

Linking the Conservation of Culture and Nature: A Case Study of Sacred Forests in Zimbabwe

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This paper examines the role of traditional religious beliefs and traditional leaders in conserving remnant patches of a unique type of dry forest in the Zambezi Valley of northern Zimbabwe. We examined aerial photographs spanning more than three decades, interviewed and surveyed local residents, and met with communities to learn about the environmental history of the forests and the factors that have affected land use in the area. Our results show that forest loss is dramatically less in forests that are now considered sacred, or were in the past connected to sacred forests. This supports our hypothesis that traditional spiritual values have influenced human behavior affecting the forests, and have played a role in protecting them until now. We also found that rates of forest loss have been much higher in an area where traditional leaders are relatively disempowered within the post-independence political system compared to an area where traditional leaders have more power. These findings lead us to conclude that a strategy that links the conservation of culture and nature is likely to be more effective in conserving forests than a strategy that ignores traditional beliefs, values, and institutions.

KEY WORDS: conservation; forests; religion; sustainable use; wildlife; Zimbabwe.

INTRODUCTION

Creating parks and protected areas has often been viewed as the main land management strategy for conserving biological diversity. However, interest in conserving land outside of protected areas is growing (Reid, 1996;

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Szaro & Johnston, 1996) and has attracted interest in part because of the realization that the reservation of even 10% of national territories will not be enough to conserve most biodiversity (Soulé & Sanjayan, 1998). Interest in conservation across a mosaic of land uses has also come about because many protected areas are “paper parks,” in which lack of resources prevents the sustainable management and protection of the biodiversity they contain (Peres & Terborgh, 1995). Linking conservation and economic development is one strategy that has been used to motivate conservation outside of protected areas. This strategy is based on the view that material values and direct economic benefits are required to motivate conservation. Integrated conservation and development projects (ICDPs) have tried to implement this strategy in many places (Brown & Wyckoff-Baird, 1992; Wells *et al.*, 1992).

Southern African conservationists have been in the forefront in promoting sustainable uses of wild resources as the basis of conservation. Zimbabwe's Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) is one example of programs that link conservation and economic development (B. Child, 1996; G. Child, 1996; Metcalfe, 1994; Murphree, 1994). A fundamental assumption of the CAMPFIRE program is that economic benefits are the key in motivating conservation in Zimbabwe's communal lands. Another fundamental assumption is that local communities must have secure tenure and proprietorship over their natural resources in order to be motivated to manage them sustainably. In Zimbabwe, where the central government formerly owned and managed natural resources such as wildlife in the communal lands, implementing CAMPFIRE required the devolution of authority to manage common-property natural resources to increasingly local levels.

Traditional African religions often viewed land and its resources as communal property that belonged not only to the living but to their ancestors and to future generations (Omari, 1990). In many cases, the relationship between people and the land was a matter of spiritual concern, and such religions have been called “profoundly ecological” (Schoffeleers, 1978). Sacred sites on the landscape, including sacred forests, play a role in many African territorial religions. Studies of sacred forests and other sacred sites throughout Africa show that religious and spiritual beliefs can sometimes be the motivation for conservation and environmental protection (Dorm-Adzobu *et al.*, 1991; Ntiamao-Baidu, 1995; Omari, 1990; Schoffeleers, 1978). A traditional sacred forest forms the core of a modern conservation area in southeastern Zimbabwe, the Rusitu Botanical Reserve (Hughes, 1995). Examples of the effect of religious values in protecting natural habitats are not confined to Africa. In northeastern India, for example, 133 species of native plants are presently found only in sacred groves, presumably having been extirpated from unprotected surrounding areas (Khan *et al.*, 1997).

Although we should be cautious not to overstate the strength of spiritual motivations for environmental conservation, the studies cited above raise the question of whether material and economic benefits are necessary or sufficient motivation for nature conservation in all cases, as the Zimbabwe CAMPFIRE program assumes.

This paper explores two hypotheses:

- Traditional spiritual and religious values have influenced human behavior toward the unique dry forests of the Muzarabani area of northern Zimbabwe, and have helped to protect these forests until now; and,
- The relative empowerment of traditional leaders within the post-independence system of government has influenced forest conservation in the Muzarabani area.

We use terms such as “traditional,” “modern,” and “culture” in this paper, recognizing the reservations held by some social scientists about the validity and utility of such constructs. These were often the terms local people used in discussing their situation with us, however, and our use of these terms should not be taken to suggest that we have a static view of Shona culture; in fact this study deals directly with the issue of cultural dynamism and change.

STUDY AREA

Ecological Background

Sites of special interest for botanical conservation in the communal lands of the Zambezi Valley of Zimbabwe were identified in a report published by the National Herbarium of Zimbabwe in 1991 (Timberlake *et al.*, 1991). A reassessment was carried out in 1995 and 1996 by the Zambezi Society, a nonprofit conservation organization dedicated to the conservation of biodiversity in the Zambezi River Basin. Information from the 1991 report was updated through inspection Landsat-TM satellite imagery dating from 1992, and many of the sites were visited on the ground. The reassessment identified 82 sites of special botanical interest; 18 were judged to be of high priority for conservation based on the national significance of their vegetation and because they are seriously threatened with clearance or degradation of the natural vegetation (Timberlake & Cunliffe, 1997).

Four patches of a unique type of dry forest found in the Muzarabani Communal Lands of the Centenary District were among the high priority sites. These patches ranged in size from about 70 to 300 hectares. This forest type is a closed-canopy, dry-season deciduous forest comprised of an

assemblage of indigenous woodland tree species. Several species of lianas (woody climbing vines) are present, and the forests have a thicket understory that usually includes *Acacia ataxacantha*. These dry forests are found along a number of rivers flowing into the Zambezi River from the south. They have developed where patches of old, clay-rich alluvial soils, often heavily gullied, are exposed, and are restricted to these soils. This forest type is unique and rare in Zimbabwe, as well as being unusual in an area otherwise dominated by shorter, sparser woodland vegetation of various types.

Our study area (centered at approximately 16°20'S latitude, 30°58'E longitude) encompasses these Muzarabani dry forests (Figs. 1 and 2). The valley floor is flat, and the elevation ranges from about 390–430 meters where the forests are found. A few kilometers south of the study area the Zambezi Escarpment rises steeply about 1000 meters, and to over 1600 m in the Mvuradonha Mountains to the southeast (Surveyor-General, 1995). The Musengezi and Utete Rivers, along which the dry forests are found, descend through steep gorges from the plateau on the top of the escarpment. The

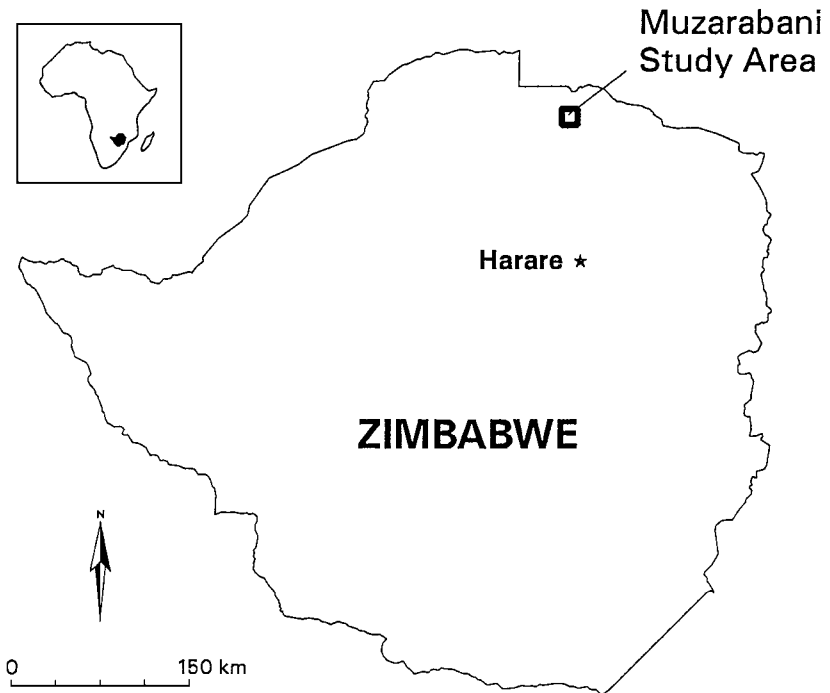


Fig. 1. Location of the Muzarabani study area.

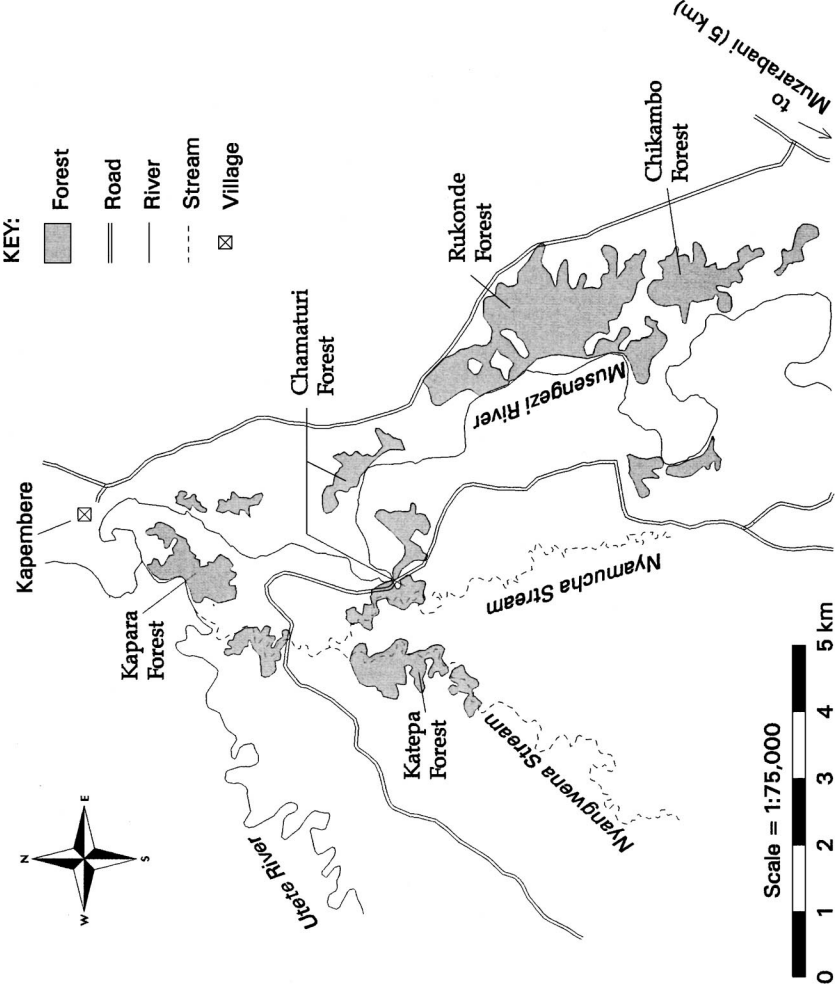


Fig. 2. Location of dry forests in the Muzarabani study area.

climate is semiarid (mean annual rainfall of 600–800 mm), with a short and concentrated rainy season from November to March and a long dry season from April to October. Mean temperatures at Muzarabani range from 20°C in July to 29.5°C in November (Cunliffe, 1992).

The Muzarabani dry forests are not known to harbor plant species that are threatened or endangered elsewhere in Zimbabwe, and there are no species found only in these dry forests. This type of dry forest has special botanical interest, however, for at least three reasons: it is quite diverse in woody plant species, it has a number of plants that are unusual or rare in Zimbabwe and/or the Zambezi Valley, and it is a unique assemblage of species from several different ecological communities.

These attributes of the dry forests give them high scientific and educational value (Timberlake & Cunliffe, 1997). Setting conservation priorities based on unusual plant assemblages, as in this case, has not been as common as a species-level focus based on criteria such as presence of rare or endangered species, species richness, or numbers of endemic species. Yet, there is increasing recognition that conservation should target whole ecological communities (Fearnside & Ferraz, 1995; Keel *et al.*, 1993; Kiester *et al.*, 1996). The threat to the dry forests in Muzarabani also contributes to their high priority for conservation. This forest type has always had a limited distribution, but was once more widespread. It has been largely cleared and converted to other uses in other places, such as along the Manyame River in neighboring Guruve District (Timberlake & Cunliffe, 1997).

A study of elephant movements using radio-collaring techniques is being carried out in the Muzarabani area (Hoare, 1998). Preliminary results show that elephants use the Muzarabani sacred forests as refuges for significant periods of time, especially during the dry season when *musawu* (*Ziziphus mauritiana*) fruit are ripe. In 1998, for example, a group of about 10 bulls spent 2–3 months in the Kapara, Katepa, and Chamaturi Forests. Some animals have been observed to move through the Muzarabani forests as they travel between the Mvuradonha Mountains and areas to the north in Guruve District and into Mozambique (G. Parker, pers. comm.).

Cultural Background

During site visits to the dry forests along the Musengezi River, the botanists who carried out the Zambezi Society study were told by local people that at least some of the forest patches are protected by ancestral spirits which are said to inhabit them, and which would seek revenge on those who carry out unauthorized tree cutting (Timberlake & Cunliffe, 1997). The Shona believe that when people die their spirits return to dwell among their

descendants. These ancestral spirits are thought to often take the physical forms of wild animals. The most powerful spirits are those of former chiefs, called *mhondoro*, which are believed to take the form of lions. *Mhondoro* are viewed as guardian spirits of a place. They concern themselves with the welfare of their descendants, and with maintaining harmonious relations between people and the land and respect for sacred places (Bourdillon, 1987). These *mhondoro* spirits are thought to communicate with modern people through spirit mediums, the most powerful traditional religious leaders. Mediums are thought to become ritually possessed by their spirit during special ceremonies, and the *mhondoro* can then be asked for and give advice about issues of concern. A ritual assistant, called a *mutapi*, organizes ceremonies and carries out other religious duties on behalf of the medium (Bourdillon, 1987; Lan, 1985). *Mutapis* are sometimes traditional village leaders, or *sabhukus*, thus having a role both in the traditional religious and political systems.

In the Shona language the word sacred, *inoera*, is an adjective describing a thing or place. Sacredness has the connotation of being life sustaining, such as providing food, fruit, or water. The concept is closely linked with rain, and the fertility of the land. A sacred place (*nzvimbo inoera*) is a place where spirits are present; it has certain rules of access, as well as behaviors that are not allowed there (taboos). In Shona religion, a place is sacred if a spirit medium says it is, because the ancestral spirit possessing the medium of course knows what is sacred and what is not.

Territorial cults are a type of religious institution found widely throughout Central Africa. Schoffeleers (1978) calls them “profoundly ecological... [A]part from engaging in ritual action, however, they also issue and enforce directives with regard to a community’s use of its environment.” Territorial cults operate on the principle that “management of nature depends on the correct management and control of society” (Schoffeleers, 1978).

Religion has a complex interaction with traditional secular politics in Shona culture. For example, when a chief dies, his successor is supposed to be approved by a spirit medium; also some *sabhukus* (village heads) also serve as *mutapis* of spirit mediums; and chiefs and *sabhukus* are supposed to enforce respect for sacred sites, and fine or otherwise punish people who break the rules. Religion also interacts with modern secular politics, which itself has a complex and sometimes tense relationship with the traditional political system (Derman, 1996; Lan, 1985; Schoffeleers, 1978; Spierenburg, 1995). Religion provides a mechanism for social communication, conflict management and dispute resolution, and a system of checks and balances to both traditional and modern political leaders. Spierenburg (1995) considers Shona religion “... a platform where sociopolitical issues can be discussed,” and Schoffeleers (1978) writes that because of its “directly ecological authority”

it is pushed into involvement in secular politics. While the strength and importance of religion in Shona society should not be overstated or idealized, it also cannot be ignored.

Political Background

After Zimbabwean independence in 1980, a new system of local government was introduced, in which the basic unit is the village, a group of 100–200 households. Villages elect Village Development Committees (VIDCOs), which have representatives on the Ward Development Committee (WADCO), with wards consisting of groups of four to seven villages. (B. Child, 1996; Spierenburg, 1995). These elected bodies were originally intended to replace the traditional political leaders at the local scale, the *sabhukus*, who were usually older men of the main family comprising a village. In practice, the traditional political system still continues to function alongside the post-independence system. At a slightly larger scale of organization in the modern political system, each ward elects a councilor to represent it as a member of the Rural District Council.

The enactment of the Communal Lands Act of 1982, and repealing of the Tribal Trust Lands Act of 1979, shifted land allocation authority from traditional political leaders to District Councils (Derman, 1996). Traditional leaders have no legal means to compel modern leaders to respect traditional land use rules. “The chiefs have no legal power to create and enforce rules on natural resource management in communal lands. Legally, this power rests with the Rural District Councils (RDCs), who may make decisions . . . without consulting the chief or taking account of customary resource management rules and practices” (Maphala, 1994). Rural District Councils have the authority to pass district-specific by-laws, however, including those which govern the protection and management of common-property natural resources, such as forests and wildlife (Musvoto, 1994). Although the Communal Lands Act gave legal power over land allocation to Rural District Councils, in actual practice the allocation of land is still often done by traditional leaders. Authority to allocate land is ambiguous, and conflicts often arise.

Economic Background

Rapid social and economic changes have occurred in the Zambezi Valley over the last four decades. In 1960, settlements in the study area were sparse and scattered, and population density was low—estimated at 1.6 persons per square kilometer in this area in 1962 (Cunliffe, 1992). The original

inhabitants of the area were mainly members of the Korekore ethnic division of the Shona. The nearest road was some distance north of the study area. In the mid-1960s the Gutsa smallholder irrigation scheme was built on the west side of the Musengezi River in the study area. Its irrigated fields were not cleared from a forested area. The irrigation works were damaged by flooding in the 1970s and the fields reverted to dryland cropping. In the early 1970s a larger irrigation scheme was developed southeast of the study area. Both of these irrigation schemes accelerated agricultural development and helped introduce cash crops such as cotton. The first paved road into the area connected Muzarabani with Centenary in the mid-1960s. Further road development took place in the late 1970s, stimulated by the independence war. Cattle production in the Zambezi Valley was constrained by the prevalence of tsetse fly and trypanosomiasis until the 1960s, when a combination of programs to eradicate the fly and drugs for controlling the disease made cattle raising much more successful (Cunliffe, 1992; Derman, 1995).

These developments provided a “pull” for immigration into the Muzarabani area. The “push” came from land ownership patterns, both before and after Zimbabwean independence, in which much of the best agricultural land in the country was owned by a small number of commercial farmers. Karanga people, another ethnic division of the Shona, immigrated to Muzarabani in a wave in the 1970s, and Zezuru immigrated in pulses in the 1960s and 1980s. By 1969 the population density in this part of the Valley was estimated to be 2.5 persons per square kilometer; by 1982, 5.0 per square km; and by 1992, 8.5 per square km. A UNDP study estimates that by 2002 the population density will be 11.4 persons per square km, an increase of almost tenfold in four decades (Cunliffe, 1992).

A 1997 feasibility study for the proposed Silverstroom Dam on the Musengezi River found that the typical rural household in the Muzarabani area cultivated an average area of 4.1 hectares, from which they earned a mean income of \$9,153 Zimbabwe dollars (approximately \$900 US dollars in 1997). Of this cash income, 46% was derived from cotton, 28% from maize, and 26% from other crops. Cotton cultivation is expanding rapidly.

The Muzarabani Rural District Council (RDC) participates in the CAMPFIRE program, and has the authority to manage the wildlife and other natural resources of the district for economic benefit. The District Council has leased a hunting concession, and elephant, sable, kudu, buffalo, and other game are taken by foreign sport hunters. From 1993 to 1996 the Muzarabani RDC earned roughly US\$20,000 per year from this sport hunting (Metcalf, 1997; Muzarabani Rural District, 1995; Zambezi Society, no date). A significant proportion of this income—70% in 1995, for example—is used to carry out community projects in the wards where the hunting took place, such as building clinics and schools (Muzarabani Rural District, 1995).

Trophy bull elephants are especially valuable, bringing about US\$8,000–10,000 each (B. Child, 1996; Muzarabani Rural District, 1995). Records of the locations of successful elephant hunts in Muzarabani indicate a strong correlation with the natural forest patches. Between 1994 and 1998, nine of the 20 elephants shot in the entire district of thousands of square kilometers were shot within two kilometers of the Muzarabani forests. Although sport hunting has been the major source of revenue from Muzarabani's CAMPFIRE program, other activities have also contributed, including tourism in the Mvuradonha Wilderness Area and the sale of live animals.

METHODS

Our main fieldwork took place from June to December, 1997, and in August, 1999; one of us (R. Cunliffe) was in regular contact with people in Muzarabani between those two periods. We obtained aerial photographs of the Muzarabani area taken in 1960, 1966, 1973, 1981 (Department of Veterinary Services), and 1993 (WWF-Zimbabwe). These photos often served as our maps in the field, and vegetation on the ground was compared with the photos in numerous locations. A Geographic Information System (GIS) showing major topographic features was created by digitizing from a 1:25,000 orthophoto of the area (Office of the Surveyor-General of Zimbabwe). Boundaries of forest patches identified on the 1960 and 1993 aerial photos were digitized onto this base map.

We traveled throughout the Muzarabani area with local guides, visiting sites and interviewing local residents. We sometimes showed aerial photos to our informants as we discussed the environmental changes that had occurred in the area over the last four decades. From these interviews and site visits we developed an understanding of the social, political, and economic changes that had occurred over time to cause the changes in vegetation visible in the aerial photos.

Independently of the Zambezi Society's 1995–1996 botanical study, an exercise to map sacred sites in Muzarabani Communal Lands was undertaken. A local research assistant traveled around the area and interviewed *sabhukus* and *mutapis* in order to identify and locate sites of special spiritual significance. By June, 1997, when we first integrated the information on sacred sites with the botanical information, more than 30 sacred sites had been identified. Even more sacred sites were identified during our subsequent fieldwork as we talked to traditional leaders who had not been contacted earlier.

In order to learn more about local knowledge of, and respect for, sacred sites, we developed a short written questionnaire. The questionnaire

was in English, with some key words translated into Shona. A teacher at Muzarabani Secondary School administered a pilot version to 17 students from the area in which the Muzarabani dry forests are found. The survey was then improved based on the responses to the pilot version, and the revised version was given to 21 additional students. These students also gave a copy to a parent, grandparent, or other older relative. For those questions that were also the same as on the pilot version of the survey, the maximum sample size was therefore 59 respondents (38 students, 21 elders). All of the students understood English, as did many of the elders; some students translated the survey for their older relative. The teacher offered all students an opportunity to participate, and the return rate was high. The sample was not stratified or necessarily random, but constituted as nearly complete a sample of the population of students as could be obtained. For some questions there was no significant difference in response between students and elders, and the responses of the two groups were pooled.

A final stage of our research involved meetings with residents of villages located near the forests. These meetings were planned, announced, and attended by members of the Muzarabani Rural District Council, including the Council Chairman, Chair of the Natural Resources Committee (also known as the CAMPFIRE Committee), and elected councilors from the three wards in which the forests are found.

RESULTS

Forest Change

Aerial photographs from 1960 and 1993 show significant changes in the dry forests of the Muzarabani area (Fig. 3). Forest area has been reduced due to the complete clearing and elimination of some patches, and to the reduction in size of other patches from clearing around the edges. Once-continuous forests have been fragmented into several smaller patches in some cases. In 1960 there were 22 patches of this forest type in the area we mapped. By 1993, 18 of these 22 patches—generally the smallest ones—had been completely cleared. The remaining four patches were reduced in size and fragmented into 14 patches by 1993.

Table I presents a breakdown of the data on forest loss along two dimensions—whether the forests are west or east of the Musengezi River, and whether they were formerly continuous with one or more of the forest fragments that are today considered sacred. Striking differences in forest loss are associated with both of these variables. First, the amount of forest lost

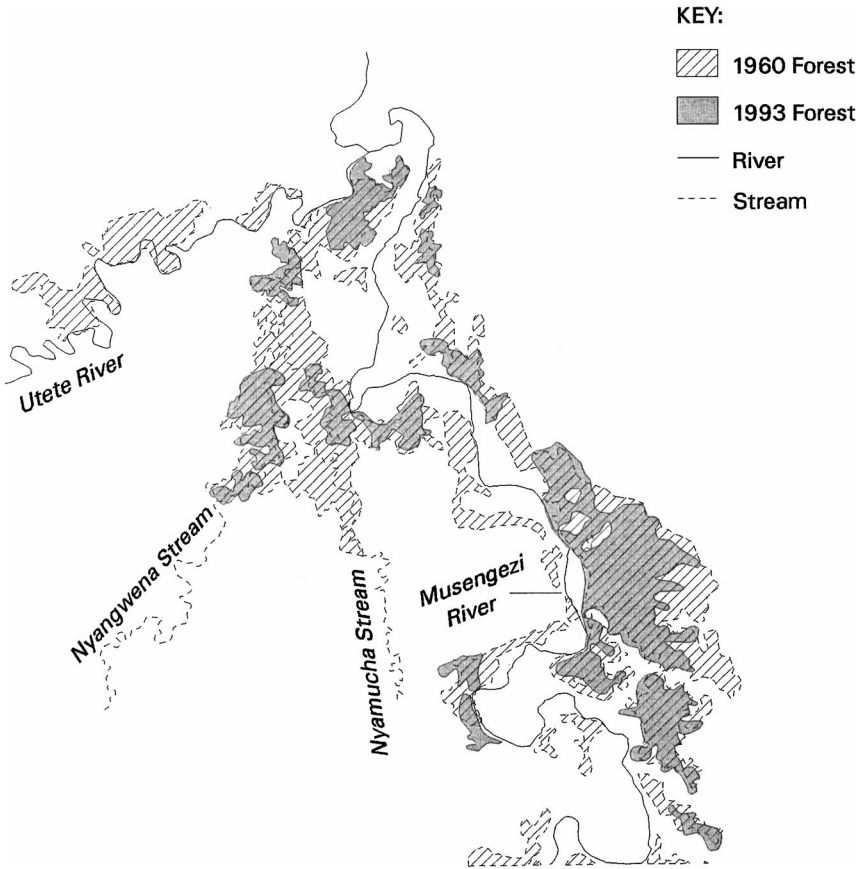


Fig. 3. Boundaries of dry forests in the Muzarbani area in 1960 and 1993.

from areas that were once continuous with forests now considered sacred is significantly lower than forest loss from forests not formerly connected to sacred forests (chi-squared test, $p < 0.001$). Second, rates of forest loss have been significantly higher on the west side of the Musengezi River than on the east side (chi-squared test, $p < 0.001$).

Once these dry forests are cleared, they do not regenerate if subsequently left fallow, at least within the time frame of decades. Regrowth on sandier soils is dominated by *Combretum elaeagnoides* and on heavier clay soils by *Acacia tortilis*. Some other tree species may begin to colonize following these common pioneer species, but the majority of the dry forest tree species are absent.

Table I. Change in Forest Area between 1960 and 1993 by Sacred Designation and Location

	West of Musengezi R.		East of Musengezi R.		Both Sides of River	
	1960	1993	1960	1993	1960	1993
Forest area now or formerly part of a sacred forest (ha)	508	254	662	445	1,170	699
Decrease in area of sacred forest (%)		50%		33%		40%
Forest area not now or formerly part of a sacred forest (ha)	351	33	46	16	397	49
Decrease in area of non-sacred forest (%)		91%		65%		88%
Total forest area (ha)	859	287	708	461	1,567	748
Decrease in total forest area (%)		67%		35%		52%

Qualitative evidence from aerial photo interpretation and ground investigation suggests that other native plant communities adjacent to the dry forests, especially mopane woodlands, have been cleared and degraded to a much greater extent than the dry forests. We did not quantify the changes in these other vegetation types, however.

Interviews

Our interviews with local residents, and those conducted by a field assistant mapping sacred sites, provided information on sacred sites in the area. Many kinds of sacred places exist, including sacred pools, sacred trees, sacred forests, places where traditional ceremonial beer is offered to the spirits, entire rivers, and mountains or entire mountain ranges. The largest remaining dry forests in the Muzarabani area are considered sacred by many local residents. These sacred forests are those named on the map in Fig. 2—Rukonde, Chikambo, Chamaturi, Kapara, and Katepa Forests.

One local farmer told us that all thickets and thick forests are sacred. “The spirit mediums say that thickets are where we keep our *vakaranga*—our animals,” he said. Another local resident explained the importance of conserving the forests of the area by saying “Lions want shade!” He was referring to *mhondoro*, the powerful ancestor spirits who take the form of lions. For him, and other traditional leaders, forests are considered sacred and are protected mainly because they provide habitat for ancestral spirits.

Acacia ataxacantha is common in the dry forests of Muzarabani. This species has backward-curving thorns and often forms a dense, thicket understory, making these forests all but impenetrable. The local Shona name for

Acacia ataxacantha is *jese*, and thickets or forests in which the species occurs are often themselves called a *jese*. A local Korekore resident told us that the dry forests are used as burial places, and this makes them spirit-inhabited, sacred places. People like areas with *Acacia ataxacantha* for burials, he said, because its thorns catch and stop witches, and thus deter them from entering the forest to disturb the bodies of the dead for evil purposes. Another possible reason for the association between burials and the dry forests is that the forests are found on soils that are deep, sandy and well-drained, making them an easy place to dig graves.

Local people were sometimes reluctant to give much information about sacred sites. This made it hard to tell whether people did not know about local sacred sites, or knew but were reluctant to talk about them. We were usually referred to the *sabhuku* of the local village, or a close male relative of the *sabhuku*, for detailed information. Several local *sabhukus* thus became some of our key informants in this study.

Knowledge of sacred sites is quite localized. Even if people knew about sacred sites nearby, it seemed that most had no knowledge of sacred sites more than a few kilometers away. Very important regional sacred places, such as Mbuya Nehanda's pool (about 40 kilometers farther north along the Musengezi River), were exceptions and were known by most people.

Rules exist regarding the use of sacred places. Local residents told us that people should not enter Rukonde Forest without special permission from the appropriate traditional religious leader. Rukonde is said to be protected by a "big snake," described as much bigger and thicker than a python. People who enter the forest without permission or cut trees there may see the big snake, and then might die, get lost, or become insane, we were told. In contrast, we were told that anyone could enter Katepa Forest, and that special permission was not required unless they were hunting animals such as guineafowl or duiker.

Some people we interviewed told us that if the forests were not sacred, they would have been cleared already. Flat areas between the gullies in some of the forests have been cleared and farmed. One family farmed some fields within Rukonde Forest for about 20 years, for example, suggesting that the soil is suitable for crops. A dry forest patch south of Kapembere was cleared in approximately 1984 and used for cultivation until recently. "The soil is good," a farmer assured us, and the fields there were abandoned for crops because it became too hard to protect them from grazing livestock, not because the soil was poor. Two significant patches of dry forest north of the Utete River were cleared for crop fields in the 1960s. Similar dry forests in Gurube District along the Manyame River have been cleared to a large extent and are being used for cultivation.

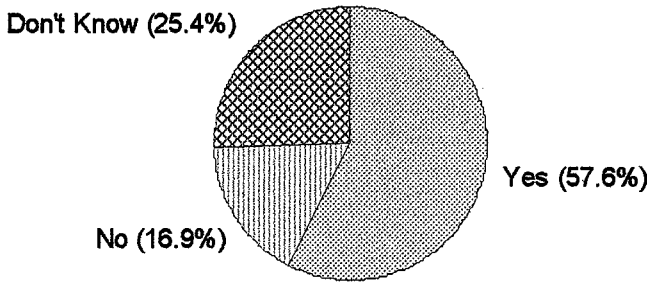


Fig. 4. Responses to "Are there sacred places nearby?" (students and elders, N = 59).

Knowledge and Opinion Survey

Figures 4–9 show the results of our questionnaire. In order to help us interpret the responses to "who doesn't respect sacred places?" (Fig. 9), we asked respondents more about their religious beliefs and their responses are shown in Fig. 10.

During interviews we heard complaints by some local people about how many immigrants have moved into the Muzarabani area. Figure 11 summarizes data on when the families of the 38 student respondents immigrated to the area.

Immigration data are corroborated by information on ethnic affiliation of current residents. A breakdown of the student-and-elder pairs of respondents (each pair always of the same ethnic division) by ethnic division is given in Fig. 12.

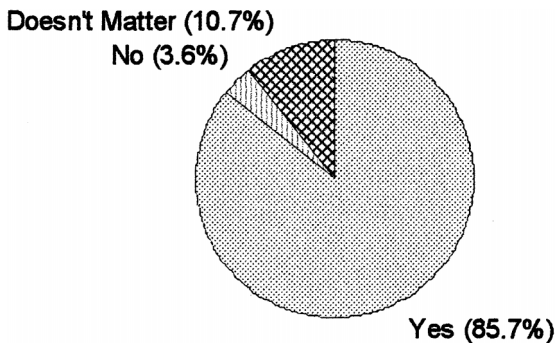


Fig. 5. Responses to "Is it good to respect sacred places?" (students and elders, N = 56).

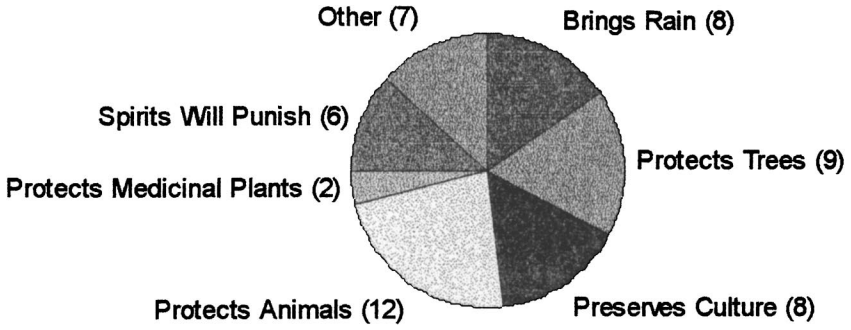


Fig. 6. Responses to “Why is it good to protect sacred places?” (all responses, N = 52 reasons given).

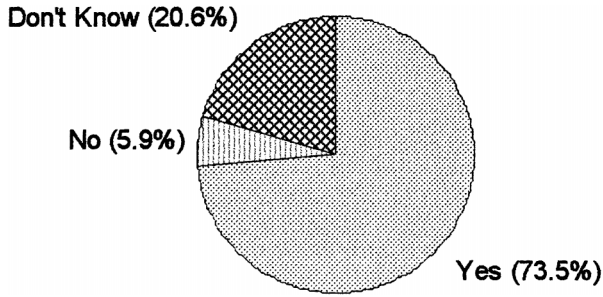


Fig. 7. Responses to “Are there rules about sacred sites?” (students and elders, N = 34).

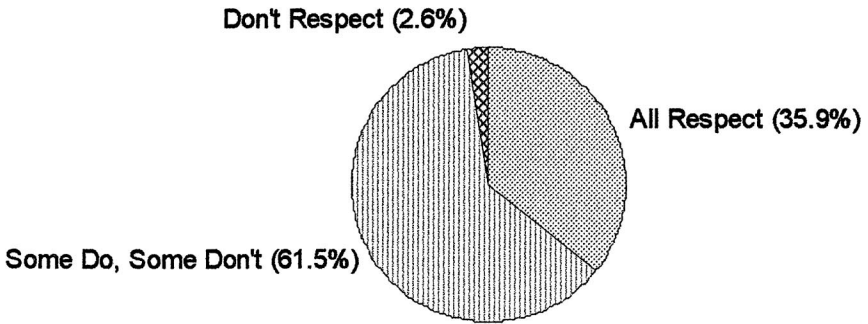


Fig. 8. Responses to “Do people respect sacred places?” (students and elders, N = 39).

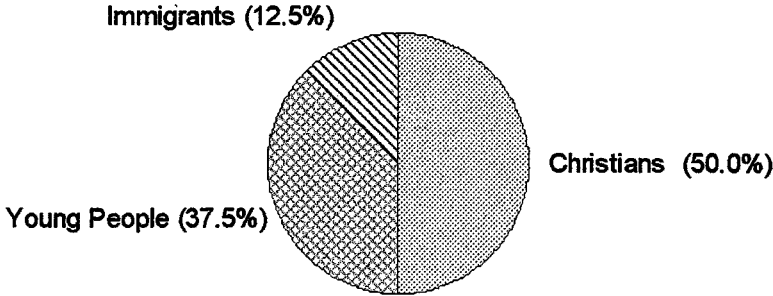


Fig. 9. Responses to “Who doesn’t respect sacred places?” (students and elders pooled, N = 24 reasons given).

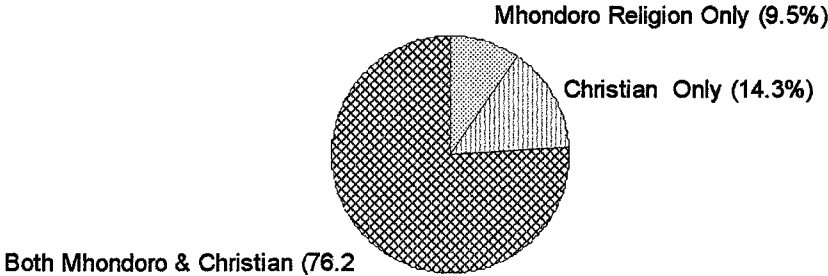


Fig. 10. Responses to “My religious beliefs are:” (students and elders, N = 42).

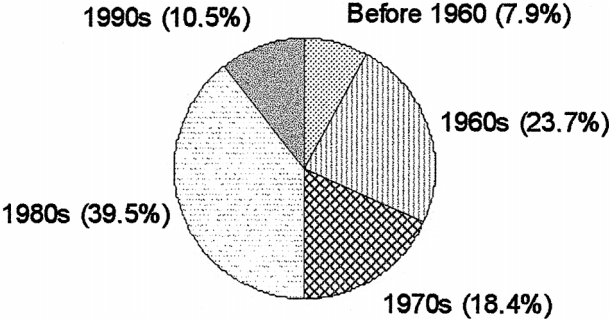


Fig. 11. Decade of Immigration to Muzarabani (students only, N = 38).

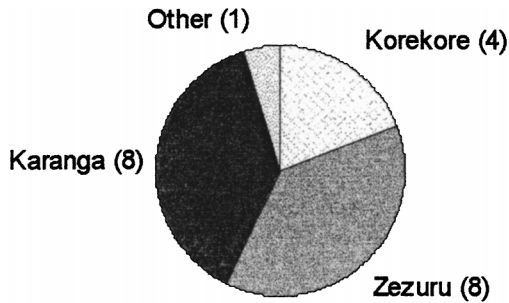


Fig. 12. Ethnic division of respondents (students = elders, N = 21).

DISCUSSION

Sacredness and Forest Conservation

Like Fairhead and Leach, who studied the landscape history of the forest-savanna mosaic zone of Guinea in west Africa, we were interested in “the social dynamics of deforestation; in how different inhabitants understood this process and responded to it technically and socially” (Fairhead & Leach, 1997). Their study showed that the pattern and direction of forest change in the area was open to dramatically different interpretations. Government forest managers since the colonial period have assumed that existing forest patches are isolated remnants of a formerly widespread forest that is gradually being cleared by local people. Local residents, however, see forest patches as anthropogenic creations, expanding gradually over time. In contrast, the situation in Muzarabani is not at all ambiguous. With the economic development and rapid population growth that have occurred over the last four decades, the dry forests of Muzarabani and in neighboring Guruve District are shrinking rapidly. They are being cleared for crop fields and villages, and thinned by tree cutting for fuel and building materials. Local residents recognize the rapid loss of these forests, and are generally concerned.

Historical trends in forest loss can be thought of as a record of behavior toward the environment over time (Byers, 2000). The clearing and fragmentation of forests in the Muzarabani area over the last four decades is the result of behavior—thousands of acts of tree cutting. The persistence of some forests is also the result of behavioral choices—fields were not cleared and settlements were not built there. Correlating forest and land use changes as revealed by a time-series of aerial photographs with the history of social and economic changes as described by local people can help provide clues

to the factors that motivate the behaviors that affect forests (Byers, 1996; 2000).

The forest fragments now considered sacred were once parts of larger continuous forests. The whole area of the larger forest blocks may well have been considered sacred originally. For example, a descendant of Chief Muzarabani claims that all of the once-larger Rukonde Forest was sacred, including the southern fragment now called Chikambo Forest. Table I shows that the amount of forest cleared is dramatically less in forests that are now considered sacred, or were in the past connected to these sacred forests, than in forests that were not formerly connected to a current sacred forest. This result supports our hypothesis that religious and spiritual values influence behavior affecting forests.

There are no obvious differences in other ecological and social factors between the forests that were cleared and those that were not. Whether considered sacred or not, these forests are ecologically restricted to old, alluvial soils which local residents say are suitable for agriculture. In this flat region, the elevation, slope and aspect of sacred and non-sacred forests do not differ in an obvious way. No obvious differences in settlement history, population pressure, or agricultural development near cleared and intact forests stand out.

The history and pattern of forest clearance in Muzarabani strongly suggests that traditional religious beliefs have influenced behavior toward the area's dry forests. But religious beliefs have not prevented forest loss and fragmentation. Why?

Knowledge of Sacred Sites

Results from the survey taken by Muzarabani students and their elders provide useful information for evaluating some hypotheses about behaviors affecting forests and their underlying motivations. Although the results presented here are suggestive, we have sought to exercise caution in their interpretation. One limitation of any survey data is that respondents may not always be telling the truth; another is that responses stating abstract beliefs or opinions are not always followed up with congruent actions and behaviors.

Our survey suggested that lack of knowledge about local sacred sites, and about the rules governing them, may play a role in forest loss. For example, almost half of those surveyed claimed either that they did not know of sacred places near their village or thought there were none. About half actually named a nearby sacred site, even though they all lived within a few kilometers of many such sites. Of the respondents who said there were

sacred sites nearby, barely three-quarters claimed to know rules regarding the proper respect for such places. If taken at face value, these results suggest a significant lack of knowledge about sacred places. However, the apparent lack of knowledge may be partly or mostly the result of the unwillingness of many people to give such information. Although our data are suggestive, lack of knowledge about sacred places must still be treated as a hypothesis, rather than a finding of this study.

In our interviews with local residents we often heard that people did not respect sacred places because they did not know about them. Sometimes we were told that they did not know because they were new immigrants to the area, and had not yet been told about the local sacred sites. We were also told that younger people were now more concerned with economic issues, and were less likely to learn about sacred places, but we were often told that if someone knew that a place was sacred, they would respect it.

Interviews and community meetings suggested that a lack of knowledge of, and agreement about, the exact boundaries of sacred forests may be important factors leading to their degradation. Local residents have different perceptions of the boundaries of sacred forests, and may interpret the boundaries of the “sacred” in ways that suit them. For example, a descendant of Chief Muzarabani claims that all of the once-larger Rukonde Forest was sacred, and that a village located between Rukonde and Chikambo Forests is actually inside the boundaries of the sacred area. The *sabhuku* of that village, however, told us that the sacred boundary of Rukonde Forest is well north of his village, and that only about one-half of the present Rukonde Forest is sacred anyway. He also said that Chikambo Forest, to the south of his village, is not sacred. A member of another family, whose houses and livestock pens encroach into the eastern side of Rukonde, claimed that his family was given permission to settle there by Chief Muzarabani, and that where they live is not a part of the sacred forest. So, although a core part of the forest is considered sacred by everyone, no one believes that where they are living or farming is sacred, even though other local residents may.

The ultimate authority on the locations and boundaries of sacred forests would be the spirit mediums who are thought to speak for the ancestral chiefs of the area. One problem in this case is that two *mhondoro* spirits with interests in the Muzarabani area, Nehanda and Chuzu, currently have no spirit mediums, their previous mediums having died many years ago. The process for identifying and authenticating new mediums is complicated (Lan, 1985), and for both Nehanda and Chuzu new mediums still have not been found. The living mediums of other spirits with interests in the area, such as Chiwawa and Chidyamauyu, can make some determinations about sacred places in the spirit territories of the medium-less spirits. However,

people sometimes question the accuracy of their views. The living mediums sometimes refuse to make a decision that is really supposed to be made by another *mhondoro* spirit, claiming that only the possessed medium of the appropriate spirit can do so (Spierenburg, 1995). Next to the spirit mediums, chiefs should have the greatest knowledge about sacred places, although some old village heads may know the locations and boundaries of sacred forests better than young chiefs.

Traditional Religious Values and Forest Conservation

Survey respondents gave three reasons, other than lack of knowledge, why some people did not respect traditional sacred places: because of their religion, their age, or the fact that they were immigrants (Fig. 9). The most common reason given was that people who didn't respect traditional sacred places were Christian (50%). However, roughly three-quarters of the respondents described their beliefs as "both *mhondoro* religion [traditional Shona religion] and Christian," while only six of 42 respondents said they were "Christian only." If degradation of sacred forests were in fact caused by those considering themselves Christian only, it would have to be caused by fewer than 15% of the local population. The majority of respondents who gave their religion as "Christian only" (4/6) nevertheless said it was good to respect traditional sacred places. These data call attention to the fact that a large majority of local people say they are followers both of traditional Shona religion and Christianity. They do not lend support to the hypothesis that Christianity is the cause of forest loss.

The second most common reason given by survey respondents was that people who didn't respect traditional sacred places were young (37.5%). However, there were no statistically significant differences between students and elders in response to the question "Is it good to respect sacred places?" Our data therefore do not support the hypothesis that young people are responsible for a lack of respect for sacred forests, although again we should note that survey results should be interpreted with caution.

The third reason given by respondents on the survey was that people who didn't respect traditional sacred places were immigrants (12.5%). However, as shown in Fig. 11, only a small minority of the residents of the area are not immigrants, and yet about 85% say it is good to respect sacred places. We were told in interviews that immigrants would usually respect sacred places if they knew about them. In several cases, old immigrants now appear to play strong roles in protecting sacred forests and upholding traditional rules governing their use. The survey and interview information we obtained therefore does not unambiguously support or refute the hypothesis that

immigration has resulted in a loss of respect for sacred forests, and the role played by immigration is not clear.

In summary, the results of the survey do not unambiguously support any of the three reasons given by respondents for lack of respect for traditional sacred sites in the area: neither religion, nor age, nor immigrant status seems to clearly explain a lack of respect for sacred forests in Muzarabani.

Spirit mediums are the authorities ultimately responsible for protecting sacred sites and enforcing rules about their use. As population increases, the influence of the spirit mediums is diluted. People used to have much more frequent contact with spirit mediums. Mediums too are changing, behaving in ways that cause them to lose some of their traditional influence. Some now ride on buses, use fertilizer, and live in “four-cornered” houses, all of which were thought in the past to compromise their power and authenticity (Lan, 1985). In short, the system of spirit mediums is under stress, and is experiencing difficulty adapting to the rapid demographic and economic changes in Zimbabwe.

Material and Nonmaterial Values in the Shona Worldview

Our results show that traditional spiritual values have motivated the conservation of some of the dry forests in Muzarabani up to now. This calls into question simplistic claims that people can only be motivated to conserve natural resources if they get direct material or “economic” benefits from doing so. The reasons given by local residents about why it is good to respect sacred forests (see Fig. 6) can be thought of as perceived values, benefits, and uses of those forests. While some of the values and uses are clearly nonmaterial—such as preserving culture—others—such as protecting animals, trees, and medicinal plants—are material. Still others among the reasons given for protecting sacred forests could be seen as either material or nonmaterial, depending upon whether one’s perspective is inside or outside the belief system of Shona religion. To a nonbeliever, protecting sacred sites to bring rain or prevent punishment by spirits would be seen as nonmaterial, spiritual values. To a believer, however, rain and disease (one kind of punishment by spirits) are real and material, so the benefits of respect for sacred forests would be viewed as direct material values.

In this case we may question whether the distinction, which seems so real from a Western worldview, between nonmaterial (e.g., spiritual and religious) benefits and material (e.g., food, water, health) benefits is perceived as a real distinction by those who believe in Shona religion. To believers in the *mhondoro*, it is those ancestral spirits who bring the annual rains and maintain the fertility of the land. If the *mhondoro* require that their sacred

places be respected, then those places—although not cleared or farmed—are perceived to be directly beneficial in a material and economic sense. Their protection in a natural state is believed to indirectly produce food, health, and other material benefits for people.

Disempowerment of Traditional Leaders and Forest Conservation

Our data (see Table I) show a dramatic difference in forest loss east and west of the Musengezi River. The correlation between a higher level of forest loss and the implementation of the Mid-Zambezi Rural Development Project on the west side of the Musengezi supports a hypothesis that links forest conservation with the power of traditional political and religious leaders.

The Mid-Zambezi Project began in 1987. The goals of this project, which was funded by the African Development Bank and Zimbabwean government, included resettling local residents in newly created or reorganized nuclear villages, providing land for the resettlement of 3,000 farming families from other communal areas, and increasing agricultural production, especially of commercial cash crops (Derman, 1996; Spierenburg, 1995). Using a technocratic, top-down approach, land use mapping and planning were carried out by Agritex, the national agricultural extension service. Modern political authorities—District Councils, ward councilors, Ward Development Committees (WADCOS) and Village Development Committees (VIDCOS) had to implement these plans. “Traditional authority . . . was bypassed. No longer were the chief, *mhondoros* [spirit mediums], and *sabhukus* asked or informed about new residents in their territories . . . The diminution of local authority is also fostered by residents (usually migrants) who do not accept old leadership and who can legitimately claim that they do not fall under customary authorities but rather under the WADCOS and VIDCOS” (Derman, 1996).

The forest change we observed in aerial photos began at least two decades before the Mid-Zambezi Project, so factors other than the disempowerment of traditional leaders may have also contributed to the different rates of forest loss east and west of the river. Population pressure for land does not seem to provide an alternative explanation, however. Population density of Gutsa Ward, on the west side of the Musengezi, was estimated at 0.4 people per square kilometer in 1962, and in adjacent Muzarabani Ward on the east side of the river at 2.8 people per square km. In 1969, after the Gutsa irrigation scheme had been developed, population density in Gutsa Ward was estimated to be 2.4 per square km, and in Muzarabani to be 3.9 per square km. Population density probably remained higher on the east side of the river even in 1982 (Cunliffe, 1992). Although localized population

density estimates are difficult to make, and should be interpreted cautiously, it appears that population densities in the study area were higher east of the Musengezi for 25 years before the Mid-Zambezi project, but rates of forest clearance were significantly less.

The Mid-Zambezi Project was originally intended to be completed by 1992, but it was behind schedule due in part to technical and organizational problems, and was extended until 1995. Increasing local resistance, which involved spirit mediums and other traditional religious leaders, slowed the implementation of the project as it moved eastward into the Muzarabani area (Spierenburg, 1995). The relocation of people into centralized villages; demarcation of homesteads, crop fields, and grazing lands; and resettlement that the project carried out on the west side of the Musengezi River did not occur on the east side of the Musengezi because of this local resistance. A “which came first, the chicken or the egg” problem complicates the analysis of this situation. Traditional leaders may have been relatively less powerful on the west side of the Musengezi than on the east side in the decades before 1987, thus allowing the Mid-Zambezi Project to develop momentum and be implemented west of the river, but stall and not be implemented east of the river (Derman, 1996; Spierenburg, 1995). The relatively greater power of traditional political and religious leaders east of the Musengezi may have been maintained over several decades, and may explain the significantly lower level of forest loss on that side of the river.

At a community meeting, one village head said: “As a *sabhuku*, I am quite aware that there are some sacred areas near my village. But it looks like the power to protect those sacred places was taken from the *sabhukus* and given to the VIDCO chairmen. That is exactly when the destruction of these resources started, when powers were withdrawn from *sabhukus*. Some people were allocated land, and sacred areas were pegged off [reserved from cultivation]. But when these people realized village heads were powerless to stop them, they cultivated those sacred areas anyway.” Another local leader called the tension between VIDCO chairmen and *sabhukus* a “tug-of-war. VIDCO chairmen were given political powers—but they don’t know about the sacred areas here.” The tension between modern political leaders and traditional political and religious leaders has roots which go back to the colonial period (Lan, 1985).

LINKING PROTECTION OF SACRED SITES WITH CONSERVATION OF FORESTS AND WILDLIFE

Because traditional religious values appear to have motivated forest protection in Muzarabani, and because the power of traditional leaders

seems to be related to rates of forest loss, we conclude that in order to conserve forests in Muzarabani, a strategy that links the conservation of culture and nature is more likely to be effective than a strategy that ignores traditional beliefs, values, and institutions. We will now discuss some ideas for supporting and strengthening traditional values and institutions and improving forest conservation at the same time.

Empowering Traditional Leaders in the Modern System

The Zambezi Society presented the results of the 1995–96 botanical survey and prioritization exercise to representatives of each of the six Rural District Councils in the Zambezi Valley in 1996, and assessed their interest in working to conserve high-priority sites in their districts. In Muzarabani, representatives of the Rural District Council proposed that the best way to conserve the remaining dry forests of the area was to involve traditional leaders and to strengthen respect for customary rules and traditions regarding forest use. This strategy of working directly with the traditional leadership to reinforce customary laws for forest conservation provides an interesting contrast to the other districts, in which modern legal approaches were proposed, such as passing by-laws at the district level to create botanical protected areas (Timberlake & Cunliffe, 1997). As discussed earlier, however, there is ambiguity about who has the power to make and enforce land use decisions—traditional or modern leaders. Although the authority to allocate land for various uses legally rests with modern political leaders, in practice traditional leaders often make these decisions. There is a tension between the two systems in this regard.

Traditional leaders are often impotent to enforce customary rules when not supported, or especially when actively opposed, by modern political leaders. In one case, for example, two brothers have cleared crop fields and are plowing within the boundaries of the Kapara Forest. In this case we were told that a relatively low-level modern leader, a ward councilor, gave them permission to do so, and even the traditional chief of the area does not seem to be willing or able to stop them. The Mid-Zambezi Rural Development Project helped to create this tension between modern and traditional leaders.

It is fairly common for the same individual to have roles in both the traditional and modern systems. One man we interviewed, for example, was both a *sabhuku* and a *mutapi* in the traditional system—both a traditional political and religious leader, in other words—as well as an elected ward councilor and the chairman of the District Wildlife Committee in the post-independence political system. Individuals like this can be key leaders in

harmonizing the values of the traditional and modern systems, and in linking the conservation of culture and nature.

Increasing Awareness and Knowledge of Sacred Sites

At a community meeting some residents asked whether signs or markers could be placed to identify the boundaries of sacred forests. In response a traditional leader replied that “as far as putting up signs goes, we have to leave that to the chiefs, because we don’t want to do anything that is forbidden by the *mhondoro*.” The local chief, Headman Muzarabani, basically rejected the idea of signs, saying that “Some people might recommend painting trees to mark the boundaries, but you need to learn the boundaries, not mark them with paint.”

The *sabhuku* of a village near Rukonde Forest told us that he thought the entire forest should be fenced “with wire” to protect it. At a community meeting a participant asked “Can’t we fence these sacred areas?” He pointed out, however, that “if we did, how would the elephants get in and out?” A traditional leader spoke against fencing, saying “Spirits don’t want areas to be fenced; they don’t like wire.” The local chief, Headman Muzarabani, had the last word on fencing sacred areas, as he had on marking them with signs: “You people should be the fence, not wire.”

In response to both of these ideas the chief seemed to be saying that people must learn the boundaries of sacred areas and respect them, rather than being informed by signs and kept out by fences. He said he would hold meetings in villages throughout the area to make sure people knew the locations and boundaries of sacred forests. A traditional leader recommended that village heads take a trip around the area with village residents to show them the boundaries of sacred areas.

These proposals raise the question of whether non-local organizations like the Zambezi Society can do anything to help local leaders increase awareness and knowledge of the sacred forests in their area, and clarify the location of their boundaries. One role for outsiders might be to facilitate meetings of local residents (by assisting with transportation and food, for example) at which the locations and boundaries of sacred forests, and options for their conservation, could be discussed. Outside organizations might also facilitate trips to enable local residents to visit sacred sites and discuss boundaries, as well as develop and provide maps of sacred forests (and/or other sacred sites) as part of a campaign to increase knowledge and awareness of these areas, if desired and approved by local leaders. A caveat should be added, however. One of the adaptive features of traditional governance is its flexibility, and in Shona religion the “sacredness” of a place can be added

or removed as needed for effective social and environmental management (Schoffeleers, 1978; Spierenburg, 1995; Y. Mhene, pers. comm.). Some people or groups may claim that a site is “sacred” in order to reserve it for their own future use (Dzingirai & Bourdillon, 1998). Printed maps may reduce this traditional flexibility by “freezing” sacred geography. The potential cost of doing so must be weighed carefully against the problem of lack of knowledge and agreement about the boundaries of sacred sites, which maps could clarify.

An important step toward empowering traditional leaders with respect to land use decisions involving sacred forests and other areas is to inform modern political leaders—District-level officials, District Council members (the ward councilors), and chairmen of the WADCOs and VIDCOs—of the locations and boundaries of sacred sites. In doing so, however, the caveat mentioned above regarding the potential benefit of the traditional flexibility of “sacredness” should be kept in mind.

Knowledge that a place is considered sacred may not be enough to protect it in every case. In interviews and at community meetings, village heads and other traditional leaders pointed out cases in which they believed people knew a place was sacred, but cut trees, planted crops, or violated the rules anyway. People who knew a place was sacred but did not respect customary rules about its proper use were described as “rude” or “mischievous.” Situations like this require understanding the many factors besides knowledge that can influence environmental behavior (Byers, 1996; 2000).

Managing Forests for Multiple Values and Uses

The sacred forests of Muzarabani contribute to livelihoods and quality of life at the local level, the district level, and the national level because of the many material and nonmaterial uses, values, and benefits they provide. The compatibility of many of these uses could allow a diverse group of stakeholders to recognize their common interest in conserving the Muzarabani dry forests, and encourage them to cooperate to do so.

Local people are generally sincere in their traditional religious beliefs, and have a strong desire to preserve their culture. Cultural respect requires understanding that in Shona religion there is no clear dichotomy between nonmaterial spiritual uses and material economic ones. The Shona religious belief that the ancestral spirits who look after the welfare of contemporary people reside in wild animals is a positive force for environmental conservation. Those wild animals require undisturbed natural habitat, so this belief leads to the protection of natural habitats. If these traditional beliefs die out, one factor favoring the conservation of natural areas will be lost. Managing the Muzarabani forests for sustainable uses requires that traditional

religious uses be recognized as legitimate uses, and be respected. Implementing such recognition of, and respect for, traditional values may require the development of new policy guidance for government and/or donor agencies and institutions involved in natural resources management.

In addition to their religious values and uses, the forests of Muzarabani provide direct, material benefits and earn money for the district through the CAMPFIRE sport hunting concession. The current hunting concessionaire said that he deliberately guides hunters to the forest areas because they attract wildlife (J. Meyer, pers. comm.). Local people, including traditional leaders, recognize the economic value of the dry forests as wildlife habitat. At a public meeting the chief of the area said “We are getting money from CAMPFIRE [because of elephants that stay in those areas], and we won’t if they [those people] keep destroying those areas.” A local *sabhuku* said: “We are lucky to have these forests. CAMPFIRE gets lots of money from the elephants that stay here.”

Hoare and Du Toit (1999) reported that elephants and humans can coexist in areas with significant human population densities and surprisingly high levels of conversion of natural vegetation to agricultural fields. They suggest that elephant populations can persist where human settlement is interspersed with a matrix of untransformed natural habitat, and that the size and connectivity of the patches of natural habitat is the critical determinant of whether elephants will remain or move away. For the time being, the forests of Muzarabani provide the natural habitat required to attract and maintain elephants in the area.

The dry forests of Muzarabani have a high scientific value according to the Zambezi Society. They are useful to scientists as a good example of one of the natural vegetation types of Zimbabwe and the Zambezi Valley, and could be called “witness stands” or “benchmark sites” of this plant assemblage (Timberlake & Cunliffe, 1997). As such they can help provide a baseline against which environmental change can be measured, whether that change is natural or anthropogenic, long or short term. These forests may be relicts from the Pleistocene, when the climate of the Zambezi Valley was different than now. They could be helpful in understanding long-term climate change in this part of Africa. They also provide seed sources for locally adapted populations of their constituent species, and thus keep open the option of future restoration of these forests.

A potential threat to the sacred forests of Muzarabani is that decisions made elsewhere may overwhelm local conservation actions. Muzarabani’s dry forests could be adversely affected by irrigation or resettlement schemes, or by changes in the economics of cotton cultivation in Zimbabwe, for example. The more common interests that exist among the diverse stakeholders

in forest conservation in Muzarabani, the better able these stakeholders will be to fight against outside pressures that would destroy the forests.

CONCLUSIONS: LESSONS FROM MUZARABANI

Out of this study of the sacred forests of Muzarabani come some lessons with wider applicability:

- Using an environmental history approach can provide insights about the motivations of environmental behaviors. Relating forest and land use changes revealed by aerial photographs to the history of social and economic changes as described by local people provided insights into the factors that influence and motivate behaviors that affect forests.
- Spiritual or religious values can motivate conservation of natural resources. In this case, the amount of forest cleared is dramatically less in forests that are now considered sacred, or were in the past connected to these sacred forests, than in forests that were not formerly connected to a current sacred forest.
- The degree of empowerment of traditional leaders within the modern system of government can influence conservation that is motivated by traditional values and practices. Policies that support traditional institutions and empower traditional leaders can foster conservation in such cases.
- Strengthening knowledge of, and respect for, traditional sacred sites has significant potential for conserving forests and wildlife in cases such as that discussed here.
- Nonmaterial uses of nature should be recognized as legitimate uses. Policies that recognize and respect values and uses of forests other than strictly material and economic ones can enhance conservation.
- Traditional spiritual uses of forests as sacred places and modern economic uses of forests as wildlife habitat are potentially compatible. A synergy of traditional nonmaterial and modern material values and uses creates the potential for a “win-win” situation that could lead diverse stakeholders to cooperate to conserve natural resources.
- The dichotomy between material and nonmaterial uses that is considered so real and clear from a modern, Western perspective is not necessarily perceived as a dichotomy in other cultures. For adherents of Shona religion, protecting sacred forests as habitat for wild animals inhabited by ancestral spirits is believed to bring tangible, material benefits: it makes the rain fall and the soil productive for growing food.

- Outsiders and non-local organizations can potentially play a catalytic role in conserving both culture and nature. Our experience in Muzarabani has convinced us that the presence of outsiders who are interested in traditional culture and sacred places can catch the attention of local people, and of traditional and modern leaders. Interest from outsiders may shift power balances so that traditional leaders struggling to protect the traditional culture, including traditional sacred sites, have more leverage.

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