

Report of ongoing Research on, “Assessing vulture population status, trends, distribution, and chemical threats across Nigeria through spatial modeling and environmental contaminant analysis.”

My research across Nigeria, focusing on the Vultures, provides an insightful overview of both the ecological and ethno-ornithological factors affecting vulture populations. Here is a summary of key findings from each state surveyed:

Taraba State

Dooshima, Ibi LGA: I observed nine Hooded Vultures feeding on a small cow carcass in a community where arable and pastoral farming is integrated. The vultures associate with livestock and feast on carcasses and afterbirths, an indication of their dependency on livestock activities for sustenance. A Palmnut Vulture was also seen feeding on dead fish across the River Ibi in Taraba state.

Wukari LGA: Pied crows dominated the slaughterhouse, with over 30 individuals outcompeting two Hooded Vultures, who avoided landing due to the aggressive behavior of the crows. Competition for food among scavengers is a significant threat to the already declining vulture population. I observed for hours each time I visit the site, the number of pied crows (*Corvus albus*), Yellow-billed kites (*Milvus aegyptius*), Green-wood Hoopoe (*Phoeniculus purpureus*), Piacpiacs (*Ptilostomus afer*), and cattle egrets (*Bubulcus ibis*).

Seta, Gassol LGA: No vultures were encountered here, and interviews revealed that the population had been decimated by poisoning. This pattern aligns with findings from other locations where vulture populations have never returned after mass killings.

Jalingo (the capital of Taraba state): The absence of vultures in the state capital for over three years was reported by the locals during an interview. From my observation, the main competition for food at slaughterhouses there has shifted to agama lizards (*Agama agama*), which number in their hundreds and form the dominant competitors at the feeding sites. This rise in reptile numbers further highlights the scarcity of vultures in this region. The lizards were seen feeding on the small particles of meat and small pieces of bones that had some pieces of meat on them.

Sirte, Gashaka, and LGA: The relationship between vultures and cattle is pronounced here. When cattle are birthing or dying, vultures thrive, but they avoid abattoirs, which present higher risks. This demonstrates the vultures' adaptability and decision-making processes regarding food scarcity and threats. The vultures form a symbiotic relationship with the cattle community. They obtain their food and in-turn, remove smelling dead animals from the environment there by also reducing diseases in the community.

An ethno-ornithological study which also made use of interviews and questionnaires, found the activities of trade in vulture body parts. I saw traditional medicine men who had many different body parts of animals including vulture wings, heads, and other parts. They also have skins of different ungulates, which also included that of lions, hyenas and tigers. My interview with them

on where they got the vulture bodies revealed a disheartening source; Cross river state. Why I found this disheartening, is because Cross Rivers state is a state in the Southern Nigeria that holds the hope for vulture continuous existence due to the beliefs of the people which was friendly to the vultures and support the protection of the threaten species. It still has a good numbers of the vultures. If some states from the North and the West now go to harvest the vultures for traditional medicine, it is clear that, soon or later, the encouraging number of vultures sighted in different communities of the state, will soon also nosedive into oblivion as seen in Kano and Ekiti states which now have no single live vulture encountered. This situation needs an urgent intervention to arrest the killings of vultures in the southern Nigeria generally or vultures in all other communities of Nigeria.

Kano State

Five LGAs surveyed: My survey found no live free-roaming vultures across the five local government areas. Three dead and five captive vultures were encountered, indicating the severity of the vulture crisis in this region. This reinforces the conclusion that vulture populations in Kano are on the brink of local extinction. The situation in Kano is worst compared to Taraba and Plateau state

Ekiti State

I surveyed Seven LGAs: Despite extended surveying efforts, no live vultures were found in Ekiti. The investigation into local beliefs and practices revealed widespread hunting of vultures for traditional medicine, with body parts being sourced from distant regions. Local residents view vultures as bad omens, contributing to their decline.

Ado Ekiti Abattoir: Ado Ekiti, is the capital city of Ekiti state. Despite hopes of finding vultures here, only Yellow-billed Kites and Pied Crows were seen. Hunters armed with guns were seen targeting raptors, further contributing to the absence of vultures in the area and increasingly putting the lives of the yellow-billed kites at risk. My field assistance and I, have encountered several traditional medicine shops in most of the local government areas visited. In most of those shops, vulture complete bodies, or body parts were seen in display. I had interviews with the shop-owners during my third visit. Most of the vultures in the shops were redeived from other neighboring states such as Osun and Ogun states that reports show, still have few number of the vultures.

Cross River State

18 vultures observed: Cross River State offered more promising results, with sightings of Hooded Vultures in various locations, including abattoirs, cattle ranches, cemeteries, and hotels. The presence of vultures in this state may be attributed to cultural practices that offer some protection to these birds.

Anambra state

We found two vultures at an abattoir situated in a fenced compound in Anambra state. Those are the only two vultures we sighted. Though the people of Anambra state, do not consume vultures, but for want of money, some of them are collaborating with vulture traders and hunters from the North and west to kill them for medicinal use outside the state.

Ethno-ornithological insights: Local beliefs in Cross River State appear more favorable toward vultures compared to other regions, and conservation efforts should focus on building upon these positive perceptions to safeguard the remaining vulture populations.

Key Threats Identified

1. **Competition:** Vultures face increasing competition from more aggressive scavengers, such as Pied Crows and lizards, which outcompete them for food in certain areas.
2. **Human Persecution:** Deliberate killings, particularly using baits laced with snuff and other poisoning, for belief-based reasons are major contributors to vulture population declines across several states as we gathered through different interviews. The trade in vulture body parts for traditional medicine is exacerbating the crisis.
3. **Cultural Beliefs:** In some regions, vultures are seen as bad omens, leading to fear and persecution. However, in places like Cross River State, more favorable beliefs persist, offering a glimmer of hope for conservation.

Conservation Recommendations

Education and Awareness Campaigns: Target regions such as Kano and Ekiti states where negative perceptions of vultures prevail, needs conservation intervention working with local communities to dispel myths and promote the ecological importance of vultures, will be very helpful.

Protection of Key Sites: We need to focus on conserving some vulture hubs or areas in Cross River State where vultures are still present, establishing sanctuaries or protected areas to safeguard remaining populations.

Addressing Competition: We need to consider interventions to manage the competition between vultures and other scavengers, such as Pied Crows and lizards, to improve vulture survival rates at foraging sites.

Laws preserving the vultures must be reviewed and implemented. Killing of vultures in one state and its transportation to the other state is widening the scope of local extinctions of vultures in the country.

Research on Chemical contaminants affecting Vultures

Fallen Vulture feathers were collected in six locations across the state. Only in one state that we found the fallen vulture feathers in two locations; in Taraba state. All of the vulture feathers were taken to the central laboratory of Federal University, Wukari for elemental extraction and analysis. This research investigated for presence of nine elements from the samples. These are; Lead, chromium, cadmium, Nickel, Copper, Magnesium, Zinc, Arsenic, and Mercury. I also collected the samples of the foods of the vultures or the soil where they were found feeding at the foraging sites. This became necessary to enable us to understand the source of the contaminants found in the vultures. The result of this chemical contaminant findings is still being analysed, however, it is observed that, all the chemical contaminants were found in the vulture feathers, but in different proportion or quantity in part per million (PPM). This chemical contaminants also vary from place to place. This research is a great breakthrough, it is the first research which directly investigated poisoning or chemical contaminants in vultures using its feathers. This is to ascertain if there is relationship between the vulture abundance and the chemical contaminants across the nation to understand if the chemical poisoning has impacted the vulture population negatively. By the time the analysis of the outcome is completed, we will see the conservation challenges in vulture conservation from the view of the chemical contamination emanating from our environment.

Ethno-ornithological Survey

We have collected adequate data using interview and questionnaire in an effort to investigate the reason that vultures are found in some communities in their good numbers, while completely absent in some states such as Kano and Ekiti states? We already collected the data which is currently being analysed and will be prepared for publication in the Journal of African Ornithology (Ostrich). We found that, some positive traditional beliefs in some of the communities especially in the South-south of Nigeria, are pro-vulture conservation as they lauded the effort of protecting the vultures. We think, if these traditional beliefs are replicated, it will help other communities that still have the vultures.

Road Transect survey of Vultures across 15 states of Nigeria

As I informed you earlier in one of my messages, we got more hands (man power) and were able to expand the research to include road transect of vultures across 15 states of Nigeria. This is the longest road transect survey of vultures ever held in Nigeria. This survey become important to enable us to compare the result of our point counting of vultures with the one of the road counting and also ensuring an almost nation-wide survey, to have the true position of the vultures in Nigeria for conservation actions. This will also inform national and international conservation bodies towards global policies that fit with the vulture status of West Africa in which Nigeria stand as the largest country.

Data collection still continue to deepen the survey and repeat same at different time and season for further field revelation. Thank you so much for the grant support which make this work possible.

I have begun the analyses of some parts of this research and will soon prepare the manuscript for publication in a peer-reviewed journal. I will make sure to acknowledge you in all the publications from this research. We are truly grateful for the sponsorship which makes this work possible.

Thank you so much,

WILLIAMS MICHAEL MANJA

Country: NIGERIA