

DRAFT

PLEASE DO NOT QUOTE OR COPY WITHOUT AUTHOR'S PERMISSION

Population Growth, Environmental Degradation, and Conflict  
in the Ngorongoro Conservation Area, Tanzania

by

Bruce A. Byers, Ph.D.\*

Paper prepared for workshop on  
The State of the Environment: Conflict and Degradation  
in North East Africa

University of Oxford  
27 September, 1994

\* Current address: Biodiversity Support Program; c/o World Wildlife Fund; 1250 24th Street, NW; Washington, DC 20037; USA

### Abstract

The Ngorongoro Conservation Area in northern Tanzania has been managed for multiple uses, including wildlife conservation, ecotourism, and grazing by indigenous Maasai pastoralists, since it was administratively separated from the Serengeti National Park in 1959. During that period of time wildlife conservation has generally been successful, and ecotourism has expanded dramatically. The Maasai population has grown from about 10,000 people in 1954 to over 22,000 today. The livestock population has remained stable, however, with only a minor shift from cattle to small stock. Some ecologists claim that the livestock population has reached or exceeded the carrying capacity of the area, leading to the spread of unpalatable grasses and increased grazing in forested areas. This situation has resulted in a decreasing livestock to human ratio, and therefore to decreasing food security and nutritional status among the local Maasai. This has led in turn to claims that development of the indigenous pastoral economy has been neglected in favor of wildlife conservation and foreign ecotourism. In order to avert a potential food emergency, small-scale cultivation was allowed by the Ngorongoro Conservation Area Authority (NCAA) beginning in 1992 for the first time since it was banned in 1975, but the Authority sees cultivation as a temporary measure and hopes to stop it as soon as alternative means of improving the food security of the local Maasai residents can be found. The NCAA is caught between international conservation organizations, which have threatened to declare the Ngorongoro area a "threatened World Heritage Site" if cultivation is not stopped, and local people, who generally want more cultivation. This issue is very sensitive, and the conflict between area residents and authorities could grow much worse if it is not handled carefully and sensitively. Participatory land-use planning and zoning, equitable sharing of ecotourism revenues to provide development benefits to local residents, and population control are all pieces of a possible formula for resolving this complex situation. If a solution can be found, the Ngorongoro Conservation Area may provide a much-needed model for the integration of conservation and economic development.

## I. Background

The Ngorongoro Conservation Area (NCA) is an area of 8300 km<sup>2</sup> lying between the Rift Valley and Serengeti Plains in northern Tanzania. The eastern half consists of volcanic highlands with elevations between 1000 and 3600 m with several high peaks and adjacent plateaus. At the heart of this highland area is Ngorongoro Crater, the spectacular caldera of an old volcano 25 km across, which drops an average of 500 m from its 2000 m elevation rim to a floor of grassland, forest, swamp, and soda lake. The montane forest and grassland, woodland, and savannah of the highlands drops to the west to the shortgrass plains of the Serengeti, which make up approximately half of the NCA (Hanby and Bygott, n.d.). Rainfall varies from 800-1200 mm in the highlands to only 300-400 mm at lower elevations (McCabe *et al.*, 1992). (See Fig. 1, Fig. 2)

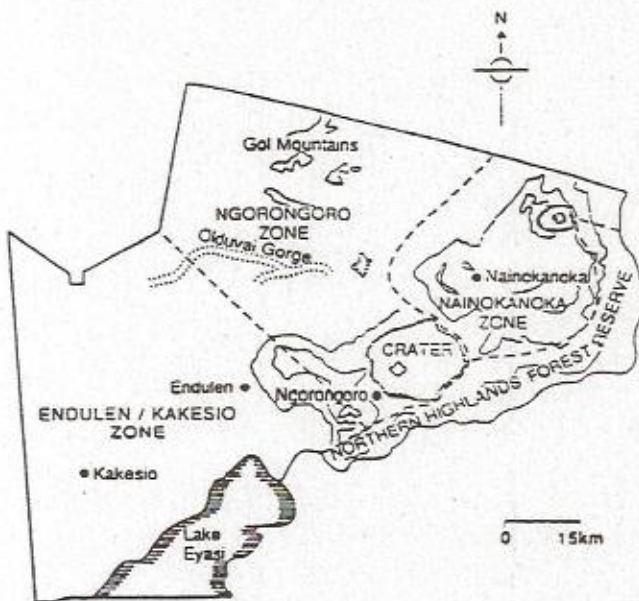


FIGURE 1. MAP OF THE NGORONGORO CONSERVATION AREA

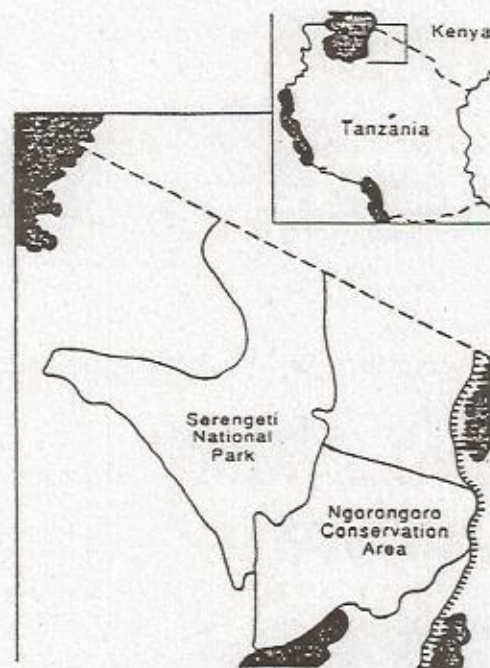


FIGURE 2. MAP OF SERENGETI AND NGORONGORO

Source: McCabe, *et al.*, 1992

The Ngorongoro Conservation Area is an area of spectacular and unique scenery, an unparalleled wildlife resource a unique cultural resource because of the colorful resident Maasai. Its highland forests are a watershed for densely-settled agricultural communities to the east. The area is also an unequalled paleo-anthropological resource: it was the volcanoes of the Crater Highlands that created the conditions both for the preservation of 3 million year old hominid footprints at Laetoli and the fossil bones and tools of Oldupai ("Olduvai") Gorge.

The ecogeographical setting of the Ngorongoro area led to the recognition, early in the colonial period, of its unique values. In 1921 the Ngorongoro-Serengeti ecosystem was legally protected by colonial authorities, and in 1951 a National Park covering the entire area was proclaimed. Cultivation was banned in this entire area in 1954, and cultivators were evicted, but this led to such a serious conflict that in 1959 the area was divided into two parts, Serengeti National Park and the Ngorongoro Conservation Area. The Ngorongoro Conservation Area has been managed for multiple uses, including wildlife conservation, ecotourism, and grazing by indigenous Maasai pastoralists, since it was administratively separated from the Serengeti National Park in 1959. During that period of time wildlife conservation has generally been successful, and ecotourism has expanded dramatically.

The unique scenic, conservation, cultural, and archaeological values of the Ngorongoro area have led to international recognition. In 1979 it was accepted as a Unesco World Heritage Site, and approved as part of the Serengeti-Ngorongoro Biosphere Reserve in 1982 (Boshe, 1989).

Today the Ngorongoro Conservation Area is a "gold mine" for ecotourism. It earns approximately one-half of the total ecotourism revenues of all of Tanzania (P. Mshanga, 1994, pers. comm.), a considerable amount of money.

## **II. Population Growth and Environmental Change**

### **Population Growth, Livestock Numbers, and Food Security**

Population growth in the NCA has been extremely rapid; between 1954 and 1987 the human population more than doubled, from around 10,000 to around 22,000 (McCabe, *et al.* 1992) (see Table 1, Figure 3). Around 26,000 people, mostly Maasai, inhabit the NCA today (Kijazi, 1994). About 20% of the Maasai in Tanzania are said to live in the NCA (Boshe, 1989, citing Mascarenhas, 1983.).

Population growth in the NCA is the result of both immigration and births, but the relative contributions of these sources to growth is unknown (M. Loft, 1994, pers. comm.). This uncertainty results partly from the fact that the population is very mobile, so it is hard to know exactly who lives where. When the Serengeti and Tarangire areas were made national parks, the NCA was offered as an alternative area for settlement by Maasai who had lived in those areas, and many Maasai moved to the NCA between 1950 and 1970 for this reason (Boshe, 1989). Many Maasai men have two or three wives, and it is not unusual for Maasai women from outside the NCA to marry and move in to the area, or for Maasai men to marry women from nearby agricultural groups like the WaArusha, WaMeru, and Mbulu. Some of the most powerful and richest men may have ten or twelve wives. Maasai value large families, perhaps in part because children, especially boys, begin to care for the family stock

at a young age. It is not unusual to see a five year old boy herding a flock of fifty goats miles from the nearest boma, armed only with a herding stick, in lion country. As part of a pastoral livestock development project just beginning in the NCA, the Danish NGO "Natural Peoples World" plans to census the human population and learn more about the contribution of births and immigration to population growth in the area (M. Loft, 1994, pers. comm.).

TABLE 1 Summary of Census Data for Human and Livestock Populations in the NCA 1954-1988 (see footnote #3)

Year	People	Cattle	Small stock
1954*	10,633		
1960		161,034	100,689
1962		142,230	83,120
1963		116,870	66,320
1964		132,490	82,980
1966	8,728	94,580	68,590
1968		103,568	71,196
1974	12,645	123,609	157,568
1978	17,982	107,838	186,985
1980	14,645	118,358	144,675
1987	22,637	137,398	137,389

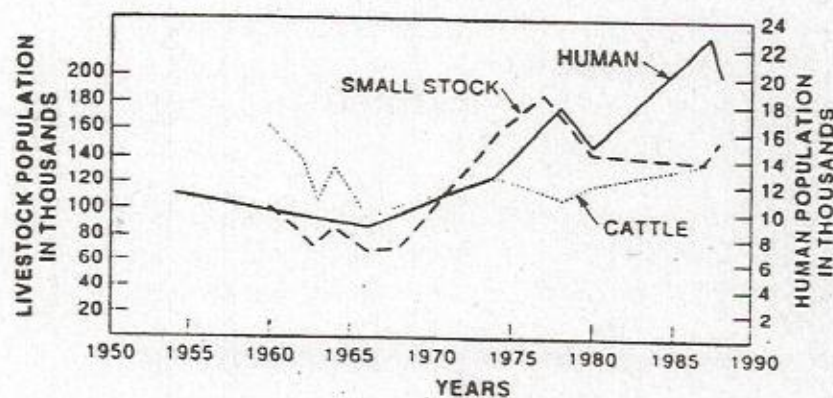


FIGURE 3. HUMAN AND LIVESTOCK DEMOGRAPHIC TRENDS

Source: McCabe, et al., 1992

While the Maasai population has grown dramatically, the livestock population has remained stable, with only a minor shift from cattle to small stock. (table & figure, pp.357 McCabe, et al., 1992 (handout) The state of the pastoral economy is essentially the same as 30 years ago, in terms of numbers of livestock. This has resulted in a decreasing livestock to human ratio (give figures from McCabe, et al. on this; see also Boshe, p.88), and therefore to decreasing food security and nutritional status among the local Maasai. This has led in turn to claims that development of the indigenous pastoral economy has been neglected in favor of wildlife conservation and foreign ecotourism.

What has happened is that economic activity has failed to "develop" fast enough to keep pace with extremely rapid population growth, leading to decreasing food security and nutritional status of residents. In essence, conservation needs were met, and economic activity was stable, but rapid population growth has led to a failure of **sustainable** economic development.

Decline of pastoral economy not unique to Ngorongoro -- in fact common to other Maasai in Tanzania (Gamassa, 1993), Kenya and other parts of Africa (McCabe *et al.*, 1992), and other regions of the world (Cincotta and Pangare, 1994).

### **Environmental Change and Its Causes**

A number of environmental changes have occurred and/or are occurring in the NCA, including:

- an increase in the wildebeest population
- the spread of unpalatable grasses
- bush encroachment in savannah and woodland grasslands
- increased grazing in highland forests
- growing numbers of buffalo in the crater

Some of these environmental changes threaten the health and sustainability pastoral economy, ecotourism, the ecological integrity of the area, or other values that make Ngorongoro unique.

The wildebeest population in the Serengeti-Ngorongoro area was somewhere between 100,000 and 240,000 animals in the early 1960s, but by 1977 had reached 1.4-1.6 million animals. This dramatic increase is believed to be due to the elimination of rinderpest in both cattle and wildebeest in 1966 (Boshe, 1989; McCabe, 1994). Since 1978 wildebeest numbers have fluctuated around a mean of 1.5 million (McCabe, 1994).

Cattle numbers have not increased over the same period. "The increasing wildebeest population may have reduced available forage for cattle, leading to poor nutritional conditions and subsequently increased susceptibility to disease..." (Boshe, 1989). The increased wildebeest population may force Maasai to use shortgrass plains less during the wet season than they did in the first half of the century. Wildebeest calve on the shortgrass plains during the wet season, and Maasai generally keep their herds away from wildebeest to avoid malignant catarrhal fever, a viral disease transmitted from wildebeest calves that is deadly to cattle. (McCabe, 1994). These constraints on cattle numbers may have been counterbalanced by veterinary services that reduced the incidence of tick-borne diseases during the same period--cattle populations did not decrease, but remained stable.

John Boshe believes that the present cattle population of about 130,000 animals is "in equilibrium with the cattle carrying capacity of the area," and that small stock (goats and

sheep) have also reached their carrying capacity at about 135,000 animals. "The present livestock population in Ngorongoro appears to have reached the carrying capacity of the area on which the Masai are legally allowed to settle and graze their livestock." (Boshe, 1989)

Some ecologists believe that heavy grazing pressure in some areas of the NCA has led to the spread of unpalatable grasses. "Some areas... are heavily overgrazed during the dry season, while signs of range deterioration and invasion by unpalatable tussock grasses (Eleusine and Pennisetum species) in the Nainokanoka area are visible." (Boshe, 1989, p.93) Lazaro ole Mariki of the NCAA staff and Terry McCabe agree (1994, pers. comm.), but Homewood and Rodgers (1987) state that "There is no evidence to bear out suggested changes in vegetation composition whether in pastoralist-occupied areas or in areas from which pastoralist stock have been excluded for 10 years or more." Unlike Boshe, they believe that erosion in the NCA has been negligible.

The NCA Maasai have changed their livestock management practices over the decades that the NCA has existed. In particular, they have become more sedentary, moving with their herds less far and less frequently (E. Chausi, 1994, pers. comm.; T. McCabe, 1994). This may be due in part to increasing wildebeest populations in the western portion of the NCA and fear of malignant catarrhal fever, and in part to the provision of water points, access to veterinary services, and grain storage in main villages. This increasing sedentariness may be responsible for both bush encroachment in savannah woodlands, as is occurring in the southern part of the NCA near Endulen (E. Chausi, 1994, pers. comm.), and the spread of unpalatable tussock grasses, as appears to have occurred near Nainokanoka.

Grazing in the highland forests of the NCA, although illegal, is occurring (Boshe, 1989; A. Kijazi and T. McCabe, 1994, pers. comm.). Buffalo were almost never present on the Ngorongoro Crater floor twenty years ago, but now are found there in considerable numbers, perhaps driven from higher forests to crater by disturbance from grazing. Increasing numbers of buffalo in the crater may be in turn driving out wildebeest and zebra (J. Ufunguo, 1994, pers. comm.)

Emmanuel Chausi, the Conservator, strongly supported the need for, and value of, understanding traditional practices and traditional knowledge of the local Maasai. He described a number of examples from the NCA in which traditional Maasai knowledge and practices were highly beneficial and appropriate, examples relating to the use of fire, control of tick-borne and other cattle diseases, and pastoral movements. In some cases, scientific research has validated these traditional practices; in other cases it probably would do so, but has not yet been carried out. (E. Chausi, 1994, pers. comm.)

### III. Land-Use Conflict in the NCA

"In spite of this successful conservation history and international recognition, harmonious co-existence of wildlife, livestock and human populations has never really been achieved in Ngorongoro. Throughout its thirty years, the NCA has experienced conflict of interests with the resident Masai. The magnitude of these conflicts has mounted year after year, and at present, the initial multiple land use policy and objectives may be looked upon as a relative failure." (Boshe, 1989, p.85) Table 2 gives a chronology of key management decisions in the Ngorongoro area, showing how many of them either created or responded to conflict with local residents.

---

**Table 2. Chronology of Key Management Decisions Affecting the Ngorongoro Area**

- 1921 Ngorongoro/Serengeti ecosystem recognized as unique wildlife area and all hunting banned by colonial authorities
- 1951 National Park covering entire ecosystem proclaimed
- 1954 Cultivation banned in National Park, cultivators evicted;
- 1959 Serious conflict leads to division of National Park into two parts, Serengeti National Park and Ngorongoro Conservation Area; NCA to be managed as multiple use area; small-scale cultivation by Maasai allowed
- 1975 All cultivation within NCA banned
- 1974-76 Maasai settlements in Crater banned, Maasai evicted
- 1979 Declared a World Heritage Site by Unesco
- 1982 Approved as part of the Serengeti-Ngorongoro Biosphere Reserve
- 1992 Small-scale cultivation permitted by NCA Authority as a temporary solution to avert a potential food emergency

Sources: (Boshe, 1989; McCabe, et al., 1992; P. Mshanga, 1994, pers. comm.)

---

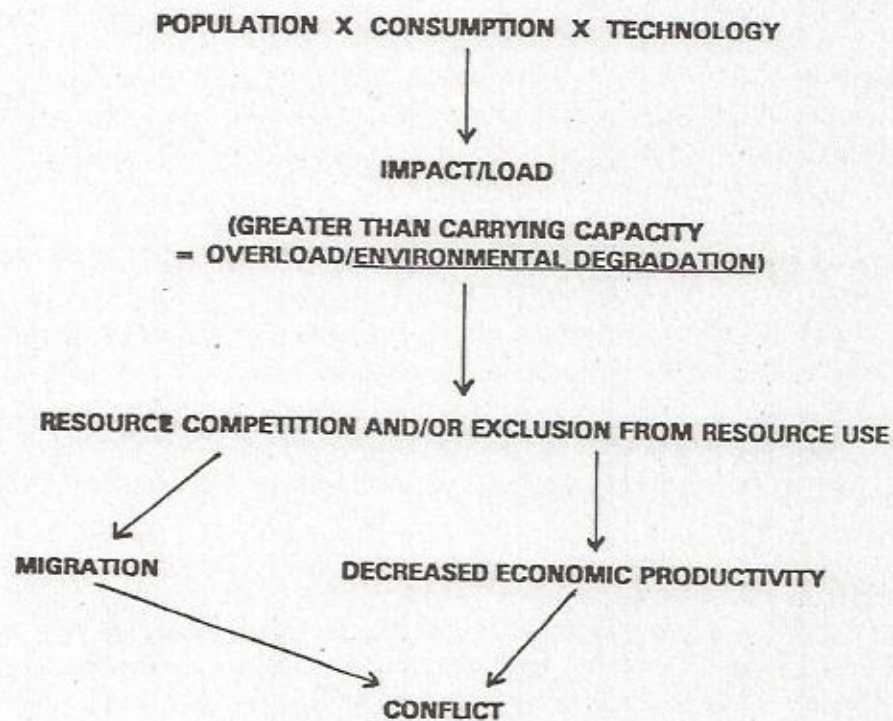
"The key reason for the failure to harmonize the co-existence of wildlife, livestock, and human populations of Ngorongoro lies in the fact that the initial policies and objectives of the multiple land-use system failed to recognize the dynamics of these populations, and how this



would affect the balance of co-existence. As a result, what was once, and could still be, a harmonious co-existence, has turned out to be an unmanageable conflict." (Boshe, 1989, p.86)

The conflicts in the Ngorongoro conservation area illustrate, in microcosm, models that link population growth, natural resources, and conflict, such as those discussed by Thomas Homer-Dixon (1991, 1992, 1994). Figure 4 below shows a modification of such models that brings in work by Daily and Ehrlich (1992).

Figure 4. Model of linkages between population, natural resource use, and conflict.



Source: Byers, 1993

## Conflict over Cultivation in the NCA

Maasai have traditionally had a great aversion to cultivating crops themselves, considering it below their dignity. A generation ago, when livestock-to-human ratios were much higher, they may have subsisted mainly on the milk, meat, and blood of their animals, supplementing their diet with grain only during the dry season. (Boshe, 1989; J. ole Koromo and L. ole Mariki, 1994, pers. comm.) Small-scale cultivation was practiced throughout the Ngorongoro/Serengeti area at the time of its designation as a National Park in 1951, mainly by people from traditional agricultural tribes such as WaArusha and WaMeru, and Maasai depended on this local cultivation. It was not uncommon for Maasai men to marry women from a cultivating group (McCabe, et al., 1992). The banning of cultivation and eviction of cultivators in 1954 led to such serious conflict that the Ngorongoro Crater Conservation area was administratively separated from the Serengeti National Park. The NCA was to be managed for multiple use, including settlement, grazing, and small-scale cultivation by resident Maasai. Maasai were forced to leave Serengeti National Park, which was reserved for non-consumptive human uses such as ecotourism and scientific research.

In 1975, cultivation within the NCA was banned, forcing Maasai to buy grain, grown outside the area, from local traders with money from selling their livestock. Small-scale cultivation continued illegally, poisoning the relationship between the NCA Authority and local people (Boshe, 1989; A. Kijazi, 1994, pers. comm.).

In order to avert a potential food emergency, small-scale cultivation was allowed by the Ngorongoro Conservation Area Authority (NCAA) beginning in 1992 for the first time since it was banned in 1975, but the Authority sees cultivation as a temporary measure and hopes to stop it as soon as alternative means of improving the food security of the local Maasai residents can be found. The NCAA is caught between international conservation organizations, which have threatened to declare the Ngorongoro area a "threatened World Heritage Site" if cultivation is not stopped, and local people, who generally want more cultivation.

The NCAA sees the cultivation issue as a "slippery slope" issue. There are already some human-wildlife conflicts caused by animals damaging crops, and the NCA managers fear that if cultivation expands (as it must if it is to keep up with rapid population growth within the area), the frequency of such conflicts will grow as well, eventually undermining the multiple-use management of the NCA altogether. The NCA managers generally view pastoralism as compatible with wildlife conservation over the long-term, and agriculture incompatible. Agriculture and an dietary shift toward more grain consumption contributes to the increasing sedentariness of resident Maasai, concentrating them around trading villages at Endulen, Kakesio, Oloirobi, Olbalbal, Ngorongoro, and Nainokanoka (Boshe, 1989).

The issue of cultivation within the NCA is very sensitive. Limited cultivation was recently permitted, but the NCAA hopes to ban it once again when alternatives are in place. Proposed alternatives include improvement in the livestock economy, more reliable

distribution and sale of subsidized grain, and finding areas outside of the NCA that can be used by NCA residents for cultivation. One NCAA staff member told me that the Maasai don't think cultivation is a problem; the NCAA does. The NCAA view seems to be that allowing limited small-scale cultivation is a "slippery slope;" even if cultivation were frozen at current levels, in 10 or 20 years there would be pressure to expand it because of the population growth that is occurring in the NCA. There are already some problems created by wildlife raiding crops, and the NCAA fears that these will increase if cultivation expands. Increasing conversion of grasslands and bush to agriculture around nearby Tarangire and Lake Manyara National Parks are already creating increasing wildlife-human conflicts and blocking former wildlife migration corridors (Gamassa, 1993).

The NCAA also is feeling pressure from international organizations to ban cultivation. Some of these organizations have threatened to list Ngorongoro as a "threatened World Heritage site" if cultivation is not stopped. The NCAA is thus caught between international organizations and donors, who want cultivation banned, and local people, who want more cultivation. According to one NCAA staff member, the local people say "You have the Crater, so let us use the land outside the crater the way we want to!" Local people really don't like the international conservation organizations, he said. Joseph ole Koromo said that he thought allowing cultivation was a good idea, and that banning it again "will be risky" because "people will starve," and "cooperation [between the NCAA and local people] will be broken." A prominent Maasai leader in the area recently said to an expatriate scientist that "If they ban cultivation, there will be war."

#### **IV. Toward Solutions**

The issue of cultivation is very sensitive, and the conflict between area residents and authorities could grow much worse if it is not handled carefully and sensitively. Participatory land-use planning and zoning, equitable sharing of ecotourism revenues to provide development benefits to local residents, and population control are all pieces of a possible formula for resolving this complex situation.

#### **Equitable Sharing of Ecotourism Revenues**

Ngorongoro Conservation Area earns about 50% of all wildlife tourist dollars in Tanzania, a considerable amount of money. The NCAA is a parastatal organization, so some NCA tourist revenues are retained by the NCA Authority for its programs, some go into central government coffers, and very little makes its way back to local communities. The amount spent by the NCAA for community development has been rising rapidly over the last several years, however; around 650 million Tanzania shillings were spent in 1991-92, while around 1,550 million in 1993-94 (Kijazi, 1994). Paul Mshanga, Chief Manager of Tourism and Development with the NCAA, said that there was a need to channel some of the benefits from conservation to local people, but that right now "they don't see any benefits; they don't

know how the money being collected for the area is being spent." (P. Mshanga, 1994, pers. comm.) The NCAA is, in fact, doing a number of things to benefit local communities, including:

- a community development and extension program to understand and address local needs
- making grain cheaper and more available through subsidies, road improvements, storage depots, and grinding mills
- creating new water points
- providing veterinary advice and services such as vaccines and stock-dipping facilities
- building a site for a "cultural boma" to attract tourists

The Community Development Unit within the NCAA is responsible for this work to bring benefits to local people. The unit employs a number of Maasai who visit villages and bomas throughout the area talking to people. Informal research methods are generally used to assess peoples' needs and aspirations.

Improving the livestock economy through provision of veterinary advice and services and the creation of water points has been one of the main ways in which the NCAA has attempted to meet the perceived needs of local people through benefit sharing. Now a Danish NGO, "Natural People's World," is beginning a pastoral livestock development project in the NCA, with funding from DANIDA. Its major objectives will be: 1) restocking herds of hardest hit "bomas," 2) reducing cattle losses through improved veterinary services, 3) increasing range utilization through water development and controlled burning, and 4) developing an early warning system for malignant catarrhal fever. (M. Loft, 1994, pers. comm.) The NCAA staff believes that a potential way to decrease the amount of illegal grazing taking place in the Northern Highland Forest Reserve is to provide more water points in dry areas (A. Kijazi, 1994, pers. comm.)

The NCA Authority has built a number of grain storage depots and grinding mills in the area, including at Nainokanoka and Endulen, where maize can be obtained at subsidized prices and ground. Some roads in the area have been improved and maintained in order to improve the availability of grain in remote areas. The NCAA staff hope that these actions will diminish the need for cultivation within the NCA and that a prohibition on cultivation can once again be put in place. One solution that has been proposed is NCA Maasai could be given land to cultivate outside the NCA. Some nearby areas, and certainly the most fertile ones, such as Mbululand, which lies between the NCA and Lake Manyara, are already full of people. Mbululand is already eroding badly due to intensive farming and poor farming practices, threatening Lake Manyara N.P. The Loliondo area north of the NCA may have the capacity to absorb additional people, and some areas may be suitable for cultivation (Boshe, 1989). John Boshe recommends that the "Government of Tanzania should ensure that the neighbouring Loliondo [area] is set aside for Masai settlement and use

to relieve the land pressure on Ngorongoro..."

Giving local Maasai more direct access to tourist revenues is also a possibility. Some young men and women already stand along the roads and earn money from tourists by posing for pictures or selling handcrafts. These young Maasai often earn lots of money quickly that way, and buy cattle or veterinary medicines with it, surpassing in wealth older, more traditional Maasai, who earned their cattle in the traditional livestock economy. These young men are no longer out looking out after herds as they used to be. They aren't as likely to respect and accept the decisions of traditional leaders as in the past. The NCAA would like to "organize" this cultural tourism, and has built a road to the site of a proposed "cultural boma," where Maasai could perform dances, sell handcrafts, and charge money for photographs (E. Chausi, 1994, pers. comm.). The money would then be used for all the residents of the nearby village (Oloirobi), through some process still to be worked out. According to Alan Kijazi, the elders of the village support such a cultural boma, but many young men and women -- the ones out along the road -- don't want to be regulated (A. Kijazi, 1994, pers. comm.).

### **Participatory Planning and Land-Use Zoning**

Resolving environmentally-rooted conflicts may require the devolution of natural resources management from central government to more local levels (Byers, 1991). Many methods exist that can help managers, such as the staff of the NCAA, both understand the needs, aspirations, and behavioral motivations of local people and influence their behavior and resolve conflicts by involving them in participatory problem-solving processes. These methods are the subject of an "Analysis of Behavioral Motivations in Integrated Conservation and Development" (Byers, 1994).

In 1986-87 the Government of Tanzania commissioned a report by the IUCN of multiple land use in the Ngorongoro Conservation Area. The IUCN evaluation "came about because of conflicts -- people were reacting against authority," said Paul Mshanga. The report, issued in 1990, found that "conservation needs were met, but development needs were not," according to Mshanga.

Joseph ole Koromo, now Extension Coordinator for the NCAA, said that in the past the NCA "did not have a good attitude to the people." Before 1990, he said, local Maasai would have said that "conservation was a problem." Now relations between local people and the NCAA are "a little better."

Although the NCAA does not have a written action plan for bringing local people into the decision-making and planning process, they have done a number of things. The first was to organize "extension committees" composed of traditional leaders and government leaders (the elected village councils) in the villages in the NCA. These were supposed to meet once a month with the NCAA extension team, and the extension team could then convey their views

to the NCAA steering committee. This process/mechanism for bringing local views into management decision-making has apparently not been as successful as hoped, in part because of lack of transportation and staff allowances to hold the meetings (P. Mshanga, 1994, pers. comm.)

In April, 1993, a meeting of traditional leaders, village chairmen, and ward councilors was organized by the NCAA, in the hope that this would initiate a long-range planning process funded by foreign donors. When donor funding was held up, the process stalled. Now, in a "new move to involve them [local people] in our decisions," a "Pastoral Council" for the NCA has been formed. The idea for this council came "after so many conflicts," said Paul Mshanga. It was just elected in January, 1994, and consists of: 1) the elected chairpersons of the 12 villages in the NCA; the councilors of the 4 wards in the NCA; 6 "prominent pastoralists," who were elected by a number of elected leaders including village chairmen, assistant chairmen, secretary; and the Conservator of the NCAA and heads of all NCAA departments. The purpose of this council is to discuss and identify "priorities of development," according to Mshanga. The final authority for NCAA decisions still rests with the 6-member Board. Mr. Chauisi, the Conservator, suggested that because the Pastoral Council would bring together traditional leaders (the "prominent pastoralists"), government leaders, and the NCAA staff, it would hopefully help to close or prevent a "gap" between them, and thus help to head off or resolve disputes.

I asked Mr. Chauisi, the Conservator, if there was some kind of information he would like to have about what local people think, need, or want for NCA planning and management purposes that he doesn't have now. He said "we don't know exactly what they [local people] want," partly because there are now two groups: the traditional leaders or "leguinani," who traditionally controlled the grazing system and pastoral movements; and the modern leaders (the village chairman, vice-chairman, and village council), elected by the people. The modern leaders are often trying to change as fast as possible, turning their backs on the old ways, he said. He saw the Pastoral Council, described above, as a vehicle for understanding the views of these two groups.

Allen Kijazi, Principal Researcher and Planner for the NCAA, said that the kind of information he would like to have to inform the planning process. He responded that "We [the NCAA staff] might perceive problems that they [the local Maasai] perceive differently," and different perceptions of problems lead to different ideas for solutions. He said he would like to know if the things that the NCAA sees as problems -- such as the declining livestock economy, or rapid human population growth -- are seen as problems by the local people, and he would like to get their proposals for solutions.

According to Allen Kijazi, one main method for resolving land use conflicts is to use zoning plans -- specific zones for specific uses -- that were acceptable to residents. Creating such plans would obviously require considerable negotiation.

The formation of Maasai NGOs is occurring with increasing frequency, although the legal

registration of an NGO can be a difficult process in Tanzania (ole Koromo, 1994, pers. comm.). Such NGOs may be an important vehicle for Maasai empowerment (S. Ndelalya and S. ole Ngulay, 1994, pers. comm.). Joseph ole Koromo of the NCAA staff, an officer in an as yet unregistered NGO, felt that an NGO would provide a mechanism to: 1) bring people together to discuss problems; 2) help figure out ways to get dispensaries and schools; 3) try to get "access to natural resources" and revenues from campsites; and to 4) serve as a channel for international aid to carry out development projects. KIPOC, a Maasai NGO based in Loliondo was involved in getting a secondary school built there.

### **Population Control**

The analysis given above suggests strongly that control of population growth in the NCA must be part of any viable plan for improving the lives of Maasai, protecting the unique values of the area, and resolving conflicts in the long term. Controlling immigration into the area and increasing the availability and use of family planning services and contraceptive technologies in order to reduce fertility among residents will both be needed to bring about a sustainable balance between people and resources.

As yet, however, I was unable to learn of any serious discussion by NCAA staff or local people about either of these approaches.

### **The Broader Context of Maasai Land-use Conflicts**

Land-use conflicts are widespread are not unique to the NCA, but are widespread in Maasailand both in Kenya and Tanzania (Gamassa, 1993a, 1993b).

A number of Maasai NGOs based in Arusha are trying to assist predominantly Maasai communities in the surrounding region (especially in the Simanjiro District) in resolving what they call "land-grabbing" conflicts. In order to learn more about this work, I met with Saruni Ndelelya, Programme Officer with Ilaramatak Lolkonerei ("Olkonerei Integrated Pastoralist Survival Programme," and Saruni Oitesoi ole Ngulay, Interim Executive Secretary of Inyuat e-Maa ("Maa Pastoralists Development Organization," in February, 1994. They said that "land-grabbing" of various kinds was occurring throughout the Maasai areas of Tanzania. The major kind that concerned these NGO representatives was when village governments approve land uses that are opposed by many in the community, in many cases without real consultation with them. Examples would be the allocation of land formerly used for grazing for large scale agriculture or hunting safaris. Elected village governments -- the village councils -- are the legal bodies for land "issuance," or the approval of land uses. All of Tanzania's land is technically owned by the government, they said, but inhabitants have the legal right to use and develop their own land. Conflicts arise because the pastoral Maasai "used to use the land communally," with customary leaders and elders making land management decisions and resolving conflicts. Now "the pastoral system of life is opposed by policies of the government," and "customary leaders have been side-lined by the

government and the development community," they said. In most villages Maasai elders and traditional leaders are not incorporated into village government; the elected village government leaders may be Maasai, but they tend to be younger, members of an educated elite of non-traditional Maasai. "The government has created its own structure of decision-making that ignored the traditional structure." This sets up conflicts within the Maasai community itself.

Related to this legal kind of "land grabbing," but illegal, is when the village chairman and secretary falsely sign documents saying that the village council gave approval for a certain land use, when in fact they did not. A final kind of "land grabbing" in the view of these NGO representatives is when the national government sets aside Maasai lands for purposes such as conservation, for example.

These Maasai NGO representatives felt they could benefit from learning about the kind of institutionalized conflict resolution process that has been developed in America and Europe. They envisioned holding a workshop in which they would present a number of cases of conflicts that Maasai communities are now experiencing, and the resource persons/trainers would give advice about how to approach, analyze, and resolve the conflicts. (S. Ndelalya and S. ole Ngulay, 1994, pers. comm.)

## V. Conclusion

If a solution can be found, the Ngorongoro Conservation Area may provide a much-needed model for the integration of conservation and economic development. see p.364, McCabe *et al.*, 1992, final paragraph for tone. According to John Boshe, "Ngorongoro continues to remain one of the most challenging conservation and development models on earth today." (Boshe, 1989, p.86)

According to Paul Mshanga, the NCA "is the only area in E. Africa to try to combine conservation and people on the same land. The example of Ngorongoro should be a model for many other places." In fact, "the world community is looking to Ngorongoro as the model for how to integrate conservation and development. In the future, more and more conservation areas will have to include local people. This is the shape of the future of conservation. We are experimenting -- we see ourselves as a model, but we have no model to follow!"

Ngorongoro is of international value as a natural and cultural heritage site. In addition to the wildlife, scenic, and human cultural values, the unique paleo-archeological sites at Laetoli and Olduvai Gorge are both within the NCA. Foreign donors also have an interest in the conservation and sustainable use of the Ngorongoro area, and therefore should continue to assist the NCAA in its work.



## Acknowledgements

My deepest appreciation goes to all of the Ngorongoro Conservation Area Authority staff who took time to share their insights about the NCA and its management, insights that result from long experience with the complex real-life challenges of attempting to integrate conservation with development: in particular to Emmanuel Chausi, Conservator of Ngorongoro, and Lazaro ole Mariki, guide and friend; also to Alan Kijazi, Joseph ole Koromo, Sampson Mkumbo, and Paul Mshanga. Terry McCabe generously shared his unpublished research findings and extensive knowledge; John Boshe, Patricia Moehlman, Saruni Oitesoi ole Ngulay, and Saruni Ndelelya likewise provided valuable insights. Bjorn Figenschou, Frumence Mbuya, and John Ufunguo gave invaluable logistical assistance. Research for this paper was part of an "Analysis of Behavioral Motivations in Integrated Conservation and Development;" it was carried out while I was an American Association for the Advancement of Science (AAAS) Science and Diplomacy Fellow working as a biodiversity conservation advisor in the U.S. Agency for International Development. Fellowship travel funds covered the expenses of two trips to Tanzania, in August, 1993, and February, 1994. I would especially like to thank Michael Philley and Timothy Resch of USAID, and Barbara Pitkin of the Biodiversity Support Program (a USAID-funded consortium of the World Wildlife Fund, The Nature Conservancy, and World Resources Institute), who supported and facilitated this work. The opinions expressed herein do not necessarily reflect the views of the U.S. Agency for International Development, and responsibility for any errors of fact or interpretation is solely my own.

## References

- Boshe, John. "Wildlife Conservation in the Ngorongoro Conservation Area in Tanzania: Social and Ecological Implications of Increasing Pastoralist and Declining Per Capita Livestock Populations", pp.84-100, in: Transactions of the XIXth IUGB Congress, International Union of Game Biologists, Sept. 1989, Trondheim, Norway. Vol. II: Wildlife Management. Svein Myrberget, ed.
- Byers, Bruce A. 1994. "Analysis of Behavioral Motivations in Integrated Conservation and Development: Final Report," Washington, DC: Biodiversity Support Program. In press.
- Byers, Bruce A. 1993. "Environmental Sustainability, Carrying Capacity, and Social Conflict." Unpublished paper presented at the World Bank, Environmental Division, Jan. 1993.
- Byers, Bruce A. 1991. "Ecoregions, State Sovereignty and Conflict." Bulletin of Peace Proposals, Vol. 22, No. 1, pp. 65-76.
- Cincotta, Richard P., and Ganesh Pangare. 1994. "Population Growth, Agricultural Change and Natural Resource Transition: Pastoralism amidst the Agricultural Economy of Gujarat." pp. 17-35 in: A Collection of Papers from Gujarat and Rajasthan, Pastoral Development Network, Network Paper 36a. London: Overseas Development Institute.
- Daily, Gretchen C., and Paul R. Ehrlich. 1992. "Population, Sustainability, and Earth's Carrying Capacity," BioScience, 42(10): 761-770.
- Gamassa, Deo-Gratias M. 1993a. "Blockade of Wildlife Migration Corridors by Agricultural Development in Northern Tanzania." Unpublished paper presented at the International Wildlife Management Congress, San Jose, Costa Rica, 19-25 September, 1993.
- Gamassa, Deo-Gratias M. 1993b. "Marginalization of Maasai Pastoralists in Northern Tanzania." Unpublished paper presented at the Fourth Annual Common Property Conference of the International Association for the Study of Common Property, Manila, Philippines, 15-19 June, 1993.
- Hanby, Jeannette, and David Bygott. n.d. "Ngorongoro Conservation Area." David Bygott & Co: Box 1501, Karatu, Tanzania.
- Homer-Dixon, Thomas F. 1994. "Environmental Scarcities and Violent Conflict: Evidence from Cases." International Security, Vol. 19, No. 1, pp. 5-40.
- Homer-Dixon, Thomas F. 1992. "Population Growth and Conflict," pp. 9-15 in: Environmental Dimensions of Security, Proceedings from a AAAS Annual Meeting Symposium, 9 Feb. 1992. AAAS, 1333 H St., NW, Washington, D.C. 20005.

Homer-Dixon, Thomas F. 1991. "On the Threshold: Environmental Changes as Causes of Acute Conflict," International Security, 16(2): 76-116.

Homewood, Katherine and W.A. Rodgers. 1987. "Pastoralism, Conservation and the Overgrazing Controversy." In Conservation in Africa: People, Policies and Practice. David Anderson and Richard Grove, eds. Pp. 111-128. New York: Cambridge University Press.

Institute of Resource Assessment, University of Dar es Salaam. 1982. "A New Development and Management Plan for the Ngorongoro Conservation Area." Prepared for the Ngorongoro Conservation Area Authority by Management Team at the University of Dar es Salaam, Institute of Resource Assessment.

Kijazi, Allen J. 1994. "Approaches to Community Conservation in the Ngorongoro Conservation Area." Paper for presentation to the Tanzania Community Conservation Workshop, 8-11 February 1994.

Mascarenhas, Adolfo. 1983. "Ngorongoro: A Challenge to Conservation and Development." Ambio, Vol. 12, pp. 146-152.

McCabe, J. Terrence. 1994. "Wildebeest/Maasai Interactions in the Ngorongoro Conservation Area of Tanzania." Final Report submitted to the National Geographic Society. Grant # 4953-93.

McCabe, J. Terrence, Scott Perkin, and Claire Schofield. 1992. "Can Conservation and Development be Coupled among Pastoral People?: An Examination of the Maasai of the Ngorongoro Conservation Area, Tanzania," Human Organization, Vol. 51, No. 4, pp. 353-366.

Mshanga, Paul. 1994. "Overview of Need for Community Conservation Policy in Tanzania with Particular Reference to the Ngorongoro Conservation Area." Paper for presentation to the Tanzania Community Conservation Workshop, 8-11 February 1994.