

# Bear gallbladder trade issues and a framework for bear management in Japan

Tsutomu Mano<sup>1,3</sup> and Nobuo Ishii<sup>2</sup>

<sup>1</sup>Hokkaido Institute of Environmental Sciences, Kita-19 Nishi-12 Kita-ku, Sapporo, Hokkaido 060-0819, Japan

<sup>2</sup>Tokyo Woman's Christian University, 2-6-1 Zempukuji, Suginami-ku, Tokyo 167-8585, Japan

**Abstract:** International trade in bears and their parts is regulated under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) because of the negative effect of gallbladder trade on bear populations. Although a significant number of bear gallbladders seems to come from the roughly 2,000 individuals killed annually as game and nuisance of the 2 species of bears (*Ursus thibetanus* and *U. arctos*) in Japan, information about the trade and usage remains obscure due to the lack of a system to regulate trade in bear parts such as gallbladders and meat. Most Japanese bear populations are considered to be at a sufficient level to sustain hunting if well-managed; however, nuisance bear control kills are not properly conducted due to inadequate management systems and regulations. Governmental organizations have not participated directly in nuisance bear control but depend on private hunters in exchange for allowing them to keep bear parts from nuisance kills. However, it will become difficult to continue depending on private hunters due to their aging and the decline in their numbers. This situation will require a new nuisance bear management system. We outline a framework for a management system for the domestic trade in gall derived from wild bears in Japan. Such a system would use the profits from bear gall trade to partially cover the cost of bear management activities, including damage prevention.

**Key words:** Asiatic black bear, bear gallbladder, brown bear, CITES, community-based management, sustainable use, Ursidae, *Ursus arctos*, *Ursus thibetanus*, wildlife trade

*Ursus* 19(2):122–129 (2008)

There are various opinions regarding the relationship between wildlife trade and conservation. One of the greatest points at issue is whether legal trade in wildlife with high economic value will inevitably lead to unsustainable legal and illegal harvesting, or whether such trade will benefit conservation if profit from the trade is used to cover management costs. International ivory trade is a typical example of such a debate (Barbier et al. 1990).

Bear bile from gallbladders is valued as a traditional medicine, particularly in Asian countries. However, due to its high value, indiscriminate or illegal harvest of bears occurs in many countries, and the trade in bear parts has been recognized as an international conservation issue (Servheen 1999). Consequently all bear species are listed in Appendices of CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora).

In Japan, both Asiatic black (*Ursus thibetanus*) and brown bears (*U. arctos*) are taken both as game

animals and through nuisance-related killing due to conflicts with people. Although most Japanese bear populations are not endangered (Ministry of the Environment 2002a) and considered to be at sufficient levels for sustainable sport hunting if properly managed, there is concern that nuisance kills may be unsustainable in some areas due to inadequate efforts at damage prevention. One issue related to this situation is that domestic trade in bear parts, including bear gall derived from wild individuals, is not fully regulated by law.

Our objective is to review the necessity of proper management of trade in bear parts in Japan and to suggest a framework of how such management might emerge.

## Bear population management in Japan

Both brown bears and Asiatic black bears are game animals in Japan subject to the hunting regulations of the National Wildlife Protection and

<sup>3</sup>mano@hokkaido-ies.go.jp

Hunting Law. The hunting season for brown bears is October 1–January 31 and for black bears is November 15–February 15. Registered hunters are not limited by the number of bears and other game animals they can kill during the season (Kusakari and Mano 2006).

In Japan bears are considered pests in most communities because of danger to people and damage to crop and cattle, and a bear appearance around residential areas or crop fields immediately results in a prophylactic control kill (Hazumi 2006, Mano 2006). The mean annual kill during 1996–2004 was 1,939 Asiatic black and 368 brown bears, and about 70% of these were control (nuisance) kills (Ministry of the Environment 2007).

In Japan, with the exception of a few regions, very few public servants manage bears, including nuisance control. Instead, control kills are usually carried out by private hunters at the request of local governments. The differentiation between the nuisance control, which should be a public activity, and sport hunting, a private one, is ambiguous. Moreover, it is difficult to regulate the sale of bear gall because it is considered a reward to the hunters who perform nuisance control and are not sufficiently paid for their contribution. This scheme may invite unnecessary control kills to obtain bear gall.

The Ministry of the Environment sets a Standard for Wildlife Management Plan (SWMP) every 5 years, which must be observed by prefectural governments in individual wildlife management plans. The SWMP for 2002–2007 indicated that “...nuisance control kill should be adopted when the problem is not solved in spite of other damage prevention efforts.” (Section 2, Paragraph 1, Article 4, Ministry of the Environment 2002b). Although prevention measures such as electric fencing or cutting bush on forest edges are effective (Hokkaido Institute of Environmental Sciences 2004), there has been almost no effort to introduce these measures. People in communities and local governments have been indifferent to damage prevention (Waseda and Kameyama 2006). For example, based on a survey in southwestern Hokkaido, Kameda et al. (2007) noted that only 22% of farmers having their crop fields next to bear habitat employed damage prevention measures, even though this was an area with significant bear-caused agricultural damages (Hokkaido Institute of Environmental Sciences 1994). People suffering from damage are reluctant to undertake the costs of damage prevention measures,

and there has been little public support for introduction or maintenance of damage prevention devices (Kameda and Maruyama 2003, Kameda et al. 2007).

## Bear bile supply and consumption in Japan

Japan is a consumer as well as a producer of bear parts. Japanese populations of Asiatic black bears and brown bears are listed with those of other populations in Appendices I and II of CITES, respectively. International commercial trade of the former species is prohibited, and permission by the exporting country is required to import the latter species. For consistency with the CITES listing, both species are designated as an International Endangered Species (IES) by the Japanese Law for Conservation of Endangered Species of Wild Fauna and Flora to regulate domestic trade (Wildlife Protection Policy Study Group of the Environmental Agency 1995). Under the law, persons wishing to trade in bear fur and skin products domestically are required to register the products as organ and processed goods of IES. However, there is no requirement to register other parts such as gallbladders, paws, or meat, because it is difficult to identify the species (Wildlife Protection Policy Study Group of the Environmental Agency 1995).

In Japan, there has been continuing demand for bear bile, which is described as a medicine in the Japanese pharmacopoeia. According to the Ministry of Health, Labor and Welfare (MHLW), which reports on most pharmaceutical companies that produce medicine containing bear bile, mean annual consumption of bear bile during 1996–2003 was about 90 kg; bear bile stock in the early 2000s was about 500 kg and decreasing (Ishii 2008). According to the Ministry of Finance (MF), during the 1980s over 1,000 kg of bear bile was imported yearly (mainly from China, which was not necessarily the country of origin). But after 1992, when all bear species were listed in CITES Appendices, the annual import declined to less than 10 kg at most (Japan Wildlife Research Center [JWRC] 2003, Ishii 2008). However, the true amount of bear bile imported was obscured because until 1987, the figures for bear bile included the weight of bufotoxin (a secretion of toads of genus *Bufo* and a material for medicine), because these items had not been classified in the trade records until that time (JWRC 2003, Ishii

2008). Thus, the amount of bile imported by 1987 was not clear, although the size of the bile stock held by medicinal companies can be investigated.

Statistics reported by MHLW also show that from 1996 to 2003 the pharmaceutical industry was still obtaining about 40 kg of bear bile a year. This amount was inconsistent with the level of legal import (<10 kg/yr); there are 3 possible other sources: unrecorded stock and double count, legally hunted animals in Japan, and illegal sources (Ishii 2008).

**Unrecorded stock and double count.** MHLW statistics did not include companies that had ceased producing medicine containing bear bile but might still possess stock; such companies might have sold stock to other companies producing medicine. Also, if one company currently producing medicine sold bear bile as material to another company, the amount sold was added to the amount purchased and was double-counted in the statistics (Y. Shimada, Chairman of the Working Group of CITES Issues of Federation of Pharmaceutical Manufacturers' Association of Japan [FPMAJ], Gose City, Nara Prefecture, personal communication, 2008). These defects of the methodology of MHLW survey may partly explain the inconsistency and clearly demonstrate the necessity of improving its methodology.

**Legally hunted animals in Japan.** On average about 2,000 bears total of the 2 species are killed annually as game or nuisances in Japan and may become the supply of bear parts. However, the FPMAJ, to which almost all the medicinal companies that use bear bile are affiliated (Y. Shimada, personal communication, 2007), has claimed that to avoid using illegally obtained bear bile, member companies have agreed to use only stock imported before Japan's ratification of CITES in 1980 or bear bile imported legally after 1980. FPMAJ also claimed that they use very little bile derived from Japanese wild bears because of the high price (about ¥10,000/g [\$100/g at August 2008 exchange rates]) compared to that of imported bear bile (about ¥1,000–3,000/g [\$10–30/g]), and because of the lack of an authorized and stable supply system. Although FPMAJ member companies have agreed to not use gall derived from wild bears in Japan, they have indicated that they would use domestically obtained gall if a system existed to provide it stably, with a certification of legal origin, and at a reasonable price (JWRC 2003, Y. Shimada, personal communication, 2007). They have also indicated a wish to import bear bile produced from captive individuals in China

to deal with the decline of bear bile stock (JWRC 2003). However, in our view, export of farmed bear-bile from China will not be approved in the near future under CITES.

Directed by the Ministry of the Environment, the Japan Wildlife Research Center, a non-governmental research institute, surveyed 79 hunters in 2 areas of Hokkaido and 7 areas of northern Honshu (JWRC 2003) on the use of wild-caught bears in Japan from 2001 to 2003. These hunters report that most bear gall from wild bears in Japan in recent years was consumed by hunters themselves or persons related to them. Hunters reported that they kept these products for their use because marketable gall bladders of good size and quality were rare, especially from bears taken as nuisance control during summer and autumn, and that it was difficult to find buyers in recent years (JWRC 2003). Article 24 of the Pharmaceutical Affairs Law makes it illegal to produce, store, or sell bear gall to persons or organizations unauthorized by the Ministry of Health, Labor and Welfare; this regulation may make it difficult for hunters to sell bear gall legally to Japanese pharmaceutical manufacturers. However, personal sales and use of bear gall is not considered official trade and use of medicine.

Because there is no system to monitor the usage of and trade in bear parts from wild bears in Japan, the situation is actually unclear. However, it appears that there is presently little domestic medicinal manufacturing using bear gall originating from wild-caught Japanese bears.

**Illegal sources.** There may also be illegal supply sources of bear gall, such as imports that violate CITES regulations as well as bears hunted illegally in Japan. Many seizures of bear products by Japanese customs have been reported, but most have been processed medicines rather than unprocessed bear bile (Ishihara 2005); therefore, we doubt that illegal import of raw material has been a major supply source for Japanese medicinal companies. There are cases of illegal possession and import of bear gall such as the case disclosed in 2007 (Shinano-Mainichi Shimbun 2007), and cases of illegal hunting of bears exist within Japan (Ishihara 2005). However, there has been no indication that illegal activities threaten bears at a population level in Japan. In addition, we consider it unlikely that medicinal companies would knowingly use illegal supplies because they risk losing approval to manufacture medicines if discovered.

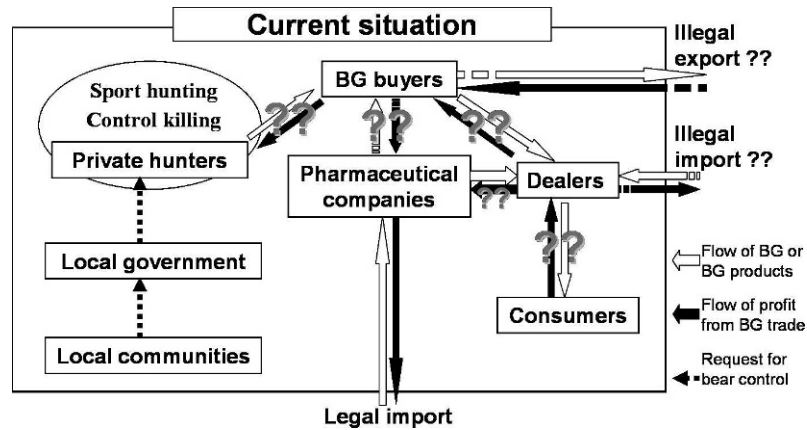


Fig. 1. Bear gall (BG) trade system in Japan, 2008.

In addition to processed medicine, bear bile is sold as raw material or powder at Chinese traditional medicine pharmacies and on Internet sites in Japan. These sales could come from illegal sources because there is no adequate system to control various market activities. To complicate the issue, products falsely claiming to be bear gall have been sold at Japanese pharmacies (Ishihara 2005). Thus, not only do we not understand the sources and trading situation of bear bile in Japan, but the system fails to assure the reliability of bear gall in manufactured medicine.

In conclusion, although there seems no major involvement of medicinal manufacturers in illegal activities, there are many unclear aspects of trade in and usage of bear gall in Japan, and introducing a system to monitor the trade and usage is needed.

In Japan, bears are killed by private hunters for sport hunting and for nuisance control (Fig. 1). The flow of domestic trade and the amount of domestic consumption of gall are unclear. There is no relationship between communities and consumers. Thus, it is important to establish a system to collect and supply legal bear gall of Japanese origin for monitoring the bear bile trade and eliminating illegal bear bile products from the domestic market.

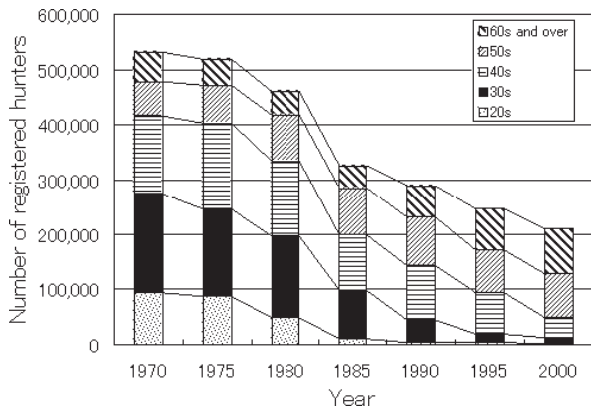
### A proposed framework for bear management and bear gall trade regulation within Japan

The current system of bear gall trade regulation makes it impossible to understand use, import, and export bear gall and may provide a loophole for bear

gall smuggling out of Japan in violation of CITES. Because of inadequate damage prevention efforts and total dependence on private hunters for bear control, it has also been difficult to regulate bear kills. At the same time, a sustainable management system must have a secure financial base. The number of private hunters is declining (Fig. 2; Ministry of the Environment 2002c); therefore, any new bear management system should not depend heavily on private hunters, especially in the near future. While a funding scheme for bear conservation is lacking, potential profits from the bear gall trade have not been returned to society but have been monopolized by buyers and hunters. We advocate securing financial resources to introduce damage prevention measures and to train and allocate public wildlife managers in bear management, including control kills. Although we are not the first to point this out (e.g., Mano 1991, Yamanaka 2000, Committee for Investigation of Wildlife Management System 2005, Ishihara 2005, Sakamoto 2006), progress has been discouragingly slow. Our suggestions below are steps toward developing a sustainable system for covering costs for bear management in Japan.

We propose establishing a public system to regulate domestic bear gall trade and consumption and to return the profit to local communities for proper bear management or damage prevention (Fig. 3). The conditions to establish the system would be as follows:

- (1) Establishment of a local organization responsible for bear management for each administrative district or population of bears, super-



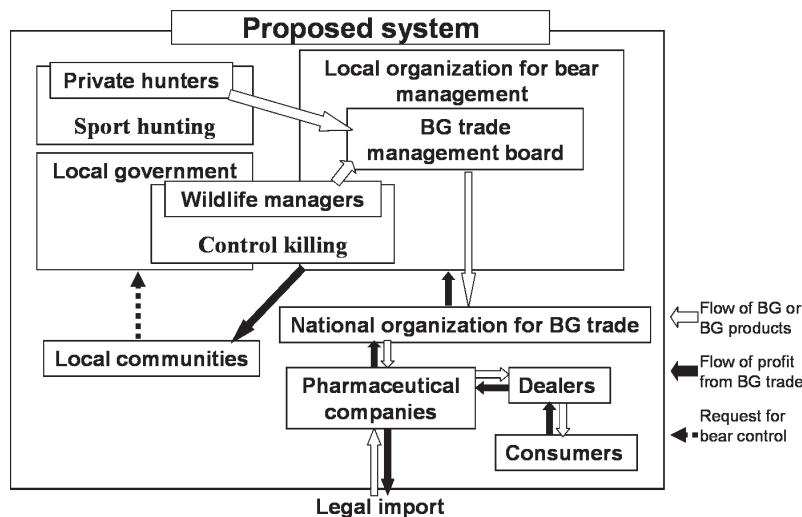
**Fig. 2. Registered hunters (for shooting and trapping) in Japan from 1970 through 2000, by age class (Ministry of the Environment 2002c).**

vised by the Ministry of the Environment. Each organization would be operated cooperatively by the local government, skilled bear hunters, wildlife biologists, hunters' associations, and conservation societies.

- (2) All bear parts from control kills and guided sport hunting would be under the control of this organization.
- (3) Establishment of a national organization to regulate bear gall trade, managed in close cooperation with the national government, local governments, wildlife specialists, conservation societies, and other interested parties.

- (4) The price of bear gall would be negotiated between the national organization and the association of pharmaceutical companies. Profit from trade in bear gall would be returned to the local organization, which would distribute profits appropriately.
- (5) Resale of raw bear gall by pharmaceutical companies would be prohibited, and only the sale of processed products would be allowed. Bear gall stock held by pharmaceutical companies would be open for inspection by the national organization.

The price of bear gall varies depending on its quality, and the best quality is from bears killed early in the spring (Taguchi 1992). More than half of the total kills of Japanese bears occur in Akita, Yamagata, Niigata, Nagano, Toyama, Ishikawa, and Fukui prefectures (Ministry of the Environment 2007), where the spring bear hunting occurs on the remaining snow. According to spring hunt records of Akita and Niigata prefectures, the percent of bears killed in the spring was 38% and 41%, respectively (Forest Policy Division of the Akita Prefectural Government 2002, Environmental Planning Division of the Niigata Prefectural Government 2008). Therefore, assuming that 40% of the total 1,000 kills in these 7 prefectures occur in spring, we can obtain 400 bears with good quality gall. If we assume that the association of pharmaceutical companies will purchase bear gall for ¥3,000/g (\$30/g) and a total of 400 kills annually of black bears (about 20g



**Fig. 3. A proposed framework for bear management and trade of gall trade in Japan.**

gall/bear), the raw annual profit would be 24 million yen (\$240,000). Also, dozens of brown bears can be hunted during spring in Hokkaido if proper management for the bear population is implemented in the future. If we assume 50 brown bear kills during spring with gall of the same size, the raw annual profit would be 3 million yen (\$30,000) for Hokkaido.

Profit from bear gall trade would not cover all costs of bear management, but it would become an indispensable financial resource to assist the budget of local governments, which are currently spent to reward private hunters conducting nuisance bear control. The national ministries concerned with bear gall regulation are the Ministry of the Environment and the Ministry of Health, Labor and Welfare.

By regulating all trade in gall derived from wild bears in Japan, we believe that illegal import or export of gall would be minimized. Additionally, under such a system, public wildlife managers would have responsibility for bear control activities, moving away from the current system of private ownership of bear gall which, in turn, rests on the principle that “an ownerless movable object is a property of the first possessor,” from Article 239 of Japanese Civil Law.

For sport hunting of bears, it may be necessary to ask hunters to abandon bear gall ownership and to be accompanied by an authorized guide. The Hokkaido government tried guided spring bear hunts during 2002–2004 to examine control measures such as hunting method regulation, setting an upper limit of total kills, and requesting samples of killed bears (Tsuruga and Mano 2008). The experiment showed that guided spring hunts would work well at the local community level. Some mountain-village communities in the Tohoku District (of northern Honshu), which have managed black bear hunts and maintained bear gall use and trade, are supportive of efforts to establish such a bear gall trade regulation system (H. Taguchi, Tohoku University of Art and Design, Yamagata, Japan, personal communication, 2006). Because it has become almost impossible to legally sell bear gall as medicine in recent years, communities may accept trade regulation if their role in better bear management is appreciated.

### **Sustainable use and conservation of bears in Japan**

Some stakeholders believe that bears should be removed from the list of game species in Japan and

that trade in bear parts, including gallbladders, should be prohibited (e.g., Sakamoto 2000, 2006). However, except for some populations, Japanese bear populations are not endangered (Ministry of the Environment 2002a) and should be able to sustain sport hunting and cope with reasonable levels of control kills. Furthermore, we believe that we must continue to kill bears in some cases if people and bears are to continue to coexist in Japan.

Sustainable use of wildlife can contribute to conservation by using profits from trade (CITES Resolution Conf. 8.3, [Rev. CoP13]. On the other hand, Rosser et al. (2000) suggested that trade restrictions and moratoria failed as conservation tactics for species used as traditional medicine, because people would not give up traditional beliefs. To succeed in species conservation, policies must be developed in partnership with users. Denial of traditional use of bear gall would not encourage local communities to conserve bears, and it is our opinion that trade and use would go underground further if prohibited, resulting in yet more regulation difficulties. Considering the current status of bear populations in Japan, a total prohibition is neither necessary nor productive for bear conservation. However, retaining the current bear management system in Japan will lead to an increasingly antagonistic attitude by local people toward bears and increasing control kills (which may endanger some bear populations). We believe that we should establish a sustainable system for co-existing with bears before such endangerment occurs.

Appropriate measures to prevent bear-related damage and deal with the dangers of people living close to bears should be promoted and enforced. The organizational framework proposed here would carry out not only bear gall trade control, but also the nuisance bear management actions.

### **Acknowledgments**

We thank H. Matsuda, H. Tsuruga, K. Kaji, S. Ono, M. Komoda, T. Akasaka, M. Asano, and Y. Kaneko for early discussion of the issue. We also thank A. Ishihara and H. Taguchi for their encouragement. We are especially obliged to Y. Shimada, Chairman of the Working Group of CITES Issues, Federation of Pharmaceutical Manufacturers' Association of Japan, for providing valuable information. C. Servheen, O. Huygens, R. Harris, and the anonymous referee provided various

critical comments on the manuscript. M. Tanigawa helped with the English. A version of this paper was presented as *Trade in bear parts* at the 17<sup>th</sup> International Conference on Bear Research and Management in Karuizawa Town, Japan, 2006.

## Literature cited

- BARBIER, E.B., J.C. BRUGESS, T.M. SWANSON, AND D. PEARCE. 1990. Elephants, economics and ivory. Earthscan, London, UK.
- COMMITTEE FOR INVESTIGATION OF WILDLIFE MANAGEMENT SYSTEM. 2005. A report on what a management system should be in Hokkaido. Committee for Investigation of Wildlife Management System in Hokkaido, Sapporo, Japan. Accessed 8 September 2006, <http://www.pref.hokkaido.lg.jp/ks/skn/choju/seidokento/kentohokokusyo> (In Japanese.)
- ENVIRONMENTAL PLANNING DIVISION OF THE NIIGATA PREFECTURAL GOVERNMENT. 2008. Black bear kill statistics in the Niigata Prefecture, Japan. Environmental Planning Division of the Niigata Prefectural Government, Niigata, Japan. (In Japanese.)
- FOREST POLICY DIVISION OF THE AKITA PREFECTURAL GOVERNMENT. 2002. Black bear conservation and management plan for Akita Prefecture. Forest Policy Division of the Akita Prefecture Government, Akita, Japan. (In Japanese.)
- HAZUMI, T. 2006. Status: Changing habitat, threatened local populations in the red data book, nationwide populations, number captured. Pages 124–125 in T. Oi and K. Yamazaki, editors. The status of Asiatic black bears in Japan. Understanding Asian bears to secure their future. Japan Bear Network, Ibaraki, Japan.
- HOKKAIDO INSTITUTE OF ENVIRONMENTAL SCIENCES. 1994. Results of a survey related to sika deer and brown bear sightings in Hokkaido. Hokkaido Institute of Environmental Sciences, Sapporo, Japan. (In Japanese.)
- . 2004. A research report of the brown bear management project for the Oshima Peninsula region (1999–2003). Hokkaido Institute of Environmental Sciences, Sapporo, Japan. (In Japanese.)
- ISHIHARA, A. 2005. Bear gall trade in Japan. TRAFFIC East Asia-Japan, Tokyo, Japan.
- ISHII, N. 2008. Management of bears and utilization of bear bile in Japan. Pages 27–36 in D. Williamson and A. Ishihara, editors. Proceedings of the 4<sup>th</sup> International Symposium on the Trade in Bear Parts. TRAFFIC East Asia, Tokyo, Japan.
- JAPAN WILDLIFE RESEARCH CENTER. 2003. Study report of the 2002 fiscal year on the trade in wildlife parts and products. Japan Wildlife Research Center, Tokyo, Japan. (In Japanese.)
- KAMEDA, M., AND H. MARUYAMA. 2003. Public attitudes and behaviors toward brown bears in the Oshima Peninsula. Memoirs of the Muroran Institute of Technology 57:65–76. (In Japanese with English abstract.)
- , ———, AND N. MAEDA. 2007. Public attitudes and behaviors toward brown bears in Assabu and Oshamambe. Memoirs of the Muroran Institute of Technology 57:1–15. (In Japanese with English abstract.)
- KUSAKARI, H., AND T. MANO. 2006. Conservation management laws and system. Page 134 in Understanding Asian bears to secure their future. Japan Bear Network, Ibaraki, Japan.
- MANO, T. 1991. Problems and brown bear management in Hokkaido. Biological Science 43:183–189. (In Japanese.)
- . 2006. Recommendations. Pages 111–121 in T. Mano, editor. The status of brown bears in Japan. Understanding Asian bears to secure their future. Japan Bear Network, Ibaraki, Japan.
- MINISTRY OF THE ENVIRONMENT. 2002a. Threatened wildlife of Japan — Red data book, 2<sup>nd</sup> edition, Volume 1. Mammalia. Japan Wildlife Research Center, Tokyo, Japan. (In Japanese.)
- . 2002b. Game statistics. Japan. The 9th Standard for Wildlife Management Plan. Ministry of the Environment, Tokyo, Japan. Notification 2 of Ministry of the Environment dated January 23, 2001, Japanese Government Gazette, Tokyo, Japan. [http://www.env.go.jp/nature/yasei/9th\\_plan.html](http://www.env.go.jp/nature/yasei/9th_plan.html)
- . 2002c. Game statistics. Ministry of the Environment, Tokyo, Japan. 25 April 2003 <http://www.sizenken.biodic.go.jp/wildbird/flash/toukei/02nenrei.html> (In Japanese.)
- . 2007. Game statistics. Japan. Ministry of the Environment, Tokyo, Japan. 25 March 2008, <http://www.sizenken.biodic.go.jp/wildbird/flash/toukei/07toukei.html> (In Japanese.)
- ROSSER, A., N. ASH, AND M. SIORA. 2000. Approaches to the conservation of species used in traditional medicines. Species 33:36–38.
- SAKAMOTO, M. 2000. Conservation and trade in bears in Japan. Japan Wildlife Conservation Society, Tokyo, Japan. (In Japanese.)
- . 2006. Illegal trade in bear gall bladder: A report on the status of bear gall bladder trade and what should be its regulation in Japan II. Japan Wildlife Conservation Society, Tokyo, Japan. (In Japanese.)
- SERVHEEN, C. 1999. The trade in bears and bear parts. Pages 33–38 in C. Servheen, S. Herrero, and B. Peyton, compilers, editors. Bears — Status survey and conservation action plan. IUCN/SSC Bear and Polar Bear Specialist Groups, IUCN, Grand, Switzerland, Cambridge, UK.
- SHINANO-MAINICHI SHIMBUN. 2007. Russians are indicted for suspected smuggling of bear gallbladders. Shinano-Mainichi Shimbun Press, 12 May 2007. (In Japanese.)

- TAGUCHI, H. 1992. An ethnological record of the life style in Miomote village, Niigata Prefecture. Rural Culture Association, Tokyo, Japan. (In Japanese.)
- TSURUGA, H., AND T. MANO. 2008. Management plan and monitoring programs for the brown bear population on Oshima Peninsula, Hokkaido. *Mammalian Science* 48:91–100. (In Japanese with English abstract.)
- WASEDA, K., AND A. KAMEYAMA. 2006. Management issues: Bear–human conflict. Pages 111–121 in T. Mano, editor. *The status of brown bears in Japan. Understanding Asian bears to secure their future.* Japan Bear Network, Ibaraki, Japan.
- WILDLIFE PROTECTION POLICY STUDY GROUP OF THE ENVIRONMENTAL AGENCY, EDITOR. 1995. Domestic trade management of endangered wild fauna and flora in Japan: An explication of Law for Conservation of Endangered Species of Wild Fauna and Flora. Chuo-Houki Press, Tokyo, Japan. (In Japanese.)
- YAMANAKA, M. 2000. Measures of bear management in Japan and United States. Pages 474–486 in S. Herrero, author, editor. *Bear attacks—their causes and avoidance.* M. Shimada and T. Ohyama, translators. Hokkaido University Press, Sapporo, Japan. (In Japanese.)

*Received: 27 April 2007*

*Accepted: 24 May 2008*

*Associate Editor: O. Huygens*