
TRENDS AND STATUS OF ILLEGAL TIMBER LOGGING IN THREE FOREST DISTRICTS OF THE BRONG-AHAFO REGION OF GHANA

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ABSTRACT

*The study was carried out in three Forest Districts of the Brong-Ahafo Region of Ghana, with the objective of finding out the occurrences of illegal timber logging. Data for the study include secondary data on illegal operations from the monthly offence report files and range report files of the Districts and data for the study covered the years 2001 to 2006. The year 2002 had the highest number of reported occurrence of illegal timber operations (24%). Most of the illegal timber logging took place off-reserve, with January being the month of most occurrences. An estimated minimum amount of GH¢29,348.02 was lost to the state through illegal logging. *Triplochiton scleroxylon* was the most exploited species representing 23% of tree species exploited by illegal loggers. Efforts at tackling illegal operations should be geared towards enforcing the laws, ensuring institutional stability and being vigilant in the month during which most of the illegal operations are likely to occur.*

Keywords: Illegal logging, *Triplochiton scleroxylon*, on and off-reserve logging

INTRODUCTION

Forests constitute a strategic resource for national development in many countries where they are found. They are capital assets of utmost economic and social importance, and they exercise great and invaluable influence on a nation's environments, not only in West/Central Africa but also all over the world (Nani-Nutakor and Boateng, 1996). The benefits that society derives from the forest include: production of wood (timber) and other forest products (NTFP), protection and conservation of environment (soil, water, wildlife etc.) and provision of opportunities for recreation. Apart from these, forests also provide employment to many people and contribute a lot to the national economy (Myers, 1985). About 60 million indigenous people are entirely dependent on forest, while 1.6 billion, a quarter of the world's population rely on forest for food, fuel, and

building materials. Therefore forest loss poses a direct threat to these people and to future generations (DFID, 2007). Most of the timber resources in the West African sub-region are located in the Tropical Moist Forest (Abeney, 1996). The timber industry in Ghana is the fourth largest foreign exchange earner. The export value of primary wood products was estimated at about US\$169 million in 2003, comprising sawn wood (US\$84.9), veneer (US\$59.5 million) and plywood (US\$24.5million) (ITTO, 2005).

Despite the numerous values of the forest resources, Ghana's virgin forests have been dwindling at a very fast rate since 1900. The average estimated annual rate of deforestation between 1990 and 2000 was 120,000 hectares; the average growing stock in the remaining forest area is only 49 m³ per hectare (FAO, 2005). Ghana's forest zone, which at the beginning of this century

covered 8.2 million hectare has been reduced drastically to about 1.7 million ha. Pressure on the remaining forests has increased because of the large number of wood-processing plants and illegal logging operations (Chachu, 1989). Other factors include the slash and burn agriculture, illegal logging by timber contractors and chainsaw operators, excessive exploitation of fuel wood and other products like canes, nuts and fruits, bushfires, mining and sand winning (FAO, 2005).

Illegal logging is increasingly recognized as a leading problem facing forest management globally. Although difficult to document, because of inconsistent accounting practices, a major review conducted for the World Bank estimated illegal logging as equal or exceeding the legal harvest rates in a number of countries (Forest Trends, 2005). Illegal logging at this scale creates a disincentive for sustainable forestry practices by depressing market prices for legally harvested wood. According to the World Bank, illegal logging results in a loss of US\$10 to US\$15 billion a year to country economies. This amount is greater than the total World Bank lending to client countries and greater than total annual development assistance in public education and health (Forest Trends, 2005).

Jaakko Pöyry Consultants (JPC) (2005) defined illegal logging in a number of ways, including harvesting without authority in National Parks or conservation reserves, and avoiding full payment of royalty, taxes or changes. Illegal logging is an activity that takes place in violation of current law. It is not synonymous with deforestation or with particular way of using trees that may or may not be acceptable to certain groups of society. The illegal removal of timber should be understood as any cutting that is prohibited by current forestry legislation. This includes felling or other uses that are inconsistent with regulations and provisions of the forestry laws. Three types of illegal logging have been identified in order to develop strategies

to combat the menace (Forest trends, 2005). These are:

1. High level commercial scale logging and related criminal activities in which there is often state and/or military collusion or corruption across the entire sector.
2. Small-scale community practices that are often regarded as illegal under existing legal frameworks, and which fail to recognize traditional uses and local livelihood interests.
3. Armed conflict situations in which there is a more complete breakdown of law and order, such as in rebel occupied territories where illegal timber is used to finance and perpetuate conflict, e.g., Democratic Republic of Congo.

Analysis prepared for the World Bank suggests that (at a very conservative estimate) Cameroun is losing €4.5 million annually because of weak regulations of timber production. Losses in the Central African Republic are estimated at €2.6 million, the Democratic Republic of Congo €3.6 million, Gabon €3.5 million and Ghana €2 million. Gabon aside, all these countries qualify as Highly Indebted Poor Countries (HIPC) and amongst the world's poorest nations (Scotland, 2003). These losses undermine a country's capacity for development and provision of essential services.

Following the important role of wood in the economy, a number of forest legislations to regulate timber exploitation have been passed. These include the Timber Resources Management Act, 1997 (Act 547) as amended by the Timber Resources Management amendment Act, 2002 (Act 617) which is intended to provide for the grant of timber rights in a manner that secures the sustainable management and utilization of the timber resources of Ghana, and Forest Protection Decree 1974 NRCDD 243 as amended by the Protection Amendment Act, 2002, Act 624. The

impacts of these Acts are reflected by the trends and status of the illegal timber operations. Intensive enforcement of regulations can be effective through the knowledge of trends and status of illegal logging by mobilizing available human and financial resources during certain periods of the year to reduce illegal logging.

The objectives of the study were:

- To compile data on the frequency of occurrence of reported illegal timber operations in three Forest Districts in the Brong Ahafo Region (Sunyani, Bechem and Goaso).
- To evaluate the extent of revenue loss through illegal activities during the period 2001-2006.

MATERIALS AND METHODS

Study Area

The study was carried out in the Brong-Ahafo region of Ghana. It shares boundaries with the Northern Region to the North, the Ashanti and Western Regions to the South, the Volta Region to the East and the Eastern region to South East. It also shares international boundary with La Cote d'Ivoire. The three Forest Districts chosen for the study were Sunyani, Bechem, and Goaso.

The Bechem Forest District lies at latitude 7°00'N and 7°25'N and longitude 1°45'W and 2°15'W. It is bordered at the North, South, East and West by, Sunyani, Nkawie, Offinso and Goaso Forest Districts respectively. About 157.38 km² of the land area is currently under forest reservation out of a total area of 1,550 km². The Goaso Forest District lies at latitudes 6°27'N and 7°00'N and longitudes 2°23'W and 2°52'W. It is bordered in the North, South, East and West by Dormaa Ahenkro, Juabeso, Bechem Forest Districts and La Cote d'Ivoire respectively. The District has a land area of 2,187.5 km² out of which 592.99 km² is

under forest reservation (i.e. 27.11%). The Sunyani Forest District lies at latitude 7°55'N and 7°35'N and longitude 2°00'W and 2°30'W. It is bordered in the North, South, East and West by Kintampo, Goaso, Bechem and Dormaa Ahenkro Forest Districts respectively. The total land area of the districts is about 1,357.84 km² of which 606.25 Km² is under forest reservation.

Data Collection

For the purposes of administration, the Brong Ahafo Region has six Forest Districts. Illegal timber logging occurs in all the Forest Districts of the Region. Three out of the six Forest Districts were selected based on the willingness of the Districts to provide the necessary data and information for the study. This represents a sampling intensity of 50 per cent.

The main sources of data for the study were secondary data on illegal timber operations during the period 2001 - 2006 and from monthly offence reports files and Range report files in the three Districts. Data obtained were analyzed using Statistical Package for Social Scientist (SPSS).

Tree species that were affected by illegal logging were classified based on their star ratings prescribed by Hawthorne (1993). Red star species are those for which current rates of exploitation present a significant danger of economic damage over a 10 year period, that is, tree species that are being cut at a rate of 50% -200% of the sustainable yield. Pink star species are significantly exploited, but their rate of exploitation is not yet a concern for their economic future or tree species that are being harvested at less than 50% the sustainable yield. Scarlet star species are those under imminent threat of economic extinction, being tree species over-cut at a rate greater than 200% the estimated sustainable yield.

Table 1: Occurrence of illegal timber operations in the three (3) Forest Districts

Forest District	Year						Total	Percentage of total
	2001	2002	2003	2004	2005	2006		
Bechem	21	43	20	16	24	4	128	44
Goaso	14	18	18	10	18	12	90	31
Sunyani	18	10	14	12	9	12	75	25

RESULTS

Occurrence of Illegal Timber Operations in the Three Forest Districts

Between the periods of 2001- 2006, a total of 293 illegal timber operations were recorded. The Bechem Forest District recorded the highest of 128 illegal timber operation representing 44% (n=293, Table 1). The least recorded was 75 illegal operations in the Sunyani Forest District (24%, n=293). Thirty-one per cent was recorded in the Goaso Forest District (Table 1). The year 2002 recorded the highest occurrence of illegal timber operations (24%, n=293) followed by the year 2001. The number of reported illegal timber operations was least in the year 2006 (10%, n=293) (Figure 1).

Monthly Occurrence of Illegal Timber Operations in three Forest Districts

During the period of 2001-2006, the month of January was found to be the period where most of the illegal timber operations occurred (13%). A mean occurrence of illegal operations for January was 12.3. This was followed by June, August and October. The results did not show any significant pattern in the various months; however, in two of the Districts sampled, January appeared as the month during which most illegal activities occurred (Figure 2). The highest occurrence in illegal operations was recorded in June at the Bechem Forest District; however, the mean occurrence for the month of June was below that of January. It is not clear why the month of January appears to be the month in which most of the illegal operations took place.

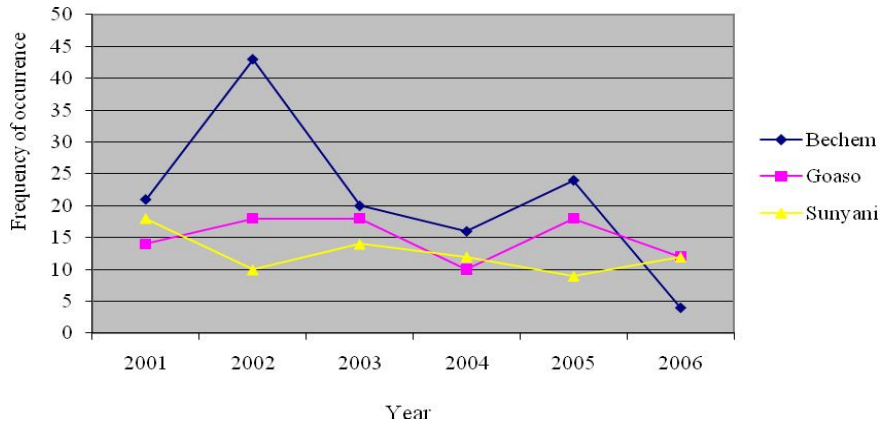


Figure 1: Trend of illegal timber operations in three forest districts
 Source: FSD Reports, Bechem, Goaso, Sunyani (2002-2007).

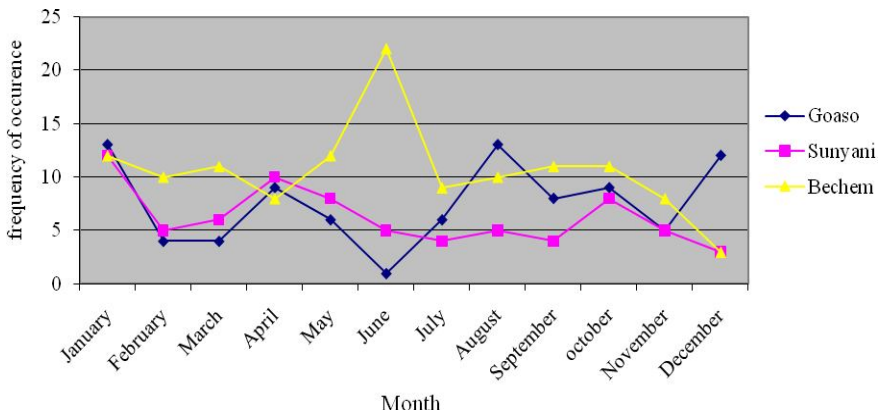


Figure 2: Monthly illegal operations in three forest districts
 Source: FSD Reports, Bechem, Goaso, Sunyani (2002-2007).

Occurrence of Illegal Timber Operations in On-Reserve and Off-Reserve

The study revealed that 172 (58.7%) illegal timber operations occurred in the off-reserve areas whilst 121 (41.3%) illegal cases occurred on-reserve (Figure 3). The forest reserves are demarcated, pillared and the boundaries cleaned and patrolled by forest guards. As such, monitoring in the reserves is easier and more effective than in off-reserves areas.

Number of Trees Felled Illegally in the three Forest Districts

Goaso had the highest number of trees felled (Table 2). This is in contrast to that observed in the occurrence of illegal timber operations (Table 1). Even though, Bechem had the highest percentage of occurrence of illegal timber operations, the number of trees felled was lower compared to Goaso. The number of trees logged was directly proportional to area of the off-reserve. Goaso had the largest area of off-reserve forest (1,594.5 km²), giving the highest number of trees logged (636).

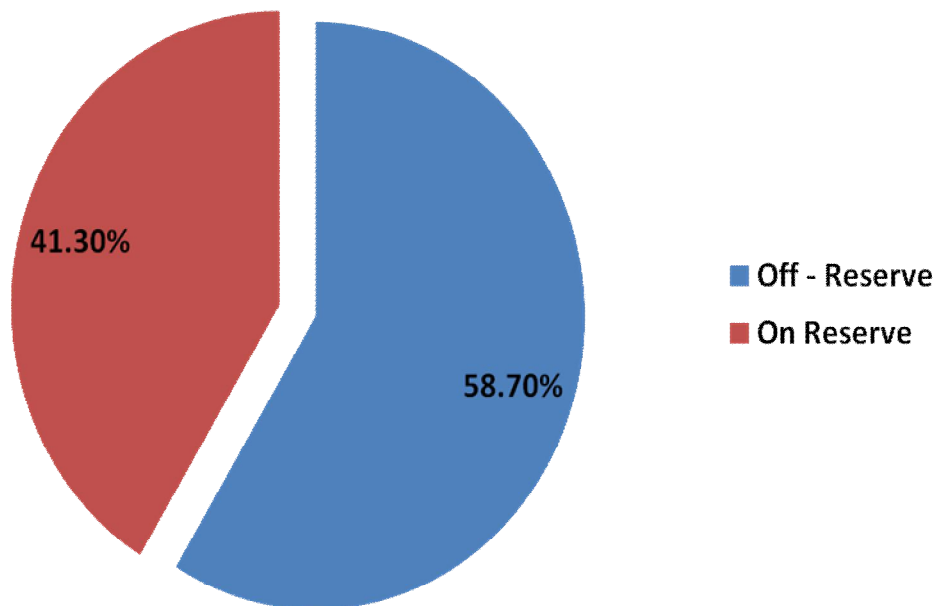


Figure 3: Occurrence of illegal timber operations in on-reserves and off-reserves areas in the three forest districts in the Brong Ahafo Region

Table 2: Number of trees felled illegally in three Forest Districts

District	No. of trees felled illegally (2001-2006)	No. of trees retrieved		Volume of trees retrieved in log form (m ³)	No. of trees taken away	Amount from retrieved trees (GH¢)
		Sawn	Log			
Bechem	455	154	159	1,391.934	142	19,114.81
Goaso	636	19	514	2,335.478	103	19,901.28
Sunyani	345	23	144	1,233.633	178	17,667.90
Total	1436	196	817	4,961.045	423	56,683.99

Source: FSD Reports, Bechem, Goaso, Sunyani (2002-2007).

Highest retrieval of trees (sawn and log) was recorded in the Sunyani Forest District (Table 2). Through the efforts of Forest Services Division (FSD) staff, 1,013 trees were retrieved out of the 1436 trees exploited illegally. Eight hundred and seventeen of the retrieved trees were in log form giving a total volume of 4,961.045 m³. Therefore average volume per tree retrieved in log form was 6.072 m³. The number of trees taken away during the period was 423, giving an estimated volume of 2,568.456 m³ of wood.

The total amount of money realized from the retrieved trees in log form was GH¢56,683.99 (Table 2). This gives an estimated amount per tree retrieved in log form as GH¢ 69.38. Therefore, an estimated minimum amount of money that might have been lost to the state through illegal timber activities within the 6 year period was GH¢29,348.02.

Tree Species Targeted by Illegal Timber Operators in the three Forest Districts

Triplochiton scleroxylon, *Ceiba pentandra* and *Milicia excelsa* were the species most affected by illegal timber operations (Table 3), because of their economic value and their relative abundance. The least targeted species included *Cola gigantea* and *Sterculia oblonga*, etc. because of their low economic value. However, species such as *Pericopsis elata*, *Terminalia ivorensis*, *Tieghemella heckelii* and *Daniella ogea* are of high economic value but had low percentage of tree species felled through illegal timber operations of 0.83 %, 0.34 %, 0.20 % and 0.06 % respectively (Table 3).

Table 3: Tree species targeted by illegal timber operators

Scientific name	Local name	No felled	Percentage	Star rating
<i>Triplochiton scleroxylon</i>	Wawa	331	23.05	Scarlet
<i>Ceiba pentandra</i>	Onyina	259	18.03	Red
<i>Milicia excelsa</i>	Odum	199	13.85	Scarlet
<i>Terminalia superb</i>	Ofram	139	9.67	Red
<i>Khaya spp.</i>	Mahogany	68	4.73	Scarlet
<i>Aningeria spp.</i>	Asanfena	62	4.31	Scarlet
<i>Entandrophragma utile</i>	Utile	45	3.13	Scarlet
<i>Antiaris toxicaria</i>	Kyenkyen	42	2.92	Red
<i>Entandrophragma angolense</i>	Edinam	42	2.92	Scarlet
<i>Chrysophyllum albidum</i>	Akasaa	35	2.43	Red
<i>Azelia Africana</i>	Papao	33	2.29	Red
<i>Mansonia altissima</i>	Opronno	25	1.74	Red
<i>Piptadeniastrum africanum</i>	Dahoma	25	1.74	Red
<i>Entandrophragma cylindricum</i>	Sapele	22	1.53	Scarlet
<i>Pterygota macrocarpa</i>	Koto	15	1.04	Scarlet
<i>Nesogordonia papaverifera</i>	Danta	14	0.97	Pink
<i>Pericosis elata</i>	Kokrodua	12	0.83	Scarlet
<i>Pycnanthus angolensis</i>	Otie	10	0.69	Pink
<i>Albizia ferruginea</i>	Awiemfosamena	10	0.69	Scarlet
<i>Petersianthus macrocarpus</i>	Esia	8	0.55	Pink
<i>Sterculia rhinopetala</i>	Wawabima	7	0.48	Pink
<i>Terminalia ivorensis</i>	Emire	5	0.34	Scarlet
<i>Morus mesozygia</i>	Wonton	4	0.27	Pink
<i>Alstonia boonei</i>	Nyamedua	4	0.27	Pink
<i>Nauclea diderrichii</i>	Kusia	4	0.27	Scarlet
<i>Trichilia monadolphia</i>	Tanuro	4	0.27	Pink
<i>Tieghemella heckelii</i>	Bako	3	0.20	Scarlet
<i>Ficus sur</i>	Kotremfo	3	0.20	Pink
<i>Celtis mildbraedii</i>	Esa	1	0.06	Pink
<i>Hannoa klaineana</i>	Hotrohotro	1	0.06	Pink
<i>Sterculia oblonga</i>	Ohaa	1	0.06	Pink
<i>Cola gigantea</i>	Watapuo	1	0.06	Pink
<i>Cylicodiscus gabunensis</i>	Denya	1	0.06	Pink
<i>Daniella ogea</i>	Hyedua	1	0.06	Scarlet

Source: FSD Reports, Bechem, Goaso, Sunyani (2002-2007).

DISCUSSION

Occurrence of Illegal Timber Operations in three Forest Districts

The occurrence of high illegal timber operations (128) in the Bechem Forest District could be due to the fact that the District has only two forest reserves (Bosomkese and Apirapi) with a larger portion of the District being off-reserve which is very difficult to monitor. The higher figures of illegal logging recorded in the years 2001 and 2002 could probably be due to the transition of the Forestry Department of the Forest Service Division to the Forestry Commission in 1999. The occurrence of illegal operations could occur when an institutional vacuum is created which could serve as an opportunity for people to over exploit timber resources. There is the tendency for illegal logging to be associated with weak legal system; high institutional and social instability.

The expanding local market for timber is attested by the springing up of new industries, construction of major highways, the rehabilitation of hospitals and educational institutions. Other domestic demand is derived from furniture making and carvers. There are signs that construction industries, particularly estate developers, will make enormous demand on the timber industry, especially for sawn timber, due to growing interest of individuals owning their houses (Sarfo-Mensah, 2005). In order to meet the demands of the local market, the Forestry Commission designated some formal processing firms to supply 20% of their total output to the local market (TIDD, 2004). In most cases, the supply from these firms were too expensive and out of reach to the ordinary individual (Sarfo-Mensah, 2005), because the lumber cut was usually for export. The deficit in supply makes illegal logging attractive as there is a high demand for wood at the local market. Logging companies in Ghana have largely ignored the needs of local communities. To stem the tide

of destruction, a portion of the royalties paid by logging companies is returned to the District and divided between local governments, the paramount chiefs and the sub chiefs in the villages. The amount paid as royalties to community leaders is critical in getting the active participation of local leaders and communities. With the active engagement of local leaders and the communities, it is likely to keep illegal loggers out of the forests. Despite these efforts at curbing illegal logging, it is still on the ascendency.

The question then is how much of these royalties is required to make a significant impact on the lives of these forest fringe communities. Until we are able to monitor and make sure that the royalties are used for the overall interest of the communities, our goal of getting the active involvement of local communities towards reducing illegal timber logging would not be achieved. Marfo *et al.* (2006) stated that negative coping practices are understood against the background that there are no economic incentives for farmers to protect timber trees on farm.

The month of January recorded the period during which most of the illegal operations occurred. It is known that the month is a period during which most people do not have enough money having spent a lot during the Christmas season. The tendency is for unemployed people who do not have a sustained source of income to go into illegal logging.

Another reason could be the weak institutional monitoring during the month of January. During the period, most workers travel to their hometowns and report late at post, hence giving illegal loggers an opportunity to perpetuate this illegality. With the declining support for public institutions, intensive enforcement of laws can be enhanced if resources are allocated taking into consideration the months during which illegal timber operations are highest.

Occurrence of Illegal Timber Operations in On-Reserve and Off-Reserve

It has been documented that over 50% of total timber harvest in Ghana come from off-reserve areas (IIED, 1993). The results of the present study show that, 58.7% of illegal logging occurs in off-reserve forests. Thus the management and development of off-reserve forest resources can be considered as a strategic means of ensuring sustainable forest management in Ghana (Marfo *et al.*, 2006). The general poverty and illiteracy levels in rural areas provide timber contractors the leeway to operate and disobey on-farm logging regulations. The absence of important state law enforcement agencies like the Police and courts in the rural areas of Ghana has provided additional constraints to both farmers and the Forest Service Division to enforce the regulations (Marfo *et al.*, 2006).

Another factor is the allocation of permits by Forest Service Division to register chainsaw operators and traders of wood products to fell and saw timber off reserves for sale to the local market. Wood products from such sources were found to be cheaper and could meet the needs of the local market. However, abuse by the groups through indiscriminate felling of timber in and off reserves with the connivance of some forestry officials and local people, prompted the government to terminate the arrangement. A total ban was placed on the activities of chainsaw operations by government in 1997 (Sarfo-Mensah, 2005).

Monitoring in the reserves is easier and more effective than in off-reserve forest areas. This is because the forest reserves are demarcated, pillared and the boundaries cleaned and patrolled by forest guards. To fight illegal logging off-reserve requires the co-operation of the local people and environmental NGOs. A unique alliance between government and local

organizations which kept several illegal loggers behind bars has dramatically reduced illegal logging in West Kalimantan. Much of the credit must go to Kalimantan Anti-illegal logging consortium (KAIL) which was funded by DFID. KAIL investigators go under cover, often at great risk to themselves. The information they gather is passed on to the Police. They also start prosecution through the courts to ensure that justice is done. Fighting illegal logging of timber off-reserve requires an integrated approach of recruiting staff, seeking the co-operation of community members and Non Governmental Organizations (NGOs).

Tree Species Targeted by Illegal Timber Operators in the three Forest Districts

Over exploitation of a limited number of species led to a ban on the export of 14 primary species in 1979 and of an additional four species in 1987. This ban resulted in increased use of secondary species (Friar, 1987). The high demand for timber products and the scarcity of enough legal wood to satisfy the need of wood industries could account for the increased exploitation of timber. Most of the species exploited by illegal loggers are of economic value. Tree species of economic value that were least exploited (Table 3) suggest that these species are almost extinct and had low relative abundance in both reserves and off-reserve forests.

CONCLUSION

There is a tendency towards under-reporting in most Forest Districts. The data obtained in this study represent a bare minimum of the illegal timber operations in the three Forest Districts. The results show an inconsistent trend in illegal operations. However, illegal logging was highest in off-reserves than on-reserves, emphasizing the need for intensive enforcement through

recruitment of staff. The institutional restructuring in the forestry sector might have created a vacuum in monitoring, hence an upsurge in illegal timber logging operations. It has also been established from the study that revenue is lost to the state, apart from the environmental impact illegal logging entails. The study also establishes that some timber species of economic value had a lower percentage of exploitation indicating that these species are becoming rare.

Based on the results of this study, the priority areas for prevention include:

- Encouraging active involvement of environmental NGOs in curbing illegal logging through active collaboration with law enforcement agencies. The judiciary should also assist by giving more severe punishment to culprits brought to court.
- Recruitment of staff to improve monitoring in both on-reserve and off-reserve; and especially during the month of January.

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