

Hunting Intensity in the Suhuma Forest Reserve in the Sefwi Wiawso District of the Western Region of Ghana: A Threat to Biodiversity Conservation

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Abstract

Hunting intensity in the Suhuma Forest Reserve (SFR) in the Sefwi Wiawso District of the Western Region of Ghana has been investigated. The methodology involved the recording of signs of hunting activity using line-transects, and interviews with hunters. A total of 157 spent cartridges, 21 wire snares, presence of 17 hunters, four hunting camps, and two gunshots were recorded over a total of 14 km of transects walked. Ten species of mammals were hunted, notably the brush-tailed porcupine (*Atherurus africanus*), Pel's flying squirrel (*Anomalurus peli*), long-tailed pangolin (*Uromanis tetradactyla*), giant rat (*Cricetomys gambianus*), Maxwell's duiker (*Cephalophus maxwelli*), bushbuck (*Tragelaphus scriptus*), bay duiker (*Cephalophus dorsalis*), royal antelope (*Neotragus pygmaeus*), western tree hyrax (*Dendrohyrax dorsalis*), and grasscutter (*Thryonomys swinderianus*). Wire snares and shotguns were the two main hunting methods employed, the former being used by all, and the latter by 34% of the hunters interviewed. Between 60 and 200 wire traps were set by each hunter. The results indicated a high hunting intensity in the Suhuma Forest Reserve. Some corrective measures have been recommended to ameliorate the problem. These measures include the initiation of public education and awareness programmes, establishment of task forces to check bushmeat hunting, execution of stricter law enforcement, and more punitive sanctions for offenders.

Introduction

Habitat loss, forest fragmentation and unregulated exploitation of wildlife, as a result of increasing demand for bushmeat, threatens many large mammals in Ghana and throughout West Africa. Over hunting has further reduced wild populations of many forest-dependent animals (Barrie & Aalangdong, 2005). Hunting and bushmeat utilization are integral parts of the socio-cultural traditions of many rural communities of the forest zone (Bennett & Robinson, 2000), for whom bushmeat is the most available and important source of essential proteins (Barnes, 2002). These activities, however, impact negatively on wildlife populations throughout the tropics (Bennett *et al.*, 2002). Commercial bushmeat hunting results in increasing harvest rates through increased hunting intensity by local people,

and immigration of non-resident commercial hunters (Bennett & Robinson, 2000; Bennett, 2004).

In West Africa, 25% of the daily protein requirements of the people are from bushmeat, and about 95% of the people in the Western and Ashanti regions of Ghana consumed bushmeat, the most commonly-consumed species being giant rats (*Cricetomys gambianus*), grasscutters (*Thryonomys swinderianus*), brush-tailed porcupines (*Atherurus africanus*), Maxwell's duikers (*Cephalophus maxwelli*), bushbucks (*Tragelaphus scriptus*), and long-tailed pangolins (*Uromanis tetradactyla*) (Bennett, 2004).

Historically, hunting practices of tropical forest inhabitants had rarely resulted in local extinctions (Bodmer *et al.*, 1997) because traditional norms, sanctions and taboos,

ensured reverence and protection of wildlife (Rose *et al.*, 2003). Unfortunately, increasing demand for meat by burgeoning human populations has resulted in unsustainable commercial and subsistence bushmeat hunting practices involving the use of modern sophisticated weapons (Barnes, 2002; Rose *et al.*, 2003). This, in turn, has resulted in the so-called “empty forest syndrome”, where seemingly intact forests are in reality devoid of faunal species (Cuaron, 2000; Bennett & Robinson, 2000; Bennett, 2004). Increasing logging has also opened up previously isolated forests to illegal hunters (Bennett *et al.*, 2002; Bennett, 2004), whose activities often lead to severe modification of biological communities and ecological interactions that negatively impact on prospects for forest maintenance and regeneration (Cuaron, 2000).

The Upper Guinea subregion, which includes the tropical rainforest zone of south-western Ghana (81,300 km²), is endowed with a variety of ecosystems that harbour rare and endemic floral and faunal species with highly restricted ranges (Bakarr *et al.*, 2001). The region provides habitat for about 2,200 plant species, including many important timber species (Hall & Swaine, 1976), as well as about 43 mammal species like the bongo (*Tragelaphus euryceros*), forest elephant (*Loxodonta africana cyclotis*), diana monkey (*Cercopithecus diana*) and the West African chimpanzee (*Pan troglodytes*) (Holbech, 1998). High hunting pressures have, however, reduced the abundances of virtually all species, with some becoming increasingly rare (e.g. forest elephants, bongos and diana monkeys) (Kufuor, 2000), and, at least, one thought to be locally extinct (e.g. red colobus) (Holbech, 1998; Kufuor, 2000). The study aimed to

conduct a preliminary investigation of hunting intensity in the Suhuma Forest Reserve (SFR) in the Sefwi Wiawso District of the Western Region of Ghana, and to recommend ways to minimize its threat to wildlife within the Reserve.

Materials and methods

Study area

The Western Region is located at the extreme south-west corner of Ghana (Fig.1), and forms part of the Ghana High Forest Zone (GHFZ), which constitutes part of the Upper Guinea Forest block (Martin, 1991). The Region, has an area of 23, 921 km², and covers 10% of Ghana’s total land area. The Sefwi Wiawso District (6° 00’ – 6° 30’ N, 2° 15’ – 2° 45’ W), one of 12 districts in the Region, has an area of 2,397 km² and is located within the wet and moist evergreen forest zones of Ghana, with the most extensive forest cover in the country. The climate is equatorial monsoon, with monthly temperatures ranging between 20 °C (August) and 34 °C (March/April), and mean annual temperatures ranging from 24 °C to 29 °C. Mean annual rainfall ranges from more than 2,000 mm in the south-east to 1,200 mm in the north-east, with relative humidity between 70% and 85% in the dry and wet seasons, respectively.

The vegetation is typically moist semi-deciduous forest (Hall & Swaine, 1981), dominated by the tree species *Celtis mildbraedii*, *Baphia nitida*, *Nesogordonia papaverifera*, *Microdesmis puberula*, *Khaya ivoriensis*, *Daniella ogea*, *Dacryodes klaineana*, *Strombosia glaucescens*, *Dispyros sanza-minka* and *Dialium aubrevillei* (Boni *et al.*, 2004). The forest habitat has, however, been invaded by the savanna grasses *Panicum maximum*

of 14 km (average of 2.8 km per transect), were walked, and signs of hunting activity, including spent cartridges, wire snares, hunting camps, hunters encountered, and gunshots heard within 10 m of both sides of the transects were recorded. Spent cartridges found were collected but wire snares were left intact. The start and end coordinates of each transect were recorded, together with the positions of hunting camps located in the reserve, and ongoing activities within the camps. Hunters were interviewed to obtain information on hunting methods and the types of animals hunted. The ages of spent cartridges were estimated by experienced hunters, using the criteria of extent of rust of the cartridge metal and discoloration of the plastic casing.

Results

A total of 157 spent cartridges, 21 wire snares, 17 hunters, four hunters' camps and two gunshots were recorded for a total of 14 km of transects walked (Table 1). The interviews revealed the hunted species as the brush-tailed porcupine (*A. africanus*), Pel's flying squirrel (*A. peli*), long-tailed pangolin (*U. tetradactyla*), giant rat (*C. gambianus*), Maxwell's duiker (*C. maxwelli*), grasscutter (*T. swinderianus*), bushbuck (*T. scriptus*), bay duiker (*C. dorsalis*), royal antelope (*N. pygmaeus*), and Western tree hyrax (*D. dorsalis*), with the first five being the most commonly hunted.

Wire snares and shotguns were the two main hunting methods used, with the former being used by all the hunters interviewed, and the latter by 34% of the hunters. Each hunter set 60–200 wire snares, of which there were three types: (i) ground snare without fencing, (ii) ground snare with

fencing, and (iii) snare on fallen log (Fig. 2-4). Hunters using wire snares were in groups of about five to 10 men, all from the same village or community. Two or more groups could use the same camp but not at the same time. Of the four hunting camps identified, three were active while one was abandoned.

Signs of current usage included open fires, processing tools, cooking utensils, and water containers (Table 2). The traps were checked every 3–4 days by the hunters, who were indigenes who migrated from parts of the Western and Brong-Ahafo regions to settle in the satellite communities of Amafie, Anhwaa, Adiemra, Wiawso, Wuako, Asiakrom, Bedii and Aboduam, as both subsistence and commercial hunters. The reason for checking the traps every 45 days was that trap inspection could be time consuming, especially when large numbers of traps are set.

Discussion

The study indicated relatively high hunting intensity in the study area, resulting from (i) the use of unsustainable hunting methods like wire snares and shotguns, (ii) high demand for bushmeat, (iii) ongoing logging activities in the reserve, and (iv) laxity and, or lack of capacity to control hunting in the Reserve. The current selective logging in the SFR alters and, or destroys wildlife habitat by decreasing forest cover through infrastructural development and tree felling (Bass *et al.*, 2003). Large mammals are especially exposed and become easy targets for hunters, and logging roads and vehicles (trucks) provide easy access to previously remote forests, enabling more and more illegal subsistence and commercial hunters to wreak havoc on the wildlife (Bennett *et al.*, 2002; Bass *et al.*, 2003; Bennett, 2004).



Fig. 2. Wire snare without fence



Fig.3. Wire snare with fence



Fig. 4. Wire snare on fallen log

TABLE 1
Evidence of hunting (number of wire snares, spent cartridges, hunters camps, gunshots and hunters) recorded in the study area

Transect number	Length (km)	Wire snares	Spent * cartridges	Evidence of hunting		
				Hunters encountered	Gunshots heard	Number of hunters' camps
1	3.0	0	51	7	1	2
2	3.0	6	79	2	2	1
3	2.5	12	8	5	0	1
4	2.5	0	10	2	0	0
5	3.0	3	7	1	0	0
Total	14	21	157	17	2	4

* Spent cartridges from 0–3 months old

TABLE 2
Hunters camp locations and evidence of activity

<i>Hunters camp</i>	<i>Location</i>	<i>Status</i>	<i>Evidence of activity</i>		
			<i>Animals present</i>	<i>Hunter</i>	<i>Related activities</i>
1	06° 06' 61.5 N 02° 27' 69.7 W	Active	Pangolins (2), flying squirrel mongoose, giant rat, porcupine (tail) skulls	Hunter with gun and processing bushmeat	Active subsistence crop farms around camp (tomatoes, plantain, cocoyam, pepper, etc.)
2	06° 06' 67.6 N 02° 24' 29.7 W	Active	Pel's flying squirrels being smoked, brush-tailed porcupine (fur, tail)	No hunter present	Evidence of torchlight, matchbox (empty), knife, cooking utensils, water containers present
3	06° 07' 91.6 N 02° 24' 03.7 W	Active	Maxwell's duikers (4), giant rats (6), brush-tailed porcupines, tortoise	Hunter with gun	Cooking utensils, knives, plates
4	06° 05' 17.8 N 02° 27' 61.1 W	Abandoned	No signs of current usage		

Because wire snares are cheap and easy to set, hunters are able to operate them in large quantities over much wider areas. Even though shotguns are quite expensive to acquire, they are also easily available, cost-effective and economically viable because they kill the larger and more profitable mammals. These two hunting methods are, however, not suitable for sustainable hunting because prey are killed almost instantly regardless of age, sex and breeding condition.

Poor enforcement of the country's wildlife laws, due largely to inadequate numbers of forest and wildlife law enforcers (e.g. guards, rangers, forestry and wildlife officers, etc.), finance and infrastructure, has resulted in a virtually uncontrolled hunting and bushmeat trade. The country's wildlife laws are not deterrent enough (e.g. low fines), to the

extent that even where adequate staffing exists, the law enforcers are not motivated enough to arrest offenders. Forest reserves in the District are the only places with the greatest diversity and abundance of faunal species, suitable habitat factors (e.g. food, shelter, water), and naturally-protected fauna and are, therefore, the greatest hope for the long term survival of such fauna.

It is, therefore, recommended that (1) A major education and awareness campaign should be launched to sensitize the Reserve's satellite communities on conservation and environmental issues to elicit a broad-based support for reducing utilization of rare and endangered wildlife species for bushmeat. (2) The Forestry Commission, in collaboration with logging companies operating in the SFR, should immediately establish task forces to monitor faunal

populations and guard against the influx of commercial hunters who take advantage of ongoing logging activities to exploit the wildlife in the reserve for their selfish gains. (3) Hunting camps should be located and destroyed, together with all wire snares in the reserve. (4) The Forestry Commission, in collaboration with logging companies, should be mandated to check bushmeat hunting and transportation in their concessions through the use of conservation bonds. (4) There should be stricter and more deterrent law enforcement and sanctions for illegal hunters, loggers or farmers in the reserve.

References

- Bakarr M., Oduro W. and Adomako E.** (2001). West Africa: regional overview of the bushmeat crisis. In *BCTF Collaborative Action Planning Meeting Proceedings* (N. D. Bailey, H. E. Eves, A. Stefan and J. T. Stein, eds). Bushmeat Crisis Task Force. Silver Spring, MD. 319 pp.
- Barnes R. F. W.** (2002). The bushmeat boom and bust in West and Central Africa. *Oryx* **36**: 236–242.
- Barrie A. and Aalangdong O. I.** (2005). Rapid Assessment of Large Mammals at Draw River, Boi-Tano and Krokosua Hills. In *A Biological Assessment of the Terrestrial Ecosystems of the Draw River, Boi-Tano, Tano Nimiri and Krokosua Hills Forest Reserves, Southwestern Ghana*. (J. McCullough, J. Decher and D. G. Kpelle, eds), pp. 67–72. RAP Bulletin of Biological Assessment 36. Conservation International, Washington, DC.
- Bass M., Aviram R. and Parker K.** (2003). Timber certification: prospects and progress in addressing wildlife issues in Central Africa. In *Uncertain Future: the Bushmeat Crisis in Africa*. 230 pp.
- Bennett E. L.** (2004) Seeing the wildlife and the trees improving timber certification to conserve tropical forest wildlife. *Wildlife Conservation Society Paper*. World Bank, Washington, USA.
- Bennett E. L. and Robinson J. G.** (2000). Hunting of wildlife in tropical forests: implication for biodiversity and forest people. *Environmental Department Papers, Biodiversity Series- Impact Studies. Paper No. 76*.
- Bennett E. L., Milner-Gulland E. J., Bakarr M., Eves H. E., Robinson J. G. and Wilkie D. S.** (2002). Forum: hunting the world's wildlife to extinction. *Oryx* **36**(4): 328–329.
- Bodmer R. E., Eisenberg J. F. and Redford K.** (1997). Hunting and the likelihood of extinction of Amazonian Forest. *Conserv. Biol.* **11**(2): 460–466.
- Boni S., Nuhu R. I., Potakey H. and Da Re G.** (2004). Anthropological, Environmental and Soils Assessments of the Sefwi Wiawso District, Ghana. *Report to Ricerca e Cooperazione (Italy) and European Commission*. 202 pp.
- Cuaron A. D.** (2000). A global perspective on habitat disturbance and tropical rainforest mammals. *Conserv. Biol.* **14**(6): 1574–1579.
- Hall J. B. and Swaine M. D.** (1976). Classification and ecology of closed-canopy forest in Ghana. *J. Ecol.* **64**: 913–915.
- Holbech L. H.** (1998). *Protected Areas Development Programme: Small mammal survey in Ankasa and Bia Protected Areas. Project No. 6 ACP/GH 045*. Protected Area Development Programme, Western Region, Ghana. ULG Consultants Ltd.
- Kufuor K. O.** (2000). Forest management in Ghana: towards a sustainable approach. *J. Afr. Law* **44** (1): 52–64.
- Martin C.** (1991) *The Rainforests of West Africa: Ecology, Threats, Conservation*. Birkhauser Verlag, Basel. 235 pp.
- Rose A. L., Mittermeier R. A., Langrand O., Ampadu-Agyei O. and Butynski T. M.** (2003). *Consuming Nature: A Photo Essay on African Rain Forest Exploitation*. Altisima Press, California.