

# Elephant poaching and ivory trafficking in African tropical forests with special reference to the Republic of Congo

*Tomo Nishihara*

Research Programme Officer, Japan Wildlife Conservation Society, Suehiro Bld. 7F 2-5-4  
Toranomon Minato, Tokyo, 105-0001 Japan; email: tomon16@aol.com

## Abstract

In and around Odzala National Park, Republic of Congo, elephant poaching is chronic and ivory is traded continuously. In 1999, larger-sized ivory pieces than in previous years and more high-calibre weapons were seized when the southern African nations legally exported ivory in a one-off sale to Japan. In other areas in northern Congo, elephant poaching and ivory trafficking continue on a daily basis. Most disastrous was the Mouadjé slaughter in which more than 300 elephants were killed for their ivory, not long before a CITES resolution in 1997 permitted the sale. In Congo elephants are protected completely and the laws on elephant poaching, ivory trade and illegal arms possession are clearly defined with harsh penalties. But the laws are not well enforced and in some cases, the Congolese authorities themselves are involved in the crimes. Various local factors encourage elephant poaching: widespread availability of military weapons effective in poaching elephants; local people's urge to profit from ivory; conflict between local people and the authorities over conservation policies; and logging activities, which have made poaching and trafficking much easier. The MIKE programme currently does not seem to function well in central Africa because of difficult logistics in the tropical forest and the lack of experienced personnel. The driving force behind elephant poaching is the international demand for ivory, in particular the strong demand in Japan for the hard ivory that comes from forest elephants, used for name seals and parts of musical instruments. Allowing ivory trade, as adopted in the CITES Conference of the Parties, will encourage illegal traffic in hard ivory and stimulate more poaching of forest elephants.

## Résumé

Au Congo, dans le Parc National d'Odzala et dans le voisinage, le braconnage de l'éléphant est chronique et le commerce de l'ivoire est continu. En 1999, on a saisi de l'ivoire de plus grande taille que les années précédentes et plus d'armes de gros calibre au moment où les pays d'Afrique australe ont exporté légalement en une seule fois de l'ivoire destiné au Japon. Dans d'autres parties du nord du Congo, le braconnage des éléphants et le trafic d'ivoire sont des événements quotidiens. Le massacre de Mouadjé, au cours duquel plus de 300 éléphants ont été abattus pour leur ivoire, a été catastrophique ; c'était peu de temps avant qu'une résolution de la CITES n'autorise cette vente, en 1997. Au Congo, les éléphants sont intégralement protégés, et les lois portant sur le braconnage des éléphants, le commerce de l'ivoire et la possession illégale d'armes à feu sont clairement définies, avec des peines très sévères. Mais les lois ne sont pas correctement appliquées et dans certains cas, ce sont les autorités congolaises elles-mêmes qui sont impliquées dans ces délits. Divers facteurs locaux encouragent le braconnage des éléphants : la disponibilité excessive d'armes de guerre, redoutables contre les éléphants ; le besoin pressant des locaux de tirer profit de l'ivoire ; les conflits entre les locaux et les autorités au sujet de la politique de conservation ; et les coupes de bois, qui ont rendu le braconnage et le trafic beaucoup plus faciles. Le programme MIKE ne semble pas bien fonctionner pour le moment en Afrique centrale en raison des difficultés logistiques rencontrées dans la forêt tropicale et du manque de personnel expérimenté. L'incitant qui pousse au braconnage des éléphants est la demande internationale pour l'ivoire, et particulièrement la forte demande du Japon pour l'ivoire plus dur qui provient des éléphants de forêt, utilisé pour les sceaux personnels et pour certaines parties d'instruments de musique. Le fait de permettre le commerce de l'ivoire, comme l'a accepté la Conférence des Parties à la CITES, va encourager le trafic d'ivoire dur et stimuler d'avantage encore le braconnage des éléphants de forêt.

## Introduction

### Trade history in forest elephant ivory

Between 1979 and 1989, African elephant populations decreased by 50% because of poaching to supply international demand for ivory (Milliken 1989). Based on the CITES quota system the Republic of Congo was the largest African exporter of ivory between 1986 and 1989. During that period Japan imported ivory from the Republic of Congo, the Central African Republic (CAR), the Democratic Republic of Congo (DRC), and Sudan, in order of volume. Ivory from these four countries amounted to 70% of the total ivory imported into Japan (Milliken 1989). The forest elephant *Loxodonta africana africana* dwells in the first three. The Republic of Congo was the most important source for Japanese ivory dealers.

### Demand for forest elephant ivory in Japan

Japan has a 1000-year history with ivory. In the 1920s, the demand for hard ivory exceeded the supply available from the Asian elephant (*Elephas maximus*), which had supplied ivory constantly, and Japan started to import large quantities of hard ivory from Africa (Martin 1985). During the 1970s Japan became the largest ivory importer in the world and two-thirds of its imports consisted of hard ivory, which in Africa comes from forest elephants. More than half the imported ivory (55%) was used for *hanko* or name seals (fig. 1). Hard ivory seals, comprising about 65% of the seals, were preferable: they are heavier and less likely to be damaged, the seal is less likely to stain the fingers with ink, and they are regarded as finer (Martin 1985).

Hard ivory is preferred for parts for two Japanese traditional musical instruments, the *shamisen* and the *koto*. These parts are usually made to order and they demand great precision in carving, since each one is designed to suit the individual player's requirements. Hard ivory is particularly preferred for the *shamisen* picks, called *bachis* (Martin 1985) as it is more durable. The *shamisen* is an important and popular musical instrument in Japanese traditional culture, and

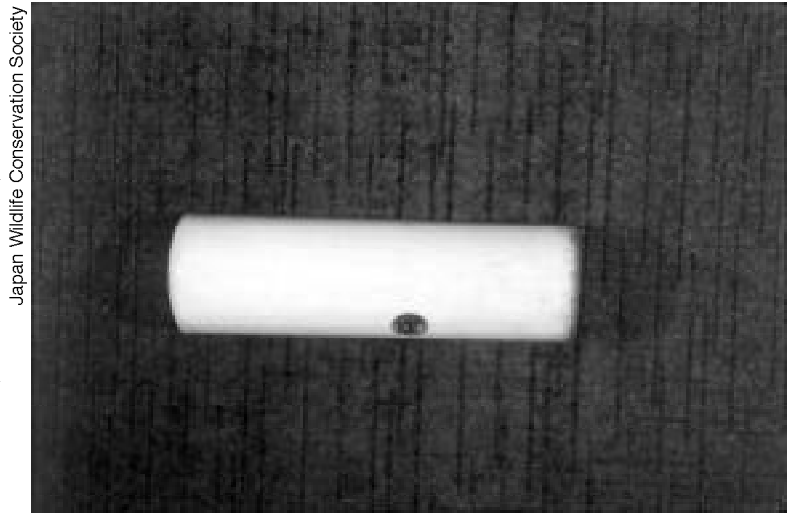


Figure 1. Ivory name seal.

present-day professional *shamisen* players, numbering approximately 1000, all require picks made from hard ivory. The pick is normally about 20 cm long, 10 cm wide and weighs 100–200 g (fig. 2). It is disposable, replaced each year. At present, one large pick costs about 1 million yen (c. USD 8000). The Japanese association for traditional musical instruments has lobbied CITES to be permitted to import hard ivory.

## Elephant poaching and ivory trafficking in the northern Republic of Congo

### Odzala National Park and Mbomo village

Odzala National Park, located in the north-western part of the Republic of Congo and covering 13,600 km<sup>2</sup>, is the country's largest park (fig. 3). Since 1992, an EU conservation programme, Ecosystèmes Forestières d'Afrique Centrale (ECOFAC), has supported management and scientific research in and around the park. Mbomo is a village located at the south-western edge of the park where ECOFAC headquarters is situated. Following are results on poaching and ivory trade of the forest elephant, based on data collected by ECOFAC since 1996.

Among arms seized in 1999, the highest percentage was military weapons (26.7%); also high was the proportion of hunting rifles (16.7%), used for hunting medium-to-large animals (table 1). Both types of

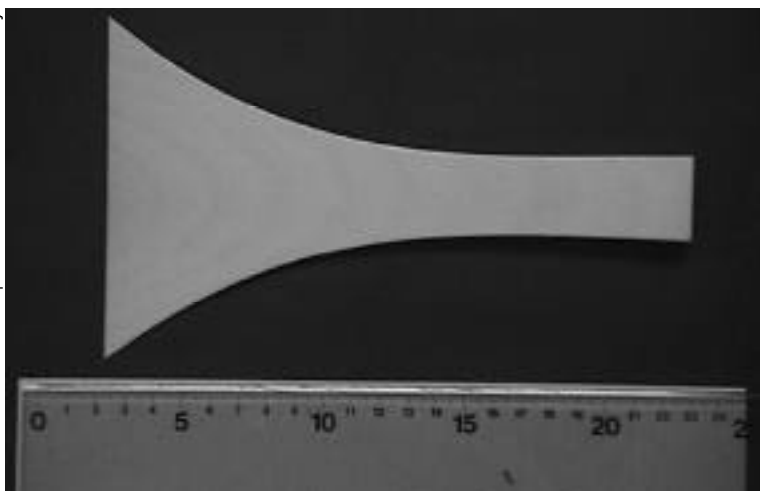


Figure 2. A pick for the shamisen, a Japanese traditional musical instrument.

weapon are mainly used to hunt elephants, suggesting that much elephant poaching occurred in 1999.

Between December 1997 and May 2002, the volume of seized ivory was 174 tusks or pieces of

tusk including 26 tusks weighing more than 10 kg each, with an average length of 72.9 cm and average weight of 3.8 kg. Seized tusks were longest and heaviest in 1999 (fig. 4). This suggests that in 1999 poachers targeted larger tusks, and there may be a connection with increased seizures of more powerful weapons in 1999.

**Nouabalé-Ndoki**

Large-scale human settlement has never developed in this area (fig. 3). Nevertheless, elephant poaching was carried out by local people before the area was established as

protected. The poaching focus was the marsh clearings that the elephants frequented.

In 1993, the Congolese government with the support of a US-based international conservation

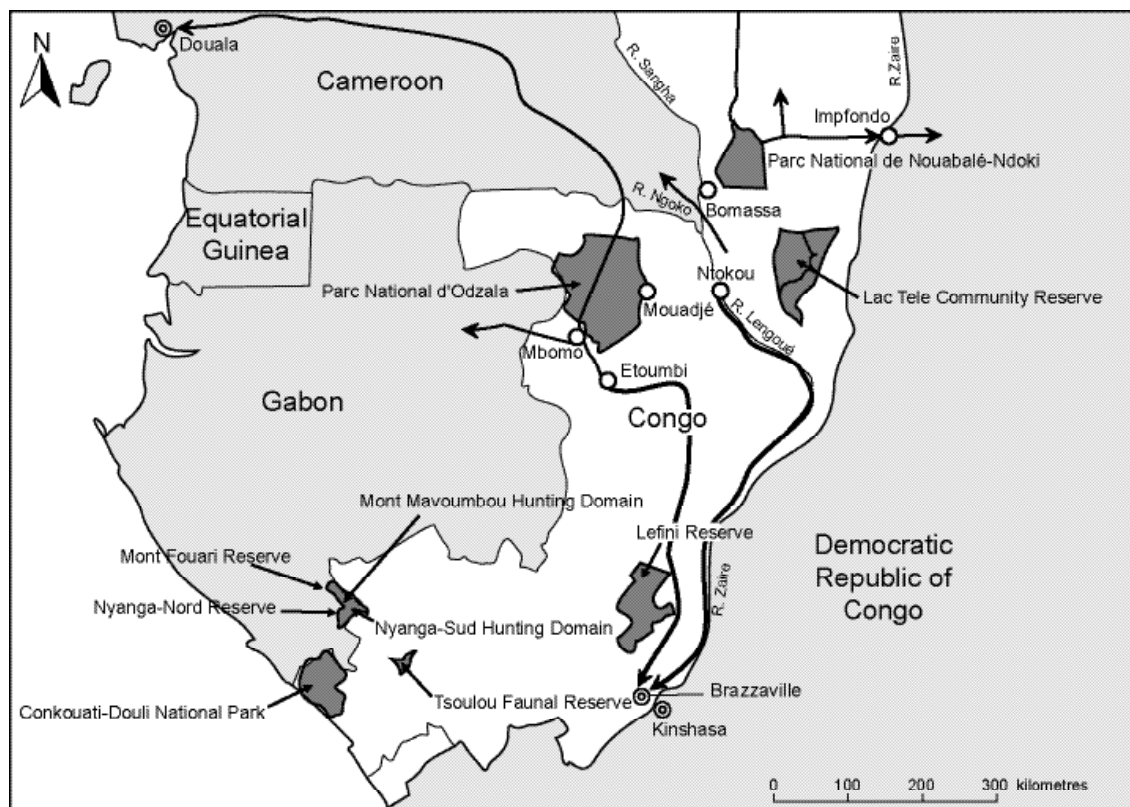


Figure 3. National parks and reserves in the Republic of Congo and outgoing routes of Congolese ivory traffic.

Table 1. Arms seized in and around Odzala National Park, 1996–2002

Type of arms	Total		Before 1998	1999	After 2000	2001	Unknown
	(no.)	(%)	(%)	(%)	(%)	(%)	(no.)
Military arms	26	20.3	22.6	26.7	21.7	14.6	
Arms for hunting medium to large mammals	12	9.4	6.4	16.7	8.7	7.2	
Arms for hunting small to medium mammals	87	68.0	71.0	53.3	69.6	78.0	
Others	3	2.3	0.0	3.3	0.0	0.0	
Total (no.)	128		31	30	23	41	3

Original data from ECOFAC. Military arms are dominated by automatic arms such as the Kalashnikov. Arms for hunting medium to large mammals are used for hunting forest buffaloes and the other medium-to-large mammals but generally are used for elephant hunting. Data for 1996 and 1997 are combined with those for 1998 as ‘before 1998’ because the data quantity was slight. Data for 2002 were combined with data for 2001 as ‘after 2001’ because the 2002 data were complete only until May. The percentage was calculated as the proportion of each type of arms among the total number of seized arms.

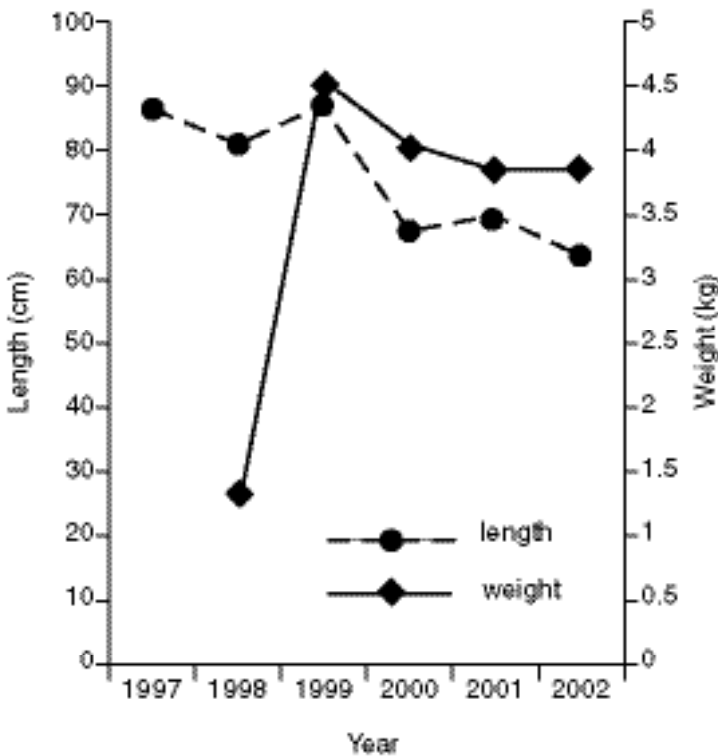


Figure 4. Yearly change of length and weight of seized ivory in and around Odzala National Park, Republic of Congo (original data from ECOFAC).

organization, the Wildlife Conservation Society (WCS), established this area as the Nouabalé-Ndoki National Park (about 4000 km<sup>2</sup>). Through anti-

poaching measures with the assent and collaboration of local people, hunters were removed, particularly from several marsh clearings where poaching was heavy, and then platforms were erected in several clearings to facilitate the study of larger mammals.

In addition WCS, under the Congolese Ministry of Forest Economy (MEF: Ministère d’Economie Forestière), has begun a collaborative project with a logging company that has concessions in the south and east of the park. For two years poaching and illegal trade of wildlife have been strictly controlled within the logging concessions.

A short survey on elephant poaching and ivory trade was conducted at 13 sites (villages and towns) in north-eastern Congo in September and October 1999 (Nishihara 2000a). Currently elephant poaching is uncommon, as is the trade in ivory and elephant meat. First, these villages are situated a 30-km walk away from elephant populations. Second, WCS has set up anti-poaching patrols and made the communities aware of

conservation. A low frequency of poaching, however, continues. In one village elephant meat is eaten twice a month. Although merchants stock only a small

quantity of ammunition, retired military men in some villages have a huge stock of ammunition and military arms, which could make elephant poaching easy.

### **Mouadjé**

In 1995 and 1996, more than 300 elephant carcasses, both fresh and old, were confirmed from the air and from the ground in Mouadjé, a large marsh clearing in north-western Congo. Interestingly, carcasses were not only of males, usually with larger tusks, but also of females and juveniles. Tusks were removed from all individuals, but the meat was not taken. Poaching occurred continuously in the clearing for almost a year. Local hunters said that it was permissible to take the tusks because the ivory trade would reopen soon, presumably referring to the CITES resolution in 1997.

With great efforts against poaching taken by MEF, ECOFAC and WCS, poaching has dropped to zero at present, and elephants could be seen in the clearing during the daytime.

### **Lengoué River**

An area along the Lengoué River remains in the central northern part of the Congo where no scientific research and no conservation activities have ever been done. Several clearings exist in that area, and elephant poaching in them has occurred constantly for many years. Frequency has increased since 1997, especially recently. In the first half of February 2000, 26 elephants were killed and all tusks removed. At least three poaching incidents were confirmed between December 2000 and January 2001 (Nishihara 2000b; 2000c; 2001).

## **Ivory smuggling routes**

See the map showing ivory trading routes, figure 3.

### **From the Odzala area**

Usually, the ivory from Odzala is taken by merchants and then sent to Brazzaville by road or river. On rare occasions, ivory is carried west by road, crossing the border into Gabon. Larger tusks weighing more than 5 kg are mixed with small pieces (20–30 cm) to make carrying easier.

In the last seven years the number of West African merchants in Mbomo has increased from 2 in 1995 to 15 in 2002. This suggests that ivory trafficking is increasing in volume.

Most of the ivory from the Mouadjé massacre was taken to Cameroon across the Ngoko River. In Cameroon the road networks are well developed and ivory is easily conveyed by road to Douala, the largest port in Cameroon (Programme ECOFAC and Projet WWF Minkébé 2001).

### **From the Nouabalé-Ndoki area**

Ivory from the southern area of Nouabalé-Ndoki is usually taken to south-eastern Cameroon across the Sangha River and traded with Cameroonian merchants. Then it goes to Douala.

Most of the ivory from the north-eastern area of Nouabalé-Ndoki is conveyed to Impfondo, Likouala Province, by river and then to the DRC across the Zaire River. Nowadays, in the northern areas of Nouabalé-Ndoki logging roads have been established, possibly making it even easier to convey ivory to CAR (Nishihara 2000a).

### **From the Lengoué River area**

Ivory is collected at Ntokou, a major village in that area, and most of it is conveyed to Brazzaville by river (Nishihara 2000b; 2000c; 2001).

## **Price trends of ivory and poaching weapons**

The price of ivory in Mbomo has been increasing in recent years (Programme ECOFAC and Projet WWF Minkébé 2001). Prices vary according to weight. The average price in Mbomo in 1997 was CFA 2000–4000 (USD 3–6) per kg. In 2002 it rose to CFA 8000–10,000 (USD 12–15) per kg. If it is taken to Brazzaville, the price increases by a further 2 to 3 times.

The price of military weapons dramatically decreased after the civil war in 1997. In 2000, one weapon cost around CFA 30,000–50,000 (USD 45–75) in Ntokou, south Lengoué, and CFA 50,000 (about USD 75) in Mbomo in 2002. This shows that a military weapon can be bought for the price of a 5-kg tusk. Ammunition is also quite cheap (CFA 150–250 or about USD 0.23–0.38 per round).

## **Trade in ivory products in Brazzaville**

Brazzaville is the capital of the Republic of Congo. A survey was conducted in 1994 and 1995 in the markets

in Brazzaville, where ivory products are sold (Madzou and Moukassa 1996). The merchants were foreigners from Chad, Guinea, Senegal and even countries further beyond. Each merchant obtained a maximum of 50 kg of ivory per month. Most of it came from northern Congo and the forests along the Zaire River. The main clients are Congolese, French, Senegalese, Chinese and Italian. Approximately 20 to 30% of these clients are diplomats. In 13 months, about 800 kg of ivory was sold in total, representing ivory from about 80 elephants.

Another survey was conducted at the ivory market in Brazzaville in 1999 (Madzou 1999b). Compared with the previous survey, the number of merchants and ivory products had decreased, but they still have stock and there is still illegal trade in ivory. For instance, both merchants and artisans said that ivory had been smuggled from the Congo to Botswana, Namibia and Zimbabwe after the 1997 CITES decision to extend the ban. Also according to the merchant who has dealt in the largest quantity of ivory products for more than 15 years, 'Since the one-off trade of ivory in 1999 from three southern African nations, the status of ivory trading has become stable. One Japanese man living in Kinshasa phones periodically to confirm the amount of ivory in stock and asks us to bring ivory to a fixed place across the Zaire River. He buys more than 10 kg of ivory every time.'

## **National laws on elephants and ivory in the Republic of Congo**

### ***Elephant hunting***

Legal protection of elephants in the Republic of Congo did not exist until 1983. This led to an enormous decrease in elephant populations owing to heavy hunting pressure. In 1983 wildlife conservation measures and related laws were established. At a national conference in 1991, it was agreed that elephant hunting be prohibited nationally and that elephants be entirely protected in the whole country by MEF through the law.

The Congolese law states that hunting entirely protected species like elephants is a crime. The penalty for offences is a fine ranging from CFA 10,000 to 5 million (USD 15 to 7500) and imprisonment for 2 months to 5 years, or both; there is also a penalty for accomplices. However, incidents of poaching are rarely handled well in court.

Elephant poaching is controlled by MEF. When necessary the ministry can request reinforcement from public safety authorities (the military, police and gendarmerie). In general, seized ivory is kept in the national safe and belongs to the government.

### ***Ivory trade***

Most African countries have stopped legally trading ivory since the international ivory trade was banned by CITES in 1989. In the Republic of Congo, which is a party to CITES, ivory trade into or out of the country is prohibited. Domestic ivory trade is also prohibited. It is treated as a crime and dealers are punished.

### ***Possession of arms***

Under Congolese law, a civilian cannot legally possess military weapons and the possession of other types of arms is strictly controlled. MEF has a role in controlling and seizing arms in illegal hunting. Hunting (with legal arms) is permitted only during the hunting period from 1 May to 31 October in non-protected areas and only for unprotected species.

## **Discussion**

### ***Poaching and illegal trade***

Both elephant poaching and illegal ivory trade still occur on a daily basis in northern Congo. In and around Odzala National Park, 12 poached elephant carcasses were found between January and March 2002. In 2001, 64 tusks or pieces of tusk were seized through patrols and traffic controls. A poacher who had killed an elephant was arrested in the park during the survey in August 2002. A few days later, an informant in Mbomo village said that three elephants had been killed.

In the central northern part of Congo, 26 elephants were killed for their ivory during the first half of February 2000 alone. Three elephant-poaching incidents were confirmed between December 2000 and January 2001.

Ivory trade is conducted at a local level. Ivory and its products are sold in markets where many foreigners come to buy. Ivory is conveyed by various routes into the neighbouring countries of Cameroon, CAR, DRC and Gabon.

### ***Trend corresponding to the CITES decisions***

The rampant elephant slaughter in Mouadjé happened just before 1997 when the Parties to CITES decided

that three southern African nations could carry out a one-off trade of ivory to Japan. When this one-off sale took place in 1999, the length and weight of the seized ivory increased, as did the number of seized weapons in and around Odzala National Park. Elephant poaching has increased since 1997 in the central northern part of Congo, partly because military weapons and ammunition have been easier to obtain since the civil war in 1997. The local price of ivory has also increased since 1997.

### **Major factors for poaching and traffic**

The wide distribution of military arms, mainly from civil wars, has stimulated elephant poaching. The public security authorities supposedly controlling these arms and ammunition appear to be involved sometimes in distributing them.

The income from ivory is so highly valued that elephant poaching for ivory is still attractive to local people. A pair of tusks can fetch almost twice the average monthly income of an agriculturalist-hunter (Programme ECOFAC and Projet WWF Minkébé 2001).

Because only some people in Mbomo can obtain employment at ECOFAC, which supports the conservation programme for Odzala National Park, others are killing elephants as a way of demonstrating their dissatisfaction. This tendency may be related to the desire of the younger generation to display their social status in the village (Programme ECOFAC and Projet WWF Minkébé 2001). In addition, difficulties arise over the issue of subsistence hunting areas between the villagers on one hand and MEF and ECOFAC on the other. This also seems to generate hostility against ECOFAC's activities.

It has been argued that crop raiding by elephants would encourage local people to kill elephants. However, in northern Congo at least, there does not seem to be a causal relationship between crop raiding and elephant killing. In Bomassa village at the edge of the Nouabalé-Ndoki area, elephants have been raiding crops for several years. But negotiations between MEF, WCS and the villagers appear to have resulted in a greater understanding of the need to conserve elephants (Madzou 1999a). In Mbomo village adjacent to Odzala National Park, elephants started crop raiding only recently. Fortunately, field owners have had an understanding with ECOFAC and crop raiding has not resulted in elephant killing.

Recently logging activities in the central African forest area have increased dramatically. Loggers not only cut down trees but they also bring large numbers of labourers into the forest, and the logging roads and trucks provide easy access for hunters and poachers, merchants and dealers. If hunting activity is not controlled by the logging concessions, excessive commercial hunting, including elephant poaching for ivory, is made easy.

### **Anti-poaching efforts**

While legislation in the country is strong, its implementation is hampered by lack of finance, personnel and equipment. Anti-poaching patrols and traffic controls in Nouabalé-Ndoki and in Odzala would not function without support from WCS and ECOFAC.

The entire central northern part of the Congo is outside the protected areas, and elephant poaching and ivory trade are still uncontrolled. In and around Odzala National Park, great efforts have been made in anti-poaching and traffic controls in the past several years. The reality, however, is that elephant poaching and illegal ivory trade cannot be stopped because of complex factors, such as widespread prevalence of military weapons, expected large income from ivory, and local dissatisfaction with ECOFAC.

Controlling illegal trade in arms and their possession is the role of the Ministry of Interior and public security authorities. But the ivory trafficking in Mbomo suggests that arms and ammunition used to poach elephant are coming from the very authorities meant to protect them. Conversations with local people in Ntokou village revealed that there was conflict between the local political staff and the police staff over the possession of weapons that could be used for elephant poaching (Nishihara 2001).

### **International demand for ivory**

All the factors described above relate to local conditions. However, the key factor is that demand for ivory exists. If there were no demand and no ivory trade, elephant poaching would rarely happen except for meat.

Historically, for the Japanese hard ivory from forest elephants has been the preferred material for hankos and bachis (Martin 1985; TRAFFIC International 1997). Japanese dealers continue to lobby for reopening of trade in hard ivory, and even during the CITES Conference

of the Parties 12 (COP) some clearly told us that they needed hard instead of the soft ivory of the savannah elephants. Also the control system of ivory trade in Japan still has loopholes that make it possible for a mixture of illegal ivory to come onto the market (Sakamoto 2002). For instance, the official control of business in ivory is weak and the system regulating whole tusks is not strict. In an implicating case in 2000 a board member of the Tokyo Ivory Arts and Crafts Association participated in an attempt to smuggle hard ivory into Japan. If the COPs continue to adopt legal ivory trade, even in soft ivory, the ivory market price will go down, encouraging the flow of hard ivory, which is preferable even if more expensive. This appears to be one of the reasons why during CITES the Japanese government strongly advocated on behalf of the southern African nations that want to export soft ivory.

All these factors would likely increase the illegal ivory traffic to Japan—particularly forest elephant ivory—resulting in more poaching of forest elephants. We would be able to expect that the trend corresponding to the CITES resolutions (see ‘Trend corresponding to the CITES decisions’ above) may not be accidental.

### ***Effective ways to conserve the forest elephant—MIKE programme***

The Monitoring of Illegal Killing of Elephants (MIKE) programme in the central African tropical forest area started in 1999. It helped develop and establish methods of estimating elephant populations as these were largely unknown.

The first phase of MIKE as a pilot project finished in 2000 and a report was presented (Thomas et al. 2001). However, this project was only a preliminary survey and did not extend to an assessment of the impact of ivory trade on elephant populations. Its various limitations are listed here, including a lack of historical data on population trends and distribution.

- It is almost impossible to count elephants directly in the dense tropical forest where visibility is poor. Dung counts using line transects can be used to obtain population estimates, but it is not easy to cover a huge area of tropical forest using this method. Combined methods using line transects and reces were tried but their effectiveness has not been established.
- Density estimates from only one particular period are not helpful in estimating overall density in a given area because forest elephants move long

distances each season. It is impossible to estimate elephant density without a long-term survey by seasons serving as a base.

- To carry out a continuous wide-ranging and long-term survey would require experienced personnel. Most of the local staff in the central African forest area do not yet have the skills needed for the task. It is not easy, therefore, to obtain reliable data even when there is plenty of staff.
- A weakness in the dung-counting method is that the mean decay rate of dung needs to be included in the formula. To estimate elephant density the decay rate in each area of the range being studied has to be established, since it differs depending on vegetation and other environmental factors. It then becomes possible to show the density in each area. But at the moment, the decay rates for different types of vegetation are not known.

From our knowledge of conditions in the forest, these four problems seem daunting if inevitable. MIKE is still not able to carry out the original objectives of CITES. Solving these problems would take a huge amount of money and time. The priority is that we need to find a way to stop ongoing poaching and illegal trade. The recce method is more effective, since it covers the widest range with minimum workforce to produce data on population trends. Also, concentrated patrols around marsh clearings should be a priority because historically, heavy poaching is known to happen there.

### ***International tasks for forest elephant conservation***

The first requirement is to conserve the tropical forest habitat. Protected areas should be continuously patrolled to prevent elephant poaching and ivory trafficking. It is essential that international support be maintained. Furthermore, new protected areas should be established, as far as possible in collaboration with local people. More collaboration with logging companies around the protected areas should be initiated.

In reality, as is the case in Odzala National Park, poaching and smuggling continue despite significant anti-poaching and law enforcement efforts. The fundamental reason for this is the continuing demand from ivory-consuming countries. Without stopping the demand, particularly from Japan, what can be achieved locally is limited.



Also the ivory-trade control system in Japan should be implemented more strongly because it does not function effectively in preventing illegal trade (Sakamoto 2002).

## Acknowledgements

Many thanks to the Japan Wildlife Conservation Society for funding the short survey in Odzala National Park and for discussion on conservation concepts given by the staff, particularly Prof. H. Obara and M. Sakamoto. I am deeply indebted to J-M Froment, former director of ECOFAC Odzala, for permitting me to use the original data; to G.W. Makaya, the ECOFAC statistician, for helping me to organize the data; to V. Mbolo, the Congolese MEF Odzala officer; and to local informants in Mbomo for giving me local information. Special thanks go to M. Fay and the staff of WCS Congo for giving me related information; I.J. Mokoko, the Congolese MEF Nouabalé-Ndoki officer, for providing me with information on Congolese law; J. Hart for permitting me to refer to the MIKE reports; S. Watts for reviewing the original report; F. Maisels and E. Hakizumwami for introducing me to *Pachyderm*; and H. Iiduka for giving me precise information on the shamisen, on which he is an amateur player.

## References

- Madzou, Y. C. 1999a. Situation conflictuelle des éléphants à Bomassa—un défi pour la gestion de la zone péri-phérique du Parc National Nouabalé-Ndoki, nord Congo. Brazzaville: Global Environment Facility.
- Madzou, Y. C. 1999b. Recents développement du commerce de l'ivoire au Congo après la reouverture par la CITES pour 3 pays d'Afrique australe. Megatranssect Report, WCS and NGS.
- Madzou, Y.C., et Moukassa, A. 1996. Situation de la vente de l'ivoire sculpté sur le marché de Brazzaville. WCS
- Projet Nouabalé-Ndoki, Congo. Brazzaville: Global Environment Facility.
- Martin, E.B. 1985. *The Japanese ivory industry*. WWF Japan.
- Milliken, T. 1989. Decreasing of African elephants and international ivory trade—in the decision based on the CITES. *TRAFFIC Japan Newsletter* 5 (3–4) in Japanese.
- Nishihara, T. 2000a. Report on the present state of elephant hunting and ivory trade in north-eastern part, Republic of Congo. Field study during the Megatranssect Project. Megatranssect Report, WCS and NGS.
- Nishihara, T. 2000b. Report on the present state of elephant hunting and ivory trade (2) in central northern part, Republic of Congo. Field study during the Megatranssect Project. Megatranssect Report, WCS and NGS.
- Nishihara, T. 2000c. Supplementary short report for Report on the present state of elephant hunting and ivory trade (2) in central northern part, Republic of Congo. Field study during the Megatranssect Project. Megatranssect Report, WCS and NGS.
- Nishihara, T. 2001. Report on preliminary ground survey of elephant hunting and ivory and meat trade in central northern part, Republic of Congo. Field survey during the Megatranssect Project. Megatranssect Report, WCS and NGS.
- Programme ECOFAC et Projet WWF Minkébé. 2001. Le contrôle du commerce de l'ivoire ou la mission impossible. *CANOPEE Bulletin sur l'Environnement en Afrique Centrale* No 21.
- Sakamoto, M. 2002. Black and grey—illegal ivory in Japanese markets. Report to the COP 12. Japan Wildlife Conservation Society.
- Thomas, L., Beyers, R., Hart, J., and Buckland, S. 2001. Monitoring of illegal killing of elephants. MIKE Technical Report No.1–5.. Central African Pilot Project. Draft.
- TRAFFIC International. 1997. *Still in business—the ivory trade in Asia seven years after the CITES ban*, ed. S.V. Nash. TRAFFIC Network Report, Cambridge, UK.