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# MIOMBO

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THE NEWSLETTER OF THE WILDLIFE CONSERVATION SOCIETY OF TANZANIA  
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## THE PROTECTIVE ROLE OF COASTAL MANGROVES AGAINST THE DESTRUCTIVE FORCES OF TSUNAMI.

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The undersea earthquake of the 26<sup>th</sup> December 2004 off the coast of Sumatra caused a series of large waves (Tsunami) that unleashed untold damage and destruction on the coastal regions of the countries surrounding the Indian Ocean. The suffering of the people who survived was well captured by the worlds'

media, and efforts to assist people poured into the region from all over the world. At the time of the disaster, scientists and conservationists predicted that the scale of the disaster was partly due to the removal of protective coastal vegetation in many parts of the region, and the destruction of coral reefs.

*Cont.. page 3*

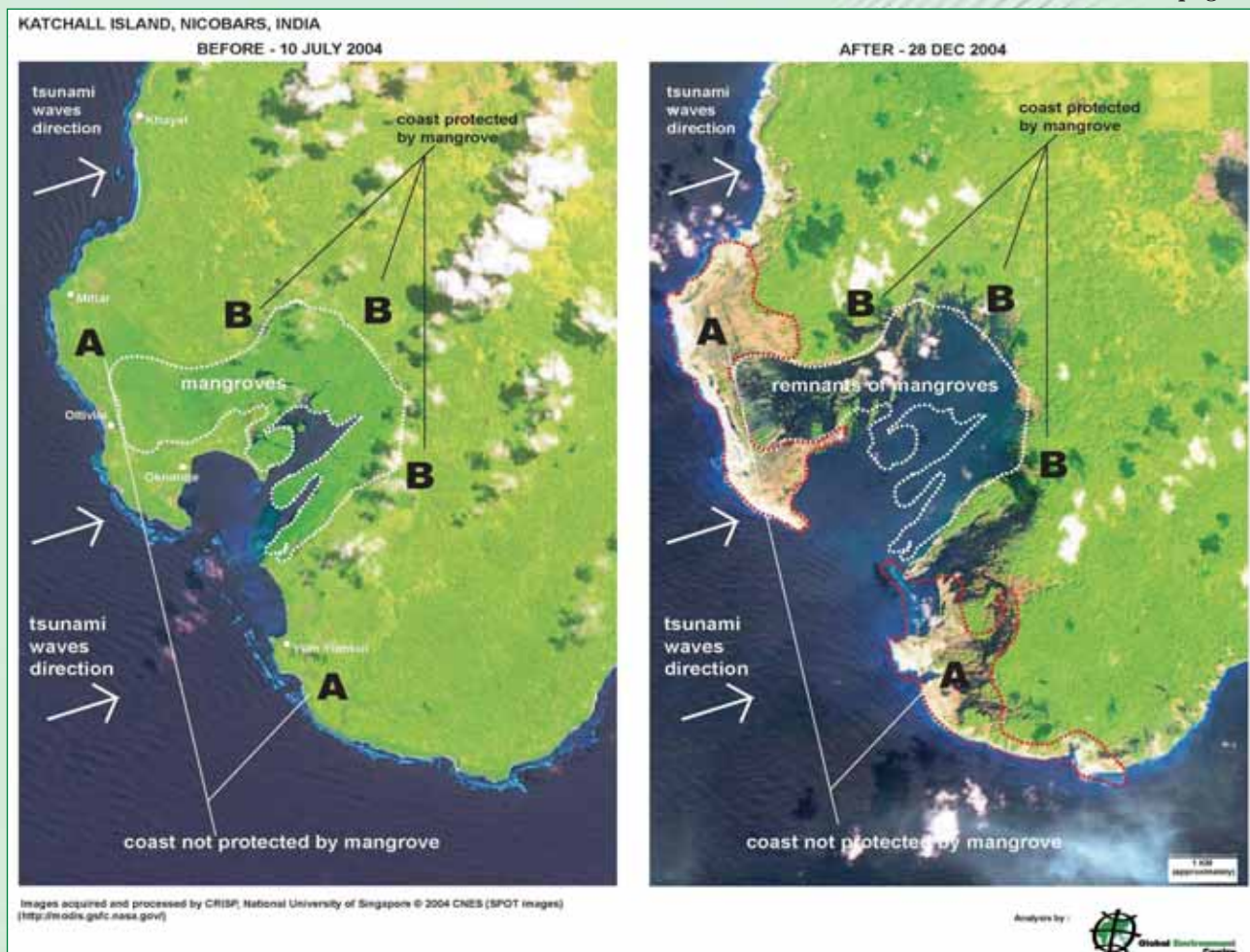


Fig. 1. Spot satellite images before and after the Tsunami at Katchall Island in the Nicobar Islands - 50 km from the fault line where over 2,500 people are thought to have died, showing areas of coast which have been protected by the mangroves retaining vegetation (B) and those areas not protected which have been stripped of vegetation (A). Images acquired and processed by CRISP, National University of Singapore; analysis by Global Environment Centre. Co-funding from Solstice Foundation/Nordec, Denmark.

### TANZANIA ON ALERT FOR POSSIBLE OUTBREAK OF BIRD FLU (AVIAN INFLUENZA) FROM MIGRATORY WILD BIRDS

Tanzania, like many other countries with migratory birds' flyways, is on high alert on possible outbreak of avian influenza. The imminent danger of the flu pandemic can result from transmission of avian influenza virus (AIV) that normally infects birds but has on occasions crossed the species barrier to infect human beings. The virus which is spread through contact is species specific and can spread rapidly through poultry flocks.

The recent spread of avian influenza (bird flu), caused by the highly pathogenic H5N1 strain, across Asia and into Eastern Europe poses challenges to those concerned with the health of domestic poultry and the conservation of wild birds. The virus is a main threat to the poultry industry and human life and therefore actions taken by the Tanzanian Government are targeted at minimizing this risk, by maximizing our vigilance and preparing a contingency plan should the virus arrive. The WCST supports the Government efforts and its membership is collaborating in the vigilance team set to monitor avian flu.

According to Keyyu, J.D (TAWIRI Scientific Conference, Arusha -2005) while the disease is highly pathogenic in domestic poultry (mainly chicken, ducks and turkeys); migratory wild birds, there are recent claims that consider domestic and non-domestic cats to be the reservoir of avian influenza virus. Bird to bird transmission occurs through virus in droplets or aerosols from the respiratory tract or through excrements by directly contaminating water or food. The faecal-oral route is the commonest, airborne spread over long distance is rare. People become infected through direct contact with infected poultry, or surfaces and objects contaminated with poultry faeces. Most infections in human occur in rural or peri-urban areas where many households keep small poultry flocks that roam freely, sometimes entering homes or sharing outdoor areas where children play. Exposure is considered most likely during slaughter, defeathering, butchering, and preparation of poultry for cooking.

There is no evidence that H5N1 infections in humans have been acquired from wild birds. Human infections have occurred in people who have been closely associated with poultry. The risk to human health from wild birds can be minimised by avoiding contact with sick or dead birds. However, there is a possibility that this virus could develop into one that might be transmitted from human to human.

Migratory waterfowls carry avian influenza virus in a less pathogenic form, and then introduce it to poultry flocks where the virus circulates and mutates into a very pathogenic form (usually within a few months). The geography, landscape and ecosystems of Tanzania could provide favorable ground for the introduction and circulation of human, avian and swine influenza viruses. Millions of wild aquatic and shore birds utilize Tanzanian waters and range annually at some stage in their lifecycle. About 3 – 5 million birds migrate each spring and autumn to and over Tanzania using 3 major flyways (the Rift valley flyway, the Nile flyway and Eastern coast flyway- that run between Siberian/Central Asia and Africa. Siberia is a meeting and interacting point for wild water birds from Tanzania and those that migrate from Asia or that are migrating on the Asia – Pacific flyway. Hence, there is a potential risk of birds that migrate to and through Tanzania to come into contact with infected birds from Asia.

Tanzania has already taken precaution measures including vigilance by the appointment of a National Technical Team for the surveillance of the dreaded avian influenza. In addition the public has been alerted to report any peculiar deaths of wild birds especially those associated with water (waterfowl), so as to permit for timely investigation on the cause of their death. Thus WCST would like to commend the Government for having taken proactive precautionary action on avian influenza virus by raising necessary public awareness on the role of migratory birds in introducing AIV and for getting prepared for any eventuality of any outbreak of the avian flu. The WCST further advises that, the government imposes a temporal ban on international trade of wild species of birds to avoid possible transmission of avian influenza from wild birds to domestic birds and people.

**By Lota Melamari**  
**WCST CEO/Coordinator**

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Opinions expressed by contributors are not necessarily the official view of the Society.

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## The Protective Role of Coastal Mangroves..

*From page 1*

Recent research shows that coastlines fringed by mangroves were far less damaged than those where mangroves were absent or had been removed (Fig. 1). Villages behind mangrove areas were largely undamaged, and even narrow strips of trees prevented much of the damage. It has also been shown experimentally that mangrove forests shield coastlines by reducing wave amplitude and energy. Analytical models show that 30 trees per 100m in a 100m wide belt may reduce the maximum tsunami flow pressure by more than 90%.

Reports from the region also indicate that mangroves also prevented people being washed into the sea, which was a major cause of death. In addition, mangroves trapped fast moving pieces of driftwood which was also a major cause of injury and death for people. Green belts of other trees, coastal dunes, and intact coral reefs performed similar functions.

According to FAO statistics the area of mangroves in the five six most affected countries around the Indian Ocean dropped by 26% from 5,723,400 to 4,232,700 ha between 1980-2000. In Thailand 65% of the mangrove was lost to aquaculture, primarily for shrimp farming, 26% to coastal development and 9% for other reasons.

Conserving, or replanting coastal mangrove areas, is being proposed as a way to help buffer communities from future similar events. Mangroves also enhance sustainable fisheries and forestry production. Such benefits are not found in man-made coastal protection structures. Mangrove forests can, however, only be replanted in areas of suitable habitat - coastal mudflats and lagoons.

### What does this mean for Tanzania?

Tanzania felt some of the effects of the Asian Tsunami, but these were mild compared with those further east in the Indian Ocean. However, there are still a number of important lessons for Tanzania. These are that the coastal mangroves and other vegetation types have a function in preventing coastal erosion and in stopping the worst effects of major events such as undersea earthquakes that cause Tsunami waves.

As in South East Asia the area of mangroves in Africa has been declining, with FAO estimates suggesting a drop of from 3,659,000 ha in 1980 to 3,351,000 ha in 2000 - a decline of 308,000 ha (8.4% overall). In Tanzania an analysis of satellite images indicates that the mangrove cover declined from 112,135 ha in 1990 to 108,307 ha in 2000 - a loss of 3,828 ha (3.4 %).

At the present time the major threats to Tanzanian mangroves are clearance for agriculture (mainly rice), solar salt pans, and cutting for building poles, boats, firewood and the production of charcoal. In South East Asia most of the mangrove was removed to develop ponds for shrimp aquaculture. Although not yet present in Tanzania, shrimp aquaculture has previously been proposed for the Rufiji mangroves. The 26th December Asian Tsunami shows that Tanzania might have made a wise decision in preventing the establishment of large scale shrimp farming in the country and that future decisions on the use of Tanzanian mangrove resources should not be taken lightly.

## THE EFFECTS OF HUNTING ON WILDLIFE MANAGEMENT

*MIOMBO Interview with Tim Caro, Professor, Department of Wildlife, Fish and Conservation Biology University of California.*

**The interview conducted by Dr. Rolf D. Baldus discusses the effects of legal hunting on wildlife management as compared to illegal hunting. It also presents the research findings on the health of vegetation in different types of protected area, where it was found that excluding certain activities, such as tree cutting or resident hunting, or excluding people from areas is the key to conserving habitats.**

**Q1. You have researched wildlife biology and management issues in Tanzania for 25 years. In the year 1985 you published an article in SWARA, the East African Wildlife Society magazine that was highly critical of biological arguments used by tourist hunters in East Africa and elsewhere. Since then you have continued your research. Any new findings or still anti-hunting?**

ANSWER:

My views on tourist hunting have changed a lot since 1985. At that time I focused on one aspect of hunting, namely the effect that removing animals can have on a population. For example, in my Swara article, I discussed how big game hunters like to shoot the biggest males. New behavioral and ecological research studies at that time were showing that these large males were not old animals that would soon die, as hunters had claimed, but were likely to be the breeding males in the population. Similarly new studies in the 1980s were showing that when an adult male lion that belongs to a pride is removed, new male lions come in and kill young cubs in order to bring the females back into heat quicker. So shooting territorial male lions has the effect of killing a generation of cubs as well.

Hunters still have these effects on animal populations, of course, but they also have an important positive influence on habitat conservation and this is where I have been focusing my attention over the last 5 years. What I mean by this is that large areas of land, especially in Tanzania, have been set aside expressly for the purpose of tourist hunting, and in so doing, they have stopped people moving into these areas to cultivate and graze.

So if you look at the big picture, conserving the numerous species that live in an area - plants, fungi, insects, birds, reptiles etc - does it really matter if hunters reduce the lion population or the eland population to very low levels? Probably not, so if you direct your attention to many species, or biodiversity as it is now called, hunters have a very positive effect because the money that they bring into the country makes it economically worthwhile for the government to protect an area.

The other thing that has made me more sympathetic to tourist hunting, other than a change of personal focus, is that I now believe that it has a trivial effect on mammal and bird populations compared to illegal hunting. The Illegal hunting takes two forms in Tanzania: hunting by residents who have obtained permits to shoot a few animals but who take many more than they are allowed, and hunting by people who have no permits at all. I don't think anyone really knows exactly how much is taken illegally but huge numbers of animals are involved each year, far, far more than that taken by tourist hunters.

**Q2. Could you please specify the positive effects which hunting tourism has on habitat conservation?.**

ANSWER:

Big game hunting has an important role in preserving large areas of land from agriculture and settlement in Tanzania and elsewhere. The Government has set aside large areas of land as Game Reserves, over 100,000 km<sup>2</sup> in total, which allow for limited tourist hunting. The money generated from this type of hunting through licenses and fees is used as a justification for keeping people out of these areas since the money can be used by the Government to build roads or hospitals etc.



## THE EFFECTS OF HUNTING ON WILDLIFE MANAGEMENT

My research group at the University of California at Davis has shown that Game Reserves are beneficial for both mammals and vegetation. Using aerial census data collected by the Conservation Information Centre in Arusha, we were able to compare the density of about 20 species of large mammals in National Parks, Game Reserves, Game Controlled Areas and Open Areas across the country. We found that densities of most species were similar in Game Reserves and in National Parks despite certain species being shot by tourist hunters which shows that Game Reserves are good at protecting mammal species. Both types of area contained much higher densities of mammals than Game Controlled Areas or Open Areas that also sanction tourist hunting but that allow settlement and cattle grazing and resident hunting as well. This shows that it is not tourist hunting itself that conserves mammals but it is the absence of people living in Game Reserves and National Parks or perhaps the absence of resident hunters that are the key.

We also looked at the health of vegetation in different types of protected area using satellite imagery. When we divided up pixels in Tanzania according to whether they were in National Parks, Game Reserves, Forest Reserves, Game Controlled areas or Open Areas, we found that National Parks and Game Reserves showed increases in greenness during the 1980 and 1990s. Thus Game Reserves set aside for hunting blocks help to keep habitats healthy as do National Parks. Game Controlled Areas and Forest Reserves on the other hand suffered great habitat degradation perhaps because they were having trees removed from them during this period of time. Once again, this research shows that excluding certain activities, such as tree cutting or resident hunting, or excluding people from areas is the key to conserving habitats.

In short, if tourist hunting is accompanied by laws forbidding other activities, and if these laws are enforced, as they are in Game Reserves, then legal hunting benefits animal and plant communities. When activities are allowed and when there is no policing, as in Game Controlled Areas due to lack of funds, then tourist hunting does not help conservation.

**Q3. This brings me to your earlier point. You say the effects of legal hunting on wildlife can virtually be disregarded as compared to illegal hunting. Can you elaborate on this? And does legal hunting and the financial returns from it have any effect on the illegal activities?**

ANSWER:

Each year animals are killed by people both legally and illegally in Tanzania. Legal hunting is carried out by residents and tourists who obtain licenses to shoot a small number of animals, as well as in cropping schemes. Illegal hunting is carried out by people who have no permits at all, but also by tourists and residents who have obtained permits to shoot a few animals but who take more than they are allowed.

Let's go through these one by one bearing in mind that there is little information on how many animals are killed by illegal methods. First, a hunter may kill an animal having acquired licenses. While such hunting is legal, the quotas allocated for legal hunting are based on educated guesswork because we do not have adequate information on the size of most animal populations in the country. Thus owners of a hunting block may be allocated a quota to shoot too many individual animals - say too many lions in a given year. In practice, the Wildlife Department usually sets quotas based on what the quota was last year. In an attempt to help the Wildlife Department come up with more informed quotas, we matched the population sizes of animals counted from aerial surveys with the tourist hunting off-take in different parts of the country and found that off-take was usually low - normally less than 10% of the population size - so the Wildlife Department has got it just about right. Nevertheless, certain species such as eland, lion, leopard and antelope such as reedbeek were being killed at overly high rates in some areas.

Hunting licenses for residents are allocated by Regional and District Game Officers. They face the same problem as their head office in Dar es Salaam they don't know the number of animals in areas under their jurisdiction. These officials usually set quotas according to what they were last year as well - but no one knows whether these are biologically correct. Near towns these quotas are

## THE EFFECTS OF HUNTING ON WILDLIFE MANAGEMENT

on the high side because Game Officers are "under siege" for licenses from many applicants rather than just one hunting company. In short, official hunting quotas at the Regional and District levels may not be set at the appropriate level to maintain animal populations in the long term. This problem could be solved by regular monitoring of wildlife populations right across the country. It might be feasible but very expensive.

Unfortunately, there is a second problem with legal hunting. This is the problem of stretching the quota. There are many ways that this is done. For example, a hunting company can call up the Wildlife Department and say that they don't have a quota to hunt leopard this year in this area, but they have a client who would love to shoot one, so could head office stretch a point and sell them a license for just one animal? Another way this is done is if the hunting company has a license to shoot a leopard in one of its blocks in the west of the country, but it uses that license to shoot a leopard in its eastern block. Yet another way is when a resident asks a Game Officer if he could take two hartebeest instead of one because Christmas is coming up.

A third problem with legal hunting is that residents or tourists may take more animals than their quota allows. Consider a tourist hunter who shoots a male buffalo with fair-sized horns but on the last day of his safari, finds a much larger male. Since he is a rich foreigner and the Game Scout with him earns a low salary, he can easily make it worthwhile for the scout to forget about the first buffalo. Of course the extent to which this happens is not known as tourist hunting companies rarely admit to it. Resident hunters also do the same thing. With a license to hunt one eland, they may shoot say two or three. Or, if they are unable to locate an eland, will shoot say four reedbuck instead. The extra meat or money can be given to the Game Scout to keep him quiet. These last two problems could be solved by tightening up on current practices among Wildlife Department field staff, and this will probably occur in time - although it may not occur quick enough to save wildlife outside Game Reserves.

Despite these problems with legal hunting, I am sure that most wildlife in Tanzania is actually killed by people who have no license at all. Usually these are villagers who set snares or go out with dogs or with a muzzle loader and kill whatever they encounter. Some of this meat is cooked at home but an increasing amount is sold in town markets or exported to the city where demand for game meat is high. Over the last year, demand for bushmeat has increased greatly because people's standard of living is on the increase. In most of the many villages in Tanzania there are several poachers; as a result this kind of hunting probably has the biggest effect on wildlife in the country.

In theory, this problem could be solved with tighter policing by National Park Rangers, Game Scouts and police officers, and heavy fines set in court. But given the number of poachers and the high demand for bush meat, these forces are over-stretched already. Another possibility is to initiate police and military operations that remove guns from people's houses. This has been done before in Tanzania and works well for a few years. Yet another possibility is to get local people involved in conserving game species that live around their villages but there are few of these "community-based conservation schemes" and we still don't know whether they will prove successful in the long term.

On a more positive side, the revenue generated by tourist hunting makes it worthwhile for the Government to keep areas set aside for wildlife protection, Game Reserves, and to pay Game Scouts to monitor hunters' activities. It is therefore important that money from tourist hunting is channeled directly back into Reserves. Also, during the dry season when tourist hunters are visiting, their presence may deter poachers, although poachers move back in the wet season.

In short, the revenue generated by tourist hunting has a very positive impact for habitat conservation; however, resident and tourist hunting are associated with many semi-legal activities that have a considerable negative impact on wildlife populations. Nevertheless, by far the greatest threat to wildlife is from local people hunting outside the law. Without doubt these are the neediest of citizens and this presents managers and conservationists with a real headache, one that they have been unable to solve.



## PLANTS, PRIMATES AND PEOPLE: CONSERVATION IN THE SOUTHERN HIGHLANDS

By Tim R.B. Davenport (Director, WCS-Southern Highlands Conservation Programme)

**It is an old irony that one of Tanzania's biggest environmental challenges is the very extent of the nation's biological diversity. With such an unparalleled array of important species and habitats, yet finite resources with which to manage them, it is little surprise that many lesser-known sites become neglected. Such has been the case with the Southern Highlands. However, recent research and new discoveries are not only changing the way we think about the area's biodiversity and biogeography, but also revealing just how important it is for conservation. Nowhere is this more so than in the Mt. Rungwe-Kitulo landscape.**

A culinary delicacy in Zambia is an unlikely beginning for a conservation initiative in Tanzania, but one of the first targets for the Wildlife Conservation Society's Southern Highlands Conservation Programme (SHCP), was a detailed investigation into a once localised and traditional foodstuff called Chikanda. Prepared from the boiled root tubers of terrestrial orchids, the dish was traditionally - though only occasionally - consumed in southwestern Tanzania, northern Zambia and Malawi. Indeed in Tanzania it was mostly considered a 'poor man's staple' only eaten in times of famine. Since the mid-1990's, however, a growing demand in Zambian restaurants has had a devastating impact on orchid populations throughout the region. In 2001 the SHCP and University of Dar Es Salaam's researcher, Henry Ndangalasi showed that over 4 million Tanzanian orchids from 85 different species - including many regional endemics - crossed border to Zambia each year. Moreover, the trade was growing.

Fortunately however, there are grounds for optimism. Heeding the warning that some orchid species could become extinct without intervention, the Government announced the designation of one of the most important sites, Kitulo Plateau, as a new national park. Perched between the Kipengere Range to the east and the Uporoto Mountains to the west, Kitulo is the largest and most important Afrotropical and Afroalpine grassland in Tanzania. The adjacent forest reserves of Numbe and Livingstone were subsequently included by TANAPA, producing an environmentally diverse park of some 402km<sup>2</sup>, and illustrating Tanzania's commitment to the broader aspects of biodiversity conservation.

In 2003, the SHCP began cataloguing the biodiversity and natural resource use in and around

the Mt. Rungwe Forest Reserve. This was then extended to include also the habitats of the (then) proposed Kitulo National Park, thus culminating in a thorough understanding of the entire Mt Rungwe-Kitulo landscape. The area's diversity is exemplified by the flora, with well over 700 species of plant including 70 orchids being present. And despite most of the large herbivores having been hunted out by the 1980's, over 85 species of mammal still occur in these mountains. Eight species of globally significant birds contribute to Kitulo and Rungwe both being designated as 'Important Bird Areas' (IBA), and the plateau is a vital breeding site for two threatened species, Denham's bustard and blue swallow. Indeed, being among important IBAs, Kitulo has been the focus of Wildlife Conservation Society of Tanzania (WCST).

*Cont.. pg 8*



*The newly described Highland Mangabey Lophocebus Kipunji in Mt Rungwe Forest (Photo: Tim Davenport).*

## PLANTS, PRIMATES AND PEOPLE: CONSERVATION IN THE SOUTHERN HIGHLANDS

From pg. 7

Studies by SHCP, revealed rich suite of regionally-restricted amphibia, reptiles, fish and invertebrates that are all of conservation concern. The socio-economic data revealed that 30% of the plants, mammals, birds, reptiles, amphibians and fish are harvested in some way by people, be it for timber, fuel, medicine, meat or trade. In early 2003, we heard rumours about an unusual monkey, known in Kinyakyusa as 'Kipunji'. Following up these stories was difficult, as few people knew of the primate. Furthermore, because of the terrain, thick secondary forest and the animal's cryptic nature, initial sightings were infrequent. It was not until December 2003 that we clearly observed the monkey and recognised it as a new species of mangabey. Amazingly, in July 2004 the same species was also found in Ndundulu Forest in the Udzungwas. Africa's first new monkey in over 20 years had been discovered independently in two sites and within a year.

The Highland Mangabey, *Lophocebus kipunji*, is brown with a head and body length of about 90 cm. It is characterized by a long, erect crest of hair on its head, elongated cheek whiskers, an off-white belly and tail, and an unusual call we termed a 'honk-bark'. The monkey occurs up to 2,450 m in Kitulo and on Mt Rungwe, and its long coat is probably an adaptation to the cold. The mangabey is extremely rare; we estimate a total population of just 500 to 1,000 individuals. Moreover, the threats to the species are considerable, not least, as logging, hunting, and unmanaged resource extraction are common across the ecosystem. TANAPA has recently begun work to protect the Livingstone Forest within the new national park, but we estimate that more than 50% of the original forest has already been lost. Meanwhile, the most extensive remaining forest is on Mt Rungwe, but this remains largely unmanaged. Whilst there are strong arguments to support the inclusion of Mt Rungwe into the park, a more critical need is the protection of the heavily degraded Bujingijila corridor connecting Kitulo to Mt Rungwe.

It is hoped that our much greater understanding of the significant value of the Mt Rungwe-Kitulo landscape will now encourage more investment and urgency in its conservation. Furthermore, the area already had good tourism potential based on the wildflowers and birds of the montane grassland. The newfound wealth of its forests, with the Highland Mangabey as its flagship, should foster even greater international interest. Hopefully this will contribute to the conservation of a wide variety of rare and threatened species, from orchids to primates, as well as to the needs of the surrounding human communities.

### IN LOVING MEMORY

#### **Bidding farewell to Mama Anneth Mwakimi**

The Wildlife Conservation Society of Tanzania (WCST) suffered a terrible blow of losing one of its long serving member of the Secretariat, its environmental and Education/Awareness officer, the late Mrs. Anneth Mwakimi on 15th September 2004. She died of breast cancer.

Anneth will be missed by all of us for her dedication, professionalism, and power of work. She will continue to be remembered for her humility, generosity, and above all sympathy. The great loss is not only a blow to her family; but indeed also to friends, fellow workers, and to all the conservation community in the country.

#### **The Loss of two members of the Executive Committee**

The Society also mourned with deep sorrow the tragic death of a member of the Executive Committee, the late Mr. Thomas Jeffery Steeb which occurred on 23rd October 2004. The late Steeb who served as an Executive Committee Member of WCST, was a victim of an accident that occurred at his own residence. The late Thomas was a devoted environmentalist and he will be remembered for website he developed for the Society.

Meanwhile another big loss was yet witnessed by the Society and the entire Tanzanian conservation community. This was the death of Mr. Costa Aloyce Mlay who passed away in November 2004. The late Mr. Mlay was one of the founder members of the Wildlife Conservation Society of Tanzania and a committed member till the last minute. He is deeply missed within the field of natural resources conservation.

**The Lord giveth, the Lord taketh, blessed be  
His name forever.**

**May their souls rest in eternal peace.  
AMEN.**



# TOURIST HUNTING IN TANZANIA

Written by Paul Nnyiti of WCST

**There is a general concern that hunting quotas are too high leading to poor trophy quality. Wildlife populations have declined in many areas of Tanzania, this is attributed to increased settlement encroaching on wildlife areas and illegal offtake for bushmeat. According to available information, only a few species, such as lion are being affected by hunting. There is no evidence that the regulated tourist hunting industry has contributed to the general decline of wildlife populations, but there is plenty of evidence that the presence of a regulated hunting industry contributes significantly to reducing the illegal activities of poachers and provides an economic incentive to protect and manage vast areas.**

Tanzania has over 140 hunting concessions covering an area in excess of 200,000 km<sup>2</sup> that are leased to outfitters licensed to conduct tourist hunting. These concessions are distributed throughout the country either in Game Reserves, Forest Reserves, Game Controlled Areas or Open Areas. Hunting is not allowed in National Parks, Ngorongoro Conservation Area or within 2 km of the boundary of these areas. The hunting areas can naturally be divided into three greater landscapes, namely Miombo of Western Tanzania, Masailand and the Selous/Coastal landscapes. Good hunting opportunities are available in each of these great areas.

## Animals that can be hunted

Schedules of the Hunting Regulations that support the Wildlife Conservation Act no. 12 of 1974 specify the types of animals that may or may not be hunted on a hunting licence. A wide range of animals (approximately 60 species) can legally be hunted by tourist hunters in Tanzania. However, Giraffe, Cheetah, Black Rhino, Black & White Colobus and Wild Dog are protected game and cannot be hunted in Tanzania.

The Hunting Regulations stipulate the fees for hunting every type of animal, and further specify a minimum number of hunting days and minimum rifle calibres for hunting various types of animals, particularly for dangerous game. These requirements are summarised in Table 2 on page 13.

## Quota setting

Developing an ecological basis for setting quota is not easy. It is extremely costly to conduct regular aerial surveys countrywide, also aerial surveys are unable to provide data for key species such as lion and leopard and do not provide consistently reliable trends of buffalo populations. Aerial census data provide only trends and the method alone therefore does not provide sufficient information for setting quota for any species. It is doubtful that a truly scientific basis for setting quota will easily be developed in the

complex multi-species ecosystems in Africa. Instead the cumulative experience of setting quotas over many years that relies on several verifiable indicators (such as population estimates, trophy quality trends, age, abundance, offtake levels etc.) that can demonstrate little or no significant detrimental impacts on the wildlife populations provide the benchmark that allows for the confidence of setting future hunting quotas through an adaptive management approach.

The approach used by the Wildlife Division in Tanzania to allocate quotas is to rely on the knowledge of Project Managers and District Game Officers who suggest quotas for the Game Reserves and Game Controlled and Open Areas respectively. Their proposals may be taken into account, but also may not. Aerial survey data may also be taken into account (where available) together with past hunting records and recommendations of professional hunters and outfitters.

There is a general concern that the lion quota is too high. On average only 52% of the Selous lion quotas have been used since 1996, while many hunting outfitters admit that it is becoming increasingly difficult to hunt good lion trophies. Many outfitters are now restricting the numbers of lion hunted in their concessions despite high quota allocations, to encourage an increase in the number and quality of available lion trophies. Some operators are imposing their own tight standards on the age and quality of lion trophies taken and have realised the benefits of hunting better quality trophies, but other operators are sometimes over-shooting their quotas and taking young animals.

A few species, such as lion are being affected by trophy hunting, however the vast majority of species are unaffected.



## WCST PROJECTS IN BRIEF

### SITE SUPPORT GROUPS AND THE CONSERVATION OF USANGU BASIN

The Usangu flats, southwest of Iringa, is an ecologically threatened Important Bird Area (IBA), a seasonally inundated floodplain. The Usangu wetland is known for its richness in biodiversity especially waterfowls, some of which are globally threatened. Despite its ecological value and other vital water retention properties for the Mtera and Kidatu Dams which generate over 50% of Tanzania hydro-electric power, the wetland is facing major threats namely overgrazing due to uncontrolled influx of nomadic pastoralists, expansion of irrigated agriculture with consequence of claiming more land and more water. Water bird poisoning is a major threat at Usangu Swamps (see the Swahili article in this issue).

The Wildlife Conservation Society of Tanzania (WCST) is implementing a project at Usangu supported by Dutch government through BirdLife International with two main objectives: Improving the livelihoods of the local people and conserving the IBA. The WCST operates through the Site Support Groups (SSGs) with assistance from the Mbarali District Natural Resources Office and Usangu Game Reserve Management. The project has enabled the SSG to acquire two forest sites of about 1500 ha from the Village land for demonstrating their conservation work that includes catchment forests to help to save the wetland resources. A beekeeping project is being implemented in one of these forests to provide income for the SSG members. Other activities include monitoring the biodiversity of the IBA and the physical status of the Usangu Flats including illegal uptake of natural resources, tree planting within the village households and schools as well as environmental awareness activities.

### INSTITUTING A STANDARDIZED SUSTAINABLE BIODIVERSITY RESEARCH MONITORING SYSTEM IN THE EASTERN ARC AND COASTAL FORESTS HOTSPOT OF KENYA AND TANZANIA

WCST, in partnership with BirdLife International and Nature Kenya, have embarked on 4 year (2005-2008) project that aims to institute and coordinate a standardized sustainable biodiversity research monitoring system in the Eastern Arc and Coastal forests region of Kenya and Tanzania. Outcome database will focus on 333 globally threatened species that occur in the Eastern Arc and Coastal Forests of Tanzania and Kenya, with 110 species being recorded in Kenya and 310 in Tanzania. The globally threatened fauna in the hotspot(s) are represented by 29 mammal species, 33 amphibian species, 28 bird species, and 7 gastropods.

The globally threatened flora contains 237 plant species, which is surely an underestimate. In the hotspot(s), 242 species are listed in the IUCN Red List as Vulnerable, 68 are Endangered, and 24 are Critically Endangered. Given the ongoing field research in Eastern Arc and Coastal Forests (EACF) coupled with efforts from stakeholders, more records are expected from various researchers calling for continuous update of the existing records of species. The project, among other things, will monitor the conservation outcomes as a result of all investments efforts undertaken by Critical Ecosystem Partnership Fund (CEPF) at species, sites and landscape scales. The CEPF is a joint initiative of Conservation International of the US, the Global Environment Facility, the Government of Japan, the John D. and Catherine T. MacArthur Foundation and the World Bank.



*The Mbarali District Natural Resources Officer, Mr. Rodgers Mwalu Hinchu (in red cap) assisting the SSG members to set-up beehives.*

### COMPACT PROJECT: ON GOING EFFORTS TOWARDS CONSERVATION OF MOUNT KILIMANJARO, A WORLD NATURAL HERITAGE SITE

Community Management of Protected Areas Conservation Project (COMPACT) is a global project under operation in globally significant protected areas that are listed as World Natural Heritage Sites. In East Africa COMPACT has been operating in Kenya and Tanzania through the mountain communities of Mt. Kenya and Mt. Kilimanjaro. The COMPACT's focus is on addressing environmental concerns and challenges while considering the needs and interests of the



## WCST PROJECT IN BRIEF

implementing local communities. Since 2001, the COMPACT project has supported more than 30 community projects around Mt. Kilimanjaro, costing more than one billion Tanzania shillings.

The WCST is working with COMPACT in promoting environmental awareness and conservation education to communities around Mt. Kilimanjaro. Activities that have been implemented by WCST include conservation education through print media, radio programs, awareness workshops, and locally conducted trainings and exchange visits. The WCST-COMPACT project component is a platform where all grantee groups get to interact and share experiences, knowledge, skills, values and interests. WCST, under the consultancy of the Moshi University College of Cooperative and Business Studies, is spearheading a process aimed at transforming and re-organizing COMPACT grantee groups into an autonomous group.



*ko (in yellow cap) and the District Beekeeping Officer, Mr. Kennedy  
hives at igava B forest site (photo by Jasson John, May 2005)*

### WCST PROGRESS IN THE PUGU AND KAZIMZUMBWI FOREST RESERVES.

The Wildlife Conservation Society Tanzania (WCST) has been working with the Forestry and Beekeeping Division and other stakeholders to develop Joint Forest Management for Pugu and Kazimzumbwi forest reserves. The WCST is spearheading the process whereby communities around Pugu and Kazimzumbwi forests will sign partnership agreements with government authorities to allow for Joint Forest Management (JFM) in the two forest reserves to take place. The Kazimzumbwi and Pugu forests, located about 30 km southwest of

Dar es Salaam, are an important biodiversity and water catchment areas.

As part of the process, WCST in collaboration with the government, village authorities, communities, and CARE Tanzania (Misitu Yetu Project) have facilitated various meetings, workshops, trainings, and study tours to various places for community to learn and appreciate the importance of joint forest management practice. The communities on various occasions have been exposed to legal instruments supportive of JFM processes including the National Forestry Policy (1998) and Forestry Act (2002). The Society closely involves community members in forest zonation, resources assessment and in the preparation of village forest resource maps. At present, the villagers around Pugu and Kazimzumbwi forests have in place a forest management plan, draft by-laws and a draft of JFM agreement which is awaiting approval at district level. Meanwhile, the government and community are participating in joint forest patrol so as to reduce the rate of forest destruction.

### PUGU AND MASANGANYA COMMUNITY CONSERVATION BANKS (COCOBA)

The Wildlife Conservation Society Tanzania (WCST) through funds provided by the National Committee of IUCN in the Netherland, has established a pilot project for small income generation projects within five villages bordering the Pugu and Masanganya forests. The objective of this project is to empower the local communities adjacent to these important coastal forests to manage the resources through operations that are non-destructive. The project aims at assisting the communities to manage income generation projects (IGAs) and promoting local financial services such as Community Conservation Banks (COCOBA). The COCOBA groups operate as savings and credit groups while receiving training on how to select appropriate IGAs, which are suitable to their local areas with guidance on technical, marketing and financial management. So far, the project has mobilized and recruited the formation of seven community groups with a total of 300 people and revolving loan of Tshs 12 million to provide seed money as capital to group members. The WCST has injected one time matching loan worth of 5.0 million to groups as capital support so that members can acquire start-up capital for IGAs. The groups are engaging in activities such as bee keeping, mushroom farming, soap making (out of neem extract), poultry projects, horticulture and improved stoves.

# TOURIST HUNTING IN TANZANIA

From pg. 9

Wildlife populations have declined in many areas of Tanzania, but this is attributed to increased settlement encroaching on wildlife areas and illegal offtake to bushmeat. There is no evidence that the regulated tourist hunting industry has contributed to the general decline of wildlife populations, but there is plenty of evidence that the presence of a regulated hunting industry contributes significantly to reducing the illegal activities of poachers and provides an economic incentive to protect and manage vast areas.

## Allocation of hunting concessions

The Wildlife Division leases hunting concessions on a five-year tenure to hunting outfitters (mostly private companies) that fulfil the requirements defined in a set of hunting regulations and guidelines, and who have been licensed to guide foreign clients on big game hunting safaris in the country during the hunting season.

Decisions on allocation of concessions are made by an Advisory Committee on Block Allocation appointed by the Minister of Natural Resources and Tourism. This committee screens applications by hunting outfitters and advises the Minister accordingly. The Wildlife Division allocates a quota for animals that can be hunted within each concession during the hunting season. The hunting quotas are annually modified on an adaptive approach using data from wildlife census, observations by Game Reserve managers, and hunting success of previous years. Outfitters must utilise the wildlife on the quota to generate revenue to not less than 40% of the value of the total quota allocated. Failing to do so, the outfitter is required to make a top-up payment to the Wildlife Division to meet the 40% minimum.

## Pricing of Wildlife

The fees charged and the number of days required for hunting various animals is based on the gazetted schedule of fees. The disadvantage of this gazetted schedule is that it is rigid and adjustments to the trophy fees need to be made with Ministerial approval and are thus difficult to achieve. To increase income, the easiest option to the Wildlife Division has therefore been to increase the quota settings for some concessions thereby forcing the shooting of more animals which in a long run is detrimental.

The numbers of many species that can be hunted is controlled by the quota allocations, and offtake is actually forced by the 40% utilisation requirement. Many species require a 21-day permit to be hunted (e.g. hippo, sable, roan, klipspringer), however the numbers of hunts that an outfitter can sell effectively depends on the number of lion, leopard and buffalo trophies available in his concession and on the quota. Outfitters are not able to bring clients at the costs of hunting in Tanzania to take a 21-day license to shoot an antelope which are widely spread, and thus these trophies therefore do not catch high market prices. In most cases

the other species are sufficiently abundant to be unaffected by the levels of tourist hunting offtake. Trophy fees for tourist hunting were gazetted in 1991 and have not been amended since. As a result, the trophy fees charged for some key species are significantly lower than that applicable elsewhere in the region.

Tanzania has been required through CITES restrictions to limit trophy hunting of elephant to not more than 50 animals per year. The Wildlife Division has achieved this by imposing a high minimum trophy size limit. While some increases to trophy fees are justified, large crosscutting increases must be looked into carefully. The Tanzanian hunting industry is already heavily dependent on trophy fees, and emphasis needs to be shifted towards daily fees and concession lease fees.

## Conduct of hunting

Finding clients and utilisation of quota is the responsibility of the outfitter that leases a concession. The outfitter secures hunting clients, and hosts them in a hunting camp constructed within the concession. The hunting regulations allow only temporary constructions for hunting camps, and the camp must be removed at the end of the hunting season. The hunting season extends from 1 July to 31 December each year. The hunting client brings his/her own hunting rifles, and needs a weapons import license issued by the Police.

During the hunt, the client must be guided and protected by a professional hunter, whose services are provided by the outfitter, and licensed by the Wildlife Division. He is typically the host of the client during the entire hunting safari. The Wildlife Division provides a game scout who supervises the hunt and provides protection to the client if necessary.

After hunting, the client must fill in the permit showing which animals have been hunted and/or wounded. This is validated by the game scout that accompanies the hunt, and presented to the game reserve manager/ local authority, who then issues a letter of clearance allowing the hunted trophies to be taken out of the hunting area. The completed hunting permit is issued to the hunting office that then bills the client for the animals hunted and a trophy-handling fee. On receipt of payment, a trophy export certificate is issued allowing the client to take his/her trophies home.

## Minimum trophy requirements

The following minimum trophy standards are prescribed:

- The minimum size of tusk of an elephant trophy must exceed 1.70 meters or 25 kg
- Leopard body length must equal or exceed 1.3 meters
- The Wildlife Division is currently developing a system to allow only trophies from lions that are at least six years old.



# TOURIST HUNTING IN TANZANIA

**Table 1: Fees payable by tourist hunters and outfitters in Tanzania**

Trophy fees	Descriptions	Cost
Permit fees	For a hunting safari up to seven days	USD 450
	For a hunting safari more than seven days	USD 600
Conservation fees	Daily fee per tourist hunter	USD 100
Observer fees	Daily fee per person accompanying a tourist hunter	USD 50
Trophy-handling fees	For a hunting safari up to seven days	USD 200
	For a hunting safari more than seven days	USD 300
Block fees	Annual fee per concession payable by the outfitter	USD 7,500
Professional hunters license (annual)	Professional hunters resident in Tanzania	USD 1,000
	Professional hunters non-resident in Tanzania	USD 2,000

## Costs of hunting

Fees presented in this document reflect the charges by the Wildlife Division which are billed to the hunting outfitter. The hunting outfitter will charge very much higher fees to the clients for the privilege of hunting. Typical daily fees billed to hunting clients coming to Tanzania range from USD 1,800 to USD 2,500 per day. The hunting outfitters will usually apply similar rules to the Wildlife Division, whereby minimum length safaris apply to hunt certain types of game, for example to hunt a lion a client must pay for a full 21 days even if he/she spends less days in a hunting camp. Some outfitters will also have a makeup on the game fees charged by the Wildlife Division. The outfitter will normally arrange an air charter for the client to fly directly into the hunting area.

Additional costs would include arranging the gun import license, export of trophies, etc. Total costs amounting to USD 80,000 to hunt a lion with some of the more exclusive outfitters is considered acceptable. The hunting outfitter provides no guarantee that the client will be provided with an opportunity to shoot a lion.

Currently there are 42 hunting outfitters leasing concessions in Tanzania. The hunting outfitter must market the hunting opportunities within his concession to attract clients. Normally this is done through based agents in the United States and Europe, and through setting up a stand at international hunting exhibitions, such as the Safari Club Annual Conventions.

**Table 2: Schedule of game fees, minimum days and rifle calibres for various game animals available on tourist hunting permits in Tanzania**

Animal	Price (USD)	Min days	Min rifle calibre	Animal	Price (USD)	Min days	Minimum rifle calibre
Baboon, Olive/Yellow	90	14		Monkey, Blue / Vervet	120	14	
Buffalo, 1st hunted	600	7	.375	Oribi	120	14	.240
Buffalo, 2nd hunted	720	7	.375	Oryx	870	21	.270
Buffalo, 3rd hunted	840	16	.375	Porcupine	70	21	
Bushbuck	340	14	.240	Puku	220		.270
Bushpig	190	14		Reedbuck, Bohor	290	14	.240
Caracal	70	21	.270	Roan Antelope	870	21	.270
Civet Cat	140	14		Sable Antelope	1,200	21	.270
Crocodile, Nile	840	14	Shotgun	Serval	180	21	.240
Dik Dik	170	14	.240	Sitatunga	900	21	.270
Duiker, Abbot's	300	21		Steinbok	150	14	.240
Duiker, Blue/Grey/Red	180	14	Suni	(Pygmy antelope)	130	14	.240
Eland	840	21	.270	Topi	350	7	.270
Elephant	5,000-10,000	21	.375	Warthog	320	7	.240
Gazelle, Grant's	220	7	.270	Waterbuck	440	14	.270
Gazelle, Thompson's	190	7	.240	Wild Cat	150	14	
Gerenuk	1,300	21	.270	Wildebeest	320	7	.270
Grysbok, Sharpe's	150	14	.240	Zebra	590	7	.270
Hartebees	370	7	.270				
Hippo	840	21	.270	<b>Birds</b>			
Honey Badger (Ratel)	70	21		Bustards	15	7	Shotgun
Hyaena	190	14		Duck / Goose	15	7	Shotgun
Impala	240	7	.270	Francolin / Spurfowl / Partridge	10	7	Shotgun
Jackal	120	14		Guineafowl	10	7	Shotgun
Klipspringer	720	21	.240	Ostrich	740	21	.270
Kudu, Greater	1,170	21	.270	Painted Snipe	10	7	Shotgun
Kudu, Lesser	1,300	21	.270	Pigeons & Doves	10	7	Shotgun
Leopard	2,000	21	.270	Quail	10	7	Shotgun
Lion	2,000	21	.375	Sandgrouse	10	7	Shotgun

## TOURIST HUNTING: HOW TANZANIA CAN BENEFIT FROM SADC BEST PRACTICES

By: Simon Milledge, TRAFFIC, East and Southern Africa

**USD 29.9 million in Tanzania, USD 28.4 million in South Africa, USD 23.9 million in Zimbabwe, USD 12.6 million in Botswana and USD 11.5 million in Namibia. And, it is a growing industry in most countries. Well-managed sport hunting can be one of the optimal land use options, especially in marginal habitats. This article serves to draw upon the experiences gained from an assessment of the sport hunting industry in five SADC countries (Botswana, Namibia, South Africa, Tanzania and Zimbabwe).**

Southern Africa currently offers some 420,000 km<sup>2</sup> of communal land and 188,000 km<sup>2</sup> of commercial land for sport hunting. Wildlife numbers outside of protected areas in Botswana, Namibia and Zimbabwe communal and private lands are increasing, due mainly to the value now placed on the lucrative sport hunting resource. In general, sport hunting is a high-return, low-impact wildlife use which can compliment a host of other activities, for example wildlife viewing safaris and trade in hides, horns and meat. It is also recognized as a valid wildlife management tool under certain circumstances, for example in addressing human-wildlife conflicts or enhancing species' population performance.

Further growth and development of the hunting industry depends upon optimal trophy quality, species diversity and professionalism of the services offered. However, the growth of the industry currently exceeds the capacity to manage it well throughout the region. Overall successes of the industry are marred by the continued existence of unsustainable management practices, especially in relation to quota setting and hunting concessions allocations. The lucrative nature of the

industry and potential for abuse and corruption still affects the industry and incentives are required to improve such management practices. Further, the demand for sport hunting in SADC currently outweighs the supply, and poor ethical practices have become an issue resulting from intense competition. It is also becoming increasingly important that the management structures (private, governmental or non-governmental) implement socially responsible policies.



### CITES trophy exports from Tanzania

Tanzania is one of the top five CITES trophy exporting nations in East and Southern Africa, the others include South Africa, Zimbabwe, Namibia and Botswana. Analysis of CITES annual reports submitted to UNEP-WCMC between 1998 and 2003 show that a net trade of almost 500 CITES-listed trophies were exported from Tanzania. Large cat trophies constituted 60% of all CITES trophies exported from Tanzania. Indeed, more large cat trophies (2946) were exported from Tanzania during this period than any country in East and Southern Africa. They included 1,310 lion trophies (42% of all lion trophies from the region) and 1,509 leopard trophies (36% of all leopard trophies from the region). Tanzania also accounted for 50% hippopotamus trophies (1,044) from the region, in addition to a significant proportion of elephant trophies.

This article draw upon the experience gained from an assessment of the sport hunting industry in five SADC countries (Botswana, Namibia, South Africa, Tanzania and Zimbabwe). The following are some of the key recommendations specific to Tanzania.

- Hunting block concession allocations should be based on a transparent and accountable open tender system. Block allocation and retention criteria should include economic as well as concession and community development indicators.
- Government should formalize a policy position with regard to the sub-leasing of hunting concessions. It is recommended that this practice be restricted where possible, to encourage greater tenure and ownership of the hunting block concession.
- The number of Safari Operators licensed in Tanzania should be kept to a manageable size, and not allowed to increase further by the subdivision of existing hunting blocks. Further subdivision of hunting blocks may damage the reputation of the tourist hunting blocks and result in unsustainable quotas being set in subdivided blocks.



## HOW TANZANIA CAN BENEFIT FROM SADC BEST PRACTICES

- The pricing structure with regards to hunting fees is based on a “pay as used” basis, rather than a “right to use” basis. This has resulted in companies not being motivated to fully utilize their entitled quota of animals, and has necessitated governments insistence on 40% of the quota block being paid for in advance. In turn, this may motivate a skewed utilization of quotas in favour of renowned and lucrative trophy species that may be bringing into question the sustainability of their quotas. It is recommended that hunting blocks be competitively marketed and concession fees charged according to the open market value of the blocks.
- The process of establishing Wildlife Management Areas and Authorized Associations should be supported and where possible expedited to enable rural communities to harness wildlife benefits through Tourist Hunting and consequently be motivated to manage and conserve a valued resource.
- A greater proportion of Tourist hunting revenue should be distributed directly to local communities through District Councils and Retention Schemes.
- The Wildlife Division should establish an effective monitoring system for the collection of biological, financial and hunt return data that through analysis should be used for the improved adaptive management of the Tourist Hunting Industry, especially with regards to quota setting.
- Quotas for sought after and renowned trophy species such as lion, leopard, sable and roan should be reviewed to re-assess their sustainability in light of high utilization rates.
- A thorough review of the Professional Hunters licensing system should be undertaken to ensure that ethical and professional standards of hunting are maintained within the industry. This review should consider the possibility of introducing trainee, learner and full professional hunter categories according to years of experience and knowledge. Examinations should also be restructured to ensure that all aspects of tourist hunting are adequately included.

## SOCIAL STATUS FOR A FEMALE SPOTTED HYENA.

*By: Marion L East and Heribert Hofer, Leibniz Institute for Zoo and Wildlife Research, Berlin, Germany.*

**Spotted hyenas do not win many prizes for their looks, but when it comes to the care of their young, no other predator in Africa is quite in the same league. Eighteen years of observing spotted hyenas in the Serengeti National Park have underlined how tough life can be for a hyena mother, even though mothers have only one or two cubs to rear in each litter.**

Spotted hyenas live in structured societies called clans, and in the Serengeti, clans may contain approximately 40–80 members. Each member of a clan holds a social position within the group, and every hyena knows its own social status in relation to that of other members of the group. It is true that you rarely see large numbers of hyenas gathered in one place, and this is because individual hyenas or small groups of animals go about their daily business independently and only meet up with other clan members when there is a good reason to do so. A clan is composed of several sub-units of closely related females, all of whom were born into the clan. Not surprisingly, the social bonds within family units are stronger than those between different families, and this partly explains why certain clan members have close social bonds, while others are decidedly less friendly to each other. Young males born into a clan normally remain associated with their mothers for about two years, and then start to look for a new

group into which they can immigrate. By the age of about 5 years, most males have dispersed from the group into which they were born.

Social status influences many aspects of the life of a spotted hyena. Generally animals with high social status prosper while those at the bottom of the hierarchy have to struggle far harder to survive and successfully rear their offspring. In short, there is a considerable degree of inequality between members of a clan, and this, of course, leads to a certain degree of conflict between groups members. Even so, clan members must find ways to resolve this friction so that they can cooperate in situations when it is necessary for clan members to work together to achieve a useful common goal. For example, female hyenas join together to attack female lions that venture too close to the clan communal den where their vulnerable offspring are hiding underground. A communal show of strength by twenty hyenas can be an impressive sight, and certainly is enough to intimidate one or two female lions. When male lions are present, hyenas are far more cautious. They may still attempt intimidation, but only from a safe distance. Thus despite social tensions, members of various family groups within a clan will cooperate when it is in their interests to do so.

*Cont.. pg 16*

## SOCIAL STATUS FOR A FEMALE SPOTTED HYENA.

*From pg. 15*

An unusual aspect of spotted hyena society is that all females socially dominate immigrant males in their group. This is true even for the female at the very bottom of the female social hierarchy. Young female spotted hyenas acquire a social status immediately below that of their mother, which of course means that if your mother is socially dominant, you will also be dominant, whereas if your mother lacks status, so will you. This does not imply that female hyenas genetically inherit their place in society, rather that the social support given by dominant mothers to their daughters ensures that their daughters win encounters with more subordinate group members, and therefore acquire a status similar to that held by their mother. Mothers that hold a lowly position in the female social hierarchy are unable to support their daughters against challenges by more dominant females, and thus their daughters learn at an early age to be submissive, just like their mothers. A high social status is a valuable asset to a female, as this provides immediate access to large carcasses in the group territory. In comparison, females with low social status are underprivileged because the more dominant females monopolize food resources. For this reason, subordinate females have to work far harder to feed themselves and their offspring.



*Female cubs of Hyenas*

The Serengeti hyenas' preferred food includes wildebeest, Thomson's gazelle and zebra. When a clan territory is flooded with these migratory species, the amount of food present is high (more than 219 animals/km<sup>2</sup>), and all clan members are 'at home' feeding on these herbivores. Spotted hyenas are

efficient predators, and chiefly run down their prey at speeds over considerable distances. As they are not fussy eaters, they will also clean up any dead herbivore they are fortunate enough to find. As a result of their excellent ability to detect dead animals over long distances, many members of a clan will quickly assemble when a herbivore is killed or dies from other causes. Irrespective of which member of a clan has gone to the trouble of killing, or which member located a dead carcass first, when the top females appear, other clan members will have to let them feed first. As immigrant males are at the bottom of the social pecking order, all these males have to wait until the females have eaten their fill, before they can feed. In short, dominant females eat before subordinate females, and all females feed before the immigrant males.

Migratory herbivores represent a large store of food, but when migratory herds move out of a hyena territory only a low density of resident herbivores remain. During such periods there is insufficient food to feed all hungry members of a clan. Competition for food escalates, and because the dominant females consume most of the food in the territory the subordinate females must travel 40-70 km from their territory before they reach the nearest migratory herds. Socially dominant females also occasionally leave their home territory to go on long-distance foraging trips but they need to do so far less often. Young hyenas receive milk from their mothers for 14-18 months, and because dominant mothers are at home more often, they nurse their young more frequently than subordinate mothers. This steady supply of milk allows cubs of dominant mothers to grow well and survive better than cubs of subordinate females. Furthermore, the level of stress suffered by mothers that have to walk more than 3,000 km per year to find sufficient food to allow them to produce enough milk for their cubs is far higher than that of mothers that can afford the luxury of staying at home.

By developing a foraging system that permits group members to feed on migratory herbivores throughout the year, the size of Serengeti hyena clans has been released from the normal constraint imposed on carnivore group size by the availability of prey within a group territory. As a result there are more spotted hyenas in the Serengeti than would be expected if all clan members had to survive on only resident herbivores. For this reason, the Serengeti holds one of the most important populations of spotted hyenas in Africa, and although the Serengeti ecosystem harbours several species of large carnivores, none are as numerous as the spotted hyena.



## COUNTER ARGUMENTS ON A RECENT PROPOSAL TO UPGRADE THE LION TO CITES APPENDIX I.

An Article Summarized by Editor from Tanzania Wildlife Discussion Paper No. 41

Many studies provide estimate figures on lion population. The figures provided are still the result of theoretical modelling, estimates and projections from smaller research sites. It is very difficult and almost impractical to count lions except with extensive research. In the case of lion's questionable figures, one such example was the false figure of 15,000 lions for the whole of Africa today or the presentation of a guess that 100,000 lions lived in Africa one hundred years or so ago. Bauer and Van der Merwe (2004) presented an inventory of available information for lion in Tanzania to an estimate of 7,073 (minimum 5,323 and maximum 8793). A study by Chardonnet (2002), gave an estimate of 14,432 lion, (minimum 10,409 and maximum 18,215).

There is a proposal to upgrade the lion to CITES appendix I, what are the basis for the proposal? Is the lion an endangered species?. To know more on the claim that lions need to be upgraded to CITES APPENDIX 1, the following interview was held with Prof. Dr. Craig Packer. He is a distinguished McKnight Professor from the University of Minnesota who has done 26 years of research on the lions of the Serengeti and is regarded as one of the world authorities on lions.

The interview was conducted by Dr. Rolf D. Baldus

**Q1. Dramatic lion figures are being published by the world media: According to some scientists there are only 15,000 lions left in the whole of Africa as compared to 100,000 in the past. Is the lion an endangered species?**

**Answer:** The earlier figure was never meant to be taken seriously as a population estimate it was just a rough guess of the order of magnitude of the overall population size. Instead of a million lions or ten-thousand, the authors said there were probably on the order of a hundred thousand. The recent numbers stem from the first systematic attempts to tally all the lions on the continent. This time each guess was scaled down to the size of a single reserve or park, and then the guesses were summed up to give a crude total. The two most widely cited total guesses, Bauer/Van der Merwe and Chardonnet, used different techniques, and the more inclusive estimate came up with a larger number. So it is simply wrong to claim that these surveys show a "dramatic decline" in lion numbers – we'll never know what happened to lion numbers over the past 20 years. On the other hand, I do think that there are probably fewer than 100,000 lions left in the wild – which is less than the number of chimpanzees or elephants – so it is important to take active steps to conserve the species while we still can.

**Q2. What are the main causes for declines of lions where they occur?**

**Answer:** Lions are dangerous animals that kill people and livestock. Rural Africans face real threats from lions, and they retaliate to livestock losses or personal injury by trying to remove the "problem animal." The number of lions killed by vengeful humans each year is far greater than from any other cause.

**Q3. If International Trade or trophy hunting are not threatening the lion, then the Kenyan uplisting proposal at CITES has no basis?**

**Answer:** The Kenyan listing is irresponsible. It recognizes the inadequacies of the recent censuses, yet it immediately turns around and cites them as if they were perfectly accurate. Even worse, the Kenyans claim that lions are being decimated by FIV (feline immunodeficiency virus) and distemper. Our Serengeti studies are by far the most exhaustive investigations on lion health, and we cannot find any evidence that FIV causes significant health effects. While Canine Distemper Virus did cause a 35% decline in the Serengeti lions in 1994, the population recovered completely within 5 years – and is currently at its all time high. By far the most important threat to lions comes from problem animal control, and by putting lions on Appendix 1, the Kenyans would do much more harm than good. Tanzania has more lions than any other country in the world, and the majority of these animals live outside the national parks. If lion trophy hunting were stopped, they would have no economic value, and there would no longer be any incentive to conserve the lions. Opponents of trophy hunting have provided no alternative mechanism for funding the large-scale conservation efforts required to protect the species.



## COUNTER ARGUMENTS ON A RECENT PROPOSAL TO UPGRADE THE LION TO CITES APPENDIX I.

**Q4. Kenya has had no hunting of lions since 27 years and the lion population has been greatly reduced. Tanzania has lion hunting and at the same time the biggest population on the continent. What is the role of well managed hunting of lions for conservation?**

**Answer:** I think that the situation in Kenya illustrates that lions would be viewed only as threats to people and livestock in the absence of trophy hunting. Lions in Amboseli National Park were exterminated by angry Maasai in the early 1990s, and three-fourths of the lions in Nairobi Park were speared in the past year. Lions inflict serious damage to these people's livelihoods, so why should they be tolerated outside the parks? The Tanzanian hunting industry certainly has the potential to play an important role in lion conservation, but there is significant room for improvement. Hunting companies need to engage local communities directly and help them to co-exist with lions.

**Q5. How can lion hunting be improved?**

**Answer:** Lion trophy hunting must be recognized as the primary mechanism for protecting viable lion populations outside the national parks. First and foremost, hunters must work to discover the circumstances where people and livestock are attacked by

lions. Conservation of such a dangerous animal rests with the tolerance of local people, and practical projects improving animal husbandry and personal safety should be implemented in cooperation with the local and regional governments. Second, it is essential to restrict lion hunting to males that are at least 6 years of age – old enough to have raised their first set of offspring. By enforcing an age minimum, the wildlife authorities will make giant strides in forcing hunting companies to prevent over-exploitation. Finally, the business of trophy hunting needs to be based on providing its clients with an unforgettable adventure – rather than selling them dead animals. African hunting companies must become associated with wildlife conservation in the same way that Ducks Unlimited is associated with wetlands conservation – rather than being associated with dead ducks. Lion conservation is going to be very expensive, and hunting companies will have to raise more and more income from diversified activities – there is no way to stake their fortune on shooting more and more animals. In addition, the industry needs to attract more long-term investors. By increasing the stability of the hunting blocks (through extended contracts and restrictions on who can actually hunt in those blocks), hunters will increasingly regard the young lions on their properties as their crop of the future rather than something that should be hastily plucked before it is ripe.

### JE SUMU ZINAZOTUMIKA KUULIA NDEGE KATIKA BONDE LA USANGU ZINA MADHARA KWA BINADAMU?

*Na: A. Chisanyo, Usangu Game Reserve, Mbarali Mbeya.*

**Rasilimali zilizopo katika Bonde la Usangu ziko katika hatari ya kuangamizwa na matumizi mabaya ya madawa ya kilimo na sumu ambazo hutumiwa na binadamu kuua ndege kwa lengo la kujipatia kitoweo na fedha. Makala hii inaelezea matumizi mabaya ya sumu katika kuua ndege kwenye ardhioevu ya Bonde la Usangu.**

Eneo la bonde la Usangu lililopo wilaya ya Mbarali ni kati ya maeneo yenye utajiri mkubwa wa maliasili. Nyingi ya maliasili hizo zinapatikana katika ardhioevu "wetland" iitwayo "Ihefu" ambayo sehemu kubwa (80 km<sup>2</sup>) ipo ndani ya Pori la Akiba la Usangu. "Ihefu" ni jina la Wasangu likiwa na maana ya uoto ulio juu ya maji. Baadhi ya rasilimali zilizopo Ihefu ni pamoja na wanyama wa majini kama viboko, mamba, vyura, kobe, samaki n.k. Bonde hilo lina ndege wa aina mbalimbali akiwemo Kuzi kijivu (Ashy Starling) ambaye ni adimu duniani na hupatikana Tanzania pekee. Ndege wanaopatikana kwa wingi katika eneo hili ni jamii ya bata, mwara (pelicans) na kweleakwelea. Eneo hili ni makazi ya ndege wanaohamama kutokana na mabadiliko ya majira toka nyanda za Kaskazini kwenda Kusini.

Bonde la Usangu lina mashamba makubwa ya kilimo cha umwagiliaji mpunga yaliyopo Madibira, Mbarali

na Kapunga. Matumizi ya madawa ya kilimo ambayo ni sumu yalianza siku nyingi. Madawa mengi yanayotumika katika mashamba ya mpunga kama Thiodan, Furan na 2-4 D yana madhara mengi kwa mazingira na binadamu kama yakitumiwa vibaya.

Hatari nyingine kubwa inayowakabili wananchi wa Usangu zaidi ya madawa katika kilimo cha mpunga ni matumizi ya madawa katika kutega ndege. Utegaji ndege kwa sumu unafanyika zaidi katika miezi ya Septemba na Oktoba. Hii inatokana na eneo kubwa la ardhioevu kukauka na hivyo kuacha madimbwi ya maji kwenye maeneo machache. Maeneo haya yenye madimbwi huwa kimbilio la ndege na hivyo kuwa na ndege wengi kwa pamoja. Kuwepo kwa ndege wengi kunafanya wategaji haramu wapige kambi zao kipindi hicho. Wategaji hawa haramu wa ndege wanakaa katika kambi kama wanavyokaa wavuvi na kutega ndege kwa kutumia sumu za aina mbalimbali. Maeneo



## JE SUMU ZINAZOTUMIKA KUULIA NDEGE KATIKA BONDE LA USANGU ZINA MADHARA KWA BINADAMU?

ambayo wategaji hupendelea kuweka kambi na kufanya shughuli hii haramu ni maeneo yaliyo na majimaji na uoto asilia wa matete. Lakini kutokana na eneo la Ihefu kuvamiwa na mifugo mingi, uoto huu umeanza kutoweka kwa kipindi cha kiangazi.

Soko kubwa la ndege hawa wanaowindwa kwa njia hii haramu lipo katika mikoa ya Iringa na Mbeya hasa wilaya za Njombe, Makete na Mbarali. Miji maarufu kwa ulaji wa ndege hawa waliouawa kwa sumu ni Makambako, Ilembula, Chimala, Rujewa, na Njombe.



*Korongu domo ganzi (Saddle\_Billed Stork) ni moja kati ya ndege wanaotegwa kwa sumu pembeni ni matenga yanayotumika kubebea ndege waliouawa.*

Kufuatana na taarifa mbalimbali za watu ambao wanachukia uharibifu huu, shughuli za utegaji ndege ziko katika utaratibu ufuatao:-

- Mtegaji wa ndege hutafuta sehemu nzuri yenye majimaji ambayo ina ndege wengi hususan bata, sehemu hiyo huwa na uoto wa matete.
- Baadhi ya matete hayo hukatwa katika sehemu za pingiri katika kimo cha ndege aina ya bata.
- Punje za nafaka kama vile mpunga huchanganywa na sumu na kuwekwa sehemu ya juu ya pingiri ili kutoruhusu kuzama punje hizo ndani ya tete hilo.
- Mtega ndege huondoka eneo lililotegea na kwenda kukaa umbali wa kati ya mita 60 – 100 ili kutoa nafasi kwa ndege kuja kunywa maji na kula nafaka yenye sumu.
- Baada ya ndege kula punje zenye sumu huanza kupigapiga mabawa na mwindaji huenda mbio sana ili kuwahi kumchinja na kutoa utumbo. Utumbo hutolewa haraka ili kupunguza kiasi cha sumu kabla ya kuenea katika nyama yote. Kutolewa utumbo kunawafanya wanunuzi (wananchi) waamini kuwa nyama hiyo ni

salama. Fikira hizo zaweza kuwa siyo sahihi kwa vile ndege hushindwa kuruka ikionyesha kuwa sumu imeshaenea maeneo mengi ya mwili.

Je, kuna madhara gani yatokanayo na nyama ya ndege waliouawa kwa sumu? Madhara ni mengi, na siyo tu kwa binadamu bali hata kwa viumbe wengine waliopo maeneo ambayo sumu hutumika. Kwa mfano, utumbo unaotolewa ndani ya ndege waliouawa kwa sumu na kutupwa ovyo unaweza kusababisha vifo kwa wanyama walao nyama wakiwemo ndege.

Sayansi inaonyesha kuwa madawa ya kilimo hubadilisha vichocheo vya uzazi “sexual hormones” za ndege wanaokula nafaka zinazotoka katika mashamba yanayotumia madawa yenye sumu. Kufuatana na utafiti wa Dr. Witt (1995), ndege waliokula nafaka kutoka katika mashamba ambayo yalitumia dawa za kuulia magugu walitaga mayai ambayo hayakuwa na gamba (kaka) gumu la yai.

Ingawa watafiti hawajaonyesha madhara ya moja kwa moja wanakisia kuwa madhara yasiyo ya moja kwa moja “indirect effects” yatokanayo na matumizi ya madawa ya kilimo yanaweza kuwa na madhara makubwa kuliko yale ya moja kwa moja “direct effects.”

Matokeo ya tafiti hizi yanatoa mwanga na tahadhari kwetu ya kuamini kuwa inawezekana nyama ya ndege wanaouawa kwa sumu ikawa na madhara yasiyo ya moja kwa moja “indirect effects” kwa binadamu. Na inawezeka, madhara haya yakaonekana wazi katika kizazi cha kesho.

Kutokana na hofu hii tunalazimika kuwashauri walaji waache kabisa kutumia nyama ya ndege hawa waliouawa kwa sumu. Lakini pia natoa wito kwa vyombo na ngazi mbalimbali zinazohusika na usimamizi wa rasilimali za bonde la Usangu kulitazama jambo hili kwa uzito wake. Vile vile sekta ya Afya, Ustawi wa Jamii, Wanyama pori na idara nyingine zisaidie kutoa elimu kwa wananchi kwani inaonekana wazi kuwa watu wengi wanaotumia nyama ya ndege waliouawa kwa sumu, wanaamini kwamba ni utumbo pekee ulio na sumu. Wananchi wanastahili kuelezwa ukweli ili kuepusha upotoshaji wa ukweli unaofanywa na wawindaji haramu. Pia wataalamu waeleze wananchi namna ya kutambua nyama ya ndege aliyeuawa kwa sumu.

Namalizia makala hii kwa kuwatolea wito wananchi wote kushirikiana kupiga vita wahalifu wanaocheza na afya za binadamu. Wananchi watoe taarifa za wahusika katika serikali zao za vijiji au kwa vyombo vya usalama mahali yalipo makambi ya watu hawa ili wachukuliwe hatua za kisheria.

## SOCIETY NEWS

### CODING THE TANZANIAN FOREST RESERVES INTO IUCN PROTECTED AREAS CATEGORIES

The Eastern Arc Mountains of Tanzania and Kenya constitute an area of global importance for biodiversity conservation. It is recognized as one of the world's biodiversity hotspot. At the same time, this is an area of extremely importance for water catchment as many rivers in Tanzanian are found in these old mountains range. It is thus the source of water supply to all larger towns in eastern Tanzania (benefiting millions of people), and it supplies water to most of the country's hydropower plants that provide around 50% total power to the nation. Ironically, the level of international support to Tanzania's Protected Areas system has been benefiting more the wildlife protected areas due to their being recognized as part of the World Protected Areas System under the IUCN categories. However, not withstanding this generality, there are some exceptional cases whereby the biodiversity uniqueness of some of the Catchment Forest Reserves makes them strong candidates in attracting international support for biodiversity conservation. Such is the case for the Eastern Arc Mountains Forest Reserves which are an important biodiversity hotspot area in Tanzania.

In an effort to maximise opportunities, the Government of Tanzania in collaboration with some key development partners, have developed what is known as the Eastern Arc Strategy which is a component of the

Project 'Conservation and Management of the Eastern Arc Forests' (GEF/UNDP: URT/01/G32). This is being implemented as a Project of the Forest and Beekeeping Division of the Ministry of Natural Resources and Tourism and it is funded by the Global Environment Facility (GEF) through the United Nations Development Programme. The Eastern Arc strategy component is striving in strengthening the management of the Eastern Arc Forest Reserves through assign them international status by proposing to be listed in the IUCN Categories of Protected Areas. To this effect, a process has been initiated and steps taken to prepare a national proposal to UNEP for the housing of Tanzania Forest Reserves information in the World Database on Protected Areas (WDPA) under the IUCN Protected Areas Categories. The process is expected to be completed by mid 2006. Once this is done, the Forest Reserves will attain the same status as the wildlife protected areas and therefore gain equal chance in competing for International Support.

The Wildlife Conservation Society of Tanzania has been entrusted by the Forest and Beekeeping Division of the Ministry of Natural Resources and Tourism to facilitate the process of coding the Tanzania Forest Reserves under IUCN Protected Areas Categories.

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