

18. TRADITIONAL AFRICAN WILDLIFE UTILIZATION: SUBSISTENCE HUNTING, POACHING, AND SUSTAINABLE USE

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SUMMARY

This paper examines traditional African wildlife utilization activities, with particular emphasis on subsistence hunting, or the procurement of wild animals for purposes of meeting household needs. It is noted that subsistence hunting in Africa is often defined by the state as poaching (hunting outside the bounds of the laws set by the state). State conservation efforts in Africa have seen limits placed on access to wildlife resources through national legislation. Hunter-gatherers and some pastoralists and farmers in Africa exploit a wide array of wild animals for economic, social, and spiritual purposes. Three countries in Africa allow subsistence hunting: Botswana, Namibia, and Tanzania. In all three cases, subsistence hunting is limited to peoples of hunting and gathering origin and/or practice. The subsistence hunting activities of the Ju/'hoansi (!Kung) San of northeastern Namibia and northwestern Botswana from the 1960s through the mid-1990s are examined, and it is argued that the offtake rates of hunters appear to be sustainable. The acquisition of surplus meat is sometimes done for purposes of storage and to share meat with other people in order to reinforce social relationships and provide food to those who do not hunt. In the 1990s community-based natural resource management programs were initiated among the Ju/'hoansi in both Namibia and Botswana. It is too early to say

whether these programs will enable the Ju/'hoansi to become economically self-sufficient.

Another strategy of promoting conservation in southern Africa which involves removing people from their ancestral lands and taking away their hunting rights is presented using the Central Kalahari Game Reserve in Botswana as an example. Changes have occurred over time in subsistence hunting strategies in the central Kalahari, with an expansion in the utilization of horses and donkeys as hunting aids. The greater efficiency of equestrian hunting has led to concerns that offtake rates are too high. The government of Botswana, therefore, decided to relocate the people of the Central Kalahari Game Reserve, with the result that the social and economic well-being of the former residents of the reserve has declined. The conclusion drawn is that community-based approaches that allow local people access to and control over wildlife resources may have more positive impacts on conservation and sustainable use than those strategies that dispossess local people and reduce their access to wildlife resources.

INTRODUCTION

Hunting of wild animals was and is considered a traditional customary right of many, if not most African peoples. Throughout much of Africa's history, people exploited wild animals and plants to meet their dietary, material and spiritual needs. Although individuals in African communities generally made their own decisions about hunting, community leaders and elders often played a role in resource use and management, establishing rules, for example, about animals that should not be hunted and stipulating that they should receive certain portions of game animals that were killed (Schapera, 1943 pp. 252–262; Marks, 1976). With the establishment of colonial governments in Africa by European nations, the state assumed an even greater role in determining who had access to wildlife resources and under what conditions (Marks, 1984; Anderson and Grove, 1987). Post-colonial African governments have followed similar policies, passing legislation that regulated the use of various species and stipulating the methods, locations and timing of wildlife exploitation (Graham, 1973; Bonner, 1993).

Members of African communities generally exploited wildlife to meet subsistence needs. The concept "subsistence" is sometimes defined as "resource dependence that is primarily outside the cash sector of the economy" (Huntington, 1992 pp. 15–16). This economic definition is, in many ways, inadequate in the context of contemporary Africa since virtually all Africans, including those in remote rural areas, are integrated into the market economy. Many people in Africa sell wild animal products (e.g. bushmeat) in order to generate income (Asibey, 1974; Hart, 1978; Martin, 1983; Murray, 1983; Fa, Juste, Del Val, and Castroviejo, 1995). People also pay sizable sums of money in Africa for traditional medicines, the ingredients of which sometimes include wild animal products.

For the purposes of this paper, a distinction will be drawn between subsistence hunting and commercial hunting. Subsistence hunting, as used here, refers to the procurement of wild animals in order to meet household needs. Subsistence pro-

duction is sometimes described as "living off the land" and generally means the taking of wild animals for food. Commercial hunting, on the other hand, is the exploitation of wild animals specifically for sale. Safari hunting and sport hunting on private land in exchange for a fee are forms of hunting that are commercial or market-oriented in nature (Hudson, Drew, and Baskin, 1989). Non-consumptive forms of wildlife usage that are commercial include photographic safaris and game viewing.

Many if not most African households are characterized by diversified production systems in which a variety of activities are undertaken to earn a living. A household will sometimes engage in the procurement of wildlife at levels slightly above what the household actually needs for food and materials (i.e. the obtaining of a surplus). This surplus is sometimes used for public purposes, as is the case when meat is obtained for a community religious ceremony such as an initiation rite or a funeral. Wild animal products are often shared with other households in a community as part of a system of mutual reciprocity and obligation, especially among hunter-gatherers (Lee, 1979 pp. 117–119, 437). Surpluses are also exchanged on occasion with other communities in regional trade and exchange systems for goods, many of which may not be available locally (Wiessner, 1977). Wild animal products have been sold to traders for generations in Africa; these traders either give people cash in exchange for the goods or provide them with items that they might not otherwise be able to obtain such as clothing, ammunition, metal pots, or grain.

The traditional use of wildlife by subsistence hunters in Africa is sometimes described as poaching (i.e. illegal hunting) (see, for example, Thomas, 1959 pp. 190–191). Milner-Gulland and Leader-Williams (1992 p. 195) note that "*Illegal hunting is probably the most important and widespread form of wildlife utilization throughout much of Africa.*" Poaching is taken here to mean the procurement of game in ways that are considered outside the bounds of the laws set by the state. It also means the taking of animals that are listed as protected under wildlife laws, or the hunting of animals in places or at times that are considered off-limits under the law (Manning, 1993; Francione, 1995).

In the course of state efforts to promote conservation in Africa, legal restrictions were placed on hunting, gathering and fishing through national legislation (Anderson and Grove, 1987; Marks, 1984). Such legislation not only reduced the access of local people to natural resources, it also resulted in individuals and sometimes whole communities being arrested, jailed and, in some cases, killed (Mogwe, 1992; Peluso, 1993). The result has been a decline in the socio-economic statuses of a number of African groups, households, and individuals, especially those who were relatively heavily dependent on hunting and gathering (Miller, 1993 pp. 160–178; Hitchcock, 1995). There is a rising chorus of objection in a number of African communities over the ways in which governments and conservation agencies have handled wildlife protection (Bonner, 1993; Veber et al., 1993; Hitchcock, 1994).

The purpose of this paper is to discuss subsistence hunting in Africa and the ways in which it has been dealt with both by African communities and governments.

The data that are drawn upon for this paper are derived mainly from southern Africa (Namibia and Botswana), but some comparative statements about subsistence hunting activities and their impacts elsewhere on the continent are made. The impacts of a community-based natural resource management project at /Xai/Xai in northwestern Botswana are discussed and compared with an approach in which people have been denied access to land and natural resources in the central Kalahari Game Reserve. From this analysis, it appears that community-based resource management approaches tend to be more effective than ones that promote exclusion of people from land and resources.

SUBSISTENCE HUNTING RIGHTS

Relatively few countries allow people to engage in subsistence hunting with little or no restriction. In Canada, the Income Security Program for Cree Hunters, Trappers, and Fishermen (ISP) was negotiated and established under the James Bay and Northern Quebec Aboriginal Land Claims Agreement. The ISP has helped to ensure the continuation of subsistence foraging as a means of livelihood for those Cree who elected to maintain hunting and gathering as their primary lifestyle (Feit, 1982). Australian Aboriginals are allowed access to wild resources under the Native Title Act, 1993, which specifically recognizes indigenous property rights in wildlife species (Altman, Bek and Roach, 1995; Bomford and Caughley, 1996). The Alaska Native Claims Settlement Act of 1971 (ANCSA) allowed native peoples of the state of Alaska in the United States to continue to hunt and fish for food (Berger, 1985; Huntington, 1992). However, even on native land, the state asserts its jurisdiction over wildlife and fish (Berger, 1985 p. 92). In 1982, voters in Alaska came out in favor of rural people, both native and non-native, having the right to engage in subsistence hunting and fishing. Given that Alaskans, like many Africans, often live in rural areas that have little physical infrastructure like roads and are far from markets and commercial locations where they can obtain goods at reasonable prices, engaging in subsistence is seen as a matter of survival. As one Alaskan resident put it in an interview in 1997, "*It's part of our culture up here to live off the land.*"

Sizable numbers of Africans engage in subsistence hunting. Some of these groups traditionally were hunters and gatherers, but others are farmers and herders who hunt in order to supplement their diets and to protect their crops and livestock. Data are presented in Table 1 on populations involved in subsistence hunting that have been studied in detail by researchers in Africa. While some of these groups were hunter-gatherers or part-time foragers at the time they were investigated, such as the San of southern Africa and the Pygmies of the central African rain forests, others were largely agropastoralists (e.g. the Okiek of Kenya and Tanzania) or farmers (e.g. the Bisa of Zambia).

There are only three countries in Africa where special provision has been made for subsistence hunting rights: Tanzania, Namibia, and Botswana. In the case of Tanzania, one group, the Hadza, residing in the Lake Eyasi region not far from the Ngorongoro Conservation Area (NCA), is allowed the right to hunt without having

Table 1. African populations involved in subsistence hunting that have been studied in detail by researchers

Group Name	Country	Population size	Hunting methods	Researchers
G/wi, G//ana San	Botswana	4,150	bows, spears, dogs, horses, snares	Silberbauer, Tanaka, Osaki, Ikeya, Murray
Ju/'hoansi (!Kung) San	Botswana, Namibia	15,000	bows, spears, clubs, dogs, horses, snares	J. Marshall, L. Marshall, Lee, Wilmsen, Yellen
Tyua (Khwe)	Botswana, Zimbabwe	7,000	spears, dogs, clubs, guns, horses, traps	Hitchcock, Ebert, Cashdan, Crowell
Kua San	Botswana	4,500	bows, spears, clubs, dogs, guns, horses	Vierich, Kent, Hitchcock, Bartram
!Xo San	Botswana, Namibia	3,700	bows, spears, clubs, snares, springhare hook	Heinz, Trail, Thoma, Lawry, van der Jagt
Mbuti Pygmies	Congo (Zaire)	27,000	nets, cooperative drives	Turnbull, Hart, Ichikawa, Harako, Tanno
Aka Pygmies	Central African Republic (CAR)	30,000	nets, cooperative drives	Bahuchet, Hewlett
Baka Pygmies	Cameroon	25,000	spears	Bahuchet
Efe Pygmies	Congo (Zaire)	6,000	bows	Bailey, Peacock, Wilkie
Boni (Aweer)	Kenya, Somalia	200	spears	Stiles
Okiek (Dorobo)	Kenya, Tanzania	42,000	spears, guns, bows, snares, honey collection	Blackburn, Kratz, Huntingford
Hadza	Tanzania	1,000	bows, spears, snares	Woodburn, O'Connell et al., Bunn, Bertram
Bisa	Zambia	6,000	guns, spears, traps	Marks

to pay fees. They can do so under a Presidential License (McDowell, 1981a, 1981b). Under Tanzania's Wildlife Conservation Act of 1974, administered by the country's Ministry of Natural Resources and Tourism, the Hadza are able to hunt specified numbers of animals, but they are restricted in the kinds of hunting methods that can be used (e.g. no traps or ambush hunting and no hunting within 500 meters of a water point; see Newman, 1970 p. 59; McDowell, 1981a pp. 11–15, 30). In spite of the fact that they had the right to hunt, some Hadza are still arrested for engaging in subsistence hunting activities, something that is also true for San in southern Africa (Laurence Bartram, personal communication, 1995).

In Namibia, there is also only one group that had the legal right to hunt for subsistence purposes, the Ju/'hoansi San (Bushmen) of the northern Kalahari Desert (Marshall, 1958; Marshall, 1976; Hitchcock, 1992; Biese, Green, and Hitchcock, 1992). The Ju/'hoansi can hunt as long as they use traditional weapons (bows and

arrows, spears, clubs, and snares) and only if they do it on foot without the aid of dogs, donkeys, or horses (Bieseke, Green, and Hitchcock, 1992; Hitchcock and Masilo, 1995). The Ju/'hoansi are only allowed to engage in subsistence hunting in one part of the country, the Nyae Nyae region, a 6,300 km² area which in the past was known as Eastern Bushmanland and since 1992 has been called Eastern Otjozondjupa (Botelle, Rohde and Van Rhyn, 1994; Jones, 1996). The Ju/'hoansi in other parts of the country (e.g. in the Gobabis Farms region of west-central Namibia) are not allowed to engage in subsistence hunting.

One of the struggles of the Ju/'hoansi in the 1980s was with the governmental ministry that oversaw the management and protection of wildlife in the country, the Ministry of Wildlife Conservation and Tourism (MWCT), now the Ministry of Environment and Tourism (MET). Until the mid-1980s, there were plans to turn Eastern Bushmanland into a game reserve where the Ju/'hoansi would not be allowed to reside or to exploit natural resources (Marshall, 1984 pp. 13–14; Hitchcock, 1992 pp. 30–31). The Ju/'hoansi and their supporters lobbied hard to be able to retain their residential and resource procurement rights in Eastern Bushmanland. In 1991, the President of Namibia, Sam Nujoma, declared that the Nyae Nyae Farmers Cooperative (NNFC), the community-based organization (CBO) that represents the 1,400 Ju/'hoansi in northeastern Namibia, had the right to manage the land and resources in their area (Bieseke, 1994).

In 1992, the government of Namibia and the United States Agency for International Development (USAID) entered into an agreement to undertake a natural resource management project in the country. Known as the *Living in a Finite Environment* (LIFE) Project (USAID Project No. 690-0251.73), this project provided funds and technical assistance to non-government organizations (NGOs) and community-based organizations (CBOs) that wished to engage in community-based natural resource management (CBNRM) activities (Jones, 1996 pp. 14–18). In 1993–94, the Nyae Nyae Farmers Cooperative applied for and received a grant from the LIFE Project, which was administered by the World Wildlife Fund (WWF-US). The Ju/'hoansi initiated a resource monitoring and planning effort, one aspect of which was the setting up of a community-based tourism program (Garland, 1994; Hitchcock and Murphree, 1995). The LIFE Project supported the training and fielding of Ju/'hoansi Community Rangers who engaged in community-level participatory resource assessment, collected information on wildlife and plant resources, and served as part of the Nyae Nyae Farmers Cooperative's community governance system, disseminating information on a variety of issues to the 37 Ju/'hoansi communities in the region and listening to people's concerns and then providing feedback to the NNFC.

The Nyae Nyae Farmers Cooperative retained the right to use their wildlife resources for subsistence purposes and they chose not to lease out those rights to private safari companies. The cooperative established a set of rules that stipulated that certain wildlife species, notably roan antelope, were not to be taken by subsistence hunters until such time as their numbers increased. They engaged in efforts to protect their water points from damage by elephants, constructing

electric fences and placing rocks around the wells in order to discourage the elephants from getting close enough to the equipment to destroy it in their efforts to get water. The farmers cooperative also initiated a game ranching project involving eland, which were kept in a fenced area near Tjum!kui in the Nyae Nyae region.

Community-based natural resource management is successful when a specific group of people have rights that are clearly defined over a resource or set of resources and when they have the right to make decisions collectively about the use of those resources (Brown and Wyckoff-Baird, 1992; Jones, 1996 p. 3; Murphree, 1997). The reason that collective decision-making is so important is that the Ju/'hoansi are a small-scale, kinship-based, face to face society in which decisions are made by consensus. No final decisions are made by community members without first having discussed them at length, generally among all of the adults and often many of the children in the camp. People living in hunter-gatherer bands in most cases pay very careful attention to the opinions of their relatives and friends. Not to do so would be considered a serious breach of etiquette. The Ju/'hoansi also weigh carefully the impacts of their actions on their neighbours, most of whom tend to be either consanguineal (blood) kin or relatives gained through marriage (affinal kin).

Also crucial to the success of CBNRM is the right of the community to receive direct benefits from the use of resources. The Ju/'hoansi cannot at present be said to have *de jure* (i.e. legal) control over the land where they live in northeastern Namibia. They do have *de facto* rights over the land through customary law and through long-standing occupation of the region. The Nyae Nyae area, which is 17,877 km² in size (Barnes, 1995 p. 7), is designated as communal land under Namibian law. Traditional authorities at the local level are charged with dealing with land matters in Namibia. It must be noted that traditional authority patterns among the Ju/'hoansi differ from that of the Ovambo, Kavango, Herero, Mbukushu, and other Bantu-speaking populations in Namibia. Among the Ju/'hoansi there are no defined leaders with power and authority over members of the group; rather, decisions are reached on the basis of consensus. Land is controlled by the group (i.e. it is common property).

The Nyae Nyae region is divided into some 200 *n!oresi* (sing. *n!ore*), traditional Ju/'hoan territories (localities) that include the basic resources necessary to support a group. It is within these areas that individuals have rights to hunt, gather, and collect other resources (e.g. clays, arrow poison beetles) (Hitchcock, Green, and Bieseke, 1992). Residential and resource use rights were inherited from one's parents or gained through marital ties. Each *n!ore* is associated with a core group of "owners" (*n!ore kxausi*) who have long-standing ties to the locality; it is these individuals that outsiders must approach for permission to use resources or move into the territory (for a discussion of these issues, see Marshall, 1976 pp. 71–79; Lee, 1979 pp. 58–61, 334–339). The people who live in these territories in effect serve as custodians of the resources, managing them in a number of innovative ways (e.g. using fire to promote the growth of certain plant species and moving out of areas when they

are considered depleted). The Nyae Nyae Farmers Cooperative oversees the larger land area of Nyae Nyae (the kxa/ho) under which the *n!oresi* are subsumed. The cooperative has established rules about the kinds of animals that can be killed in their area (Hitchcock, 1992).

In 1996 the Nyae Nyae Farmers Cooperative applied to the government of Namibia for the right to create a conservancy in the Nyae Nyae region. Conservancies are blocks of communal land that can be allocated to recognized groups under Namibian law with the understanding that those groups will draw up a management and utilization plan for their natural resources. The groups that get conservancies have the rights to the benefits from their land and resources. They also have the right to establish rules for how the conservancy is to be managed. The Ju/'hoansi are hoping to be able to use the conservancy status of their land to ensure a greater degree of control over the land and resources, and as a means of preventing outsiders from entering the region and using its resources without permission of the conservancy management committee and the cooperative.

SUBSISTENCE HUNTING IN BOTSWANA

The Republic of Botswana is the only country in Africa that has granted a fairly sizable number of its citizens the right to hunt for subsistence purposes (Hitchcock and Masilo, 1995). In 1961, a specific class of people was given the right to hunt based on their degree of dependence on hunting and gathering for their livelihoods. As the Fauna Conservation Proclamation (Republic of Botswana, 1961 pp. 9–10) noted, the crucial factor was whether “*the animal is hunted for the reasonable food requirements of the hunter or of the members of the community to which he belongs.*” People in the Central Kalahari Game Reserve (CKGR), which was gazetted in 1961, had the right to hunt for subsistence purposes as long as they used traditional weapons (Silberbauer, 1981; Hitchcock and Masilo, 1995). According to Botswana legislation passed in 1963, people in the central Kalahari were not supposed to use dogs in hunting, although in fact the game scouts of the Department of Wildlife and National Parks often looked the other way when people hunted with dogs.

Until the late 1970s, hunter-gatherers in Botswana were not required to obtain a hunting license. In 1979, the government of Botswana introduced its Unified Hunting Regulations (Republic of Botswana, 1979). The Fauna Conservation (Amendment) Act (1979) (No. 1 of 1979) stipulated that the Minister of Commerce and Industry could institute regulations that allowed the “*hunting of any animal, other than a conserved animal, in any area by persons resident in that area who are principally dependent for their living on hunting and gathering veld produce*” as long as they had in their possession a Special Game License (SGL). These special licenses were issued to people designated as Remote Area Dwellers (RADs), those people who lived in rural areas outside of villages and who tended to depend relatively heavily on natural resources for subsistence and income. The purpose of Botswana's Special Game License was several-fold. First, it was aimed at legitimizing hunting activity by the poorest members of the population, those people who depended heavily on meat

for a living. Second, it was seen as a means of assuring a measure of food security for rural poor people. Finally, it was aimed at allowing people to increase their incomes from wildlife utilization.

An analysis of Special Game License usage in Botswana in 1995 revealed that the hunters who were able to get these licenses contributed significantly to the nutritional and material well-being of their families (Hitchcock and Masilo, 1995). The majority of people who were issued with the special licenses used them themselves and did not transfer them to other people. The reason that the licenses were sometimes transferred to other people was that they contained sizable number of species which other people could not get with normal citizen licenses that were available to the people of Botswana. There were certainly occasions when Remote Area Dwellers loaned other people the licenses, usually in exchange for a portion of the meat obtained by the hunter using the license. There were also instances in which people sold the licenses, but this was not as common as was assumed by game scouts and safari hunters in Botswana (Hitchcock and Masilo, 1995).

Special Game Licenses were seen by many people in remote areas as crucial to their survival. This was particularly true for elderly people and widows in remote communities, who otherwise were able to get little in the way of animal protein. The licenses also provided a means for obtaining products used in the production of craft items which were sold for cash, thus enabling rural households to diversify their livelihoods. One example of such craft items were skin blankets known as *karosses* which were sold to traders and sometimes to the handicraft purchasing companies that traveled into the Kalahari in search of goods.

The Special Game Licenses were given to qualified people for free. They are good year-round, unlike other kinds of hunting licenses in Botswana which are restricted to the hunting season (from April to September). The Special Game Licenses contained a list of the various animals which could be hunted along with the numbers that could be taken; these ranged from four hartebeest, two gemsbok, and three warthog to 30 duiker, 30 steenbok, and 50 bat-eared foxes. Some animals, such as baboons, could be obtained in unlimited numbers if one was in possession of a Special Game License.

According to some staff members in the Department of Wildlife and National Parks, the Special Game License was supposed to be phased out after a short period. But by the early 1990s, between 500 and 1,000 of these licenses were being issued annually, and some people had been allocated them every year for nearly two decades. The Special Game License was supported by a number of Botswana government officials because it enabled a segment of the society that was considered marginalized to obtain food and income, and thus ensure that they did not have to be supported through government assistance programs. There were also those in Botswana who saw the special licenses as a means of providing people with access to sufficient income (assuming they would sell some of the goods produced) so that they would “*no longer have to be dependent on the hunting and gathering lifestyle.*” The notion that hunting and gathering was a “primitive” way of life was common, especially in government circles and among the Tswana elite.

One of the more contentious issues relating to Special Game License system in Botswana related to the criteria employed by wildlife department officials and Remote Area Development Officers in determining who qualified for the licenses. Two of the criteria employed by Botswana government officials in defining a person as a subsistence-oriented hunter-gatherer were (1) the kinds of weapons employed and (2) the hunting aids and methods that were used in procuring game. If the individual used a bow and arrow, spear, or club (i.e. a "traditional" weapon), then he or she usually was considered to have met the legal criteria. If, on the other hand, the individual used a steel trap or a gun in hunting, then he or she was considered to have broken the law. Department of Wildlife and National Parks game scouts told me that the criteria that they employed in determining whether or not to arrest a Remote Area Dweller found hunting was the type of weapon that was being used. One game scout went further: if the hunter was wearing trousers (i.e. "modern" clothing and not a breechcloth), then he would be arrested.

Ironically, hunting from horseback was considered by some Botswana Department of Wildlife and National Parks officers to be a "traditional" method of hunting, something that is not the case in Namibia. When asked why they felt this was a traditional method, game scouts said that it was because horses had been used in hunting for generations. Oral history information indicates that horse hunting has been carried out in the remotest parts of the country, including the central Kalahari, since at least the first quarter of the 19th century (Alec Campbell, Mark Murray, personal communications, 1988, 1995). A question that arises, then, is: how long does a strategy have to be in existence before it is considered "traditional?" Gun hunting has been done in Botswana since at least the 1840s and yet it is considered to be a "modern" strategy. The Department of Wildlife and National Parks officials in North West District (Ngamiland) allow Special Game License holders to hunt with both traditional weapons and guns, but this is not the case in other districts. This variation in the rules applied to subsistence hunting rights causes significant consternation among local people in Botswana.

It should be noted that there were cases of people being arrested even when they were in possession of a Special Game License (Hitchcock and Masilo, 1995). There were also disturbing reports of people suspected of having broken wildlife laws being physically abused and mistreated by wildlife officials, police, and the military (Mogwe, 1992 pp. 11–14). In the Central Kalahari Game Reserve, an elderly man died in 1993 after being questioned by wildlife officials. In northern Botswana, people suspected of poaching were shot and, in some cases, killed by members of the Botswana Defense Force (Lee, 1990 p. 49; Hitchcock, 1995). At least some of these people were women and children who had crossed the border in order to collect water and firewood.

Human rights groups and San advocacy organizations have expressed deep concerns over the ways in which anti-poaching activities have been pursued in Botswana, and they have taken their worries to international human rights agencies such as the United Nations. Similar concerns have been expressed by local people in Zambia (Stuart Marks, personal communication, 1996) and in Zimbabwe

(Hitchcock and Nangati, 1992). Besides the issues of mistreatment of people when they were being questioned about alleged poaching activities and the loss of life, the high numbers of arrests of people in rural Botswana communities have resulted in the loss of crucial labor to rural households, leading in a fairly sizable number of cases to severe impoverishment. This was the case, for example, in the central Kalahari in the 1980s and early 1990s.

IMPACTS OF HUNTING ON WILDLIFE SUSTAINABILITY

One of the most contentious issues in wildlife conservation and development in Africa today is whether or not allowing local people to engage in wildlife utilization has beneficial or harmful effects on the wildlife populations. Those who support the "sustainable use" position maintain that giving local people the right to the benefits from wildlife promotes conservation (Martin, 1986; Steiner and Rihoy, 1995; Murphree, 1995, 1997). Those who oppose these kinds of efforts argue that wildlife populations are affected negatively when control over wildlife devolves from the state to local communities (Hoyt, 1994). Either way, it is necessary, as Barrett and Arcese (1995 p. 1074) point out, to examine the actual on-the-ground effects of integrated conservation and development projects (ICDPs) and sustainable use strategies on biodiversity. In order to do so, one needs detailed data on wildlife population sizes and densities, offtake rates, and population sizes of groups involved in wildlife utilization.

The crucial question that must be asked is: are resources being exploited by local people at the "optimum sustained yield?" In order to answer this question, one needs research information on a variety of topics, including resource types and densities, exploitation methods, extraction rates for various resources, time and energy allocation data, and numbers, densities, and distributions of people. One place where data have been collected on hunting behavior and wildlife populations over an extended period of time is the northwestern Kalahari Desert region of southern Africa, specifically the Nyae Nyae region of Namibia and the western Ngamiland region of Botswana. This is a useful area to examine because of the relatively high percentage dependence of local people on wild natural resources and the availability of data over a lengthy period, some four decades (Marshall, 1976; Yellen, 1977; Lee, 1979; Wilmsen, 1989; Hitchcock and Masilo, 1995; Hitchcock et al., 1996; Hitchcock and Bleed, 1997).

In order to assess wildlife off take rates and their impacts, data recorded by researchers who worked in the area in the 1960s through to the 1990s were examined. Lee (1979 pp. 254–269) reported on a 28-day study of a group engaged in subsistence hunting at Dobe in western Ngamiland during July–August, 1964. According to Lee's data, a total of 18 animals yielding 206 kilograms of meat were killed by the hunters during the study period (Lee, 1979 pp. 265–269, Tables 9.6 and 9.7). Gifts of meat from the outside provided an additional 16 kilograms of meat, for a total supply of 222 kilograms. Meat from outside sources comprised only seven percent of the total. Based on Lee's calculations of 866 person-days of con-

sumption in the Dobe camp, the average amount of meat consumed per person was 256 grams (9.1 ounces) per day (Lee, 1979 pp. 265–266).

Patricia Draper (n.d.) collected data on work effort by Ju/'hoansi San over a ten month period in 1969 at /Du/Da, south of /Xai/Xai in western Ngamiland. There were 1,207 person days of observation, and the total number of individuals at /Du/Da was 87. During this time hunters at /Du/Da killed six gemsbok, three eland, three duiker, and two porcupines. The total amount of meat yielded was 1,558 kilograms, and the amount of meat consumed per person was 1.29 kilograms. This high rate of meat consumption is due in part to the fact that the /Du/Da region lacked *mongongo* trees which provided the high-protein nuts that were so important to the diets of the Ju/'hoansi further north in the Dobe region (Lee, 1979; Hitchcock et al., 1996).

Between January and July, 1968, Yellen (1977) observed two married members of a Ju/'hoan San sibling group from Dobe. The average camp consisted of seven adults and seven children, and the study included a total of 96 observation days. During the observation period, Ju/'hoansi hunters killed six gemsbok, four duikers, six steenbok, 32 porcupines, 24 springhares, two tortoises, three guinea fowl, two hornbills, one aardwolf, and one red-crested korhaan. Thus, a total of 682 kilograms of meat were obtained by the Ju/'hoansi hunters studied by Yellen, for an average meat consumption rate of 0.51 kilograms per person per day.

Given the offtake rates reported by Lee (1979), Draper (n.d.), and Yellen (1977), it is possible to estimate that the Ju/'hoansi killed approximately 28 gemsbok, 77 steenbok, 19 duiker, and 33 warthogs per annum in the 1960s. The animals taken by the hunters represent approximately 8,900 kilograms live weight. Calculations of total wildlife biomass in the Dobe—/Xai/Xai area in the 1960s was estimated to be approximately 1,300,000 kilograms (Wolfgang von Richter, D. Martin Fleming, personal communications). For these particular species it was 260,000 kilograms. Therefore, the Ju/'hoansi were harvesting approximately 3.4% of the total biomass annually. As evolutionary ecologist Kim Hill of the University of New Mexico (personal communication, 1995) points out, this harvest rate is considerably lower than that necessary to stop the growth of wildlife populations in the region. It should be pointed out, however, that offtake is usually expressed as a percentage of the population numbers, not as percentage of biomass. One could conclude that the Ju/'hoansi harvest rates in the 1960s were not having a negative effect on the wildlife populations, but this is the case only if hunting was done in such a way that only adults were targeted (Herbert Prins, personal communication, 1997).

Data on hunting returns among Ju/'hoansi in western Ngamiland in the 1973–1976 and the 1979–1980 periods were obtained by Wilmsen (1989 pp. 225–233) at /Xai/Xai. These data reveal that there are significant differences among various categories of households in terms of meat production. Foragers at /Xai/Xai who used bows and arrows, spears and clubs, and hunted on foot had a wild meat return rate that averaged over 8 kilograms per person per month (Wilmsen, 1989 p. 232). Mbanderu (Herero) pastoralists at /Xai/Xai tended to hunt primarily from horseback and they generally used guns. These households had the highest

rates of return of all households in the study, with an average of 10 kilograms per person per month (Wilmsen, 1989 p. 227). It is important to note that not all of this meat was consumed by the households that obtained it. Some of it was shared with other households that were related to them primarily through kinship. It was also shared with other groups (specifically Mbanderu) who possessed goods such as livestock and fields that provided resources that people desired such as milk and grain.

Meat-sharing is a crucial aspect of Ju/'hoan social and economic relations. One reason for meat-sharing is that it ensures that the meat from large body-sized prey are consumed before it spoils. Sharing also helps even out the variance in hunting success. As Marshall (1976 p. 295) notes, "*The fear of hunter is mitigated: the person with whom one shares will share in turn when he gets meat; people are sustained by a web of mutual obligation.*" Ju/'hoan meat-sharing thus depends in part upon the body size of the prey; the larger the prey item, the more likely it is to be shared. Similar observations were made by Winterhalter (1981) among the Cree of northern Ontario in Canada. Among the Ju/'hoansi, sharing strategy also depends on the social relationships among those who took part in the hunt and who were present at the time of the butchering of the animals (Marshall, 1976; Yellen, 1977).

Hunting among Ju/'hoansi in Botswana and Namibia was and is done for a variety of purposes. First, it is carried out in order to provide food for consumption by the household. Second, it is done in order to obtain raw materials for making clothing and other requirements (e.g. leather carrying bags, ostrich egg containers). Third, it is conducted in order to provide material for the production of crafts, which are then used by the household, exchanged with other people, or sold. Hunting produced goods which were processed for storage (game meat, for example, was dried and turned into biltong); the dried meat was used during times of the year when other resources were not available. Skins were used not only for clothing, sleeping mats, and handicrafts but also served as buffering resources in lean times; there were numerous stories told by Ju/'hoansi as to how skins were consumed during drought periods or times when game failed to appear. Finally, hunting generated surpluses which were distributed to other people. This gave meat to people who might otherwise not have access to it.

The combination of habitat change, hunting pressure and shifts in political and economic conditions contributed to changes in wildlife numbers and densities in the northern Kalahari region. Ju/'hoansi noted with dismay that the general trend in wildlife numbers in northwestern Botswana was downward, a trend that was also evident in the aerial census data of the Research Division of the Department of Wildlife and National Parks (1994). A strategic response to resource depletion among Ju/'hoansi in the western Ngamiland region has been to shift to using alternative resources. In the drought period of the early 1980s and again in the early 1990s, households shifted away from hunting toward the collecting of wild plant foods (Hitchcock and Masilo, 1995). Some households increased their dependency on drought relief and cash-for work programs of the Botswana government (Ruigrok, 1997; Hitchcock, 1997). A number of households withdrew from

foraging and concentrated their efforts on producing crafts which were sold to craft marketing organizations. When asked why some people stopped hunting completely, informants noted that this decision was prompted by a desire to promote peace and harmony in the community. If an individual ceases hunting, it is said, it shifts responsibility to other people. This has the advantage of allowing others to be the providers, a tactic which ensures that amicable reciprocal relationships are maintained.

Judging from experiences in western Ngamiland, significant changes in social and ecological relationships occurred when (1) environmental conditions changed, (2) when new kinds of hunting technologies were introduced (e.g. guns) and (3) when market exchange systems replaced subsistence ones. If conservation was to be successful under these changed circumstances, local people maintained, then social mechanisms needed to be put in place that prevented people from taking too many resources or failing to share those resources that they did get. The enforcement of resource management rules among Ju/'hoansi and their neighbours (e.g. Mbanderu) in western Ngamiland includes subtle social pressure brought to bear on individuals through public suggestions and veiled (as well as overt) criticism (Marshall, 1976; Lee, 1979). Sometimes those who fail to share, or who over exploit resources are threatened with expulsion from the local community. There are also ideological or ritual methods that are sometimes applied to rule violators such as sorcery. The use of these methods, while not always easily observable, reportedly had impacts on the behavior of individuals; whether or not they prevented over exploitation of resources is something that has yet to be determined.

CHANGE OVER TIME IN RESOURCE MANAGEMENT IN /XAI/XAI

A response of the people of /Xai/Xai to the changing conditions in northwestern Botswana has been to establish community-level institutions that decide on sets of rules as to how wildlife and other natural resources should be used. These institutions include a Quota Management Committee (QMC) which has been granted the right to decide on the numbers of animals that can be hunted and the ways in which hunting will take place. In 1995, the committee decided that the quota from the Department of Wildlife and National Parks would be set aside solely for use by subsistence hunters. In October, 1995, interviews of subsistence hunters in possession of Special Game Licenses indicated that the numbers of animals taken ranged from none in the case of springbok to seven greater kudu and 11 duikers Grimm's (Hitchcock et al., 1996 pp. 196–197). After the community decided to get a Department of Wildlife and National Parks quota in 1996, only four large antelopes were killed. Thus, the overall numbers of animals being hunted appear to have declined significantly. While it is too early to say whether or not this trend is due to greater conservation behavior or because of some other factor (e.g. increased anti-poaching patrols), there is no question that the community members are taking fewer animals. It is important to note, too, that the numbers of wild animals in the region are on the rise (Charlie Matsubi, personal communication, 1997). This trend

Table 2. Comparison of Hunting Activities and Rights of Subsistence Hunters Between Namibia and Botswana

Namibia	Botswana
Area is part of the Eastern Otjozondjupa Region (formerly Eastern Bushmanland) administered from Rundu (size = 18,877 km ²)	Area is part of Community-Controlled Hunting Areas (CCHAs) NG 4 and 5 in the North West District (Ngamiland) administered by the North West District Council (NWDC) (size = 16,966 km ²)
Wildlife is overseen by the Ministry of Environment and Tourism (MET)	Wildlife is overseen by Department of Wildlife and National Parks (DWNP)
Only the Ju/'hoansi in Eastern Otjozondjupa have the right to hunt for subsistence in Namibia	Remote Area Dwellers (RADs) with Special Game Licenses (SGLs) can hunt
Do not have to carry a hunting license	Must carry a valid Special Game License (SGL)
Use of traditional weapons only	Use of traditional and modern weapons allowed
Can use traditional snares	No snares or traps allowed
Cannot use dogs to assist in hunting	Can use dogs to assist in hunting
No mounted hunting allowed (horses, donkeys)	Mounted hunting is allowed (horses, donkeys)
Use of bows and arrows with poison	Use of spears, bows, occasional guns
Ambush hunting is allowed	Ambush hunting is not allowed
Limits on types of animals to be hunted	Limits on types of animals allowed to be hunted
No quota	Quota on number of animals to be taken set by Department of Wildlife and National Parks
No safari hunting or citizen hunting other than Ju/'hoansi	Community controlled hunting area; the community has the option to allow citizen, safari, and/or subsistence hunting
No shooting of predators	Shooting of some predators allowed (e.g. jackal, spotted hyena, genet)
Resource management by Nyae Nyae Farmers Cooperative (NNFC) and local <i>n!ore kxaosi</i> (Ju/'hoan territorial overseers)	A new Quota Management Committee (QMC) is in charge of allocating the wildlife quota; a trust aimed at overseeing community business and resource management is planned (1997)

may be due as much to the reduction in cattle numbers as a result of the mass killings of livestock by the Department of Wildlife and National Parks in Botswana in order to control the spread of contagious bovine pleuropneumonia (CBPP) in 1996 as it is to reduced offtake rates among local hunters.

One of the strategies employed by some Ngamiland Ju/'hoansi in their efforts to earn a living has been to intensify their hunting activities. Some groups of hunters undertake long-distance expedition hunts, often with horses, donkeys, and dogs. Hunting with the aid of horses, donkeys, and dogs is something that the Ju/'hoansi in Botswana are allowed to do under Botswana wildlife laws. This is not the case for the Ju/'hoansi just across the border in Namibia. It is useful, therefore, to compare the hunting activities and rights of subsistence hunters in Namibia and Botswana (see Table 2). (In Ngamiland, Botswana, subsistence hunters are allowed to use horses, guns, and dogs, whereas this is not the case in Namibia.) In Botswana, hunters must carry a valid hunting license (in this situation, a Special Game License),

whereas Ju/'hoansi hunters in Namibia are not required to carry a license. Not surprisingly, the Ju/'hoansi, who are allowed by both the Namibian and Botswana governments to cross the border freely and without restriction, are sometimes confused about which sets of rules to follow concerning subsistence hunting.

In early 1995 a rumor circulated that people were coming across the border from Namibia to hunt in western Ngamiland. As a result, the Botswana government's Anti-Poaching Unit (APU) went to the area to look for suspected poachers. The APU picked up the trail of seven hunters and their horses and donkeys and came upon them at /Du/Da with a number of animals they had just killed, including four eland and a gemsbok. When the game scouts arrested the men, they treated the alleged poachers with respect. They reportedly discussed the charges with the suspects and ate some meat with them before taking them to jail. The Magistrates' Court heard the case on July 7th, 1995, and the people were convicted of contravening the National Parks and Wildlife Act (Republic of Botswana, 1992) (Edwin Ruigrok, personal communication, 1995; Hitchcock and Masilo, 1995; Hitchcock et al., 1996).

The arrest of the hunters resulted in the confiscation not only of the wild animals that they had killed, but also their hunting equipment. Of even greater concern to local people was that the APU also confiscated the domestic animals that were used in the hunt (four horses and 11 donkeys) along with bridles, saddles, and reins. All told, a total of P7,000 (about US \$2,517) worth of goods was confiscated, some of which belonged to other people. Subsequently, the hunters requested that they have their animals restored to them (letter to Magistrate of Maun District, 29 June, 1995). While the Magistrate apparently was favorably disposed toward granting their request, the men did not get their horses and donkeys because the animals had "gone missing" at the local office of the Department of Wildlife and National Parks in Gomare. As several people noted in interviews conducted in October, 1995, this situation argues for expeditious efforts to be made to resolve issues surrounding arrests and confiscation of goods belonging to individuals accused of violating wildlife laws.

The question remains as to whether offtake rates of wildlife in western Ngamiland are sustainable at current levels. Based on data obtained on subsistence hunting in the region in October, 1995 and July, 1997, hunters in /Xai/Xai were getting fewer animals than were allowed for under the Department of Wildlife and National Parks' 1995 and 1996 wildlife quotas for Controlled Hunting Areas Ngamiland 4 and Ngamiland 5 (David Lawson, personal communications, 1995 and 1996; Charlie Matshubi, personal communication, 1997). Aerial census data for western Ngamiland, Botswana in the period 1989–91 indicated that the average biomass for wildlife was 5,467 kg/km² (van der Sluis, 1992 pp. 30–33). In 1996 it was approximately 6,500 kg/km² (Department of Wildlife and National Parks aerial census data, 1996). The offtake rate for subsistence hunters at /Xai/Xai in the 1995–1997 period was approximately 1.2 kg per person, or a total of 441.6 kg for the community as a whole. According to officials in the Department of Wildlife and National Parks in Botswana, this offtake rate is considered sustainable given the numbers and

densities of wild animals in the western Ngamiland region. Again, since biomass estimates are not as useful as actual population numbers, it must be noted that this conclusion is tentative. In July, 1997, the Regional Wildlife Officer for Ngamiland, Charlie Matsubi, told me that the offtake rates in /Xai/Xai, in his opinion, were sustainable, especially given the numbers of wild animals documented in the area by Department of Wildlife and National Parks aerial censuses.

THE CENTRAL KALAHARI GAME RESERVE HUNTING SITUATION

In the decade between 1986 and 1996, the Botswana government sought to convince the people of the Central Kalahari Game Reserve that they should move out of the reserve. This recommendation was made in part because the government was concerned that the hunting activities of the local G/wi, G//ana, and Bakgalgadi populations were non-sustainable and were having a negative effect on wildlife numbers and densities. In the 1960s, a band of 80 G/wi hunter-gatherers in the central Kalahari killed 14 species of mammals not including rodents; the prey ranged from springhare (*Pedetes capensis*) to giraffe. The total amount of meat obtained in the one-year period, including the meat of the mammals, birds, tortoises, reptiles, and invertebrates, was 8,632.6 kilograms. The meat available per capita was 107.9 grams (Silberbauer, 1981 pp. 483–487 and Table 12.3). It should be noted that the meat taken over the year varied considerably on a month to month basis, from a low of 127.6 kilograms in October (at the end of the dry season) to a high of 1,388 kilograms in January (at the height of the wet season). The amounts of meat available in the early summer period (September to November) are below the minimum adult daily requirement of protein (Silberbauer, 1981 p. 487, Figure 12.2). Data collected by Tanaka (1980) in the Central Kalahari in 1968–69 indicated that a total of 5,606 kilograms of meat were obtained by a group of 50 people, or about 112 kilograms per person and 0.30 kilograms per person per day (Tanaka, 1980 pp. 66–69, Tables 10 and 11).

Between the late 1960s and the 1980s, significant changes occurred in the subsistence hunting system in the Central Kalahari. One part of this change relates to the expansion of the number of horses in the reserve. By the early 1980s, there was a total of 20 horses and 70 donkeys being kept by the people of !Xade, the main settlement in the reserve (Osaki, 1984 p. 52). Horses had become an important part of the hunting system in the central Kalahari, and as Osaki (1984) has demonstrated, equestrian hunting was very effective. In a five-month period in 1982–83, a total of 91 large animals were obtained by hunters from !Xade (Osaki, 1984 pp. 52–54, Table 1). The estimated total amount of meat obtained was 23,700 kilograms. Of that amount, 22,800 kilograms were obtained with the aid of horses; the balance was gotten either with bows and arrows or with spears and dogs (Osaki, 1984 p. 53). The area over which hunters ranged in search of game increased to 5,000 km² and the numbers of group expedition hunts in which people attempted to obtain several large animals at a time increased significantly (Osaki, 1984

pp. 53–56). Long distance hunting was also facilitated by using donkeys to transport meat back to camp.

The changes in hunting methods and the increased effectiveness of hunting from horseback in the central Kalahari contributed to the growing perception among ecologists, environmental non-government organizations, and the Department of Wildlife and National Parks in Botswana that efforts were needed to stop hunting on the part of the residents of the reserve. One way to do this was to remove the residents of the central Kalahari to locations outside of the reserve and to turn the Central Kalahari Game Reserve into a full-fledged game reserve where hunting was prohibited.

In order to get the residents of the reserve to move, a series of consultations were undertaken by government officials over the period from 1986 to 1997. There were statements made during the course of these consultations that people would be given large amounts of compensation if they chose to leave the reserve. The people were also threatened in subtle and sometimes not-so-subtle ways; they were told, for example, that drought relief feeding programs would be terminated and that development assistance such as the construction and maintenance of schools and health posts would cease. The justification that the officials gave for this position was that it is too expensive to provide services to such a remote and widely scattered population.

In 1997, the government offered individuals cash compensation for relocating outside of the reserve. While there were widespread rumors concerning the large amounts of compensation that would be provided (including enough "for a new four wheel drive vehicle,") the payments made were at most a few thousand Pula (around US \$1,000). Given the resources that people had to give up if they moved out of the reserve, these amounts are, according to local people, far below those that would be required to re-establish themselves at a level at least equivalent to what they had while living in the reserve.

The settlement of New !Xade, where people from the central reserve were moved in mid-1997, was not ready for occupation. The promised social services were non-existent and the resettled people were required to live in tents. According to some of the human rights and development workers who have been in the New !Xade resettlement area (e.g. those from Ditshwanelo, the Botswana Center for Human Rights and from Kuru Development Trust), the majority of the people in the settlement were much worse off than they were before they were required to move. The failure of the government to allow the people of the resettlement area to hunt for subsistence purposes was having a very negative effect on their nutritional and socioeconomic well-being. Protein availability was much lower than was the case in the past and several people had been arrested for hunting illegally in the reserve. One of their only options was to make crafts, something that was made more difficult when the government of Botswana decided that ostriches were off-limits to people without licenses. Overall, according to people in the central Kalahari, including wildlife officers, the numbers of wild animals had declined considerably, but the primary factors involved in these declines were not subsistence and commercial

hunting but rather drought, habitat change due to the expansion of boreholes, cattle posts and livestock populations on the peripheries of the reserve, and the heightened presence of tourists and mining personnel in four-wheel drive vehicles. Excluding subsistence hunters from the Central Kalahari Game Reserve may, in fact, actually lead to greater pressure on the wildlife resources of the reserve.

GAME RANCHING

A group which would like very much to have continued access to ostriches is the women's craft cooperative at East Hanahai, one of the remote area settlements south of the settlement of New !Xade. The women of East Hanahai, who make crafts from ostrich eggshell beads, would like to have a steady supply of ostrich eggshell at a relatively cheap price for use in making necklaces, bracelets, and other items for sale to Kuru Development Trust and Gantsicraft, two of the handicraft purchasing organizations operating in their area. It would be much easier and safer, they said, to get ostrich eggshell from game ranches instead of having to go into the bush on long forays and having to risk getting arrested and perhaps jailed for contravening Botswana wildlife laws.

Increasing the participation of women in wildlife-related community-based natural resource management activities would be advantageous, especially given that it is women who bear many of the costs arising from large mammal-oriented resource management projects (Hunter, Hitchcock, and Wyckoff-Baird, 1990). It is women, for example, who usually end up having to construct the facilities for tourists. It is also women who have often had to expend labour to obtain water and firewood for tourist camps. Women tend to be under-represented on quota management committees and other institutions having to do with wildlife management, so their ideas tend not to get aired as easily and they cannot participate as extensively in group decision-making. Women also have to bear the brunt of supporting their families if their husbands or children are arrested and jailed for violating wildlife laws. One strategy suggested by the women of East Hanahai was to set up their own ostrich farm.

Such a game farm was planned and is in the process of being implemented on a freehold farm known as Qaeqare, 15 kilometers southwest of the village of D'Kar, where the Kuru Development Trust has its headquarters. Detailed work has been done on assessing the potential of the Qaeqare game ranch from the standpoint of environmental suitability, stocking rates and income that could be obtained from ranching wildlife, including antelopes and ostriches, and domestic stock (Thoma, 1995). In Table 3 the stocking rate, annual offtake and income from wild and domestic animals in western Botswana is shown. It can be seen from these figures that the theoretical potential of game ranching is quite high. One of the advantages of game ranching, according to local people in the western Kalahari, is that live wild animals can be sold on the market for high prices. The San and other people in western Botswana are aware of the high prices paid by freehold farmers in Namibia and South Africa for wild animals like roan and sable

Table 3. Stocking Rate, Annual Off-take, and Income from Wild and Domestic Animals in Western Botswana; prices and values in US\$

Game Animal or Domestic Animal	Animals per LSU	No. of Animals suggested		Estimated annual off-take		Cropping Price		Sale
	No	No	LSU	%	No	kg meat/carcass	total meat price (at 4 pula/kg)	Per Ind.
Duiker	20.0	60	3	12	7	4	40.1	—
Steenbok	20.0	60	3	12	7	2.8	282.0	—
Springbok	9.0	200	22	15	30	18	776.7	144
Warthog	6.2	32	5	10	3	50	215.8	—
Eland	1.3	100	77	7	7	155	1,560.7	270
Greater kudu	2.6	120	46	10	12	74	1,277.3	252
Gemsbok	2.5	120	46	10	12	60	1,035.6	324
Hartebeest	2.9	120	41	10	12	52	897.6	288
Wildebeest	2.3	100	43	10	10	75	1,078.8	252
Ostrich	4.0	50	13	10	5	22	158.2	162
Zebra	2.0	30	15	10	3	88	1,139.2	288
Giraffe	0.7	6	8	2.5	0.15	620	*	899
Cattle	1.2	360	16	12	43		316.4	216
Horses	0.8	12	15	12	1.4	220	*	432
Total		1,370	354		152.55		8,778.6	

* live sale only.

Note: Table adapted from Thoma (1995:41, Table 17). Off-take and Livestock Units (LSU) drawn from Barnes (1993, Appendix B) and Conybeare and Rozemeijer (1991:79, 80, Appendices 4 & 5). The figures for meat given in the column with carcass weight in kgs are based on cold dressed weight (CDW) and are average carcass weights for both males and females. Exchange rate: 1 pula = 0.36 \$.

antelope; they want very much to be able to cash in on what they perceive to be the equivalent of a cash cow (or, in this case, a cash roan). Thus far, however, relatively little progress has been made by remote communities in Botswana in their efforts to establish game ranching operations. One reason for this situation, they feel, is that there are well-to-do farmers and ranchers who are attempting to keep the numbers of producers low so that they can minimize their competition and maximize their own profits.

One Nharo San man suggested to me in July, 1997, that the game ranches could serve as places where traditional bow and arrow hunters could take international safari clients out on hunts that involve the use of traditional methods. It is interesting to note that Botswana passed legislation in 1996 which allows bow hunting using long bows of 22.3 kilograms draw mass and crossbows of 55 kilograms draw mass (David Lawson, Bernard Horton, personal communications, 1996). The San, who use small, locally made bows and arrows, wanted to show safari clients how they track game, stalk up to it, and let their small unfledged arrows fly (see Hitchcock and Bleed, 1997). This kind of approach to hunting was, they said, a kind of commercialized subsistence hunting which not only provided cash but had the added advantage of passing on valuable indigenous knowledge to hunters from other parts of the world. It was their hope that these hunters, some of whom belong to

Safari Clubs International and other hunting organizations, would lobby on their behalf for continued rights to carry out subsistence hunting.

Some serious constraints face the East Hanahai community organization and other potential game ranchers in western Botswana, northeastern Namibia, and elsewhere in southern Africa. These constraints include the high costs of fencing and veterinary supplies (e.g. medicines, food supplements for the animals), the presence of predators and poisonous plants (e.g. *mogau* (*Dichapetalum cymosum*)), and the difficulty of obtaining permits to move game meat or live animals from one area to another. Game ranchers also have to deal with phosphate-deficient grazing and animal diseases. Those choosing to engage in game ranching must be acutely aware of the dangers of disease spreading from wildlife to domestic livestock, as can happen in the case of malignant catarrh, a disease carried by wildebeest which causes 100% mortality in affected cattle populations (see Grootenhuys, Chapter 6). Land use planners in Botswana have proved to be relatively cautious about allowing local communities to get involved in game ranching, especially in areas where there are relatively dense cattle and small stock (sheep and goat) populations.

CONCLUSIONS

African people throughout the continent hunt for a variety of reasons, only some of which relate to meeting basic nutritional and economic needs. Some people engage in wildlife procurement in order to gain social rank; others obtain wild animals for ideological purposes (e.g. pangolin, *Manis temminckii*, the scales of which are considered powerful ingredients in traditional medicines); and still others hunt in order to alleviate the pressure on other people in their communities. Subsistence hunting continues to be an important means for many Africans to help feed their families and at the same time facilitate their involvement in the cash economy. As one Kxoe man in the West Caprivi region of Namibia put it, "*Subsistence hunting is a means to an end: the end is survival.*" Another man in the same community noted that poaching is rare in their area and when it does occur, it usually is a strategy of last resort, since people are all too aware of the heavy penalties they will suffer if they are caught. Experiences in West Caprivi, Cunene, and the Nyae Nyae regions of Namibia indicate that it is possible to control poaching and at the same time enable people to increase their incomes from wildlife-related activities. This can be done without having to sacrifice people's lives or violate their basic human rights, all at a relatively modest cost when compared to the militarized anti-poaching operations seen in other parts of Africa.

The community-based natural resource management projects being implemented in southern Africa, such as those in the Nyae Nyae Region of Namibia and the /Xai/Xai region of Botswana, have the potential of increasing local people's access to benefits from wild plant and animal resources. The Ju/'hoansi and other remote area populations see these projects as providing a means by which they can increase the degree of control that they have over their areas. Nevertheless, they admit,

Table 4. Community-Based Natural Resource Management Projects That Include Wildlife Utilization in Southern Africa

Project Name	Country	Activities	Reference(s)
Chobe Enclave Conservation Project	Chobe District, Botswana	safari hunting returns, rural development	ECOSURV (1996)
Sankuyo Natural Resource Management Project	North West District, Botswana	hunting and photographic safaris, rural development	Maotonyane (1996); Painter (1997)
/Xai/Xai Community Natural Resource Management Project	North West District, Botswana	community tourism, craft marketing, rural development	Hitchcock and Masilo (1995); Ruigrok (1997)
North Kgalagadi Community Resource Management Project	Kgalagadi District, Botswana	safari hunting, tourism, crafts, rural development	SNV Botswana (1994); van der Jagt (1995)
Nyae Nyae Natural Resource Management Project	E. Otjozondjupa (formerly Eastern Bushmanland), Namibia	community tourism, crafts, subsistence hunting, resource and land use planning	Biese, Green, and Hitchcock (1992); Wyckoff-Baird (1996); Jones (1996)
West Caprivi Community-Based Conservation Programme	West Caprivi, Namibia	community tourism, crafts, resource monitoring, local capacity building	Hitchcock and Murphree (1995); Steiner and Rihoy (1995)
Purros Integrated Rural Development and Nature Conservation Programme	Cunene (Kaokoland), Namibia	community game guards, tourism, crafts, rural development	Jacobsohn (1991, 1993, 1995); Owen-Smith and Jacobsohn (1989)
CAMPFIRE (Communal Areas Management Programme for Indigenous Resources)	Nyamiyami, Guruve, Masoka, Tsholotsho, Hwange, Bulalima-Mangwe, Binga, and other districts, Zimbabwe	safari hunting, game culling, resource monitoring, tourism, craft marketing, training, and rural development	Martin (1986); Murphree (1995, 1997); Steiner and Rihoy (1995); Hassler (1996)
Luangwa Integrated Rural Development Programme (LIRDP)	Luangwa and other Game Management Areas (GMAs), Zambia	safari hunting, tourism, resource monitoring, rural development	Gibson and Marks (1995)

wildlife is still in the hands of the state. They realize full well that if they are going to be able to expand their incomes and enhance their social well-being through the use of natural resources, then they will have to gain secure legal title over those resources. Without legal title, there is always the possibility that they could be dispossessed, as happened in the case of the people of the Central Kalahari Game Reserve (Hitchcock, 1997; Matloff, 1997). The lessons of the Central Kalahari case are not lost on the peoples of southern Africa: this was the first place in the region where subsistence hunters had their rights to hunt and gather enshrined in governmental legislation. The peoples of southern Africa are hoping that the central Kalahari case does not set a precedent and that they will be able to attain enduring rights over their lands and resources that will exist in perpetuity and not be abrogated by governments, international environmental agencies, or companies that place higher values on natural resources than they do on human lives.

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