Nature of Forest Crime in Bangladesh: An Empirical Study on Modhupur Reserve Forest

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Abstract: The national sal forest, includes the Modhupur Reserve forest, which takes up 76% of the total space. Along with a variety of tree species, this forest is rich in biodiversity. This forest is also threatened by forest crime since it has attracted the attention of grabbers. The scope of forest crime in the Modhupur Reserve Forest was examined in this study. Other objectives include understanding the causes and consequences of forest crime on the ecosystem and humans, as well as the role of law enforcement in forest crime prevention. The study adopted a quantitative methodology and collected data using a non-probability purposive sampling technique. A total of 150 people between the ages of 18 and 83 were collected from the Modhupur Reserve Forest in Tangail. The study' main findings include the smuggling of Sal, Gujjar, and Acacia, deforestation and squatting on forestland, as well as the trafficking of endangered and rare animals and flora. The primary factors that substantially contribute to the growth of forest crime include corruption and dishonesty among forest employees, security personnel, authorities, and even locals. The presence of forest crime jeopardizes both human and natural equilibrium. Acute environmental problems and livestock survival have a significant association. Water scarcity, air pollution, and an increase in natural calamities are just a few of the severe environmental issues that Modhupur people are currently dealing with. Additionally, police involvement is insufficient to eliminate forest crime.

1. Introduction

Forests and people coexist together and continue to shape our environment (Erdonmez and Erol, 2010). Environmental crime is now the third-largest criminal sector in the world (Interpol, 2020). Organizations have witnessed an upsurge in environmental crime of 5-7 % every year. Forest crime is a form of environment crime which is known as the illegal act of trafficking valuable wildlife and endangered plants and species for economic gain. Forest crimes and timber harvesting are the most common environmental crimes followed by illegal fishing, illicit mining, illegal wildlife trading, and illegal waste disposal (Interpol, 2020). Illegal timber trade accounts for 10-30% of global timber traffic, with the majority of it being exotic wood species like rosewood, which is used in musical instruments and furnishings (Meibom, 2020).

Many tropical nations' forest degradation is caused by non-compliance with forest-related regulations and inadequate governance (Omijeh, 2022). Poaching, illicit logging, and related trafficking are just a few of the ways that forest crime can manifest itself. Neglect of forest conservation efforts and wildlife management legislation, exploitation of forest products, and other larger concerns such as the use of corrupt methods and the abuse of authority are all factors that contribute to this (Blaser and Zabel, 2016). The main cause of increasing environmental crime, since this form of crime is very profitable and carries a relatively low risk (Amir, 2019; Meibom, 2020). Few studies have found that, both local communities and indigenous people often involved with forest crime (Schneider et al., 1995). Roper (2000) stated, big organized groups are working on to sponsored logging interests. Collins et al. (2017) claimed that companies or individuals extract timber from public or private

forestlands and log protected species without authorization over prescribed volumes.

Geographically, Bangladesh is located at the crossroads of the Indo-Himalayan and Indo-Chinese regions and it is the transitional zone for the wild lives of the subcontinent and Southeast Asia (Stanford, 1991). Further, people living in the forest are often engaged in poaching and squatting of forestland for agriculture. A country needs to have a minimum of 25% forestland. But the current forestland is 10%, with an annual deforestation of 0.2% from 1990 to 2015 (FAO, 2015). According to the Zoological Society of Bangladesh and the Wildlife Trust of Bangladesh's report, 10,000 deer were killed and trafficked in 2010. From 2010 to 2015, 19,404 animals were trafficked and seized by law enforcement agencies. A total of 68 incidents of illegal wildlife poaching were committed in 2014 and 44 incidents were committed in 2015 (Ministry of Environment and Forest, 2016). Overall, 37,039 wild animals and birds were rescued by the law enforcement agencies between June 2012 and November 2016. Of all, 19,359 were reptiles and 16,979 were birds (Amin, 2019). Additionally, the Wildlife Crime Control Unit (WCCU) of the Bangladesh Forest Department (BFD) has recorded 85 cases in 2019. The WCCU rescued 47 reptiles and 2010 birds in 2018. The highest ever in which WCCU was able to rescue 76 reptiles and 2632 birds from the offenders (Farhin, 2017). The forest department rescued 1,058 wild animals and birds in 2021 (Rahman, 2021). In last five years, 374 wildlife violations were officially reported, but just 566 perpetrators, primarily small-time smugglers, were apprehended. Offenders hunt or shoot animals, mix poison into the water, go fishing or set traps in the forests (Reza, 2019).

Law enforcement agencies also play a vital role in protecting wildlife and endangering species. Nurse (2015) described how wildlife law enforcement agencies' honesty and kindness develop the nature of policing wildlife crime to save forest resources. On the contrary, some corrupted officials of the forestry department are directly involved in forest crime as they help the local grabbers for some economic profit. Furthermore, Johnston and Shimada (2003) stated that the government has the unique ability to force people to do or not do certain things. Furthermore, enhancing forest law consent depends on actions by the judiciary, the law enforcement agencies, and so on because the forestry sector does not operate in complete isolation from other sectors (Turyahabwe and Banana, 2008; Roy, 2017). The Bangladeshi government has strong laws connected to forest crime in place and is associated with law enforcement organizations (Islam, 2022). Several laws that address forest crimes in Bangladesh include the Environment Conservation Act of 1995, the Forest (Amendment) Act of 2000, the Forest Policy of 1994, the Wildlife (Conservation and Security) Act of 2012, and the Bangladesh Biodiversity Act of 2017 (Jashimuddin, 2012; Lubaba, 2019). According to the prior records, the forest agency had lost one-fourth of the cases involving forests (Karim, 2021). The primary flaw in those laws is that forest department officials lack the

authority to take legal action against offenders unless they receive assistance from local officials and police (Rahman, 2021).

Modhupur forest land consists of 78.8% of national sal forest (Hossain, 1999). From previous literature, there are many studies conducted so far related to the ethnic tribes, ecological balance, biodiversity, forest management, and evaluation of sustainability programs in Modhupur forest land (Dhar and Mridha, 2006; Rahman, 2015; Mollick et al., 2018; Islam and Hyakumura, 2019; Saha et al., 2021). Despite a large number of studies, there is rarely any study that has been mentioned about the variations of forest crimes and their impact on the environment, especially in Modhupur forest land. Moreover, the role of law-enforcing agencies to protect the forest lands. One study has mentioned concern related to illegal logging in Modhupur forest zone along with land settlement but not brief enough (Rahman, 2015). This study has identified this limitation as the basis of this study and is aimed at finding out the nature and causes of forest crime in Modhupur Reserve Forest.

Moreover the study has tested two hypotheses as:

Hypothesis 1: There is no relationship between police patrolling and frequently committing the crime.

Hypothesis 2: There is no relationship between the threatening factors on survival of livestock and acute environmental problem.

2. Materials and methods

This research is based on a quantitative framework so that the present conditions of forest crime can be analyzed descriptively. In this research, a survey conducted and collected data are being used to critically analyze, interpret, reflect, and conceptualize the information and relate it to the expected outcomes.

The study area was Modhupur reserved forest, which is located in the unions of Alokdia, Arankhola, Ausnara, and Solakuri, Erat volutpat aliquam. The number of residents in the forest was not officially counted by the authorities (Population and Housing Census, 2011; Department of Statistics, Modhupur Upazilla Parishad, 2019). Consequently, the researcher must carry out a pilot study. The pilot study's replies are examined, and the results are used to enhance the questionnaires that the respondents suggested. A nonprobability sampling strategy based on the judgemental method was used to choose the sample. Data was gathered over a lengthy 10-day period using a standardized questionnaire that included both closed- and open-ended questions. A total of 150 respondents' data were gathered, with 12 to 15 respondents' responses being obtained daily.

3. Results and discussion

3.1. Socio-demographic characteristics of the respondents

In this study, the participation of females (55%) is more than the males (45%). The age range has a close range with one another but the majority of the respondents (33%) is between the age group of 31-44 years. The educational background seems to not much advance as 41% of them are illiterate. Among the respondents 53% of the population are Islam, 27% of them are farmers, 59% have families consist of 2-4 members, and 77% are married. Finally, 41% of the respondent's monthly income is in the range between 5000-9999 Tk.

3.2. Rate of reduction of species in the forest over 10 years

Forest plants and different species have their value in the case of conservation of ecological balance. Figure 1 shows that 15% of the respondents think deer have been reduced at an alarming rate for the past few years; 17% of respondents prefer monkeys in Modhupur forest; 11% of the respondents notify that birds; 29% of respondents strongly agree with Sal plant.
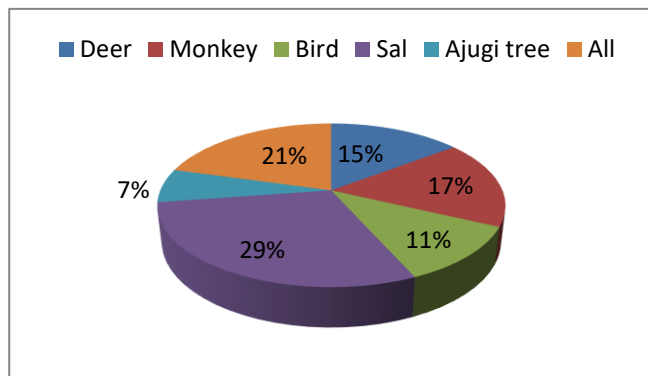

Figure 1: Reduction rate of species over 10 years

Moreover, 7% of ethnic respondents think Ajugi trees and 21% of the respondents have identified that all of the deer, monkeys, birds, Sal trees, Ajugi trees all are declining. It further created a threat to the conservation of the ecosystems and ecological balances of the forest.

3.3. Nature of frequently occurred forest crime

Based on the respondent's experience, Table 1 shows that smuggling of Sal, Gujjar, and Acacia and squatting of forestland are occurring mostly in Modhupur reserved forest, which is similar to the concern of illegal logging from Rahman's work in 2015. The rate of smuggling of Sal, Gujjar, and Acacia is 23%. Next is squatting of forestland is occurring at 23%, and the rate of consumption of rubber trees is 9%. In the case of wildlife, the offenders commit bird hunting, which is 10%; the rate of smuggling of monkeys and deer is equal to 7%. Others are marked as the rate of deforestation is 11%; and finally, water monitor slaughtering is occurring at 10%.

Table 1: Percentage distribution of nature of forest crime

Nature of forest crime	Frequency	Percent
Smuggling of Sal, Gujjar, and Acacia	35	23%
Smuggling of monkey	10	7%
Squatting of forestland	35	23%
Trafficking of deer	10	7%
Consuming of Rubber tree	13	9%
Bird hunting	16	10%
Deforestation	16	11%
Watermonitor slaughtering	15	10%
Total	150	100%

3.4. Criminals preference of species for trafficking

7% of respondents said that criminals prefer less than usual plants and animals for trafficking in Modhupur forest (Figure 2). For that reason, they have specified that the offenders tend to smuggle high-value endangered species for surveillance and ignore the application of legal procedure. Also, 29% of the respondents have said that criminals prefer moderate-value endangered species for illegal trafficking, and maximum 64% of my respondents have explained that offenders prefer high-value endangered species for illegal trafficking.
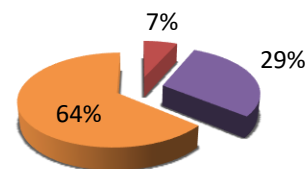

Figure 2: Percentage distribution of criminal's preference of species

3.5. Potential offenders

Table 3 shows that 38% of respondents saw forest officers as potential offenders who commit illegal trafficking and logging, which matches with other studies (Rahman, 2021); 31% agreed security guards are potential offenders; and 25% said local grabbers are potential offenders by direct or indirect Crossett. Also, 3% agreed that rangers and external influential people are potential offenders who commit forest crime for their own profit or to implead others.

Table 2: Percentage distribution of potential offenders

Potential offenders	Frequency	Percent
Forest officers	57	38%
Rangers	4	3%
Local grabbers	38	25%

Security guards	47	31%
External influential	4	3%
Total	150	100%

3.6. Respondents supportive opinion about local politician's involvement in forest crime

It's found from the survey that, 52% of respondents said that local politicians directly raise the offenders to commit forest crime, whereas 45% have explained that local politicians commit forest crime on their own but 3% of respondents were neutral.

3.7. Respondents confession about local resident's participation along with forest crime

38% of the respondents have confessed that local residents pretend not to see and don't respond to forest crimes and offenders because of their insecurity; 31% of the respondents have confessed that local people greatly influence the offenders in committing forest crime; 17% of the respondents have confessed that local people prevent forest crime; 8% of the respondents haven't rendered any comment; and lastly, 6% of the respondents have confessed that local people commit forest crime on their own.

Table 3: Percentage distribution of local resident's participation in forest crime

Local resident's participation in forest crime	Frequency	Percent
Locally prevented	26	17%
Local people help the offender	46	31%
Local people are directly involved in criminal activities	9	6%
Local people keep silent because of insecurity	57	38%
No comments	12	8%
Total	150	100%

3.8. Police engagement in forest crime or with wildlife trafficking

From table 4, 38% think that police indirectly support offenders in committing forest crime, but 35% of the respondents think that the police are innocent, namely that they don't commit forest crimes but strictly prevent these crimes. Only 27% of those polled believe that police directly assist criminals in committing forest crimes. Table

4 also shows that 12% of the respondents think that apathy of law enforcement agencies is a risk factor in cases of forest crime, 15% consider that forest crime is being increased because of the default of law enforcement procedures, 21% of the respondents think that backdated law enforcement strategies provoke forest crime, and the greatest percentage of respondents think that corruption is the greatest risk factor of forest crime.

Table 4: Percentage distribution of police engagement with forest crime

		Frequency	Percent
Police engagement	Police directly raise the criminals	40	27%
	Police indirectly support the offenders	57	38%
	Police prevent forest crime	53	35%
Responsible factors for their involvement	The apathy of law enforcement agency	18	12%
	Default of law procedure	23	15%
	Backdated law enforcement strategies	31	21%
	Corruption	78	52%

3.9. Potential victims

Table 5 shows that 34% of the respondents have said that local people involved in farming become potentially victimized by forest crime, 33% have notified that ethnic residents are potential victims of forest crime in Modhupur forest, and 33% of the respondents think that a mix of local and ethnic people involved in farming is potentially victimized by forest crimes.

Table 5: Percentage distribution of potential victims

Potential victims	Frequency	Percent
Local people (involved in farming)	51	34%
Ethnic residents	50	33%
Mixed of local and ethnic (involved in farming)	49	33%
Total	150	100%

3.10. Impact of forest crime upon localities

According to Table 6, the respondents has stated some adverse impact of forest crime on their localities. Among them 37% mentioned that, as a result of different forest crime, it rises the Bangla community against ethic and ethic against Bangla community conflicts (Rahman, 2015). Moreover, 29% they have a social problem of insecurity

as they can be victimized at any time. Offenders can squat on their forest lands as well as their land of cultivation at any time. That has led to threaten their economic resources agreed by 21% and 13% has said, forest crime has impact on their land settlements.

Table 6: Percentage distribution of main social problem

Social problem	Frequency	Percent
Insecurity	43	29%
Threat to economic resources	32	21%
Land settlement	19	13%
Bangla-ethic groups racial conflict	56	37%
Total	150	10 0%

3.11. Forest crime effect on forest ecological balance

Forest crime has an adverse impact on biodiversity as well as the ecology of the land (Islam, 2022). It is clear from table 7 that 47% of the respondents think that deforestation is the most threatening factor that erases the survival of livestock. Additionally, 27% of the respondents have explained that wildlife trafficking threatens the survival of livestock to a greater extent. 14% of the respondents have said that farming is a threatening factor to the survival of livestock, and 12% of the respondents have said that grabbers' oppression is a reasonable threatening factor to the existence of livestock.

As a result of forest crime, the local people also faced some environmental problems, as it is estimated that 31% of my respondents have said that they face a shortage of water. The level of the water is deep compared to the surface of the past and it is not pure either (Rahman, 2015). Additionally, 40% of respondents have specified that there is a great problem of land fertility. Farmers cannot grow crops, vegetables, and fruits easily because of deforestation and various forest crimes, and 19% of the respondents have indicated that air pollution, especially the huge density of dust, is acute in the forest at present because of squatting of forest lands and brick kilns (Islam, and Sato, 2012).

When asked about recent environmental disasters, 27% of the respondents said that anomaly in-season change is endangering the survival of livestock as well as human beings; 22% of the respondents have clarified that air pollution, especially dust density, is a serious environmental disaster issue at present in the forest area because of making roads, movement of vehicles, and the building of brick kilns. 17% of the respondents also noticed a great decline in rainfall in Modhupur reserved forest because of deforestation. 15% have faced a water crisis. Drinkable water is not available everywhere. Besides, the water contains iron. Lastly, 19% of the respondents hadn't experienced any disasters in the forest.

Table 7: Percentage distribution of threatening factors

Variables	Attributes	Frequency	Percent	Total
Threatening factor on the survival of livestock's	Deforestation	71	47%	
	Farming	23	14%	
	Wildlife trafficking	40	27%	
	Grabbers oppression	16	12%	
Acute environmental problem	Water storage	47	31%	
	Land infertility	59	40%	
	Air pollution	29	19%	n=150
	None	15	10%	%=100
Recent environmental calamities	Decline of rainfall	26	17%	
	Season change	41	27%	
	Air pollution especially extreme dust density	32	22%	
	Water crises	23	15%	
	Didn't observe any recent disaster	28	19%	

3.12. Polices activities in Modhupur Forest Zone

From table 8, it is clear that 22% of the respondents have agreed that there are several police checkpoints, but the majority 56% have said that there are not enough police checkpoints in all risky zones of the forest, and 22% of my respondents have said they are satisfied with the existence of police checkpoints. From the second section, 41% have mentioned that police don't play their duty both formally and informally 24 hours in the forest, while 24% of the respondents have averred that police occasionally play their duty both day and night. 23% of the respondents have stated that police play their duty 24 hours in the sensible zones of the forest. Although 12% of respondents stated that they are unsure whether police officers are on duty 24 hours a day, Further, this table 8 reveals that 23% of the respondents have agreed they are satisfied with police patrolling to prevent forest crime, but 54% have replied in the negative.

Table 8: Police's role in forest crime prevention

Variables	Attributes	Frequency	Percent	Total
Presence of police checkpoints in all risky zones	Yes	34	22%	
	No	82	56%	
	Satisfied with what has at present	34	22%	n=150
Police's duty in day and night	Yes	33	23%	%=100
	May be	18	12%	
	Occasionally	36	24%	
	No	63	41%	

Satisfaction with police patrolling	Yes	35	23%
	Average	35	23%
	No	75	54%

Hypothesis test 1: There is no relationship between police patrolling and frequently committing the crime.

The assumption was that there was no relation between the severity of police patrolling and the frequency of crime. The critical value is 0.05 in the null hypothesis. Here, the calculated value is 43.613 and the table value is 23.6848; where the degree of freedom is 14, the asymptotic significant value is 0.000, which is less than the critical value of 0.05. So, the null hypothesis is rejected. Namely, there is a relationship between the severity of police patrolling in the forest and the frequency of committing forest crimes.

Hypothesis test 2: There is no relationship between the threatening factors on survival of livestock and acute environmental problem.

The assumption was there is no relation of both an acute environmental problem and threatening factors on survival of livestock. The critical value is 0.05 in the null hypothesis. Here, the calculated value is 18.908 and the table value is 16.9190; the degree of freedom is 9. The asymptotic significant value is 0.026, which is less than the critical value of 0.05. So, the null hypothesis is rejected. It means there is a relationship between threatening factors to the survival of livestock and acute environmental problems.

4. Conclusion

This study is focused on forest crime or wildlife trafficking with fauna and flora in Bangladesh. The primary research objective of this study is to understand the nature of forest crime in our country. Not only that, but also to find out the reasons or causes of forest crime or wildlife lodging, to know about potential offenders and victims, to measure the impact on the environment and upon human beings, and to justify the role of police in combating forest crime. It is found that 23% of respondents have specified smuggling of Sal, Gujjar, Acacia trees, and squatting of forestlands as a serious crime in the forest. For 64 percent of the responders, high-value endangered animals are more attractive to criminals. According to 52 percent of respondents, corruption is to blame for the increase in forest crime. As a result of this, forest crime is at an all-time high. About 40 percent of respondents claimed they were facing land infertility, while 31 percent said they were facing a water shortage. According to a recent survey, 27 percent of respondents have seen anomalies in the seasons, 17 percent have noticed a reduction in rainfall, and 21 percent have noticed an increase in dust volume as a result of a recent environmental catastrophe in the forest. Forest police, according to 38 percent of respondents, and security guards, according to 31 percent, are potential criminals who conduct forest crimes with the aid of local grabbers.

Three-fifths of respondents believe that ethnic people conduct forest crime and blame the Bengalese for it and vice versa. Sixty-seven percent of respondents said local farmers are victims of forest crime. 38 percent of respondents believe that the police indirectly help criminals, whereas 35 percent of respondents believe that the police are innocent. On the contrary, they prevent forest crime to some extent. The study has recommended some preventive measures to take and suggests more in-depth future studies. In the end, this study suggests that the community, police, and local administration need to work hand in hand to prevent forest crime. Furthermore, forest-related legislation must be strictly enforced and changed or amended as needed.

Acknowledgements

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