

Experiences with and the Challenges of Wildlife Health Management in the National Parks of Tanzania¹

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Introduction

Tanzania occupies approximately 945,200km² of the eastern African region. Its protected area network covers about 28% of the total land area. Of this, 12 national parks (NPs) represent 4%, the Ngorongoro Conservation Area represents 1%, 15% comprises 31 game reserves (GRs), and 8% comprises 38 game-controlled areas. This means at least 19% of the land (NPs and GRs) is managed primarily for wildlife protection where no human settlement is allowed, and 9% of the land is intended to enable wildlife to coexist with people. Forestry reserves also add substantially to the areas for wildlife protection.

Conflicts between people and wildlife have increased around protected areas because of increasing human populations and their activities, including settlements, agriculture, livestock husbandry, deforestation, charcoal burning, tourism, and research. These conflicts include blockage of migratory and dispersal areas, loss of habitat for wildlife, raiding of crops and attacks on livestock by wildlife, competition for resources such as watering points and grazing areas, illegal/unsustainable harvesting (poaching), and disease transmission. Tanzania has not been spared from these trends. Disease transmission from livestock to wildlife has become a more serious problem due to increasingly constrained ecosystems, which can result in stressed and immunocompromised wildlife. Emerging diseases have already affected large tracts of protected areas with little regard for international boundaries.

For the last seven years, Tanzania National Parks (TANAPA) has been developing a wildlife veterinary unit to address these numerous and emerging wildlife health challenges in the country. However, the ability of the unit to address these disease issues is low because of the expanse of the area; the diversity of species; the small number of veterinary staff; inadequate skills, funding, and equipment; and low awareness among decisionmakers of the impact of disease on wildlife systems. This paper highlights the key wildlife health challenges encountered in and around TANAPA over the last seven years.

Human/wildlife conflict

Conflicts between people and wildlife, often related to competition for land, are increasing because of the growing human populations around NPs such that major migratory routes and dispersal areas are being constrained. One major migratory route is Selela in northern Tanzania. This route connects Tarangire and Lake Manyara NPs with the Lake Natron open areas, which are essential for breeding and wet-season dispersal of wildebeest and zebra. The route's blockage has resulted in the loss of some species in Lake Manyara NP, including the gerenuk, Thomson's and Grant's gazelles, and eland. Another critical corridor, which is important for elephants in terms of their seasonal needs, connects Lake Manyara NP with the Ngorongoro Highlands. Arusha NP is now an island after being disconnected from Amboseli and Kilimanjaro NPs, and this has been detrimental to the health and existence of some wild animal species, including lions, eland, and buffalo.

Major activities conducted by people encroaching on protected areas are agriculture and charcoal burning. Chemicals applied to the crops and livestock are finding their way into park waters and are affecting wildlife. A notable example of the hazard of chemical contamination is the die-off of flamingos in the Embakaai Crater in the Ngorongoro Conservation Area due to endosulfan, an organophosphate (NCAA 2002).

Competition for grazing areas and watering points, especially during the dry season, is becoming critical in the western Serengeti, where wildlife is now denied access to Lake Victoria. However, livestock keepers have been forced to avoid some areas for fear of diseases from wild animals.

Attacks by dangerous animals on people and livestock, as well as wildlife raiding of crops, are also problems. Unfortunately, there is no compensation policy for affected individuals. Outreach programs organized by wildlife authorities are intended to smooth such conflicts and to share some of the benefits from tourism activities. Until the economic status of the local communities is improved, poverty levels will continue to fuel conflict between wildlife and people.

¹See abstract on p.xxiii.

Loss of species

Although loss of species is a worldwide phenomenon, the situation in some Tanzanian parks is alarming. The national black rhino herd is estimated not to exceed 100 animals. Other species such as wild dogs disappeared in even some of the larger ecosystems, such as Serengeti, although recent reports of recolonising wild-dog packs are encouraging. Over the past 20 years, Lake Manyara NP has experienced the loss of several species: black rhino, gerenuk, eland, Thomson's gazelle, Grant's gazelle, and wild dogs (Marietha Kibasa, personal communication).

Transmissible diseases

Since the establishment of the TANAPA veterinary unit, disease outbreaks in wildlife populations in various parks have caused major threats to wildlife, livestock, and people. Diseases of unknown etiology and epidemiology have posed big challenges to the already constrained wildlife veterinary unit. Even other established veterinary institutions are poorly equipped in terms of diagnostic equipment, operational funds, and skills to investigate wildlife diseases.

Sexually transmitted disease in baboons in Lake Manyara and Gombe NPs

The causative agent of this disease is still unknown, but seems to be associated with humid or damp conditions, because these diseases are not seen in the troops living away from abundant water sources or wet grounds. Proper diagnosis and a management plan for disease mitigation are needed, and the long-term dynamics need to be better understood. Currently there are limited veterinary resources available to address the problem, which is manifested by grossly visible lesions of the genitalia.

Ear disease in giraffes in Mikumi NP and Selous GR

The disease was first observed in 1999 in two giraffes but now has spread to affect giraffes throughout Mikumi NP and is spreading further south into Selous GR, the largest wildlife area in Africa. In the most severely affected areas, the prevalence of the disease is estimated at 80% of the total population, with about 10% of cases observed with the severe form of this still idiopathic, suppurative, necrotizing otitis externa that seems to progress to a fatal cellulitis. This indeed is a challenge to both veterinary and other conservation professionals. A workshop organized in Mikumi NP in September 2002 to discuss the problem resulted in a research agenda. This document (TANAPA 2003) identifies a number of prioritized research topics related to the problem. Researchers and funds are invited to assist.

Giraffe skin disease in Ruaha NP

This skin disease affects only giraffe and is characterized by hair loss, followed by raising of the affected area, and later wrinkling, cracking, and encrustation. The lesions typically localize on the flexor side of the carpal joints and occasionally on the medial side of the scapula area. The disease was first seen in one area of the Park in 2000 and is now spreading to other areas of the Park. Preliminary investigation showed involvement of *Dermatophilus* species, but this could not be confirmed. The mode of spread and epidemiology need to be studied.

Unexplained deaths of sitatunga and bushbuck in Rubondo Islands NP

This problem has been recurring seasonally. Formerly, deaths were seen during the dry months, between September and October, but recently deaths have also been seen during the wettest months, between February and April. Infectious diseases such as anthrax have been ruled out. Some animals die in good body condition. Skin lesions and liver cirrhosis have been identified as pathologic changes in most cases. A long-term study is needed to establish the cause, epidemiology, and impact on the population dynamics of ungulates on this predator-free island.

Chimpanzee health problems in Gombe NP

Tanzania hosts the largest population of wild chimpanzee in the world in its Mahale Mountains, Rubondo Islands, and Gombe NPs. Jane Goodall is the lead scientist in Gombe NP, where the chimp population has been studied the longest. Survival of this population, however, is now highly threatened partly due to recurring disease outbreaks. Various diseases have been reported (Table 1) and measures instituted to control the situation, including stringent regulations for tourists. Despite those efforts, the diseases are still occurring.

Table 1. Chimpanzee deaths caused by diseases in Gombe NP (total chimp population is currently 97).

Period	Number of outbreaks	Number of deaths	Health problems documented
1960–1970	3	12	1 polio, 2 pneumonia related; remainder unknown
1971–1980	4	3	pneumonia related
1981–1990	1	10 or 11	pneumonia related
1991–2002	4	16	1 scabies, 4 pneumonia related; remainder unknown

Source: Anne Pusey

A systematic plan to monitor and manage the health of these chimpanzees is critical for their long-term survival.

Salmonellosis in elephants in Tarangire NP

This outbreak occurred in 1997 after an extensive drought that forced elephants to scavenge in staff and hotel garbage pits, which are presumed to be a possible source of infection. The disease problem has resolved since the implementation of proper waste management in the park.

Rabies and canine distemper in and around Serengeti NP

These diseases occur in most parts of the country and have had disastrous effects in Serengeti wildlife, domestic animals, and people (in the case of rabies). Surveillance of the diseases in the park and neighbouring communities and annual immunisation of more than 35,000 domestic dogs, although effective in reducing disease incidence around the park, are both labour intensive and financially demanding.

Rinderpest

Rinderpest was last reported in Tanzania in 1997 when it was diagnosed in cattle in some villages bordering Ngorongoro Crater and Lake Manyara NP. The Ministry of Agriculture, with financial and technical support from African Union/Interafrican Bureau for Animal Resources (AU/IBAR) launched a major campaign to stop the threat. TANAPA supported this major campaign by funding vaccination of cattle in five districts surrounding the Serengeti, Tarangire, and Lake Manyara NPs, and in the Ngorongoro Conservation Area. The campaign aimed at protecting the huge, susceptible ungulate populations in these famous protected areas. The country has now stopped vaccination and no longer follows the Office International des Épizooties pathway but conducts wildlife surveillance for the disease.

Foot and mouth disease

Foot and mouth disease (FMD) is endemic in most sub-Saharan countries and is an obstacle to international trade. The last outbreak was reported in wildebeest in the Serengeti in 1997. FMD is suspected to have originated from domestic stock around the park, where cases had previously been reported. The multiplicity of strains makes control elusive, especially where movement control of livestock is also a challenge. A component of the African Union/Pan African Control of Epizootics (AU/PACE) programme addresses this issue, but the role of wildlife must be closely examined. FMD greatly affects the livestock industry and the well-being of the local community. Control of FMD will have a great impact on poverty levels in the indigenous economy. A transboundary approach may have to be considered.

Sleeping sickness in and around northern NPs

Some foci of sleeping sickness have long been known in some northern Tanzania NPs, but government efforts since colonial times have kept the disease under control. Between 2000 and 2001, probably due to ecological changes wrought by rains induced by El Niño, there was an upsurge of the disease in the northern zone. The government promptly instituted control methods, including establishment of de-flying centres at NP entry gates and deployment of insecticide-impregnated targets in intensively visited park sites. Park authorities have learned of no new cases since 2002. Wild animals are known to harbour sleeping sickness parasites, which are of major public health significance. In Tanzania, about 4 million people are considered at high risk, but control of the disease in extensive protected areas is very costly.

Low capacity

Only four Tanzanian veterinarians and three technicians currently work permanently in the Tanzanian wildlife sector. With about 250,000km² protected for wildlife, this is clearly grossly inadequate. A single small field laboratory is the only diagnostic facility able to perform blood smear and fecal examination in addition to processing and storing samples. Therefore, most of the specimens collected must be sent to other specialised institutions, often outside the country. This is both costly and inefficient. In general, the wildlife veterinary profession in Tanzania is limited not only by the number of professionals, but also by lack of training, low funding, and scant equipment. The lack of a local laboratory specialising in wildlife diseases further contributes to the difficulty of addressing wildlife health problems in Tanzania.

TANAPA intends to expand veterinary services to other parks by developing veterinary units on a zonal basis, each covering three to four NPs. Unfortunately, due to limited funding and inadequate staff, this goal has been difficult to achieve. It is proposed that each unit should have at least one experienced veterinarian and at least two technicians and/or additional volunteer veterinarians to meet the needs of each zone. Each unit would require proper transportation, such as a 4-wheel-drive vehicle, and laboratory facilities including microscopes, incubators, an autoclave, freezers, reagents, pipettes, and other equipment to perform basic diagnostics for wildlife diseases.

Because many of the emerging diseases around the world affect large ecosystems and cross country boundaries, including those of Tanzania, there is a need to strengthen local capacity to detect and identify disease threats, to launch efficient reporting mechanisms, and to develop concerted efforts to manage and mitigate their effects. There is also a need to work with neighbouring countries on these problems.

Conclusions

In view of the large size of Tanzania and the abundance and diversity of its wildlife species, there is invariably a wide range of issues and problems related to wildlife. One of these, wildlife health management, is enormous. Disease transmission has important implications not only for wildlife management, but also for public health, livestock development, and rural livelihoods. The apparently sexually transmitted baboon disease, seasonal deaths of sitatunga and bushbuck, and the giraffe ear and skin diseases are issues that have not been properly investigated and deserve to be priorities for resources. Unfortunately, the present resources and infrastructure are insufficient to effectively address these challenges.

The lack of ability to manage these disease problems may also increase the risk to neighbouring countries. Small teams lacking equipment, skills, and funds cannot cope with such a range of wildlife health issues. Concerted material, moral, and political support are therefore urgently needed from all partners to establish a stronger wildlife health programme in Tanzania. The wildlife we cherish today is our foremost natural heritage and threats to its survival are of grave concern to many people. It is important that decisions are made

and effective policies developed to address the situation for the benefit of the region and the world at large.

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