



## POTENTIAL AND CHALLENGES OF INDIGENOUS KNOWLEDGE IN CONSERVATION OF BIODIVERSITY IN OSUN OSOGBO SACRED GROVE, NIGERIA

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### ABSTRACT

The study assessed the potential and challenges of biodiversity conservation in Osun Osogbo sacred grove located in South-west Nigeria. The sacred grove was established on the indigenous knowledge (IK) of the people of Oshogbo and passed down orally from one generation to another. Meanwhile, ecological encroachment and degradation activities posed great challenges to the sustenance of the grove. Data was collected through interview of twenty key informants in the adjoining communities and five officials in the grove. Some of the challenges facing the grove include pressure from population explosion and urbanisation process, poaching and deforestation resulting from farming practices going on along the boundary. To effectively strengthen the indigenous knowledge in conservation of remaining natural diversity, the local people should be fully integrated in the management strategies. More guards are also required for patrol activities, and re-establishment of the grove's boundary and buffer zone are pertinent to prevent further encroachment.

**KEYWORDS:** Osun Sacred Grove, indigenous knowledge system, tree diversity, deforestation, cultural belief.

### INTRODUCTION

From the time immemorial, indigenous peoples in many parts of the world imbue headlands, springs, trees and forest with religious meanings (Augustine 1999; Liu *et al.*, 2001; Lauwrence, 2003). Indigenous knowledge has been defined as cultural knowledge and commonsense ideas of local peoples concerning the everyday realities of living (Sefa dei *et al.*, 2000). This definition covers cultural traditions, values, belief systems and world views that, in any indigenous society, are imparted to the younger generation by community elders. Recent studies have drawn attention to the role of indigenous knowledge and cultural beliefs in biodiversity conservation (Rao, 1996; Liu, 2006; Louman *et al.*, 2009). The interrelationship between traditional culture and biodiversity conservation has been documented (Xu and Liu, 1995; He and He, 2000; Chen *et al.*, 2008). These studies have documented how, through historical processes, local ethnic groups have developed very close interrelationship with local animals, plants and forests, and formed distinctive diversified indigenous knowledge systems and traditional cultural beliefs. Cultural sites, particular sacred sites are ecologically unique and important for conservation on varying scale of landscape, community and species (Salick *et al.*, 2007). Local people in some of the past studies believe that if they can protect the sacred mountain and sacred trees well, then this will protect their villages and wildlife of the forests, and also bring rain and provide general protection of the environment, bring good luck and fortune, and avoid God's punishment. Traditional beliefs are the important components of culture. Meanwhile, a problem of integration of traditional beliefs is that of the

refusal of many scientists to recognize traditional ecological knowledge as science because of its spiritual base, which they regard as superstitious and fatalistic (Ogunade, 2005). Many discussions implicitly or explicitly assume that biodiversity conservation is possible only within protected areas. Yet most of the world's biodiversity is in areas used by people (Berkes and Folke, 2002; Berkes, 2004). What they fail to recognize is that spiritual explanations often incorporate important ecology, conservation, and sustainable development strategies (Johnson, 1992). Local people have incentives to conserve biodiversity when their livelihoods depend on a multitude of products and values produced by biodiversity (Bhagwat *et al.*, 2005; Dudley and Phillips 2006). Hence, to conserve biodiversity, we need to understand how human cultures interact with landscapes and shape them into cultural landscapes (Davidson-Hunt, 2003). In fact, to a large extent, the world's biodiversity depends on maintaining patterns of resource use that facilitate the continued renewal of ecosystems. Sacred groves are forests that have been protected since the ages by traditional societies (Liu *et al.*, 2001). Sacred groves vary in size from a few hectares to a few kilometers protected by local communities as being the sacred residences of local deities and sites for religio-cultural rituals. They have served as valuable storehouses of biodiversity. There are many sacred groves in south west Nigeria with varying sizes, species compositions, and cultural / social relevance. The concept of the 'sacred' species provides a basis not only for natural resource management, but also for rehabilitation of degraded ecosystems with community participation (Ramanujam, 2003). Results of a comparison

between sacred groves and formal reserves have shown that sacred groves shelter a high diversity of medicinal plants and have more vigorous regeneration of trees than do formal reserves (Boraiah *et al.*, 2003). Sacred groves also have higher diversity of tree species than do formal reserves (Bhandary and Chandrashekar, 2003; Jamir and Pandey, 2003; Ramanujam and Cyril, 2003). Of late, a decline in traditional beliefs has led to a decline in practices and rituals associated with sacred groves (Anup, 2006). Sacred groves perform useful environmental tasks not merely for the immediate vicinity but for the future. The importance of sacred groves in conservation is immense.

Recent studies have shown that Indigenous Knowledge Systems (IKS) in the form of “ethno-ecological knowledge is faced with danger and diverse challenges” (O’ Donoghue *et al.*, 1999). This view on IKS is sending signals that we should be careful in the way we utilise the natural environment as a result of the future consequences. O’ Donoghue *et al.*, 1999 are of the assumptions that environmental problems and issues challenging us today are as a result of the decline in IKS utilisation. In addition, the author argue that “traditional (indigenous) peoples lived in conscious harmony with nature” and that “traditional knowing processes contain some sort of deep purity of values and have somehow been gradually eroded and lost” (O’ Donoghue *et al.*, 1999). Lots of environmental issues are on the increase at alarming rate. Some of these issues cannot be unconnected with the abandonment of “environmental friendly” indigenous knowledge – such as sacred groves. In the past, sacred groves were present in numerous parts of the world, nearly every continent, and were entities held sacred by communities with different religions and different forms of economic and social organization. Most of the world’s sacred groves have disappeared and few remain today (Anup, 2006). This study therefore assessed the potentials and challenges of the sacred grove in conservation of remaining tropical biological diversity with special focus on Osun Osogbo Sacred Grove located in South-west of Nigeria. The grove was selected because of the current challenges it is facing in serving the dual purposes of conservation of cultural values of the local people and the endemic biological diversity.

## METHODOLOGY

### Description of Osun Osogbo Sacred Grove

Osun sacred grove is situated in Osun State, southwest Nigeria. The slogan of the state “*the state of the living spring*”; this is coined from the presence of Osun River in the state. In 2005, UNESCO designated the Osun sacred grove a world heritage (Wikipedia, 2009; UNESCO, 2009). This was the culmination of a 50-year campaign spearheaded by a group of artists, Yoruba priests and an Austrian artist – Susanne Wenger (popularly known as *Adunni Olorisa*). The Osun cultural festival is a unique annual celebration and has assumed an international status. It is usually witnessed by both domestic and international tourists. The grove is about 2 km from Ataoja’s palace and Oba’s market at Adunni Hill slope in Oshogbo (the state capital of Osun State). The sacred grove was selected for the study due to its cultural significance and contribution to biodiversity conservation at the local, national and international levels. Due to its significance and

recognition, the grove is culturally and legally protected by the Federal Military Government of Nigeria Decree 77 of 1979. Regarded as the abode of the goddess of fertility, *Osun* is one of the pantheon of Yoruba gods. The landscape of the grove and its meandering river is dotted with sanctuaries and shrines, sculptures and art works in honour of Osun and other deities. The sacred grove, which is now seen as a symbol of identity for all Yoruba people, is probably the last in Yoruba culture. It testifies to the once widespread practice of establishing sacred groves outside all settlements. Situated within the grove is River Osun. The river drains the Osun basin in a north-south direction and passes out of the grove south-westwards. The underlying rocks at the river bed are of Precambrian formation. The two main seasons are rainy season (March to October) and dry season (November to February). Mean annual rainfall is above 1000mm and relative humidity is generally greater than 60% during the day and not less than 70% in the night. Temperature is generally between 22°C – 35°C. The dense forest of the Osun Sacred Grove, on the outskirts of the city of Osogbo, is one of the last remnants of primary high forest in southern Nigeria. The vegetation structure of Osun grove was unique with distinct strata, and dominated with species which usually predominate towards or at the climax level of the plant succession. Over thousand species of plants were identified by non-taxonomist in the past. According to Adebisi (1999), about 164 flora species were identified in the grove; 32 flora species were endemic and endangered to the grove while 7 flora species were mentioned as extinct. The extinct species include *Boscia augustifolia*, *Cissus populnea*, *Croton penduliflorus*, *Griffonia simplicifolia*, *Lactuca capensis*, *Merremia kentrocaulis*, and *Strophantus sermentosus*. Many of the plant species might have gone into extinction due to land clearance and other anthropogenic practises.

### Sampling Method

The respondents for the study include key informants selected from communities around the sacred grove and the government officers working in the grove. Primary data for the study was collected through administration of structured questionnaire and in-depth interview. Twenty key informants were purposively selected based on their long years of staying in the communities and their experiences (average of 50 years) on the activities going on in the sacred grove. In addition, structured questionnaire was administered to five government officials working on full term basis in the grove. The officers were selected based on their accessibility to adequate information on the grove and long years of working (average of ten years) in the grove. Information collected through the questionnaires and the interview includes the traditional beliefs of the people and the cultural values of the grove, as well as the challenges facing the grove.

To establish the biodiversity conservation potential of the grove, line transect was used to conduct rapid survey of tree diversity within the grove. Three line transects of 100m long and at a distance of 50m apart were laid within the sacred groove. Tree species within 20m on either sides of the line transect (making a total land area covered to be 1,200m<sup>2</sup>) were identified and recorded.

## RESULTS

### Some of the cultural beliefs in the grove

The Osun sacred grove was established on the cultural beliefs of the people of Oshogbo which was passed down orally from one generation to another. The people have the belief that the goddess of the River Osun has power to give children and protect. History has it that River Osun provided the water of life which saved the inhabitants of ancient Oshogbo town from hunger, pestilence and religious war centuries ago. It is still believed to provide protective guidance till today. The annual celebration is therefore done in reverence and appreciation to the goddess of fertility. No one is allowed to go near the river unless the person has come to pray to the river goddess. When a woman is suffering from barrenness she is to bring sacrifice which compose pap (solid paste made from corn (*Zea mays*)) and prepared vegetable locally called *efo yanrin* (*Launaea taraxacifolia* (Wild.) Amin. MS ex C. Jeffrey). This sacrifice is placed under a statue called *Olomoyoyo* located in the grove. The belief is that the statue represents the god of fertility; bringing sacrifice is therefore to appease the god for provision of babies. Fishing is not allowed in the river within the grove

because of the belief that the fishes belong to the god. It is also believed that any fish caught from the river will never cook no matter how long it is subjected to heat, and anybody who consumes such fish will die same day, become an imbecile or run mad.

### Conservation of Tree diversity in the grove

The riparian vegetation in the sacred grove is unique in the sense that it is the only remaining relic of the Nigeria rain forest ecosystem endemic to the grove. The forest serves as watershed protecting the water body and also facilitates micro-climatic condition within the grove and to the adjoining communities. Among the flora species identified in the grove is listed in Table 1. It is noteworthy to mention that the grove is rich in tropical diversity and these consist of trees, shrubs, herbs, and climbers and some of the plants are sacred to the people. In addition, the riparian forest houses primate species like white throated (*Guenon cercopithecus erythrogaster*) monkey, birds, snakes and other reptiles, forest antelopes, squirrels, and amphibians. Wild water species like *Napoleona vogelli*, *Aframomum danielii*, *Crinum jagas*, *Dennettia tripelata*, among others were predominant in this vegetation.

**TABLE 1:** Flora species identified in the Osun Sacred Grove, Osun State, Nigeria

S/N	Species	Family	Local name	Life form
1	<i>Acanthus montanus</i>	Acanthaceae	Ahon-Ekun	Herb
2	<i>Adenia cissampeloides</i>	Passifloraceae	Arokeke	Tree
3	<i>Afzelia africana</i>	Caesalpiniaceae	Apa	Tree
4	<i>Alchornea laxiflora</i>	Euphorbiaceae	Ijan	Shrub
5	<i>Allophylus africanus</i>	Sapindaceae	Eekan-ehoro	Tree
6	<i>Anchomanes difformis</i>	Araceae	Ogrisako	Herb
7	<i>Antiaris toxicaria</i>	Moraceae	Ooro	Tree
8	<i>Aristolochia ringes</i>	Aristolochiaceae	Akogun	Climber
9	<i>Baphia nitida</i>	Papilionaceae	Irosun	Tree
10	<i>Blepharis maderaspatensis</i>	Asteraceae	Ojusaju	Herb
11	<i>Blighia unijugata</i>	Sapindaceae	Isin-oko	Tree
12	<i>Bombax bundue</i>	Bombacaeae		Tree
13	<i>Brachystegia eurycoma</i>	Caesalpiniaceae	Ako	Tree
14	<i>Carpolobia lutea</i>	Polygalaceae	Osusun	Shrub
15	<i>Celtis zenkeri</i>	Ulmaceae	Ita	Tree
16	<i>Centrosema pubescens</i>	Papilionaceae	Ewu ahun	Climber
17	<i>Chasmanthera dependens</i>	Menispermaceae	Atoo	Climber
18	<i>Cissanipelos mucronata</i>	Menispermaceae	Jenjoko	Climber
19	<i>Cissus petiolata</i>	Vitaceae	Daiko / Dekodeko	Climber
20	<i>Cissus quadrangularis</i>	Vitaceae		Climber
21	<i>Cnestis ferruginea</i>	Connaraceae	Omu-aja	Shrub
22	<i>Cola millenii</i>	Sterculiaceae	Obi-edun	Tree
23	<i>Combretum bracteatum</i>	Combretaceae	Ogandudu	Climber
24	<i>Dioscorea bulbifera</i>	Dioscoreaceae	Emina	Climber
25	<i>Dioscorea mangenotiana</i>	Dioscoreaceae	Esusu	Climber
26	<i>Entada abyssinica</i>	Mimosaceae	Ogunbere	Climber
27	<i>Gliricidia sepium</i>	Papilionaceae	Agunmaniye	Tree
28	<i>Grewia mollis</i>	Tiliaceae	Ora-igbo	
29	<i>Holarrhena floribunda</i>	Apocynaceae	Ako ire	Tree
30	<i>Hoslundea opposita</i>	Lamiaceae	Ana-mi-ole	Tree
31	<i>Icacina trichantha</i>	icacinaceae	Gbegbe	Shrub
32	<i>Landolphia owariensis</i>	Apocynaceae	Panukuru	
33	<i>Lannea welwitschii</i>	Anacardiaceae	Opon	Tree
34	<i>Lecaniodiscus cupaniode</i>	Sapindaceae	Akika	Tree
35	<i>Limdackeria dentata</i>	Flacourtiaceae	Ooya-edun	
36	<i>Malacantha alnifolia</i>	Sapotaceae	Akala	Tree
37	<i>Microdesmis puberula</i>	Pandaceae	Arinyo	Tree
38	<i>Microdesmis puberula</i>	Pandaceae	Arinyo	Tree

39	<i>Milicia excelsa</i>	Moraceae	Iroko	Tree
40	<i>Milletia thonningii</i>	Papiilionaceae	Ito	Tree
41	<i>Mondia whitei</i>	Asclepiadaceae	Isirigun	Climber
42	<i>Monodora tenuifolia</i>	Anonaceae	Lakusin	Tree
43	<i>Mucuna purens</i>	Pipilionaceae	Yerepe	Climber
44	<i>Napoleonea vogelii</i>	Lecythidaceae	Ito	Tree
45	<i>Nesogordonia papaverifera</i>	Sterculiaceae	Opepe ira	Tree
46	<i>Newbouldia laevis</i>	Bignoniaceae	Akoko	Tree
47	<i>Olax subscorpioidea</i>	Olacaceae	Ifon	Shrub
48	<i>Pepperomia pellucida</i>	Piperaceae	Rinrin	Herb
49	<i>Pouzolzia guineensis</i>	Urticaceae	Aboloko-piran	tree
50	<i>Ricinodendron heudelotii</i>	Euphorbiaceae	Epuu	Tree
51	<i>Rothmannia hispida</i>	Rubiaceae	Dandoje	Tree
52	<i>Solenostemon monostachyus</i>	Lamiaceae	Olojongbodu	Herb
53	<i>Spondias mombin</i>	Anacardiaceae	Iyeye	Tree
54	<i>Sterculia tragachantha</i>	Sterculiaceae	Alawefon	Tree
55	<i>Terminalia ivorensis</i>	Combretaceae	Idigbo	Tree
56	<i>Tragia benthamianum</i>	Euphorbiaceae	Yeesi dudu	Climber
57	<i>Trichillia edulotii</i>	Maliaceae		Tree
58	<i>Triplochiton scleroxylon</i>	Sterculiaceae	Arere	Tree
59	<i>Zanthoxylum xanthoxyloides</i>	Rutaceae	Ata	Tree

Source: Field survey (2010)

### Deforestation resulting from encroachments in the grove

The grove is currently undergoing degradation from the boundary and this is advancing at alarming rate. In addition to the pressure from population explosion and urban expansion, the deforestation of the grove is resulting from farming practices going on along the boundary. Also, illegal hunting of wild animals is on the increase. Wild animals like antelope, monkeys, snakes and other reptiles, forest antelopes, squirrels that were informed to be abundant in the grove are now scarce. The white throated monkey, which is the only abundant species available in the grove, has restricted their movement to places near the shrine where the presence of guard is concentrated and the illegal killing could not be carried out. This is indirectly a way of hiding from the poachers by migrating from the boundary and highly protected area of the grove. Table 2 presents some of the factors that the respondents believe is

contributing to deforestation of the sacred grove. About 90% of the indigenes of the adjoining communities to the grove informed that the local belief used to establish the sacred grove is now being neglected and people have no fear for repercussion of any form of illegal exploitation and encroachment activities. About 60% expressed their displeasure in the way the government is in total control of the grove and not involving the local communities. The indigenes also indicated that many of those that are in charge of the grove lack the local knowledge of managing and protecting the grove. Furthermore, the indigenes informed that local professionals are not fully incorporated in the conservation strategy of the grove and this has pose great challenge to government and international conservation efforts. To effectively perform these duties, the people are of the opinion that some professional indigenes should be employed and fully incorporated in the management strategies of the grove.

**TABLE 2:** Factors given by the indigenes to be causing deforestation in Osun Sacred Grove

S/N	Reasons for encroaching the grove	Number of interviewees n = 20	Percentage (%)
1	Neglect of the local belief	18	90
2	Present custodian do not have the local knowledge of protection	8	40
3	Low employment of local indigene	7	35
4	Government is in total control	12	60
5	Inadequate land for farming	5	25

Source: Field survey (2010)

**TABLE 2:** Factors given by the government officials to be causing deforestation in Osun Sacred Grove

S/N	Reasons for encroaching the grove	Number of interviewees n = 5	Percentage (%)
1	Poachers carry out illegal hunting of the wild animals	5	100
2	Local communities turn the forest into farmland from the boundary	5	100
3	Hatred for the strict nature reserve as preventive measures to illegal exploitation	3	60

Source: Field survey (2010)

All the interviewed government officers of the grove indicated that poachers from the adjoining communities

carry out illegal hunting of the wild animals in the grove and this has lead to reduction and total extermination of

some animals. Furthermore, the officials indicated that the local people have converted considerable portions of the forest boundary into farmland which is not in the initial plan of the grove. In the same vein, 60% of the government official indicated that some of the local people have developed hatred in the way the grove has been demarcated into strict nature reserve thereby preventing illegal activities (Table 3).

### CONCLUSION & RECOMMENDATION

The study has shown that establishment of groves where tree cutting is prohibited is highly contributory to the conservation of biodiversity in as much as it could contribute to socio-economic activities of the adjoining local communities. Meanwhile, this indigenous system is currently facing lots of challenges. It is no doubt that sacred groves are currently on the decrease due to many reasons ranging from urbanisation to conflict between traditional belief and that of civilisation. Recent development resulting from pressure for more agricultural land has also contributed to the encroachment of the sacred groves. This calls for immediate attention and action. It is therefore pertinent to reinforce more guards and intensify patrol activities around remaining sacred groves where they exist for adequate protection of endemic and threatened natural diversity. There is also need for re-establishment of many of the sacred grove's boundary and buffer zone for clear demarcation on where anthropogenic activities should end. Incorporation of community in the management strategy of the sacred grove also needed to be strengthened. Studies have shown that the best hope for protecting and conserving biological diversity is to involve communities (Ramanujam, 2003). Communities near protected areas and any other remaining wild areas rely on these resources for their existence and it is to their advantage to conserve them for protection of their culture and heritage, and most importantly for the future uses. When communities are given more knowledge about the resources under their control, taught effective and sustainable management practices, and trained in institutional management structures, they can democratically manage these resources in a sustainable way on their own.

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