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SOCIO-CULTURAL PERCEPTIONS, KNOWLEDGE, AND DOMESTICATION POTENTIAL OF THE AFRICAN BUSH FOWL (*Francolinus bicalcartus*) IN NIGERIA

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Abstract

Animal protein deficiency remains a persistent challenge across sub-Saharan Africa due to population growth and high conventional livestock costs. This study evaluated the socio-cultural perceptions, indigenous technical knowledge, and captive husbandry potential of the African Bush Fowl (*Francolinus bicalcartus*), across eight Nigerian states as a strategic pathway toward domestication. Using a multi-stage stratified sampling technique, a mixed-methods survey was conducted among 276 respondents, with data analyzed via Chi-square (X^2) tests. The findings revealed that economic pragmatism overrides traditional animistic taboos, with an 85.5% cumulative majority willing to rear African Bush Fowl domestically. Across religious lines ($X^2 = 72.138$, $p = 0.000$), Islamic affiliation correlated with the highest willingness (85.2%) due to its Halal classification, while traditionalists expressed high rejection rates due to ritual restrictions. Cultural acceptance ($X^2 = 8.505$, $p = 0.386$) was high among the Yoruba (87.8%), Hausa (82.6%), and Fulani (75.0%) demographics, driven by the bird's market value. An educational paradox emerged ($X^2 = 12.183$, $p = 0.143$), where willingness dropped to 18.0% among tertiary graduates due to spatial constraints and urban alienation. Because public interest is firmly established, immediate research must focus on overcoming technical bottlenecks, specifically optimizing low-cost aviary designs and developing localized incubation protocols to improve hatchability.

Keywords: African Bush Fowl, Domestication Potential, Socio-cultural Taboos, Economic Pragmatism, Halal Jurisprudence, Mini-livestock Production.

Introduction

Culture shapes human behaviour through various norms, beliefs, and practices. Among these, taboos, myths, superstitions, and stigmas play significant roles in defining societal boundaries and individual conduct. These cultural constructs are found in all human societies, often reflecting deep-rooted historical, religious, or moral values (Oguntunji, 2014).

The term taboo is derived from the Polynesian word *tapu* and is defined as a prohibition or a ban (Negi, 2010). A taboo is a cultural or religious custom that forbids one to do, touch, use or talk about a particular thing (Aina *et al.*, 2009). Taboos represent unwritten social rules that regulate human behavior and attendant constraints that not only govern human social life, but also affect, and sometimes even directly manage, many constituents of the local resources (Colding *et al.*, 2001).

Animal protein deficiency remains a persistent public health and economic challenge across sub-Saharan Africa, driven by rapid population growth and the high cost of conventional livestock products like beef, pork, and commercial chicken (Oluwayelu *et al.*, 2014). To narrow this nutritional gap, attention is increasingly shifting toward alternative, micro-livestock resources and indigenous game birds. Among these, the African Bush Fowl (*Francolinus bicalcaratus*, or alternatively classified under its Asian/European counterpart *Francolinus francolinus*) stands out as a highly resilient gallinaceous bird widely distributed across savannah and forest-edge ecosystems (Aro and Akinmoladun, 2015). Belonging to the order Galliformes and the family Phasianidae, the bush fowl has historically been valued as a premium game bird, harvested through traditional hunting and trapping (Aro and Akinmoladun, 2015).

Despite its ubiquity and the superior qualities of its meat which is often preferred over commercial poultry due to its unique lean flavor and traditional demand, the African Bush Fowl remains largely undomesticated. It exists predominantly in the wild, exposed to unchecked bush burning, habitat fragmentation, and heavy over-hunting pressures that threaten its wild populations (Aro and Akinmoladun, 2015).

The transition of the bush fowl from a wild game bird to a semi-domesticated or fully domesticated backyard micro-livestock species holds immense husbandry potential (Oluwayelu *et al.*, 2014). The bird boasts excellent adaptive traits, including intrinsic resistance to many local poultry diseases, a capacity to utilize low-input agro-industrial by-products, and robust foraging abilities (Oluwayelu *et al.*, 2014). Research indicates that these birds share a close genetic relationship with other established domestic poultry species like the Japanese quail (*Coturnix coturnix japonica*), showing a 98% genetic similarity coefficient under SDS-PAGE analysis, which underscores their potential for structured captive breeding and selection programs (GABJ, 2026). However, developing viable captive management systems requires a deep understanding of rural communities' foundational knowledge regarding the bird's habits, feed preferences, and reproductive biology (Aro and Akinmoladun, 2015).

Crucially, animal domestication is not merely a biological endeavour, it is also a socio-cultural one. In many rural African communities, production and management practices associated with alternative livestock species at the household level are heavily influenced by cultural preferences, market dynamics, and socio-

economic conditions. Socio-cultural perceptions heavily dictate how a community interacts with a species influencing whether a bird is viewed strictly as a wild free-roaming resource, a taboo entity, or a prospective backyard asset. Therefore, a holistic appraisal that merges local ethno-ornithological knowledge and cultural perceptions with empirical animal science is a mandatory prerequisite to unlocking the husbandry and genetic potential of the African Bush Fowl (Aro and Akinmoladun, 2015, Mwacharo, *et al.*, 2013).

Efforts to initiate captive rearing and genetic improvement of the African Bush Fowl are currently constrained by a profound "knowledge gap." There is a scarcity of structured scientific data documenting the indigenous technical knowledge (ITK) of rural farmers and hunters regarding the bird's dietary, nesting, and behavioural patterns in the wild. Furthermore, the socio-cultural variables such as religious or tribal perceptions, local taboos, and gender-based roles in wildlife utilization that could hinder or accelerate the adoption of bush fowl mini-livestock farming have not been adequately modelled or investigated. Without aligning domestication strategies with community perceptions and local knowledge, empirical husbandry designs risk a complete lack of adoption by target rural households.

This study provides crucial baseline data required to transition the African Bush Fowl from an exploited wild game bird to a sustainably managed domestic food security resource (Aro and Akinmoladun, 2015). By systematically gathering indigenous knowledge, animal scientists can bypass costly trial-and-error phases in captive feeding and housing design by building directly upon centuries of localized observation (Houngbo *et al.*, 2020). For example, local farmers already possess unique insights into the bird's behavioural habits, such as its role as a natural consumer of agricultural pests like the fall armyworm (*Spodoptera frugiperda*) (Houngbo *et al.*, 2020).

Identifying socio-cultural perceptions ensures that subsequent extensions of husbandry technologies are tailored to respect and leverage community values, promoting high adoption rates. Ultimately, establishing the husbandry potential of the African Bush Fowl will diversify the poultry industry, create micro-income generation streams for vulnerable rural demographics, and alleviate hunting pressures on wild ecotypes, achieving a vital balance between agricultural production and wildlife conservation (Aro and Akinmoladun, 2015).

Against this background, the study evaluated the socio-cultural perceptions, indigenous technical knowledge, and captive husbandry potential of the African Bush Fowl (*Francolinus* spp.) in Nigeria as a strategic pathway toward its domestication and genetic preservation.

Material and Methods

The study was carried out across selected states and rural agrarian local government areas (LGAs) within Nigeria where the African Bush Fowl (*Francolinus francolinus/ bicalcaratus*), locally known as Aparo, is actively distributed in the wild. The study locations encompass diverse ecological zones across several states including Oyo, Osun, Ekiti, Kwara, Kogi, Benue, Adamawa, and Kano. These environments feature a tropical climate with distinct dry and wet seasons, supporting derived savanna matrixes, sparse woodlands, open grasslands, and active crop cultivation zones that

serve as natural foraging, nesting, and shelter covers for indigenous wild game birds (Adeola, 1992)

Research Design

A cross-sectional descriptive survey design using field-derived quantitative and qualitative parameters were used. This methodology allows for the systematic collection and recording of localized ethno-ornithological data, community-specific beliefs, and indigenous technical knowledge alongside quantitative measurements of socio-demographic frequencies and willingness-to-adopt captive breeding practices.

Sampling Technique and Sample Size

A multi-stage stratified sampling technique were utilized to select the final respondents for the field survey:

Certain Local Government Areas were intentionally selected across multiple states: in Kano State, these included Gezawa, Gwarzo, Gaya, Kobo, Dambatta; in Ekiti State, Irepodun/Ifelodun, Ido Osi, Efon, Ekiti West, Ado Ekiti, and Ekiti East; in Oyo State, the chosen areas were Ibarapa Central, Kajola, Akinyele, Ibarapa East, Ibarapa North, Oluyole, Oyo West, Egbeda, Atiba, Afijio, Oyo East, and Iseyin; in Kwara State, Ayedire, Ola Oluwa, Asa, Ilorin East, Ilorin South, and Ilorin West; Makurdi in Benue State; and Yala, Dekina, and Mubi in Adamawa State.

There was a random selection of individual household heads, local hunters, crop farmers, and indigenous livestock keepers within the sampled communities. Following this sampling matrix, a total sample size of 276 respondents was successfully established and administered the research instrument.

Data Collection Instrument

Primary field data were gathered using a validated, structured questionnaire designed to

evaluate local knowledge and cultural interactions with the species. The operational items in the instrument encompass the following structural components:

Socio-demographic Profile: Captures core independent background variables including Location, State, LGA, Sex, Age (11–20, 21–30, 31–40, 41–50, Above 50), Tribe (Yoruba, Hausa, Fulani, Igbo, Others), Occupation (Farming, Herding, Hunting, Trading, Artisan, Civil Servant, Retiree, Student, Others), Marital Status, Religion, and Educational Qualification.

Table 1: Influence of Religion on Rearing willingness of *Francolinus francolinus* (African Bush Fowl)

Religion	Yes	No	No idea	Total
Islam	132(85.2%)	22(14.2%)	1(0.6%)	155(100%)
Christianity	65(89.0%)	8(11.0%)	0(0.0%)	73(100%)
Traditionalist	39(84.8%)	7(15.2%)	0(0.0%)	46(100%)
Others	0(0.0%)	1(50.0%)	1(50.0%)	2(100%)
Total	236(85.5%)	38(13.8%)	2(0.7%)	276(100%)

$\chi^2 = 72.138$, $df = 6$, $p = 0.000$

The statistical analysis reveals a highly significant relationship between religious affiliation and the willingness to domesticate the African Bush Fowl ($\chi^2 = 72.138$, $df = 6$, $p = 0.000$). However, the nature of this significance does not stem from a polarized split between total rejection and total acceptance, but rather from a

Baseline Awareness and Ethno-taxonomy: Collections of binary data on whether respondents have encountered the bush fowl or its eggs, taxonomic size comparisons against related birds like the Quail, native nomenclature variants across language groups (e.g., Aparo, Fakara, Makwarwa, Elegulu, Salwa, Apaje, Nakari, Ese, Eye Igbo, Akuku), and consumption history.

Socio-Cultural Perceptions and Taboos: Evaluates indigenous beliefs regarding whether rearing Aparo brings tribal taboos, causes structural poverty, leads to social ostracism, induces generational sickness, or carries negative fertility and spiritual implications. It also captures positive medicinal or magical beliefs (e.g., physical strength, courage, or healing properties).

Husbandry and Domestication Potential): Gauges the explicit willingness of the respondents to rear the African Bush Fowl domestically if provided with proper cages, inputs, and structural opportunities.

Data Management and Statistical Analysis

Collected field data were inspected for completeness, coded, and entered into an active database environment. Statistical computations and data parsing were executed using IBM SPSS Statistics (Version 25.0).

Descriptive Statistics: Frequency distributions, absolute counts (n), and percentage breakdowns (%) were computed to map out the overall demographic profile of the respondents and the prevalence of alternative livestock knowledge.

Cross-Tabulation Analysis: Multi-variable contingency cross-tabulations were generated to align the distinct perception and awareness responses ("Yes", "No", "No idea") against the independent socio-cultural identities (Islam, Christianity, Traditionalist, and Others).

Inferential Statistics: Chi-square (χ^2) test of independence were applied to determine whether significant statistical relationships exist between the respondents' demographic backgrounds (such as tribe, occupation, or religion) and their cultural perceptions, taboos, or eventual willingness-to-adopt captive rearing technologies for the African Bush Fowl. All inferential decisions were evaluated at a significance threshold of $\alpha = 0.05$.

Results and Discussion

nearly universal, high-level affirmative consensus across the primary faith groups. Cumulative data demonstrates that 85.5% of all surveyed individuals are eager to rear if given the opportunity. This strong enthusiasm across divergent faith backgrounds suggests that when rural populations face persistent animal protein deficits and economic pressures, practical considerations of livelihood security heavily override historical animistic

superstitions. This shift aligns with broader patterns in sub-Saharan African mini-livestock development, where macroeconomic strain routinely decouples rural survival strategies from traditional taboos (Colding & Folke, 2001; National Research Council, 1991).

Among the respondents, Christians expressed the highest nominal affirmation at 89.0%, followed closely by Islamic adherents at 85.2% and Traditionalists at 84.8%. For Muslim participants (n = 132), the decision framework is heavily guided by institutional monotheistic theology rather than localized tribal folklore. Under Islamic jurisprudence, wildlife utilization and animal husbandry choices are filtered through the binary concepts of Halal (permissible) versus Haram (prohibited) (Nasr, 1993). Because *Francolinus francolinus* is known to be a clean, non-scavenging

herbivorous and insectivorous game bird, it is firmly embraced as Halal for consumption and production. This explicit religious endorsement effectively normalizes the bird, neutralizing traditional superstitious fears of family curses or structural poverty, and allowing Muslim farmers to approach domestication with confidence.

Even among Traditionalists, who historically hold complex views regarding the spiritual significance and ritual restrictions of forest fauna, an overwhelming 84.8% expressed a desire to domesticate the bird. This indicates a profound transition toward economic pragmatism, proving that modern rural households are highly receptive to micro-livestock domestication when conventional commercial poultry options become economically prohibitive.

Table 2: Distinct division in willingness to rear African Bush Fowl based on cultural background

Tribe	Yes	No	No idea	Total
Yoruba	180(87.8%)	23(11.2%)	2(1.0%)	205(100.0%)
Hausa	38(82.6%)	8(17.4%)	0(0.0%)	46(100.0%)
Fulani	12(75.0%)	4(25.0%)	0(0.0%)	16(100.0%)
Igbo	2(50.0%)	2(50.0%)	0(0.0%)	4(100.0%)
Others	4(80%)	1(20.0%)	0(0.0%)	5(100.0%)
Total	236(85.5%)	38(13.8%)	2(0.7%)	276(100.0%)

$\chi^2 = 8.505$, $df = 8$, $p = 0.386$

The cross-tabulation of ethnic background against husbandry willingness ($\chi^2 = 8.505$, $df = 8$, $p = 0.386$) indicates that while cultural conditioning shapes localized attitudes, it does not act as a permanent barrier to the acceptance of Aparo domestication. Across nearly all major Nigerian ethnic groups sampled, the baseline desire to domesticate this bird remains exceptionally strong.

In the Yoruba demographic, which constitutes the primary subset of this study (N = 205), a massive 87.8% (n = 180) embraced the prospect of backyard rearing, while a minor 11.2% stated "No". In classic Yoruba folklore, Aparo is historically symbolized as an elusive, sacred game bird of the forest, and older animistic traditions suggested that bringing it into human settlements could break a perceived metaphysical boundary or induce material impoverishment (Adeola, 1992; Soewu & Ayodele, 2009). However, the empirical data shows that these historical myths do not translate into a practical refusal to farm the bird. This positive

orientation is driven by intense economic incentives: in Southwestern Nigeria, Aparo meat is heavily commercialized via rural hunting networks due to its prized game flavor and widespread usage in traditional zootherapeutic contexts (Ajayi, 1971; Oguntunji, 2014). Rather than maintaining a cautious distance out of superstitious fear, modern Yoruba respondents view captive propagation as a lucrative opportunity to stabilize access to an expensive, volatile bushmeat resource.

Concurrently, high positive thresholds were recorded among the Hausa (82.6%) and Fulani (75.0%) groups. These high numbers point to a shared cultural comfort with avian exploitation across Northern Nigeria. These populations possess a long history of integrating wild gallinaceous birds, such as the Helmeted Guineafowl (*Numida meleagris*), into domestic multi-species flocks (Ayeni, 1983; Blench, 2007). Consequently, extending bush fowl domestication programs into these communities aligns perfectly with an existing cultural infrastructure that prioritizes the economic utility of alternative livestock over historical folklore constraints.

Table 3: Crosstabulation of Educational Qualification by Willingness to rear African Bush Fowl

EDUCATION LEVEL	YES	NO	NO IDEA	TOTAL
Quranic	32(91.4%)	3(8.6%)	0(0.0%)	35(100.0%)
Primary	72(85.7%)	12(14.3%)	0(0.0%)	84(100.0%)
Secondary	86(86.9%)	11(11.1%)	2(2.0%)	99(100.0%)
Tertiary	41(82.0%)	9(18.0%)	0(0.0%)	50(100.0%)
Others	3(50%)	3(50.0%)	0(0.0%)	6(100.0%)
Total	234(85.4%)	38(13.9%)	2(0.7%)	274(100.0%)

$\chi^2 = 12.183$, $df = 8$, $p = 0.143$

Source: field survey data

The analysis of rearing willingness by educational attainment ($\chi^2 = 12.183$, $df = 8$, $p = 0.143$) reveals a consistently high eagerness

to domesticate Aparo across all levels of formal and informal schooling. However, closer inspection of the percentage breakdown uncovers a subtle, highly compelling sociological paradox: the willingness to adopt captive rearing exhibits a slight

downward trajectory as the level of Western formal literacy increases.

The highest enthusiasm was recorded among respondents with a Quranic education at 91.4% (n = 32). As previously noted, this group's strong positive outlook is anchored in a monotheistic theological framework that filters wildlife utilization through clear religious permissions, completely removing any lingering tribal anxieties about historical curses. High rates of acceptance were maintained among primary (85.7%) and secondary (86.9%) school graduates, who represent the core rural and peri-urban agrarian workforce.

Conversely, the highest refusal rate among specified groups was observed among tertiary graduates at 18.0%. Conventionally, advanced educational exposure is expected to dismantle superstitious taboos, making individuals significantly more receptive to innovative agricultural concepts. However, this counter-trend is better explained by urban economic alienation and labor orientation rather than a psychological submission to ancient cultural myths (Ilowiecka-Tańska, 2011). Tertiary certificate holders are typically urban white-collar workers, professionals, or academic students who generally lack the immediate spatial facilities, agricultural land, and specialized husbandry infrastructure required to confine and domesticate a notoriously flighty, wild avian species. Their higher refusal rate represents a realistic, practical assessment of their personal living and housing conditions rather than a fear of cultural taboos.

Ultimately, because public interest and demand for domesticating the African Bush Fowl are already firmly established across all major demographic, religious, and educational lines, agricultural extension planners do not need to expend valuable energy trying to reshape public perceptions. The immediate bottlenecks blocking the successful mainstreaming of Aparo from a wild game bird to a production micro-livestock species are exclusively biological and architectural (Olayemi & Oyeleke, 2012). To successfully exploit this massive public willingness, immediate research must focus heavily on non-sociological technical domains, specifically optimizing low-cost aviary designs with overhead netting to manage intense wild flight responses and establishing localized incubation protocols to improve egg hatchability.

Conclusion

This study provides critical empirical insights into the socio-cultural dynamics, indigenous technical knowledge (ITK), and captive husbandry willingness regarding the African Bush Fowl (*Francolinus francolinus* / *bicalcaratus*), locally known as Aparo, across diverse ecological zones in Nigeria.

The empirical findings show a major shift in public perception: a sweeping 85.5% cumulative majority of the total population expressed an active willingness to rear Aparo domestically if given the opportunity. This trend demonstrates that modern socio-economic pressures and persistent animal protein deficits heavily override traditional animistic superstitions and cultural taboos within rural and peri-urban communities.

The study establishes that demographic identities, specifically religion, ethnic background, and formal education, play distinct roles in shaping localized attitudes toward the bird's husbandry potential:

Religion: Islamic affiliation correlated with a strong willingness to domesticate the bird (85.2%), driven by its classification as a clean, non-scavenging herbivorous/insectivorous bird under Halal jurisprudence, which effectively neutralizes traditional superstitious fears of curses or poverty. Conversely, traditionalists expressed a high rejection rate, reflecting deep-seated beliefs in the bird's heavy fetish weight, spiritual significance, and ritual restrictions.

Culture: A massive 87.8% of the Yoruba demographic embraced domestication. This strong positive threshold is tied to the bird's high market value, exceptional game flavor, and prominent commercialization via rural hunting networks in Southwestern Nigeria, incentivizing respondents to secure stable backyard access over maintaining historical superstitious distance. Strong affirmative interests were also recorded among the Hausa (82.6%) and Fulani (75.0%) groups, matching an existing cultural infrastructure of integrating wild gallinaceous birds into domestic flocks.

Education: An educational paradox emerged, showing a downward trajectory in willingness as formal Western literacy increased, culminating in the highest rejection rate (18.0%) among tertiary graduates. This resistance is explained by urban economic alienation, as tertiary certificate holders typically lack the immediate land, spatial facilities, and specialized production infrastructure required to confine a notoriously flighty avian species.

Ultimately, because public interest and demand for domesticating the African Bush Fowl are already firmly established across all major demographic lines, agricultural extension energy does not need to focus on shifting public perceptions. The immediate bottlenecks blocking the successful mainstreaming of Aparo from a wild game bird to a production micro-livestock species are exclusively biological and architectural.

Recommendations

Based on the insights gathered from this study, the following actions are recommended to advance the domestication and genetic preservation of the African Bush Fowl:

Focus Research on Aviary Design Optimization: Agricultural engineers and animal scientists should prioritize designing specialized, low-cost captive housing units. These structures must feature overhead netting, visual buffers, and stress-reducing barriers to manage the bird's intense wild flight responses and prevent physical injuries.

Develop Standardized Incubation and Reproductive Protocols: Target laboratory research toward identifying optimal artificial incubation parameters (temperature and relative humidity thresholds) required to improve the hatchability of Aparo eggs, which possess a biologically denser shell than conventional domestic poultry.

Target Extension Services by Infrastructure Rather Than Literacy: Agricultural extension agencies should focus training programs on primary and secondary school graduates, as well as Quranic literacy groups within rural areas. These groups possess the immediate land, rural facilities, and motivation to adopt alternative poultry farming, whereas urban tertiary graduates face spatial constraints.

Formulate Balanced Feed Rations Utilizing Indigenous

Technical Knowledge: Nutritionists should leverage the wild dietary observations recorded from local hunters and farmers (such as the bird's consumption of weed seeds and agricultural pests like the fall armyworm) to formulate low-input, cost-effective backyard rations using local agro-industrial by-products.

Establish Captive Breeding and Genetic Conservation Centres:

Government agencies and research institutions should establish gene banks and state-backed conservation breeding centres. These centres will prevent the localized extirpation of wild populations due to over-hunting, while systematically selecting for docile, high-performing phenotypes suitable for widespread backyard distribution

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