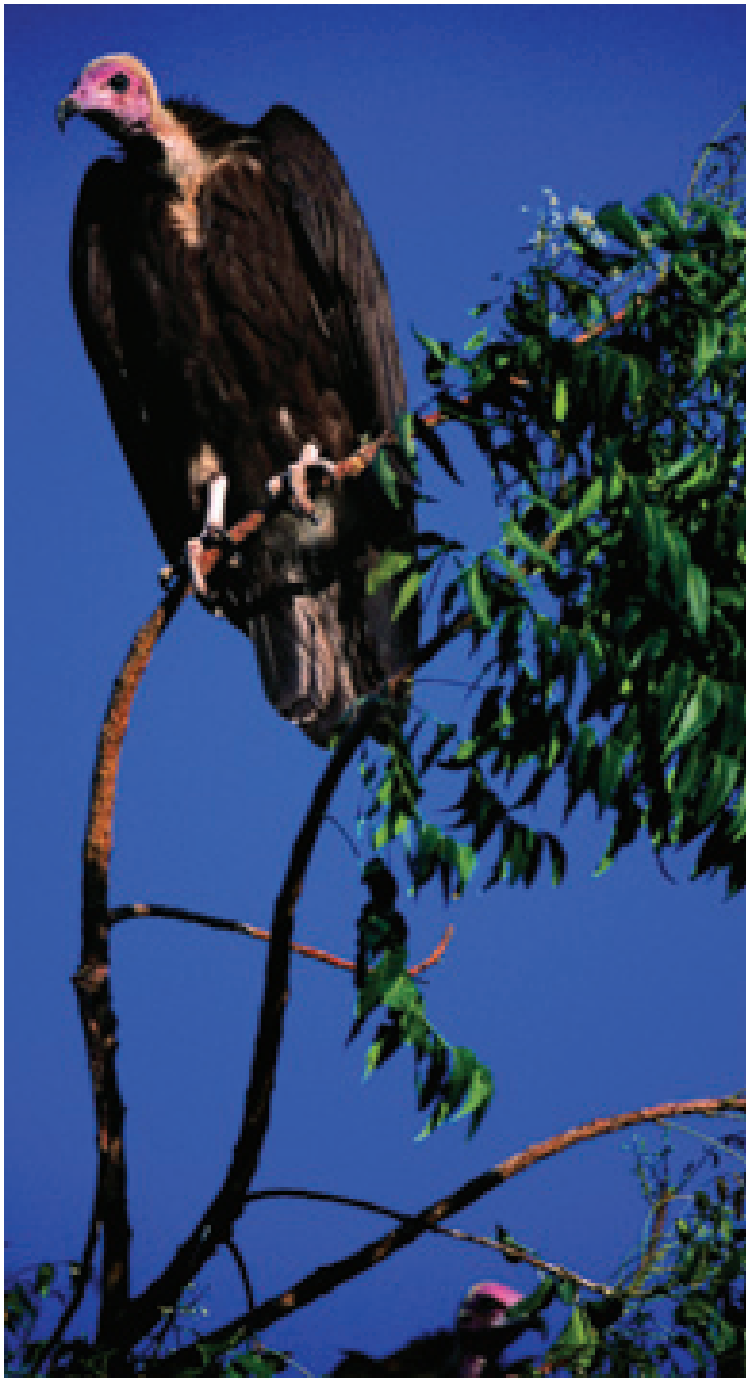


TRADITIONAL HUNTERS, SUCH AS UMARU OUSMANE, INCREASINGLY ASSIST PARK AUTHORITIES IN CONTROLLING WILDLIFE

TOURISM

Tourism is widely regarded as one of the most appropriate ways of optimizing the use of wildlife resources. A good example in the basin is Waza National Park (Cameroon), which is probably the best known and most visited national park in central Africa. Annually, 5 000 visitors are attracted by its large elephant population, as well as by its lions and giraffes and the spectacular concentrations of kob, korrigum and waterbirds during the dry season. Yet even here, in this most visited national park in the basin, the revenues generated by entry fees are not enough to cover the running costs of its management, let alone the costs of reserving this tract of land for conservation purposes. Indirect revenues, such as travel costs and souvenirs, are an important additional source of finance, but they are difficult to quantify or to exploit as an incentive for the area's protection.

Efforts have been undertaken to increase tourist numbers; for example, a hotel was constructed near the park entrance in the 1980s, although it has never been used. Recently, initiatives have been undertaken to direct more of the revenues from visiting tourists into local communities by the construction and successful exploitation of a local tourist camp. Among the other protected areas in the basin, the Lake Chad Basin National Park (Nigeria), Zakouma National Park (Chad) and Manovo–Gounda–St Floris (Central African Republic) each receive only a few hundred tourists a year at most, despite relatively important investments in their lodging facilities. The inaccessibility of the area, which is 1 000 km from N'Djamena (Zakouma National Park) and Bangui (Manovo–Gounda–St Floris), and the lack of spectacular wildlife (Chad Basin National Park), combined with a general lack of any tourism tradition, hamper any development of tourism in these countries.



NEAR BOL, CHAD

THE DEVELOPMENT OF TOURISM IN THE LAKE CHAD BASIN IS STILL SLOW, MAINLY BECAUSE OF SCARCITY OF SPECTACULAR FAUNA AND A GENERAL LACK OF TOURISM TRADITION

PHOTO: COURTESY OF P.SCHOLTE

DORCAS GAZELLE, STILL THE MOST ABUNDANT ANTELOPE IN THE LAKE CHAD BASIN

GAME-HUNTING TOURISM

For decades there has been a tradition of game-hunting tourism in the humid infertile savannahs of the upper Lake Chad Basin, in the northeastern Central African Republic and just outside the basin in Cameroon. Since the 1990s, game hunting of elephants has been allowed in the basin part of northern Cameroon, but its poor organization does not meet international standards. Western hunters pay up to €25 000 for a two to three week safari, targeting trophy species such as the giant eland (*Tragelaphus derbianus*), African buffalo, elephant and others. Because of the extremely low carrying capacity of these savannahs for livestock grazing, let alone agriculture, game hunting has proved to be a sustainable land use, if controlled by specialized management. Unfortunately, the northeastern Central African Republic has witnessed increasing pressure from pastoralists in their quest for new pastures after the loss of grazing lands further north. Insecurity has become a major problem and large-scale poaching has become prominent. Game-hunting revenues in the northeastern Central African Republic dropped from over €6 million in 1988 to less than €3 million in 1995 [8.32]. In Cameroon, conditions for game hunting are positive, yet the pressure of increasing cotton cultivation threatens its long-term prospects. In both the Central African Republic and Cameroon, efforts are being undertaken to give local communities a more important stake in the exploitation of their territories, thus increasing their revenues and ensuring their commitment to the wise use of wildlife.

WILDLIFE AS PART OF A MULTIPLE LAND-USE SYSTEM

With the collapse of wildlife populations in the Sahelian grasslands in the 1970s and 1980s, areas with high wildlife densities and low human populations have become increasingly rare in the Lake Chad Basin. The northeastern part of the Central African Republic is the only area where there is still the potential for land use to be focused exclusively on wildlife. Elsewhere, direct as well as indirect revenues from tourism do not compensate for other potential uses of the protected areas. Lately, several protected areas in the basin have benefited from conservation development projects, thus supplementing the revenues from the protected area with infrastructures such as health clinics and wells. The results of these projects are limited, however, because of the generally short intervention periods, as well as the negative impacts of development activities right on the border of protected areas [8.33]. These constraints have motivated the development of international payment schemes to compensate local communities for the conservation of biodiversity, but their implementation will take several years – too long to be of much help for the pressing problems in the Lake Chad Basin.

The consideration of wildlife as part of a multiple land-use system seems to be the most pragmatic option for the basin's protected areas. Moreover, for decades, the presence of wildlife alongside land uses such as grazing, fishing, and collecting fruits and gum Arabic has been the existing situation in most protected areas, although it has not been recognized as such or developed [8.34]. Priority should be given to the involvement of local communities, which have so far had only a passive role (Table 23). Local communities can and should play a major role in assisting protected-area authorities, based on their recognition of the protection status of wildlife. In return, the communities should be given the exclusive rights to exploit resources such as gum Arabic and straw, and possibly fish and grazing in the protected areas, under strict conditions laid down in a contract. No miracles should be expected and the Waza National Park experience shows the need for a gradual approach in which a strong governmental presence is indispensable for dealing with armed poachers. At present, none of the protected areas in the Lake Chad Basin has the appropriate regulations, although the IUCN Protected Area Category VI [8.35] provides a suitable framework. Few protected-area managers in the Lake Chad Basin have any experience of community wildlife management, and an institute such as the Garoua Wildlife College in northern Cameroon could play an important role in enhancing their abilities [8.36].

TRADITIONAL PAINTING BY ROKY, FROM MOUNDOU VILLAGE (N'DJAMENA), CHAD

LOCAL COMMUNITIES MUST BE INVOLVED IN PROTECTING AND MANAGING WILDLIFE AS PART OF A SUSTAINABLE EXPLOITATION OF LOCAL RESOURCES.

N'GUIGMI, THE NIGER

UNTIL THE 1930S, ELEPHANTS WERE COMMON IN THE NIGER PART OF THE LAKE CHAD BASIN

On the trail of Lake Chad's last elephants

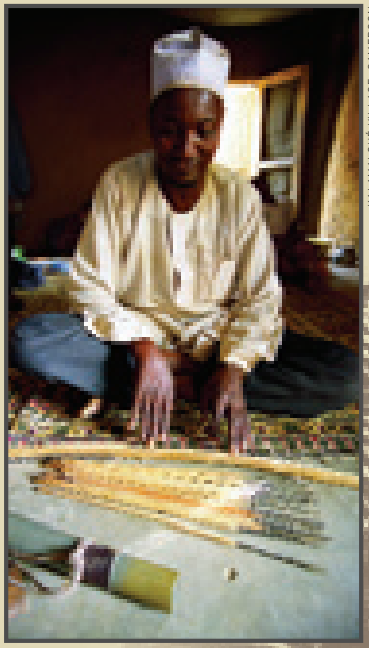
6 October 2001
N'Guigmi, the Niger

We are a few kilometres south of N'Guigmi, in the Niger, close to the shores of Lake Chad. Here elephants were sighted in great numbers up until the 1930s. Some of the old farmers of the area still remember them, and they describe for us their slow progress, as they moved between the Tal Desert and the lakeshore, swaying their big heads. Today, the only evidence of those former times is two giant elephant skulls – without their precious tusks – which adorn the entrance to the *Prefecture*, a pleasant colonial-style building.

Today around Lake Chad just a few herds remain in Cameroon and Chad, maybe a hundred elephants in all, chased from cultivated land, pursued from park to park. They are a problem: a herd of just 20 elephants can wreak havoc on fields and pastures, uprooting trees and plants, eating all the freshest shoots and trampling on crops as they go. The trail of destruction is not unlike that left by a whirlwind, as we ourselves witness in Cameroon, on our way to Dum Dum, crossing a wadi recently visited by a small herd of elephants.

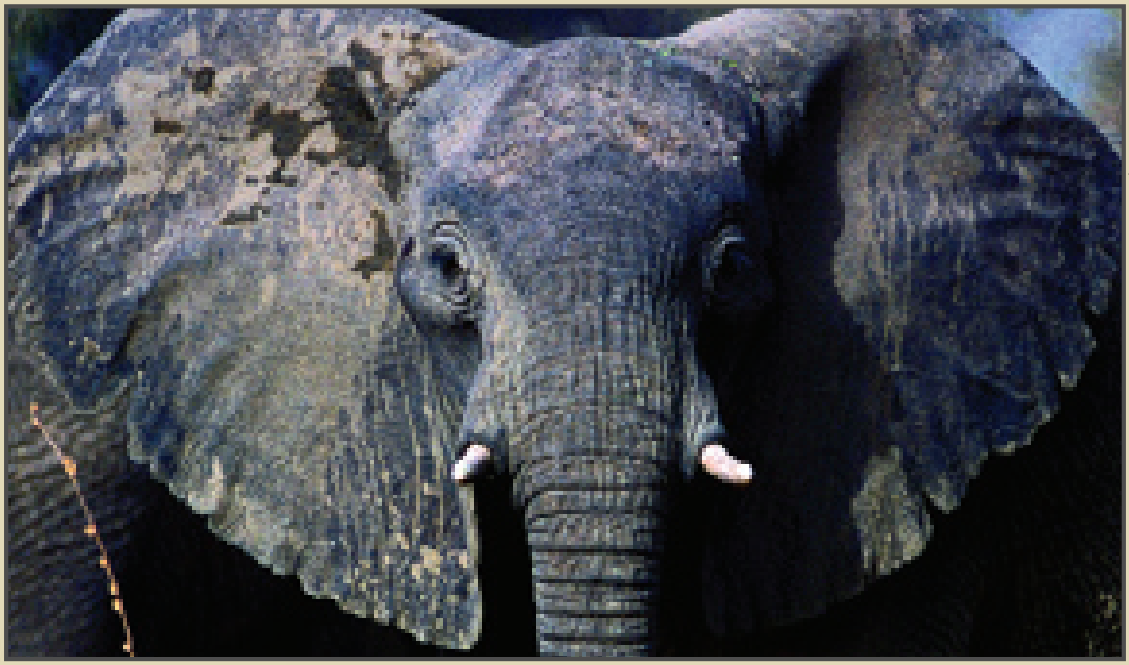
21 March 2002
Kousseri, Cameroon

In both Cameroon and Chad, elephants are a protected species. As long as they do not poke their long noses outside the confines of the parks and reserves, no one will kill them. Even farmers, who are in constant battle with them, simply try to scare them off their land with noise, banging saucepans, shouting and throwing stones. But as soon as they stray, it becomes a good opportunity to organize a shooting party for white tourists.



KALAMALOUÉ VILLAGE, CAMEROON

HAMMADOU GLIN EXPLAINS THE TRADITIONAL ELEPHANT HUNTING METHODS



KALAMALOUÉ NATIONAL PARK, CAMEROON

IT IS QUITE DIFFICULT TO PERSUADE ELEPHANTS TO RESPECT THE BOUNDARIES CREATED BY STATES AND PROTECTED AREAS

Just outside the small protected area of Kalamaloué, in Cameroon, a few kilometres from the lake, there are about 30 elephants, many of them mothers with their babies. Two European hunters are waiting patiently for the elephants to stray beyond the confines. They have paid $1 500 for the privilege of shooting one specimen at will.

In the nearby village of Maracò, we make a stop at the house of Hammadou Glin. An experienced game warden, once a great hunter himself, he now works as a guide for tourists. His competence is beyond question, his stories riveting. He recalls how his own father hunted elephants on horseback. The hunters, always in a group, would choose a good target, maybe the weakest, least aggressive member of the herd, and would gallop alongside it. Then, at the right moment, they would thrust their spears into the belly of the animal. Three, four, five spears whose tips had been dipped in poisonous latex from the *Ficus* plant, and the pachyderm would end his run in a matter of minutes, the hunters closing in for the kill. The spoils of the hunt would be shared among the whole village, recalls Glin, and a big celebration would follow. "It meant meat for everyone, for several days at a stretch."

Among the followers of a hunting party, there would be people endowed with special powers; if an attacked elephant turned violent, they were able to calm the beast with magic spells. "I saw one elephant lift a hunter into the air with its trunk, but when it was ordered to put him down, it did so at once!" (The group of listeners nods emphatically: "Ah yes, it's true, there were some people who had these powers!") "Of course, we never attacked a mother with its baby, nor a dominant male; one could say the selection was almost natural," he added. "These days, the elephants and the farmers manage to get along, though it isn't always easy."

The situation seems rather more fraught in Chad, where the parks are much further south of the lake, making it more likely that the elephants will damage the crops. It is all too easy to track a small herd of elephants – all we do is follow the trail of demolished trees and bushes as well as huge dum palms that have been completely uprooted. (Elephants are particularly fond of the tender roots of these palms, and the only way they can get at them is to simply pull the whole tree out and devour the roots before moving on to the next one). This herd of 40 to 60 elephants is now wandering along the southern shore of the lake, close to the village of Kuludia, moving in the direction of Dum Dum in Chad. We are told that the idea is to persuade them – or force them if necessary – to join up with another much larger herd living in the Lake Fitri Basin, and then push the whole group further south, into the Zakouma National Park.