

Trade in Non-Mammalian Wild Animals for Traditional African Medicine in Ogun State, Nigeria

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Abstract

A steady rise in the patronage for Traditional African Medicine (TAM) has necessitated a corresponding increase in the demand for the ingredients used in the preparation of the trado-medicines. These ingredients are the various wild animals and plants parts. The attendant rise in this demand for ingredients calls for a need to document the extent of utilisation of these natural resources involved as a measure of the impact of such trade on biodiversity conservation. This paper examined diversity of molluscan, reptilian and avian species traded for use in TAM; the quantity of each species traded for utilisation over a period of time, and seasonal fluctuations in abundance and utilisation of these species as an index of utilisation pressure on populations in the wild. A multi-stage stratified random sampling technique was employed. An open-ended questionnaire was administered on vendors in selected market stalls for six consecutive markets days in each of dry and rainy seasons. The study identified twenty-three species, 8 were listed in CITES and Nigerian Decree 11(1985). A total of 3196 (molluscan), 2527 (reptilian), 2894 (avian) carcasses were traded over an average period of twenty days.

Index terms— traditional medicine; wildlife utilisation; wildlife trade; ethnozoology.

1 I. Introduction

Wildlife is vital to the lives of a high proportion of the world's population, often the poorest. Some rural households depend on local wild animals for their meat protein and on local trees for fuel, and both wild animals and plants provide components of traditional medicines used by the majority of people in the world, Anon, (2016). Many people in the developing world depend entirely on the continued availability of local wildlife resources, Soewu (2013). Each year, hundreds of millions of plants and animals are caught or harvested from the wild and then sold as food, pets, ornamental plants, leather, tourist curios, and medicine. Though a great deal of this trade is legal and is nonharmful to wild populations, a large proportion is illegal and threatens the survival of many endangered species (Anon 2016). Trade in wildlife is usually for cash, though could sometimes be in exchange for other useful objects -for example, utensils in exchange for wild animal skins. Driving the trade is the end-consumer who has a need or desire for wildlife products, whether for food, construction or clothing.

An enormous number of meat is being taken from some of the most bio-diverse forests in the world and this indicates the scale of seriousness of an ecological problem that will escalate if commercial trade goes unchecked (Bowen-Jones and Pendry, 1999; Caldecott, 1994; Soewu et al 1995). The number of animals taken by subsistence hunters can be very large. For instance in 1980, the number of mammals killed in the Brazilian Amazon alone (2,847,007 people in an area of 3,581,180km²) resulted in the harvesting of 14,030,050 individuals. If birds and reptiles are added to this figure the number of game killed per year could reach more than 19 million individuals (Redford, 1993). Ott et al (2002) reported that several regions in Asia have already experienced massive defaunation as a result of the bush meat crisis. Wilkie et al (1998) stated that it is not habitat loss

but defaunation that poses the greatest immediate threat to animal conservation in forests of West and Central Africa.

Wildlife trade involves hundreds of millions of wild plants and animals from tens of thousands of species. To provide a glimpse of the scale of wildlife trafficking, there are records of over 100 million tonnes of fish, 1.5 million live birds and 440,000 tonnes of medicinal plants in trade in just one year Anon (2016).

Traditional medicine has over the years provided livelihood for a wide variety of people most of whom, due to their economic and social background, depend mainly on harvesting, processing and trading in wildlife and the products as their only means of making a living (Costa-Neto, 1999; Li and Wang, 1999; Soewu et al 2012). It is expected that trade in wildlife as ingredients for traditional medicine will continue to flourish as there will always be human ailments in need of attention (Soewu 2008). The direct consequence of this would be a continued depletion of these resources in the wild as Marshall (1998) had documented that majority of wildlife traded for use in traditional medicinal preparations are collected from the wild. Though most wildlife trade is legal, and as such by no means always a problem, it has the potential to be very damaging as it can cause overexploitation to the point where the survival of a species hangs in the balance. An average of 40% decline in populations of species on earth was recorded between 1970 and 2000. Overexploitation of wildlife primarily for trade has been identified as the second-biggest direct threat to species survival, after habitat destruction (Anon, 2016).

In particular, most problems associated with wildlife trade, stems from a demand for rare, sometimes highly endangered and legally protected species, more likely to have been obtained in an environmentally damaging way and which need to be smuggled or traded under clandestine conditions. There are several reports of open trade in species listed as protected in many countries across the world (Sodeinde and Soewu 1999, ??akati and Duolo, 2002; Soewu et al 2012).

Bowen-Jones (1998) recorded that even the animals that could be hunted sustainably are often being exploited at probably unsustainable levels, and that controls need to be introduced in order to make sure that they are not added to the vulnerable category. Chardonnet et al ??2002) has established that excessive harvest of wildlife depletes the wildlife resource when the level of exploitation overtakes the recruitment rate. However, as long as there is sufficient money to be made from the trade in wild animals, not only will the individual species suffer but also conservation at regional or even world level may be threatened, Simmonds (1998).

2 II. Methods

3 a) Study Area

Ogun State is entirely in the tropics. Located in the Southwest Zone of Nigeria with a total land area of ??6,409.26

4 b) Preliminary Survey

A preliminary pilot survey of the state was carried out between December 2001 and February 2002 to determine: (i) which two markets in each zone are the leading markets for traditional medicinal ingredients; (ii) the number of stall/traders in identified markets that stocks and deals primarily in ingredients for traditional medicine. This provides the basis to determine the number of traders / stalls to be involved in the main survey as a proportion of the whole number for the zone.

Also, during this survey, the questionnaire for the main survey was subjected to trial runs to be able to establish the time needed to interview a respondent and take inventory of the stock in the stall. A stratified random sampling technique was employed in the selection of respondents. All the markets surveyed are five-day markets and the visits were made to each stall in the evening period of the market days. The market day was chosen as this is often the period when fresh supplies of animals are delivered to stalls and wares are fully displayed. This makes room for ease of inventory-taking and monitoring the dynamic movement of the stock. Each market and the stalls therein were given two sets of survey, one in each season of the year. In each market, the selection of stalls to be surveyed was done by the use of table of random numbers. The stalls were visited for six consecutive market days for a set of survey.

A total of one hundred dealers were interviewed, and the dynamic stock movement of their stalls taken using open-ended questionnaire to avoid yes / no answers while encouraging maximum discussion i.e. twenty-five dealers in each zone. In each zone the dealers were selected from the two markets chosen for the survey. The number of dealers/stalls surveyed in each market was determined as the proportion contributed by the number of stalls in that market to the total number of stalls in the two markets for the zone. On each visit to the stalls a detailed inventory of wild animal species found was taken. The stock movement for each species was determined.

5 d) Identification of Species

All species encountered during survey were recorded with their local names in the market. To match the local names with the common English and Scientific names, due consultations and references were made to scientific publication that had previously established the names. Also the VCS i.e. Village Contact Survey method was used to identify some species. This involves showing published identification manuals and encyclopaedia with pictures and distinguishing features of animals to the dealers and some hunters for them to identify the animals

with the local names. When the local name is established it is thereafter matched with the common English and the scientific names.

6 e) Carcass Quantification

To determine the number of carcass of each species that passed through the stall for the period, the number of that species sold out between consecutive market days were taken and summed up.

The whole animal seen at each stall on the first visit were counted and recorded separately for each species and this was taken as the initial opening stock. During subsequent visits to the stall, the remnant numbers of each species were counted and recorded. Also the number supplied to the stall after the last count was noted for the species. This allows for observation of the dynamic stock movement and the determination of the actual number sold out during the period. $\text{Number sold out} = \text{Opening balance} + \text{Added stock} - \text{Closing balance}$ For some species occurring in parts, the head count approach was employed to avoid repeated counts. In this method, every head of an animal species encountered are counted as whole animals while other parts are overlooked to avoid repetition.

The main attributes of market dynamics measured during this survey are: 1. Quantity utilised by traditional medical practices as revealed by sales figures i.e. carcass number.

2. Frequency of occurrences and availability of each species 3. The average sales figure per stall / dealers for the species.

7 f) Seasonality and Availability

To examine any seasonality in the availability of animals on the stalls, a Latin square design was employed in deciding randomly the time of visit to each zone. The two major seasons were subdivided for convenience of study into early and late dry, early and late rain periods. The study was also designed such that markets in each zone are surveyed twice, each survey coming up at a season different from the other. The availability of identified species for each zone was compared for the two main seasons.

8 g) Conservation Status of Species

To evaluate the current trade status of the species encountered during the survey, due consultations / references were made to the CITES appendices for the listing on global level. Also the Endangered Species (Control of International Trade and Traffic) Decree No 11 of 1985 was consulted to determine the present conservation status of the species in the Nigerian context.

9 III. Results

10 a) Socio-Economic Characteristics of Respondents

The female folk dominated the trade in tradomedicinal ingredients, having constituted over 90 percent of the dealers in all the zones of the state. Majority of the dealers (64 percent) were aged between 40 and 60 years as at the time of the survey. While most of the dealers (53 percent) had post primary education, 12 percent of the dealers had no formal education. Concerning to religious affiliation, the study shows that the majority (over 55 percent) of the dealers claimed affiliation to Islamic religion. Also, the study showed that the majority (over 80 percent) of the dealers had no other means of livelihood besides the trade, and were also unaware of legislative provisions protecting wildlife species in Nigeria. Table 1 showed the number of carcasses sold across the state in both dry and rainy seasons for all class of animals during the survey period. In all, 3196 molluscs, 2527 reptilian and 2894 avian whole carcasses were sold into traditional African medicinal practices. Table 2 revealed species encountered during survey that were listed in appendices I and II (of CITES) as well as 1 and 2 of Nigerian Decree 11 of 1985. More than 30% of the species encountered during the survey were listed in the appendices. Table 3 gave the mean number of carcasses traded per dealer in a month in both seasons while table 4 showed the mean number of carcasses traded per dealer by zone in a month.

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Volume XVI Issue I Version I However, being a more specialised study excluding the mammals, the number of species encountered during this survey differ from most of the previous researches. This survey recorded 23 species while Taylor and Fox (1992) recorded 55 species in Lome Fetish Market, Togo; Kakati and Doulo (2002) recorded 23 species in a study on zootherapeutic use by Chakhesang tribe of Nagaland in India; Costa-Neto (1999) encountered 17 species in zootherapeutic practices in Bahia, Brazil; Sodeinde and Soewu (1999) reported 45 species of wild animals for southwestern Nigeria while Soewu et al (2012) documented 30 species of mammals in Nigeria. For the bush meat markets, Fa et al (2000) reported 14 and 21 species respectively in 1991 and 1996 on Bioko Island, Equatorial Guinea while Anadu et al (1988) recorded 25 species in southwestern Nigeria. There have been more quantitative studies on the bush meat trade than the trade in wild animals for traditional medicine where there is still a dearth of data on the quantity of individual species traded for utilisation.

Regarding their conservation status, more than 30% of the species encountered during this study were listed in appendices 1 and 11 of CITES and the Decree 11 ??1985) of Nigeria as against 70% species recorded by Soewu et al 2012 and 26% species officially listed as endangered recorded by ??akati and Duolo (2002).

The dealers submitted that they have observed a general decrease in the sizes and volume (in number) of carcasses for virtually all the animals they received from suppliers. It was also established during the study that all species on the stalls visited were cropped from the wild and there were no records of any captive breeding or domestication project supplying the markets. All dealers agreed to having procured from either larger wholesale markets or directly from hunters, and sometimes from intermediaries.

Trade in wild animals for traditional medicine has been estimated to worth billions of dollars per year globally. It has been estimated that wildlife products worth about 160 US billion dollars were legitimately imported around the globe each year in the early 1990s. This is in addition to a large and profitable illegal wildlife trade which no-one can judge with any accuracy what this may be worth because it is conducted covertly (Anon 2016). The trade volume in selected markets for this study runs into excess of hundreds of thousands of naira within a month (Table 5). The price of species or parts was found to be influenced by the perceived medicinal value vis-à-vis the demand for preparations for that purpose. Animal or its part(s) used in fortune drawers and money rituals would attracted higher prices than those used for some other purposes.

Incidences of panic buying by the traditional medical practitioners as well as hoarding by the dealers were reported, both of which had economic implications for the trade and practices. This stemmed from fluctuations in demand for wild animals and their parts based on the differences in the kind of preparations people will seek during the various period and seasons of the year as well as the prevailing situation in the society. Another factor which was found to influence seasonal changes in demand for animal species is the fear or anticipation of non-availability of such species during the forthcoming season. In situation of political crises, even if only anticipated, the demand for amulets and other preparations for protection against gun shots, cutlass and other such protective preparations weapons will increase. A period of economic crises will lead to a rise in the demand for fortune drawers and good luck charms. National public holidays and religious festive periods like Easter and sallah celebrations were known to have involved mass movement of people from one location to another hence, an increase in the demand for traditional medicinal preparations meant to prevent occurrence of accidents or to save users from sustaining any injury in case there is an accidents. Some ailments which are season-related were also found to cause fluctuations in the demand for species recognised as possessing the medicinal properties to treat such ailments. Malaria fever, common cold/catarrh and the likes which appear to have a high level of incidence during the rainy season are expected to cause a rise in the demand for species involved in the treatment of these conditions.

The observed trend in utilisation of molluscs, reptiles and aves for traditional African medicinal practices has no consideration yet for either the present conservation status of the animals or the sustainability of continued use of these resources. Open trade in species officially listed in the appendices of various protective machineries indicated a very low level of enforcement of the protection purportedly accorded these species. The conservation status as well as the protection accorded these species need to be adequately publicised to increase the level of awareness on part of the populace concerning these issues. This is an essential pre-requisite before enforcement.

Human-nature interaction must be established within its cultural dimensions for utilisation of animal resource for therapeutic purposes to be sustainable ??akati and Duolo (2002). One of the main threats to wildlife lies in the attitude of some extremist lobbying group that promotes the strict preservation of wildlife, which tends to remove all socio-economic values from wildlife Soewu, et al (2012). Chardonnet et al ??2002), stated that a complimentary approach allows conservation issues to meet with development concerns. The old-fashioned philosophy of conservation of nature and wildlife is a defensive attitude which attempts to protect nature against the consequences of development, while the modern conservation of biodiversity is a voluntary approach which intends to match the needs of people for biological resources while securing the long-term survival of the biological

richness of the Earth (Chardonnet et al, 2002). Modern conservation approach is obviously more appealing, acceptable, pragmatic and promises better results. Also, while advocating effective application of punitive measures against violators of laws protecting wild fauna species, it is essential to avoid formulating policies which may be seen as trying to force dealers to abandon their trade.

V. Recommendations

To effectively factor sustainability into the ethnobiological utilisation, and ensure continued availability of renewable natural resources, two basic steps are required: reduction in need/demand for resources in the wild for trado-medicinal practices; and improvement in the yield of these resources both in the wild and under various ex-situ schemes.

VI. Reduction in Need / Demand

It has been documented that notwithstanding the availability of affordable health care delivery, cultural identity and recognition will continue to promote patronage for traditional medicine for peoples across the world (Soewu et al 2012, Soewu 2008). A general improvement on the provision of essential amenities and overall quality of life may reduce situations that will drive the people to patronise trado-medical practices which will in turn, necessitate consumptive utilisation of wild animals without any consideration for their conservation status or sustainability of use.

A massive enlightenment campaign should be mounted on the ecological consequences of continued exploitation of these resources beyond their sustainable level and its attendant implications for the health status of mankind now and in the future. Wildlife conservation education should be integrated into the curriculum for formal education from primary to tertiary level to make conservation an essential component of the life of every citizen

a) Trade Regulation

A comprehensive review of the legal machineries protecting wild animals within the country is urgently needed to strike the required delicate balance between biodiversity conservation interests, sociocultural demands and political exigencies. The contents of such national law as well as international conventions and treaties regulating trade in these species and, the implications of such legal provisions should be given adequate publicity as the present level of awareness is near zero among the citizenry.

Increase in Yield

Production of desired species should be enhanced through in-situ and ex-situ programmes. Insitu conservation facilities should be given adequate attention in ecosystem management practices with regular anti-poaching and surveillance patrols to minimize poaching activities and encourage maximum production. These will ensure optimally harnessing the potentials of these protected areas to conserve populations of wild animals while also serving as a source of re-populating species of interest. Ex-situ method of wildlife conservation constitute an important method of saving species on the verge of extinction. Efforts should be intensified on captive breeding, artificial propagation and ranching of possible species. This will provide animals for other uses such as protein sources thereby reducing pressure on resources in the wild. It will also provide animals for traditional medicinal practices where behavioral traits hinged on wild-based activities of the species are not pre-requisites.

Host communities of the wild fauna resources should be integrated as partners and beneficiaries in the management of conservation areas to make compliance with laws regulating exploitation of animals easy and realistic. Enjoining their voluntary cooperation and compliance may eliminate the need for elaborate monitoring and expensive control. Legitimate trade in non-protected species should be promoted and made more beneficial to the less well-off rural populations as against the intermediaries or the better-off urban dealers. There is a need to further investigate the dynamics of wild animals' utilisation for traditional medicine across the country so as to gain an insight into the pattern and volume of consumptive use at the national level.

VII. Conclusions

Overexploitation has caused extinctions or severely threatened species and, as human populations have expanded, demand for wildlife has only increased. Recent overexploitation of wildlife for trade has affected countless species, some of which have been documented. In addition to the impact on human livelihoods caused by the over-harvesting of animals and plants is the harm caused by overexploitation of species to the living planet in a wider way. As human life depends on the existence of a functioning planet Earth, careful and thoughtful use of wildlife species and their habitats is required to avoid not only extinctions, but serious disturbances to the complex web of life.

Prohibiting the utilisation of natural resources, most especially for reasons relating to food, health and cultural beliefs of peoples around the world has been found to be non-appealing and in-effective as the concept of wildlife conservation is often alien to them. If the need for conservation is to be accepted by people who make their livelihoods from wildlife or its use for necessities such as food and medicine, massive enlightenment campaigns and conservation education are urgently required. Care should be also be taken to avoid what may be seen as

ideological or culturally imperialistic approaches. Accepting and respecting differing views of the values of wildlife is required for cooperation across all strata of the society while at the same time explaining the provisions of the various conservation laws to the populace to discourage undue violations. Finally, while wildlife trade alone has been identified as a major threat to some species, it is important to remember that its impact is frequently made worse by habitat loss and other pressures. This should be factored adequately into conservation policies and projects to ensure an all-round sustainability of renewable natural resources.

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Figure 1:

1 2

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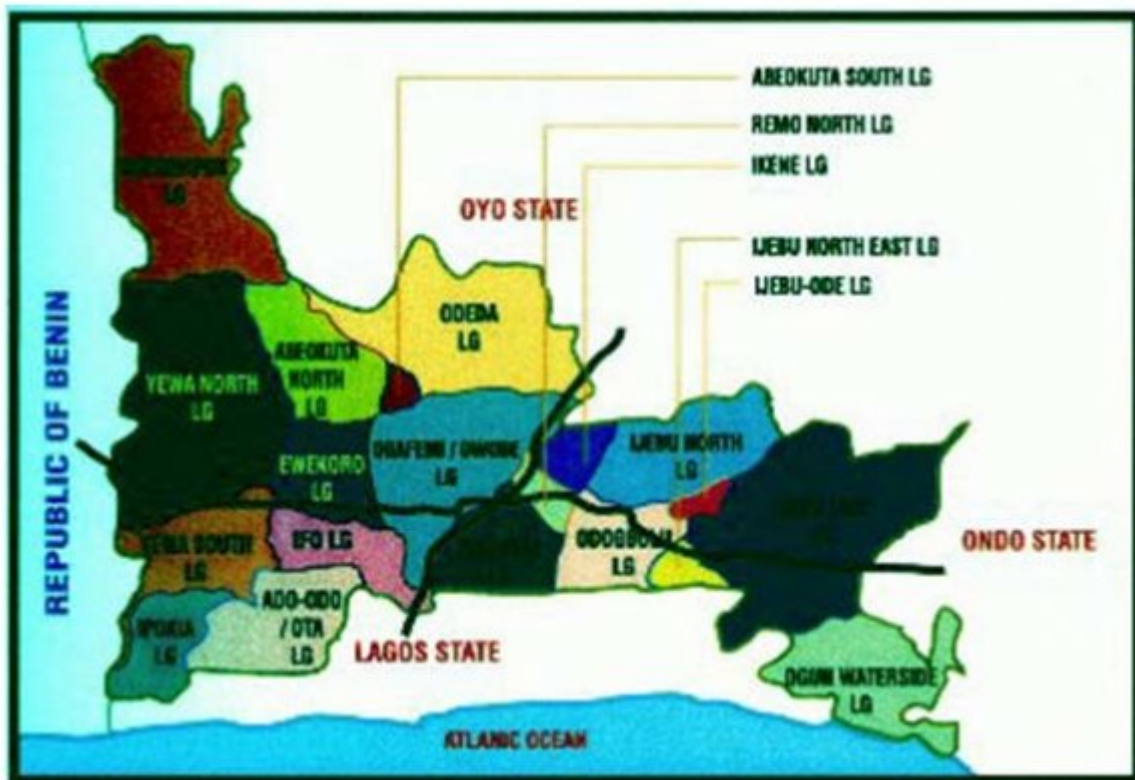


Figure 2:



1

Figure 3: Fig. 1 :



Figure 4:



Figure 5: Fig. 2 :

1												
Zone	Ijebu -Ode			Ilaro			Abeokuta			All loca-		
	Sagamu									tions		
Season	Dry	Rain	Both	Dry	Rain	Both	Dry	Rain	Both	Dry	Rain	Both

Figure 6: Table 1 :

2

Common name	Scientific name	CITES	Decree
			11
Black kite	Milvus migrans	II	1
Vulture	Necrosyrtes monachus	II	2
Parrot	Psittacus erithacus	II	1
Owl	Tyto alba	II	
Chameleon	Chameleon senegalensis	II	
Crocodile	Crocodylus niloticus	I / II	1
Python	Python sebae	II	1
Monitor	Varanus niloticus	II	1

[Note: Source: FieldSurvey, 2005]

Figure 8: Table 2 :

3

Source: Field Survey, 2005

Figure 9: Table 3 :

Year 2016
D D D D)
(B

Figure 10:

4

Source: Field Survey, 2005

Figure 11: Table 4 :

Year 2016
D D D D)
(B

[Note: Issue I Version I © 2016 Global Journals Inc. (US)]

Figure 12:

Common Name	Season			Unit Price Range*		Parts	Price (NGN)
	Dry	Rain	Both	Whole	Price (NGN)		
Molluscs							
African giant snail	1589	1607	3196	X	150		
Reptilian species							
Cobra	119	94	213	X**	3500	Head, skin	600-1000
Tortoise	607	446	1053	X	1200	Head, carapace	200-400
Nile monitor	60	48	108	X**	3000	Head, skin	900-1300
African python	88	59	147	X**	4000	Head, skin	
Senegal chameleon	246	202	448	X	500		
Nile crocodile	38	38	76	X**	6000	Head, skin	1500-2500
Gabon viper	122	98	220	X	600	Head, skin	200-350
Mamba	150	112	262	X	500	Head, skin	150-200
Avian species							
Red eye dove	127	104	231	X	600	Head, feathers	100-250
Blue-eared glossy starling	135	115	250	X	800	Head, feathers	100-300
Pied crow	132	108	240	X	2500	Head, feathers	200-600
Little grebe	101	79	180	X	1200	Head, feathers	100-400
Carmine bee-eater	133	108	241	X	900	Head, feathers	120-400
Double-spurred francolin	138	113	251	X	400	Head, feathers	100-180
Black kite	106	82	188	X	1200	Head, feathers	150-300
Harrier hawk	92	67	159	X	1000	Head, feathers	120-300
African grey parrot	113	87	200	X	1200	Head, feathers	150-400
Hooded vulture	171	138	309	X	1500	Head, feathers	150-600
Cattle egret	146	110	256	X	400	Head, feathers	100-150
Indian peafowl	37	21	58			Feathers	300-700
Barn owl	87	64	151	X	400	Head, feathers	120-250
Spotted eagle owl	105	75	180	X	450	Head, feathers	120-250

* Carcass sold in fragmented parts

**requires pre-payment for contract hunting

IV. Discussion

Traditional African medicinal practices

consume a wide variety and vast quantity of wild

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