

Perceptions on Population Decline and Ethno-cultural Knowledge of Hooded Vulture (*Necrosyrtes monachus*) in Southwest States of Nigeria.

Bibitayo Ayobami Owolabi^{1*}, Sunday Olayinka Odewumi² and Ebenezer Abayomi Agbelusi²

¹Department of Wildlife and Ecotourism Management, Faculty of Renewable Natural Resources Management. College of Agriculture, Osun State University, Osogbo. Osun State, Nigeria.

²Department of Ecotourism and Wildlife Management, Federal University of Technology, Akure, Ondo State, Nigeria

*Corresponding author: bibitayo.owolabi@uniosun.edu.ng

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Abstract

The global decline of many vulture populations due to anthropogenic activities is increasing and is largely connected to cases of poisoning. The objectives of this study were to access local perceptions and knowledge of vulture declines, and to determine the ethno-cultural uses of vulture body parts across southwest Nigeria. Semi-structured questionnaires were administered through interviews with randomly selected respondents ($n = 144$) between August 2018 and July 2019. Results showed that 82.5% ($n = 119$) of respondents confirmed the sharp decline in vulture populations. 79.8% ($n = 115$) of respondents considered poisoning to be the cause of vulture deaths in the study area and 79.8% ($n = 117$) confirmed the need to conserve the remaining vultures. 80.5% ($n = 116$) of respondents reported that vultures play a key role in Yoruba traditional settings. Vulture parts (organs) were reported as being important in ethno-cultural traditional benefits ranging from curing ailments, to making financial fortune to enhancing dreams, having visions about the future, healing and magic use. Conservation education and public awareness to shift the public mindset away from the use of vultures for rituals and healing purposes and the resultant negative effect of extirpation and extinction is the only way forward.

Introduction

Vultures provide essential ecosystem services, yet are among the most threatened groups of birds worldwide (Ogada, *et al.* 2012). Recent studies have revealed that vulture populations have declined, particularly in Africa (Virani *et al.* 2011, Ogada *et al.* 2012, Murn *et al.* 2016, Ogada *et al.* 2016). The vulture decline crisis has gained the attention of conservationists and resulted in published reports that have the objective of developing a common strategy to save vultures from extinction (Botha *et al.* 2012; Ogada *et al.* 2015a).

The International Union of Conservation of Nature (IUCN) reports that 69% of vultures and

condors are listed as Threatened, Near Threatened, Endangered or Critically Endangered (BirdLife International 2013). The Hooded Vulture (*Necrosyrtes monachus*) is among the species listed as critically endangered, due to significant population declines; poisoning and habitat degradation have been reported as the major drivers of these declines (Virani *et al.* 2011, Ogada *et al.* 2012, Ogada *et al.* 2016).

The Hooded Vulture has established a close and commensal relationship with human habitations in West Africa. These habitations include livestock farming areas, slaughter houses and rubbish dump sites in highly urbanised areas (Gangoso *et al.* 2013; O'Neal Campbell 2016). This relationship with human habitations has

exposed the Hooded Vulture to risks and persecution. Despite the ongoing global discussions and huge awareness about declining populations of vulture species across globe, in Nigeria, the Hooded Vulture is still considered the most useful of all wildlife for the treatment of a range of physical and mental diseases (Ejidike *et al.* 2013).

However, there is still little known or reported about the understanding and perceptions of local people towards declines of Hooded Vultures and the ethno-cultural significance of this species in Nigeria. Therefore, the objectives of this study are to access people's perceptions and knowledge of vulture declines and to determine the ethno-cultural uses of vulture body parts across southwest Nigeria.

Materials and Methods.

Study Area.

The study took place in the southwestern region of Nigeria. The region is the home to the Yoruba speaking tribe of Nigeria and it consists of six (6) states namely: Lagos, Ogun, Oyo, Osun, Ondo and Ekiti states. The area lies between longitudes $E2^{\circ}31'$ - and $6^{\circ}00'$ and latitudes $N6^{\circ}21'$ - $8^{\circ}37'$ and covers a land area of 77,818 km². The study area is bounded in the East by Edo and Delta states, in the North by Kwara and Kogi states, in the West by the Republic of Benin and in the south by the Gulf of Guinea (Figure 1).

The climate of southwestern Nigeria is tropical and characterized by wet (May-September) and dry (October-April) seasons.

Human Population of the Study Area.

The National Population Census (2006) put the approximate population of southwest Nigeria at 27.7 million. Lagos has the highest population with 9.2 million people, followed by Oyo with 5.6

million, Ogun state with 4 million, Ondo state and Osun State with 3.5 million, while Ekiti had the lowest with an approximate population of 2.4 million people.

Sampling method

Data on the perceptions, local knowledge and traditional uses of Hooded Vulture in southwest Nigeria were collected from wildlife traders, hunters, farmers and herbalist using semi-structured interviews conducted between August 2018 and July 2019. A purposive sampling method by (Babbie 2001) was adopted, and respondents with multiple years of experience in the wildlife trade and hunting were the main focus of the study.

Data on local perceptions of vulture conservation were collected from 144 respondents chosen across four (4) communities in four of the southwestern states of Nigeria, where Hooded Vulture presence has been established during reconnaissance surveys. The communities are Ado Awaye in Oyo state, Lekki in Lagos state, Oka Akoko in Ondo state, and Ijebu Igbo in Ogun state. The structuring of the questionnaire followed that of Reson (2012), and questions were asked under the following topics: (i) perceptions and knowledge vulture declines and their ecological importance and (ii) the ethno-cultural uses of vulture body parts.

The questions were carefully constructed to be very direct and straightforward in an attempt to avoid bias in answering (Kasunic 2005).

The questionnaire was pre-tested among selected wildlife conservation practitioners, and where necessary, questions were reframed for clarity. Necessary permission to conduct the study was obtained from the Ministry of Agriculture and the traditional rulers. Wildlife traders, hunters' groups and respondents were informed of the planned interviews one to two days in advance.

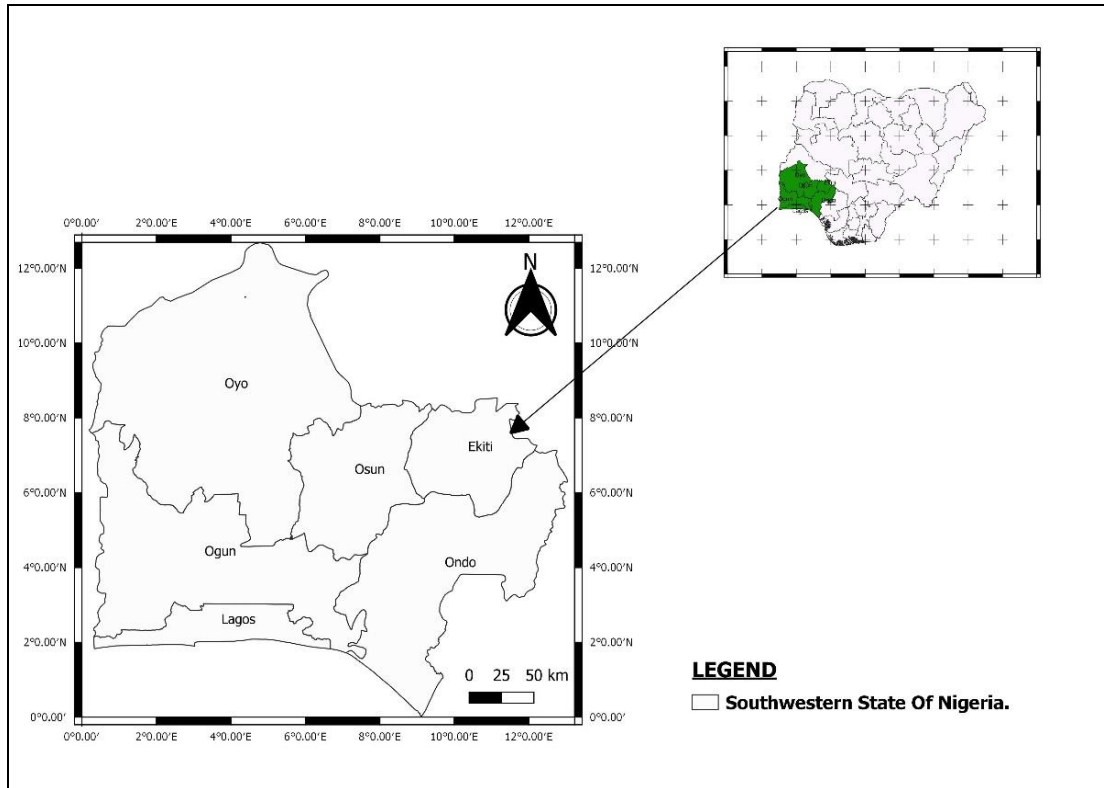


Figure 1: Map of the study area, showing the Southwestern States of Nigeria.

Data collection and analyses.

Interviews were conducted in Yoruba, which is the most widely spoken language in the study area. All interviewed participants were fluent Yoruba speakers. Interviews took place at each respondent's home and lasted for about 20 minutes once an individual was ready and willing to be interviewed. Anonymity of responses was ensured by only using voice recording during each interview. Questions were open-ended to get more information and to understand people's perceptions in a way that was not preconceived (Gandiwa *et al.* 2013).

Results

Perceptions and understanding of vulture declines.

The sample on perception and understanding of vulture declines comprised 63% ($n = 90$) males

and 37% ($n = 54$) females. 56% ($n = 80$) of the respondents were head of their household and indicated the vulture trade as a means of livelihood. 53% ($n = 77$) of respondents claimed to have been in the trade of selling and using Hooded Vulture parts for more than six years (Table 1).

About 80% of the 115-respondent believed that poisoned carcasses of animals lead to the death of vulture in the study area, with 86% ($n = 124$) reporting that intentional poisoning and habitat loss is a major factor in the decline.

80.5% ($n = 116$) of the respondents confirmed the role of vultures in Yoruba tradition, with 88.7% ($n = 128$) of the respondent claiming that conservation education would be an appropriate step to its conservation. 82% ($n = 111$) of respondents would be willing to participate in conservation awareness on the need to conserve the Hooded Vulture (Table 2).

Table 1: Socio-economic and demographic profiles of participants across four communities in southwest Nigeria.

Variables	Study Area				Total N (%)
	Ado Awaye N (%)	Oka Akoko N (%)	Lekki N (%)	Ijebu Igbo N (%)	
Gender					
Female	11 (31)	15 (42)	14 (39)	14 (39)	54 (37)
Male	25 (69)	21 (58)	22 (61)	22 (61)	90 (63)
Age					
18-25	8 (22)	13 (36)	9 (25)	11 (31)	41 (28)
26-50	23 (64)	19 (53)	25 (69)	22 (61)	89 (62)
51+	5 (14)	4 (11)	2 (6)	3 (8)	14 (10)
Level of education					
None	3 (9)	1 (3)	0	2 (6)	6 (4)
Primary	16 (46)	20 (55)	5 (14)	17 (47)	58 (41)
Secondary	12 (34)	9 (25)	26 (72)	10 (28)	57 (40)
Tertiary	4 (11)	6 (17)	5 (14)	7 (19)	22 (15)
Religion					
Christian	15 (42)	13 (36)	16 (44)	8 (22)	52 (43)
Africa tradition	11 (30)	15 (42)	10 (28)	19 (53)	33 (27)
Muslim	10 (28)	8 (22)	10 (28)	9 (25)	37 (30)
None	0	0	0	0	0
Source of livelihood					
Farming	21 (58)	24 (68)	0	15 (41)	60 (41)
Herbalist	5 (14)	9 (26)	0	6 (17)	20 (14)
Wildlife traders	3 (8)	0	15 (42)	6 (17)	24 (17)
Hunter	7 (20)	2 (6)	21 (58)	9 (25)	40 (28)
Period of residence and trade/use of Hooded Vulture parts.					
0-2 years	6 (17)	8 (22)	4 (11)	2 (6)	20 (14)
3-5 years	8 (22)	10 (28)	21 (58)	8 (22)	47 (33)
6+ years	22 (61)	18 (50)	11 (31)	26 (72)	77 (53)
Head of family	17 (47)	23 (64)	21 (58)	19 (53)	80 (56)

Table 2: Perceptions and understanding of vultures and their ecological importance among participants across communities in southwest Nigeria.

	Ado Awaye	Oka Akoko	Lekki	Ijebu Igbo	Total
Percentage of agreement by respondent.					
	N (%)	N (%)	N (%)	N (%)	N (%)
Vultures are important in Yoruba tradition and should be conserved for their ecological role.	34 (92)	32 (87)	20 (56)	31 (84)	117 (79.8)
Spread of diseases is reduced in communities where vultures thrive.	28 (74)	23 (64)	16 (45)	29 (81)	96 (66)
My household is willing to participate in vulture conservation awareness programs	35 (97)	26(81)	20 (67)	30 (83)	111 (82)
Conservation education is key in vulture conservation	33 (92)	30 (83)	31 (86)	34 (94)	128 (88.7)
Disappearance of vultures in the study area now as compared to the past years.	28 (78)	30 (83)	30 (83)	31 (86)	119 (82.5)
Poisoned carcasses lead to vulture deaths in the study area.	31 (86)	26 (72)	30(83)	28 (78)	115 (79.8)
Intentional poisoning of carcasses to target vultures is causing population decline in the study area.	35 (97)	28 (78)	30 (83)	31 (86)	124 (86)

Ethno-cultural values of Hooded Vulture body parts in Southwest Nigeria.

The study showed that the brain is the most used part of the Hooded Vulture, it had the highest frequency of use across the study area followed by bones, legs, beak, feather, neck, skull, wings and hearts (Figure 2).

Discussion

Our study reveals that most respondents are aware of the fast-declining vulture population. Respondents perceived the ecological roles that vultures play in the environment are reducing the spread of diseases through consumption of dead

carcasses. This perception is in tandem with the findings of Whelan *et al.* (2008), who reported that vultures play a significant ecological role as nature’s garbage disposers.

Hooded Vultures are a highly persecuted species in the study area and their survival is highly threatened as a result of both deliberate and unintentional poisoning. Hooded Vultures are scavengers and depend solely on carrion, and this food source is deliberately laced with poison by hunters and wildlife traders who pack the dead birds and prepare their body parts for trade. This constant practice in the study area has led to ongoing population declines.

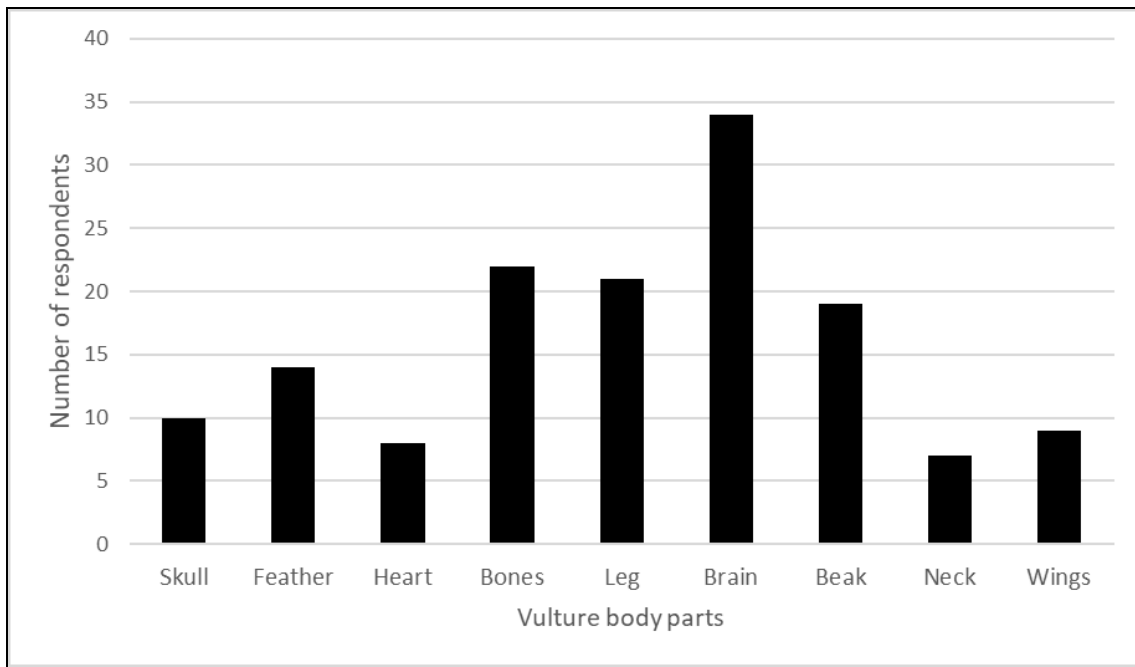


Figure 2: Vulture body parts used for ethno-cultural purposes across communities in southwest Nigeria (144 respondents).

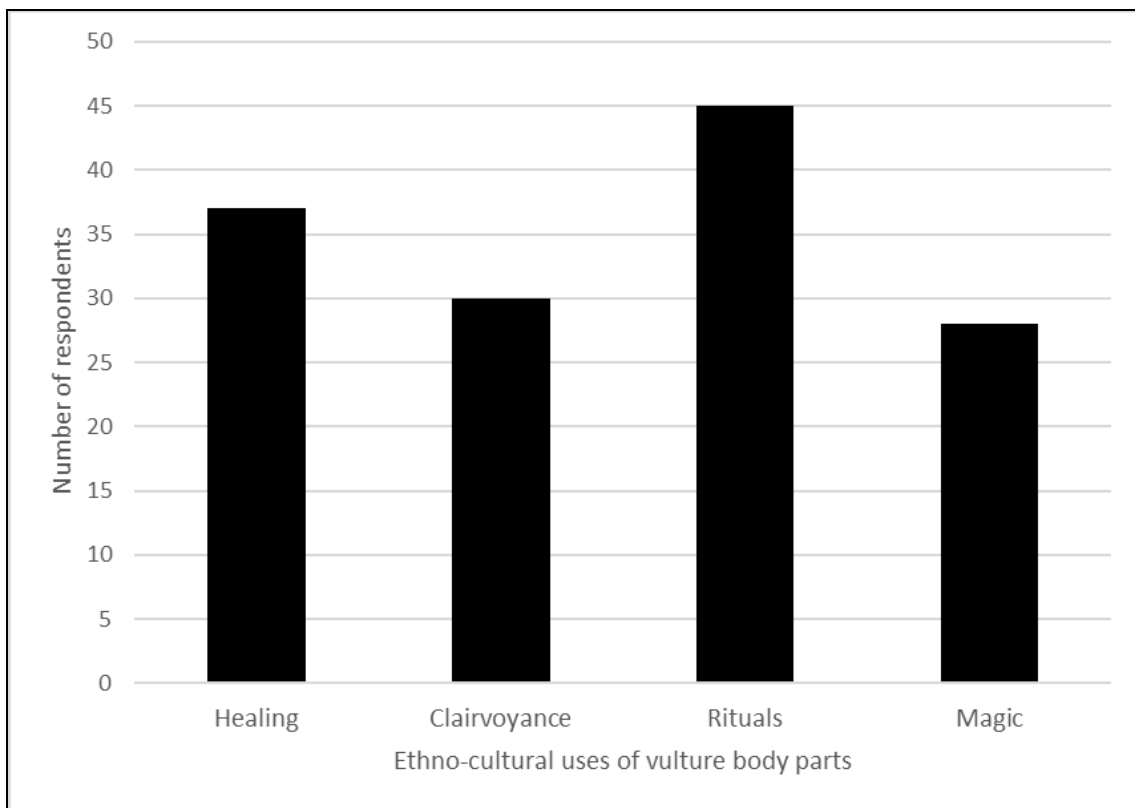


Figure 3: Ethno-cultural uses and Yoruba mythologies associated with Vulture across communities in southwest Nigeria (144 respondents).

Our study further revealed the high use value of vulture body parts for traditional medicine and other fetish purposes. These findings on the socio-cultural uses of Hooded Vulture body parts is similar to studies reported by McKean *et al.* (2013). Hooded vulture body parts recorded in this study (skull, feather, heart, bones, leg, brain, beak, neck, and wings) were perceived to be useful ingredients in the preparation of concoctions for healing, clairvoyance, rituals and magic for traditionalists. This finding is similar to the findings of Reson (2012).

Preference for Hooded vulture body parts for traditional medicinal purposes in southwest Nigeria is very high. The high value placed on vulture brains and bones in the study highlight the perceived importance attached to these body parts by herbalists, ritualists and herbal practitioners, most especially for healing purpose. These findings also align with that of McKean *et al.* (2013), where the vulture brain was found to be the most used of all vulture body parts.

The skull, bones and the legs are also used in clairvoyance, which is the belief of seeing into the future or beyond normal sensory contact (Saidu & Buij 2013, Mullié *et al.* 2017). The use of the skull as a cure for headaches has been reported by McKean *et al.* (2013) as well as a support for magic. Feathers are said to be used in securing spiritual protection and power against enemy. These findings partially align with findings of Bobo *et al.* (2014) in Cameroon, where the feathers are reportedly used as a source of spiritual protection.

The Hooded Vulture is considered a sacred species in some communities across the study area, and its continued presence is of utmost importance owing to the roles it plays in traditional religion activities and cultural beliefs, not forgetting the significant ecological role as nature's garbage disposers. However, the survival and sustained population of Hooded Vulture in

natural ecosystems is increasingly being threatened to various degrees by anthropogenic activities. Thus, there is a need for conservation bodies and government authorities to identify, recognise and work closely through the provision of social amenities in local communities to encourage traditional belief systems that support biodiversity conservation most importantly the Hooded Vulture. These partnerships will go a long way in mapping out vulture conservation plans aimed at reducing the cultural use of Hooded Vulture body parts.

Of great importance and significance is the high percentage of respondents who are willing and ready to participate in vulture conservation awareness programmes aimed at enlightening local people about the importance of vultures conservation. This is indeed very encouraging and further improved by the fact that most respondents are educated youths in their active and productive age.

Vultures play a key spiritual and positive role for worshipers of River Oshún in Osun state. The Oshún goddess has a vulture as a symbol and is believed to have once saved the world from draught by flying up to heaven (turning into a vulture in the process).

In Ifa divination, a religion in southwest Nigeria, the Hooded Vulture (*Igun* in Yoruba) is associated with prospects of growing old. Also, when Hooded Vulture feed on sacrifices, it is a sign that the sacrifice has been acceptable to the gods.

Yoruba mythologies believe strongly in vultures and as a result there are many diabolical interpretations to various vulture parts in preparing herbal concoctions. According to a verse in the Ifa divination: "*Ba o ba ri igun, a ko gbodo se'ebo*" ("*without Vulture, nobody performs sacrifice*"). These findings all confirm the report of Moleón *et al.* (2014) that, from time immemorial, vultures provide important spiritual services.

Conclusion

This study focused on perceptions of population decline and ethno-cultural knowledge of Hooded Vultures in the Southwest States of Nigeria. Results from this study shows that people are aware of the vulture population decline and also that the ethno-cultural values attached to Hooded Vulture body parts across the study area are high. Some of these ethno-cultural values are attached to the use of vulture body parts by traditionalists for the treatment of ailments and other fetish purposes. With these varying values in body parts usage, it is evident that the poisoning of Hooded

Vultures is still on the increase. There is an urgent need to proactively educate herbal practitioners and sensitise people who patronise them, to shift their attentions away from the use of vulture body parts for rituals and healing purposes and seek modern medicine as the alternative.

Non-governmental conservation organisations should intensify their efforts in organising conservation education and public awareness on the importance of conservation. Lastly, community participation and involvement in biodiversity conservation should be encouraged to protect community forests.

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