***Original Research Article***

**TOTEMS PRACTICES AND WILDLIFE CONSERVATION IN UGANDA. A CASE OF SELECTED CLANS IN THE BUGANDA KINGDOM**

**ABSTRACT**

Totems were originally animals or plants that had a special symbolic meaning to a group of people and were regarded as sacred objects that were worshiped and surrounded by various ritual activities. The current study aimed to synthesize the contribution of totems practices to wildlife conservation and derive a mechanism to integrate Buganda totems practices into wildlife conservation as an alternative to modern conservation practices of wildlife species and their habitats". Specifically, the study objectives focused on exploring the cultural values, beliefs and norms of totemic practices to wildlife conservation in the Buganda kingdom; and evaluated the relationship between totem practices and wildlife conservation, emphasizing the potential mediating effects of certain interventions in this nexus. The researcher employed a cross-sectional research design to achieve the stated objectives. This was because the study based on the people’s experiences within a particular group of people. Both the qualitative and quantitative study approaches were used to collect the data. A sample size of 388 respondents were included from a target population of 13,500 individuals from the study area. The target population from which the sample was drawn included 1,500 from Mawokota, 8,000 from Busiro, and 4,000 from Buddu counties who were proportionately selected. The study also included a total of 50 key informants who were purposively selected from organisations like Buganda Heritage and Tourism Board (BTHB), Uganda Wildlife Education Centre (UWEC), and Uganda Wildlife Authority (UWA) who had some requisite information about the study variables. Interviews, questionnaire survey and focus group discussions were used to collect the primary data. The data obtained from the questionnaire survey were analyzed using SPSS version 23.0 and the qualitative data collected were thematically analysed to augment on the quantitative findings. The study revealed that totemic practices of Buganda kingdom were very significant towards wildlife conservation and species’ habitat protection. The Totemic Integration Practices Sustainability Model (TIPSM) was formulated from the study findings aimed at strengthening existing conservation strategies of both totemic animals and plants in Buganda. The study affirmed that there is a need for community involvement in wildlife resources management by involving cultural institutions in Buganda while integrating them with the Buganda kingdom totemic practices. The integration of indigenous technical knowledge based on Buganda totemic practices ranks as the best solution towards wildlife threats from poaching, overharvesting, prevention of human-wildlife conflicts and countering of climate change effects in the Buganda kingdom, Uganda and world at large. The study recommends that wildlife management agencies in Uganda to involve Cultural Institutions by integrating totemic practices and modern scientific conservation strategies towards protecting and conserving wildlife resources.

**Keywords:** Clan Beliefs; Clan Norms; Cultural Values; Totems Practices; Wildlife Conservation

**1.1 INTRODUCTION TO THE STUDY**

Totemism among the Baganda is a cultural institution that intertwines identity, lineage, and environmental stewardship, with each clan (*ekika*) being associated with a totem (*Omuziro*) ranging from wild animals (fauna), plants (flora), aquatic species, insects, amphibians, and reptiles. These totems are safeguarded through indigenous beliefs, taboos, and customary laws that prohibit their harm or consumption, fostering a traditional form of wildlife conservation. However, modernization, urbanization, and socio-economic transformations have increasingly weakened these practices, raising concerns about their long-term effectiveness in biodiversity protection (Lubowa, 2009).The overwhelming situation of wildlife species loss in Buganda kingdom and Uganda at large is very worrying because a number of wildlife species are facing extinction in and around protected areas which has raised serious concerns to many nature lovers (Musinguzi, 2005).

Several reports indicate that the killing and destruction of wildlife resources such as the elephants in Murchison Falls National Park, lions in Queen Elizabeth National Park through poaching, poisoning and wildlife trafficking, these are serious threats to wildlife conservation in Uganda (Monday, New Vision, 13th April 2018). The most affected species in Uganda are Mountain Gorillas, Lions, Elephants, Red Colobus Monkeys, Rhinoceros, Pangolins and Rothschild Giraffe and each day that passes, they are reducing in numbers and yet are of great attachment as far as totems are concerned in Buganda kingdom. The report further indicates that a number of tree species such as mahogany (*Mukusu*), *Ficus natalensis* (*Omutuba*), Purple canary tree (*Omuwafu*), air potatoes or air yams (*Ekobe*) which were very common in forests such as Mabira, Zika, Wabitembe and Mpanga forests are now very rare to find due to deforestation. It also indicates that a lot of amphibians and other aquatic species have disappeared from early 2000 to date due to ecosystems change by man hence a need to revive the fight for the survival of these species. Based on the fact that the government of Uganda has put in place a number of strategies and policies to avert the situation, these enacted laws have been able to address this problem. These laws include Uganda wildlife statutes (cap 200) under laws of Uganda of 1996, endangered species Act, National vision 2040 and the national development plan (Musinguzi, 2015).

Totems were originally animals or plants that had a special symbolic meaning to a group of people. Therefore, it is a sacred object that is worshiped and seen and surrounded by various ritual activities. However, sacred objects and symbols are treated as separate from the everyday aspects of being, a realm of profane. Eating the totemic animal or plant except on special ceremonial occasions, is usually forbidden, and as a sacred object the totem is believed to have divine properties which separate it completely from other animals that might be hunted, or crops gathered and consumed (Giddens, 2001).

Indigenous knowledge and totemic practices can be well placed to inform and complement western science, but findings this common ground is one of the struggles of cross-cultural research. Beliefs associating some animals and plants have contributed towards wildlife conservation because they have for long served as totems or emblems of the clans or kingdom that are sometimes considered to have magical or sacred qualities. People belonging to these totems not only kill them but actually protect them as members of their own clans (Wilson, 2008).

The totemic animal has a sacred status above the others that creates the taboo against killing it. Since the clan itself is considered to be one with its totem, the clan itself is what is sacred. This reinforces the taboo against killing other people in the clan, as well as other social mores (Pettman, 2013). Hence, when the tribe gathers to worship the emblem representing its chosen totem, it is actually worshiping the tribe itself. The totem is not only the symbol of the clan, but actually the clan itself, represented in the form of the arbitrary animal or plant.

Damien (2017) states that totems are a practice of beliefs that people are said to have kinship or mysterious relationships with spiritual entities such as animals and plants. Entities or totems are thought to interact with specific kinship groups or individuals and act as their emblems or symbols. The term totem comes from the Ojibwe word ototeman, from United States and Canada which means "relatives of his brothers and sisters." The grammatical roots of ote show the kinship between siblings who share the same mother and are not allowed to marry (Naskar 2016). Totemic beliefs and practice shape human behaviors as well as respect for wildlife resources thus enhancing wildlife conservation by people.

Besides, many wildlife species are important to human welfare. They are not only standing in place to be respected (Giddens, 2001, cited by Smith 2003), but play prominent role in crops production such as wild plants that are relatives of agricultural crops, or animals that are hunted for human consumption as well as some species of animals and plants (such as earthworms, bees, and termites among others) which help to maintain a healthy and productive ecosystem (Packham, 1992 cited by Woinarski, 2007). An outright elimination of this species disrupts the ecological flows. Relatively, totemism can lead to environmental protection due to the fact that many tribes have multiple totems and it is a taboo to eliminate them, thus prevent species’ extinction (Chimininge, 2015). Various wildlife species need to be protected because they are totems of a particular group of people and therefore have great significance for them. Nuwagaba (2014) found that more than 100 animal and plant species are considered totems in the Uganda tribes of Baganda (*Omuziro*), Batooro and Banyoro, and similar numbers in the Congo (DRC) and the Central African Republic (CAR).

Therefore, totemic practices in Buganda kingdom create a sense of identity as it represents a given group of people; it gives and creates relationship among clan members as they share a physical item (wildlife resource) as their totem with a kin relatedness.

This study was mainly based on the Value Belief Norm Theory by (Schwartz, 1977) and Actor-Network Theory by Gibson (1982), Affordances, and Framing Theory by Goffman (1974). Totems are viewed through the lens functionalism, symbolic interactionism and biocentrism functionalist perspective which sees society as a complex practice whose parts work together to promote solidarity, social order and stability (Macionis, 2010).Society is seen through a macro-level direction that believes that society has evolved like a living thing, with a broad focus on the social structures that shape society as a whole (De Rosso Deb, 2003). It seeks to consider both the function of the social structure and all its elements in relation to norms, customs, traditions and institutions.

The underlying theoretical foundation for this study is the Value-Belief-Norm (VBN) theory, which explains how values, beliefs and norms shape environmental attitudes and behaviors. According to Stern et al. (2000), the Values, Beliefs Norms theory (VBN) is considered as the best to explain ecological behaviors such as ecological citizenship, political support and behaviors adhering to the private sphere. These affirmations justify the relevance of VBN theory to explain the wildlife resource conservation behavior by the people. The study was also guided by the Actor-Network theory. Latour 2005 asserts that Actor-Network theory educated local people and framed them with moral discipline as well as creating bondage between local community members that belong to a specific dialect and resource use and existence.

The selected clans of Buganda kingdom have their traditional seats in the three counties of Buganda kingdom namely Busiro, Buddu and Mawokota. These clans include, *Ffumbe, Mmamba, Mpindi, Ngeye* (Busiro County), *ŋŋali*,*Omusu, Kinyomo* (Buddu county), *Kkobe, Lugave, Ngabi* (Mawokota county). According to Nabanoga (2005), these clans are facing a lot of challenges as the ecosystems where these totems stay each day that goes is destroyed and grabbed for agriculture and industrialization.

Contextualizing the wildlife resource conservation process is essential for addressing the diverse needs of stakeholders involved in resource management. A case study of selected counties and clans in the Buganda Kingdom provided conservation managers with a clearer understanding of the challenges facing wildlife conservation. The major threats to wildlife resources are evident in counties such as Kyagwe (Mabira Forest, Liana fruit, colobus monkeys, Bushbuck), Mawokota (Mpanga Forest, Liana fruit, Black Ants), Busiro (Zika Forests, Vervet monkeys, Oribi Antelopes, Cane Rats, Pangolins, Crested Cranes, Monitor Lizards), and Buddu (Wabitembe Forest and Nabajjuzi Wetland, African Lungfish, Liana fruit, Bushbuck Antelopes, Otters, black and white colobus monkeys). In these areas, vast sections of forests and streams have been destroyed due to human activity and government policies that allocate land to investors for industrial and agricultural expansion, resulting in significant habitat loss for wildlife species (Baranga*et al.,* 2007).

Totems have been described as a traditional environmental protection method in addition to kinship. Because some tribes have multiple totems, totems can help conserve wildlife resources. Some conservation groups, such as the Uganda Wildlife Education Center (UWEC), are looking to ancient cultural beliefs to complement existing conservation and conservation efforts. In 2010, UWEC announced that it would adopt Ugandan Buganda clan totem practices to raise awareness of wildlife species in the region. People forgot this, but in ancient times, the Baganda knew that killing totems and eating totems was taboo. If we reinvent this, it could be a useful tool for our conservation efforts (Daily monitor on Thursday, July 1, 2010).

**1.2 Problem Statement**

Totemic beliefs are intricately woven into the cultural fabric of Buganda, passed down through oral traditions such as storytelling, poetry, and proverbs, and recorded in the literature of West Africa and Buganda. This highlights the importance of educating not only the Baganda but also neighboring ethnic groups residing near Uganda’s national parks and nature reserves, including the Bakonjo, Banyankole, Batooro, Acholi, Bakiga, Bagisu, Karamojong, and Banyoro. Increasing awareness among Ugandans is essential to address the rampant killings of wildlife and the destruction of their habitats, which are considered totems (Basemera, 2003, cited by Nuwagaba, 2014). The threat to wildlife resources is a significant concern in Buganda, Uganda, Africa, and worldwide. Wildlife populations are decreasing at an alarming pace, raising concerns about the potential extinction of unique and endangered species (Lule, 2012). The National Autonomous University report (2018) indicates a serious decline in the number of wildlife species within Buganda and Uganda’s national parks. The UWA report from 2011, published in the Independent Newspaper (May 5, 2012), documented the tragic loss of 25 elephants in Murchison Falls National Park in 2011, marking the most severe incident of wildlife loss in a single conservation area. Likewise, The New Vision (April 13, 2018) reported the poisoning of 11 lions in Queen Elizabeth National Park. Sseguya (2013) further emphasizes that species such as the black and white rhinos, antelopes, pangolins, and various wild plant and bird species have gone extinct in Uganda. The National Autonomous University report also reveals a staggering 81% decline in lion populations, followed by ostriches at 79%, zebras at 74%, and Uganda kobs at 69%. Additionally, critical plant species like Ficusnatalensis (*Omutuba*), Aleuritesmoluccana (*Omuyiki*), and the candle nut tree (*KabakaAnjagala*), along with fish species such as the elephant-snout fish (*Kasulu*) and Singida tilapia (*Ngege*), are also at risk of extinction.

The UWA Corporate Report (2018/2019) highlights that the shoebill is under severe threat, alongside elephants, pangolins, hippopotamuses, ostriches, monitor lizards, pythons, and crocodiles. The 2018 Red List of threatened species in Uganda documents 184 butterfly species, 99 plant species, 77 mammal species, 83 bird species, 41 dragonfly species, and 31 reptile species under threat. These findings suggest that natural ecosystems and species are experiencing unprecedented pressure from industrial development and rural populations striving to earn a living. If immediate action is not taken, future generations will only hear stories of once-thriving wildlife species, such as lions, leopards, pangolins, cane rats, and various aquatic and plant species that once populated Lake Victoria and forests like Mabira, Ziika, Mpanga, and Wabitembe. Mulira (2009) emphasizes that these forests and wetlands serve as habitats for wildlife species and provide medicinal resources. Since its inception, Buganda has developed a totemic system that fosters deep affiliations between its people and wildlife species, with each clan directly linked to a plant, animal, fish, bird, insect, or rodent. Totemic practices in Buganda have historically enforced strict respect for these species, making their killing a taboo with serious consequences, thereby contributing to wildlife conservation. In the past, adherence to these totemic norms ensured the protection of wildlife species, providing a successful conservation model for Buganda’s selected clans in Mawokota, Buddu, and Busiro. However, today, wildlife resources are under severe threat due to pollution, habitat destruction, and unregulated hunting (Haken, 2011). In Uganda, poaching for bush meat, firewood collection, and timber harvesting are the most widespread wildlife crimes, alongside a growing illegal wildlife trade involving African elephants, lions, mountain gorillas, chimpanzees, pangolins, rhinos, and African wild dogs (Akella, 2012). Uganda is increasingly becoming a transit hub for illicit wildlife products (Mugisha, 2013). Many of these cases go unreported due to the absence of strong totemic belief attachments to these species among communities surrounding national parks (Smith, 2008). Clans and totems serve as vital conduits for the transmission of cultural values and the strengthening of conservation ethics.

To address this crisis, the Ugandan government, guided by the Wildlife Act (2000, revised in 2019), mandated the Uganda Wildlife Authority (UWA) to protect wildlife inside and outside protected areas. However, policy gaps persist, with no clear guidelines on conserving wildlife beyond these designated areas. This necessitates the integration of the Value-Belief-Norm Theory as a framework for wildlife conservation. Traditional totemic practices in Buganda have historically curbed the exploitation of wildlife species, making them a viable model for conservation efforts today. This study aims to investigate the role of totems practices in the Buganda Kingdom in promoting wildlife conservation by analyzing selected totems in the three counties of Mawokota, Buddu, and Busiro. By leveraging the cultural and conservation synergies of totemic traditions, the study seeks to provide solutions to the escalating crisis of wildlife loss and propose sustainable conservation strategies through adoption of the practices throughout the country.

**1.3 General Objective of the Study**

The purpose of the study was to justify the significance of totems practices to wildlife conservation in Buganda kingdom and Uganda as whole hence coming up with a model. After critically analyzing and discussing the findings of the study, the new hypothesized wildlife conservation model was established. That’s the Totemic Integration practices sustainability model (TIPSM). The model is based on the study findings and the conceptual framework exploring the significance of totems practices and wildlife conservation in Buganda Kingdom and Uganda, a case of selected clans of Buganda kingdom. The (TIPSM) aimed at amending the existing modern conservation strategies by the government of Uganda (Muyiira 2025).

**1.3.1 Specific Objectives of the Study**

The following objectives guided the study;

1. To explore Kingdom the cultural values, beliefs and norms of totemic practices in wildlife conservation in the Buganda Kingdom.
2. To evaluate the relationship between totem practices and wildlife conservation, emphasizing the potential mediating effects of certain interventions in this nexus.
3. **Literature Review**
	1. **The cultural values, beliefs and norms of totemic practices in wildlife conservation in the Buganda kingdom.**

Totemic practices among the indigenous communities of Buganda are deeply embedded in their culture and belief systems. Each clan in Buganda traditionally has its own totem (*Omuziro*), usually an animal, plant, or natural element, which holds symbolic significance (Kiyimba *et al*., 2017). These totems are not just identifiers but also serve as sacred symbols that define a clan’s heritage, responsibilities, and obligations. They play a crucial role in shaping social structures and instilling a sense of belonging among clan members, reinforcing communal values and strengthening social cohesion (Mukasa, 2013).

Beyond their symbolic significance, totems embody values of respect, reverence, and protection for the species associated with them. This cultural foundation encourages the conservation of biodiversity by ensuring that specific species are safeguarded against harm or exploitation (Kiyimba *et al*. 2017). The system fosters a deep-seated commitment to environmental stewardship, as individuals and clans uphold the responsibility of protecting their totemic species (Byaruhanga, 2012). Additionally, it strengthens clan identity and unity, creating a framework in which traditional ecological knowledge is preserved and passed down through generations (Mbabazi *et al*., 2017).

Sacred places such as forests, rivers, and swamps have long played a crucial role in the conservation of flora and fauna. Certain tree species were forbidden from being cut down, and some animals were strictly protected (Kaggwa, 2005). For instance, the killing of a lizard (*Omunya*) was believed to prevent one from going to heaven, instilling a moral obligation to protect biodiversity (Lubowa, 2009). These sacred sites served as reservoirs of ecological diversity, sheltering numerous species and maintaining environmental balance (Byaruhanga, 2012). They were regarded as spiritual domains where ancestral spirits resided, reinforcing their protection.

The importance of totems extends beyond Buganda. Other ethnic groups in Uganda also associate themselves with specific animal species, reinforcing conservation through cultural symbolism (Ssozi, 2010). National symbols also reflect this reverence for wildlife, as seen in the crested crane on the Ugandan flag and the naming of sports teams after animals (Young, 2005). Burial traditions in Buganda also contributed to conservation. Trees planted around gravesites were believed to house the spirits (*Mizimu*) of the deceased. Cutting down these trees was considered a violation of spiritual and ecological balance (Lubowa, 2009). However, modern burial practices involving concrete tombs have led to deforestation. Integrating traditional burial customs, such as planting memorial trees, could restore ecological balance and honor cultural values (Young, 2005).

2.2 **The relationship between totems practices and wildlife conservation, emphasizing the potential mediating effects of certain interventions in this nexus.**

Totemic beliefs in the Buganda Kingdom are central to the identity of its indigenous communities, with each clan revering a specific animal, plant, or natural element as their totem. These totems are deeply integrated into cultural practices and environmental interactions, influencing sustainable environmental practices and resource management (Mutebi*et al*., 2020). Understanding the mediating role of certain interventions in this relationship provides insight into how totemic beliefs can be leveraged for enhanced wildlife conservation.

Totemic beliefs in Buganda are associated with cultural taboos that regulate human interaction with nature. These taboos dictate sustainable resource management by restricting the hunting of specific animals or harvesting of particular plants, thereby protecting natural habitats such as forests, wetlands, and other ecosystems (Kandama*et al*. 2021). Additionally, the spiritual connection to totemic species fosters environmental stewardship, ensuring the protection of species and ecosystems (Lubega*et al*. 2021). This spiritual reverence acts as a natural conservation strategy by promoting biodiversity protection, preventing overexploitation, and maintaining ecological balance.

Totemic beliefs also influence land use by discouraging deforestation and overgrazing in areas associated with totemic species. This protection helps preserve biodiversity, maintain ecological services such as carbon sequestration and water filtration, and ensure long-term sustainability (Santos *et al.* 2022). Similarly, totemic associations with water bodies contribute to sustainable water management, as cultural taboos help maintain clean water sources and reduce pollution (Tushabe *et al*., 2020). While totemic practices play a crucial role in wildlife conservation, various factors mediate their effectiveness. These include modernization, environmental degradation, and socio-cultural shifts, which either strengthen or weaken the traditional totemic-based conservation practices.

To strengthen the relationship between totemic practices and wildlife conservation, several interventions can be implemented. Community-based education and awareness programs are necessary to train young generations on the importance of wildlife in sustaining their heritage. Legal and policy support should integrate totemic practices into formal conservation policies to strengthen local stewardship. Sustainable livelihood programs, such as ecotourism, can reduce reliance on destructive land-use practices. Scientific research and conservation partnerships, such as genetic studies on isolated primate populations (Bortolamiol, 2014), can inform conservation strategies to mitigate risks associated with habitat fragmentation. Totemic practices remain a powerful tool for wildlife conservation in Buganda. However, they require reinforcement through education, policy support, and sustainable development initiatives to counteract modern threats. By integrating traditional conservation knowledge with contemporary strategies, the sustainability of Uganda’s forests and wildlife can be safeguarded for future generations.

1. **Methodology**

This study employed a cross-sectional study design. A cross-sectional study design is a research method that involves the collection of data from a population or a representative subset at a single point in time to assess the prevalence of a particular phenomenon. In the context of studying Totem practices and their role in the conservation of wildlife resources in the Buganda kingdom, a cross-sectional study was chosen because it allows capturing a snapshot of the existing beliefs, traditions, and practices within a community. By examining these practices at a specific moment, researchers were able to gain insights into how totems are integrated into the daily lives of individuals and communities and their potential impact on wildlife conservation efforts (Smith *et al.,* 2019).

The use of cross-sectional study design involves collecting data from diverse individuals within the selected three counties of the Buganda kingdom (Buddu, Mawokota and Busiiro) by employing various methods, such as surveys, interviews, and observations, to understand the prevalence and nature of totemic practices. This design provided an exploration of correlations between Totem beliefs and wildlife conservation behaviors, hence shedding light on how cultural factors influence conservation efforts. Cross-sectional design provides a comprehensive overview of the existing totem practices and their potential implications for wildlife conservation (Jones *et al.,* 2020).

This research used descriptive research design to obtain the data to be used to make decisions and. This research used document analysis. Document scrutiny was used to compare existing describing the way Buganda totems practices is influencing conservation of wildlife in Buganda kingdom documents with some bench marking practices or using some standard documents of what is supposed to be. Thus, the research design of this study is descriptive ex post facto research design. The research design was used because the research required describing and reporting what had already happened. Cross-sectional study design looks at both a correlation study design which is both quantitative and qualitative study in which there are two or more quantitative variables from the same group of subjects and the researcher determines whether there is a relationship between the two variables. This type of research design seeks and interprets relationships between sets of facts (Joseph, 2015). Cross-sectional studies Correlative studies have therefore been used to outline the relationship between Buganda totem practices and conservation of wildlife resources in Uganda, particularly in the Kingdom of Buganda. Therefore, this study used both quantitative and qualitative data, because observations and interviews were used to collect data, and because researchers used questionnaires and recordings to measure the amount of performance.

According to the National Population and Housing Census (2020-2027), anestimated4,178,700 people live in the three counties of the Buganda kingdom (Central Region of Uganda). The study was conducted only in the three counties of Mawokota Counties, Busiro County and Buddu County. These included 2,915,200 from Busiro, 976,900 from Buddu and 286,600 from Mawokota. Out of 4,178,700, the study only targeted 13,500 respondents for quantitative samples. These included 1,500 from Mawokota, 8,000 from Busiro, and 4,000 from Buddu. To achieve a target population of 13,500 from a total of 4,178,700, Proportional Stratified Random Sampling was used. The population was divided into districts, and each district was sampled in proportion to its share of the total population. This method ensured a representative selection from each district, with sample sizes determined based on the population proportions of each district.

The study also considered a target population of 50 for qualitative data. These were opinion leaders, officials from BTHB, UWEC Officials and UWA Officials.

The prime target population to the study were the people who belong to the clans whose seats are in Busiro (*Ffumbe, Mmamba, Mpindi, Ngeye, Njovu, Nkima*), Buddu (*Ŋŋali, Kinyomo*) and Mawokota (*Kkobe, Lugave, Ngabi, Kayozi*) where different clan seats are found. These counties were chosen to represent the whole of Buganda counties which are the seats of the different clans of the Buganda kingdom. Since this study was highly concerned with the cultural practices and norms of the Baganda people, it’s ideal that the researcher focuses on the location where the custodians of these clans (totems) are found.

The researcher selected sample categories of clan heads found within the four counties of Buganda kingdom, officials from wildlife management agencies within these districts in these counties on the basis of purposive sampling. Purposive sampling was used in selecting participants for the interviews and the targeted were clan heads, wildlife management agencies of Uganda and officials from the ministry Buganda kingdom. Purposive sampling was of great help in this situation where a researcher was able to meet the targeted sample and where sampling proportionality may not be of great concern Amin (2005). The clan heads and county heads are not many within the sample frame work, the researcher did not waste time on those he knows do not have the information he needed, and instead targeted those who are directly important for this research. Snow ball sampling technique was important for the researcher in a way that the target sample purposively selected was leading the researcher to helpful responses. This helped in getting information on the current operational scope strategies policies and philosophy in wildlife conservation initiatives in Uganda.

The size of the qualitative sample was not calculated but rather guided by Creswell (1998, Vasileiou , 2018)  who argues that sample size of 5-25 on reaching saturation of at least 16 and above is a representative sample. In this study, a sample of 15 respondents was a representative sample upon reaching saturation. Among the key informant considered in the interview were opinion leaders, UWEC and UWA Officials.

Out of 13,500 target populations, a sample of 388 was selected to take part in the study. These included 100 from Mawokota, 170 from Busiro and 118 from Buddu. The selected sample size included all clan heads, Buganda cultural sites guides above 18 years, the Officials from the ministry of Buganda tourism and heritage board, local community, UWA Officials, and Academicians. The sample size was calculated using the sample size procedure given by the Yamane formula for determiningsample size. Therefore, a sample of 388 is good as recommended by Gordon, (2001) and suitable for a target population of 13,500 people as recommended by Yamane (1967).

Purposive Sampling was used for Buganda Heritage and Tourism board officials, Clan Elders, Local communities and Officials from UWA. This enabled the study to identify respondents from each category since they are placed in positions suitable for them to give relevant information on Totemism and wild life conservation (Amin, 2005). The researcher used the Snowball sampling method; this was because it is a non-probabilistic sampling method, also called a network. This was used to select respondents who were difficult to reach due to the privacy of the content they are involved with. This study used Snowball to examine how totemism leads to wildlife conservation and an interview guide to collect data from the resulting samples (Koul, 1984, cited Pandey, 2021).

In this study, respondents (Buganda clan elders, Buganda Heritage and Tourism Board staff, local communities, Uganda Wildlife Education Center staff, and Uganda Wildlife Authority staff) were presented with open-ended and informal questionnaires. The Likert-scale model was adopted when developing the questionnaire. Where 5-Strongly Agree, 4-Agree, 3-Not Sure, 2 Disagree and 1 Strongly Disagree.

The study included structured face-to-face and telephone interviews with key opinion leaders (Buganda clan elders, Buganda Heritage and Tourism Board staff, local communities, Uganda Wildlife Education Center staff, and Uganda Wildlife Authority staff).

In this study, clan elders, Buganda heritage and tourism board officials, tourist destination guides, clansmen (elders, professional NGOs, opinion leaders) were provided with unstructured interview guides. The researcher’s aim was to get the insights of discussants views on alternative practices to wildlife management.

This study analyzed statistical documents and publications from government, NGOs such as the cross-cultural foundation of Uganda, academic publication, wildlife conservation reports, Buganda kingdom totems publications and newsletters and non-governmental organization summary reports (Mateen, 2020). Searches were from PDF electronic academic research, and other researches on totemism and conservation of wildlife.

The study ensured data quality by testing for validity and reliability of the instruments to be used before administering them to respondents. A pre-test of instruments, then a verification of accuracy of coding and data input was done. In this study, validity was tested using the content validity index (CVI). The pre-test was done on 20% of the total sample. And the results of the pretest =86% (0.86) while aligns with what Nunnally (1978) Content Validity Index (CVI) of 0.70 or higher is acceptable for new instruments when using expert judgment.

Data was analyzed using the SPSS program and results pointed out were items ranked above 0.7 as specified by Amin (2005). The results pointed out that the items ranked above 0.7 as specified by Amin (2005). This is shown in Table 1 as Totems’ Practice represented by Cronbach Alpha Coefficient of 0.750, Plant, insects, fish, bird and Animal Totems with the coefficient of 0.759, The constraints facing the conservation of totems with 0.745, Integrating totemic practices with modern conservation strategies with 0.810, Wildlife Conservation in Buganda Kingdom with 0.735 and Mediating Factors with 0.711.

# Table 1: Reliability of Results-Cronbach Alpha Coefficient

|  |  |
| --- | --- |
| **Factors**  | **Cronbach Alpha Coefficient** |
| Totems’ Practice | 0.750 |
| Plant, insects, fish, bird and Animal Totems | 0.759 |
| The constraints facing the conservation of totems | 0.745 |
| Integrating totemic practices with modern conservation strategies | 0.810 |
| Wildlife Conservation in Buganda Kingdom | 0.735 |
| Mediating Factors | 0.711 |

Source: Primary Data (2024)

A pilot study was in Buganda kingdom in central Uganda on one fifth of the total sample. This study used the results of this pilot study to develop, adopt and check the feasibility of the strategies, to determine the reliability of the measures, and at times to calculate how big the final sample needs to be, (Hopkins, 2000).

The quantitative data collected from respondents was coded and edited on a continuous basis to ensure accuracy and completeness. Data collected with the use of interview guide was put into meaningful and exhaustive categories. Data collected at the end of each day was checked to ensure accuracy; this was useful in ensuring that the objectives of the study are being addressed.

Cleaned data was analyzed using both statistical and narrative methods. Qualitative methods of data analysis were mainly applied on the research findings. During interviews the researcher made sure that he takes detailed information, from the participants. In case of information gaps identified in data collected, he amended such gaps by making repeated visits for interviews and cross checking for clarity (Dahlerg 2009).

Qualitative data analysis was done using content analysis technique by examining data collected from interviews and questionnaires. The data collected from interviews, focus group discussion, observation and reflection field notes, various texts, pictures and other materials was summarized. Quotations were interpreted concerning their contents in relation to a particular research question and objectives. In the process of coding and analysis, the content of the same categories was considered and accordingly worked upon.

Data collected through interviews, focus group discussions as well as documents were discussed by the researcher where primary data was of great use in backing up documentary sources and filling the knowledge gaps which may not have been addressed by literature from those documents.

QuantitativeData was sorted using the Statistical Package for Social Scientists (SPSS), Version 23.0. Descriptive analysis and calculation of frequency, percentage, Skewness and mean were carried out using SPSS, a tool used by researchers for quantitative data analysis in social science research. For inferential data analysis, IBM SPSS Amos was utilized. This is because the tool helps to describe relationships between the variables and indicators. Amos provides a path model (Sander & Lee, 2014). Using structural equation modelling (SEM), the study tested relationships between the study variables. Hypotheses were tested using the Structural Equation Model (SEM).

1. **Results**

Out of the 388 questionnaires distributed to the study participants, a total of 374 were successfully returned, resulting in a response rate of 96.4% (see table 1). This response rate is considered exceptionally high and strong for ensuring the reliability and validity of the study’s findings. According to Mugenda and Mugenda (2003), a response rate of 50% or higher is generally deemed adequate for the purposes of analysis and reporting, especially in social science research. A response rate of 96.4% far exceeds this threshold, indicating a strong level of engagement from the participants and enhancing the representativeness of the sample. Given the significance of the 96.4% response rate, the study is well-positioned to provide accurate and actionable insights, supporting the integrity of the research findings and their subsequent recommendations. It is a strong indicator of the quality of the data and enhances the credibility of the study within the academic and professional community.

**4.1 The cultural values, beliefs and norms of totemic practices in wildlife conservation in the Buganda kingdom, and how do these practices influence wildlife conservation**

Respondents were asked to give their opinions regarding the cultural values, beliefs and norms of totemic practices in wildlife conservation in the Buganda kingdom, and how these practices influence wildlife conservation do.

The findings on whether totemic practices in Buganda Kingdom play a crucial role in instilling morals and values that contribute to the conservation of wildlife, the bigger percentage (98.1%) generally while 1.9% were not sure. The mean = 4.9385 implied that respondents accepted that totemic practices in Buganda Kingdom play a crucial role in instilling morals and values that contribute to the conservation of wildlife. As to whether it is essential to educate young people about their totemic beliefs from an early age to foster respect and understanding towards wildlife conservation, the majority percentage 353(94.4%) of respondents generally agreed, 1.9% were not sure and 3.7% disagreed. The mean = 4.7380 implied that it is essential to educate young people about their totemic beliefs from an early age to foster respect and understanding towards wildlife conservation. Regarding whether elders in Buganda possess valuable cultural knowledge that integrates wildlife conservation principles, the majority percentage 360 (96.3%) of respondents generally agreed, 3.7% were not sure and 3.7% disagreed. The mean = 4.7701 implied that elders in Buganda possess valuable cultural knowledge that integrates wildlife conservation principles. With respect to whether traditional storytelling and poems are effective mediums for transmitting totemic beliefs and wildlife conservation values to the younger generation, a bigger percentage 367(98.1%) generally agreed, 1.9% disagreed. The high mean=4.7701 means that traditional storytelling and poems are effective mediums for transmitting totemic beliefs and wildlife conservation values to the younger generation. In line to whether taboos associated with totemic beliefs among the Baganda regulate behaviors that are crucial for wildlife conservation efforts, a larger percentage 343 (91.7%) generally agreed, 1.9% were not, and 6.4% generally disagreed. The high mean = 4.6390 that taboos associated with totemic beliefs among the Baganda regulate behaviors that are crucial for wildlife conservation efforts. About whether tribal, clan, and family histories among the Baganda building a sense of courage and confidence in wildlife conservation practices, all respondents 374(100%) generally agreed. High mean = 4.7273 close to code 4 implied that Tribal, clan, and family histories among the Baganda building a sense of courage and confidence in wildlife conservation practices. About the Acceptance of Totemic Beliefs and Taboos is widespread among the Baganda Community, all respondents 348 (100%) generally agreed. High mean = 4.7353 implied that the Acceptance of Totemic Beliefs and Taboos is widespread among the Buganda Community. This suggests that totemic beliefs are not only widely recognized but are also considered integral to maintaining social order and environmental stewardship. Further, on whether respondents each Muganda identifies with a specific totem, which can either be a plant or an animal, influencing their attitudes towards wildlife conservation, the majority percentage 359(76%) generally agreed, 4.0% disagreed. The mean = 4.7059 implied that each Muganda identifies with a specific totem, which can either be a plant or an animal, influencing their attitudes towards wildlife conservation.

**Table** **2: Summary Results for Cultural values, beliefs and norms of totemic practices in wildlife conservation.**

|  |  |  |
| --- | --- | --- |
| N | Valid | 374 |
| Missing | 0 |
| Mean | 4.7674 |
| Median | 4.8000 |
| Std. Deviation | .22630 |
| Variance | .051 |
| Skewness | -.828 |
| Std. Error of Skewness | .126 |
| Kurtosis | -.329 |
| Std. Error of Kurtosis | .252 |
| Range | .80 |
| Minimum | 4.20 |
| Maximum | 5.00 |
| Percentiles | 25 | 4.6000 |
| 50 | 4.8000 |
| 75 | 5.0000 |

**Source:** Primary Data (2024)

The Table 2 indicate a mean = 4.7674 close to median 4.800, indicating that the data is symmetrically distributed. Since the median represents the middle value, with a negative skew (skew = -.828). This suggested normal distribution of the results. High mean also meant that influences of Totems’ Practice on wildlife conservation are rated to be high. The low standard deviation = .22630 also indicated that responses were normally distributed. Figure 1 shows the results as displayed by the normal curve.



Figure.1. Histogram for Cultural values, beliefs and norms of totemic practices in wildlife conservation.

Figure 1 shows that respondents rated the Totems’ Practices and wildlife conservation highly, with a mean of 4.7674 and a standard deviation of 0.22630, indicating a relatively narrow spread of responses. However, the distribution is positively skewed where the distribution spread concentrating towards the right. This positive skew suggests that while most people view the practices favorably, there is a smaller group that rates it exceptionally high. The implication is that the general perception of Totems’ Practices and wildlife conservation is positive, but there was some variability in how different individuals or groups assess its effectiveness.



Figure 2. Structural Model for Cultural values, beliefs and norms of totemic practices in wildlife conservation.

**Key: Totem: Totems’ Practice and Conservation: wildlife conservation**

Before modification, the covariance figure shows several significant inter-variable relationships, with substantial modification indices (M.I.) pointing to potential improvements in the model’s fit. For example, the covariance between e20 and wildlife conservationhas a high M.I. of 24.447, suggesting that adding this covariance could improve model fit. Other notable relationships, such as e12 with e20, e19, and e17 (see table in appendix 1), also show high M.I. values, indicating areas where the model could be enhanced. The parameter changes (Par Change) suggest that these modifications could improve the relationships between variables, with both positive and negative changes indicating potential model adjustments that could either strengthen or weaken specific covariances.

However, the fit statistics of the default model before modification indicate poor fit, with a CMIN/DF ratio of 9.506 (which is well above the acceptable threshold of 5), and an RMSEA of 0.151, indicating a poor model fit. The GFI and AGFI values are both below 0.80, further signaling a suboptimal fit. Similarly, the CFI and IFI values are relatively low (0.759 and 0.760, respectively) (see table in appendix 1), which suggests that the model doesn't fit the data well. The parsimony-adjusted indices (PRATIO, PNFI, and PCFI) also indicate that the model is not very efficient in explaining the data. The NCP value (1139.820) is quite large, further indicating that the model requires substantial improvement. These results suggest that significant changes are needed to improve the model’s fit and interpretation, which is why model modification was considered.



**Figure: 3 After modification (Source:** Primary Data 2024)

After modification, the covariance table reveals several adjustments that were made to improve model fit. Significant changes include the addition of covariances between e14 and e15, and e11 and e13, with positive parameter changes indicating improved relationships between these variables. The model also shows negative par changes in some covariances, such as e11 and e15, suggesting that these changes could reduce the strength of the relationships between these variables. The goodness-of-fit indices indicate that the default model has improved significantly post-modification. Specifically, the CMIN/DF value dropped to 3.641, indicating a better fit than the previous model. The RMSEA value of 0.084 (with a 90% confidence interval between 0.063 and 0.106) is also within the acceptable range, suggesting an adequate fit. The CFI and TLI values of 0.955 and 0.933, respectively, further indicate a good model fit, with the NFI and RFI values also reflecting improvement. The parsimony-adjusted indices (PRATIO, PNFI, and PCFI) all suggest a relatively efficient model after modification. These results imply that the modified model offers a better fit to the data, with improved covariance structure and model parameters.

**4.2 The relationship between totem practices and wildlife conservation, emphasizing the potential mediating effects of certain interventions in this nexus**

Respondents were asked to give their opinions regarding the constraints facing the conservation of totems in the Buganda kingdom.

Regarding the whether there is a lack of awareness among the younger generation about the significance of totems, the majority percentage 347 (92.8%) of respondents generally agreed, 7.2% generally disagreed. The mean = 4.5856 implied that there is a lack of awareness among younger generations about the significance of totems, with a lean toward stronger agreement. This implies that there is a significant perception within the Buganda community that the younger generation is less aware of the importance of totemic beliefs and taboos. Regarding the modern development projects often disregard the cultural importance of totems, the majority percentage 357 (95.5%) of respondents generally agreed, 4.5% generally disagreed. The mean = 4.6150 implied that modern development projects often disregard the cultural importance of totems. As to whether encroachment on traditional lands and habitats threatens totem species, the majority percentage 365 (98.9%) of respondents generally agreed, 1.1% generally disagreed. The mean = 4.7724 implied that encroachment on traditional lands and habitats threatens totem species, with a lean toward stronger agreement. As to whether conservation efforts in Buganda that incorporate plant and animal totems are more effective, the majority percentage 352 (98.2%) of respondents generally agreed, 1.9% generally disagreed. The mean = 4.8102 implied that conservation efforts in Buganda that incorporate plant and animal totems are more effective, with a lean toward stronger agreement. Regarding the whether there is insufficient governmental support for the protection of totems, the majority percentage 333(86.9%) of respondents generally agreed, 11% generally disagreed. The very high mean score of 4.8102 and the overwhelming agreement of 98.2% among respondents suggest that the Buganda community strongly believes that conservation efforts that incorporate plant and animal totems are more effective. Regarding the traditional knowledge about totems is at risk of being lost due to cultural shifts the majority percentage 94.4% of respondents generally agreed, 5.6% disagreed with very high mean score of 4.8128. This result highlights a significant concern that traditional knowledge about totems is being lost as cultural shifts, likely driven by modernization, globalization, and changes in lifestyle, gradually replace old practices and teachings. Findings on lack of funding hindering conservation efforts focused on totems reveals that all respondents generally agreed, with a higher mean of 4.8770 indicating that the Buganda community believes the lack of financial resources is a significant barrier to effective conservation of totemic species and their habitats.

1. **Discussion of Results**

***Cultural Totems’ Practice and wildlife conservation***

The study concludes that totemic practices within Buganda play a pivotal role in fostering environmental stewardship and wildlife conservation. These practices, deeply embedded in the community's cultural fabric, govern the interactions between humans and the natural world, particularly through prohibitions against harming animals or plants associated with specific clans. This reflects a deep cultural respect for wildlife that aligns with conservation efforts. According to Berkes (2009), traditional ecological knowledge (TEK) has been shown to regulate behaviors and sustain biodiversity within indigenous communities. The findings of this study reinforce this view, suggesting that totemic beliefs can instill moral values that promote conservation and the protection of sacred species.

The study also emphasizes the importance of educating younger generations about their totemic beliefs. This education fosters respect for wildlife conservation by embedding these values into the cultural identity of the youth. Laird (2007) points out that cultural education linked to ecological stewardship strengthens community-based conservation efforts. This finding is in line with the study's suggestion that by integrating traditional knowledge into education, Buganda can ensure long-term commitment to environmental preservation. Walwambe and Barakagira (2024) and Ojelel et al. (2024) state that when members of the local community have knowledge about the benefits obtained from natural ecosystems, they are eventually conserved.

Elders in the community, who possess vast ecological knowledge, are central to the transmission of these values. Through storytelling, songs, and other cultural expressions, they pass on not only knowledge of the totem but also its cultural and ecological significance. This knowledge transfer is crucial for the sustainability of both cultural practices and conservation ethics. Pretty *et al*. (2009) highlight the role of elders as custodians of ecological wisdom, and the study shows how their influence contributes to bridging the gap between traditional wisdom and modern environmental practices.

**The relationship between totems practices and wildlife conservation, emphasizing the potential mediating effects of certain interventions in this nexus.**

The relationship between totemic practices and wildlife conservation, particularly through interventions, is explored within the context of Buganda, where totemic species play a significant role in the cultural and ecological framework. The study identified several constraints that hinder the effective conservation of these species, which include a lack of awareness among younger generations about the cultural and ecological significance of totems, as well as the pressures of modern development projects. Alcorn (1995) emphasizes how rapid development often undermines traditional ecological knowledge and practices, further compounding the difficulties faced by conservationists.

Encroachment on traditional lands and the insufficient support from governmental agencies for conservation efforts also emerged as significant barriers to the preservation of totemic species. Despite these challenges, the study indicates that incorporating plant and animal totems into conservation initiatives can help overcome these obstacles. The findings are in line with the work of Dudley et al. (2005), who emphasized the importance of integrating local cultural practices into conservation policies for more successful and sustainable outcomes. Therefore, the study suggests that fostering cultural awareness and integrating totemic beliefs into conservation strategies can strengthen community support and ultimately improve environmental management.

1. **CONCLUSIONS**

**The cultural values, beliefs and norms of totemic practices in wildlife conservation in the Buganda kingdom, and how do these practices influence wildlife conservation**

The study concluded that totemic practices within the Buganda Kingdom play a critical role in fostering environmental stewardship and wildlife conservation. These cultural traditions, which include prohibitions against harming animals or plants associated with specific clans, help instill moral values that align with ecological preservation. The practices, deeply rooted in the community's ancestral beliefs, regulate behaviors and protect sacred species, thus contributing to the conservation of local biodiversity. The study also emphasizes the importance of educating young people about their totemic beliefs, which serves to embed respect for wildlife conservation in the cultural fabric of the community, ensuring a long-term commitment to environmental preservation. This integration of traditional values with contemporary environmental concerns presents a sustainable approach that aligns with the local community’s cultural identity.

Additionally, the study highlights the role of elders as vital sources of traditional ecological knowledge, bridging the gap between ancient wisdom and modern conservation methods. Their expertise in sustainable practices and the cultural significance of species can be transferred to younger generations through storytelling, poems, and other mediums. This intergenerational knowledge transfer ensures the preservation of both cultural practices and environmental ethics. The study found that the widespread acceptance of totemic beliefs and taboos, along with the strong personal connection to one's totem, fosters a deep sense of responsibility for wildlife protection. By combining ancestral wisdom with modern conservation strategies, the totemic practices of Buganda offer a culturally relevant and effective framework for sustaining both ecological and cultural biodiversity for future generations.

**The relationship between totem practices and wildlife conservation, emphasizing the potential mediating effects of certain interventions in this nexus.**

The study highlighted significant concerns within the Buganda community regarding the awareness, preservation, and support for totemic practices amidst modern development and environmental challenges. There is a clear recognition of the lack of awareness among younger generations about the cultural and environmental significance of totems, compounded by modern development projects that often overlook the cultural importance of these practices. Encroachment on traditional lands and habitats, along with insufficient governmental support and funding for conservation efforts, further threatens totemic species and undermines the preservation of cultural heritage. However, the study also emphasizes the strong belief that integrating plant and animal totems into conservation efforts can lead to more effective and sustainable outcomes. The community strongly supports the idea that conservation strategies that respect and incorporate traditional beliefs are more likely to succeed, highlighting the need for a balanced approach that merges cultural preservation with environmental conservation.

1. **Recommendations**

The Ministry of Tourism, Wildlife, and Antiquities and the Buganda Kingdom Ministry of Heritage should collaborate with clan heads to promote totemic practices for wildlife conservation through radio and TV programs. Agencies like NEMA, NFA, and UWA should work alongside cultural institutions rather than operating independently in wildlife conservation efforts. NCDC should integrate indigenous conservation knowledge including totems, beliefs, values, and taboos into the national education curriculum at primary and secondary levels. Environmental activities such as tree cutting, wetland reclamation, and bush burning should require local council and Gombolola chief approval to prevent environmental degradation. The government should support artists in composing songs and plays on wildlife conservation, utilizing schools and musicians to spread awareness through entertainment. Tree planting should be incorporated into Buganda Kingdom events, such as Kabaka’s birthday, coronation, weddings, and funerals, to promote environmental conservation. Traditional burial practices using bark cloth (*olubugo*) should be encouraged, along with planting trees and natural flowers instead of using artificial wreaths. Cultural gatherings like *Kisakatte*, led by the Nabagereka, should continue educating youth on norms, values, taboos, totems, and environmental conservation. Clan heads should hold meetings at clan seats to educate younger generations about totems and the importance of protecting them and their habitats. UWA and MITWA should permit Buganda clans to keep some totemic wildlife species on clan land under strict inspection and guidance, similar to zoo enclosures, for educational and conservation purposes. The Uganda Tourism Board should use animal sculptures representing regional wildlife species to market and promote tourism, following Buganda Kingdom’s model along KabakaAnjagala Road.

**Areas of further research:**

Impact of Cultural Beliefs on Biodiversity Conservation: Further research should investigate the broader impacts of cultural beliefs and practices on biodiversity conservation. This includes examining how totemic species influence local attitudes toward conservation and the role of cultural norms in promoting sustainable resource use. Understanding these dynamics can lead to more effective conservation strategies that leverage cultural values to protect endangered species and ecosystems.

Evaluating the Effectiveness of Community-Based Conservation: More research is needed to assess the effectiveness of community-based conservation initiatives that focus on the preservation of totemic species. Studies should explore the outcomes of these initiatives in terms of biodiversity conservation, community engagement, and socio-economic benefits. This research would help refine models for integrating cultural preservation with environmental sustainability.

Quantitative Analysis of Health Benefits Linked to Ecosystem Conservation: Future studies could explore the direct and indirect health benefits of preserving totemic species and their associated ecosystems. For instance, research could investigate how the conservation of totemic species contributes to food security, clean water, and reduced disease transmission. This would provide empirical evidence of the health-related benefits of cultural and ecological preservation, further justifying the integration of cultural perspectives in health policy.

Exploring the Role of Gender in the Conservation of Totemic Species: Research could further explore how gender dynamics influence the conservation of totemic species. In many cultures, men and women may have different roles in environmental management, and understanding these roles could help improve conservation strategies. This research could also examine how empowering women in conservation efforts related to totemic species might contribute to achieving gender equality (MDG 3) and other MDGs as well as SDG’s.

Climate Change and the Future of Totemic Species: Another area for future research is to investigate the impact of climate change on totemic species and how communities can adapt their cultural practices to address these changes. With climate change threatening ecosystems worldwide, understanding how shifts in climate may affect the availability of totemic species or the symbolic roles they play in cultures will be crucial in developing adaptive conservation strategies. Research in this area can help ensure that cultural and ecological conservation efforts are resilient in the face of global environmental changes.

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