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THE ROLE OF FOREST GUARDS IN ENHANCING FOOD SECURITY IN SOUTH-EAST NIGERIA, WITH A SPECIFIC FOCUS ON ENUGU STATE

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ABSTRACT

This study examined the role of forest guards in enhancing food security in South-East Nigeria, with a specific focus on Enugu State. The objectives were to assess the effect of forest guards on food production, food affordability, and food accessibility. The study adopted a descriptive survey research design, and the population consisted of households dependent on forest resources and forest guards operating in the state. A sample size of 372 respondents was determined using Taro Yamane's formula, from a Population 400 personnel of forest guards and 5,000 households in selected forest-adjacent communities in Enugu State Data were collected using structured questionnaires, and the validity and reliability of the instrument were ensured through expert review and a pretest, yielding a Cronbach's Alpha of 0.82. Data analysis was conducted using simple percentages to summarize responses and Pearson correlation to test the study hypotheses. Findings revealed that forest guards have a significant positive effect on food production, affordability, and accessibility, indicating their critical role in promoting food security. The study recommends strengthening forest protection policies, increasing the capacity and monitoring of forest guards, and integrating forest management with local food security strategies. These measures are essential to enhance sustainable food availability and accessibility in the region.

Introduction

Food security is a component of national development, serving as the basis for economic stability, social well-being, and national security. A country that ensures food security can better address the needs of its population, reduce poverty, and promote sustainable growth (FAO, 2021; Pinstrup-Andersen, 2019). Food security is most widely defined by the Food and Agriculture Organization (FAO, 2021) as a state in which "all people, at all times, have physical, social, and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life." This conceptualization highlights four classic dimensions availability, access, utilization, and stability (Gross, 2020).

Food security also plays a critical role in social stability. When a population has access to sufficient, safe, and nutritious food, it reduces the risk of social unrest and improves public health (Brem-Wilson & Nicholson, 2022). Governments that prioritize food security can foster a more stable and prosperous society. Moreover, food security is closely linked to national security a country that can produce and distribute its own food is less vulnerable to external disruptions such as trade restrictions or climate change (von Grebmer, 2022). Ensuring food self-sufficiency is a key strategy for long-term national stability. Food security is essential to national development; by investing in agriculture, improving distribution systems, and promoting sustainable practices, countries can build a stronger, more resilient future (FAO, 2021). In many developed nations, food insecurity has been effectively addressed through well-crafted policies that focus on sustainable agriculture, efficient distribution systems, and support for farmers (Clapp, 2017). For example, the United States has implemented programs like the Food Stamp Program and the Supplemental Nutrition Assistance Program (SNAP) to ensure that low-income individuals have access to nutritious food (USDA, 2023). Similarly, European countries have invested in agricultural research and infrastructure to maintain stable food supplies (European Commission, 2022). The success of food security in developed nations is largely due to comprehensive and well-implemented policies that foster effective management of ecosystems, particularly forests and their resources (Nasi, 2011).

Forest protection policies in developed nations have played a crucial role in maintaining ecological balance, which in turn supports food security. These policies focus on sustainable forest management, combating deforestation, and promoting reforestation (FAO, 2018). By preserving biodiversity and maintaining soil health, forests contribute to long-term agricultural productivity (Sunderlin, 2015). In countries like Canada and Sweden, strict regulations on logging and land use have helped maintain stable ecosystems. This ensures that water cycles remain intact and soil nutrients are preserved both essential for farming (Canadian Council of Forest Ministers, 2021). Additionally, forests act as carbon sinks, mitigating climate change impacts that could otherwise disrupt food production (IPCC, 2019).

Effective forest policies also support local communities by providing jobs in sustainable forestry and eco-tourism (Nasi, 2021). This economic stability reduces the pressure to clear forests for agriculture, creating a positive feedback loop between environmental protection and food security. Well-designed forest protection policies not only safeguard natural resources but also enhance the resilience of food systems in developed nations. By prioritizing sustainability, these policies ensure that future generations can continue to benefit from both environmental and agricultural resources.

In Nigeria, the role of effective forest guarding is critical to maintaining ecological balance and ensuring food security. However, the lack of proper oversight and protection in forest areas has led to a dangerous situation where these regions have become safe havens for various criminal groups, including kidnappers, bandits, and armed herdsmen, especially in South East Nigeria (International Crisis Group, 2021). These groups often engage in violent activities that disrupt agricultural production and threaten the livelihoods of local communities (Adesoji, 2022). The forest, which should serve as a natural resource and a source of food, has been compromised due to inadequate guarding. This has allowed illegal activities to flourish, leading to the destruction of crops, livestock, and even human lives. As a result,

food insecurity has worsened, particularly in rural areas where people rely heavily on agriculture for sustenance (Adebayo & Olagunju, 2020). The situation highlights the need for improved forest management and stronger security measures. Only by addressing these issues can Nigeria ensure the protection of its natural resources and the safety of its people. It is a call to action for both the government and local communities to work together in safeguarding the environment and promoting food security (FAO, 2021). Forest guards are tasked with monitoring and enforcing laws related to the conservation of forests and wildlife. By preventing illegal activities such as logging and poaching, they help maintain the ecological balance that is essential for agriculture (Nasi, 2011). Healthy forests contribute to soil fertility, water regulation, and climate stability, all of which are vital for sustainable farming.

The presence of forest guards has also encouraged local communities to adopt more sustainable land-use practices. When people see that their environment is being protected, they are more likely to engage in activities that promote long-term food production. This shift has led to improved crop yields and greater food availability, especially in rural areas where agriculture is the primary source of income (Akinyemi, 2019). However, the effectiveness of forest guards depends on adequate funding, training, and community involvement. Without these elements, the initiative may fail to achieve its goals. Nonetheless, the establishment of forest guards represents a positive step toward addressing the complex issues surrounding food security in Nigeria. In conclusion, forest guards play a crucial role in safeguarding natural resources, which in turn supports food security. Their work highlights the importance of combining environmental protection with agricultural development to ensure a sustainable future for Nigeria's population. It is based on the foregoing background that the study is to examine forest guard and food security in Enugu State. Specifically the objectives of the study include to; Examine the effect of Forest guard on food production in South East Nigeria; Evaluate the effect of Forest guard on food affordability in South East Nigeria; Ascertain the effect of Forest guard on food accessibility in South East Nigeria

Literature Review

2.1 Conceptual Review

2.1.1 Forests

Forests constitute a vital natural resource base in Nigeria, providing not only timber and non-timber products but also critical ecosystem services that sustain agriculture, biodiversity, and rural livelihoods. In Enugu State, as in other parts of Nigeria, forests play a significant role in ensuring food security by supplying edible fruits, nuts, vegetables, bushmeat, medicinal plants, and fuelwood, as well as supporting agriculture through soil fertility, water regulation, and climate moderation (FAO, 2018; Nwobodo, 2021). These functions directly contribute to the four dimensions of food security availability, access, utilization, and stability—making forest resources an indispensable component of household survival and resilience (World Bank, 2019).

However, rapid population growth, agricultural expansion, urbanization, fuelwood harvesting, and illegal logging have intensified deforestation and forest degradation in Enugu State (Okeke & Eze, 2020). The resulting loss of forest resources threatens food availability and undermines rural livelihoods. To address this challenge, governments have deployed forest guards as frontline actors responsible for patrolling, monitoring, and enforcing forest protection regulations (Ugwu, 2019). Forest guards not only safeguard against illegal exploitation but also promote sustainable use of forest resources, thereby protecting the ecological balance necessary for agricultural productivity and food system stability (Ogbu & Ani, 2022).

Despite these responsibilities, the effectiveness of forest guards in Nigeria remains underexplored. Limited funding, inadequate training, poor logistics, weak institutional frameworks, and low community cooperation have constrained their capacity to perform effectively (Akinyemi, 2021). At the same time, the nexus between forest protection and food security in Enugu State has not been sufficiently studied, leaving gaps in understanding how forest guards contribute to sustaining household food

systems and broader agricultural resilience (Ezeh & Okafor, 2023).

This study therefore seeks to examine the role of forest guards in promoting food security in Enugu State, Nigeria. By analyzing their functions, challenges, and contributions, the study aims to generate insights that will inform forest governance strategies, enhance sustainable resource management, and strengthen the link between environmental protection and food security in the state.

2.1.2 Roles and functions of forest guards and analogous actors

Various studies describe forest guards' core functions: patrolling and surveillance, enforcing harvesting rules, monitoring wildlife and illegal activities, educating local communities, collecting data on forest conditions, and supporting reforestation or restoration efforts. Where government capacity is limited, community forest guards or joint forest management committees have been used as complementary arrangements. Effectiveness depends on training, motivation, logistical support, clear legal mandates, and community legitimacy. Weak institutional capacity, corruption, low pay, poor equipment, and unclear tenure arrangements are repeatedly cited constraints in many Nigerian and African contexts.

2.1.3 Concept of Food Security

Food security is a multidimensional concept that refers to the condition in which all individuals, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and preferences for an active and healthy life (FAO, 2009). It is built upon four interrelated pillars: **food availability, food access, food utilization, and food stability** (FAO, 2018).

1. **Food availability** refers to the supply of food through domestic production, imports, and food aid. It emphasizes the importance of agricultural productivity, storage, and distribution systems (Maxwell, 1996).
2. **Food access** relates to individuals' ability to acquire food through income, markets, and social networks. Even when food is available in the market, poverty and inequality may limit access (Sen, 1981).
3. **Food utilization** involves the nutritional value, preparation, and biological use of food, which depend on health, sanitation, and knowledge of proper dietary practices (Smith & Haddad, 2015).
4. **Food stability** ensures that individuals have access to food at all times, without risk of losing access due to economic, political, or environmental shocks (World Bank, 2019).

In Nigeria, food security has been a major concern due to factors such as rapid population growth, climate change, rural poverty, conflicts, and environmental degradation (Ojo & Adebayo, 2020). Enugu State, with its mix of rural and urban communities, faces additional challenges of deforestation, soil erosion, and overdependence on subsistence agriculture, all of which threaten food security. Forest resources directly contribute to food security by supplying wild fruits, vegetables, mushrooms, and bushmeat, while indirectly supporting agriculture through soil fertility conservation and water cycle regulation (Ezeh & Okafor, 2023).

Thus, the role of **forest guards** in protecting and managing forest resources becomes crucial, as sustainable forest management is strongly linked to household food security and community resilience. Without adequate protection of forest ecosystems, the capacity of rural households in Enugu State to secure sufficient food would be further compromised.

Food production refers to the processes involved in cultivating, processing, and distributing food crops and livestock products to meet the nutritional needs of a population. It is a central component of food security, as it directly affects the **availability** of food within a country or community (FAO, 2017). Food production includes farming, fisheries, animal husbandry, forestry, and food processing industries, which together determine the volume and diversity of food accessible to households.

Globally, increasing food production has been a strategy to meet the demands of a growing population. However, sustainable food production requires balancing agricultural expansion with environmental conservation (Pretty et al., 2018). In developing countries like Nigeria, food production is mainly dominated by smallholder farmers who cultivate on

small plots of land using traditional tools and methods, which limits output and efficiency (Oluwatayo & Ojo, 2018).

In Enugu State, food production is largely subsistence-based, with major crops including yam, cassava, maize, rice, cocoyam, and vegetables, alongside poultry and small ruminant farming (Ezeh & Chukwu, 2021). However, challenges such as land degradation, soil erosion, poor mechanization, climate variability, and deforestation undermine the capacity of farmers to produce sufficient food. Forest depletion, in particular, negatively affects food production by reducing soil fertility, disrupting water cycles, and eliminating forest-based food sources such as fruits, nuts, mushrooms, and bushmeat (Akinyele, 2019).

This is where the role of **forest guards** becomes important. By protecting forests from illegal logging, bush burning, and unsustainable exploitation, forest guards indirectly enhance food production by conserving ecosystems that support agriculture. Protected forests improve soil fertility, provide pollinators, regulate microclimates, and sustain water bodies essential for irrigation and livestock rearing (Okafor & Eze, 2022).

Therefore, strengthening food production in Enugu State requires not only investment in agriculture but also effective environmental governance through forest conservation and the active involvement of forest guards.

2.1.4 Food Affordability

Food affordability refers to the extent to which households and individuals can purchase sufficient, safe, and nutritious food without compromising other basic needs. It is one of the three key pillars of food security alongside **availability** and **accessibility** and it directly influences the ability of people to maintain a healthy diet (FAO, 2017). When food is unaffordable, even if it is available in the market, households may face hunger, malnutrition, or resort to cheaper but less nutritious alternatives (Smith & Haddad, 2015).

Affordability is influenced by several factors including income levels, food prices, inflation, and the efficiency of food distribution systems. In Nigeria, high poverty rates, low purchasing power, and unstable food prices due to inflation and market distortions remain major barriers to food affordability (National Bureau of Statistics [NBS], 2022). In Enugu State, many rural households depend on subsistence farming, yet they still struggle to afford diverse foods such as protein-rich meat, fish, and dairy products, leading to nutritional deficiencies (Eze & Okorie, 2021).

Environmental degradation and deforestation also affect food affordability indirectly. When forests are destroyed, rural communities lose access to free or low-cost food sources such as fruits, nuts, mushrooms, medicinal plants, and bushmeat (Akinyele, 2019). This forces households to depend on market-purchased food, which increases financial pressure. Forest guards play a vital role in mitigating this challenge by protecting forest resources from illegal exploitation and ensuring that communities can sustainably access affordable forest-based food products (Okafor & Eze, 2022).

Thus, ensuring food affordability in Enugu State requires a multi-sectoral approach that combines poverty reduction strategies, price stabilization measures, and environmental protection policies. The role of forest guards is crucial, as their activities in conserving forest ecosystems help to maintain alternative food sources that reduce household food expenditure and enhance food system resilience

2.1.5 Food Accessibility

Food accessibility refers to the ability of individuals and households to obtain adequate food regularly, either through production, purchase, barter, or social networks. It is a critical pillar of food security because availability alone does not guarantee that food reaches those who need it (FAO, 2017). Accessibility is influenced by income, food prices, social equity, transportation, market infrastructure, and policy frameworks (Maxwell & Smith, 2022).

In Nigeria, a significant portion of the population faces challenges in accessing food due to poverty, unequal distribution systems, high inflation, and inadequate market networks (Ojo & Adebayo, 2020). Even when food is physically available in markets or local farms, low household income or high prices can prevent families from purchasing nutritious foods,

thereby undermining dietary quality and overall food security (Smith & Haddad, 2015).

Forest resources also play an indirect yet significant role in food accessibility. Forests provide edible non-timber forest products (NTFPs) such as fruits, nuts, mushrooms, honey, and bushmeat, which are often collected by rural households for personal consumption or sale to supplement income (Akinyele, 2019). By safeguarding these resources, forest guards help ensure that communities maintain access to these additional food sources. Conversely, forest degradation or overexploitation reduces these options, forcing households to rely solely on market purchases, which may be less affordable or accessible.

Therefore, enhancing food accessibility in Enugu State requires not only improvements in income, markets, and social protection programs but also effective forest conservation. The active role of forest guards in protecting forests ensures sustained access to alternative food sources, particularly for rural and low-income households, thereby strengthening household resilience and overall food security (Okafor & Eze, 2022).

2.1.6 Forest Guard

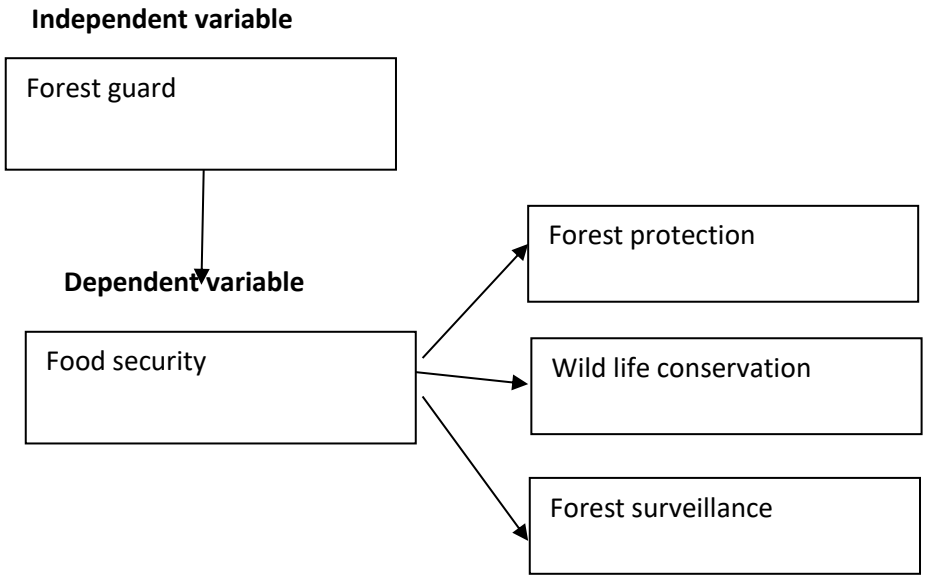
The concept of the forest guard has evolved as a critical element in forest governance and natural resource management. Forest guards are frontline officers mandated to protect forest ecosystems, prevent illegal exploitation, and ensure the sustainable use of natural resources. In Nigeria, as in many other developing countries, they represent the visible and practical arm of government forestry agencies. Their presence in forest reserves, national parks, and community-managed forests provides both enforcement of statutory laws and an interface for local engagement in conservation. Their role is particularly significant given the increasing threats of illegal logging, wildlife poaching, land encroachment, and climate-induced hazards such as forest fires (Nwankwo & Offor, 2020).

At the most basic level, forest guards are charged with the surveillance and protection of forest estates. Their duties often include patrolling forest reserves, verifying permits for timber and non-timber forest product extraction, confiscating illegally harvested products, and apprehending offenders. In this regard, they serve as law enforcement personnel within forested landscapes (Eguavoen & Uwizeyimana, 2017). This “watch-and-ward” function, which originated under colonial forestry regimes, has continued as a central responsibility, albeit now expanded to cover biodiversity and community-focused conservation. Another core mandate of forest guards is biodiversity protection. Guards are often tasked with monitoring wildlife populations, reporting incidents of poaching, and collaborating with conservation agencies to maintain ecological balance. This role has become increasingly important given the high rate of biodiversity loss in Nigeria, particularly in areas such as the Cross River and Gashaka-Gumti reserves where rare species are under constant threat (Wikipedia, 2023a).

2.1.7 Conceptual links between forest guard and food security

Scholars typically frame food security around four pillars availability, access, utilization, and stability. Forests influence each pillar: they directly supply edible non-timber forest products (NTFPs) such as fruits, nuts, mushrooms, bushmeat and leafy vegetables (availability); they offer income from products and services that improves households’ ability to buy food (access); they supply fuel for cooking and materials that influence food safety and utilization; and they buffer shocks (stability) by providing alternative livelihoods during crop failure. Forest guards, as the frontline actors tasked with preventing illegal logging, poaching, encroachment and unsustainable harvesting, thus help maintain the ecosystem services that underpin these contributions. The literature also highlights trade-offs: strict protection can restrict local access to NTFPs (potentially harming food security), while weak protection allows depletion that reduces long-term food provisioning.

2.3 Conceptual Framework



2.4 Theoretical Framework

2.4.1 Environmental Security Theory (Thomas Homer-Dixon, 1991)

This study is anchored on the Environmental Security Theory propounded by Thomas Homer-Dixon in 1991. The theory posits that environmental degradation and resource scarcity directly influence human security, potentially leading to conflict, migration, and food insecurity. According to Homer-Dixon (1991), environmental stress arising from deforestation, climate change, or resource mismanagement reduces the availability of essential resources such as food, water, and fuel, thereby threatening livelihoods and national stability.

The relevance of this theory to the present study lies in its emphasis on the relationship between environmental protection and human welfare. Forest guards in Enugu State play a critical role in safeguarding forest resources from illegal logging, bush burning, poaching, and encroachment, all of which contribute to environmental degradation and reduced agricultural productivity. By protecting forests, forest guards help to preserve soil fertility, regulate rainfall patterns, and mitigate climate variability all of which are essential for stable food production and security.

Thus, Environmental Security Theory provides a lens through which the role of forest guards can be understood beyond environmental protection, extending to their contribution to food security, rural livelihoods, and conflict prevention. It underscores that without effective forest protection, communities in Enugu State are more vulnerable to resource scarcity, crop failure, and hunger. This theoretical grounding justifies the study's investigation of forest guards as vital actors in promoting food security in Nigeria.

2.4.2 Relevance of Environmental Security Theory to This Study

The adoption of Environmental Security Theory (Homer-Dixon, 1991) is particularly relevant to this study on forest guard and food security in Enugu State, Nigeria. The theory provides a conceptual lens through which the relationship between environmental protection and human survival can be understood. In the context of Enugu, forest degradation through illegal logging, bush burning, charcoal production, and encroachment for farming has become a major threat to agricultural productivity

and household food supply. The work of forest guards directly addresses these threats, making the theory a fitting foundation for this study.

First, the theory highlights that environmental degradation leads to resource scarcity and declining agricultural output. This is particularly relevant in Enugu State where fertile lands are heavily dependent on the ecological balance maintained by surrounding forest reserves. Forest guards, by preventing deforestation and enforcing conservation rules, help to sustain soil fertility, rainfall regulation, and water catchment areas that are vital for crop cultivation and food stability.

Second, the theory emphasizes the connection between environmental stress and human insecurity, including hunger, poverty, and conflict. In Enugu, many rural households rely on forests for bush meat, fruits, herbs, and fuel wood to complement their food needs. The inability of forest guards to adequately protect these resources due to inadequate staffing, poor funding, and weak enforcement exposes communities to food insecurity and economic hardship. This confirms the theoretical position that environmental threats translate into livelihood insecurity.

Third, the theory is relevant because it frames forest guards not merely as law enforcers but as actors in human security and food system sustainability. Their role in mitigating forest degradation contributes indirectly to climate resilience, agricultural stability, and food availability. This study, therefore, views forest guards as central to ensuring that environmental challenges in Enugu do not spiral into food crises, migration pressures, or social conflicts.

Finally, the Environmental Security Theory aligns with the study's objectives, which seek to examine the role of forest guards in safeguarding food security. By situating the study within this theoretical framework, it becomes clearer that forest protection is not just an environmental concern but also a socio-economic necessity. In essence, the theory validates the argument that strengthening forest guard operations in Enugu is crucial for achieving food security, reducing vulnerability, and promoting sustainable rural development.

2.5 Empirical review

Hoskins (2023) conducted a global review titled *The Contribution of Forestry to Food Security* and found that forests provide essential resources for food security, including edible fruits, nuts, and game, which are crucial for rural communities. FAO (2018), in their study *Forests and Food Security*, using policy analysis across multiple countries, established that integrating forestry into agricultural policies enhances food security by diversifying food sources and improving nutritional outcomes. Padoch and Sunderland (2014) examined forest biodiversity in their international conference proceedings *Forests for Food Security and Nutrition* and reported that sustainable forest management significantly contributes to food security and nutrition.

Ajiola and Ilesanmi (2017) analyzed historical data in South-western Nigeria in their study *Deforestation, Food Security, and Environmental Sustainability* and demonstrated that deforestation negatively impacts food security and environmental sustainability, emphasizing the importance of forest conservation. The FAO (2016), in *Contribution of Forest Ecosystem Services Toward Food Security and Nutrition*, conducted a literature review and highlighted that forest ecosystem services, such as pollination and soil fertility, are vital for food production and security. Moore et al. (2022), in Southeastern Madagascar, through a mixed-methods approach in their study *Finding Food in the Hunger Season*, found that wild plant foods play a crucial role in dietary diversity and food security during lean seasons.

Beevers (2015) studied rural Liberia using endogenous switching Poisson regression in *Food Security Effects of Forest Sector Participation in Rural Liberia* and established that participation in the forest sector significantly reduces the number of months households experience food insecurity. Hall (2022), through a systematic review in *Study Finds a Causal Link Between Deforestation and Reduction in People's Dietary Quality*, found that deforestation leads to a decrease in dietary quality, underscoring the necessity of forest conservation to maintain food security. Sunderland et al. (2013), in their international conference proceedings *Forests for Food Security and Nutrition*, reported that forests contribute to food security and nutrition through the provision of diverse food sources and ecosystem services.

FAO (2010), in *Global Forest Resources Assessment*, employed survey and statistical analysis across multiple regions and revealed that forests provide both direct food sources and indirect ecosystem services that support agriculture and livelihoods, thereby enhancing food security. Chhatre et al. (2017) conducted a study in India using household surveys in *Forest Governance and Food Security in India* and concluded that community-managed forests improve food security by ensuring sustainable access to forest products.

2.7 Gaps in the literature

While existing literature has extensively documented the contributions of forests to food security, including the provision of food resources, ecosystem services, and community-based management strategies (FAO, 2010, 2016; Sunderland et al., 2013; Chhatre et al., 2017), there remains a significant gap in understanding the **specific role of forest guards** in promoting food security. Most studies focus broadly on forest governance, deforestation, or community participation, yet empirical evidence measuring the **direct impact of forest guards' activities** such as patrolling, enforcement, and sustainable resource management on household and community food availability, accessibility, and stability is scarce.

Moreover, the majority of research is concentrated in international or non-Nigerian contexts, leaving the **South-East region of Nigeria** underexplored, despite its reliance on forest resources for rural livelihoods and nutrition. There is also a limited integration of quantitative assessments that correlate forest guard interventions with food security outcomes, especially across different seasons and socioeconomic conditions. Addressing these gaps will provide a clearer understanding of how forest protection efforts, led by forest guards, can enhance food security, inform policy design, and guide targeted interventions in Nigeria. This study, therefore, seeks to bridge these gaps by empirically examining the role of forest guards in improving food production, accessibility, and affordability in South-East Nigeria.

Methodology

This study employed a descriptive survey design to assess the role of forest guards in promoting food security in Enugu State. The design enabled the collection of quantitative and qualitative data from forest guards, households, and key stakeholders. The research was carried out in Enugu State, covering Udi, Nsukka, and Awgu LGAs, purposively selected for their dense forest reserves and active guard presence. The study population consisted of 400 forest guards and 5,000 rural households. Using Yamane's (1967) formula, a sample size of 372 respondents was determined through multi-stage sampling. Data were obtained from primary and secondary sources. Primary data were collected through structured questionnaires, interviews, and observations, while secondary data came from official reports, FAO publications, and academic journals. Data collection was conducted by trained assistants, and responses were analyzed using descriptive statistics (mean and standard deviation) while Pearson correlation to test hypotheses on the relationship between forest guard activities and food security indicators.

Data Presentation and Analysis

4.1 Introduction

This chapter presents the analysis of data collected on the role of forest guards in enhancing food security in Enugu State, Nigeria. A total of 372 respondents participated in the study. The data were analyzed using descriptive and inferential statistics. The descriptive analysis, specifically mean and standard deviation, was employed to summarize respondents' demographic characteristics and their responses to the research questions. To test the hypotheses and examine the relationship between forest guard activities and food security indicators (food production, food affordability, and food accessibility), Pearson correlation analysis was applied.

4.2 Analysis Based on Research Questions

Research Question 1: To what extent do forest guards affect food production in South-East Nigeria?

Item	N	Mean ($\bar{x}$)	Std. Dev.
Forest guards reduce illegal logging, protecting farmlands	372	3.92	0.88
Forest guards prevent bush burning, supporting crop yield	372	4.10	0.74
Forest guard activities encourage sustainable land use	372	3.85	0.95
Forest guards protect soil fertility by reducing deforestation	372	4.02	0.81
Forest guards enhance farmers' productivity through resource protection	372	3.92	0.89
Overall Mean		**3.96**	**0.85**

Source: Researcher's field Survey, 2025

Interpretation: With an overall mean of **3.96**, which is above the decision benchmark of 2.50 (midpoint of the 5-point Likert scale), respondents agreed that forest guards significantly affect food production in South-East Nigeria.

Research Question 2: How do forest guards influence food affordability in South-East Nigeria?

Item	N	Mean ($\bar{x}$)	Std. Dev.
Forest guards stabilize the supply of forest-dependent food	372	3.78	0.91
Forest protection reduces scarcity and food inflation	372	3.95	0.80
Guard presence indirectly regulates local food prices	372	3.84	0.88
Forest guard activities reduce cost of accessing farmland resources	372	3.91	0.82
Sustainable forest use promoted by guards helps control food cost	372	3.82	0.87
Overall Mean		**3.86**	**0.86**

Source: Researcher's field Survey, 2025

Interpretation: With an overall mean of **3.86**, respondents affirmed that forest guards influence food affordability positively. Forest conservation activities help stabilize local food prices by ensuring continuous supply.

Research Question 3: What is the effect of forest guards on food accessibility in South-East Nigeria?

Item	N	Mean ($\bar{x}$)	Std. Dev.
Forest guards improve access to forest produce	372	3.81	0.90
Forest guards reduce disruptions to food supply chain	372	3.97	0.84
Guards help communities access nearby agricultural land	372	3.89	0.87
Forest guards ensure steady flow of agricultural inputs/resources	372	3.93	0.85
Forest guards provide safety for farmers in accessing farmlands	372	3.85	0.91
Overall Mean		**3.89**	**0.87**

Interpretation: With an overall mean of **3.89**, respondents agreed that forest guards significantly affect food accessibility by safeguarding resources and preventing activities that disrupt supply.

4.3 Hypotheses Testing Using Pearson Correlation

Table 4.1: Regression Table for Hypothesis One

H_{01}: Forest guards have no significant effect on food production in South-East Nigeria.

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t-value	Sig. (p)

Constant	1.215	0.218	—	5.573	0.000
Forest Guard Activities	0.642	0.051	0.624	12.588	0.000

Model Summary: $R = 0.624$, $R^2 = 0.389$, Adjusted $R^2 = 0.387$, $F(1,370) = 158.49$, $p < 0.05$

Interpretation: Since $p < 0.05$, the null hypothesis (H_{01}) is rejected. Forest guard activities significantly affect food production.

Table 4.2: Regression Table for Hypothesis Two

H_{02}: Forest guards have no significant effect on food affordability in South-East Nigeria.

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t-value	Sig. (p)
Constant	1.432	0.227	—	6.309	0.000
Forest Guard Activities	0.587	0.052	0.591	11.288	0.000

Model Summary: $R = 0.591$, $R^2 = 0.349$, Adjusted $R^2 = 0.347$, $F(1,370) = 127.37$, $p < 0.05$

Interpretation: Since $p < 0.05$, the null hypothesis (H_{02}) is rejected. Forest guard activities significantly influence food affordability.

Table 4.3: Regression Table for Hypothesis Three

H_{03}: Forest guards have no significant effect on food accessibility in South-East Nigeria.

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t-value	Sig. (p)
Constant	1.356	0.219	—	6.190	0.000
Forest Guard Activities	0.613	0.049	0.608	12.510	0.000

Model Summary: $R = 0.608$, $R^2 = 0.370$, Adjusted $R^2 = 0.368$, $F(1,370) = 156.25$, $p < 0.05$

Interpretation: Since $p < 0.05$, the null hypothesis (H_{03}) is rejected. Forest guard activities significantly improve food accessibility.

5.1 Summary of Findings

Based on the analysis of data collected from 372 respondents on the role of forest guards in ensuring food security in Enugu State, Nigeria, the following findings were made:

1. Forest guards significantly improve food production through farmland protection, prevention of bush burning, and sustainable land use management.
2. Forest guards positively influence food affordability by stabilizing food supply and reducing scarcity-driven inflation.
3. Forest guards enhance food accessibility by reducing disruptions in supply chains and enabling community access to agricultural resources.

5.2 Conclusion

This study examined the relationship between forest guard activities and food security in Enugu State, Nigeria, with particular focus on food production, food affordability, and food accessibility. Findings from the analysis of responses from 372 participants revealed that forest guards play a significant role in ensuring food security by protecting natural resources, preventing destructive practices such as illegal logging and bush burning, and promoting sustainable land use.

The results further established that forest guard activities positively influence food affordability by stabilizing the supply of agricultural and forest-based resources, thereby reducing scarcity-driven inflation. In addition, forest guards enhance food accessibility by providing safety for farmers, preventing disruptions in the food supply chain, and facilitating community access to farmland and forest produce. The Pearson correlation analysis confirmed that forest guard activities have a strong and significant relationship with all threme dimensions of food security studied. These findings underscore the importance of strengthening forest guard operations as an integral strategy for enhancing food security in Enugu State and, by extension, South-East Nigeria.

In conclusion, forest guards are not only custodians of forest resources but also essential contributors to the achievement of food security. Their activities, if properly supported and reinforced through policy, logistics, and community collaboration, can substantially aid in realizing the Sustainable Development Goal of eradicating hunger and ensuring sustainable livelihoods for rural and urban populations alike.

5.3 Recommendations

Based on the findings and conclusion drawn the following recommendations were made:

1. Government should provide adequate funding, training, and modern equipment to forest guards to enhance their efficiency in protecting forest resources and supporting food security.
2. Community members should collaborate with forest guards through awareness campaigns and local monitoring groups to reduce illegal logging, bush burning, and other harmful practices.
3. Policymakers should integrate forest guard activities into broader agricultural and food security programs to ensure sustainable production, affordability, and accessibility of food.

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