Demand for forest elephant ivory in Japan

Tomoaki Nishihara

Senior Technical Adviser of Operations and Protection, Wildlife Conservation Society
BP 14537, Brazzaville, Republic of Congo
email: tomowcs@gmail.com

Abstract

Japan is the only country where a strong demand for 'hard' or forest elephant ivory still exists. This demand differs from that of China, which consumes more ivory but where no preference for soft or hard ivory exists. While there is no hard evidence that ivory originating from forest elephants in Central Africa is smuggled into Japan, the question remains whether only old stock of hard ivory can be meeting the stable demand. Through investigations in ivory markets in Japan, it was found that ivory dealers there have limited knowledge of the domestic ivory-trade control system and have not applied it. Also, this control system is not sufficient to manage the legal ivory trade. These factors may facilitate the illegal importation of hard ivory into the Japanese market. We recommend that the Japanese ivory-management system be re-evaluated and improved, focusing on hard ivory stock management. In addition, Japan should develop an information-sharing system for forest elephant conservation by producing and distributing practical education materials in Japanese. These are priorities because hard ivory originates in the Central African region, where poaching pressure on forest elephants is increasing, resulting in a drastic decline in their populations.

Résumé

Le Japon est le seul pays où il existe toujours une forte demande pour l'ivoire «dur» ou l'ivoire des éléphants de forêt. Cette tendance diffère de celle de la Chine qui a une plus grande consommation d'ivoire, mais où il n'existe aucune préférence pour l'ivoire souple ou dur. Bien qu'il n'y ait pas de preuves tangibles que l'ivoire provenant des éléphants de forêt en Afrique centrale passe en contrebande au Japon, il reste la question de savoir si seulement le vieux stock d'ivoire dur pourrait répondre à la demande stable. Grâce à des enquêtes sur les marchés d'ivoire au Japon, on a constaté que les négociants d'ivoire au Japon ont une connaissance limitée du système de contrôle interne du commerce de l'ivoire et ne l'appliquent pas. En outre, ce système de contrôle ne suffit pas à gérer le commerce légal de l'ivoire. Ces facteurs peuvent faciliter l'importation illégale d'ivoire dur sur le marché japonais. En conclusion, le système de gestion de l'ivoire japonais doit être réévalué et amélioré, et l'accent mis sur la gestion des stocks d'ivoire dur. En outre, le Japon devrait mettre au point un système d'échange d'informations sur la conservation de l'éléphant de forêt, en produisant et en distribuant du matériel didactique pratique aux Japonais. Tout cela est prioritaire parce que l'ivoire dur provient d'Afrique centrale, où la pression du braconnage sur les éléphants de forêt s'accroît ce qui donne lieu à une baisse drastique de leurs populations.

Introduction

TRAFFIC—the wildlife-trade monitoring system—states that 2011 saw the largest seizures of ivory by weight since the CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) ban on ivory trade in 1989 (TRAFFIC 2011). While most of this ivory originated in Africa there is no indication of its precise origins. These seizures are related to the current high demand for ivory in Asia, particularly from China (Martin & Vigne 2011; Gabriel et al. 2012). It is highly probable that part of the seized ivory came from forest elephants (*Loxodonta africana cyclotis*) if we consider their recent population decline (Beyers et al. 2011; Bouche et al. 2011; Maisels et al. in review) and high poaching pressure for their ivory.

Historically, Japanese ivory carvers have produced most of their items from 'hard ivory' originating from

Asian elephants and from forest elephants of Central Africa (Martin 1985), which is preferred to 'soft ivory' from savannah elephants (*Loxodonta africana africana*) of eastern, western and southern Africa. The major ivory items produced in Japan are hanko (personal name seals) and musical implements, such as bachi (plectrum for the shamisen, a traditional Japanese musical instrument), preferably made of hard ivory (Vigne and Martin 2010).

However, due to the CITES ivory ban of 1989, hard ivory could not be imported to Japan, resulting in a drop in amount of its stock. With two one-off ivory sales under CITES regulations, in 1999 and in 2008, Japan acquired a quantity of soft ivory. Since the ban, more and more ivory items in Japan were therefore made from soft ivory, but most Japanese ivory dealers consider soft ivory useless for traditional carving, particularly for bachi (Nishihara 2003). Although Japanese consumer demand for hanko made of ivory has been declining since the last decade (Vigne and Martin 2010), it is clear that there is still continuous demand for ivory (Motegi 1988; Tsugawa 2004; Tanaka 2008), especially for hard ivory (Tanabe 1963) from the Central African region for bachi (Association of Japanese Actors 2000; Tanaka et al. 2009).

The major objective of this study was to examine the current status of demand for hard ivory in Japan, and to investigate knowledge about elephants and ivory as well as about the Japanese domestic management system of ivory by ivory dealers in Japan. At the same time, the Japanese ivory management system was examined, with suggestions for improving its functioning to control illegal importation and use of ivory more efficiently. This study is based mainly on descriptive information because the author was unable to collect quantitative data on hard ivory, its products and its demand due to a lack of information from Japanese authorities and bachi-related people.

Materials and methods

Investigations in internet and ordinary shops in Japan that deal in ivory products, particularly hanko and bachi, were conducted by three Japanese investigators under supervision of the author, during two periods in 2010—March–April and August–September—in Tokyo, Yamanashi Prefecture, where traditionally many ivory hanko have been produced, and in the neighbouring prefectures of Kanagawa, Saitama and Gunma. In this report, the shops selected were in this area of Japan; most internet shops are located in the western part of Japan.

The investigators posed as clients, aware that most of the shopkeepers were wary about discussing ivory issues. This sensitive reaction may be related to poor understanding of the legal sale of ivory products in Japan and the international ban on ivory trade. Table 1 shows the number of shops investigated. Also, during the period November 2009–October 2011, any information related to Japanese ivory issues was collected from books, journals, newspapers and websites.

In ordinary hanko shops, the investigators asked three categories of questions:

1. Current trends in hanko trade
- Prices of hanko made of any material including ivory
- Trends in prices, demand and supply, age class of buyers, seasonal variations and annual variations of ivory sales

2. Knowledge of elephants and ivory
- Knowledge of the geographical origin of ivory
- Knowledge of ivory in general, for instance, how it is harvested, whether ivory is regenerated after it is removed from the elephant
- Knowledge of hard and soft ivory

3. Knowledge of the legal issues of ivory
- CITES and Japanese domestic management system of ivory
- Presence of CITES certificate seal (Fig. 1)—the official seal with the CITES logo provided by the relevant Japanese ministries

One investigator carried out research on internet hanko shops by checking for any information including hanko prices.

Table 1. Shops and other sources interviewed during this investigation

Period in 2010	Ordinary hanko shops	Internet hanko shops	Shamisen shops	JWRC and TIACA
March and April	66	23	12	2
August and September	36	10	17	0
Total	102	33	29	2

JWRC – Japan Wildlife Research Center; TIACA – Tokyo Ivory Arts and Crafts Association

Figure 1. CITES certificate seal attached to ivory products in Japan with the CITES logo (about 2.5 cm x 2.5 cm), with the wording 'Certificate seal is proof that ivory products are legal based on the Law for the Conservation of Endangered Species of Wild Fauna and Flora (LCES) (from a brochure published by the Ministry of Environment and the Ministry of Economy, Trade and Industry, 2008).

For shamisen shops, one investigator posed the same questions used in hanko shops. Apart from ivory shops, one investigator visited ivory-related organizations to gather information on ivory management and legal issues. These organizations are 1) the Japan Wildlife Research Center (JWRC), the governmental organization that hosts the department of CITES, and manages and registers wildlife products under the Ministry of Environment and the Ministry of Economy, Trade and Industry, and 2) the Tokyo Ivory Arts and Crafts Association (TIACA), which has four business activities—purchasing raw ivory, holding meetings to exchange the ivory and products, advertising ivory business, and holding exhibitions for immediate ivory sale (http://www.tokyo-ivory.or.jp/englishversion/index.html).

Results

Price of hanko and current trend in the hanko market

Currently, the common material for hanko is horn of the Asian domestic water buffalo, *Bubalis bubalis*, because it is much cheaper than ivory but aesthetically pleasing and strong enough for use as hanko. Almost half of the ordinary hanko shops investigated (44 of 102 shops) explained this current trend. Titanium as hanko material is also recommended by some shops, but it is expensive and has yet to gain popularity among the Japanese. Table 2 compares maximum and minimum prices of Jitsu-in hanko (officially individually registered seal) of typical 15-mm diameter made from various materials, indicating current price trends. The greater range exists between minimum and maximum prices for hanko made of ivory and buffalo horn, but this is because of the quality differences between parts of materials. Sample numbers of hanko made with titanium were few and therefore the prices cannot be considered indicative. The minimum price of ivory hanko seems to be cheap, especially in the internet shops. One ivory dealer said that it is impossible for prices of ivory hanko in the internet shops to be so low if we see the ordinary wholesale prices, indicating that internet hanko shops use illegal ways to obtain ivory materials more cheaply because they are not well controlled.

Other current trends such as age class of buyers, seasonal variations and annual variations of ivory sales were not clearly detected during this investigation.

Table 2. Maximum and minimum prices of Jitsu-in hanko (officially individually registered seal) with typical 15-mm diameter, made from various materials as sold in ordinary and internet hanko shops

Material / type of shop	Hanko investigated (no.)	Price (JPY)	
		Minimum	Maximum
Ivory			
Ordinary	86	11,800	110,350
Internet	93	9,800	273,750
Horn of black buffalo			
Ordinary	12	9,980	46,220
Internet	41	1,680	30,450
Titanium			
Ordinary	1	15,555	15,555
Internet	6	7,600	38,750

Approximately JPY 90 = USD 1 during the investigation period

Investigation of ordinary hanko shops about knowledge of elephants and ivory

It is important to know the extent of awareness of ivory legal issues and also knowledge of elephants and ivory. This knowledge is essential for interactions between vendors and clients because with accurate information about elephants, ivory vendors can explain ivory products to clients with more transparency. It is indispensable for vendors to have this knowledge as now since the ivory ban most clients in Japan hesitate to buy any ivory products. Clients know little about elephants and ivory, and they request clear explanations from vendors. The following information was obtained from the shopkeepers:

- Professional ivory carvers can traditionally distinguish between hard and soft ivory, but more than 70% of the shops cannot, which means they do not know the difference in properties or from which species each ivory type derives.
- About two-thirds of the shops did not know the geographical origin of elephant ivory; only one-third knew that it came from Africa but even they had no specific information about areas in Africa.
- Two shopkeepers believed that elephant tusks regenerate even after they are completely removed from the elephant. Only 11% of shops knew that the tusks do not regenerate.
- One shopkeeper believed that tusks are pulled out completely from living elephants without killing them.

This information highlights the lack of knowledge about ivory in Japan. Many of the shopkeepers are not aware of the existence of hard ivory, the origin of ivory, or the fate of elephants.

Investigation of shamisen and of shops selling Japanese musical instruments about knowledge of elephants and ivory

The shamisen (Fig. 2) is one of the most popular traditional Japanese instruments, dating back more than 500 years, being used in Japanese performance arts such as Kabuki and Bugrake, both with 400 years of history (Tsugawa 2004; Tanaka et al. 2009). Bachi (Figs. 3 and 4) made from ivory started being used during the later age of the Edo period (Tanabe 1963) and became popular among professional shamisen musicians after the Meiji era, about 150 years ago. More than 60% (18 of 29) of shamisen shops

Figure 2. Shamisen, one of the most traditional and popular Japanese musical instruments, with bachi, a shamisen plectrum of ivory.

investigated mentioned this history of bachi.

People insist that hard ivory is still available in Japan from old stock acquired before the CITES ban. But the author was unable to procure information from the traders on hard ivory stocks in Japan including whether they contain large tusks. The average weight of ivory tusks, either hard or soft, in Japanese stock between 1995 and 2007 was only 12.86 kg (data from JWRC 2007); one bachi requires a large tusk weighing more than 15 kg (Fig. 5), ideally without any cracks. During the study period, the author found bachi made with tusk fragments because they could not make a whole bachi from cracked ivory, but the vendor explained that this was not ideal for professional users.

A bachi made of hard ivory provides better and softer sound; bachi made of soft ivory does not produce good sound, according to Japanese shamisen players from two different blogs. Bachi made of alternative materials such as synthetic resin have been used but

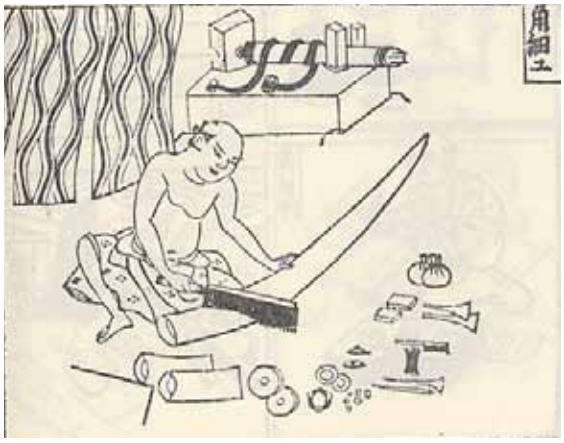

Figure 3. Ivory art technician, Kyoto, Japan, during the Edo period. The craftsman is cutting the ivory tusk into pieces; the shamisen bachi (plectrum) are at the lower right. Source: Jin Rin Kin Mou Zui (in Japanese)

Figure 4. Bachi, shamisen plectrum, made of wood; the size of bachi varies but the ordinary length is about 25 cm, maximum width 15 cm and maximum thickness 2.5 cm.

more research needs to be done, particularly with regard to the elasticity of the bachi edge. The future for traditional music in Japan, particularly music of high-quality sound, is not favourable due to the shortage of materials such as hard ivory (Tanaka et al. 2009).

A stable demand for bachi exists from professional shamisen musicians because they change bachi regularly. Musicians vary widely as to how often they change ivory bachi—some once per year while others only every 10 years. Musicians use wooden bachi for practising and ivory bachi only for public performances, although that too varies among musicians. However, one millimetre of wear from the bachi, which touches the strings of the shamisen, significantly reduces sound quality (Tanaka 2008) and musicians need to replace it.

In Tokyo, 29 shops selling shamisen and other Japanese musical instruments were surveyed. The findings:

- More than 60% of the shops surveyed knew the difference between hard and soft ivory. Also, about half the shops stated that hard ivory is the only material useful for bachi.
- Most of the shops did not know the geographical origin of elephant ivory; only 20% mentioned that it came from Africa, but even they had no specific information on areas in Africa.
- Only 10% of the shops had correct information about hard ivory and its origins.

It is interesting to note that these shopkeepers were more familiar with hard ivory than were the ordinary hanko shops interviewed. This is probably linked to the exclusive use of hard ivory for bachi. General knowledge of ivory—its geographical origins, elephant sub-species and habitat—is still poor.

Evaluation of the Japanese ivory management system

Japan established its own domestic trade management system of ivory to prevent illegal ivory imports into Japan, under the Law for the Conservation of Endangered Species of Wild Fauna and Flora (JWCS 2000, 2002; Martin & Stiles 2003). The system requires that all ivory and ivory products be strictly registered at every link along the commodity chain: importers, retailers, carvers and vendors. Nevertheless, loopholes still exist.

All dealers, at whatever level in the chain, must register each ivory item using a document with a unique number. This number should enable each item to be tracked, verifying that the product comes from legal ivory. However, no computer database exists for this system, only a paper numbering system with the dealers (JWCS 2000). Thus it is almost impossible to track the origin of any particular ivory product and extremely difficult to judge its legality.

All ivory dealers in Japan are required to be authorized by the Ministry of Environment and the Ministry of Economy, Trade and Industry. An authorized certificate with dealer's number is given to each authorized ivory dealer (JWCS 2002). However, our investigations determined that the certificate papers were confirmed in fewer than half of the shops:

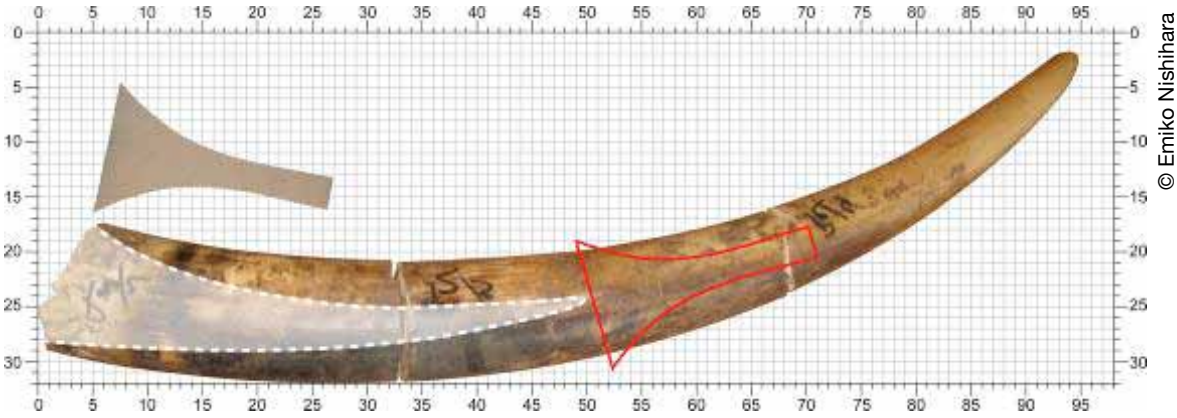

Figure 5. Comparison in size of a 15-kg tusk and a bachi. Although the tusk is long and large, it is almost impossible to make even one bachi from it because such a tusk is usually hollow at the base (as indicated in white) and the maximum diameter of solid ivory is not as wide as the maximum width of bachi (outlined in red).

38% of the ordinary hanko shops (39 of 102 shops) and 45% of the internet hanko shops (15 of 33 shops). This indicates that more than half of the shops are operating illegally without authorization certificates for dealing in ivory.

Relevant ministries have recommended that ivory shops put a CITES seal (the official seal with the CITES logo provided by these Japanese ministries, Fig. 1) on each ivory product sold, with a unique number on the seal to assure clients that the item is legal, each number being registered (JWCS 2000, 2002). However, putting a seal on each ivory product is only a recommendation from the Japanese government, not an obligation. Our investigation indicated that 22% (22 of 102 shops) of ordinary hanko shops did not use seals or understand the system of seals; 73% (24 of 33 shops) of internet hanko shops showed no evidence of using seals; about 80% (23 of 29 shops) of shamisen shops either did not use seals or did not register the numbers that were on the seals. These findings show that shops poorly manage their ivory products, a trend more pronounced in internet hanko shops and shamisen shops than in ordinary hanko shops. An ordinary hanko shop uses the CITES seals but uses the same number on every piece, illegally duplicating the seals and thus making them useless as a proper register.

The department of CITES management at JWRC handles the administration related to ivory registration and certification of ivory products in Japan. Even if Japanese citizens buy (or are given) illegal ivory in Japan, all they need to do is to register such items by using the given format and sending the form to JWRC. Once certified, the items become legal. During this investigation, one of the officials in JWRC admitted that the system is vague as to how non-registered ivory gains legal certification.

Ivory dealers should know about the CITES regulations in order to manage their ivory business legally. However, their knowledge is poor (JWCS 2000). For instance, we found that less than 20% of ordinary hanko shops knew about CITES and the two legal one-off ivory trades under CITES regulations.

The TIACA staff said that the association is no longer powerful and effective in conducting its responsibilities of creating awareness of the domestic ivory management system and CITES regulations. Younger people are not joining the association and many ivory dealers have left due to the complicated ivory management system. One TIACA member alleged that during the one-off ivory auction in 2008 in South Africa under CITES regulation, hard ivory was found among ivory pieces available in the auction. Japanese dealers selectively bought this ivory, although hard ivory should not have been included in the sale because there are no forest elephants living in southern Africa.

When asked for information, the ministry could not give clear answers regarding 1) the lack of a computer database to manage commodity chains of ivory deals and to easily identify the origin of each ivory product, 2) how to control internet shops, where most dealers do not respect ivory management procedures, 3) why some ivory dealers do not correctly use CITES certificate seals on each ivory product or even have the proper authorization to do so, 4) the current weak

legal ivory register system, and 5) the lack of stock quantity and a specific system for managing hard ivory in spite of the strong demand for it in Japan.

There are no strict controls at customs checks in any of the Japanese international airports. For example, Japanese travellers can easily transport pieces of ivory in their luggage. Recently, it was found that some Japanese tourists were bringing in uncarved ivory hanko materials, especially from other Asian countries like China, and having their names carved on them in ordinary hanko shops (JWCS 2000). Four cases were found during this investigation period. These incidents are examples of illegal importation of ivory into Japan and there is no effective system to control this activity. Also, at the Tokyo seaport customs control, it was found that shipping imports controls are lax with no system for determining the geographical origin of confiscated items or to prevent confiscated items from entering local markets.

Discussion

Recommendations to improve the Japanese ivory management system

In Japan the quantity of musical instrument parts made of ivory is small (Vigne and Martin 2010). More importantly, the focus should be on the size of the tusks necessary to make a complete bachi. In the past, as many as four bachi could be made from large tusks (Martin 1985) weighing at least 15 kg (see Fig. 5 caption). However, data from tusks confiscated by guard patrols in the Republic of Congo (Domingos Dos Santos, pers. comm. 2012) show that tusks weighing more than 15 kg are rare (only one pair weighing 21 kg and two pairs weighing 18 kg among 44 pairs). Tusks from current ivory stocks in Japan weigh on average 12 kg, which is not adequate for even one bachi. If musicians need 100 new bachi during the course of a year, at least 50 forest elephant tusks without cracks and weighing more than 15 kg would be needed, but data from both the field and the Japanese ivory stocks show that it is difficult to meet this demand.

The current Japanese ivory stock management system has no means of quantifying the amount of forest elephant ivory; no differentiation is made between savannah and forest elephants. This is because CITES does not differentiate between the two species of elephants, savannah and forest, although elephants in general are classified as *vulnerable* under IUCN. However, recent morphological and genetic studies insist on the distinction that these two so-called sub-species are actually two independent species (Roca et al. 2001, 2007; IUCN/SSC 2002; Rohland et al. 2010; Ishida et al. 2011a, 2011b). This distinction is important because forest elephant populations have drastically declined in number due to poaching (Beyers et al. 2011; Bouche et al. 2011; Maisels et al. in review). There is no hard evidence that ivory originating from forest elephants in Central Africa is smuggled into Japan. However, the question remains whether only old stock of hard ivory can still maintain the demand for bachi that requires large tusks of hard ivory originating from forest elephants in Central Africa. At the least, a system for monitoring stock quantity and a specific management system for hard ivory should be put in place to ascertain the demand for hard ivory in Japan.

The following measures should be improved as mentioned above: 1) a computer database should be created to manage commodity chains of ivory deals and to easily identify the origin of ivory of each ivory product, 2) clear strategies to control internet shops for ivory products, where presently most dealers do not respect ivory management procedures, 3) the regulation needs to be enforced that requires ivory dealers to be authorized and obliges them to use correctly a CITES certificate seal on each ivory product, 4) the current legal ivory register system needs to be improved.

In addition, the relevant ministries should take a strong initiative to create awareness among ivory dealers of the domestic ivory management system and the CITES regulations. At the same time, poor knowledge of elephants and ivory, such as the origin of ivory and the difference between hard and soft ivory, causes a lack of transparency between vendors and clients; more awareness should be created and information disseminated about elephants and ivory.

Japanese customs officials should also establish a system to identify through DNA analysis illegal ivory that was confiscated, in order to determine the quantity of hard ivory illegally destined for Japan from Central Africa.

More investigations needed on hard ivory and its products in Japan

We need additional intensive investigations to learn more about hard ivory and its products in Japan,

especially quantitative data on products. Since bachi is the most numerous item made from hard ivory, it is the most important target to investigate, as the demand for hanko made from ivory has declined. A freelance Japanese journalist, a colleague of the author familiar with Japanese traditional performances such as Kabuki, will conduct interviews and dialogues with staff and performers in the next phase of our study. These participants will range from scholars with expertise in this domain, major managers of performance groups including shamisen players, stage hands and ivory dealers offering bachi to shamisen players. The results will help evaluate the future of traditional and professional demand for hard ivory bachi in Japan. The following questions will be asked:

- Who and how many shamisen players need bachi made of hard ivory?
- How many hard ivory tusks of what size are used annually in making bachi?
- What is the existing stock quantity of hard ivory in Japan available for bachi?
- How often do shamisen players replace ivory bachi with new ones, especially after cracking the tips?
- What is the commodity chain from ivory dealers to bachi makers to musicians?
- Are there alternative materials that would suffice in making bachi?

Performers and staff are proud of their traditional jobs and performances and remain in an isolated setting with little outside communication. They are likely unaware of the status of wildlife in Central Africa or the role of the ivory trade. Given that ivory-made bachi are essential to their performances, discussions will revolve around the theme of how to find a balance between traditional Japanese cultural values and biodiversity conservation. The initial meeting will gather information to determine the existing knowledge of these performers and their use of ivory, and introduce them to forest elephants and their conservation status. The second meeting will be a follow-up with the same group to gauge how views and practices of staff have changed and to focus more on conservation issues. These meetings will use educational materials (see below).

More awareness needed in Japan on elephant conservation

Traditionally, Japan has a culture that respects nature and wildlife. The Japanese enjoy seasonal displays of spring blossoms, summer green forests, autumn leaves and winter landscapes. They eat little wild bush meat. These customs and appreciation of nature and wildlife are expressed in Japanese traditional poems (waka or haiku) and in Japanese folklore where many wild animals appear as friendly neighbours. The Japanese people also enjoy imitating nature—gardening, flower arrangement, bonsai, etc.

Because of this traditional Japanese concept of nature and wildlife, it can be said that historically the Japanese have a good sense of nature and wildlife conservation in Japan. However, these trends have almost no relationship with the fact that Japanese people do not fully understand the importance of elephant conservation. Indeed, the Japanese have been using ivory without a conservation concept. This is mainly because the qualities of ivory—its colour, durability, absorption properties and hardness—allow it to be carved into detail. It is also partly related to particular Japanese Shinto spirits, which encourage using natural materials such as ivory as they are the best nature spirits (Motegi 1988; Takeda 2010). The demand for ivory for hanko production is currently declining, because of the psychological pressure of the ivory ban and also simply because the younger generation is losing interest in luxury ivory products (Vigne and Martin 2010), and not because the Japanese comprehend global conservation.

The relationship between traditional culture in Japan and ivory use is also vague. The use of hanko to identify any documents needing certification was widespread in the Edo era, more than 300 years ago. Originally, major materials for hanko were stones of clear crystals (http://www.rokugo.com). Hanko culture and carving techniques are traditional with a long history, but not for hanko made of ivory, a practice that came into fashion just after World War II. Shamisen and bachi are also part of traditional culture but not bachi made of ivory. Shamisen dates back more than 500 years, and this instrument has been used in well-known Japanese performances with 400 years of history. But bachi made of ivory became popular only after the Meiji era, about 150 years ago. Thus, we suggest that the Japanese people should be taught to understand that using ivory is not part of traditional culture but is used for technical reasons.

In Japan, one urgent task is to establish an information-sharing mechanism on wildlife conservation, particularly on issues outside Japan. The Japanese need to understand in the context of

global biodiversity conservation the adverse effects of using wildlife products. In Japan, there is neither much opportunity nor material from which to learn. Especially, little information is available about the African tropical forest and its conservation status, including about forest elephants, their ecology and the threats to their existence.

It is essential to create educational materials for use in Japan aimed at many and varied target groups: schools, universities, zoos, non-government organizations (NGOs), businesses involved in corporate social responsibility, ecotourism sectors, ivory dealers, traditional artists such as Kabuki actors and shamisen players, ministries, development people, and also for the internet. The author initiated a project in April 2012 with a Japanese NGO and a professional Japanese educator in biodiversity conservation who visited the Central African region to make conservation education materials under the author's supervision. These materials will be distributed widely to the Japanese public. Also, field training sessions for young Japanese in the Central African forest area, an area of the world unfamiliar to most Japanese, should be organized. These field trainees who are interested in careers in conservation will become not only future field conservationists but also strong messengers spreading the global conservation ethic to the Japanese. The author is in the ideal position to initiate this action, as the only Japanese who has been working in Central African conservation under the Wildlife Conservation Society (WCS) for more than two decades.

China's ivory demand compared with that of Japan

After the CITES ban of 1989, Japan was allowed a one-off ivory trade from southern African nations in 1999 under CITES regulations. A second similar shipment was allowed in 2008 for both Japan and China. China has more than 1,800 years of history using ivory. The demand for ivory in China is growing because it has a population of more than a billion people, and growing middle and upper classes that buy ivory. At the same time it should be noted that currently more and more Chinese people in Africa are buying raw tusks and ivory products and are linked to illegal smuggling operations. This situation has resulted in serious poaching pressure on elephants and the illicit trade of ivory everywhere, particularly between Africa and China (Gabriel et al. 2012).

Such Chinese demands need to be expressed in relation to Japan's demand in order to compare and contrast the trends of the two countries. In the past the Chinese made personal seals out of ivory, but the current trend is mostly to use ivory in crafts and accessories (Gabriel et al. 2012), using any quality of ivory including cracked portions of tusks (Gendai Inshou 2009). This is related to the current Chinese boom of using mammoth tusks, most of which are cracked (Martin & Vigne 2011) and are considered of lower quality by Japanese ivory dealers. Also, the Chinese do not differentiate between hard and soft ivory (Yan Xie, pers. comm. 2010**)**. Japan bought expensive hard ivory at the CITES ivory auction in 2008 without competition from Chinese buyers, who bought the cheaper, softer ivory from savannah elephants, including cracked tusks. This indicates that Japan has a specific demand for hard and non-cracked ivory.

Conclusions

- Japan is the only country in the world where a strong demand for hard ivory, originating from forest elephants in Central Africa region, still exists.
- Though there are no quantitative data, currently most of the demand for hard ivory in Japan is for bachi, used in playing the Japanese traditional musical instrument, the shamisen, with a decline in ivory-made hanko.
- One bachi requires one non-cracked complete tusk of more than 15 kg, and Japanese shamisen players need to replace bachi once the edge is cracked.
- We need to determine if old stocks of hard ivory are available to match the demand for bachi, which require a large tusk for each piece.
- Most Japanese ivory dealers have insufficient knowledge of the domestic management system for ivory, CITES regulations, and general information about elephants and ivory, which contributes to illegal ivory imports into Japan.
- It is recommended that the current Japanese management system for ivory be improved, especially to enforce control of hard ivory, for which there is great demand.
- More investigations on the use of hard ivory, especially for bachi, are planned to get more quantitative data.
- As traditional Japanese culture appreciates nature

and wildlife, it is important to produce educational materials on global biodiversity conservation that will make the Japanese public aware of the conservation issues concerning elephants.
- Japan and China confront different challenges regarding the potential for illegal ivory to come into their countries and their responsibility in a large part for future elephant conservation.

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