

Co-existence between the traditional societies and wildlife in western Serengeti, Tanzania: its relevancy in contemporary wildlife conservation efforts

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Abstract This paper seeks to show how the traditional societies in western Serengeti have coexisted and continue to coexist with wildlife. It also recognizes the relevancy of this coexistence in furthering contemporary conservation efforts although there are practical constraints to putting this into practice. The following questions are examined: (1) How did/do traditional societies in Serengeti interact with their nature? (2) Which traditional management institutions governed/govern interaction between people and wildlife species, resources and ecosystems and, how do they operate? (3) Which factors were (or are) responsible for erosion of traditional management institutions? (4) What can the traditional practices offer to contemporary conservation efforts and what are the limitations? The paper identifies four ways in which traditional institutions and practices can contribute to current conservation efforts: regulating the overexploitation of resources; complementing the current incentives aiming at diffusing prevailing conflicts between conservation authorities and communities; minimising the costs of law enforcement and; complementing the modern scientific knowledge in monitoring and responding to ecosystem processes and functions. The practical constraints likely to limit adoption of these practices are presented as: methodological complications of acquiring indigenous knowledge; prevailing historical conflicts; human population growth; poverty and lack of appreciation among the conservation planners and managers. In conclusion the need to address the current constraints in order to achieve effective tapping of the existing potentials is emphasized.

Keywords Western Serengeti · Tanzania · Traditional societies · Ethnic groups · Wildlife conservation · Totemic or sacred species · Taboos · Indigenous knowledge · Sustainable utilisation

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Introduction

The question of whether the traditional societies conserve and manage resources sustainably is often contested. The proponents attribute conservation among these traditional societies to the existing structures in the form of beliefs, ceremonies, customs and taboos (Akama 1998; Colding and Folke 2001; Murombedzi 2003). Colding and Folke (2001, p. 584) describe social taboos as the “invisible systems of local resource management and biological conservation.” They feel that these institutions, however, receive minimal recognition despite their central role in guiding human conduct toward the natural environment. Murombedzi (2003) recognises the presence of effective traditional conservation practices in Southern Africa during the pre-colonial times and efforts to set aside some areas for conservation purposes. However, much of these practices have been obliterated by colonial conservation practices. The areas gazetted for conservation included Kalahari and Moremi Game Reserves (Botswana), Mavhuradonha, Matopos and Gonarezhou National Parks (Zimbabwe), Mamili National Park (Namibia) and Hluhluwe and Umfolozi National Parks (South Africa).

Similar traditional practices and their conservation values are also evident in Tanzania. Mwihomeke et al. (1998) identified about 920 units of traditionally protected forests that ranged from 0.125 to 200 ha in size in the Northern Pare Mountains (Ugweno and Usangi) and in 23 villages of Handeni District. These sacred units are critical biodiversity sites and the only sites supporting several indigenous tropical tree species. Mgumia and Oba (2003) also demonstrate the biodiversity conservation potential of sacred groves and ritual sites maintained by wanyamwezi people in the Miombo woodland of Central Tanzania. TANAPA (undated) acknowledges that most of the Udzungwa Mountains is still a vast pristine area where man has not disturbed the earth and its natural communities due to taboos and cultural beliefs of the tribes that lived in the park before its gazettement.

There is ample evidence supporting the positive role of mythical values in enhancing conservation of biodiversity in Africa (Mwihomeke et al. 1998; Saj et al. 2006; Lean 2006; WWF 2006). However, examples also abound showing that not all of them are beneficial to conservation. Some may actually lead to extinction of species. Becker and Ghimire (2003) cite example from Guatemala where mythical values have promoted the survival of Resplendent Quetzal (*Pharomachrus mocinno*) while in Madagascar Aye aye (*Daubentonia madagascarensis*) has been driven to the verge of extinction because local people believe that they are evil creatures. Examples like these abound in African cultures. In Tanzania, for instance, many tribes associate spotted eagle owl (*Bubo africanus*) with superstition. This makes the species vulnerable since incentive to conserve it and maintain its habitats among the people is minimal. Ritual killing pursued by young Maasai (*Morans*) for the purpose of proving their manhood (*Olamayio*) may be detrimental to this species where the population is low.

However, it is worth noting that even those mythical values encouraging sustainable behaviours and practises that promote survival of species, may not necessarily be consensual conservation practices. Berkes et al. (2000, p. 1254) put it correctly that “Biodiversity conservation is not necessarily the objective of the practice but a consequence of it.” To qualify as conservation-oriented interventions they have to develop in ecological situations in which the long-term benefits outweigh the short-term benefits. Alvard (1998, p. 64) argues that “in order to identify conservation, it is necessary to demonstrate intent on the part of the actor or design via natural selection.” Therefore, designating sacred groves and forests or sustainable harvest and dietary prohibitions (food taboos) cannot serve as evidence of conservation without prior intent to do so. Cunha and Almeida (2000) elaborate this by

presenting environmentalism both as a set of practices and an ideology. From this presentation, three scenarios are derived: first, the presence of ideology without practices—a case of lip service to conservation. Second, the situation in which both sustainable practices and cosmology are present. In this case, which the authors refer to as ‘cultural conservation’, values, taboos on food and hunting, and institutional or supernatural sanctions provide the instruments for them to act according to this ideology. A third scenario involves presence of cultural practices without ideology—in which people adhere to cultural rules governing the use of natural resources sustainably despite lack of explicit conservation-oriented ideology (refer example on religion case below).

In religions modern to Africa, some species are prohibited. For example, bush pigs (*Potamochoerus* spp.) and warthogs (*Phacochoerus aethiopicus*) are prohibited for Moslems and believers of Seventh Day Adventist church. This may reduce hunting pressure on this species. However, the practise may not be regarded as conservation action. Even the believers themselves do not ascribe this prohibition to conservation. Nor do they avoid it for anticipating some future benefits from the species. They may, therefore, show less concern in case anybody or natural catastrophes destroy these species. They consider them to be unclean, so, presumably, there would be no reason for them to wish to mourn their demise. Literature shows further that, a taboo species may still suffer from human impact, as they are not necessarily maintained because of their conservation effects. Individuals frequently invoke “exception rules” to allow themselves to eat an otherwise a taboo species. For example, in Cameroon some 29 species were found to be entirely or partially prohibited, to avoid loss of the child by pregnant women or disease or deformation of the newborn. However, these applied to few consumers only and, therefore, people could hunt and sell a taboo species to persons unaffected by it (Roe et al. 2000). That is because taboos and religion really have goals, other than conservation.

Another example is provided by sacred groves and forests. These play a critical role in biodiversity conservation. However, most of them are designated not purposely for conservation, but rather for cultural and religious reasons such as burial sites and holy places for ceremonies and initiation rites (Mwihomeke et al. 1998; Saj et al. 2006; Lean 2006; WWF 2006).

Whether the traditional practices and mythical values are conservation-oriented or not, the importance of knowing them, notably the different ways in which they affect biodiversity should not be overlooked. This should be the case because what matters is the success of whatever system is used. The current conservation efforts might be flawed due to negligence of these values in planning. This negligence is historical following weakening and termination of interaction between local people and their environment by colonial regimes. Conventional conservationists conceptualised local people as environmental threats, rather than partners in conservation. The consequence of this has been a rift that has long disallowed opportunity to tape and use the traditional knowledge to further conservation efforts. As this knowledge is currently gaining prominence as one of the potential tools for achieving conservation goals and enhancing co-management approaches (Berkes 2003; Moller et al. 2004), it is imperative to understand how local communities interact (or interacted in the past) with; and what they know about their environment; how can conservationists tape this knowledge and what are the likely limitations. This information is useful for conservation planning and an entry point in achieving complementarity between traditional practices and current management strategies.

This paper seeks to show how the traditional societies in western Serengeti have coexisted with their natural environment. The following questions are examined: (1) How did/do traditional societies in Serengeti interact with their nature? (2) Which traditional

management institutions governed/govern interaction between people and wildlife species, resources and ecosystems and, how did/do they operate? (3) Which factors are (or were) responsible for erosion of traditional management institutions and practices? (4) What are the potentials and limitations of adopting the traditional practices as a way of furthering the contemporary conservation efforts?

Tanzania: ethnographic history

Tanzania is home to some of the oldest human settlements unearthed by archaeologists, including fossils of early humans found in and around Olduvai Gorge in northern Tanzania, an area often referred to as “The Cradle of Mankind”. These fossils include *Paranthropus* bones thought to be over 2 million years old, and the oldest known footprints of the immediate ancestors of humans, the Laetoli footprints, estimated to be about 3.6 million years old (Leakey and Harris 1987).

Hunter-gatherer communities, probably Khoisan-speaking people, are believed to have populated Tanzania in the past 10,000 years ago. Between 3,000 and 5,000 years ago, Cushitic-speaking people from the north joined and slowly absorbed Khoisan people. Cushitic people introduced basic techniques of agriculture, food production, and later, cattle farming. About 2,000 years ago, Bantu speaking people began to arrive from western Africa in a series of migrations. These groups brought and developed ironworking skills and new ideas of social and political organization. They absorbed many of the Cushitic peoples who had preceded them, as well as most of the remaining Khoisan-speaking inhabitants. Later, Nilotic pastoralists arrived, and continued to immigrate into the area through to the 18th century.

Within the borders of Tanzania co-exist over 120 ethnic groups speaking languages representing all four major African language groups i.e. Khoisan, or hunter-gatherers (such as Hadzabe), Nilotic-speaking pastoralists (such as the Maasai), Cushitic speakers, and Bantu speakers. The latter predominate in terms of population size. The largest ethnic groups include the Sukuma (over 3 million), Chagga, Haya, and Nyamwezi (over 1 million each). Despite the tremendous cultural and linguistic diversity among Tanzanians, ethnic groups are united by the use of a common language (Kiswahili) and a sense of national identity.

Study area

Serengeti and its conservation value

Serengeti ecosystem (covering a total area of about 30,000 km²) is a highland savannah region with thorn tree woodlands and plains ranging from approximately 900 to 1,500 m above the sea level. It lies between latitudes 1°28' and 3°17'S and longitudes 33°50' and 35°20'E. Average annual precipitation ranges between 500 and 1,200 mm declining towards the Park boundary and increasing towards Lake Victoria (Campbell and Hofer 1995). The ecosystem contains one of the highest diversity and concentrations of large mammals and avifauna in Africa. This entails thirty species of ungulates, 13 species of large carnivores and over 500 bird species (Sinclair and Arcese 1995).

Being a part of the Great Serengeti ecosystem, Serengeti district derives its ecological and conservation value from this ecosystem. About 60% (i.e. 6,600 km²) of the district's land falls under wildlife protected areas i.e. Serengeti National Park, Ikorongo and Grumeti

Game Reserves and IKONA Wildlife Management Area. About 50% of the district is occupied by Serengeti National Park. Along with prolific resident wildlife species, a big part of the district is critical as dispersal areas, buffer zones for the park and a corridor for wildlife species migrating between Serengeti National Park and Maasai Mara in Kenya. These species include some 1.4 million wildebeest (*Connochaetes taurinus*), 0.2 million zebra (*Equus burchelli*), and 0.7 million Thompson's gazelle (*Gazella thompsoni*) (Norton-Griffiths 1995).

Serengeti and its people

Serengeti District is made up of a mix of languages, economies and cultures. The four major language groups are represented by different ethnic groups: Ikoma, Natta, Kurya, Ishenyi and Ngoreme (Bantu-speakers); Maasai (Nilotic-speakers); Hadzabe (Khoisan-speakers) and Cushitic-speakers. Each of these ethnic groups claims its own unique identity and history. A small group of foragers, Hadzabe people, who live on the southern edge of the ecosystem, occupied the Serengeti in the thousands of years ago. Nilotic- and Cushitic-speakers moved into the area from the north, bringing livestock and crops like millet. Bantu-speakers, who lived around Lake Victoria basin, gradually spread into parts of the ecosystem with good rainfall and soil. In response to this pressure, the foragers moved to south. In the last 200 years, the pastoral Maasai moved in and occupied the grasslands, avoiding the wooded areas with biting tse tse flies. However, their population was gravely disrupted by the 1900 great rinderpest epidemic and severe droughts that killed virtually all cattle, causing famine and serving as a predisposing factor for epidemic diseases like smallpox. The situation, referred to as *Enkindaaroto* (Maasai word for destruction), caused competition for dwindling resources. This competition triggered wars that furthered depopulation of Maasai (Adams and McShane 1996).

Ikoma people moved to western Serengeti from Loliondo area in the eastern part. This ethnic group is said to have originated from Sonjo ethnic group. Its movement to the west is often associated with wildebeest migration although the government conservation policies also played a crucial role in these movements. They first settled in Naabi Hill in a shrubland dominated by *Grewia bicolor* (Common name: White raisin; Ikoma name: Mkoma). The name Ikoma was derived from these shrubs. Natta ethnic group moved to Serengeti from Kisii Kenya and is closely related to cultivators known as Wagusui ethnic group. Kurya people came to Serengeti from the North (i.e. Tarime district and Kenya) during the 1950s.

Like in many other African societies, Serengeti people experienced interruption of their political, economic and socio-cultural systems from colonial and post colonial regimes. The Germans enacted the first wildlife law that prohibited hunting by Africans in 1891. Their livelihood strategies were further outlawed following enactment of the Game Preservation Ordinance of 1921 by British regime and subsequent declaration of Serengeti as the partial game reserve in 1921 which was latter upgraded to a full game reserve in 1929. Following Major Richard Hingston's report to the London-based Society for Preservation of Flora and Fauna of the Empire (SPFFE), Serengeti along with other nine areas in Eastern and Southern Africa were identified as potential for establishment of the national parks. Serengeti was found ideal for a national park due to limitations that made the area unsuitable for alternative uses by the Europeans such as mining, agriculture and livestock production (Bonner 1993; Adams and McShane 1996). The Fauna Preservation Ordinance Cap. 302 of 1940 that repealed the 1921 Game Preservation Ordinance paved the way for gazettment of Serengeti as a National Park, although it remained a 'park in paper' until 1951. These policies and associated interventions not only denied people access to resources, but

also caused relocations from their residences. The Maasai were forcefully relocated to the eastern part (the current Ngorongoro Conservation Area) in 1954 following gazettement of Serengeti National Park in 1951 (Bonner 1993). The Ikoma elders (pers. comm, 2004) recalled a number of relocations from the park: from Naabi Hill to Banagi River in 1950s; Banagi to Mochatongarori to Romoti River in 1960s and from Romoti River to areas further west. Further relocations occurred in the mid 1970s when most of the people (from all ethnic groups) were relocated to implement the government villagization policy which aimed at concentrating people together in order to ease provision of social services. In early 2000 some people who were living in Ikorongo (mainly Kurya) and Grumeti (Taturu and Ikizu) were evicted following the 1994 government decision to elevate the areas from Game Controlled Areas to Game Reserves.

Local people in Serengeti have had historical conflictual relationship with government and its conservation agencies due to imposed prohibitive and punitive conservation policies. Resentment towards these policies has been common and has often taken different forms. For example, Ikoma hunters threatened to kill the colonial wildlife rangers to resist any attempt of stopping them from hunting (see Neumann 1998). Relocation of Maasai from Serengeti National Park triggered retaliatory response that involved spearing of rhinos, setting fire with malicious intent and physical violence (Neumann 1992). Wholesale inheritance of colonial conservation policies by the post-colonial government after independence had made conflicts and resentment to persist. The loss of grazing land, arable land and hunting rights following expansion of the park in 1960 caused resurgence among the Kurya people. They declared their independence in 1970 and pulled down a Tanzanian flag, replacing it with a leopard banner. Although the government forces ended this resurgence the hostility between Kurya and conservation authorities is still notable.

The people of western Serengeti are typically agropastoralists i.e. relying on a combination of livestock keeping and cultivation for their sustenance. Agriculture is mainly a small-scale operation involving growing of maize, cassava, millet and sorghum (for food) and cotton (for cash). Most households own relatively small land holdings, with two-thirds owning between 0 and 10 acres. Over 70% of the households owns livestock (cattle, goats, sheep, pigs, donkeys and poultry). Annual income from livestock ranges from US\$ 45 to 130. Agriculture and livestock account for 80% of the household income. The remaining 20% is sponsored by off-farm activities such as hunting, charcoal burning, making local brews and formal employment (Campbell and Hofer 1995; Loibooki et al. 2002). The estimated proportion of the people earning income from activities other than livestock keeping and agriculture is about 33% (Holmern et al. 2004).

Along with agropastoralism, illegal hunting remains a major challenge in Serengeti. Of all ethnic groups found in Serengeti, Ikoma ranks the highest, contributing 40% of all poachers (Holmern et al. 2004). Although hunting is occasionally motivated by cultural reasons, economic situation and rapid demographic growth are major motivational factors. Illegal hunting is pursued as a coping strategy for diminished livelihood options and increased demand for resources. Over 75% of illegal hunters in Serengeti have limited sources of income and virtually no livestock (Loibooki et al. 2002). Holmern et al. (2002) gave an estimate of 61% of illegal hunters who hunt for their own consumption, 8.5% hunting for cash and 31% for both purposes. Illegal hunting earns the hunters an annual income of US\$ 200, a value close to or equivalent to average on-farm income. Pressures on natural resources including habitat destruction is mainly influenced by rapid human population growth. In 1988 Serengeti district had population of 111,710 (average density 25.5 people/km²). In 2002, the population rose to 176,057 (average density 40.2 people/km²).

Study villages and groups

The study was conducted in three villages of Serengeti district, in the northern part of Tanzania. These villages were Nattambiso, Robanda-Ikoma and Nyichoka. The first two villages are inhabited by Natta and Ikoma ethnic groups, respectively, while Nyichoka is mainly inhabited by Ikoma and Kurya. The villages form a part of Great Serengeti ecosystem (Fig. 1). The famous wildlife migratory corridor from Serengeti to Maasai Mara National Reserve in Kenya passes through the villages. All villages are bordered by the recently gazetted IKONA Wildlife Management Area. Robanda Ikoma is bordered by Serengeti National Park and Ikorongo Game Reserve. Nyichoka and Nattambiso are bordered by Grumeti Game Reserve.

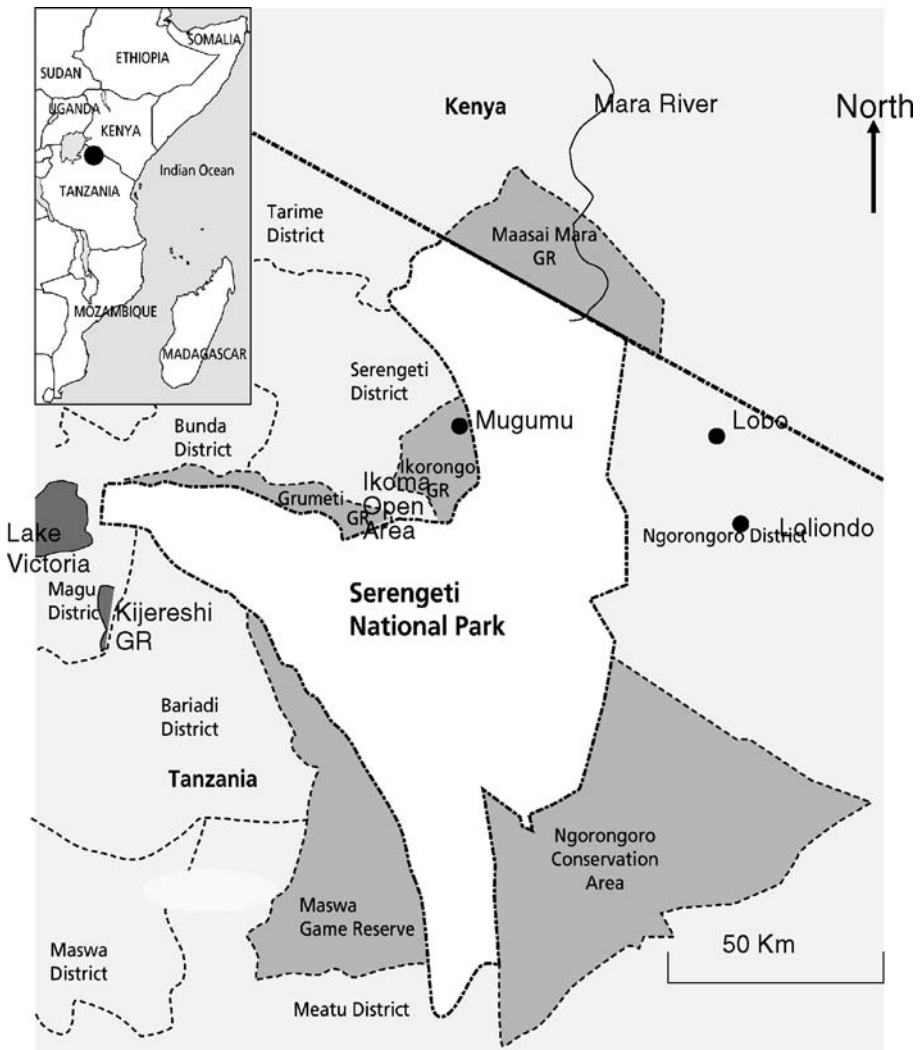


Fig. 1 Serengeti ecosystem and adjacent protected areas

Methods

This study employed the key informant interview technique to obtain insights about the traditional values, use and management systems of natural resources. Three elders (age ≥ 60 years) from each of the three ethnic groups (Ikoma, Natta and Kurya) were consulted. These elders came from three villages of Nattambiso (three Natta elders), Robanda Ikoma (two Ikoma elders) and Nyichoka (one Ikoma and three Kurya elders). One of the elders was an old woman who was a widow of one of the Ikoma tribal leaders. Two elders from Ikoma and Natta tribes were former employees of the Serengeti National Park. The choice of elders for interview was facilitated by village government leaders. They were chosen from among the elders who were believed to be more conversant with customs and traditions (known locally by different names as *Warokinge*, *ritongo* or *wazee wa mila*). Their presence in the area for long time and active participation in several cultural events pre-empted a doubt on authenticity of the information they provided. The authenticity was further ensured since the selected elders received theoretical and practical aspects related to their culture and environment when the system of knowledge transmission from generation to generation was still effective. The selected elders had had time to attend the initiation rites for several months and get adequate exposure on cultural and environmental issues. The current socio-economic and political developments are not supportive to this opportunity. Interviewing more than one person from each ethnic group sought to provide opportunity for cross-checking of the consistency of information (given by each group) and, therefore, to improve authenticity of the data.

The interview allowed a free flow of ideas and information. Without losing track of the themes under discussion, the questions were framed spontaneously and probing was done to gather as much detail as possible. Further information was obtained from the village leaders, the former Member of Parliament for Serengeti constituency and two officials from Serengeti National Park. These were consulted to complement and verify some information obtained through interview with elders. For example, they were requested to provide facts and opinions regarding the sacred elephant tusk owned by Ikoma people. They were also requested to comment on feasibility of incorporating the traditional practices in current conservation measures.

The discussions were tape-recorded and transcribed after the sessions. Additionally the field assistant jotted down the key points given during the discussion. The discussions were conducted in Kiswahili (the language spoken by majority of Tanzanians). The analysis involved categorising, collating and filtering the data in order to identify and extract dominant themes as identified in both the questions asked and the responses provided.

Results

Traditional management institutions governing wildlife species, resources and ecosystems

This section provides some explanations about totems, protected species, protected areas, and rules governing hunting and use of wildlife products and enforcement mechanisms as uncovered by different informants who participated in the interviews.

Sacred species and sites in western Serengeti

Historically, the relationship between people and nature in western Serengeti has been defined by spiritual and totemic affiliation to different flora, fauna species, habitats and

utilization of these species for diet, cultural reasons, trade and medicines. Taboos (locally known as ‘*emeghilo*’), had emerged as enforcement mechanisms to preserve the relationship between humans and nature. Since most of these taboos sought to protect the species and habitats against destruction and, the fact that they were observed without being questioned and challenged, their effect on nature conservation had often been positive. All nine elders interviewed in the study area appraised the taboos as effective, efficient and socially acceptable resource management systems.

Ikoma, Kurya and Natta ethnic groups are divided into several clans called ‘*Ebhehita*’. Each *Ebhehita* had an animal that it recognised as supreme i.e. totemic or sacred (‘*Oghu-sengera*’) (Table 1). The fact that these animals symbolized a clan or a tribe, and thus had ritualistic or religious value to the community, gave them immunity against wanton destruction even if they inflicted some economic and social costs such as property damage and injuring people. A totemic or sacred species that happened to get into human premises was accorded a benevolent welcome with special foods including milk and meat. This continued until when an animal left the place. As a way of valuing sacred species, some people have adopted their names from these species. Examples are Mahiti and Makuru adopted from hyena and leopard tortoise, respectively.

Though no longer observed as strictly as in the past, the totemic species are still being held in great respect and veneration. Hunting of sacred species requires observance of the well-defined traditional rituals. Killing or wounding a sacred animal is considered a gross violation of a customary rule, which may lead into severe penalty. Although, members of some Christian sects (known as *Walokole*) and recipients of formal education present some opposition against these rules, they are compelled to abide for fear of being socially isolated as traditional rituals still make sense to majority of the people. In case a sacred animal is killed, a ritual called ‘*Herana*’ has to be performed as a way of appeasing the spirit and therefore cleansing the *Ebhehita* and the entire tribe from presumably bad omens (called ‘*Aring’a*’). *Aring’a* may entail diseases outbreaks, deaths, severe droughts, pests and loss of livestock. *Herana* involves organising a feast in which domestic stock is slaughtered along with preparation of local brews and varieties of food. Each household from the *Ebhehita* is obliged to pay a fine exceeding a daily household budget, even if a perpetrator does not belong to that household. These communal fines which befall all members of the

Table 1 The wild animal species sacred to waikoma and wanata of Western Serengeti

Clan (Ebhehita)	Sacred animal or part	Scientific name	Ikoma/Natta name
All waikoma	Elephant	<i>Loxodonta africana</i>	Achoghu or Anchogu
All waikoma	Elephant tusk	N.A.	Machaba bowari
Wahikumari (k)	Green mamba	<i>Dendroaspis angusticeps</i>	Kumari
Abharanche (k)	Python	<i>Python spp</i>	Abhosoti
Some Abharanche(k)	Lion	<i>Panthera leo</i>	Aka
Abhaghetigha (k)	Puffadder	<i>Bitis arietans</i>	Magho
Some Abhaghetigha(k)	Spotted hyena	<i>Crocuta crocuta</i>	Kikwo ahiti
Some Abhaghetigha(k)	Ostrich	<i>Struthio camelus</i>	Anungu
Abhamwancha (k)	Puffadder	<i>Bitis arietans</i>	Marakanyi
Abhahimurumbe (k)	Cobra	<i>Naja haje</i>	Murumbe
Abasaye (abamwancha) (n)	Leopard	<i>Panthera pardus</i>	Angwei
Abasaye(n)	Leopard tortoise	<i>Geochelone pardalis</i>	Akuru
Abasaye (abamwancha) (n)	Hyena	<i>Crocuta crocuta</i>	Ahiti
All wanata and waikoma (n, k)	Bush buck	<i>Tragelaphus scriptus</i>	Angabi

k = Ikoma clan; n = Natta clan

Ebhehita inspire collective responsibility in caring for the sacred animal. A perpetrator is perceived as irresponsible and a public nuisance. This can be an embarrassing attribute to him. All people are required to respect the totemic species even if it does not belong to their clans. Similar fines may be imposed to them in case of violation. The offence committed by a member of a particular clan is handled by his/her clan and this is seen as a way of maintaining unity and harmony between the clans.

Further to specific species revered by each ‘*Ebhehita*’, elephant (‘*Achoghu*’ or ‘*Ancoghu*’) is sacred to the entire Ikoma tribe. It receives full protection. Elephants are believed to be the deceased Chiefs. In the past, apart from performing *Herana*, killing an elephant involved mourning for 7 days, just as it happens to humans in Ikoma culture. Essentially, this goes beyond criteria for being conservation, as they have more or less humanised the elephants. The informants did not give any evidence of actual retaliation against the tribe which killed an elephant and failed to provide food for the *Herana*. However, a notable hostility between Kurya and two tribes of Ikoma and Natta was attributed to tendency of the latter to ignore and violate taboos of the two tribes. The Ikoma and Natta elders accused the Kurya for serious poaching of elephants and rhinos that nearly drove the species to the verge of extinction between 1970s and 1980s. During this period, Somali and other middlemen from Dar es Salaam, Mwanza and nearby countries offered four to five heads of cattle in exchange for two elephant tusks (see also Bonner 1993). Following banning of ivory trade, the problem of elephant hunting is virtually eliminated now and, the population of elephants has recently increased (see also Walpole et al. 2004).

Although an increase in population of some sacred animal species such as elephant was linked to worsening of problems of property damage, the interviewees did not endorse an intervention that aimed at exterminating the sacred species. They preferred alternative measures such as reporting to wildlife officers, scarring off the animals, guarding farms, using deterrent such as chilli for elephants and, growing buffer crops around the fields.

The social taboos also cater for plants and habitats. Different cultural motives inspire this. For example, circumcision (‘*ghusara*’), in Ikoma tribe provides an incentive to protect some tree species such as *Balanites aegyptiaca* (common name: desert date, ikoma name: Mrogoro or Mduguyu mtundu), *Lannea schweinfurthii* (common name: Bastard or false marula; ikoma name: omusari) and *Ekebergia capensis* (common name: cape ash; ikoma name: omisembito). *Ghusara* occurs during the dry seasons under the shade of these trees, thus justifying their protection.

Specific sites set aside for rituals are sacred and all human activities such as settlements, fishing, firewood collection, cultivation and livestock grazing are prohibited. The sites are also closed against menstruating women and contaminants from human wastes (urine and faeces). Examples of these sites are Gateku watershed and Bangwesi hills (for the entire Natta tribe), Ng’abati Hill (the entire Ikoma tribe), Kemarishi Hill (waserabati clan), Ngoombe (Abamuriho clan), Kitaraga Hill (abagikwe clan) and Mochwuri Hill (abarumarancha clan). Although no thorough inventory was conducted, visual observation by the author showed that these sites were richer in biodiversity and less polluted compared to adjacent areas. These sites, regardless of the clan to which they belong, are respected by people from all clans.

Machaba Bowari: Ikoma peoples’ sacred elephant tusk and wildlife conservation laws

Of particular interest to all Ikoma people is a special respect accorded to two elephant tusks called ‘*Machaba Bowari*.’ Of the two, one is male and the other is female. They are kept in Ng’orisa (the western part) and Rogoro (the eastern part), respectively. The tusks are kept

by the respected persons picked from among the tribal elders. During the discussion, Ikoma elders paid little attention to female *Machaba*, suggesting a relatively minimal importance of this tusk to the tribe compared to male *Machaba*. Male *Machaba* is, therefore, a subject of discussion here. According to Ikoma elders, *Machaba* was given to their ancestors by a famous sorcerer who lived in Olduvai Gorge over a century ago. The elders ascribe it to past victories that the tribe won during the wars against other tribes and they still strongly believe on its powers in pre-empting the bad omens ('*Aring'a*'). A reverence accorded by Ikoma people to elephants is also attributable to *Machaba*. A popular belief is that killing or injuring an elephant offends *Machaba*—something that may bring bad omens to the society.

Although colonial and post-colonial legislation prohibited possession of government trophies, '*Machaba*' has remained under the control of Ikoma people for decades. Ikoma elders were consistent in explaining the unusual events that transpired when the colonial (German and British) and post-colonial governments attempted to confiscate *Machaba* (Table 2).

In order to avoid inconvenience from the law enforcers the Ikoma elders were advised to apply for a certificate of ownership. In 1990, the former Member of Parliament for Serengeti, Mr Simon M. Mongate, requested it from the former Minister for Land, Natural Resources and Tourism. The certificate of ownership No. A 05342 was issued in January 31, 1990 accompanied by a letter SDC/NRG.10/12/48. The certificate is currently kept in the village government office in Robanda. According to Ikoma elders, when the first President of Tanzania, Mwalimu J.K. Nyerere, visited the area in 1970s assured them that his government will not confiscate *Machaba*. He equated its cultural and deity importance to a monkey called *Muhunda* which is sacred to his own tribe of Zanaki.

Use of wildlife resources

Wildlife in Western Serengeti is used to meet both pecuniary and non-pecuniary motives. Pecuniary motives entail obtaining meat for household use and trade along with non-food products for various purposes. In the past Sukuma, an agro-pastoralist tribe living in Southern Serengeti, gave cereals to Ikoma and Kurya people in exchange for wildebeest tails and oils extracted from the lions. Wildlife and its derivatives provided a variety of non-food benefits such as raw materials for manufacturing household items and substances to cater

Table 2 Attempts to confiscate *Machaba* (sacred elephant tusk) by different regimes

Year of attempt	Regime	Unusual event associated with confiscation
1907	German	Soldiers from Fort Ikoma could not cross the bridge in River Grumeti with <i>Machaba</i> as the bridge overflowed. This happened during the severe droug period
1936	British	A 35 km trip from Robanda to Serengeti Game Reserve headquarters took 4 days with a car after several breakdowns. For three mornings consecutively, <i>Machaba</i> was found outside the armoury where it was locked the days before
1972	Post-colonial government	Three vehicles that carried <i>Machaba</i> and its guardian switched off on their way to Mugumu Police Station. The problem was fixed after harassing <i>Machaba</i> 's Guardian who supplicated to <i>Machaba</i> . In Mugumu a new generator belonging to Police Force knocked after putting <i>Machaba</i> in a room which was set for confiscated trophies

Source: Narration from Ikoma elders of Western Serengeti (2004)

Table 3 Non-food uses of wildlife species along the WSC

Wildlife species	Part/product used	Uses/purposes
Lion	Mane	Making helmets for male dancers during the ceremonies such as initiation
Lion/Lionesses	Pellets	For making amulets (something worn as a charm against evil). It is believed that a witch or enemy, refrain from a person wearing it
Small antelopes (Duikers, Suni, Steenbok, Reed bucks and Gazelles)	Skins (Ebisero)	Making mats for kid rearing or sits for adults especially women A container in which the grinding stone sit during the preparation of grain flour Making the drum coverings that are used by dancers in ceremonies Used in the past to make traditional skirts which were worn as underwear by women Used for making men's wallets
Big antelopes e.g. Topi etc.	Skins (Ebisero)	Used in the past for making traditional beds for adults and mats for drying the grains (millets, finger millets) Used in the past for making traditional bags for storage and carrying grains, the sleeping mats and the arrow Quivers
Small antelopes (Duikers, Suni, Steenbok, Reed bucks and Gazelles)	Hollow Horns (Chahembe)	Used to store protective charms against harmful effects from sorcerer's magic. Are worn on trousers or short pants
Ostrich (Anungu)	Down feathers (Chasingori)	Used as ornaments-put on/worn round helmets or perched on rings around upper arms by men in traditional dances
Ostrich (Anungu)	Fat oil (Amaguta)	Used as laxatives and as a catalyst by expectant mothers to speed up delivery
Big antelopes	Tail skins (Ebirasi vyemekera)	Making handles for machetes (Pangas), knives, spears
Big antelopes	Tail hairs	Making snares (Emeheto) for birds such as starlings etc Held by traditional elders' to keep flies away and as symbol of elderly in the society (Eghise)
Elephant (Anchogu)	Ivory (Tusks)	Making traditional dancing rings worn during the ceremonies. It is on these rings where ostrich down feathers are perched
Eland/Roan antelope	Hollow horns	Used as whistles (<i>Ebheture</i>) in traditional ceremonies
Small birds	Down/flight feathers	Ear cleaning materials (sticks)
Gallous birds	Spurs	Protective cover on which powerful herbs are put and worn as amulets
Porcupine (Ekisabo)	Pines (Chasaboh)	To remove pierced thorns on person's legs
Gnu (Asamakiri)	Tails (Emekera)	Used in a barter trade with Sukuma during the famine periods who reciprocated cereals; also served as bride prices (dowries) a long time ago

for witchcraft, protection and medicinal purposes (Table 3). Hunting also served for training purposes, as a recreation activity and a marker of status. It was considered as a skilful and professional activity and the society accorded high respect to a good hunter.

Regulatory mechanisms for wildlife hunting and utilization among the Ikoma Kurya and Natta ethnic groups

The traditional norms and values of hunters were built around mythology through which the activity was organized, planned and controlled by lineage elders which formed the council of elders called '*Ritongo*'. *Ritongo* had a responsibility of overseeing the functioning

Table 4 Laws and rules that ensured rational use of resources among the societies in Western Serengeti

Hunting was limited to meat for household use only; Accumulation or storage for future was considered to be morally wrong
Taboos (' <i>emeghilo</i> ') restricted people from killing an animal before finishing the previous hunt
All members of the community shared the meat (' <i>okomussa</i> '). This kept the number of hunters in the society minimal
Hunting or touching an animal revered (sacred) to a particular clan (' <i>oghusera</i> ') was prohibited
Taboos restricted killing or hunting an animal found at a water catchment area
Hunting was prohibited for an animal found giving birth
When found fighting, only one animal was allowed to be killed
Friendly non-edible wild animals were protected through taboos (' <i>emeghilo</i> ')
Hunting was mostly targeted to adult and male animals
Killing of young, pregnant or lactating animals was prohibited. When happened to be trapped they were set free
Some animals could not be hunted unless the permits were obtained from the tribal chiefs
Hunting of certain species were limited to specific seasons only to give them room for breeding
Shot animal was followed until it was found
A belief that a person who kills animals indiscriminately will remain poor as he will never own livestock
A bushmeat can not be used in functions such as wedding, rituals and by mothering women
Abandoned young animals who lost their mothers were taken home to the lactating goat or cow
An animal that sought a refuge in homestead could not be killed
Different clans had different preferences for bushmeat e.g. abarumarancha and abasaye (eland), abakigwe (zebra) and abangirate (fish). This reduced competition and therefore ensured sustainability of the resource
Medicinal and fruit trees were protected
Setting fires was a serious crime that amounted to heavy fines
Firewood for cooking and heating was limited to dry trees only
Most of the forests were sacred and nobody was allowed to enter and harvest any resource
Tree species were allocated specific use(s) depending on availability, durability and workability

and enforcement of all rules, which were set for the benefit of the tribe including those governing hunting and daily life (Table 4). Hunters were well alert against contravening the rules, which guided their profession

To date, despite a ban on hunting, *Ritongo* is still a powerful institution in western Serengeti enforcing the rules aiming at reforming the socially unacceptable behaviours such as theft, witchcraft, disobedience and other social vices. Stern disciplinary measures against the perpetrators include taking traditional oath '*kihore*'. It is believed that *Kihore* may result into undesirable consequences such as death and insanity. The elders forming *Ritongo* are believed to be talented such that they can speak directly to the Gods of their tribes and forecast the fate of any events. *Ritongo* elders perform a religious rite called '*Likula*' in order to protect the society from natural disasters. The rite lasts for 8–12 days and occurs after every 8 years. Essentially, for all three ethnic groups, *Ritongo* is more powerful than the formal court. In formal courts cheating is not uncommon, something which rarely happens in *Ritongo*. Therefore, *Ritongo* still plays a central role in regulating the lives, culture, behaviours and traditional values and norms of the people in Western Serengeti.

Erosion of traditional management systems

The elders in western Serengeti blamed colonialism for divorcing them from their heritage and, therefore, undermining their physical and spiritual life. Their proprietorship, user-rights and practices were outlawed on grounds of causing decimation to wildlife (see also Bonner 1993; Adams and McShane 1996). Legal hunting was made technologically and financially unattainable to local people due to expensive hunting licenses and occasionally stringent conditions that forced the natives to obtain governor's consent before issuance of a

license. Furthermore, natives were prohibited from owning rifles although the indigenous weapons were banned. The elders dismissed the accusations of decimating wildlife, on grounds that their weapons (bows and arrows) were too inferior to be destructive than guns and lorries which white people used for hunting.

According to elders, creation of protected areas furthered these restrictions. The ‘shamba la Bibi’ (Kiswahili words for queen’s farm) concept made an entry and livestock grazing in the protected areas trespassing. Fuelwood collection became wood theft. Access to sacred sites, which fell in the protected areas, was also prohibited, thus detaching people from their spiritual affiliations. For instance, Kamarishi Hill located inside the Serengeti National Park became inaccessible to members of Waserabati clan who used to go there annually for ‘pilgrimage’. Creation of national parks and game reserves had involved relocation of people to other places, thus terminating most of the cultural and traditional practices. The distance, between the new places and protected areas was another factor that limited access to sacred sites. Prohibition of hunting, access to sacred areas and other cultural activities limited the amount and quality of knowledge which elders transmitted to the young generations.

Along with prohibitive laws, new institutions such as formal education and western religions in which people were taught to denounce their culture; beliefs, practices and knowledge were introduced. Through these new institutions, the natives’ ways of living were regarded as barbaric and their replacement by civilised ways was considered inevitable.

Relevancy of traditional practices in contemporary conservation efforts

Pre-colonial coexistence between human and wildlife can be described through resource utilisation patterns, management and indigenous knowledge systems. Although these practices, which were enforced through religious beliefs and taboos, were not necessarily the consensual conservation interventions (Alvard 1998; Berkes et al. 2000), they may be useful in enhancing conservation of biodiversity. However, some practices, may not be as effective as they used to be in the past due to social, economic and policy changes. This section presents some potentials and constraints of traditional practices and systems in the contemporary conservation efforts.

Some potential roles for traditional rules and values

Regulating overexploitation of resources and habitat loss

There is substantial literature indicating the importance of traditional practices and systems (taboos and religious affiliations) in checking species overexploitation and habitat destruction. Of the species that benefit from these practices and systems are those listed under different threat categories and the ecologically important species such as endemic and keystone. For example, Colding and Folke (2001), identified 70 specific taboo species from which, 21 were listed in the World Conservation Union (IUCN) redlist book of threatened species. Of these 21, four were endemic and five were keystone species. Therefore, traditional practices and institutions are potentially important in complementing the national and global efforts geared towards the conservation of threatened species.

In Western Serengeti, low vulnerability of elephant (*Loxodonta africana*) and bushbuck (*Tragelaphus scriptus*) to decimation by humans can be attributed to totemic link with these species. Study on illegal hunting by Campbell and Hofer (1995) indicated zero case

of elephant hunting although consumption of its meat is common in some parts of Tanzania (personal experience) and other African countries (Hart and Smith 2001; IUCN 2006; Strieker 2002). However, there were rampant poaching for elephant trophy between 1970s and 1980s, the problem, which the Ikoma and Natta elders tied to some people from Kurya tribe as the tribe does not revere to this species (Ikoma and Natta elders, pers. comm 2004). Likewise bushbuck makes important contribution in the diet of many people in Africa (Assogbadjo et al. 2005; Teleki et al. 1977; IUCN 2006). However, it is the least hunted species with annual offtake of 5.0% compared to other species such as buffalo *Syncerus caffer* (19.5%), warhog *Phacochoerus aethiopicus* (24.4%), topi *Damaliscus korrigum* (20.5%), impala *Aepyceros melampus* (28.7%), giraffe *Giraffa camelopardalis* (29.6%) and eland *Taurotragus oryx* (30.9%) (see Campbell and Hofer 1995). Most of the communities associate minimal offtake of this species with its totemic importance to most clans within the tribes of Western Serengeti such as Sukuma, Natta, Ikoma, Issenye, Ngoreme and Ikizu. Although designating sacred forests and groves may be prompted by reasons other than conservation, their contribution in maintaining healthy habitats and enhancing species conservation can be immense as epitomised by different case studies conducted in Africa (Table 5).

Alternative incentive and conflict resolution

Given the fickle and disappointing outcomes of the economic incentive strategy in meeting conservation goals (Barrett and Arcese 1995; Gibson and Marks 1995; Songorwa 1999), the traditional practices and systems may be potential in complementing this strategy and achieving the desired results. The economic incentives have erroneously being considered as a panacea for motivating people to align their behaviours with conservation goals and,

Table 5 Examples of sacred groves/forests in Africa and their conservation potential for wildlife species

Sacred grove/forest	Reason for sacredness	Conservation importance
Kakamega forest (Western Kenya)	The Tikiri tribe use a stream in the forest for circumcision ceremonies The Taita people place the skulls of important ancestors in the caves they call “pango”	Critical habitat for over 350 avian species and mammals such as bush pig, Civet, clawless otters, ground pangolin, colobus monkeys and leopard <i>Source: Lean (2006)</i>
Boloma Bijagos (Guinea-Bissau)	Bijago people’s holy places for ceremonies and initiation rites	Critical habitats for Nile crocodiles, hippopotamus and many crustaceans, molluscs, fish and green turtles <i>Source: Lean (2006)</i>
Sankoantovo forest (Madagascar)	Burial site for Mahafaly and Tandroy communities’ ancestors	Critical habitats for chameleons, lemurs and tortoises (endemic), primates, reptiles, amphibians and birds <i>Source: Soutter et al. (2003)</i>
Kupe forest (Cameroon)	Belief that it is home for ancestors of local Bakossi people	Endemic and threatened bird species and highly threatened chameleons and primates <i>Source: WWF (2006)</i>
Boabeng-Fiema monkey sanctuary (Ghana)	Habitat for <i>Colobus polycomos</i> and <i>Cercopithecus mona</i> —primate sacred to Boabeng and Fiema societies	Maintain population of several wildlife species other than the sacred monkeys <i>Source: Saj et al. (2006)</i>
Mshitu and Mpungi (Northern Pare Mountains, Tanzania)	Gweno and Pare people’s holy places for ceremonies and initiation rites	Variety of wildlife species and the only sites harbouring many indigenous tropical trees <i>Source: Mwihomeke et al. (1998)</i>

therefore, diffusing the tensions between conservation authorities and local people. Contribution of other incentives to this end, including cultural and spiritual values, have often been neglected (Barrett and Arcese 1995; Colding and Folke 2001; Infield 2001).

Examples abound to illustrate importance of cultural values to local people. In Uganda's Mount Elgon National Park, for instance, Bagisu community were ready to forgo all other resources from the park but not smoked bamboo shoots (*Arundinaria alpina*). Scott (1998, p. 49) quoted a local government official as saying, "You [park authorities] can take away whatever you like, but you can't take away our bamboo." The bamboo shoots are essential to biannual circumcision ceremonies, powerful spiritual events to Bagisu people. In Kili-manjaro, Tanzania, the *Wagweno* tribe perform ritual sacrifice of goats and sheep in a sacred forest (*Kwa Mrigha*) to communicate with their ancestors where they make supplications against social and ecological crisis. They also complain against injustices perpetrated by other members of the society (pers. observation). Paying attention to these non-pecuniary values—so long they do not degrade the habitats and deplete the resources—may provide a powerful link between the communities and government conservation agencies and, therefore, minimise the prevailing resource use conflicts for the benefit of conservation.

Besides complementing the economic incentives, which may often be too minimal to offset the conservation-induced costs (see e.g. Norton-Griffiths 1995), cultural incentives may be more affordable, reliable and sustainable forms of incentive. Unlike economic incentives, cultural incentives do not rely on external funding. Economic incentives on the other hand rely on donors, tourism and safari hunting. Vulnerability of these external sources may lead to termination or reduction of the benefits and, therefore, reduce the incentive to support conservation. If the donor pulls out and market for tourism is obstructed by factors such as political instability, terrorism, natural catastrophes and policy changes, the economic incentive may cease.

Minimising the costs of law enforcement

As revealed in results, the life of the people in Western Serengeti is still regulated by elders' council, *Ritongo*. The influence of this institution can be an opportunity for minimising an endemic problem of illegal hunting in the area. However, feasibility of this will require an effective incentive mechanism. Economic, political and legal empowerment of the villagers and their local institutions is imperative. Since illegal hunting in Serengeti is largely associated with poverty (Kideghesho et al. 2005; Loibooki et al. 2002), poverty reduction may be a key strategy in reducing this problem. Power of decision making may restore a sense of ownership. Legal empowerment may involve dealing with criminals (illegal hunters). For instance, *Ritongo* can be empowered to impose penalties against culprits for the benefits of the respective villages. The penalties may involve assigning the criminals to do productive activities for society such as digging the boreholes, making roads and bricks for building schools, village offices or dispensaries. In case of fines, villages should retain the money and use them for development projects. Contribution to village developments may motivate the villagers, as potential beneficiaries, to expose the culprits. If effectively implemented, this strategy may be cost-affective and may minimise the existing conflicts between conservation authorities and local communities.

Complementing the modern scientific knowledge

Of recent, scientific, social and economic reasons have prompted an increasing interest over the indigenous knowledge among the conservation biologists, ecological anthropologists,

ethnobiologists and other scholars. The knowledge—defined as “a cumulative body of knowledge, practices and beliefs, evolving by adaptive processes and handed down through generations by cultural transmissions” (Berkes et al. 2000, p. 1252)—is an essential tool for monitoring, responding to, and management of ecosystem processes and functions with special attention to resilience. The knowledge had also received political attention internationally as a valuable resource for biodiversity conservation through the *World Conservation Strategy* (IUCN 1980), and Brundtland Commission’s *Our Common Future* (WCED 1987) and the Earth Summit (UNCED 1992).

Combination of scientific and traditional monitoring methods is considered as a form of political incentive (empowerment) for strengthening community conservation approaches (Berkes 2003; Moller et al. 2004). Furthermore, the knowledge enables the indigenous resource users to critically evaluate scientific predictions on their own terms and test sustainability using their own forms of adaptive management. The knowledge is essential in complementing conventional scientific knowledge as Moller et al. (2004:online) put, “complementing objectivity with subjectivity.” Science strives to be objective (excluding people and feelings) while traditional knowledge explicitly includes people, feelings, relationships, and sacredness.

Some practical constraints

Literature on efficacy of indigenous knowledge offers huge hopes to conservation success (see e.g. Berkes et al. 2000; Berkes 2003; Becker and Ghimire 2003; Colding and Folke 2001; Moller et al. 2004). Suggestions are being made on reviving the abandoned practices, taboos and beliefs. While this sounds good, the social, economic and political realities in Serengeti (and possibly many other parts of Africa) may limit its application. Some of the practices may not be feasible today while some may work only after addressing some existing constraints.

Methods of acquiring indigenous knowledge may be complicated

As stated earlier, the indigenous knowledge was handed down through generations by cultural transmission. Folklore or storytelling, continuous observations, practising and attachment on natural resources were the major means of taping this knowledge in the past. The situation today, however, hinders effectiveness of these means. To acquire the knowledge, adequate time is required for recipient (youth) to interact with the elders and resources. This may be difficult, as most of the resources are located inside the protected areas where conventional legislation prohibits entry. Furthermore, formal education utilises most of the time, which could be used to acquire the knowledge. Primary school begins at the age of seven and lasts for seven years. This is compulsory and, thereafter, a pupil may continue with secondary school and colleges for four to eight years, often in boarding schools away from the place of birth.

Besides formal education, Christianity—another influence of colonialism, had also undermined the indigenous knowledge and the ways local people perceived nature. The new Christian churches in the area and those who have embraced this new faith tend to denounce some of the traditional ceremonies, rituals and taboos. Association with these cultural activities is regarded as devilish. Christianity is still expanding through introduction of new sects with elements of fundamentalism (popular as *Walokole*). Given the increased influence of Christianity in the area, complete reverting to traditions may be next to impossible.

Prevailing conflicts

Even if the formal education and Christianity had to be non-factors, the historical resource use conflicts that still prevail in Serengeti to date may forestall some attempts to re-introduce indigenous knowledge. Painful memories of the involuntary relocation and loss of access to land and resources are still fresh among the communities. Attempts to incorporate their knowledge and practices into current conservation policies may inspire unachievable demands. For instance, people may demand returning to their ancestral burial sites in the National Park and Game Reserves or may demand the right to hunt some species as a part of enhancing their culture, knowledge and skills. Implementation of these demands may be difficult and unsustainable given the high human population growth. Their implementation may be tantamount to degazetting the protected areas.

Population growth and change of demands

Primitive technology, low human population, high wildlife population and, therefore, low demand made some traditional practices feasible in the past. Today, if allowed, these practices may lead to resource depletion. For instance, ritual killing of lion, which is an important cultural practice for Maasai youth (Moran) may contribute to a decline of these species. Similarly, while hunting was previously limited mainly to subsistence needs, today the need for income has emerged as important reason (Campbell et al. 2001; Holmern et al. 2002). Given the difficulty of ascertaining the sincerity of the hunters and monitoring, permission to carry out ritual hunting may be employed to meet other ulterior motives. Furthermore, given the socio-economic changes, it is unlikely that the old habits that ensured sustainable utilisation of resources such as sharing of meat will be observed.

Poverty

Poverty is another major constraint that may limit the practicality of using the traditional practices in enhancing conservation. Even if the elders' councils—*Ritongo*—will be legally empowered and willing to curb illegal hunting this may prove difficult if they will be working amid the poor people compelled to hunt in order to survive. Hunting pressure is often associated with the low number of livestock and low crop yield due to drought or crop damage by wildlife (Loibooki 2002; Kideghesho et al. 2005). The elders, being a part of the society, may feel uncomfortable to enforce the law against people who opt for hunting as their most reliable coping strategy. The following example illustrates this scenario. During the British colonial era, Ikoma Chief who through indirect rule was endowed with great institutional power was reluctant to deal with the problem of illegal hunting and threats directed to wildlife staff by Ikoma hunters (Neumann 1998). He did not yield even after his salary was withheld.

Lack of appreciation of traditional institutions among the conservation planners

Despite the significant potentials that can be derived from the traditional practices in conservation, conservation planners and managers in many parts of the world, Tanzania being no exception, have paid little attention to these practices (Barrett and Arcese 1995; Colding and Folke 2001; Infield 2001). Colding and Folke (2001, p. 584) contend, “Many resource habitat taboos have functions similar to those of formal institutions for nature conservation in contemporary society but have not been sufficiently recognised in this capacity.”

Conclusions

Despite the suppression of traditional resource management practices through introduction of new structures and systems, not all hope is lost as some positive effects of these practices (in form of beliefs, taboos and practices) can still be traced to date. Understanding of indigenous knowledge, values and practices may provide an opportunity for using them to complement the current strategies seeking to address the conservation problems such as resource overexploitation, conflicts and limited budget for law enforcement. Although some constraints may make these practices less effective than they were during the pre-colonial era, these potentials may still contribute substantially to contemporary conservation efforts. While it is imperative for conservation planners and managers to understand, recognise and tap these potentials, they should also strive to overcome the constraints reducing the efficacy of these practices. The problems of poverty, human population growth and prevailing conflicts should be addressed along with empowering local institutions in conservation. There is a need for attitude change among the conservation agencies. Prohibitive laws should be relaxed to allow uses which are not destructive as a way of providing a link between the local communities and protected areas and, therefore, incentives for conservation. For example, laws prohibiting entry into, and visit the sacred sites in protected areas can be relaxed so long monitoring mechanisms are put in place to check misuse of the provisions. Hunting and other consumptive uses may be allowed so long the resources in question are not overexploited.

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