



FARMERS' PERCEPTIONS OF FOREST DEGRADATION AND CHANGES IN NON-TIMBER FOREST PRODUCT AVAILABILITY IN NIGER STATE, NIGERIA

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ABSTRACT

This study described farmers' perceptions of forest degradation and of changes in the availability of non-timber forest products (NTFPs) in Niger State, Nigeria. A cross-sectional survey was conducted among rural households across the State's three agricultural zones. Data were collected using structured questionnaires administered to 160 respondents selected through a multi-stage sampling procedure and were analyzed using descriptive statistics. Most respondents (85.0%) reported having noticed forest degradation in their areas, and 80.0% reported a decline in NTFP availability over the preceding 10 years. Agricultural expansion was the most frequently perceived driver of degradation (75.0%), followed by fuelwood collection (65.0%) and bush burning (55.0%). Among NTFP categories, bush meat was most frequently perceived to have declined (85.0%), followed by fuelwood (80.0%) and wild vegetables (75.0%). Most respondents agreed (strongly agree or agree) that community-based forest management would improve NTFP sustainability (81.3%), and 78.8% agreed that NTFP conservation should be integrated into State forest policy. These findings reflect farmers' reported perceptions; no independent ecological measurements of forest cover or NTFP availability were made, and causal relationships were not tested. The study recommends that the perceived changes be verified through forest and NTFP inventories, and that community-based woodland management, agroforestry, and livelihood support programs be considered to reduce pressure on remaining forest resources.

Keywords: Farmers' perceptions, Forest degradation, Guinea savanna, Land-use change, Non-timber forest products, Rural livelihoods

INTRODUCTION

Forests and woodlands provide a wide range of products that support rural livelihoods across the developing world. The Food and Agriculture Organization defines non-wood forest products as goods of biological origin other than wood, derived from forests, other wooded land and trees outside forests (FAO, 1999), while the broader term non-timber forest products (NTFPs) typically includes fuelwood and small wood as well (Belcher & Schreckenberg, 2007). In this paper, NTFPs are used throughout, and fuelwood is treated as an NTFP category; fuelwood collection and charcoal production are also reported separately as perceived drivers of degradation, and the Results and Discussion explicitly address this dual role.

In Nigeria, the importance of NTFPs is well documented but uneven across regions. Much empirical work has focused on the humid forest zones of southern Nigeria, for example in Ondo State (Oyerinde, 2015), and national overviews are available (Etowa et al., 2015; David et al., 2019). Far less attention has been given to the Guinea savanna-transition zones of North-Central Nigeria, where woodland structure, species composition, and livelihood strategies differ from those of the rainforest belt. In savanna areas, fuelwood, honey, gum arabic, medicinal herbs, and fruit nuts were reported as important for household use and income around Falgore Game Reserve in Kano State (Suleiman et al., 2017). Shea oil, honey, locust bean, and fuelwood were significantly associated with NTFP users' livelihoods in Kwara and Niger States (Ganiyu et al., 2024). In Ibaji, Kogi State, the most preferred NTFP species included *Elaeis guineensis*, *Irvingia gabonensis*, *Dacryodes edulis*, *Prosopis africana*, and *Parkia biglobosa* (Tee & Ekwubile, 2015).

Niger State, Nigeria's largest State by land area, sits almost entirely within the Guinea forest-savanna mosaic and the Sudan savanna. For agricultural development and extension administration, the State is divided into three agricultural zones: Zone I, headquartered in Bida; Zone II, headquartered in Kuta; and Zone III, headquartered in Kontagora. These zones encompass the major farming communities and diverse ecological conditions across the State. The State has forest and game reserves, including Kpashimi, Borgu, and Zugurma, that support diverse savanna woodland species. In Kpashimi Forest Reserve, Jibrin et al. (2014) estimated that deforestation and forest degradation between 1987 and 2007 resulted in a carbon loss of 240.2 Mg C ha⁻¹ (about 12.0 Mg C ha⁻¹ yr⁻¹). Such changes may alter the woodland structure on which many NTFP species depend, although the effect on NTFP availability was not examined in that study.

Directly relevant prior work in Niger State has focused largely on shea. Koloche et al. (2016) surveyed 150 shea nut processors and reported that processing was mainly a women's enterprise and that nuts were collected from wild shea stands in the processors' communities. Garba and Sanni (2015) evaluated the profitability of shea nut processing in Bosso and Borgu Local Government Areas (LGAs). They reported that butter was mostly processed by traditional methods that are inefficient in the amount and quality of butter extracted. Ganiyu et al. (2024) examined the effects of NTFP use on the livelihoods of users in three LGAs of Niger State (Borgu, Mokwa, and Lapai) and three LGAs of Kwara State. These studies address processing, incomes, and livelihood effects rather than farmers' perceptions of changes in forest condition and NTFP availability. Niger State-specific research on farmers' perceptions of forest degradation and NTFP availability therefore remains thin relative to the State's ecological distinctiveness and its documented reliance on forest products for rural livelihoods (Garba & Sanni, 2015; Ganiyu et al., 2024).

The literature has increasingly recognized the importance of local ecological knowledge and farmer perceptions in natural resource management (Berkes, 2012). Perception-based studies offer insights into how rural communities experience and interpret environmental change, particularly where long-term biophysical monitoring data are scarce. However, such perceptions are subjective and cannot substitute for measured changes in forest cover or NTFP stocks; they are best regarded as complementary to remote sensing and field-based ecological assessments. In the West African savanna, where livelihoods are closely tied to woodland resources, communities adjacent to forest reserves rely heavily on NTFPs, so effective conservation efforts require understanding how host communities interact with these resources (Suleiman *et al.*, 2017).

Gender is relevant to NTFP use in Niger State. Shea butter processing in the State is largely carried out by women (Garba and Sanni, 2015; Koloche *et al.*, 2016), and Niger State is reported to have Nigeria's largest natural stands of shea trees (Ganiyu et al., 2024). Rural households commonly combine farming with other activities, including the gathering of wild products, as part of diversified livelihood portfolios (Ellis, 1998). If perceived changes in the availability of shea and other NTFPs were confirmed, they could affect household income, particularly for women; however, the present study did not analyze gender differences in perceptions or NTFP use.

This study was therefore designed to describe farmers' perceptions of forest degradation and of changes in NTFP availability across all three agricultural zones of Niger State using a descriptive cross-sectional survey. The study did not measure forest cover or NTFP stocks, nor did it test causal relationships. Specifically, the study determined respondents' awareness of forest degradation, identified perceived drivers of degradation, assessed perceived changes in NTFP

availability, and examined rural attitudes toward forest conservation and sustainable management.

MATERIALS AND METHODS

Study Area

Niger State is located in the North-Central geopolitical zone of Nigeria, between latitudes 8°20' N and 11°30' N and longitudes 3°30' E and 7°20' E (Ganiyu *et al.*, 2024). It covers approximately 74,244 km² within the Guinea forest-savanna mosaic and Sudan savanna. The State is characterized by a Guinea savanna-transition ecology in the south, grading into Sudan savanna in the north, with riverine forests along the Niger and Kaduna floodplains. Annual rainfall ranges from 1,100 mm to 1,600 mm in the southern Guinea savanna and from 800 mm to 1,100 mm in the northern Sudan savanna, with a wet season from April to October and a dry season from November to March. Agriculture is the main livelihood activity, but woodland extraction for fuelwood, hunting, and gathering is common, particularly during the dry season.

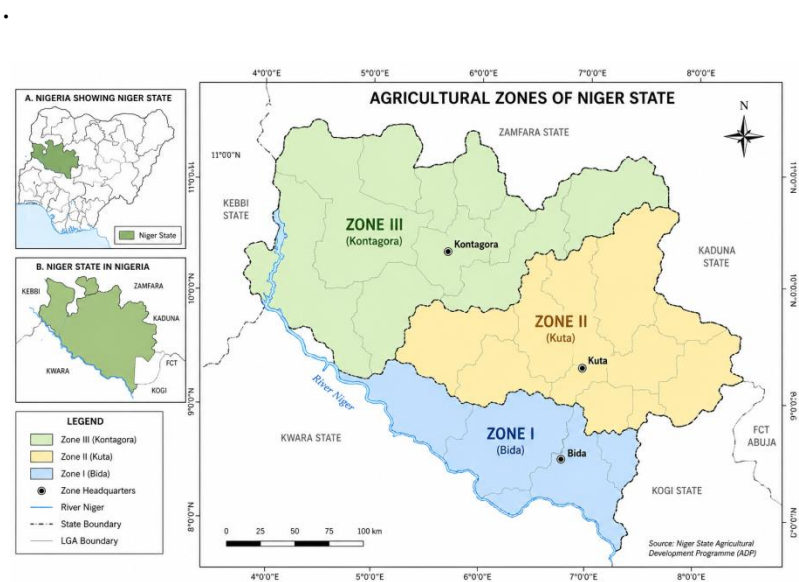


Figure 1: Agricultural Zones of Niger State [Source: Niger State Agricultural Development Programme (ADP)]

Sampling and Data Collection

A multi-stage sampling procedure was used. First, all three agricultural zones of the State (Zone I, Bida; Zone II, Kuta; Zone III, Kontagora) were purposively included to capture ecological variation. Second, two Local Government Areas (LGAs) were randomly selected from each zone: Mokwa and Lavun (Zone I); Shiroro and Rafi (Zone II); and Borgu and Wushishi (Zone

III). Third, four villages were randomly selected per LGA, for a total of 24 villages. Finally, household lists were compiled with the assistance of village heads in each of the sampled villages, and households were randomly selected from the compiled lists until a target of 160 respondents was reached, with one adult farmer interviewed per household. The final allocation of respondents across the agricultural zones was 56 respondents in Zone I, 52 in Zone II, and 52 in Zone III, giving a total of 160 respondents. Structured questionnaires were administered face-to-face by research assistants fluent in Nupe, Hausa, Gwari, and Gbagyi.

The sample size of 160 respondents was determined based on available resources, time constraints, and the need to cover all three agricultural zones of Niger State. As a guide to precision, for an estimated proportion of 50%, a simple random sample of 160 gives a margin of error of about ± 7.7 percentage points at the 95% confidence level (Cochran, 1977); allowing for clustering of respondents within 24 villages (an assumed design effect of 1.5), the margin is about ± 9.5 percentage points. The sample is therefore adequate for describing broad patterns in the whole sample but less so for precise estimates within individual zones ($n = 52-56$), and no zone-level comparisons were attempted.

The questionnaire was divided into four sections: (i) socio-demographic characteristics (gender, age, education, farm size, agricultural zone); (ii) awareness of forest degradation and NTFP availability (whether respondents had noticed forest degradation and a decline in NTFP availability over the preceding 10 years, perceived change in the availability of seven NTFP categories recorded as declined, same, or increased, and sources of information); (iii) perceived drivers of degradation (agricultural expansion, fuelwood collection, charcoal production, bush burning, overgrazing, logging, urban expansion); and (iv) attitudes and perceptions toward conservation (five Likert-scale statements on community management, the importance of NTFPs for household income, enforcement, policy integration, and agroforestry).

The questionnaire items were developed from a review of literature on NTFP use, forest degradation, and rural livelihoods in Nigeria, particularly Suleiman et al. (2017), Ganiyu et al. (2023, 2024), Garba and Sanni (2015), and Koloche et al. (2016). The draft instrument was reviewed by three subject-matter experts in forestry, agricultural extension, and rural livelihoods for relevance, clarity, completeness, and appropriateness of wording. Their comments were used to revise ambiguous or repetitive items. Face Validity and field feasibility were assessed through a pilot test involving 16 farming households in communities that were not included in the main survey. Pilot feedback was used to improve question clarity, response categories, and estimated interview duration. Internal consistency of the pilot-test Likert-scale items was assessed using Cronbach's alpha, with an acceptable Reliability coefficient of 0.78 obtained. The remaining items are single-item categorical questions, for which Reliability coefficients are not applicable and for which content Validity and pre-testing were relied upon.

Ethical Considerations

Participation was voluntary. The purpose of the study was explained to each respondent in a language they understood, and verbal informed consent was obtained before the interview. Respondents were told that they could decline to answer any question or withdraw at any time, and no names or personal identifiers were recorded. No formal ethical approval was obtained for the study.

Data Analysis

Data were coded, organized, and analyzed using Microsoft Excel and Statistical Package for the Social Sciences (SPSS). A descriptive approach was adopted because the study aimed to describe farmers’ perceptions and attitudes, not to test hypotheses or relationships between respondents’ characteristics and their perceptions; therefore, inferential analysis was not undertaken, and no causal relationships were tested. Unless stated otherwise, percentages are based on all 160 respondents. For the Likert-scale statements, responses were scored from 5 (strongly agree) to 1 (strongly disagree). The percentage agreement for each statement is the number of respondents who selected strongly agree or agree, divided by 160 and multiplied by 100. Mean scores and standard deviations were also computed, and mean scores were interpreted using the class limits 1.00-1.80 (strongly disagree), 1.81-2.60 (disagree), 2.61-3.40 (undecided), 3.41-4.20 (agree), and 4.21-5.00 (strongly agree). Results are presented in tables and discussed in relation to existing literature on forest degradation and NTFP dependency in the Guinea savanna.

RESULTS

Table 1 presents the socio-demographic profile of the 160 respondents. Most respondents were male (65.0%). Half of the respondents (50.0%) were aged between 31 and 50 years. Regarding education, 40.0% had primary education, 30.0% had secondary education, 20.0% had no formal education, and 10.0% had tertiary education. In terms of farm size, 40.0% cultivated more than 5 hectares, 30.0% cultivated 2-5 hectares, 20.0% cultivated 1-2 hectares, and 10.0% cultivated less than 1 hectare. Respondents were distributed fairly evenly across the three agricultural zones (35.0%, 32.5%, and 32.5%).

Table 2 shows respondents’ awareness of forest degradation and NTFP availability. Most (85.0%) reported noticing forest degradation in their area over the past 10 years. Among those who had noticed degradation (n = 136), the main source of information was personal observation (58.8%), followed by fellow farmers (35.3%), agricultural extension services (20.6%), and radio/TV (14.7%); multiple responses were permitted, so these percentages sum to more than 100%. When asked whether they had observed a decline in NTFP availability, 80.0% of all respondents answered yes. In addition, 70.0% of respondents said they could identify the causes of forest degradation; this was a self-assessment and was not verified.

Table 1. Socio-demographic Characteristics of Respondents

Variable	Frequency	Percentage (%)
Gender		
Male	104	65.0
Female	56	35.0
Age (years)		
20 – 30	24	15.0
31 – 40	40	25.0
41 – 50	40	25.0
51 – 60	32	20.0
Above 60	24	15.0
Education Level		
No formal education	32	20.0
Primary	64	40.0
Secondary	48	30.0
Tertiary	16	10.0
Farm Size (hectares)		
< 1	16	10.0
1 – 2	32	20.0
2 – 5	48	30.0
> 5	64	40.0
Agricultural zone		
Zone I (Bida)	56	35.0
Zone II (Kuta)	52	32.5
Zone III (Kontagora)	52	32.5
Total	160	100.0

Table 2. Awareness of Forest Degradation and NTFP Decline

Variable	Frequency	Percentage (%)
Have you noticed forest degradation in your area?		
Yes	136	85.0
No	24	15.0
Source of information (n = 136; multiple responses permitted)		
Personal observation	80	58.8
Fellow farmers	48	35.3
Agricultural extension service	28	20.6
Radio/TV	20	14.7
Other (e.g., community meetings)	12	8.8
Have you noticed a decline in NTFP availability?		
Yes	128	80.0
No	32	20.0
Can you identify causes of degradation?		
Yes	112	70.0
No	48	30.0

Percentages under "Source of information" are based on the 136 respondents who had noticed forest degradation. Multiple responses were permitted; percentages therefore do not sum to 100%.

Table 3 presents the causes of forest degradation as perceived by respondents. Multiple responses were allowed; therefore, frequencies and percentages are based on the total sample of 160 respondents and do not sum to 160 or 100%, respectively. Agricultural expansion was the most frequently perceived driver, reported by 75.0% of respondents. This was followed by fuelwood collection (65.0%), bush burning (55.0%), charcoal production (45.0%), overgrazing (40.0%), logging (35.0%), and urban expansion (25.0%). Fuelwood is reported here as a perceived driver of degradation and is also assessed as an NTFP category in Table 4.

Table 3. Perceived Drivers of Forest Degradation

Perceived Driver	Frequency	Percentage (%)
Agricultural expansion	120	75.0
Fuelwood collection	104	65.0
Bush burning	88	55.0
Charcoal production	72	45.0
Overgrazing	64	40.0
Logging	56	35.0
Urban expansion	40	25.0

Multiple responses were permitted; percentages are based on n = 160 and do not sum to 100%.

Table 4 shows respondents’ perceptions of changes in the availability of major NTFP categories. Bush meat was perceived to have declined by the highest proportion of respondents (85.0%), followed by fuelwood (80.0%), wild vegetables (75.0%), locust bean (70.0%), shea nuts (65.0%), medicinal plants (60.0%), and honey (55.0%). Very few respondents (5.0%) reported increased availability in any product category.

Table 4. Perceived Changes in NTFP Availability

NTFP Category	Declined, n (%)	Same, n (%)	Increased, n (%)
Bush meat	136 (85.0)	16 (10.0)	8 (5.0)
Fuelwood	128 (80.0)	24 (15.0)	8 (5.0)
Wild vegetables	120 (75.0)	32 (20.0)	8 (5.0)
Locust bean	112 (70.0)	40 (25.0)	8 (5.0)
Shea nuts	104 (65.0)	48 (30.0)	8 (5.0)
Medicinal plants	96 (60.0)	56 (35.0)	8 (5.0)
Honey	88 (55.0)	64 (40.0)	8 (5.0)

Percentages are row percentages based on n = 160; each row sums to 100%.

Table 5 presents the distribution of respondents’ answers to five statements on forest conservation and management strategies, measured on a 5-point Likert scale. Table 6 summarizes agreement (strongly agree plus agree), mean scores, and standard deviations. Most respondents strongly agreed or agreed that community-based forest management would improve NTFP sustainability (81.3%), that NTFPs are important for household income (86.3%), and that the government should enforce forestry laws more strictly (79.4%). A similarly high proportion (78.8%) agreed that NTFP conservation should be integrated into State forest policy, while 75.0% agreed that agroforestry could reduce degradation. Mean scores ranged from 4.06 to 4.35.

Table 5. Attitudes and Perceptions Toward Forest Conservation and Sustainable Management

Statement	Strongly agree, n (%)	Agree, n (%)	Undecided, n (%)	Disagree, n (%)	Strongly disagree, n (%)
Community-based management improves NTFP sustainability	72 (45.0)	58 (36.3)	20 (12.5)	8 (5.0)	2 (1.3)
NTFPs are important for household income	88 (55.0)	50 (31.3)	14 (8.8)	6 (3.8)	2 (1.3)
Government should enforce forestry laws more strictly	68 (42.5)	59 (36.9)	22 (13.8)	8 (5.0)	3 (1.9)
NTFP conservation should be integrated into state forest policy	70 (43.8)	56 (35.0)	24 (15.0)	8 (5.0)	2 (1.3)
Agroforestry can reduce forest degradation	64 (40.0)	56 (35.0)	28 (17.5)	10 (6.3)	2 (1.3)

Percentages are based on n = 160 and may not sum to exactly 100.0% because of rounding.

Table 6. Agreement, Mean Scores, and Standard Deviations for the Attitude Statements

Statement	Agree (SA + A), n (%)	Mean	SD	Decision
Community-based management improves NTFP sustainability	130 (81.3)	4.19	0.93	Agree
NTFPs are important for household income	138 (86.3)	4.35	0.88	Strongly agree
Government should enforce forestry laws more strictly	127 (79.4)	4.13	0.96	Agree
NTFP conservation should be integrated into state forest policy	126 (78.8)	4.15	0.94	Agree
Agroforestry can reduce forest degradation	120 (75.0)	4.06	0.97	Agree

Agree = strongly agree (SA) + agree (A), as a percentage of n = 160. Mean scores are on a five-point scale (5 = strongly agree, 1 = strongly disagree); SD = standard deviation. Decision classes: 1.00-1.80 strongly disagree; 1.81-2.60 disagree; 2.61-3.40 undecided; 3.41-4.20 agree; 4.21-5.00 strongly agree.

DISCUSSION

Socio-demographic Characteristics of Respondents

The respondents were predominantly male (65.0%), and most had low levels of formal education (60.0% with primary education or less); 40.0% cultivated more than 5 ha. These characteristics describe the study sample. Because zones were purposively included and the sample is modest ($n = 160$), they should not be assumed to represent all rural farming communities in Niger State or in North-Central Nigeria. Respondents were spread fairly evenly across the three agricultural zones, but the small number per zone (52-56) limits zone-level inference, and no comparisons between zones were made. The relatively low level of formal education may be relevant to the design of extension and awareness programs, although this study did not test that relationship.

The predominance of men among respondents is comparable with Suleiman *et al.* (2017), who found that men were the dominant collectors of most NTFPs around Falgore Game Reserve in Kano State, and with Ganiyu *et al.* (2023), where 68.9% of NTFP users in Kwara State were male. However, respondents in the present study were farmers rather than NTFP users, and respondent gender does not reflect household headship. In the present sample, 35.0% of respondents were older than 50 years, compared with 42.2% of NTFP users in Kwara State (Ganiyu *et al.*, 2023); this difference may reflect differences in study populations and sampling and should not be over-interpreted.

The high proportion of respondents who reported noticing forest degradation (85.0%) indicates that the issue is salient to most respondents. Personal observation was the main source of information (58.8%), followed by fellow farmers (35.3%). Agricultural extension services were cited by 20.6% of the respondents who had noticed degradation, which may indicate that extension is a less common channel for this information than personal observation and peer exchange; the survey did not assess extension coverage or content. The proportion reporting a decline in NTFP availability (80.0%) was slightly lower than the proportion who noticed forest degradation (85.0%); the survey did not collect data to explain this small difference.

Perceived Drivers of Forest Degradation

Respondents most frequently cited agricultural expansion as a driver (75.0%). This aligns with the Nigeria Forest Reference Emission Level submission, which identifies agricultural expansion as a main driver of forest loss in Nigeria (Nigeria FREL, 2019). However, the frequency with which a driver was mentioned reflects respondents' perceptions and does not establish that agricultural expansion is objectively the dominant cause of forest degradation in Niger State; this would require measuring land-cover change and attributing it.

Fuelwood collection (65.0%), bush burning (55.0%), charcoal production (45.0%), and overgrazing (40.0%) were also perceived as drivers of degradation by substantial proportions of

respondents. The role of annual dry-season fires in shaping West African savanna vegetation has long been recognized (Innes, 1972). The survey did not measure household energy use, charcoal trade, or livestock management, so the reasons why respondents perceived these activities as drivers, and any links to energy access or grazing patterns, are outside the Scope of the data and are not discussed as findings of this study.

Perceived Changes in NTFP Availability

The perceived decline in bushmeat availability (85.0%) aligns with concerns raised by Lindsey *et al.* (2013) and TRAFFIC (2012) about bushmeat hunting in African savannas. However, the present study did not measure wildlife populations or hunting pressure, so it cannot confirm those conclusions for Niger State. Respondents also reported perceived declines in fuelwood (80.0%) and wild vegetables (75.0%), and for every product category, far more respondents perceived a decline than an increase (Table 4).

Shea nut and locust bean, two of the most economically significant savanna NTFPs, were perceived to be declining by 65.0% and 70.0% of respondents, respectively. Previous work on shea in Niger State has concerned processing and profitability (Garba and Sanni, 2015; Koloche *et al.*, 2016) and did not assess changes in nut availability, so the present perceptions cannot be compared directly with those studies. Medicinal plants (60.0%) and honey (55.0%) were the categories least frequently perceived to have declined, although still by more than half of respondents. The survey did not investigate why perceptions differed among products, or whether households had changed where or how they collected or produced them; such explanations would need to be examined in future work.

Attitudes and Perceptions Toward Forest Conservation and Sustainable Management

Most respondents agreed that community-based management would improve NTFP sustainability (81.3% agreement) and that NTFP conservation should be integrated into State forest policy (78.8% agreement). These results indicate that respondents were receptive to such measures; however, they describe stated attitudes and do not show whether respondents would participate. In the authors' view, the State forestry department could provide e-government to NTFPs in forest management. The 75.0% agreement that agroforestry can reduce degradation may indicate openness to parkland agroforestry, in which economically valuable trees are retained within croplands, a practice that is widespread in West Africa (Boffa, 1999). This study did not test whether such systems would reduce pressure on woodlands in Niger State.

Agreement that forestry laws should be enforced more strictly (79.4%) was about as high as agreement with community-based management (81.3%), suggesting respondents did not regard these approaches as mutually exclusive. The reasons for respondents' views on enforcement

were not explored. According to the authors' interpretation, co-management arrangements that combine State oversight with local participation could be explored.

Limitations of the Study

This study has several limitations. First, it relies entirely on farmers' reported perceptions; no independent ecological measurements, such as forest cover change or NTFP inventories, were undertaken, so the results cannot establish whether forest degradation or NTFP decline occurred or measure its extent. Second, responses about changes over the preceding 10 years depend on respondents' memory and may be affected by recall bias. Third, the sample of 160 respondents from 24 villages is modest, and the results should not be generalized beyond the sampled areas; precision is about ± 7.7 percentage points for the whole sample, or wider once clustering is considered (see Materials and Methods). Fourth, all five Likert-scale statements were positively worded, which may encourage agreement. Fifth, the analysis was descriptive, so associations between respondents' characteristics and their perceptions were not examined. Finally, no formal ethical approval was obtained for the study.

CONCLUSION

This study describes farmers' perceptions of forest degradation and of changes in NTFP availability in Niger State. Most respondents (85.0%) reported having noticed forest degradation, and 80.0% reported a decline in NTFP availability over the preceding 10 years. Agricultural expansion and fuelwood collection were the most frequently perceived drivers, while bushmeat, fuelwood, and wild vegetables were most frequently perceived to have declined. Most respondents supported community-based management, stricter law enforcement, and integrating NTFP conservation into State policy. These findings represent farmers' reported perceptions. No independent ecological measurements were undertaken, and causal relationships were not tested, so the findings should not be taken as evidence of the actual extent or causes of forest degradation or NTFP depletion. They do indicate concerns among rural farmers that merit verification through forest and NTFP inventories and consideration in forest and extension policy.

Based on the perceptions reported in this study, the following recommendations are made:

1. Integrate NTFP conservation into State forest policy. Niger State's forestry department should explicitly recognize NTFPs as an economic sector requiring protection and commission a state-wide NTFP inventory to verify farmers' perceptions and guide sustainable harvesting regulations.

2. Promote agroforestry. Because respondents most frequently cited agricultural expansion as the driver, the State agricultural extension service could promote parkland agroforestry systems that retain economically important NTFP trees within croplands.
3. Strengthen community-based woodland management. Most respondents supported community-based approaches. Encourage regulated harvesting zones, community co-management agreements, and the establishment of fast-growing woodlots.
4. Assess energy needs and alternatives. Fuelwood collection was among the most frequently cited drivers (65.0%), and fuelwood was perceived to have declined (80.0%). Household energy use was not measured in this study; an assessment of household energy needs should precede improved cookstove dissemination and alternative energy pilot projects aimed at reducing pressure on natural stands.

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