



**Proceedings of the
International Symposium on the
Trade of Bear Parts for
Medicinal Use**

**PROCEEDINGS
OF THE
INTERNATIONAL SYMPOSIUM
ON THE
TRADE OF BEAR PARTS
FOR
MEDICINAL USE**

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and
Andrea L. Gaski, Editors

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INTRODUCTION

Most of the world's eight bear species have experienced dramatic population declines in recent decades, primarily due to habitat loss and human persecution. More and more often, however, bears are being killed for their valuable body parts. In Asia and Asian communities elsewhere in the world, bears are valued for their parts--gallbladder, meat, brain, blood, bone, paw, and spinal cord for traditional medicines, and paws, meat and fat for food. Asian bear species have been particularly affected by human population and economic growth, as well as a renewal of interest in traditional foods and medicines in some countries. Most Asian bear species are considered threatened or endangered because of both habitat loss and the demand for live animals and body parts. Because the native bears in many of those countries have been hunted to precariously low levels, bear parts are believed to be increasingly imported from around the world, including North America. Of the world's eight bear species, only the giant panda of the People's Republic of China is not hunted specifically for its gallbladder.

All bears are regulated in international trade by their listing on Appendix I or II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), a treaty that includes more than 120 countries. The American black bear, not currently considered threatened, was the last species to be listed on Appendix II of CITES in 1992, primarily to aid the enforcement of CITES controls. Since that time, it has become increasingly evident that a market exists for parts from the American black bear, both within North America and abroad. To date, few reliable data have been compiled on the importance of the American black bear in the Asian medicinal trade, nor on the impacts of trade on American black bear populations.

The International Symposium on Trade of Bear Parts for Medicinal Use, the first ever of its kind, was organized to provide a forum for wildlife managers, law enforcement personnel, policy makers, and researchers to discuss levels and trends of trade of bear gallbladders, paws, and other parts, the management and conservation implications of this trade, and opportunities for improving information, regulation, and law enforcement. The symposium was held in Seattle, Washington on September 9-11, 1994 and attended by more than one hundred participants from the United States, Canada, Russia, Hong Kong, Taiwan, China, Korea, and Japan. Presentations and discussion focused on the trade, management, and conservation of the American black bear in North America, but also addressed the global context of the Asian medicinal trade and opportunities for international cooperation to record, monitor, and control the trade.

The plenary session of the symposium brought together representatives from federal wildlife agencies, experts on bear biology and trade, and medical researchers and practitioners to provide an overview of the origins, consequences, and alternatives to the global bear parts trade (see Part I). The remainder of the symposium was organized into a series of focused discussions to assess the scale and impacts of the North American trade,

improve the effectiveness of law enforcement, explore regulatory options within North America, and address the international context of trade (see Parts II-IV). Following the formal presentations, participants divided into two working groups to develop conclusions and recommendations on both the North American and international dimensions of the trade of bear parts (see Part V). The invited papers presented at the symposium and the summaries of the results of these working groups are included herein.

The International Symposium on the Trade of Bear Parts for Medicinal Use represented a successful effort to bring together very diverse interests to discuss the highly complex, controversial, and poorly understood issue of bear parts trade. TRAFFIC USA is very pleased to have been a part of this process, and commends all of the participants for their dedication, effort, and objectivity in working toward a broad consensus on key issues and priority actions to address the management and conservation implications of the trade.

Debra A. Rose
Symposium Co-Organizer
TRAFFIC USA

I. PLENARY SESSION

ASIAN DEDICATION TO THE USE OF BEAR BILE AS MEDICINE

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Abstract: Ongoing dedication among East Asians to the use of bear bile as a traditional Oriental medicine was underscored in July 1993, when the Republic of Korea took a three-year reservation on Appendix II bear species while acceding to CITES. The People's Republic of China now keeps more than 10,000 bears in captivity on bear farms for the purpose of milking their bile for medicinal use. In the Russian Far East, some scientists say the East Asian demand for bear gallbladders is decimating wild bear populations there. Using South Korea as a case study, this paper will show that Asian dedication to the use of bear gallbladder and bile as medicine remains strong, and that the resulting commercial demand is met by illegal and largely undocumented means. Documentation for these assertions come from an attitudinal survey of Korean traditional medicine doctors and from a review of international trade records. It is the conclusion of this paper that trade in bear gallbladders and bile remains a threat to bears which requires close monitoring and strict regulation.

Introduction

The East Asians' use of bear gallbladders and bile finds its roots in Chinese medicine, which has been practiced for thousands of years. A TRAFFIC study of the availability of bear gallbladder and bile in medicine stores in 11 East Asian countries showed that this practice remained steadfast and widespread in the early 1990s (Mills and Servheen 1991). Though many of the gallbladders offered for sale in Asia may be from species other than bears, a study of authenticity in Hong Kong revealed that more than a third of 81 items sold as bear bile were in fact from bears (Lau *et al.* 1994).

An ongoing dedication to and interest in the use of bear gallbladders and bile was underscored in July 1993, when the Republic of Korea acceded to CITES with a three-year reservation on Appendix II bear species. Officials of the South Korean government said that the reservation was necessary due to the importance of bear bile as a medicine to the Korean people (R.K. Chung, South Korea Ministry of Foreign Affairs, pers. comm., 1993).

The 10,000 or more bears now on bile farms in China (Y.Q. Ma, China Bear Specialist Group, pers. comm., 1994) serve as another illustration of the present day reliance on bear bile as a medicine in East Asia. Officials of China's Ministry of Forestry point to bear farming as one of their country's major conservation triumphs, in that it has been able to supply China's demand for bear bile without bringing about the extinction of its wild bear populations (J.H. Qing, PRC Ministry of Forestry, pers. comm., 1993).

Further, it seems unlikely that the demand for traditional medicines such as bear bile will diminish as modern Western influence increases throughout East Asia. Sociological research in Hong Kong has documented that, despite outward appearances of Westernization, a majority of Chinese across all demographic strata consider themselves fundamentally traditional and/or Chinese in their beliefs and behaviors (Martin 1994). Medical choices are one of several cultural choices embraced as symbols of national and cultural unity (Foster 1973).

In the Russian Far East, some biologists report that some wild bear populations there are being decimated to supply the East Asian demand for bear gallbladders and bile (pers. comm., I. Chestin, Russian Academy of Sciences, 1994). Chinese biologists themselves are warning that the demand for bear gallbladders and breeding stock for bile farms is seriously depleting China's Asiatic black bear populations (Chang and Qing 1994).

This paper will discuss the East Asian dedication to the use of bear bile as medicine, as examined through a case study of traditional medicine doctors in South Korea. It will further document the degree of difficulty in measuring the commercial market for bear gallbladders and bile that result from this apparently robust if not widespread dedication among certain East Asian groups.

Methodologies

The case study from which the following information was derived was conducted by the author in Taegu, South Korea's second largest city, during 1991. Survey questionnaires were administered in person by three Korean graduate students. A non-random sample of 50 traditional medicine doctors was chosen based on the doctors' willingness to spend the time necessary to answer the more than 30 questions included in the questionnaire. Table 1 summarizes the results of the survey.

Data documenting South Korea's legal imports of bear bile from 1970 through 1993 were obtained from the Customs Administration in Seoul. Unlike some other countries, South Korea since 1970 has recorded imports of bear bile under a separate customs category. Table 2 and Figure 1 summarizes the customs data.

South Korea's customs data were then compared with the international trade in bear gallbladders and bear bile documented in CITES annual reports from 1975 through 1992. CITES data were obtained from the World Conservation Monitoring Centre's database, via a request for data on all trade in all parts of all bear species from 1975, the year CITES first came into force, until present. Table 3 summarizes the CITES data. Complete data sets for 1993 were not yet available.

Finally, the current prices for bear gallbladder in South Korea were obtained from published price lists. Information regarding importers and manufacturers of bear bile and its derivatives came from officials within South Korea's pharmaceutical industry.

Survey Findings

All doctors surveyed said bear bile is primarily used to treat serious diseases, usually liver cancer or cirrhosis of the liver (see Table 1). While 55 percent classified bear bile as an effective health tonic, 33 percent of the total noted an aphrodisiac effect. Only 25 percent thought bear bile was an essential medicine, though 45 percent said there were illnesses for which bear bile was the only cure. A majority (65 percent) ranked bear bile as an "important though not essential" medicine.

When asked to describe primary users of bear bile as medicine, 67 percent said people who are ill, 24 percent said wealthy people and 6 percent said average health-conscious Koreans.

Only 8 percent said there was no substitute for bear bile as a medicine. However, synthetic substitutes were recommended by only 2 percent. Herbal substitutes were favored by 18 percent. The gallbladders of other animals were the most acceptable substitution, with 73 percent of respondents recommending the gallbladders of wild boar, domestic pigs cows, dogs, badgers and other species. However, 82 percent of respondents thought the bile of other species to be less effective than bear bile.

The Asiatic black bear was the species most favored by this group of Korean doctors. The polar bear and brown bear, respectively, were the next most favored species.

A majority of doctors (67 percent) preferred gallbladders from bears in China. Bears from Korea, where the Asiatic black bear is thought to have been extirpated, were noted as the best medicinal source by 14 percent. Indeed, 63 percent said all of their bear bile comes from Asia, and 26 percent obtain at least half their stock from Asia. Russian bears were favored by 8 percent of the respondents, and North American bears by 4 percent.

Of the various forms in which bear bile is sold, whole gallbladders were cited as the most effective by a majority (53 percent) of respondents. Thirty-three percent said a wholesaler is the most reliable source for authentic bear bile, while 26 percent thought farms the best source. The best proof of authenticity for 35 percent was seeing the gallbladder or bile taken from a bear's body. Another 29 percent relied on the reaction of authentic bear bile when placed in a glass of water.

A majority (75 percent said bear farming is a good idea. Nonetheless, 90 percent thought bile from farmed bears was less effective than bile from wild bears. Only 2 percent said they would pay as much for farmed bile as for bile from a wild bear. While 75 percent of the respondents found bear bile difficult to obtain, only 6 percent bought bear gallbladders themselves from hunters. Sixty-nine percent said they bought their bear bile from wholesalers, most citing the same name of a Seoul wholesaler. Another 16 percent bought bear gallbladders from acquaintances. Only 18 percent said they went abroad to purchase bear gallbladders or bile themselves.

Only 2 respondents said they used "many" bear gallbladders in a year's time. Thirty-one percent said they used "several" annually, while 43 percent use one or less.

Most respondents were reluctant to say how much they pay for gallbladders from wild bears. Those who did gave prices ranging from US\$12.50 per gram to US\$187.50 per gram. Most sold bear bile at more than US\$37.50 per gram. When asked the maximum amount they would be willing to pay for a gallbladder guaranteed to be from a wild bear, all but one said more than US\$1,000 and two went as high as US\$18,750.

Only 8 percent of respondents classified the world's bears as plentiful. Another 49 percent said they were decreasing in number, and 26 percent deemed them scarce.

South Korea's Official Imports of Bear Bile

Customs records show that South Korea imported 4,136,017 grams or roughly 4,136 kilos of bear bile (see Table 2 and Figure 1) from 1970 through 1993 (Customs Administration, Republic of Korea). That amount averages to approximately 172 kilos per year. If gallbladders weigh an average of 60 grams each, South Korea's average annual imports of bear gallbladders over the past 24 years represented the gallbladders of 2,867 bears annually.

These imports are said to have come from 22 countries which appear in customs records by name. Among those 22, Japan was by far the greatest supplier, accounting for more than 2,151 kilos. The United States was South Korea's second largest source and was noted as the origin for more than 1,249 kilos. Other major suppliers include, in descending order of quantities, India (267 kilos), Indonesia (207 kilos), Hong Kong (127 kilos) and China (60 kilos).

It is interesting to note that imports exceeded 4,000 kilos in the 1970s, but dropped by 99 percent to just under 48 kilos in the 1980s. The trend was up again in the 1990s, with a 71 percent jump, to a total of more than 74 kilos for the years 1990 through 1993.

Also of interest is the fact that prices for bear bile remained relatively low during the 1970s, dropping to an all-time recorded low of US\$113 in 1977--the same year South Korea marked its largest-ever annual imports of more than 3,815 kilos of bear bile. The following year, prices soared to an average of US\$10,592 per kilo, while imports fell back to 1,239 kilos. Prices reached their record high in 1980, when the average import price for bear bile was US\$435,045 per kilo. While this exponential jump in price may be due to an error of some sort, prices for bear bile never fell back to their pre-1978 levels. Since then, they have fluctuated along a range from US\$3,996 (in 1983) to US\$13,085 (in 1990) per kilo. The import price in 1993 averaged US\$7,337 per kilo, at which price South Korea imported a total of just under 48 kilos of bear bile.

A Comparison with CITES Records of International Trade

CITES annual reports for 1975 through 1992 (see Table 3) show only 18 kilos of bear gallbladders entering South Korea from Russia in 1991. Those 18 kilos do not appear in South Korea customs records. More importantly, the 4,063 kilos that Korean Customs reported imported from 1975 through 1992 do not appear in CITES annual reports of any of the CITES parties involved.

One reason for this omission is the fact that South Korea was not a CITES party until 1993. However, all but three of the listed exporting countries are parties to CITES. CITES did not come into force until 1980 in Japan, which means only 85 kilos of the gallbladder shipped from Japan to South Korea would have been in contravention of CITES. However, given that CITES came into force in 1976 in the USA, all 1,249 kilos of the gallbladder the USA sent to South Korea was either from American black bears (not regulated under CITES until 1991) or in contravention of the Convention. As another example, India appears to have shipped more than 260 kilos of bear bile to South Korea in violation of CITES.

Documented Demand and Prices for Bear Gallbladders and Bile in South Korea

A wholesaler of traditional medicines was selling bear gallbladder at the published price of US\$37.50 per gram in September 1993. There were three importers of bear bile registered with the Korea Pharmaceutical Traders Association in 1993 (H. Park, *in litt.*, 1993). In 1992, there were seven South Korean companies manufacturing licensed pharmaceutical products worth US\$1,876,250 annually (Korea Pharmaceutical Manufacturers Association 1993), plus thousands of traditional doctors and pharmacies across South Korea potentially prescribing handmade medicines containing bear bile (Ministry of Health and Social Affairs).

Figure 2 compares South Korea's reported bear bile import prices to reported import quantities from 1971 to 1993.

Conclusions

The results of the survey of doctors in South Korea document that bear gallbladders and bile are an important source of traditional medicines to treat life-threatening diseases. Bear bile is not a trivial medicine nor one easily replaced. These results also show that gallbladders and bile from wild bears are more highly prized than those from farmed bears or other species, both wild and domestic. Despite the wide availability of synthesized bear bile (or ursodeoxycholic acid) in South Korea, this group of traditional doctors clearly does not favor man-made alternatives. The relative scarcity of bears in the wild does not deter dedication to bear bile as a medicine.

Asian bear species, which are among the most threatened of the world's eight bear species, are preferred among these traditional doctors. While most respondents did not use large quantities of bear bile annually, most said they obtained half or all of their bear bile from Asia. Several were willing to pay prices that would provide high incentive to poachers in Asian countries with low per capita GNPs, but would also make poaching of interest to hunters in wealthier countries.

The fact that most respondents obtain their bear gallbladders from one particular wholesaler in Seoul rather than shopping abroad for their supplies indicates that importation or at least distribution of stocks is largely centralized. This indicates that regulation would be relatively easy to put in place under the existing commercial infrastructure. Surveying South Korean wholesalers would provide better insight into international networks that feed bear bile into the South Korean market.

To assume that CITES will track the international trade in bear gallbladders and bile and provide ample warning of an unsustainable commercial demand clearly could prove fatal to certain vulnerable bear populations, especially those in Asia. If 4,136 kilos of bear bile from at least 22 different countries were sent to South Korea without being reported to CITES over the past 19 years, one must assume an active and lucrative black market exists, connected by trade networks around the world. Is South Korea the only importer of such quantities of bear bile? Are there other nations with equal or greater annual appetites for bear bile? These questions must be answered if the world's wild bear populations are to be managed responsibly.

Recommendations

More in-depth monitoring of the international trade in bear gallbladders and bile should be undertaken so as to track the commerce worldwide. To this end, traders in bear gallbladders and bile should be encouraged to utilize the CITES infrastructure.

In places such as South Korea, for instance, traders already assume that the trade in bear gallbladders and bile is illegal there due to their country's recent accession to CITES. In other countries, Asians have been caught trying to smuggle out gallbladders that could have been exported legally with a CITES permit. In some ways, the CITES bureaucracy intimidates traders and encourages smuggling via personal luggage and other means. The end result may not be decimation of North American bear populations, but documenting a sustainable take is as important as documenting an unsustainable take where wildlife resources are concerned.

The bear trade offers wildlife conservation officials a chance at avoiding the extinction scenario facing the tiger today. Had the trade in tiger bones for medicine been documented while there were still robust tiger populations and no trade bans in place, one presumes that the threat now posed by the bone trade would not have taken conservation officials by surprise in India during what may well be the tiger's eleventh hour worldwide.

The scenario the bears of the world face today is not so different than that of the tiger. The use of tiger bone as medicine originated in China millennia ago. China eventually killed all but a few of its tigers due to habitat destruction, pest control, trophy hunting and supplying the pharmaceutical industry with bones for rheumatism medicine. One day China found itself with too few tigers to support its internal medicine demands. Hence, Chinese buyers began venturing to other tiger range states to supply their country's bone needs. In March 1994, 11 of 14 tiger range states--minus China--came together in Delhi, India, at the Global Tiger Forum to proclaim the bone trade the foremost threat to the viability of their tiger populations.

Similarly, bears have been depleted in China due to habitat destruction, pest control, trophy hunting and to the high demand for bear bile as a medicine. China's wild bear populations became so depleted that the Chinese government mandated that bears be farmed for their bile. Meanwhile, wild bears in South Korea were nearing extinction about the time law enforcement personnel in North America began noticing advertisements for bear gallbladder in U.S. newspapers (D. Patterson, U.S. Fish & Wildlife Service Law Enforcement Division, pers. comm., 1991).

Stricter regulation of the trade in bear gallbladders while North American and Eastern European bears are still plentiful will take pressure off depleted Asian populations by preventing laundering. Encouraging legal, documented trade in Appendix II bear species would allow volumes of trade to be quantified to ensure that such trade remains

sustainable. In addition, promoting legal trade should bring down prices to a level that will not encourage poaching solely for economic gain. Ultimately, such measures will make law enforcement easier by decreasing poaching and smuggling.

While the term "limited legal trade" is controversial in conservation circles, Appendix II of CITES is designed to allow limited legal trade. Encouraging *documented* legal trade in bear gallbladders and bile will require conservation officials and nongovernmental organizations to work with traditional medicine traders as well as CITES management authorities worldwide to familiarize them with procedures they will need to follow in order to conduct commercial trade of Appendix II species. If possible, such procedures should be streamlined and permits entered into a worldwide database immediately. Governments around the world also should be encouraged to add specific categories for bear gallbladders, bear bile and bear-bile derivatives to their customs records.

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TABLE 1. RESULTS OF TRADITIONAL DOCTORS SURVEY IN SOUTH KOREA

Percent who use bear bile to treat serious diseases:	100%
Percent who feel bear bile is <i>very</i> effective in treating illness:	75%
Percent who say there are illnesses that <i>only</i> bear bile can cure:	45%
Percent who recommend synthetic substitutes:	2%
Percent who recommend bile from other animals as a substitute:	73%
Percent who think bile of other animals is less effective than bear bile:	82%
Species preferred by the majority:	Asiatic black bear
Preferred country of origin:	China
Preferred form of bear bile:	Whole gall bladder
Percent who think farmed bile is less effective than bile from wild bears:	90%
Best source for authentic bear bile:	Wholesalers
Best proof of authenticity:	See the gall bladder taken from a bear
Percent who find bear bile difficult to obtain:	75%
Percent who obtain most of their bear bile from Asia:	63%
Percent of patients using bear bile who are very sick:	67%
Maximum willing to pay for a wild bear gall bladder:	US\$18,750
Percent who feel bear bile is important or essential medicine:	92%

TABLE 2.

SOUTH KOREA'S TOTAL BEAR BILE IMPORTS BY COUNTRY AND DECADE

Country	1970s	1980s	1990-1993	Total Grams
<i>Bahrain</i>	95	0	0	95
<i>Brazil</i>	0	3	0	3
<i>Canada</i>	684	1,009	0	1,693
<i>China</i>	916	1,015	58,652	60,583
<i>Hong Kong</i>	122,238	5,007	0	127,245
<i>India</i>	267,289	0	0	267,289
<i>Indonesia</i>	206,172	1,002	0	207,174
<i>Iran</i>	269	0	0	269
<i>Italy</i>	0	0	550	550
<i>Japan</i>	2,143,239	7,709	850	2,151,798
<i>Kuwait</i>	113	0	0	113
<i>Malaysia</i>	0	32	0	32
<i>Nepal</i>	108	6,000	4,400	10,508
<i>Pakistan</i>	0	0	0	0
<i>Russia</i>	0	0	1,780	1,780
<i>Singapore</i>	654	0	550	1,204
<i>Saudi Arabia</i>	201	103	0	304
<i>Taiwan</i>	0	17,000	2,000	19,000
<i>Thailand</i>	26,520	0	0	26,520
<i>UAE</i>	0	1	0	1
<i>USA</i>	1,244,545	4,843	0	1,249,388
<i>Vietnam</i>	4,668	0	0	4,668
<i>Others</i>	0	0	5,800	5,800
Total Grams	4,017,711	43,724	74,582	4,136,017

TABLE 3.

INTERNATIONAL TRADE IN BEAR GALL BLADDER AND BILE REPORTED TO CITES						
1975-1992						
Year	Gall Bladders	Derivatives	Species	Status	Port of Entry	Exporter
1975	0	0				
1976	0	0				
1977	0	0				
1978	0	0				
1979	0	0				
1980	0	0				
1981	0	0				
1982	0	0				
1983	0	6 kg	Asiatic black	T	S. Korea	Japan
	0	4000 units	Asiatic black	T	USA	Japan
1984	0	1 unit	Asiatic black		Russia	Japan
	0	1 unit	Brown		USA	Canada
1985	0	0				
1986	0	0				
1987	0	0				
1988	0	27,000 units	Ursus spp.	I	USA	Hong Kong
1989	0	4,320 units	Ursus spp.	T	USA	Hong Kong
1990	0	2 units	Sun	I, U	USA	Lao PDR
	0	25 units	Asiatic black	I, W	USA	XX
	0	1,200 units	Ursus spp.	I, W	USA	Hong Kong
	0	36 units	Ursus spp.	I, U	USA	Hong Kong
	0	539 units	Ursus spp.	I, U	USA	S. Korea
	0	2 units	Ursus spp.	I, W	USA	S. Korea
	0	2 units	Ursus spp.	I, U	USA	Singapore
1991	0	500 cartons	Asiatic black	T	Hong Kong	China
	0	1 unit	Asiatic black	I, W	USA	China
	0	1 unit	Ursus spp.	I, W	USA	S. Korea
	0	8 units	Ursus spp.	I, U	USA	S. Korea
	0	3 units	Ursus spp.	I, U	USA	S. Korea
	0	146 units	Ursus spp.	I, U	USA	XX
	2 units	0	Am. black	T, W	China	Canada
	172 units	0	Am. black	T, W	Japan	Canada
	14 units	0	Am. black	T, W	Japan	Canada
	1 unit	0	Am. black	E, W	USA	Canada
	0	250 cartons	Brown	T	Hong Kong	China
	0	1 unit	Brown	I, W	USA	China
	18 kg	0	Brown	T	S. Korea	Russia
	1,289 kg	0	Brown	T	Singapore	Russia
	1 unit	0	Brown	H, W	USA	Canada
	0	12 units	Am. black	U	USA	Canada
1992	0	500 boxes	Brown	T, R	Hong Kong	Canada
	0	5 kg	Brown	T, R	Singapore	China
Key:						
T = Commercial						
I = Confiscated or seized specimens						
U = Unknown source						
W = Wild caught						
E = Educational						
H = Hunting trophy						
R = From ranching operation						
Source: CITES Annual Reports						

FIGURE 1.

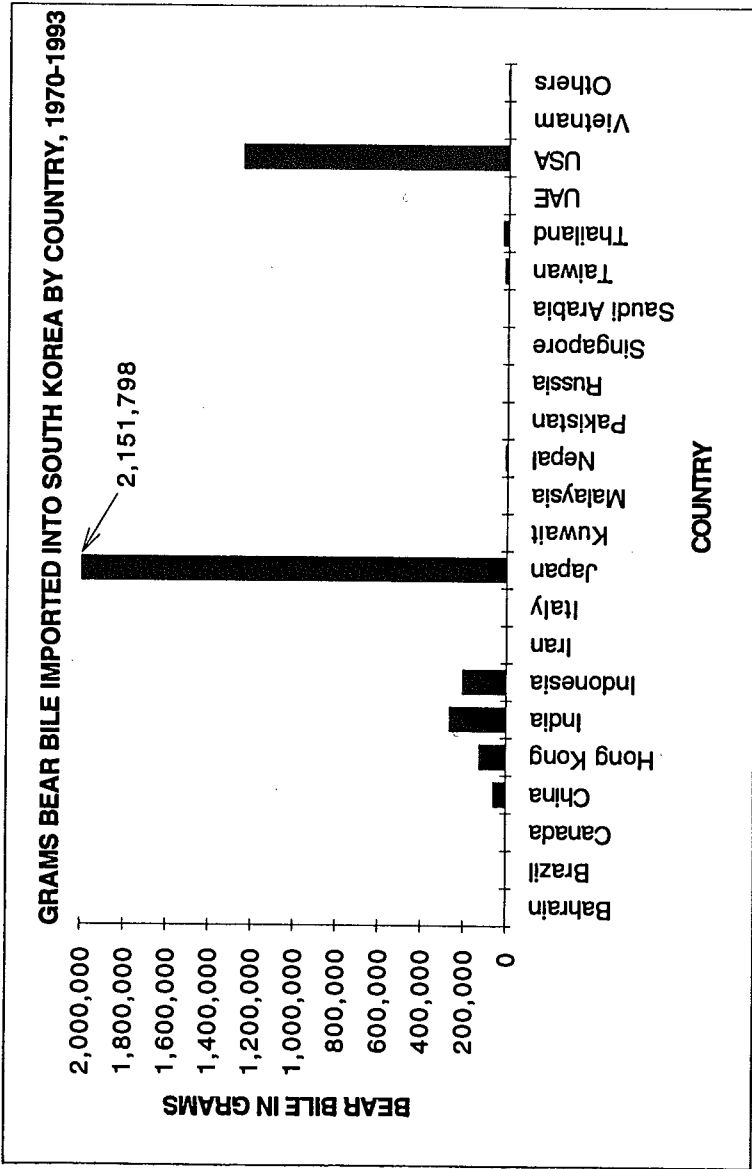
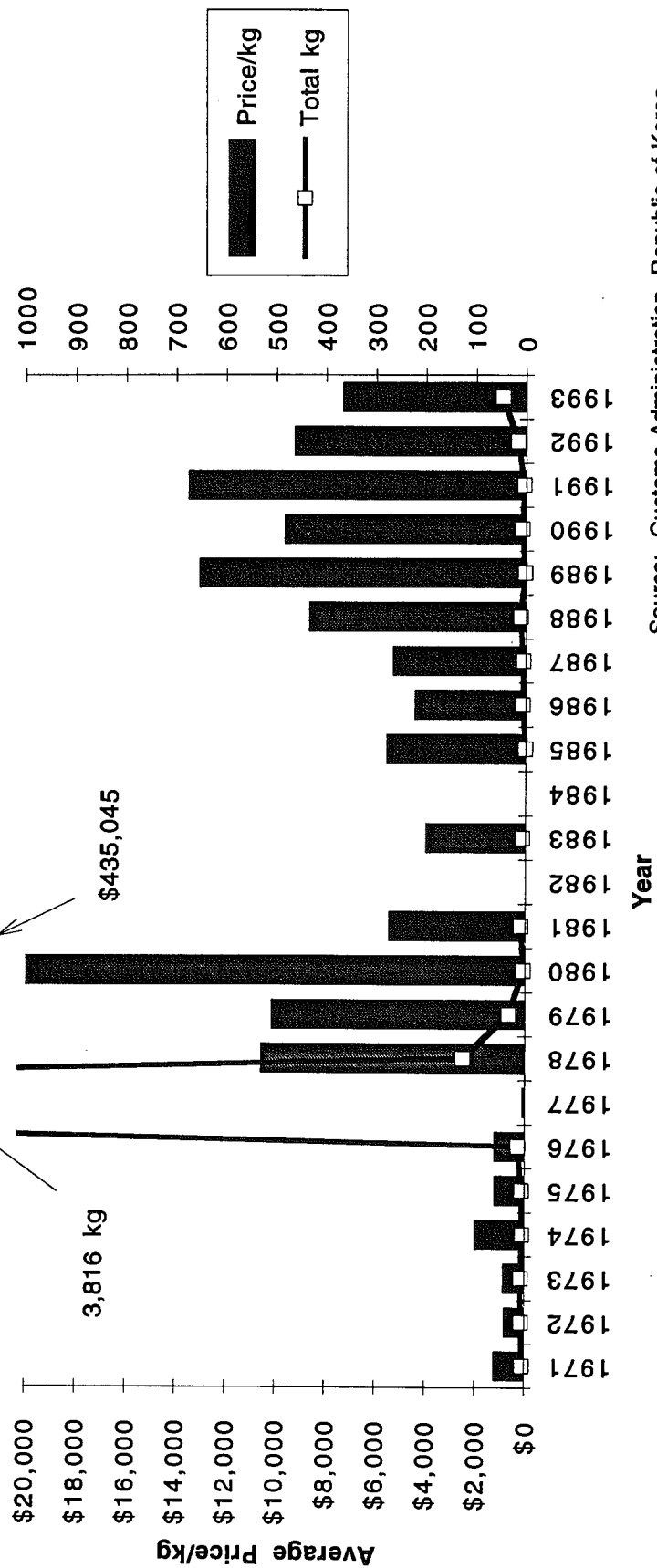


FIGURE 2.

SOUTH KOREA'S BEAR BILE IMPORT PRICES VERSUS QUANTITIES, 1971-1993



Source: Customs Administration, Republic of Korea

CITES ASPECTS OF CONTROLLING TRADE IN BEAR PARTS: U.S. PERSPECTIVES

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Introduction

Good afternoon. I appreciate the opportunity to speak here today, and would like to thank TRAFFIC USA both for having invited me to speak, and for all of their close cooperation with our office in all CITES matters. CITES is unique in that it is a partnership not only between countries of the world, but between governments and nongovernmental organizations interested in the wildlife trade, both legal and illegal, and its impact on wildlife populations.

I would like to give you a very brief background on CITES, followed by an overview of how CITES is implemented in the United States, and lastly focus on how the trade in bear parts is regulated by CITES, particularly here in the United States.

CITES

CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, provides an international mechanism for the maintenance of biodiversity by protecting endangered species of wildlife and plants from overexploitation through international trade. The United States has been a leader in international efforts to protect biodiversity since 1973, when it hosted the conference in Washington, D.C. where the CITES treaty was concluded. The United States will also host the next CITES meeting, in Fort Lauderdale, Florida from November 7-18. There are now 125 countries that are Parties to CITES, making it one of the most extensive international agreements for environmental protection.

Human population growth and concomitant habitat destruction are the major factors impacting biodiversity worldwide. Yet the wildlife trade has had a major impact for many species and in many regions. Significant public attention has been focused on more familiar species, such as the poaching of African elephants for the ivory trade, the illegal trade in chimpanzees, and the near extinction of African rhinoceroses for their horn. Yet

many little known but ecologically significant species have also been seriously depleted by the wildlife trade.

CITES serves a critical function as the world community's principal means of protecting threatened and endangered wildlife from the most disastrous effects of international trade. For a number of reasons, CITES is probably the best known international treaty dealing with wildlife conservation. It is through the cooperation of the countries that are parties to CITES that the international wildlife trade is both monitored and regulated, and as such it is only as good as the law enforcement and regulatory infrastructure within each country. The CITES treaty involves trade restrictions for species listed in different Appendices. Appendix I includes species in danger of extinction which are or may be affected by international trade; commercial trade in these species is prohibited. Appendix II includes species that may become endangered if their trade is not brought under control. Commercial trade in Appendix II species is subject to regulation, and is allowed only if permits are obtained stating that trade will not harm the species.

Implementation of CITES in the United States

The United States has been a CITES Party since 1975, when the treaty first went into effect. The U.S. Fish and Wildlife Service is the agency of the Department of the Interior charged with implementing CITES. The Service has recently reorganized and consolidated its international functions under a new Assistant Director for International Affairs. International Affairs incorporates both the Office of Management Authority (OMA) and the Office of Scientific Authority (OSA). The Division of Law Enforcement is a separate entity, and is charged with enforcement of federal wildlife statutes, including the Endangered Species Act, which implements CITES, the Lacey Act, and Migratory Bird Treaty Act, among others. In terms of CITES, OMA is responsible for issuance of all CITES permits, the U.S. CITES Annual Report, and all U.S. CITES policy development and implementation. Just to keep us busy, we are also charged with organizing the next CITES meeting, here in the U.S. this November.

All species of bears (Ursidae) are listed in either CITES Appendix I or II, as in the following Table 1. Thus, only the American black bear, European brown bear, grizzly bear, and polar bear are listed in CITES Appendix II.

Although I have been discussing all of the species of Ursidae, most of you here today are particularly interested in CITES' role in the trade in black bear (*Ursus americanus*) parts and products. The American black bear was listed on CITES Appendix II at the Kyoto CITES meeting (COP8) in 1992, which became effective June 11, 1992. That listing was due to its similarity of appearance with endangered bear species listed in CITES Appendix I, particularly those found in Asia. Gallbladders and other parts of endangered Asian bears have been reported to be traded under the guise of being from the

American black bear, as you heard earlier. Therefore, the listing of the American black bear is in order to control trade in other bear species, and not due to conservation needs of the American black bear.

TABLE 1. CITES Listing of Bears (Ursidae)

<u>Scientific name</u>	<u>Common name</u>	<u>Appendix</u>
<i>Ursus americanus</i>	American black bear	II
<i>Ursus arctos</i>	Brown bear; grizzly bear	II
<i>Ursus arctos</i> (Mexican population)	Mexican grizzly bear	I
<i>Ursus arctos</i> (Bhutan, China, and Mongolia populations)	Asian brown bear	I
<i>Ursus arctos isabellinus</i>	Red bear	I
<i>Ursus maritimus</i>	Polar bear	II
<i>Ailuripoda melanoleuca</i>	Giant panda	I
<i>Helarctos malayanus</i>	Sun bear	I
<i>Melursus ursinus</i>	Sloth bear	I
<i>Selenarctos thibetanus</i>	Asiatic black bear	I
<i>Tremarctos ornatus</i>	Spectacled bear	I

In implementing CITES for the American black bear, therefore, any commercial exports of bear gallbladders, other viscera, paws, or other parts would require an Appendix II permit from OMA. Individual hunters can take their legally acquired sport-hunted bear trophies with them out of the country under the CITES Appendix II personal effects exemption, which is implemented in the U.S. in 50 CFR Part 23. CITES export permits for bear parts or products can only be issued by the Office of Management Authority after a finding is made that the items to be exported were taken in full compliance with all applicable state and federal laws.

The Service's Division of Law Enforcement has conducted an analysis of the hunting of black bear and trade in its parts. This study indicated that the population of black bears in North America ranges in size from 590,000 to 626,000. Black bear populations are believed to be stable in 20 of the 37 (54 percent) U.S. states that have black bears, and are increasing in 12 states (32 percent). The study points out that over 40,000 black bears are taken legally by hunters in the United States and Canada every year.

This points out the fact that we must differentiate between illegal trade in bear parts, particularly gallbladders, and illegal killing for commercial trade--poaching. We will hear in this symposium about concerns about illegal trade in American black bear gallbladder and other parts to supply the demands of the Asian medicinal market for these bear products. However, our Division of Law Enforcement believes that the main problems are those of illegal commercialization of black bear viscera, including violations of state laws that prohibit sale of bear viscera, rather than poaching. Many of the bear gallbladders illegally sold are, in fact, removed from legally killed black bears. If the state in question prohibits commercialization of bear parts, any export of these gallbladders would not qualify for a CITES permit, and would be a violation of CITES, the Endangered Species Act, and the Lacey Act.

The attached Table 2 indicates that 25 states do have legal black bear hunting, and 10 states have no bear hunting and no sale of parts. On the other hand, there are seven states that do not have legal hunting, but allow the sale of parts which originate elsewhere. The remaining eight states have no regulations specific to the trade in bear parts. I highlight this patchwork of regulations for the following reasons: Any enforcement of CITES in the United States for the American black bear is in essence a partnership with states. The American black bear is a state-managed species; federal involvement is in the export of trophies, parts, and products, as well as in any interstate commerce in violation of state laws. Of course, the variety of differing state regulations allows take from one state that does not allow commercialization to possibly be misrepresented as take from another that does allow it. For example, parts of a bear legally hunted in Oregon cannot legally be sold in Oregon, but they can be sold in neighboring Idaho; here in Washington only the hide and skull can be sold. As another example, in Montana only the hide, head and mount of a legally hunted bear can be sold, but in neighboring North Dakota, which does not have a legal bear hunt, the sale of any parts are allowed as long as they did not originate in North Dakota.

If OMA receives an application to export gallbladders, paws, or other black bear parts or products, we must determine the state of origin, whether or not the take of the bear(s) was legal, and whether or not the state in question allows the commercialization of the particular parts. Because the black bear was listed for "look-alike" purposes, our Scientific Authority does not need to determine if the export would be detrimental to the black bear; that determination is essentially up to each state, in their determination of whether or not to allow bear hunting, and if so to allow commercialization of parts.

In order to export a legally hunted bear trophy, hunters do not need a CITES Appendix II export permit from OMA; they can make all necessary arrangements at the port of export, since such an export qualifies as a personal effect. In addition, we have worked out expedited procedures for trophy exports and imports to and from Canada. Since the American black bear was listed in CITES Appendix II, OMA has records of only three permits having been issued for bear part exports, and one permit denial. One

permit that we issued involved gallbladders and paws being reexported to Canada; the second was for one gallbladder from a legally taken bear in Maine; the third was for gallbladder tissue for forensic purposes. We have also issued several pre-Convention certificates for bear claws. I stress this paucity of permits having been issued to make the point that a CITES Appendix II listing does not prevent bear parts from being exported, even commercially, but rather regulates such exports. If our Division of Law Enforcement becomes aware of a shipment of bear gallbladders or other parts being exported from the United States, without the appropriate permits, then appropriate prosecution will take place. However, there is no way that we can know when a shipment is being exported, particularly due to the ease of hiding gallbladders. Furthermore, as anyone who has travelled abroad knows, customs does not check your luggage when you leave a country, only when you enter. This points out the reality in CITES that most enforcement is by the importing country. Therefore, the burden of enforcement of CITES Appendix II, including exports of bear parts from the United States, is actually on the importing countries. It is for this reason, among others, that the Service is particularly committed to CITES enforcement and implementation training, particularly in Asia.

There has been some discussion recently of the need for national legislation to prohibit export of bear gallbladders and other parts from the United States. It is the opinion of the Service that such additional enforcement authority is not necessary. Export without CITES permits is already an Endangered Species Act violation (by virtue of being a CITES violation). We have issued so few permits since the Appendix II listing became effective, that prohibiting the issuance of such permits would be of little consequence, and of no benefit for bears.

I do personally believe, however, that increased cooperation and partnership between the federal government--the Service--and the state fish and game agencies is absolutely essential. We must all work together to understand trends and patterns in the commercialization of bear parts, impacts of trade and other factors on bear populations, and other aspects of black bear conservation. It is important that black bear conservation and management programs be seen as 50 interlocking, interdependent links in a chain, for the benefit of the species, rather than as 50 (and more including the Canadian provinces) separate, independent entities.

Conclusion

In conclusion, the next twenty years of this treaty will hopefully see an increase in the effectiveness of CITES throughout the world, for bears as well as other species. The first twenty years have seen increased public awareness of the consequences of uncontrolled trade, and the need for tight controls and regulations to conserve biodiversity. Let us hope that the next twenty years sees increased commitment to training, education,

implementation, and enforcement. These four factors will ensure long-term benefits to both wildlife and people.

implementation, and enforcement. These four factors will ensure long-term benefits to both wildlife and people.

TABLE 2.

The following States have a legal
Black Bear "harvest" and allow the
sale of some parts:

State	Sale legal except	tag required	comments
Arizona	no gall	yes	claws may be sold separately
Colorado	no meat, no gall	yes	only hide tagged
Idaho		yes	must report sale
Maine	*	yes	*state licensed hide buyer only
Michigan	hide and skull only	yes	
Minnesota	hide only	no	
Montana	hide, head and mount only	yes	
New Hampshire	head, hide and feet only	yes	claws need not be attached to hide
New Mexico	no meat or gall	yes	permit must accompany any part sold
New York	no meat	yes	parts must be tagged (fall 94)
Pennsylvania	no meat	yes	may be sold by hunter only
Utah	tanned hide only	yes	
Vermont			license tag only, no reg. on sale
Washington	hide and skull only	yes	
West Virginia		yes	surplus property tag on parts sold by state
Wisconsin	hide only	yes	
Wyoming	hide only	yes	

All states which allow bear hunting require a hunter to have a hunting license. The exception to this is that Native Americans hunting on their reservations do not need to comply with state regulations. They must however meet any regulations with regard to sale off the reservations.

TABLE 2. (continued)

The following States have a legal Black Bear "harvest" and no legal sale of parts: Export by hunter only.

State	tag required	comments
Alaska	some areas	
Arkansas	yes	
California	yes	
Florida	yes	
Georgia	yes	
North Carolina	yes	
Oregon	yes	
Virginia	yes	

The following States have no legal bear "harvest" but allow the sale of parts which originate elsewhere:

Connecticut
Louisiana
New Jersey
North Dakota
Ohio
Oklahoma
Rhode Island

* The following States have no regulations specific to bear parts:
* OMA won't permit export from these states without other documentation.

*
* Delaware
* Hawaii
* Illinois
* Indiana
* Iowa
* Kansas
* Kentucky
* Nebraska

The following states have no bear hunting and no sale of parts as far as current research goes but this summary is subject to change.

Alabama
Maryland
Massachusetts
Mississippi
Missouri

Nevada
South Carolina
South Dakota
Tennessee
Texas

CITES ASPECTS OF CONTROLLING TRADE IN BEAR PARTS: CANADIAN PERSPECTIVES

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Introduction

My name is Robert Wenting. Since 1993, I have been a wildlife officer for CITES for Environment Canada. Previously, I was a fur management officer and CITES Management Authority with the province of Ontario. Having been involved with black bear management concerns in Canada for some time, I am here representing the office of the Canadian CITES Administrator.

In speaking with you on Canadian perspectives on CITES aspects of controlling trade in bear parts, I want to touch, briefly, on the historical background to the CITES listing of this species, address current implementation under Appendix II, the impact of the permit system, legal sale and poaching concerns, current population status, and misinformation concerns, and leave you with some questions.

Historical Background

In September of 1991, the Parties to CITES were notified of Canada's voluntary listing of the American black bear on CITES Appendix III. This listing was made at the request of the provinces and territories, not because these jurisdictions were experiencing a management problem with exports of harvested specimens, but because the provincial and territorial wildlife agencies recognized a need to provide assistance to the CITES community in the collective endeavor to provide more effective control of trade in bear parts for the other bear species listed by CITES on Appendices I and II.

Canada's Appendix III listing exempted the trophy items of skull and hide with claws attached, focusing, therefore, on other bear parts. This exemption was requested by the provinces and territories because, for most jurisdictions, the harvest of animals by nonresident hunters is significant and such an exemption would eliminate the need for CITES export permits for nonresident hunters leaving Canada with only trophy parts.

The United States and Mexico chose not to list their black bear populations similarly, and, apparently, the CITES implementing legislation of some "consumer"

nations does not address Appendix III listings (which is a separate problem for CITES). This appears to have led to the proposal for an Appendix II listing--for "look-alike" reasons--being made at COP8, which was adopted.

Current Implementation under Appendix II

Recognizing that the annual harvest of black bear in Canada is roughly 25,000 animals, with over half being taken by nonresident hunters, a significant administrative burden has been assumed by the provincial and territorial wildlife agencies that issue CITES export permits for species under their constitutional control.

Under existing law, applicants for Canadian CITES export permits must be Canadian residents. Most nonresident hunters (Americans and Europeans) leave Canada with their trophies on weekends, when CITES permit issuing offices are not open. Recognizing that for most jurisdictions nonresident hunters must hunt bear through a licensed Canadian outfitter or guide, a special CITES export permit for black bear was developed for exclusive use by licensed bear outfitters for their nonresident clients.

For each client an outfitter expects to have, a blank, partially completed CITES export permit is issued by a field office of the provincial or territorial wildlife agency. On this document, the outfitter records the name and address of the successful nonresident hunter as exporter and as consignee at final destination. The outfitter records his or her name and address and signature as the applicant for the permit. What will be exported is checked off on a preprinted list in the description portion of the permit. The outfitter will record the date that the permit is prepared, and a 21-day period of validity for the permit will begin.

On each permit is a notice: "Please note that this permit is not valid unless it bears the serial number of the nonresident license to hunt black bear, and, where applicable (all provinces and territories except Newfoundland, Nova Scotia, Quebec and Saskatchewan) the serial number and/or a copy of the provincial/territorial export permit or trophy registration; and it bears the validating stamp of a Canada Customs officer at the port of export from Canada."

All Canadian CITES export permits--including the CITES export permit for black bear--have seven copies. The outfitter may retain one copy, as the applicant, and give two to the nonresident hunter, with instructions that they be presented to Canada Customs at the port of export for validation. One validated copy must be left with Canada Customs (for Customs to forward to the Office of the CITES Administrator for Canada); the other validated copy must be presented to Customs in the identified country of import. The outfitter submits the remaining four copies of each permit issued to a nonresident hunter to the issuing field office of the provincial or territorial wildlife agency. That office retains

one copy for audit purposes and forwards the remaining three copies to the provincial or territorial CITES Management Authority. The provincial or territorial CITES Management Authority retains one copy for audit purposes and forwards the remaining two copies to the Office of the CITES Administrator for Canada. One of those copies is for audit purposes and one is for enforcement and legal purposes.

This system has been in effect since the autumn of 1992, so it is a little early to comment on its efficacy. We do know that, in the beginning, many nonresidents were not getting the document validated by Canada Customs and foreign customs still accepted it. When foreign customs were asked to refuse entry and began to do so, the level of compliance increased markedly. Like any administrative system, it requires time for implementation and time for maintenance. Effective maintenance requires sufficient data, and that, currently, is being collected. For the most part, we believe that licensed bear outfitters and nonresident hunters understand the permit system and respect the need to cooperate and comply.

For any other export of harvested bear or bear parts, a standard application for a standard CITES export permit is required and these are available during normal government office hours.

Some exceptions will exist in some jurisdictions, but, essentially, this system is applicable nationally.

In 1993, in excess of 10,000 CITES export permits for black bear were used for successful nonresident hunters. This means that there will be at least 40,000 copies in government circulation, for audit. But each licensed bear outfitter is likely to request a blank permit for each expected nonresident hunter. All unused permits are supposed to be returned to the issuing field office. Given the fact that there is a spring hunt and a fall hunt, the number of blank permits in circulation is significant and the administrative burden is more than considerable. Accounting for another 40,000 unused permits could be needed.

This system, involving industry, provincial and territorial government field offices and headquarters, and the Offices of the CITES Administrator and Enforcement of Environment Canada, endeavors to effectively control movement of a species with an Appendix II "look-alike" listing, by a client base that we believe already was effectively controlled and cooperative.

Recognizing that comparatively few gallbladders and paws are taken out of the country by nonresident hunters--and even fewer by resident hunters--it is difficult to understand how this extra CITES administrative burden helps this species or how it helps or will help other bear species when there is little historical trade data in bear parts (and,

specifically, bear gallbladders) with "consumer" nations. And with this administrative burden, attention to the essential concern for illegal trade in bear parts is not addressed.

But what happens to the 25,000 (more or less) gallbladders of the bears that are legally harvested each year? What happens to the gallbladders of black bears taken legally by trappers and legally killed as "nuisance bears" for which there is little information available? Would it not be better to focus on this item, rather than ensure that skulls and hides with claws attached have a CITES export permit? Has the Appendix II listing afforded any more protection to the species or helped internal conservation and trade control efforts of the Parties in which these other species are found?

Legal Sale

Currently, the Northwest Territories, Saskatchewan, Quebec and Nova Scotia permit the sale of parts of legally taken bears and provide provincial or territorial export permits. None of these jurisdictions have indicated, or are able to indicate, any real use or abuse of the opportunity to legally "deal" in bear parts. Only a minor percentage of the gallbladders of bears legally killed in any year enter the legal trade. Historically, supply has been greater than demand, and the selling price, where legal, has been around the C\$7.00 per gram. Why aren't the dealers in the illegal product exploiting the opportunity to acquire the legal product and the paperwork that would be available with it?

Almost every jurisdiction can report the odd infraction of its provincial legislation relating to trade in bear parts, some involving parts of bears taken in that province, some involving the "laundering" of parts through reuse of export permits issued by other jurisdictions. This should not be surprising, and each jurisdiction has some proactive and reactive enforcement programmes in place to endeavor to effect compliance. Occasionally, a major "bust" will occur, but, for the most part, the "busts" are for small quantities of bladders--usually from legally taken bears in jurisdictions where sale of game is not permitted.

For the most part, provincial and territorial wildlife agencies do not recognize a major illegal trade problem. They do realize that there is a possession problem with the gallbladders of legally taken bears. Currently, two jurisdictions have banned possession. In some jurisdictions, under existing wildlife legislation, such action cannot readily be effected.

If possession and sale were prohibited in all jurisdictions, would that prevent trade? Would the gallbladders of all bears killed be destroyed? Are they being destroyed now? We do not see them in trade. Are they being collected by dealers? Are they marketed? Are they illegally exported? If we want to find out and need to find out, the provinces and territories will have to devote more time to the species, and spend considerably more

money to do so. Yet these questions may be more important than the significant administrative control of the export of legally harvested trophy parts by a cooperative client base that currently occupies them.

Current Population Status

Currently, all jurisdictions have indicated that bear populations are stable to increasing, and that current harvests are sustainable. Since the black bear was listed on CITES for "look-alike" reasons relating to trade in bear parts, population status and sustainable harvest are not concerns for this listing.

Misinformation

The federal, provincial, and territorial wildlife agencies in Canada are all concerned with the promulgation by certain nongovernmental organizations of information indicating that there is some sort of massive slaughter of the species occurring. In Canada, one such organization distributed a brochure that compared the plight of the black bear to that of the black rhino. There is no evidence of a significant illegal harvest throughout the Canadian range of the species. We have to ask if this is in the best interests of wildlife conservation.

No one doubts that some illegal taking of black bear occurs, but we remain convinced that this is incidental and opportunistic more than it is organized. Available parts that are in legal trade remain under utilized.

No one doubts that the species could benefit from better management and more attention, but that is applicable to any species. The more important question is "Are the management dollars currently being spent on the species actually beneficial to the species, and, in this case, to the CITES programme?"

In the case of the American black bear, a disproportionate amount of attention is being paid to the least threatened and most managed species of Ursidae, and, of necessity, perhaps in the wrong way.

The value of a federal/provincial/territorial meeting of black bear specialists in Canada, to address biological data available on the species, administrative and enforcement problems, and the ramifications of any actions has been recognized, and we are hopeful that this can be arranged for early in 1995.

For example, if all jurisdictions were able to require the submission of the gallbladder of every black bear legally killed, all of these gallbladders were destroyed, and

all imports and exports of bear gallbladders was banned, would this help this species whose population does not appear to be threatened with current harvest rates? Would this help to eliminate the demand for the gallbladders of Asian bear species? Or would this result in additional illegal harvest pressures being exerted on those threatened species?

Without effective control of domestic trade, without effective control of international trade, and without constructive attention to an ingrained cultural demand, the CITES listing of a species and the resulting administrative process is not necessarily effective.

The American black bear was listed to help protect endangered Asian bear species. Considerable scarce wildlife management dollars are being expended to administer the resulting, required CITES permit system. But has the listing helped?

THE IMPACTS OF THE BEAR TRADE ON GLOBAL BEAR POPULATIONS

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Abstract. There is a serious impact on global bear populations from the trade in bear parts. The main species affected are the Asiatic black bear (*Ursus thibetanus*), sloth bear (*Melursus ursinus*), and brown bear (*Ursus arctos*) populations in Asia, and, to a lesser degree, sun bears (*Helarctos malaynus*) and American black bears (*Ursus americanus*). Quantifiable data on the numbers of bears killed for their gallbladders are unavailable. The best data on the levels of trade are indirect evidence from the numbers of bear gallbladders on the market and the availability of bear bile in the traditional medicine trade. Increasing prices for bear bile, especially bile from wild bears, will continue to create demand for the product. High prices will continue to provide an incentive for the killing of wild bears for their bile. This killing will be either by market hunters who specialize in obtaining bear parts by bear hunting, or by opportunistic hunters involved in other activities in bear habitat such as timber harvest or agriculture. The impacts of the trade will continue to accelerate as access to bear habitat increases with the building of roads for timber harvest and as formerly secure bear habitat is converted to agriculture or plantations. Increased access to bear habitat makes bear populations vulnerable especially as demand for parts increases.

Bear populations can be maintained by careful management of human-caused mortality. Small, isolated populations have limited ability to sustain human-caused mortality at any level. The trade in bear bile causes an increasing and unmanaged kill of bears. This kill is not controlled or managed as to sex and age of the wild bears killed, nor is it limited by area where the kill occurs. Areas of high human access and resultant bear-human interaction are subjected to high kill levels, often in excess of sustainable levels. This type of unmanaged mortality will cause the decline in the population if the kill exceeds sustainable levels. Since killing bears for trade of bear parts is illegal, it is unmanaged, and the potential for excessive kill is high. Limited laws protecting bears, limited wildlife law enforcement capability, and continued demand for illegal bear parts all combine to create a serious impact on bear populations. The impacts of the trade in bear parts are a serious threat to bears in Asia, especially as human activities fragment habitat and create isolated populations. Continued killing of bears for sale of parts combined with habitat loss poses a serious threat to the survival of Asian bear populations, and to the future of small bear populations worldwide where killing is unregulated.

ASIAN PERSPECTIVES ON THERAPEUTIC VALUE OF BEAR BILE AND ALTERNATIVES

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Introduction

Bears, as well as tigers and leopards, have long been considered by Asians as symbols of strength and force. Thus, Asian people think bear flesh is very nutritional and a source of strength. In ancient China, the bear paw was listed as one of the eight most delicious and nutritional foods. Bear bile was listed as a medicine in "The Tang Materia Medica", the first official pharmacopoeia in the world, which was published in 659 A.D. Since then, bear bile has been applied for many health problems. According to Chinese medical theory, bear bile is bitter and cold, so people mainly use it to treat heat and detoxify the heat toxin (roughly equivalent to bacterial infection and inflammation). However, bear bile is very expensive, and most people can not afford it. As a result, the bile of other animals has been used as a substitute. In this paper, the Asian perspectives on the therapeutic value of bear bile and its alternatives are reviewed.

Bear Bile, Its Therapeutic Value and Clinical Application

Bear bile is from the gallbladder of either the Asiatic black bear (*Selenarctos thibetanus* G. Cuvier) or brown bear (*Ursus arctos* L.).

Preparation

Bear bile may be obtained either by removing the entire gallbladder, or by milking bile from live bears. Before removing the gallbladder, the cystic duct must be tightly tied with a thread. Then the fat tissue around the gallbladder is carefully removed. The gallbladder is placed between two wood boards and dried by hanging it in a well-ventilated room or placed in a jar filled with quick lime. It cannot be dried in sunlight or by baking. The whole gallbladder may be pulverized after removing the cystic membrane, or dried bile is pulverized. This very fine powder is then ready for topical or oral application or mixed with other herbs.

Chemical Components

Bear bile is mainly composed of base metal salt of bile acid, cholesterol, and bile pigment. From black bear bile, around 20% tauroursodesoxycholic acid is separated. It can be hydrolyzed into taurine and ursodesoxycholic acid, with trace amounts of chenodesoxycholic acid and cholic acid. Ursodesoxycholic acid is stereoisomeric to chenodesoxycholic acid. It is the unique component in bear bile and therefore, it is employed to distinguish bear bile from other animal bile.

Pharmacological Research

Effect on smooth muscle: Fel Ursi samples from 8 different places were compared for their ability to relieve acetylcholine-induced spasm in mouse intestinal tissue. That from Tibet had the strongest action and that of *Selenarctos thibetanus* G. Cuvier from other locales was also very strong. It appeared that the active ingredient was tauroursodesoxycholic acid, which has actions similar to that of papaverine.

Detoxifying effect: One component of Fel Ursi, Na-ursodesoxycholate, has an antidotal effect on strychnine poisoning in mice.

Cardiovascular effect: Preliminary reports suggest that Fel Ursi has a certain antihypertensive effect in the treatment of high blood pressure as a sequelae to acute nephritis in childhood.

Respiratory effect: In one uncontrolled study, Fel Ursi was useful in controlling the coughing paroxysms of pertussis.

Clinical Application

Antibacterial and detoxifying effect: Oral application (0.3 - 0.6 gram) for acute icterohepatitis, hepatic coma, acute or subacute hepatonecrosis. Topical application for cellulitis, acute laryngopharyngitis, conjunctivitis, skin ulcer and other chronic skin infection.

Anti-parasite effect: Used for roundworm, pinworm.

Tranquilizing and anti-convulsion effect: Oral application for convulsion due to high fever and/or infection.

Anti-inflammatory effect: Topical application for hemorrhoids, keratitis, canker sore.

Pain killing effect: Oral application for intense pain due to peptic ulcer, cystic colic pain, and swelling pain due to injury. Topical application for herpes zoster.

Anti-allergic effect: For asthma, sinus allergy and eczema.

Use of Other Bear Parts

Bear meat is used for muscle weakness and muscle spasm. Bear bones are used on the extremities for arthritis. Bear fat is cooked until it becomes oil, and the oil drained and allowed to congeal, for topical application for tinea capitis, tinea unguium, chronic skin ulcer, and oral application with boiling water for muscle spasm and weight loss. Bear brain medullary substance is cooked and eaten for hearing loss and tinnitus. Bear paws are cooked and eaten for any physical exhaustion, arthritis and injury. Bear tendons are cooked and eaten, or infused in liquor, for tendonitis and muscle weakness.

Other Animal Bile Used as a Substitute for Bear Bile

Bear bile is very expensive and it is always in short supply. Thus, people use the bile from other animals as a substitute for bear bile. Some of these substitutes are even more effective than bear bile for treating certain health problems. For example, pig bile is better than bear bile for sinusitis and sinus allergy, and the Cantonese drink snake bile to cleanse the body rather than bear bile.

Beasts

Bovine Bile: From *Bos taurus domesticus* (Gmelin) and *Bubalus bubalis* (L.) It is used for conjunctivitis, jaundice, constipation, diabetes, cellulitis, and hemorrhoids.

Pig Bile: From *Sus scrofa domestica* (Brisson). It is used for constipation, jaundice, whooping cough, asthma, bronchitis, diphtheria, indigestion, diarrhea, dysentery, tinger, conjunctivitis, keratitis, laryngopharyngitis, cellulitis, and burns.

Goat or Sheep bile: From *Capra hircus* (L.) or *Ovis aries* (L.) It is used for conjunctivitis, cataract, night blindness, hemoptysis due to pulmonary TB, laryngopharyngitis, jaundice, constipation, and cellulitis.

Elephant Bile: From *Elephas maximus* (L.) and used for conjunctivitis, keratitis, and cellulitis.

Deer Bile: From *Cervus nippon* (Temminck) and *Cervus elaphus* (L.) and used for cellulitis.

Tiger Bile: From *Panthera tigris* (L.) and used for pediatric convulsion, dysentery, and injury.

Dog bile: From *Canis familiaris* (L.) and used for conjunctivitis, nasal bleeding, hemoptysis, injury, vomiting, cellulitis, and impacted cerumen.

Poultry

Chicken Bile: From *Gallus gallus domesticus* (Brisson) and used for whooping cough, bronchitis, bacterial dysentery, urinary stones, conjunctivitis, and hemorrhoids.

Duck Bile: From *Anas domestica* (L.) and used for conjunctivitis and hemorrhoids.

Goose Bile: From *Anser domestica* and used for hemorrhoids and cellulitis.

Eagle Bile: From *Milvus korschun* Lineatus (Gray) and used for stomach pain.

Crow Bile: From *Corvus macrorhynchus* (Waglers) and used for conjunctivitis.

Fish

Black carp: From *Mylopharyngodon piceus* (Richardson) and used for conjunctivitis, keratitis, laryngopharyngitis, and cellulitis.

Carp: From *Cyprinus carpio* (L.) and used for conjunctivitis, laryngopharyngitis, hearing loss, and diphtheria.

Grass carp: From *Ctenopharyngodon idellus* (Cuvier et Valenciennes) and used for laryngopharyngitis and fish bone or sticks in the throat.

Crucian carp: From *Carassius auratus* (L.) and used for genital herpes, diphtheria, and fish bone or sticks in the throat.

Mandarin fish: From *Siniperca chuatsi* (Basilewsky) and used for fish bone or other sticks in the throat.

Murrel: From *Ophicephalus argus* (Cantor) and used for laryngopharyngitis, keratitis, hearing loss, and ringworm on the scalp.

Shark Bile: From *Mustelus manazo* (Bleeker) and used for laryngopharyngitis.

Tortoise Bile: From *Chinemys reevesii* (Gray) and used for conjunctivitis.

Turtle Bile: From *Pelochelys bibroni* (Owen) and *Amyda sinensis* (Wiegmann) and used for hemorrhoids and laryngopharyngitis.

Otter Bile: From *Lutra lutra* (L.) and used for lymphatic TB, amenorrhea, and injuries such as gunshot wounds.

Other Animals

Frog bile: From *Rana nigromaculata* (Hallowell), *Rana plancyi* (Lataste) and *Rana limnocharis* (Boie), used for measles, pneumonia, and glaucoma.

Toad Bile: From *Bufo bufo gargarizans* (Cantor) and *Bufo melanostictus* (Schneider) and used for bronchitis.

Snake Bile: From *Python molurus bivittatus* (Schlegel) and *Agkistrodon haiys* (Pallas), used for intestinal parasites, dysentery, epileptic seizures, hemorrhoids, conjunctivitis, canker sore, genital herpes, hemorrhoids, and fistula. In Canton province, people drink snake bile to cleanse their bodies.

Hedgehog: From *Erinaceus europaeus* (L.) and *Hemiechinus dauuricus* (Sundevall) and used for hemorrhoids and conjunctivitis.

Rat Bile: From *Rattus norvegicus caraco* (Pallas) and *Rattus rattus rattus* (L.) and used for glaucoma, hearing loss, and impacted cerumen.

THE BILIARY AND FECAL BILE ACIDS OF BEARS AND PANDAS¹

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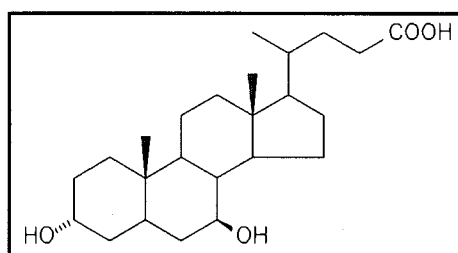
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Abstract. The biliary bile acid composition of gallbladder bile obtained from six species of bears (family Ursidae), as well as the related red and giant pandas, were determined by reversed phase liquid chromatography. The fecal bile acid composition was also determined (using gas chromatography-mass spectrometry) for these six bears and for the giant panda. The bile acid ursodeoxycholic acid was present in all Ursidae, averaging 1-39 percent of total biliary bile acids, depending on the species. Ursodeoxycholic acid was present in 73 of 75 American black bears, and its proportion averaged 34 percent (range 0-62 percent). It was absent in the red and giant pandas. The bile of all species also contained the bile acids chenodeoxycholic acid and cholic acid. All bile acids observed were conjugated with the amino acid taurine. It is concluded that comparatively high concentrations of ursodeoxycholic acid occur in, and are characteristic of, all members of the family Ursidae.

Introduction

Bile acids are synthesized in the liver as the end products of cholesterol metabolism. Their structure consists of a steroid nucleus of four rings and an aliphatic side chain with a terminal carboxyl group. Two or three hydroxyl groups are present, generally added to only one face of the comparatively flat steroid nucleus. The result is an amphipathic molecule with a hydrophobic side lacking hydroxyl groups, and a hydrophilic side which contains all the hydroxyl groups. This structure is analogous to that of an airplane with its three landing wheels on the hydrophilic side and no wheels on the upper surface of its wings, the hydrophobic side. Using its two faces of opposite polarity, bile acids can self associate to form micelles, which in turn, can solubilize other lipids. When secreted into the intestine, bile acid micelles facilitate the uptake of dietary lipids (Hofmann 1994).



Ursodeoxycholic acid

¹Portions of this paper have been excerpted from Hagey *et al.* (1993).

There are many types of bile acids, based on the number and position of hydroxyl groups added to the steroid nucleus and side chain. One of the more unusual of these structures is that of ursodeoxycholic acid, a bile acid with two hydroxyl groups.

Using the airplane analogy cited above, this "plane" has one of its landing wheels placed on top of one of its wings. The result is that ursodeoxycholic acid is a comparatively hydrophilic bile acid, with a reduced tendency to self associate. Compared to other bile acids, it is also much less cytotoxic. During the last decade, ursodeoxycholic acid became widely available in the Western world, as a less toxic alternative to the bile acid chenodeoxycholic for the medical dissolution of cholesterol gallstones. This use of ursodeoxycholic acid has recently been eclipsed by the advent of laproscopic treatment of gallstone disease.

In the early 1900s, ursodeoxycholic acid was discovered in a collection of arctic polar bear bile samples (Hammarsten 1901). Subsequent analysis of bile acids from a large number of other vertebrates found the frequent presence of low levels (<1 percent) of ursodeoxycholic acid in mammals (Haslewood 1978). The source of this ursodeoxycholic acid is thought to be the interconversion of the common bile acid chenodeoxycholic acid into ursodeoxycholic acid by anaerobic intestinal bacteria. The origin of ursodeoxycholic acid in bears, however, remained unclear. Certain studies (Kurozumi *et al.* 1973) found anomalously high concentrations of the bile acid in bears, while others could not find the bile acid at all (Tammar 1970).

Comparative Analysis of Ursodeoxycholic Acid in Six Ursidae Species

To evaluate the status of ursodeoxycholic acid in bears, biliary and fecal bile acids were examined in six members of the bear family Ursidae, as well as from the related red and giant pandas. The results are summarized in Table 1.

The major biliary bile acids in each bear examined were ursodeoxycholic acid, chenodeoxycholic acid, and cholic acid, all conjugated with the amino acid taurine. Deoxycholic acid, the major bacterial biotransformation product of cholic acid, was absent in four species of bears and found at trace levels in the remaining two species. The extent of variability of ursodeoxycholic acid for any one species was also examined. Table 2 shows the biliary bile acids found in 75 American black bears.

The proportion of ursodeoxycholic acid averaged 47 percent (range 0-78 percent; urso- deoxycholic acid was completely absent in only two bears (both from source B). To determine whether or not ursodeoxycholic acid was synthesized in the liver, or converted from chenodeoxycholic acid in the intestine, the fecal bile acid composition of bears was also examined.

Table 1. HPLC analysis of the Biliary Bile Acids in Gallbladder Bile of Bears^{a,b}

<u>Ursidae</u>		<u>Bile Acid Composition, %</u>			
<u>Common Name</u>	<u>Latin Name</u>	<u>3α7α^d</u>	<u>3α7β</u>	<u>3α7α12α</u>	<u>3α12α</u>
Polar Bear ^e	<i>Thalarctos maritimus</i>	19.6	17.4	62.8	0.2
Black Bear	<i>Ursus americanus</i>	29.6	38.8	31.1	0.5
Brown Bear	<i>Ursus arctos</i>	5.7	18.6	75.7	0.0
Sun Bear	<i>Helarctos malayanus</i>	63.6	8.6	27.8	0.0
Sloth Bear	<i>Melursus ursinus</i>	31.3	1.4	67.3	0.0
Spectacled Bear	<i>Tremarctos ornatus</i>	23.6	6.3	70.1	0.0

^a Bile acids were present in bile as the taurine (N-acyl) conjugates.

^b Bile acid composition has been normalized to 100 percent.

^c Bile acid conjugates were analyzed by HPLC using an octadecylsilane column (RP C-18) column and a phosphate based buffer as previously described in Hagey *et al.* (1993).

^d The position of the hydroxyl substituents is indicated. 3 α 7 α , chenodeoxycholic acid; 3 α 7 β , ursodeoxycholic acid; 3 α 7 α 12 α , cholic acid; 3 α 12 α , deoxycholic acid.

^e Values were pooled from multiple individuals, as available.

Table 2. Gallbladder Composition of the Dominant Three Bile Acids in the American Black Bear (*Ursus americanus*)

<u>Study</u>	<u>N</u>	<u>3α7α</u>	<u>3α7α12α</u>	<u>3α7β</u>
A ^a	7	29.7	39.0	31.3
B ^b	11	28.3	17.2	54.5
C ^c	57	15.9	30.0	54.1

^a HPLC of zoo and hunted bears by L. Hagey, 1983-1991.

^b GLC of hunted bears by M. Carey, 1981-1985.

^c HPLC of hunted bears by E. Espinosa, 1990-1991.

Table 3. GC-MS Analysis of the Fecal Free Bile Acid^{a,b} Composition of Bears

Ursidae Species	Fecal Bile Acid Composition, %					
	$3\alpha7\alpha$	$3\alpha7\beta$	$3\alpha^c$	$3\alpha7\alpha12\alpha$	$3\alpha12\alpha$	% secondary ^d
Polar Bear	7.4	27.7	0.0	16.0	48.9	76.6
Black Bear	19.1	35.7	0.0	29.4	15.8	51.5
Brown Bear	17.5	16.3	18.7	29.7	17.8	52.8
Sun Bear	74.6	2.5	0.0	26.2	0.0	2.5
Sloth Bear	32.5	4.6	0.0	62.9	0.0	4.6
Spectacled Bear	64.6	0.0	0.0	35.4	0.0	0.0

^a See Table 1 for abbreviations.

^b Fecal bile acids were analyzed by GC-MS using a Hewlett-Packard 5890 Gas Chromatograph-5970 MSD, controlled by a HP/UX Chem Station program as previously described in Hagey *et al.* (1993).

^c 3α , lithocholic acid

^d Summation of all potential secondary bile acids present.

In Table 3, it can be seen that the amount of ursodeoxycholic acid in feces closely paralleled the amount of ursodeoxycholic acid in bile (as shown in Table 1) and that deoxycholic acid was present only in the black, polar, and brown bears. The data from Tables 1 and 3 indicate that the pattern of deoxycholic acid synthesis from cholic acid (by bacterial metabolism) was completely different from the biliary profiles of chenodeoxycholic acid and ursodeoxycholic acid. This suggests that the anomalously high levels of ursodeoxycholic acid found in bears is the product of direct hepatic synthesis, and that the contribution by bacteria to total biliary and fecal ursodeoxycholic acid (the major pathway in most mammals) is a minor route in bears. Ursodeoxycholic acid has also been shown to be hepatically synthesized in certain South American rodents (Tint *et al.* 1986). Although these animals also have high levels of ursodeoxycholic acid in bile, their biliary profiles appear completely different from bears, since rodents conjugate their bile acids with the amino acid glycine. Bears and pandas, in contrast, (as do all other carnivores) conjugate their bile acids exclusively with taurine.

The evolutionary status of the red and giant pandas is somewhat unclear. Since some studies link these animals with bears, the biliary bile acids for both pandas and the fecal bile acids of the giant panda were determined and are shown in Table 4.

Unlike what was found in bears, ursodeoxycholic acid was not detected in pandas. In pandas, all bile acids were conjugated with taurine.

Table 4. HPLC Analysis of the Gallbladder Bile Acids^a from the Red and Giant Pandas

<u>Common Name</u>	<u>Latin Name</u>	<u>Bile Acid Composition, %</u>			
		<u>3α7α</u>	<u>3α7β</u>	<u>3α7α12α</u>	<u>3α12α</u>
Giant Panda	<i>Ailuropoda melanoleuca</i>	61.7	0.0	38.3	0.0
Red Panda	<i>Ailurus fulgens styani</i>	5.1	0.0	94.9	0.0

Table 5. GC-MS Analysis of the Fecal Bile Acids from the Giant Panda

<u>Common Name</u>	<u>Latin Name</u>	<u>Fecal Bile Acid Composition, %</u>			
		<u>3α7α</u>	<u>3α7β</u>	<u>3α7α12α</u>	<u>3α12α</u>
Giant Panda	<i>Ailuropoda melanoleuca</i>	70.0	0.0	30.0	0.0

^aSee Tables 1 and 3 for abbreviations and methods.

Conclusion

Based on the proportion of ursodeoxycholic acid in biliary and fecal bile acids observed in Tables 1 and 2, bears can be divided into two groups. In the first group are the closely related polar, brown, and black bears, in which the percent ursodeoxycholic acid in bile is high (15-39 percent). The remaining bears fall into a second group in which the percent ursodeoxycholic acid is comparatively low (1-8 percent). For both groups of bears, the concentration of ursodeoxycholic acid present in bile was still higher than that found in pandas (Table 4) and in other vertebrates (0-0.5 percent) (4). A comparison of the percent ursodeoxycholic acid found for each species of bear with a phylogenetic tree of the family Ursidae indicates that the most recently evolved bears contain the highest proportions of ursodeoxycholic acid in bile. Thus, the utilization of ursodeoxycholic acid by bears is apparently an on-going and recent acquisition, and may have some selective advantage for bears.

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URSODEOXYCHOLIC ACID IS NOT ONLY A SUBSTITUTE FOR BEAR BILE

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Ancient people living in the Middle East and Western Asia, the Saracens, were probably the first humans to apply animal bile to medication. It was later introduced to ancient China through the Silk Road. Several kinds of animal bile were experimented with in those days, including snake, pig, sheep, cow, fish, goose and bear. Bear gallbladder was eventually chosen as the most effective medicine based on their empirical findings. Nowadays, this choice is supported by modern scientific data, as only bear bile contains sufficient ursodeoxycholic acid (UDCA), while other animals contain other bile acids, such as cholic acid, chenodeoxycholic acid, etc.

In ancient China, bear bile was highly valued as a medicine for everything from abdominal colic to fever and inflammation. It was listed in an old Chinese Pharmacopoeia in the 7th century. Bear bile was introduced to Japan by Japanese doctors in the 17th century. From that time on, bear bile was to become a popular medicine in Japan.

In Japan, however, there were several grades of bear bile. The most precious one was from Japanese black bear living in the Honshu Island and caught in summer and autumn before hibernation. The poorer quality gallbladders were obtained from Japanese brown bears living in Hokkaido Island, and from black bears caught in spring just after hibernation. This grading was supported by modern analytical sciences, which find that higher grade bear bile contains higher concentration of ursodeoxycholic acid (UDCA), while lower grades contain less of it or do not contain it at all.

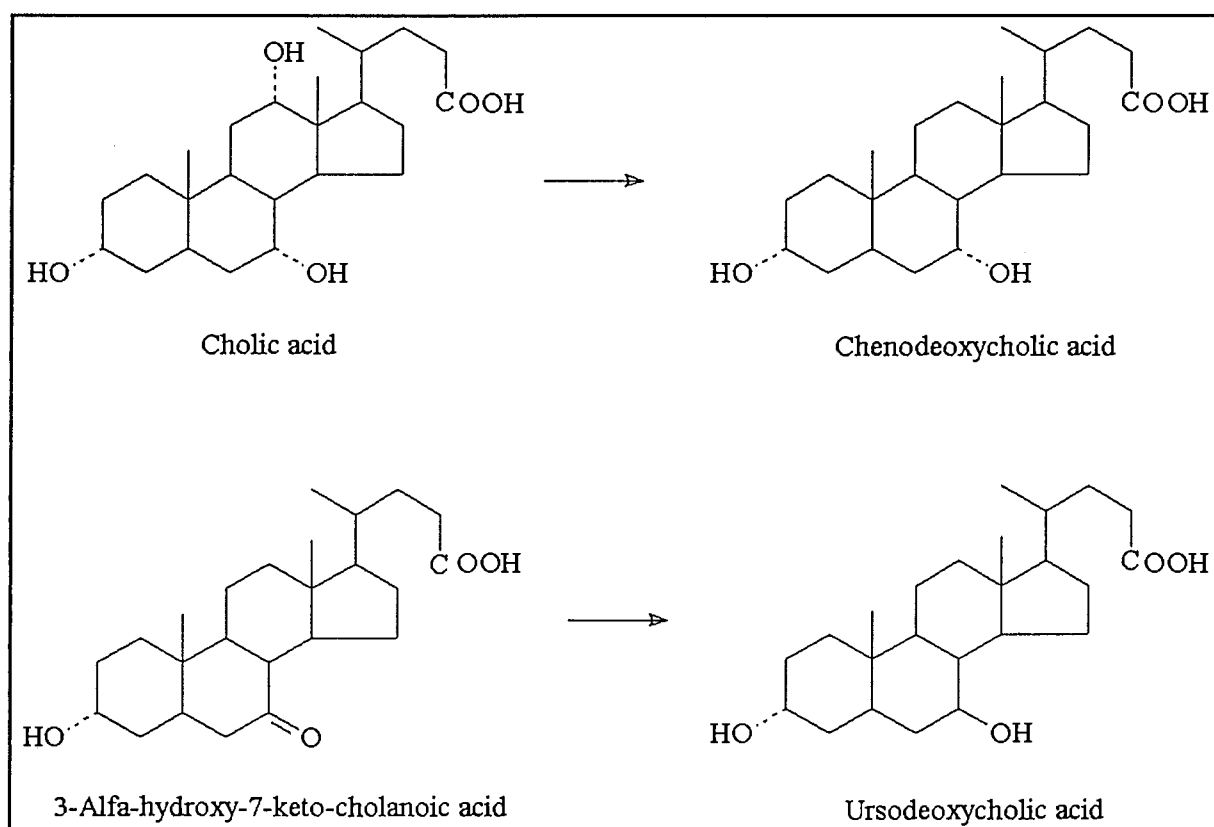
Bile acid composition in bears may change before and after hibernation. Bile composition may also vary according to species, habitat, diet, and other factors (Makino *et al.* 1986).

It was not until this century, however, that the effects of bear bile were recognized empirically. The first scientific research on the effectiveness of bile acids was undertaken by a group led by Professor Tsei Shimizu of Japan (Shimizu *et al.* 1938). In 1927, Dr. Shoda and his group succeeded in isolating unknown bile acid in pure crystal form from the Japanese black bear, and named it ursodeoxycholic acid (Shoda *et al.* 1927). This was the birth of UDCA. The chemical structure of UDCA was determined as 3- α , 7- β -dehydroxycholanoic acid by Dr. Iwasaki and his group in 1936 (Iwasaki *et al.* 1936). In 1955, Dr. Kanazawa and his colleagues first succeeded in chemically synthesizing UDCA from cholic acid (Kanazawa *et al.* 1954). Cholic acid is the major bile acid of cattle.

In 1957, 37 years ago, Tokyo Tanabe Co., Ltd. launched UDCA preparation under the trade name of URSO. Its official indications were for the treatment of hepatobiliary diseases such as chronic hepatitis, hepatic intoxication, cholecystitis, biliary dyskinesia, and for hypercholesterolemia, anorexia, and indigestion.

In 1972, Dr. Hofmann and his colleagues at Mayo Clinic in the U.S. reported that chenodeoxycholic acid dissolved cholesterol gallstones (Hofmann *et al.* 1972). Since chenodeoxycholic acid is a stereoisomer of UDCA, it led Japanese investigators Dr. Sugata (Sugata *et al.* 1974) retrospectively and Dr. Makino (Makino *et al.* 1974) prospectively to ascertain that UDCA was a safer and more effective agent for dissolution of cholesterol gallstones than chenodeoxycholic acid. Many clinical trials, including multicenter double blind controlled studies (Nakagawa *et al.* 1977, Tokyo Cooperative Gallstone Study Group 1980), were conducted in Japan to confirm the effectiveness and safety of UDCA for this new application. That additional application for dissolution of cholesterol gallstone was finally approved by the Ministry of Health of Japan in 1978.

FIGURE 1. Synthetic Route of Ursodeoxycholic Acid



Up to the approval of that additional application, URSO was regarded as just a substitute for bear bile and only marketed in Far East countries such as Korea, Taiwan, and Japan. Later, UDCA was approved and marketed as an effective cholesterol gallstone dissolving agent in European countries, including Italy since 1978, Germany in 1979, and France the UK, Spain, and so on. UDCA was finally approved by USFDA in 1988. Nowadays, it is marketed in more than 30 countries in the world.

In 1987, Professor Poupon of the University of Paris (Poupon 1987), and several Japanese investigators (Tanigawa *et al.* 1987, Okuyama *et al.* 1988), almost simultaneously reported that UDCA was the only effective treatment for primary biliary cirrhosis that had been recognized as a fatal disease.

UDCA, developed in Japan as a modern form of an ancient drug, still remains the subject of great interest in the medical community because its therapeutic potential does not seem to have been fully exploited. According to an updated investigation, UDCA improved patients with Hepatitis C when it was concomitantly used with interferon (Poupon *et al.* 1990). This fact suggested that UDCA might have a certain influence on the immunological systems in humans.

Table 1. Consumption of UDCA in the World

<u>Country</u>	<u>Major Marketers</u>	<u>Consumption of UDCA¹</u>
Japan	Tokyo Tanabe	50-60 metric tons/year
Italy	Gipharmex	25-35
Korea	Dae Woong	20-30
Germany	Dr. Falk	6-10
France	Houde	4-8
China		3-6
USA	Ciba-Geigy	3-5
UK	Inter Falk	0.5-1
Spain	Zambon	0.5-1
Others ²		5-10
TOTAL		117-167

¹ The above figures are estimated by Tokyo Tanabe

² Others include Canada, Russia, Taiwan, Hong Kong, Portugal, Brazil, Chile, Indonesia, India, South Africa, etc.

Tokyo Tanabe, the original developer of this old yet new drug, is committed to making further efforts to fully utilize its effects for people's benefit. As demonstrated in the following Table 1, nowadays, the annual world consumption of UDCA exceeds 100 metric tons, but that UDCA is chemically synthesized from cholic acid extracted from cattle bile without victimizing bears.

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**II. NORTH AMERICAN BLACK BEAR
GALLBLADDERS IN TRADE:
SIGNIFICANCE AND TRENDS**

STATUS, MANAGEMENT, AND COMMERCIALIZATION OF THE AMERICAN BLACK BEAR (*Ursus americanus*), PART I¹

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Abstract. Despite numerous reports of poaching and illegal sale and trade of gallbladders and other parts from the American black bear (*Ursus americanus*), there is little available information with which to assess the impacts on wild populations. Current governmental information on harvest, trade, legal and illegal sales, and the origins of bear parts in trade are discussed in terms of their implications for American black bear management and conservation. Recommendations are made for improving the availability and exchange of information related to harvest, sale, and trade of American black bear gallbladders and other parts.

Introduction

We know, and we have heard from several speakers, that trade in bear parts is heavily impacting Asian bear populations. We have also heard that the impact of trade on the American black bear is less clear, a situation that TRAFFIC USA hoped to address when we initiated research for this report in 1992.

The American black bear is not considered endangered or threatened overall, and the CITES Appendix II listing was intended as a way to prevent Asian species being labeled as American black bear to avoid CITES controls. We also have heard that populations are stable or increasing in most states, provinces, and territories in the United States and Canada, and that trade from the United States is believed to derive primarily from legally harvested bears. On the other hand, we are aware that illegal hunting for bear parts occurs in North America, and many of those working in the field are concerned about the impact this is having on black bear populations.

Evidence of increasing trade in black bear parts, obtained primarily from law enforcement investigations such as those we will be hearing more about in later presentations, prompted TRAFFIC USA to begin in 1989 to gather information on the scale of the trade and its potential effects on American black bear populations. In 1992, TRAFFIC began a comprehensive survey of black bear status, management, and commercialization in North America. The objective of this survey was to

¹ From C.A. McCracken, D.A. Rose, and K. Johnson. 1995. *Status, Commercialization and Management of the American Black Bear (Ursus americanus)*. TRAFFIC USA/World Wildlife Fund, Washington, DC.

compile and analyze current government information on management, harvest, and trade in order to document existing commercialization and to better understand the trade and its potential impacts on black bear populations.

Information for this report was gathered from three main sources:

1. The results of a 13-page questionnaire sent to all state, provincial, and territorial wildlife agencies in 1992 to gather information on bear management and commercialization. This questionnaire was answered by personnel selected within these agencies, and all states, provinces, and territories, with the exception of New Brunswick, completed the survey and returned it to TRAFFIC USA.
2. Data on trade and commercialization available from CITES reports, customs, and U.S. Fish and Wildlife Service records.
3. Telephone interviews with personnel from federal, state, provincial, and territorial wildlife agencies regarding the scale of trade and current regulations on sale and trade of bear parts.

The survey attempted to assess the scale of the trade and its effects on black bear management and conservation by examining the following types of information: black bear population size and trends; current rates of offtake for other uses (sport hunting, commercial hunting and trapping, problem animal control, road kills, etc.); the numbers of bears involved in the trade of gallbladders, paws, and other parts (legal or illegal); whether trade of gallbladders and paws represents an additional source of mortality, or an additional byproduct of bears already harvested for other purposes (legal or illegal); prices paid to hunters for bear parts; and the effectiveness of existing regulatory and enforcement mechanisms in preventing illegal harvest for trade.

Size and Trends of Black Bear Populations

Based on information from the questionnaires, black bears are currently found in 42 states and 11 provinces and territories--although, out of the total of 53 range states, 14 have populations of fewer than 500 bears. The total population is estimated at between 632,000 and 804,000, not including Wyoming, Kentucky, and New Brunswick, which did not respond to this question.

Forty-eight of the 53 range states (38 states and 10 provinces or territories) report their populations are stable, stable to increasing, or increasing. This suggests that, according to most agencies, hunting (whether legal or illegal) is not currently posing a threat to black bear populations.

Current Rates of Offtake

Black bears are currently subject to legal hunting in 28 states and 11 provinces and territories. Approximately 40,000 black bears are taken legally each year throughout North America by hunters and trappers. In most of the areas reporting, other types of human-induced mortality, such as problem animal control and road kills, are not significant relative to legal hunting and trapping.

Only 23 states, provinces, and territories of the 53 range states provided information on reported illegal kills; only 10 provided estimates of unreported poaching kills. In many cases, the absence of an estimate may reflect the difficulty of making meaningful estimates of poaching kills rather than the absence of illegal hunting. Reported illegal kills totaled only 863 from 1989 to 1991, while estimates of unreported poaching totaled 2309 animals during this period.

The Number and Origin of Bears Involved in the Trade of Gallbladders and other Parts

How many gallbladders could enter the market legally? Theoretically, this number could total more than 40,000 annually, from bears legally hunted and trapped. However, state, provincial, and territorial laws and regulations governing commercialization of bear parts are inconsistent and often unclear. Some states regulate the legal sale of bear parts or at least do not prohibit sales, some allow the sale of bear parts only if the bears are legally taken in another jurisdiction, and some explicitly prohibit the sale of bear parts.

Most states that allow hunting do not allow the sale of gallbladders. Eight states currently allow their sale if legally acquired in the state: Idaho, Maine, New Mexico, New York, Vermont, Virginia, West Virginia, and Wyoming. Four provinces and territories--Northwest Territories, Nova Scotia, Quebec, and Saskatchewan--also allow legal sale of gallbladders from bears taken within their boundaries.

If we combine the legal harvests of black bears from all these 12 states, provinces, and territories in 1991, we get a total of 11,265 black bear gallbladders that could potentially have entered the market legally in 1991; 5,723 gallbladders from the United States and 5,542 gallbladders from Canada.

These gallbladders could have been sold legally either in the state, province, or territory of origin, or in one of the 20 states and five provinces that allow (or at least do not explicitly prohibit) the sale of bear parts harvested legally in other jurisdictions. Or, they could have been sold illegally in jurisdictions where the sale of gallbladders is prohibited. Because laws and regulations controlling trade of bear parts are not uniform, it

is often difficult to determine which is the case. This is especially true because many jurisdictions do not require, tagging, sealing, or registration of bear parts offered for sale.

Only Idaho, Saskatchewan, and Maine were able to provide us with data on the numbers of gallbladders acquired and sold within their boundaries, as these jurisdictions require all gallbladders sold to be reported. Idaho recorded sales of 510 gallbladders between 1983 and 1989, and 941 gallbladders from 1990 through 1993. Saskatchewan reported sales of 2209 gallbladders from 1988 through mid-1994. Maine last totaled their records of legal sales in 1989 or 1990, and found that roughly 400 gallbladders had been reported as sold. That gives us a total of reported sales from 1983 through mid-1994 of 3,550 gallbladders. Again, these are just sales within the states and provinces of origin; there are no data to indicate their ultimate destinations.

Total legal sales in North America are of course likely to be much higher than this, but no other data are available. There are also no comprehensive summaries available on illegally sold gallbladders.

We also have some data available on exports. The United States has issued CITES permits for the export of only two black bear gallbladders since 1992, and there are no records of seizures of black bear gallbladders intended for illegal export. In 1991, Canada reported total exports of 189 black bear gallbladders from September, when Canada listed the black bear on CITES Appendix III, to the end of the year, but no CITES reports have been completed since 1991. Incomplete export data obtained from Nova Scotia and Northwest Territories revealed the export of only 41 gallbladders since 1991, 38 from Northwest Territories and three from Nova Scotia.

The TRAFFIC questionnaire asked states, provinces, and territories to give their subjective assessments of the use of bear gallbladders and other parts both within their jurisdiction and outside their jurisdiction, and the significance of this trade. Fifty-nine respondents provided answers to these questions.

Thirty-four states, provinces, and territories indicated that markets for bear parts existed within their boundaries, while 18 of these reported the use of gallbladders. Thirty states, provinces, and territories reported the existence of out-of-state, out-of-province, or out-of-territory markets for bear parts and products, whether domestic or foreign. Twenty of these indicated Asian demand for black bear gallbladders harvested within their boundaries.

Trade activity within the state, province, or territory was considered very significant or somewhat significant by 26 respondents. Seventeen replied that the trade was not significant, and five reported that there was no known trade. Ten responded "do not know."

So there is a perception of relatively widespread commercialization of black bear gallbladders and other parts, particularly in Canada and on the eastern and western coasts of the United States. Once again, however, it is difficult to assess the conservation implications of the trade without having access to more reliable data on the size of trade relative to black bear populations or to legal supply.

Prices Received by Hunters for Bear Parts

Given the difficulties of recording legal as well as illegal commercialization and trade of bear parts, and abundant evidence of trade from law enforcement investigations, we might speculate about the incentives for illegal hunting and sale created by high demand and prices both within North America and overseas. Price trends are often the best indicator of demand, so let us examine the range of prices obtained by the hunter for gallbladders, paws, and other bear parts, as indicated by survey respondents.

We have reports of prices upwards of US\$10,000 for a bear gallbladder in Asian markets, although the price differential for American black bears versus Asian species is not clear. However, questionnaire respondents indicated that prices for gallbladders within the United States are much lower, ranging from US\$75 to US\$600, while the hunter will receive between US\$20 and US\$200. Prices within North America for gallbladders are actually significantly lower than prices paid for hides. Without more complete data on markets for American black bear gallbladders and other parts, however, it is difficult to determine the extent to which demand for medicinal purposes is likely to stimulate additional legal and illegal harvest of black bears.

Conclusion

Our findings to date thus suggest that although trade of gallbladders and other parts from the American black bear certainly does occur, it is not clear how much of an impact, if any, this trade is having on wild populations overall.

However, as demand for bear gallbladders, paws, and other parts appears to be increasing, while Asian bear populations are declining, we do feel that, at a minimum, it is important to continue to monitor the trade, and to improve the availability and reliability of data on the trade. This requires greater effort on several fronts:

1. We recommend that mandatory reporting systems be effected in all states, provinces, and territories in which the sale of gallbladders and other parts is permitted. Such systems would improve our ability to assess the scale of the legal trade, at least, and to monitor trends in trade in order to detect potential problems in time to address them. Mandatory reporting and recording systems would also improve our ability to

determine the origin of bear parts in trade, in order to assess whether this trade is supplied by legally harvested bears or is stimulating additional, and possibly illegal, harvest.

2. A centralized recording system for seizures by federal, state, provincial, and territorial wildlife and law enforcement agencies would be extremely helpful in obtaining at least a minimum estimate of illegal harvest and commercialization.
3. Increased market research, both within North America and abroad, to assess demand for black bear parts and track price trends would also improve our ability to predict changes in harvest and trade levels. Access to these types of information would also assist us in estimating the possible outcomes of different regulatory frameworks and law enforcement strategies in order to maximize their effectiveness.
4. Greater consistency among state, provincial, and territorial laws and regulations governing commercialization of bears and bear parts, at least at the regional level, also appear to be a priority in order to enhance current regulatory and law enforcement capability.

STATUS, MANAGEMENT, AND COMMERCIALIZATION OF THE AMERICAN BLACK BEAR (*Ursus americanus*), PART II¹

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Abstract. A great deal of information related to the status, management, and commercialization of the American black bear (*Ursus americanus*) was collected by a 1992 TRAFFIC USA survey of wildlife management agencies in the United States and Canada. A matrix of management considerations was developed to assist management and law enforcement officials to consider those impacts on black bear populations which are linked. Indicators used in the matrix include size of black bear population, trend in population, trade levels, and use of bear parts within jurisdiction. The purposes of the matrix are to assess the impact that commercialization of the American black bear is having at the state, provincial, and territorial levels. In addition, it is hoped that the matrix will guide officials to those states, provinces, or territories with the greatest needs for additional research, investigations, and both intra-agency and inter-agency coordination.

Introduction

Over the past eight to ten years, TRAFFIC USA has compiled extensive information on the status, trade, and management of the American black bear (*Ursus americanus*). The 1992 TRAFFIC USA questionnaire was completed by staff of state, provincial, and territorial wildlife management agencies in the United States and Canada. The primary goal of the 1992 TRAFFIC USA questionnaire was to better understand the issues related to commercialization of the American black bear. However, it is important to look at the issues related to commercialization in the context of all factors affecting American black bear populations. These include legal hunting, illegal hunting (poaching), road kills, natural mortality, habitat loss, population fragmentation, commercialization, and others. Although perfect information on the issues and factors influencing the commercialization of the American black bear is not available, some factors pertinent to this issue and to those interested in this issue are well known and documented:

1. From C.A. McCracken, D.A. Rose, and K. Johnson. 1995. *Status, Commercialization and Management of the American Black Bear (Ursus americanus)*. TRAFFIC USA/World Wildlife Fund, Washington, D.C.

1. All species of bears (and their parts) have a market value for a wide range of consumptive and nonconsumptive uses, including the American black bear (Cook 1994, Mills and Servheen 1991).
2. Link analysis work completed as part of undercover investigations has revealed an extensive and sophisticated network of hunters, middlemen, retailers, and buyers of parts from the American black bear (Cook 1994, Gavitt 1989, Klein 1982).
3. Bear parts desired by suppliers and users, such as gallbladders, claws, and paws, must be obtained by the killing of individual black bears. This killing may be legal or illegal. In some countries, the bile salts of bears are extracted through a milking process that does not result in the death of individuals (Mills and Servheen 1991).
4. Laws related to legal harvest of the American black bear, sale of bear parts, and penalties for illegal killing are not uniform throughout the range of the species, creating potential "loopholes" for those involved in illegal trade to launder bear parts to escape detection.
5. The American black bear is not distributed evenly throughout its range, nor is its habitat in North America contiguous. Smaller, fragmented populations of bears are at a greater risk from ALL factors, including trade in bear parts.
6. Most bear populations, including the American black bear, "have...low reproductive rates...delayed reproductive maturity...(and) variable survivorship of young...." (Miller 1990, 359). Therefore, populations that are reduced because of legal and illegal hunting, road kills, natural mortality, or environmental events may take years to recover.

What does what we know about the commercialization of the American black bear mean for the future of management activities related to this species in North America? Should the issue of commercialization be considered in isolation from the other issues impacting black bear populations, such as loss of habitat, fragmentation of populations, and legal harvest?

The appropriate question to consider is not "Is there national and international commercialization of the American black bear?" because clearly the answer to that question is an undisputed "Yes." Rather, a more appropriate question related to commercialization is whether or not the commercialization of the American black bear represents a threat to the long term sustainability of the species in its range. If a population is threatened by commercialization, what is the severity of that threat and to what extent can measures be put in place under financial, operational, and political constraints to eliminate or reduce that threat? As discussed in Miller (1990), black bear populations in North America are managed for different goals (control, conservation, or

sustained yield) and the goal selected will determine the management strategies implemented for a particular black bear population. Some states, provinces, or territories may have mission statements that define conflicting management goals.

It may also be important to examine the issues related to commercialization of the American black bear at more than one level. For example, the level of illegal killing of black bears in one state could be dramatically impacted by revisions in laws in an adjoining state or increased demand for bear parts from the entry of new users in the market. In order to look at these issues, and particularly those issues which are linked, a matrix of management considerations was developed with information provided by the states, provinces, and territories in the 1992 TRAFFIC USA questionnaire.

Overview of Matrix of Management Considerations

The matrix of management considerations has two purposes:

1. To assess the impact of commercialization of the American black bear at the state, provincial, and territorial levels; and
2. To guide officials to those states, provinces, or territories with the greatest needs for additional research, investigations, and both intra-agency and inter-agency coordination.

The matrix is comprised of ten indicators: population, population trend, legal harvest as a percentage of minimum estimated population, level of trade, trend in trade, arrests for illegal killing of black bear (1989-1991), users of parts in-state/in-province/in-territory, users of parts out-of-state/out-of-province/out-of-territory, legal sale of gallbladders acquired within the jurisdiction, and legal sale of gallbladders acquired from outside the jurisdiction.

An explanation of each indicator and the criteria used to apply the indicator to a particular state, province, or territory is provided, followed by the completed matrix and a discussion of the matrix results. It should be noted that the matrix reflects only the information obtained by those who completed the 1992 TRAFFIC USA questionnaire. The matrix of management considerations is meant to be a tool to help condense the large amounts of information collected in the 1992 TRAFFIC USA questionnaire process into a more useful format. It is not a "scorecard" of the management strategies for the American black bear in the states, provinces, and territories.

Description of Indicators Used in Matrix of Management Considerations

The first indicator used in the matrix was the estimated size of the black bear population. This consideration was noted if the population size estimate for the black bear population in the state, province, or territory was 1,000 or less, or if the state, province, or territory was unable to provide a population size estimate for its black bear population. As discussed above, smaller bear populations are more vulnerable to all factors, including the effects of commercialization.

Population trend was the second indicator used in the matrix. This consideration was noted if the population trend of the black bear population in the state, province, or territory was described as stable to decreasing or decreasing, or if the state, province, or territory was unable to provide a population trend description for the black bear population.

A literature review indicated that a legal harvest rate of 3 percent to 8 percent is the rate above which a black bear population's long term stability is likely to be negatively impacted (California Department of Fish and Game 1992, Kolenosky and Strathearn 1987). Therefore, legal harvest as a percentage of minimum estimated black bear population was used as the third indicator in the matrix. If the reported legal harvest of black bear in a state, province, or territory was greater than 10 percent of the minimum estimated population for at least two years of the period 1989-1991, this consideration was noted.

The fourth indicator used in the matrix was the level of trade in black bears and black bear parts. This consideration was noted if the level of trade in the state, province, or territory was reported as very significant or somewhat significant, or if the state, province, or territory was unable to provide information on the level of trade in black bears and bear parts.

The trend in trade in black bears and their parts was the fifth indicator used in the matrix. This consideration was noted if the trend in trade in the state, province, or territory was reported as increasing, or if the state, province, or territory was unable to provide information on the trend in trade in black bears and black bear parts.

Respondents to the 1992 TRAFFIC USA questionnaire were asked to provide information on arrests for illegal taking or killing of black bear for the period 1989-1991. Although a number of respondents were able to provide at least partial information on this topic, in quite a few of the states, provinces, or territories, this type of information is not centrally collected or summarized. However, it was felt that it would be important to reflect this information in the matrix of management considerations as the sixth indicator. This consideration was noted if a state, province, or territory reported any arrests for illegal taking or killing of black bear in the period 1989-1991. Detailed information on

whether or not these arrests involved trade in black bear parts is not available, although parts were seized in a number of the reported cases.

The seventh indicator used in the matrix was the reported use of black bear parts within the jurisdiction of a state, province, or territory. This consideration was noted if a state, province, or territory reported the use of black bear parts, including gallbladders, within their jurisdiction. This indicator and the eighth indicator were included in the matrix to provide some definition of where active markets for black bear parts exist in the United States, Canada, and abroad. The eighth indicator used in the matrix was the reported use of black bear parts outside the jurisdiction of a state, province, or territory. This consideration was noted if a state, province, or territory reported the use of black bear parts outside their jurisdiction, including Asia.

The ninth and tenth indicators used in the matrix relate to the regulations on sale of gallbladders in a state, province, or territory. As discussed above, the regulatory framework related to trade in black bear parts is inconsistent across the range of the species. The ninth indicator, sale of gallbladders from inside the jurisdiction, was noted as a consideration if the sale of black bear gallbladders from within the state, province, or territory is legal. The tenth indicator, sale of gallbladders from outside the jurisdiction, was noted as a consideration if the sale of black bear gallbladders from other states, provinces, or territories is legal.

Discussion of Completed Matrix of Management Considerations

After completing the matrix for all of the indicators, we can begin to see which states, provinces, and territories might be identified as having many considerations to incorporate into their management strategies for the American black bear. As you can see from the completed matrix, a state with a small black bear population with no legal hunting, such as New Jersey, can have as many management considerations as a state with a larger, hunted black bear population, such as Pennsylvania. The impact of illegal poaching in an area where bears are heavily sport hunted may be an important consideration, because complete information on illegal kills is not available. It should also be noted that those states, provinces, and territories where gallbladders have been seized in arrests for illegal killing of black bear in the period 1989-1991 are indicated in the matrix.

While the matrix is helpful as a first step to organize and understand the large quantity of information generated from the 1992 TRAFFIC USA questionnaire, it does only reflect that information. It is important that some consideration be given to other, more diffuse factors which affect American black bear populations. One example of these factors that is often overlooked, but of great importance, is the relationships between professionals within and between management agencies. During the course of the 1992 TRAFFIC USA questionnaire process, it was clear that these relationships range from

collaborative in some jurisdictions, to openly hostile in others. This issue has been a key factor in successful, integrated, comprehensive black bear management strategies (Cook 1991). Coordinating mechanisms such as task forces, interagency committees, and advisory councils could play an important role in sharing information and human and financial resources.

One example of this type of coordinating group is the Black Bear Conservation Committee in Louisiana, which involves more than 50 agencies, private companies, non-governmental organizations, university research units, and others. The coordinator for the Black Bear Conservation Committee is housed at the Nature Conservancy office in Louisiana (Davidson and Pashley 1992).

The TRAFFIC USA report, *Status, Management and Commercialization of the American Black Bear (Ursus americanus)*, includes a more detailed discussion of other factors, such as lack of reliable information on legal sales, illegal kills, enforcement activities, and public awareness and education needs related to the impacts of trade on black bear populations. Hopefully, both the report and the matrix of management considerations described in this paper will be helpful to those concerned with the management of the American black bear. It is the author's personal wish that the individuals and groups who have an interest in issues affecting the American black bear make a commitment to work together to ensure the continued viability of this important species in the United States, Canada, and Mexico.

Matrix of Management Considerations for States, Provinces, and Territories

Indicators:

The column is checked if the answer provided on the 1992 TRAFFIC USA questionnaire corresponds to that indicated in parentheses. States, provinces, or territories with American black bear populations are boldfaced.

- | | |
|-------------|---|
| Pop. | - Population (estimate of 1,000 or less, do not know) |
| Pop. Trend | - Population trend (stable to decreasing, decreasing, do not know) |
| Harv. | - Legal harvest as percentage of minimum estimated population (greater than 10 percent for two or more years) |
| Trade | - Level of trade (very significant, somewhat significant, do not know) |
| Trade Trend | - Trade trend (increasing, do not know) |
| Law Enf. | - Arrests for illegal killing of black bear 1989-1991? (yes) (*gallbladders seized) |
| Users In | - Use of parts within jurisdiction, including gallbladders? (yes) |
| Users Out | - Use of parts outside jurisdiction, including Asia? (yes) |
| Sale In | - Sale of gallbladders from inside jurisdiction legal? (yes) |
| Sale Out | - Sale of gallbladders from outside jurisdiction legal? (yes) |

STATE/ PROVINCE	Pop.	Pop. Trend	Harv.	Trade	Trade Trend	Law Enf.	Users In	Users Out	Sale In	Sale Out
Alabama	✓				✓					
Alaska				✓	✓			✓		
Arizona				✓		✓	✓	✓		✓
Arkansas					✓	✓				✓
California					✓	✓	✓	✓		
Colorado				✓	✓	✓	✓	✓		
Connecticut	✓				✓					
Delaware					✓					
Florida	✓			✓	✓	✓		✓		
Georgia						✓		✓		
Hawaii				✓	✓					
Idaho		✓		✓	✓	✓		✓	✓	✓
Illinois					✓			✓		

STATE/ PROVINCE	Pop.	Pop. Trend	Harv.	Trade	Trade Trend	Law Enf.	Users In	Users Out	Sale In	Sale Out
Indiana				✓	✓					
Iowa				✓	✓					
Kansas				✓	✓				✓	✓
Kentucky	✓				✓					
Louisiana	✓				✓	✓				✓
Maine			✓	✓	✓	✓		✓	✓	✓
Maryland	✓			✓	✓	✓		✓		
Massachusetts	✓				✓			✓		
Michigan			✓	✓	✓	✓		✓		
Minnesota			✓	✓		✓*	✓	✓		
Mississippi	✓	✓		✓	✓					
Missouri	✓			✓	✓	✓*		✓	✓	✓
Montana			✓	✓	✓	✓*		✓		
Nebraska				✓	✓					
Nevada	✓								✓	✓
New Hampshire						✓		✓	✓	✓
New Jersey	✓			✓	✓	✓*		✓		✓
New Mexico		✓	✓		✓		✓	✓	✓	✓
New York			✓	✓		✓		✓	✓	✓
North Carolina			✓	✓		✓				
North Dakota	✓							✓	✓	✓
Ohio	✓			✓	✓	✓		✓		
Oklahoma	✓							✓		✓
Oregon				✓	✓	✓				✓
Pennsylvania			✓	✓	✓	✓*	✓	✓		

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STATE/ PROVINCE	Pop.	Pop. Trend	Harv.	Trade	Trade Trend	Law Enf.	Users In	Users Out	Sale In	Sale Out
Rhode Island	✓									✓
South Carolina	✓				✓	✓		✓		
South Dakota									✓	✓
Tennessee	✓			✓	✓	✓		✓		
Texas	✓			✓	✓		✓			
Utah	✓			✓	✓	✓	✓	✓		
Vermont			✓		✓			✓	✓	✓
Virginia			✓	✓					✓	✓
Washington				✓	✓					
West Virginia			✓	✓		✓		✓	✓	✓
Wisconsin			✓	✓		✓		✓		
Wyoming	✓			✓	✓			✓	✓	✓
Alberta				✓	✓	✓		✓		
British Columbia				✓	✓			✓		
Manitoba							✓	✓		
New Brunswick	No information provided for 1992 TRAFFIC USA survey									
Newfoundland				✓	✓	✓		✓		
Northwest Terr.			✓		✓			✓	✓	
Nova Scotia				✓				✓	✓	✓
Ontario				✓		✓		✓		
Prince Edward Is.										
Quebec					✓	✓			✓	✓
Saskatchewan				✓	✓	✓*			✓	✓
Yukon Territory				✓	✓	✓*				

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My appreciation also to the staff members from the state, provincial, and territorial wildlife management and law enforcement agencies who took significant amounts of their time to complete the 1992 TRAFFIC USA questionnaire on the commercialization of the American black bear. In addition, they also generously made themselves available to me and to Debra Rose to provide additional information and answer our many questions. The TRAFFIC report released in March 1995 would not have been possible without their assistance.

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A CRITICAL INTELLIGENCE REVIEW OF THE BEAR TRADE IN THE USA

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**TRADE IN BEAR PARTS:
LESSONS FROM LAW ENFORCEMENT INVESTIGATIONS
IN CALIFORNIA**

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Abstract. This paper discusses five law enforcement investigations taking place in California from 1985 through 1994 and involving illegal sale and purchase of bear gallbladders and parts. These are Operation Rube, an 18-month covert operation ending in 1986 and involving 16 bears; Operation Ursus, a 14-month covert operation ending in 1988 and involving 60 retail purchases of bear gallbladders; the Robert Spina case of 1992, in which 70 bear gallbladders were taken out of California by a New Jersey resident and sold to an undercover agent in Pennsylvania; the William J. T. Lee and Ace Hunting Club case of 1993, involving 30 illegal guided hunts for bears and gallbladders from other poached bears; and the Joseph Chang case of 1994, involving the purchase of 177 bear gallbladders.

**TRADE IN BEAR PARTS:
LESSONS FROM LAW ENFORCEMENT INVESTIGATIONS
IN BRITISH COLUMBIA**

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Background

The wildlife parts trade and, more specifically, the bear parts trade have been noticeably active in British Columbia since the mid-1970s. A decrease in Asian bear populations, an increase in British Columbia's Asian population, and trade with Asia resulted in an increased demand for bear gallbladders during the mid-to-late 1980s. Soon the value of bear gallbladders became known to the hunting population and the general public through media exposure.

Bear gallbladders soon became a commodity that could help a hunter partially fund the hunt and changed the way in which bears were viewed. Past hunting pressure on bears was for trophy hides or for consumption and only exceptional animals were taken. The bear gallbladder trade made all bears valuable, and soon conservation officers noticed carcasses in the field with only gallbladders and paws removed. Once concern was raised by conservation officers, the Ministry of Environment chose to provide a legal avenue for the bear parts trade to monitor its impact on bear populations.

While the monitoring of the legal bear parts trade showed a low harvest number, street level information received by conservation officers found that the legal trade route was being circumvented. A covert operation into the bear parts trade was begun and indicated a large illegal trade. At the conclusion of the operation, the target alone was responsible for a trade in bear gallbladders in excess of the total number legally reported in B.C. The operation found that as long as there was a legal avenue to launder illegal gallbladders, monitoring and enforcement of the trade were extremely difficult. Regulations from other jurisdictions that prohibited the trade in bear gallbladders were studied and the decision was made to prohibit the possession of bear gallbladders. While it was understood that the regulatory change would not stop the illegal trade in bear parts, it would not provide a loophole for traffickers once they were caught with bear parts. In February of 1993, British Columbia prohibited the possession of bear gallbladder and genitalia separate from the carcass.

The Bear Parts Trade in British Columbia

The investigation into the British Columbia bear parts trade found that the trade existed at three levels: the shooter, the supplier, and the trafficker.

Shooter

The shooter is the bottom level of the bear parts trade and the most difficult to identify. Shooters include licensed hunters, native hunters, ranchers or farmers, houndsmen, and organized poachers. Most shooters are aware of the ban on the trade in bear parts, but want the monetary gain and feel the regulation is unwarranted government intervention.

Location: Shooters operate throughout B.C., but are noticeably active in areas such as Northern Vancouver Island, Upper Fraser Valley/Hope, Boston Bar/Merrit, Peace River area and the Okanagan.

Method: Gallbladders are illegally removed from bears during the general hunting season and from areas of high bear populations such as landfills, spawning areas, streams, and bait sites. Organized poaching groups will use remote bait sites with tree stands to kill bears. The sites are well hidden like grow operations and the groups go to great lengths to ensure the site and carcasses are not discovered, resulting in unwanted enforcement pressure. The spring appears to be the time of highest harvest as bears are easily baited coming out of hibernation and are very visible before green up. Also there are fewer resource users to witness violations in the spring compared to the summer and fall.

Transport: The gallbladders are easily transported by vehicle, although care must be taken not to puncture the gall sac. The gallbladders are transported to the supplier in either fresh or frozen state. Recent information has some shooters leaving the gallbladder at drop sites for the suppliers to pick up, lessening the risk of detection by conservation officers.

Supplier

The supplier is the mid-level of the bear parts trade and purchases the bear gallbladders from shooters. Suppliers are sometimes involved in harvesting some bears. Usually suppliers operate out of a business like a corner store, taxidermy shop, meat cutter, sporting good store, fur buyer, or restaurant. Suppliers represent a cross-section of nationalities.

Location: Work throughout B.C. but usually are found in larger centers.

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Location: Work throughout B.C. but usually are found in larger centers.

Methods: The suppliers' trade in gallbladders is usually a sideline to their main business. Often the gallbladder is traded for work or supplies, or cash is paid. Suppliers usually conduct their trade at their place of business, but due to inspections of the business by various government agencies, they store the gallbladders at their residence.

Transport: Usually gallbladders are brought to the supplier by the shooter and picked up by a trafficker.

Trafficker

The trafficker is the top level of the bear parts trade in B.C. Traffickers purchase gallbladders from suppliers throughout the province, import gallbladder from other jurisdictions, and export gallbladders to Asia. Traffickers also retail gallbladders to the local Asian market as well as to the Asian tourist trade. The traffickers are middle to upper middle class with either a university education or a trade, with most having military experience. The traffickers have an extensive network of contacts throughout North America and Asia related to their military service, church affiliation, or business.

Location: The known traffickers in B.C. operate in the lower mainland of B.C. and travel extensively throughout B.C. picking up gallbladders from suppliers.

Methods: The province during the time of the investigation was divided between four traffickers. Three travelled the province and the fourth, who was most established, relied on suppliers delivering to him personally or by mail. The traffickers also acquired gallbladders from other jurisdictions, including New Foundland, Manitoba, Saskatchewan, Yukon, New York State, Washington State, Idaho, and Alaska. The traffickers keep their suppliers secret to protect against takeover by other traffickers and to stop suppliers from getting together and fixing prices. Traffickers prefer to meet suppliers at the suppliers' place of business or a neutral site before allowing a trade at the trafficker's business. The traffickers will start by paying the supplier a high price for the product, then at subsequent sales lower the price due to changes in the market price or complaints of poor quality product. Traffickers are not easily fooled and are quite adept at identifying dried bear gallbladder.

Transport: Traffickers transport gallbladders in their vehicles from suppliers' locations to their residence or business. Gallbladders have been found hidden under spare tires, front seats, and under dirty diapers on the vehicle floor.

Export

To date, no evidence of large-scale gallbladder exports (>50) have been discovered. Export out of Canada is relatively easy through air cargo, or mailing or shipping as gifts. A larger trend is to have Asian tourists purchase gallbladders from a trafficker and carry it back to Asia in hand luggage or on their person. There is also an export of gallbladders from B.C. into Washington state through the lower mainland border crossings.

Indicators: Methods for hiding gallbladders are to dip them in chocolate, store them in containers of honey, or hide them in boxes of cookies and candy. Another avenue is any perishable product being shipped from B.C., such as fish products or pine mushrooms. Shipments of furs should also be checked for gallbladders. Any photographs of bears, bear parts or video tapes of bear hunts should also be suspect. Recent trends are to utilize other wildlife species like cougar gallbladders and to use Asian women as "mules" to transport bear parts.

**III. NORTH AMERICAN BLACK BEAR
GALLBLADDERS IN TRADE:**

LAW ENFORCEMENT ISSUES

INTERAGENCY COOPERATION IN LAW ENFORCEMENT INVESTIGATIONS INVOLVING WILDLIFE VIOLATIONS

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Abstract. Violators of wildlife laws, especially in the commercial arena, do not recognize geographic, political, or cultural boundaries. Methods to unlawfully take and commercialize wildlife are becoming more sophisticated each year. Funding, personnel, and equipment resources of conservation agencies are being stretched to the limits. One of the most effective tools in the wildlife law enforcement arena to combat this shortage of resources is interagency cooperation. Examples include task force operations, covert investigations, cross training, cross deputization, sharing of forensic expertise, intelligence sharing, routine enforcement patrols, and multi-jurisdiction prosecutions. Pooling of these resources enables wildlife law enforcement to address problems that are out of reach to the individual conservation agency. Memorandums of Understanding/Agreement are an effective way to document what resources will be shared and how the enforcement activity will be conducted. These cooperative efforts enable the conservation agencies to maximize their strengths and provide better oversight in the management and direction of resource expenditures.

I. WILDLIFE POPULATIONS ARE DECREASING AND/OR BECOMING MORE CONCENTRATED IN SMALLER AREAS

- HUNTER PRESSURE
- HABITAT DESTRUCTION
- INCREASING HUMAN POPULATIONS

II. HERE TO FORE WILDLIFE LAW ENFORCEMENT AGENCIES WENT THEIR OWN INDIVIDUAL WAYS - THIS HAS NOT WORKED EXCEPT IN LIMITED ARENAS

CONSERVATION LAW ENFORCEMENT OFFICERS HAVE EVOLVED FROM THE TRADITIONAL GAME WARDEN ROLE OF CHECKING HUNTERS TO HIGHLY SOPHISTICATED CRIMINAL INVESTIGATORS. THIS IS DUE TO DUE TO:

- GROSS ILLEGAL TAKE OF WILDLIFE
- INTERNATIONAL SMUGGLING
- COMMERCIAL MARKET HUNTING
- EXTREMELY HIGH COMMERCIAL VALUES OF WILDLIFE
LIVE ANIMALS, PARTS, PRODUCTS, TROPHIES

WILDLIFE VIOLATORS DO NOT RECOGNIZE GEOGRAPHICAL, POLITICAL,
OR CULTURAL BOUNDARIES

- MOVEMENT ACROSS OCEANS
- CROSS STATE AND COUNTRY BOUNDARIES
- ASIAN COMMUNITY GOING TO TRADITIONAL WHITE HUNTER FOR
WILDLIFE PARTS

WILDLIFE VIOLATORS HAVE BECOME MORE SOPHISTICATED IN THEIR
METHODS OF OPERATION

- USE OF ELECTRONIC SURVEILLANCE EQUIPMENT
- RECORD MANIPULATION
- USE OF LAUNDERING FACILITIES WEAK STATE & FOREIGN
COUNTRY LAWS
- BIG DOLLARS AVAILABLE FOR FINANCING
- PROFITS OUT WEIGH RISK OF GETTING CAUGHT

FUNDING, PERSONNEL, AND EQUIPMENT RESOURCES OF
CONSERVATION LAW ENFORCEMENT AGENCIES ARE LIMITED

- AGENCIES ARE HAVING TO PRIORITIZE WORK HIGH, MEDIUM, LOW
- PREVIOUSLY HIGH PRIORITIES ARE NOW LOW
- VIOLATORS ARE GETTING AWAY WITH MORE

III. INTERAGENCY COOPERATION IS AN EFFECTIVE TOOL IN WILDLIFE LE

DOCUMENTATION OF COOPERATIVE AGREEMENTS

TYPES OF INTERAGENCY COOPERATION

SHARING OF INTELLIGENCE

CROSS TRAINING (LAWS, PROCEDURES, TECHNIQUES)

CROSS DEPUTIZING

POOLING OF PERSONNEL

POOLING OF FUNDS

POOLING OF EQUIPMENT

TASK FORCE OPERATIONS

- ROADBLOCKS
- WATERFOWL
- BIG GAME ENFORCEMENT
- TAXIDERMIST
- FALCONRY
- BORDER CHECKS

JOINT ENFORCEMENT PATROLS

COVERT INVESTIGATIONS

SHARING OF FORENSICS EXPERTISE

MULTI-JURISDICTIONAL PROSECUTIONS

IV. COOPERATIVE AGREEMENT CONSIDERATIONS

PURPOSE

- MUTUAL ASSISTANCE IN CONSERVATION LE

AUTHORITIES

- AUTHORITY TO ENTER INTO COOPERATIVE AGREEMENT

DELEGATION OF AUTHORITIES

- RE-DELEGATION TO OTHER EMPLOYEES
- LAWS TO BE ENFORCED
- ENFORCEMENT POWERS
- GEOGRAPHICAL AREA OF AUTHORITY
- LIABILITY PROTECTION

AMENDMENT OF AGREEMENT

TERMINATION OF AGREEMENT

OPERATIONAL CONSIDERATIONS

V. JOINT OPERATION CONSIDERATIONS

PERSONNEL COMMITMENT (NUMBER & HOURS PER WEEK)

- NUMBER OF COVERT OFFICERS
- NUMBER OF SUPPORT (OVERT) OFFICERS
- NUMBER OF CLERICAL SUPPORT

FUNDING COMMITMENT

- HOW MUCH

Proc. Int. Symp. on Trade of Bear Parts for Medicinal Use

- OVER WHAT PERIOD
- HOW CAN FUNDS BE SPENT
- WHERE CAN FUNDS BE SPENT

EQUIPMENT TO BE PROVIDED

- VEHICLES/BOATS
- RADIOS
- FREEZERS
- LE GEAR

REVIEW OF PREDICATE LAWS BY PROSECUTING ATTORNEYS

NEED TO KNOW STATUS

- PROSECUTORS
- CLERICAL
- UPPER MANAGEMENT
- PUBLIC AFFAIRS
- FIELD PERSONNEL
- OTHER AGENCIES

ULTIMATE DECISION MAKER (Determining priorities)

HANDLING OF INFORMANTS

- CONTROLS/GUIDELINES
- PAYMENTS

PROSECUTOR CONTACTS

- WHEN CONTACT INITIATED

- WHO INITIATES CONTACT
- WHICH CASES ARE PROSECUTED & BY WHOM

INVESTIGATIVE REPORT PROCEDURES

- FORMAT TO BE USED
- WHO WRITES REPORTS
- TO WHOM & WHEN SUBMITTED
- WHO TYPES REPORTS AND/OR TAPE TRANSCRIPTIONS
- WHO RECEIVES COPIES OF INVESTIGATIVE REPORTS

HANDLING OF EVIDENCE

- WHAT IS TO BE SEIZED/PURCHASED/SOLD
- WHERE IS IT TO BE STORED
- WHO DOES FORENSICS WORK
- WHEN CAN DISPOSITION BE MADE AND HOW

HANDLING OF THE MEDIA

- WHO INITIATES CONTACTS AND WHEN (Lead)
- ON-SITE PARTICIPATION ALLOWED
- PRESS RELEASE GUIDELINES

WHO DECIDES WHEN "TAKEDOWN" IS TO OCCUR

- PRIMARY TARGETS VERSUS SECONDARY TARGETS
- STATUTE OF LIMITATIONS

WHO DECIDES WHEN CASE IS TO BE TERMINATED

HOW ARE ASSETS TO BE DIVIDED AT END OF CASE

- CAPITOL FUNDS PROFITS
- EQUIPMENT

VI. TEAM WORK IS THE ONLY WAY TO EFFECTIVELY ENTER THE 21ST CENTURY

LAW ENFORCEMENT AND TRADE IN BEAR PARTS: VIEWS FROM THE PROSECUTION

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Abstract. Trade in bear parts, particularly gallbladders, has increased greatly in the past few years in British Columbia. This has resulted in changes in legislation to control the sale and ultimately prohibit the possession of bear gallbladders within the Province of British Columbia. These legislative changes have resulted in prosecutions under the Wildlife Act. The paper discusses applicable legislation, charge approval process, preparation, the conduct of the trial, issues that may arise at trial, the use of expert witnesses at trial, and considerations on sentence.

THE USE OF DOGS IN DETECTING BEAR GALLBLADDERS

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Introduction: Use of Canines in the B.C. Conservation Officer Service

The Conservation Officer Service (C.O.S.) currently uses two breeds of dogs in the course of their duties. The C.O.S. maintains packs of hounds trained to track problem wildlife such as cougars. The service also utilizes German shepherds for its law enforcement activities. This paper will discuss this latter use of dogs.

Conservation Officer Service Dog Program

In the spring of 1992, the Conservation Officer Service formally established a canine team. Training was received through the RCMP with primary focus on utilizing the searching abilities of a canine specialized in fish and wildlife law enforcement work. Training encompassed the following profiles:

Small Article Searches: Recovery of small items of evidence, primarily spent brass, knives, or anything that is foreign to an area.

Outdoor searches: Finding persons, evidence, and articles, primarily at poaching scenes.

Detection: Locating items such as guns, bear gallbladders, etc., that may be hidden in vehicles, aircraft, boats, residences, stores, or warehouses.

Tracking: Following suspects from point to point, primarily in wilderness conditions.

Criminal apprehension: To assist in the control and arrest of suspects.

In Canada, canines used for law enforcement purposes must be certified for the task. This certification process is necessary before the courts will consider any evidence obtained by the canine as admissible. Certification does not guarantee that the evidence obtained through the use of a canine will be accepted by the courts, as the canine handler

must qualify as an expert witness to give his opinion and relate to the courts what the handler/canine team did.

The Conservation Officer Service receives certification through the Royal Canadian Mounted Police Dog Service. Their course of training has been modified where necessary to suit the needs of the C.O.S.

Although the canine team has many applications in the C.O.S., this paper will discuss in some detail the bear gallbladder detection profile.

Profile Specialty--Bear Gallbladder Detection

Investigations into the bear gallbladder trade led to the decision that one of the specialties of a trained canine team should be bear gallbladder detection. This decision was based on the following factors: the relatively high value of bear gallbladders; the ease of hiding bear gallbladders; the increasing frequency of bears being poached throughout the province with only the gallbladder removed from the carcass; the substantial volume of bear gallbladders coming into the Vancouver from other jurisdictions; British Columbia's ban on the bear parts trade; and CITES listing of the black bear.

Concern about whether a canine could reliably detect bear gallbladder was another issue. Since it was evident that no other agency was using a canine for bear gallbladder detection, narcotic detection training methods were employed substituting narcotics with bear gallbladders. It quickly became evident that a canine could easily discriminate the scent of bear gallbladders and locate their presence.

Methods

Detecting hidden bear gallbladders incorporates the interplay of three distinct phases while the dog is going through a search pattern that the handler must recognize and interpret. As the dog searches, he will abruptly alter his search pattern when he first comes in contact with the gallbladder scent and further investigates that scent. This is termed 'showing interest.' This can be very subtle at times, but an experienced handler will easily read his or her dog. The dog will pursue this scent cone to its source. Once the source is located, the dog will "indicate" to the handler the location by a number of methods such as pawing at it, whining, and pointing at it with its muzzle. Immediately after this indication, the dog will sit close to the hide and stop searching. This is termed a "sit confirmation," the purpose of which is for the dog to commit to his decision of the item being found.

Detecting bear gallbladders begins with the handler evaluating the search conditions such as air movement, contamination, safety, etc. to determine how best to deploy the dog. At this point, the dog is brought into the area and downed for about two minutes. This permits the dog to acclimatize his nose to the unique scents at the scene. After this brief delay, a nylon collar is placed on the dog and the search command given. The dog will normally begin to free search the scene off leash with the handler maintaining a close eye on the dog in case of any easy finds. Depending on the size of the area, the handler will at some point place the dog on a short leash and commence detailing. Detailing is a much more slow and methodical method of searching. The dog will sniff only those areas or items the handler points to. This concentrates the dog's searching effort and greatly enhances his detection abilities. From the moment when the search command is given, it is not uncommon for the dog to run straight to a hidden gallbladder and indicate it.

Once the dog was reliably indicating the location of hidden bear gallbladders, tests were conducted to determine how specific was the dog's scent discrimination; would it be good enough for court certification? The results were impressive. Two different tests come to mind. The first was using a dried gallbladder (which gives off far less scent than a green gallbladder) hidden among a number of boxes which contained other bear body parts (paws, heads, quarters, hides, etc.). The canine located the gallbladder without delay or difficulty. This test indicated that the bear gallbladder is scent specific and unique from the rest of the bear carcass. The second test sought to determine if the scent of a bear gallbladder differed from other animals' gallbladders. Gallbladders from other species were hidden along with a bear gallbladder. When the dog began the search, it located the bear gallbladder and ignored the gallbladders of other species. This test was repeated with the bear gallbladder hide made more difficult, while the other species were hidden in a manner that would make them easy to find. Again the results were as before, with the dog indicating the bear gallbladder and ignoring the other species. These tests were repeated and conducted under different conditions, yet the results remained the same.

Bear gallbladder detection has proven most effective during the execution of search warrants. There normally is not enough manpower available during a search to check every possible nook and cranny inside a car, residence or warehouse that may hold bear gallbladders. An average residence can be searched with a dog in about 30 minutes, a large warehouse in about one hour. In due course, searches will commence on international airline luggage. The largest find to date has been 15 bear gallbladders at an apothecary.

The sheer volume of daily luggage originating from Vancouver Airport to Pacific rim countries far exceeds the capacity of a trained canine team. It is not uncommon for three Boeing 747 flights to depart for Asia in one afternoon, yet a canine team could at most, under optimum conditions, search the luggage of one such flight. Intelligence from the C.O.S. indicates that bear gallbladders are frequently smuggled abroad in clothing

worn by the passengers. The only feasible method of intercepting these gallbladders would be to have the canine team move amongst passengers just prior to aircraft boarding. Obviously, this is politically not feasible.

Costs and Operations

The canine team responds to requests received from district offices. The team is also available to other jurisdictions requiring this detection specialty for major investigations.

The establishment of a trained canine team is an expensive undertaking and difficult to justify as most agencies face shrinking budgets.

A summary of costs is listed below:

C\$125	per month dog allowance to cover food and minor incidentals;
C\$1,000-C\$3,000	for the purchase of a German shepherd with a contract;
C\$3,000	for vehicle modifications (air conditioning, rubber mats, window tinting, silent patrolman);
C\$500	for equipment (leashes, harnesses, etc.);
C\$1,000	for secure kennel at residence;
C\$1,000	for veterinarian bills; Dogs used for law enforcement suffer from frequent injuries such as cuts and bruises;
C\$15,000	in wages for officer time spent training.

Establishing a canine team will cost about C\$25,000 in the first year of operation and it will normally take six to 12 months of training before the team will attend its first call. What is not reflected in the above figures is the substantial professional and personal commitment required by any dog handler. Caring for the dog's needs and safety continues into the officer's off duty time.

Conclusion

A dog trained in the detection of bear gallbladders is an effective tool for law enforcement agencies engaged in this type of activity. By the very nature of the trade, bear gallbladders are most frequently concealed and standard manual searches carried out

by officers are, at best, haphazard and hit and miss. By comparison, a canine team moves through a search area with almost mechanical purpose. It would, however, be a waste of a dog's ability and motivation to restrict it to only bear gallbladder detection. Dogs have repeatedly demonstrated their unique aptitude for law enforcement and the variety of situations that a dog can be called upon to perform is limited more often by the handler and training than the dog's capacity to learn.

THE UNBEARABLE FACTS ABOUT THE (VILE) BILE TRADE*

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Abstract. We have characterized 1) bile acid crystals, 2) fresh gallbladders, and 3) desiccated gallbladders of the Ursidae family that were obtained as criminal evidence. The identification of bear species consists of identifying the three principal biliary components, mainly ursodeoxycholy-*L*-taurine, cholyl-*L*-taurine and chenodeoxycholy-*L*-taurine using TLC and HPLC. This bile acids profile is an Ursidae family characteristic. Analysis of 1528 evidence items showed that of the samples from Asia (n=168), only 2 percent were from wild bears and 15 percent were from "farmed" bears. Samples seized in the U.S.A. (n=871) and Canada (n=489) showed that 49 percent and 74 percent, respectively, were from Ursids. The remaining samples were consistent with bile from the domestic pig (Suidae).

Introduction

Bear bile has been a prescribed medicinal in Asian communities for the last two millennia (Bensky and Gamble 1993). Within the last decades, the number of Asian bears has dramatically decreased while the demand for oriental medicinals has increased, and bears now warrant protection as threatened or endangered species. Because of the endangered status of many of bear species, the trade in bear bile and gallbladders has become subject to laws and trade agreements (i.e., CITES). In the past, identification of bear bile crystals was performed using folkloric methods and was unreliable at best. Even with the implementation of more recent immunological or protein techniques, identification of the source of desiccated gallbladders has remained difficult, if not impossible. We have developed a method which allows for the source identification of bile salts and gallbladders of bears by analyzing the main biliary components, specifically the bile acids

* This presentation has been excerpted from the following two sources:

Espinoza, E.O., J.A. Shafer, and L.R. Hagey. 1993. International trade in bear gallbladders: Forensic source inference. *J. For. Sci.* (38)(6): 1361-1368.

Hagey, L.R., D.L. Crombie, E.O. Espinoza, M.C. Carey, C.Y. Cun, and A.F. Hofmann. 1993. Ursodeoxycholic acid in the Ursidae: Biliary bile acids of bears, pandas and related carnivores. *Journal of Lipid Research* (34)(11): 1911-1917.

ursodeoxycholyl-aurine, cholyl-aurine and chenodeoxycholyl aurine using thin layer chromatography (TLC) and high pressure liquid chromatography (HPLC). Using this method, we have analyzed the bile acid crystals or desiccated gallbladder contents of over 1500 samples seized as criminal evidence.

Experimental Method

Materials

HPLC grade methanol, chloroform and isopropanol were purchased from Fisher Scientific Co. Deionized water was distilled and filtered through a 0.45 μ m membrane filter (Millipore). Tauroursodeoxycholic acid, taurocholic acid, glycocholic acid, glycochenodeoxycholic acid and monobasic potassium phosphate were purchased from Sigma Chemical Co. Glycohyodeoxycholic, glycohyocholic and taurochenodeoxycholic acids were obtained from Dr. Hagey. The Prep Torr solid phase vacuum system and solid phase extraction (SPE) reversed phase C₁₈ columns were purchased from Fisher. Bear and nutria gallbladders were obtained courtesy of the U.S. Fish and Wildlife Service Law Enforcement agents and selected zoos. Lyophilized bear bile salts were obtained courtesy of Dr. Theis from the University of California, Davis Campus. Bovidae and Suidae gallbladders were obtained from local sources.

Sample Preparation

Ten milligrams of crystallized bile salts were removed through a small incision at the base of desiccated gallbladders. Fresh hydrated gallbladders were sampled by extracting 0.1 ml of bile with a hypodermic syringe. The samples were transferred to a test tube and one milliliter of 0.1 N NaOH was added. Samples were sonicated for eight minutes and transferred to a C₁₈ solid phase extraction (SPE) column. Extracted bile samples were eluted thrice using 0.33 ml of methanol. The eluted samples were then transferred to glass collection vials for analysis.

TLC

A TLC method (modified from Batta *et al.* 1981) was used to confirm the presence of conjugated bile acids detected by HPLC. Bile samples (prepared as described above) were spotted (10 μ l) onto Fisher silica gel TLC plates. The plates were developed twice in a chloroform:isopropanol:acetic acid:deionized water solvent system, 30:30:4:1, v/v. The plates were air-dried and then sprayed with 20 percent v/v sulfuric acid in water followed by 3.5 percent w/v phosphomolybdic acid in isopropanol and heated at 110 °C for two minutes.

HPLC

A Hewlett Packard 1090 HPLC equipped with a diode array detector was used for analysis. The analytical column was a Vydac reversed phase C₁₈ column, 25cm x 4.6 mm I.D., (5 μ m particle size). The analytical wavelength was 210 nm with a reference wavelength of 250 nm. Separations were obtained using a modification of the method of Rossi *et al.* (1987). The method uses an isocratic 25 mM KH₂PO₄ / K₂HPO₄ buffer (apparent pH 5.45) in methanol:water, 85:15, with elution at 0.75 ml/min. Peaks were assigned by comparison of the relative retention times with those of known standards. Ultraviolet spectra of all bile acids tested were similar and consequently did not offer any useful structure elucidation.

Results

We have previously reported the results of the analysis of the gallbladders from 289 individuals of the Ursidae family using HPLC and confirmed by TLC (Espinoza *et al.* 1993, Hagey *et al.* 1993). Species represented included six grizzly bears (*Ursus arctos*), 35 American black bears (*Ursus americanus*), three polar bears (*Thalarctos* (= *Ursus*) *maritimus*), 34 farmed bears (*Ursus thibetanus* and *Ursus arctos* suspected (Mills 1992), and 124 North American bear gallbladders of unknown species. One of the authors (Hagey) has additionally investigated the bile acid composition of sun bears (*Helarctos malayanus*), sloth bears (*Melursus ursinus*), and spectacled bears (*Tremarctos ornatus*).

The main bile acids of the Ursidae family consist of ursodeoxycholy-*l*-taurine (3 α ,7 β -dihydroxy-5 β -cholanoyl taurine), its 7 α hydroxy epimer chenodeoxycholy-*l*-taurine (3 α ,7 α -dihydroxy-5 β -cholanoyl taurine), and choly-*l*-taurine (3 α ,7 α ,12 α -trihydroxy-5 β -cholanoyl taurine) as well as other minor components (Hagey *et al.* 1993). These bile acids were found in all bear samples when analyzed by either HPLC or TLC (Espinoza *et al.* 1993, Hagey *et al.* 1993). Characteristic TLC retention factors (R_f) for the bile acids of interest are found in Table 1. This data is in agreement with that published by MacDonald *et al.* (1985).

An analysis of the main bile acids of suspected farmed bears found ursodeoxycholy-*l*-taurine and chenodeoxycholy-*l*-taurine but little or no choly-*l*-taurine. The qualifier "suspected" farmed bears is used because we have not obtained reliable standards from bear farms¹. Farmed bears are a mixture of genera, but are likely to consist primarily of Asiatic black bears (*Selenarctos thibetanus*) (Mills 1992). A caveat of concern is that within the last three years we have not been able to obtain a reliable known sample of

¹The farmed bear samples were obtained from asian medicinal containers which stated that the provenance of the bile salts were from bear farms.

Asiatic black bear gallbladder for analysis and it is possible, although unlikely, that the data we are presenting is due to a species difference. Until known standards are obtained, we can not discount species differences as an explanation for the marked decreased or absence of cholyl-aurine in farmed bears.

The low cholyl-aurine levels seen in suspected farmed bears is consistent with the data of Guanlin and Guanzhu (1988) who analyzed the bile of three farmed bears and found low concentration of cholyl-aurine (6-13 percent) and high concentrations of ursodeoxycholyl-aurine (31 - 42 percent) and chenodeoxycholyl taurine (46-56 percent). It is significant that the decreased production of cholyl-aurine and the concurrent increase in both ursodeoxycholyl-aurine and chenodeoxycholyl taurine appear to be characteristic of farmed bears. It is very likely that within the Ursidae family, ursodeoxycholic acid, chenodeoxycholic acid and cholic acid are hepatically synthesized primary bile acids. The pattern of bile acids detected in farmed bears suggests a constant synthesis of the dihydroxy components and concurrent feedback suppression of cholic acid synthesis.

Gallbladders from domestic pigs, the nutria (*Myocastor coypus*), various species of cat, snake, fish, raccoon, dog, and cow were also analyzed by TLC and HPLC (Espinoza *et al.* 1993, Hagey *et al.* 1993, Hagey 1992). None of these species had the distinct bile acid profile characteristic of the bear family when analyzed by TLC and HPLC. Therefore, it can be inferred that large amounts of ursodeoxycholyl-aurine in bile is a Ursidae family trait and that no other species of mammal, reptile, or fish analyzed to date (n=1000) (Hagey 1992) share their unique bile salt profile. Based on our data, the following criteria were established for bile or gallbladder source inference :

1. If high levels of ursodeoxycholyl-aurine in combination with chenodeoxycholyl-aurine and cholyl-aurine were detected by HPLC and confirmed by TLC, it was concluded that the bile salts were from wild bears.
2. If HPLC analysis revealed high levels of chenodeoxycholyl-aurine and ursodeoxycholyl-aurine and low levels of cholyl-aurine (<10 percent), it was inferred that the bile salts were from farmed bears.
3. The absence of ursodeoxycholyl-aurine was indicative that the source of the bile did not belong to the Ursidae family.

The National Fish and Wildlife Forensic Laboratory has received 1528 bile salt and/or gallbladder items as criminal evidence for analysis (see Figure 1). Asia (Hong Kong, Taiwan, Malaysia and India) has submitted 168 items (11 percent) and Canada has submitted 489 items (32 percent). The remaining 57 percent (871 items) were submitted from various state and federal wildlife agencies in the United States (Table 2). Analysis showed that of the samples from Asia (n=168), three gallbladders (2 percent) were from wild bears, 25 samples of bile crystals (15 percent) were from farmed bears, and the

remainder were inconsistent with those of the Ursidae family. Analysis of gallbladders submitted from Canada (n=489) revealed that 360 gallbladders (74 percent) were from wild bears (Figures 1 and 2). Samples seized in the United States (n=871) showed that 428 gallbladders (49 percent) were from wild bears and 51 percent were from pigs. The number of gallbladders submitted by state is shown in Figure 1. The percentage of bear gallbladders is shown in Figure 2. The widespread substitution of pig gallbladders for those of bear and the fraudulent nature of the trade in gallbladders and bile salts should not be surprising, since Namba *et al.* (1982) documented fraud as early as 1982.

Conclusion

HPLC and TLC were used to analyze and characterize the bile salts and gallbladders from known bears and from items seized as criminal evidence. The principal bile salts detected in North American bears were ursodeoxycholy-*L*-taurine, cholyl-*L*-taurine, and chenodeoxycholy-*L*-taurine. This bile salt combination is an Ursidae family characteristic and it is not shared by over 1000 species tested, including mammals, birds, and reptiles (Hagey 1992). Farmed bears are characterized by a decreased presence of cholyl-*L*-taurine (<10 percent) and a corresponding greater increase in the percent composition of ursodeoxycholy-*L*-taurine and chenodeoxycholy-*L*-taurine. Analysis of 1528 bear trade items obtained as criminal evidence showed that of the samples from Asia (n=168), only 2 percent were from the Ursidae family and 15 percent were from "farmed bears." Samples seized in the United States (n=871) and Canada (n=489) showed that 49 percent and 74 percent respectively were from Ursids. The remaining samples contain bile from the domestic pig.

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Acknowledgement

We are grateful to Dr. Mark Kirms and Mary Jacque Mann of the U.S. Fish and Wildlife Service for their advice and editorial critiques.

TABLE 1. R_f Values Of Conjugated Bile Acids

COMPOUND	R _f
Cholyl-taurine	0.18
Deoxycholyl taurine	0.34
Chenodeoxycholyl taurine	0.37
Ursodeoxycholyl taurine	0.43
Lithocholyl taurine	0.53
Cholyl-glycine	0.47
Deoxycholyl glycine	0.73
Chenodeoxycholyl glycine	0.76
Ursodeoxycholy glycine	0.81
Lithocholyl glycine	0.87

TABLE 2. Number of Items and Percentage of Bear Gallbladders by Area of Submission

Origin	Case Load Percentage	Number of Samples Analyzed	Percent (Number) of Ursidae Samples
Asia	11 %	168	2 % (3) Bear 15 % (25) Farmed Bear
United States	57 %	871	49 % (428)
Canada	32 %	489	74 % (360)
Grand Total	100 %	1528	53 % (816)

Number of Evidence Items Analyzed for Bile

FIGURE 1.

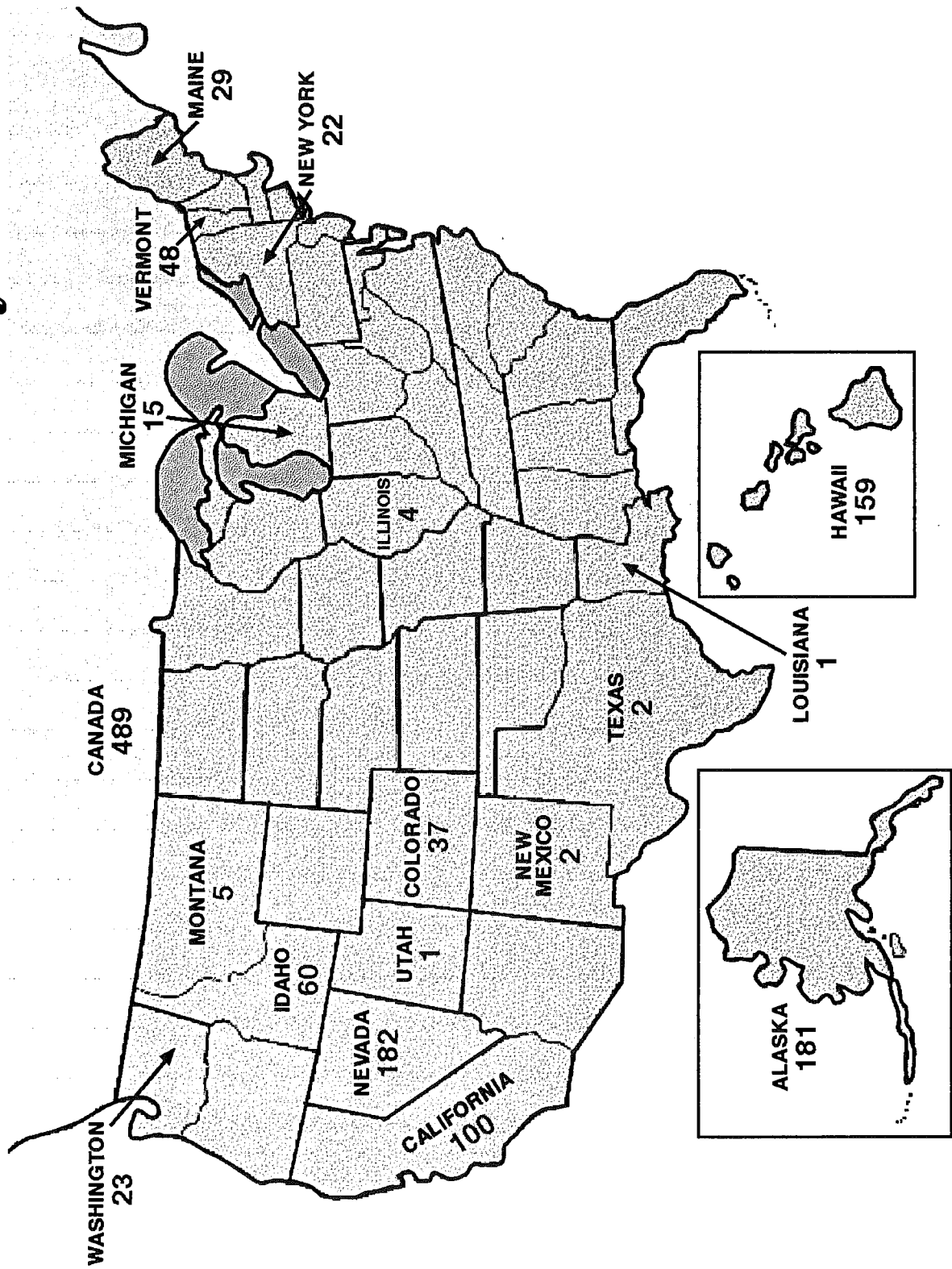
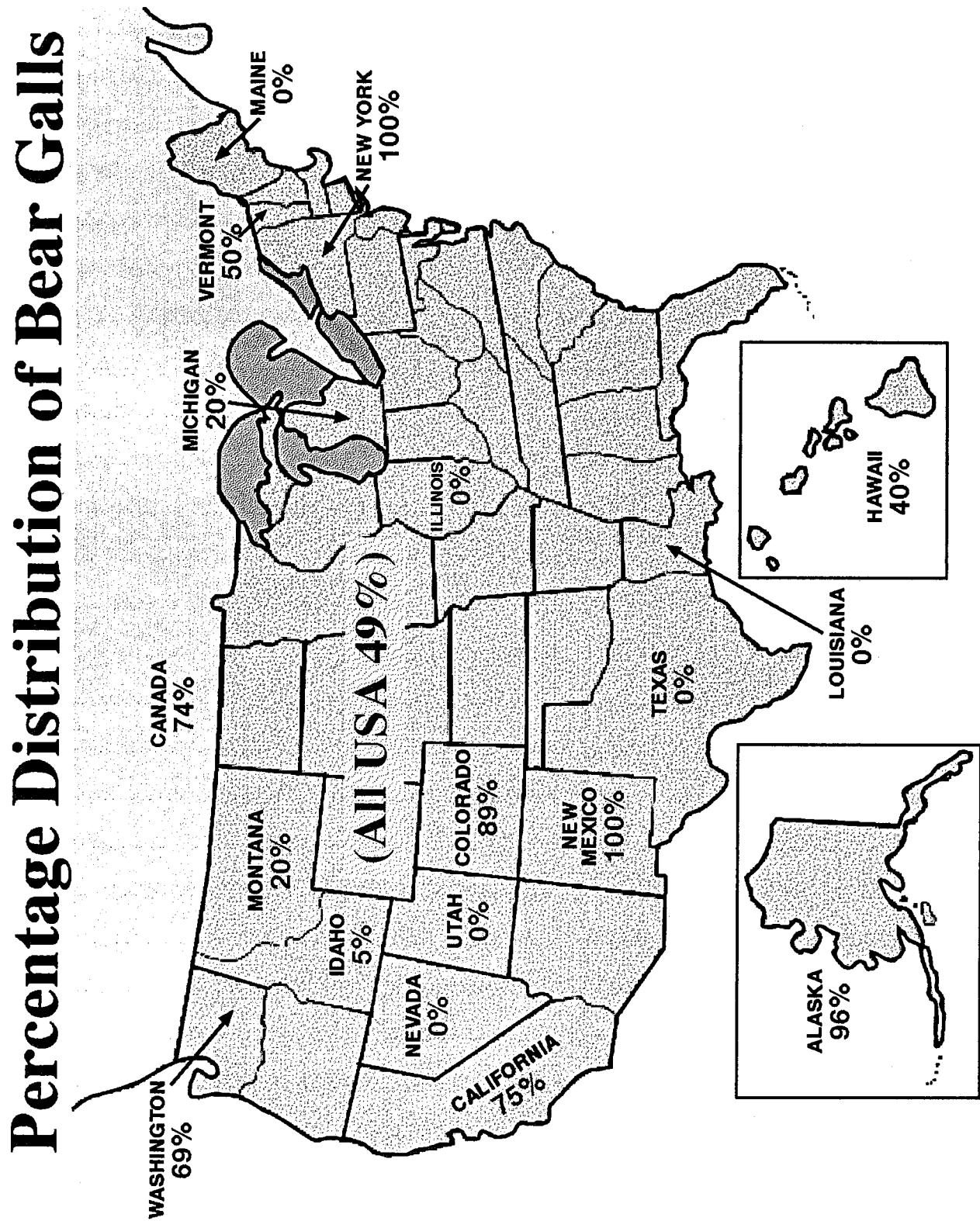


FIGURE 2.



MITOCHONDRIAL DNA ANALYSIS AND WILDLIFE LAW ENFORCEMENT: EFFORTS TO STOP INTERNATIONAL COMMERCE IN BEAR PRODUCTS CAN BENEFIT GREATLY BY THE VALUABLE RESOURCE OF ZOO BREEDING PROGRAMS

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Abstract. A responsibility of the National Fish and Wildlife Forensics Laboratory is to provide analytical support for the enforcement of the Endangered Species Act, Marine Mammal Protection Act, Lacey Act and the Convention on International Trade in Endangered Species (CITES) concerning foreign or domestic trade in bear parts. Recently, mitochondrial DNA (mtDNA) analysis has become a valuable tool in identifying the species source of bear parts and products. The development of species specific markers for casework applications requires a knowledge of the levels of genetic variation that exist within and between bear species.

The captive populations of Asian and spectacled bears in North American zoos are comprised of multiple accessions of individuals from different geographic locations within the respective species ranges. The genetic difference between these samples would approximate intra-specific variation for a species. The zoo populations of these critically endangered species are actually becoming the sole source for information of this kind. Fifty-four different zoos collaborated in this work.

We characterized sequence variation in a portion of the mtDNA control region of 48 sun bears (*Helarctos malayanus*) representing 16 geographically anonymous matriline, 21 Asiatic black bears (*Selanarctos thibetanus*) representing four geographically anonymous matriline, 32 sloth bears (*Melursus ursinus*) representing 11 geographically anonymous matriline, nine spectacled bears (*Tremarctos ornatus*) representing nine geographically anonymous matriline, and one panda (*Ailuropoda melanoleuca*). In addition, we compared the DNAs of 19 brown bears (*Ursus arctos*), nine American black bears (*Ursus americanus*), and 10 polar bears (*Ursus maritimus*) collected from throughout their respective ranges in North America.

Intra-species sequence divergence among Asian bears was as high as 8.5 percent. A rapid PCR/RFLP assay developed from the acquired nucleotide sequence information resolved the 16 sun bear matriline into four different haplotypes, the 11 sloth bear matriline into two haplotypes, and the four Asiatic black bear matriline into a single haplotype. The nine spectacled bear matriline were also resolved into a single haplotype. Most RFLP haplotypes were species specific. However, sloth bears and sun bears exhibited two haplotypes in common. The geographic source of some sloth bear and sun bear matriline was inferred from RFLP comparisons to reference samples of known geographic origin.

**IV. REGULATING COMMERCIALIZATION AND TRADE
OF BLACK BEAR PARTS:**

PERSPECTIVES FROM THE STATES AND PROVINCES

THE BEAR PARTS BUSINESS IN MAINE

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Maine currently maintains one of the largest black bear populations in North America. For a number of years, the harvest level of approximately 2,000 bears has helped to keep the population at around 21,000 animals. That 21,000 figure is right on target with our management plan for the black bear. During the years that the number of bears goes much higher than that, we experience some severe crop damage and many incidents of bears raiding home garbage containers.

Our bear season currently takes place during the months of September, October, and November. The majority of the bears harvested are taken in September and a large number of those are in conjunction with a guided hunt.

It was approximately 20 years ago that we became aware that the gallbladders from some of these bears were being removed and sold to people of the Asian culture. The first question that arose was whether or not this activity was legal under Maine law. The final resolution was that it would be legal to sell the gallbladder, head, hide, and claws from a legally taken bear. The second question posed was what effect will this have on the resource in terms of promoting an illegal harvest of bears for their parts. Let us set the latter question aside for awhile and address the first.

Because of Maine's long standing history of having a fur harvesting industry, we had in place regulations that governed the registration and sale of raw fur. The sale of bear gallbladders fell under those rules, so we were one step ahead of the game. The law mandates that almost all fur taken must be legally registered and tagged before being sold. Perhaps more importantly, the law requires that anyone buying fur must possess a hide buyer's license and keep accurate records of all transactions. Our records show that 500 or so bear gallbladders are sold in this state each year. Of course, our numbers are only as accurate as the data provided.

Now let us go back to the question of resource protection. During the past few years, we have conducted numerous overt and covert investigations into commercial bear hunting. Many of those centered around bear gallbladders. The results of most of those investigations has been that charges were brought but primarily involved license cases. An example is the case of a U.S. military colonel of Korean descent who was purchasing

bear gallbladders in northern Maine. The primary violation was that he did not possess a current hide buyer's license. The penalty for that charge is usually \$200 or so. The trend now is that most people buying gallbladders purchase a license to do so. It is our feeling that we are getting a fair accounting of bear gallbladder sales. We do not find much, if any, evidence that supports the theory that bears are taken just for their gallbladders and other parts.

At issue in many of the investigations was the illegal guiding that was taking place. It is important to note that about 50 percent of the bears taken in this state each year are done so in conjunction with a guided hunt. To guide in the state of Maine, one must first possess a Registered Maine Guide's license. Before obtaining this license, the applicant must first pass an in depth written exam and then undergo a rigorous oral board exam. Because of the many complaints from properly licensed guides, we investigated many of these people and charged several with guiding without a license.

The state of Maine's position on the sale of bear parts is this: We feel that these parts are simply a by-product of a legally taken bear. Hence, the sale of bear parts has no bearing on the original reason to kill the bear for the vast majority of hunters. Therefore, the sale of the parts does not result in an increased harvest.

Another question one might pose is whether or not Maine is a clearing house for the sale of bear parts from other states or provinces. Generally, we do not find this to be so. We have, however, recently finished a case involving the purchase of bear gallbladders from an individual in Ontario by an individual in Maine. Ontario prohibits the sale of bear gallbladders and the Maine buyer acted as the middleman to get the gallbladders to another U.S. buyer. This case was handled in Federal Court.

For several years, the price for bear gallbladders has stayed at around \$10 to \$20 dollars an ounce. Within the past five years, there has been an increase in the interest in claws, feet, and teeth. The price for them has increased about 50 to 100 percent during that time period. The Asian communities of Boston and New York remain as the ultimate destination for most of our bear parts, excluding the hide and meat which are usually taken by the sport hunter. On the guided hunts, the guide most often removes the gallbladder and sells it to a licensed hide buyer. This is permitted as long as it is understood that the sport hunter is giving it to the guide and not selling or trading it. All gift bear parts have to be labeled with the name of the hunter, possessor, and transporter. Currently, the price of a one week guided hunt averages around \$1,000, so it would make no economic sense for a guide to kill a bear for \$100 worth of parts.

In closing, the reader should not be fooled into thinking that the great state of Maine takes a nonchalant attitude toward sale of bear parts or toward the commercialization of any resource. We manage our fish and wildlife to the best of its potential, both for the resource and for the state's benefit. The Maine Warden Service has had a long standing

reputation for being tough on poachers and other law breakers and that reputation is deserving.

SASKATCHEWAN TRADE IN BLACK BEAR PARTS

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Introduction

Saskatchewan allows the sale of legally taken bear parts. A permit must be obtained to do so. This permit may be acquired through any of the province's 190 conservation officers. The Department is currently studying this policy and may outlaw the sale of bear parts within the next year. This action has been taken by most other Canadian provinces and there are fears that Saskatchewan will become a "clearing house" for other provinces in the bear parts trade.

The black bear population in Saskatchewan numbers between 25,000 and 40,000, and ranges primarily in central and northern Saskatchewan. A sharp decline in numbers occurred in 1989 to 1992, but the population recovered in 1993 and 1994.

Section 41 of the Saskatchewan Wildlife Act states: "Subject to this Act and the Regulations, every person who traffics in any wildlife is guilty of an offence." That offence carries a minimum \$1,000 fine plus a five year license suspension, and a maximum \$25,000 fine plus a two year jail term and forfeitures.

Until 1994, bears were unprotected in the southern third of the province, but they are now equally protected as a big game animal and a fur animal across the province. The old provision used to allow southern bears to be sold without any permit, creating a major loophole in the control over marketing of bear parts.

A Sale of Wildlife Permit (Figure 1, next page) is necessary in order to sell bear parts other than a legally tagged big game hide or those hides sold by licensed trappers. The sale of wildlife permit shall only be issued if the officer is satisfied that the bear was taken legally. License numbers and names of licensees, or some other form of evidence that will show the animal was taken legally, must be provided. The sale of wildlife permit indicates seller's and buyer's names and addresses, the price of the item being sold, and the weight and description of the item.



Saskatchewan
Environment
and Resource
Management

SALE OF WILDLIFE PERMIT

Subject to the provisions of the Wildlife Act and Regulations:

Last Name of Seller	First Name	Initial
Address	City	Province
		Postal Code

is hereby authorized to sell wildlife, or parts thereof, indicated below to:

Last Name of Purchaser	First Name	Initial
Address	City	Province
		Postal Code

Upland Birds:

Sharp-tailed Grouse ()	Ring-necked Pheasant ()	Spruce Grouse ()
Ruffed Grouse ()	Hungarian Partridge ()	Ptarmigan ()

Big Game:

White-tailed Deer ()	Mule deer ()	Antelope ()	Moose ()
Barren-ground Caribou ()	Woodland Caribou ()	Elk ()	Bear ()

Other Wildlife Species: Describe

Description and form of Wildlife being sold:

Antlers/Horns () Head and Cape () Skin/Hide () Fully Mounted ()

Photos included: Yes () No ()

Remarks (indicate distinguishing features and other parts not listed)

Boone and Crockett Score _____

Purchase Price _____

Origin Authority to possess

Hunting License# _____

Land owner Protection () Found ()

Indicate the land location where the wildlife was destroyed or found

Other _____

Sec. _____, Twp. _____, Rge. _____, W. of _____ Mer.

I hereby certify that the wildlife identified herein was lawfully

taken in accordance to **The Wildlife Act and Regulations**

Date of Issue: _____ 19____

Issuing Region or Office: _____

Permittee _____

Issued by: _____

() Export Permit

Note: Provided the box is checked this permit authorizes the export of the Wildlife identified herein to the address of the purchaser.

Conservation Officer Initial _____

Part 1 - Seller's Copy
Part 2 - Purchaser's Copy
Part 3 - District Copy
Part 4 - Region Copy
Part 5 - Enforcement Coordinator

Dollar values of sales are also listed on the sale of wildlife permit. This is done because buyers were often exiting the province into the U.S. showing customs officers their sale of wildlife permit and declaring nil value on the wildlife items. It has also allowed us to determine market values of Saskatchewan gallbladders. The sale of wildlife permit may also authorize export if the appropriate box is so indicated by the issuing officer.

Sellers, buyers, and transactions are monitored through the Department's Resource Intelligence Program by Enforcement Branch staff. Laurie Rohs, Special Investigator, will present an overview of recent findings through analysis of current intelligence.

Analysis of the Trade

In the last five years, Saskatchewan's permit system used to regulate bear gallbladder sales has expanded significantly. Bear gallbladder sales in Saskatchewan first reached significant numbers in the late 1980s, when out-of-province buyers were actively soliciting Saskatchewan hunters, outfitters, and trappers for bear gallbladders. Since 1990, the annual legal sales of gallbladders have varied from a low of 229 to a high of 477.

Initially, out-of-province buyers dealt directly with Saskatchewan outfitters, hunters, and trappers. In 1991, five out-of-province gallbladder dealers bought 73 percent of the total number of gallbladders salvaged from Saskatchewan bears.

In 1992, seven out-of-province buyers purchased 45 percent of the 372 gallbladders salvaged from Saskatchewan bears (see 1992 flow chart). This was the first year Saskatchewan residents were acting as bear gallbladder brokers for these out-of-province buyers. This pattern has evolved and so far in 1994, 93 percent of the gallbladders salvaged have been purchased by Saskatchewan gallbladder buyers (see 1994 flow chart). These buyers now have direct links with gallbladder dealers in Korea and Ontario.

One Saskatchewan buyer purchased 78 percent of all the gallbladders sold in Saskatchewan in 1994. The salvage rate of gallbladders from all sources has ranged from 12 percent to 32 percent (Tables 1-4). Saskatchewan outfitters have salvaged between 41 percent and 8 percent of the gallbladders of bears killed by their clients. As the harvest of bears has increased since 1990, the salvage rate for outfitters has declined (Figure 2). This compares to a 15 percent to 26 percent salvage rate for all sources excluding outfitters (Figure 3).

One suspected problem is that some outfitters are avoiding the permit system. It is known that some of Saskatchewan's 153 bear outfitters are removing gallbladders from bears taken legally by their clients and not getting permits to sell the gallbladders. Another obvious concern is that illegal gallbladders originating in other provinces are being laundered through Saskatchewan's permit system. It is also suspected that illegal gallbladders are being sold illegally with falsified permits.

Conclusion

Saskatchewan may ban the sale of black gear gallbladders within the next year if (1) the sale of gallbladders from Saskatchewan is having a demonstrated effect on other bear species worldwide; or (2) Saskatchewan begins to "launder" gallbladders from other jurisdictions where their possession and sale are prohibited.

There is public support to ban the sale of bear parts; however, there is an element of society that will be impacted when legal trappers cannot market bear gallbladders. The trapping industry is already suffering a major downturn in profits, so the elimination of another market for them must be carefully considered. There are two major enforcement problem areas which can be solved through banning the sale of bear gallbladders: (1) Officers cannot distinguish between legally taken bear gallbladders and illegally taken ones, and often must take a sworn statement at face value; and (2) Provincial court judges often now determine that charges for trafficking in bear gallbladders is only a permit violation rather than a poaching violation, thereby diminishing the significance of the case. Fines often reflect that sentiment.

Saskatchewan Environment and Resource Management commends TRAFFIC USA for hosting this conference on the trade in bear parts. It will serve well to assist in determining the future of the sale of bear parts in Saskatchewan.

Dollar values of sales are also listed on the Sale of Wildlife Permit. This is done because buyers were often exiting the province into the U.S. showing customs officers their Sale of Wildlife Permit and declaring nil value on the wildlife items. The Sale of Wildlife Permit may also authorize export if the appropriate box is so indicated by the issuing officer.

Sellers, buyers and transactions are monitored through the Department's Resource Intelligence Program by Enforcement Branch staff. Laurie Rohs, Special Investigator will present an overview of recent findings through analysis of current intelligence.

In the last five years Saskatchewan's permit system used to regulate bear gall sales has expanded significantly. Bear gall sales in Saskatchewan first reached significant numbers in the late 1980's when out-of-province buyers were actively soliciting Saskatchewan hunters, outfitters and trappers for bear galls. The legal annual sales of galls has varied from 229 since 1990 to a high of 477.

Initially, out-of-province buyers were dealing directly with Saskatchewan outfitters, hunters and trappers. In 1991, five out-of-province gall dealers bought 73 percent of the total gallbladders salvaged from Saskatchewan bears.

In 1992, seven out-of-province buyers purchased 45 percent of the 372 galls

salvaged from Saskatchewan bears (1992 flow chart). This was the first year Saskatchewan residents were acting as bear gall brokers for these out-of-province buyers. This pattern has evolved and so far in 1994 93 percent of the galls salvaged have been purchased by Saskatchewan gall buyers (1994 flow chart). These buyers now have direct links with gall dealers in Korea and Ontario.

One Saskatchewan buyer has purchased 78 percent of all the gallbladders sold in Saskatchewan in 1994. The salvage rate of galls from all sources has ranged from 12 percent to 32 percent (Figure 1). Saskatchewan outfitters have salvaged between 41 percent and 8 percent of the galls killed by their clients.

As the harvest of bears has increased since 1990 for outfitters the salvage rate has declined (Figure 2). This compares to a 15 percent to 26 percent salvage rate for all sources excluding outfitters.

One suspected problem is that some outfitters are avoiding the permit system. It is known that some of Saskatchewan's 153 bear outfitters are removing galls from bears taken legally by their clients and not getting permits to sell the galls. Another obvious concern is that illegal galls originating in other provinces are being laundered through Saskatchewan's permit system. It is also suspected illegal galls are being sold illegally by falsified permits.

In conclusion, Saskatchewan may outlaw bear gall sales within the next year. The Department has support from many significant stakeholder groups to do so. Current fears about laundering bear galls from other provinces appear to be coming true. The black bear population in Saskatchewan appears to be doing well. Modifications made to the Provincial Wildlife Act in 1994 will further protect bears from over exploitation.

TABLE 1. 1990 BEAR GALL SALES - HARVEST SASKATCHEWAN

	LICENSE SALES	HARVEST	GALLS SOLD	SALVAGE RATE %
Sask. Resident Hunter	2,510	821	38	4
Non-Resident Hunter	729	496	75	15
Canadian Resident Hunter	83	43	0	0
Northern Trapper	0	239	129	53
Southern Trapper	0	29	4	13
TOTAL	3,322	1,628	246	*

* Overall average was 15% salvage rate.

TABLE 2. 1991 BEAR GALL SALES - SASKATCHEWAN

	LICENSE SALES	HARVEST	GALLS SOLD	SALVAGE RATE %
Sask. Resident Hunter	1,740	596	75	12
Non-Resident Hunter	701	568	241	42
Canadian Resident Hunter (Outfitter)	43	23	0	0
Northern Trapper	0	210	145	69
Southern Trapper	0	49	16	32
TOTAL	2,484	1,446	477	*

* Overall average was 32% salvage rate.

TABLE 3. 1992 BEAR GALL SALES - SASKATCHEWAN

	LICENSE SALES	HARVEST	GALLS SOLD	SALVAGE RATE %
Sask. Resident Hunter	1,687	597	44	7
Non-Resident Hunter	818	663	134	20
Canadian Resident Hunter	71	45	0	0
Northern Trapper	0	273	191	69
Southern Trapper	0	29	3	10
TOTAL	2,576	1,607	372	*

* Overall average was 23% salvage rate.

TABLE 4. 1993 BEAR GALL SALES - SASKATCHEWAN

	LICENSE SALES	HARVEST	GALLS SOLD	SALVAGE RATE %
Sask. Resident Hunter	1,759	645	55	8
Non-Resident Hunter	1,140	923	83	8
Canadian Resident Hunter (Outfitter)	76	41	0	0
Northern Trapper	0	182	90	49
Southern Trapper	0	88	1	1
TOTAL	2,975	1,879	229	*

* Overall average was 12% salvage rate.

TABLE 5. 1994 BEAR GALL SALES - SASKATCHEWAN

	GALLS SOLD
Sask. Resident Hunter	46
Outfitters	128
N.F.C.A. Trapper	54
South Sask. Trapper	1
TOTAL	229

Patrol year - January - August 26, 1994 up to reference #2051.

FIGURE 2.

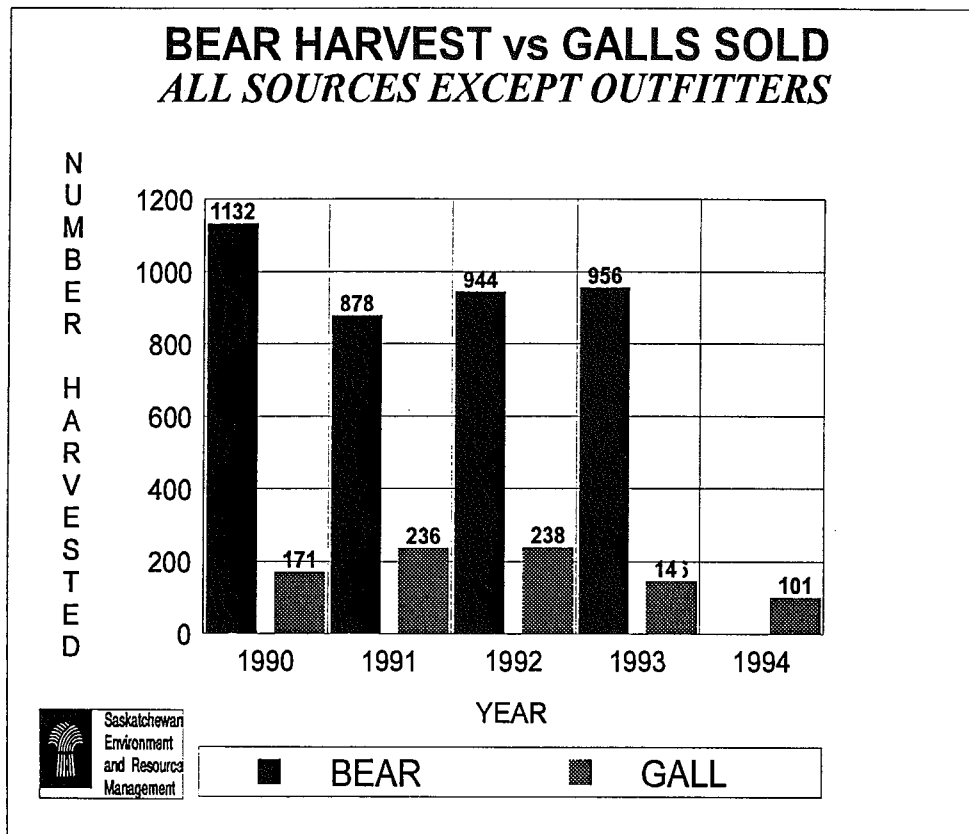
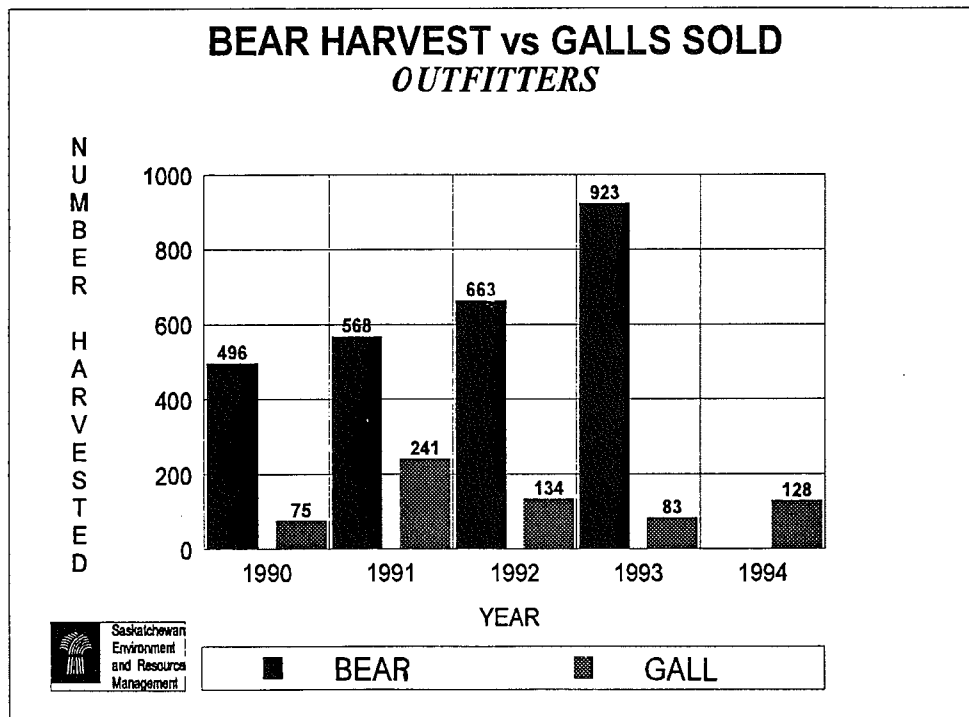
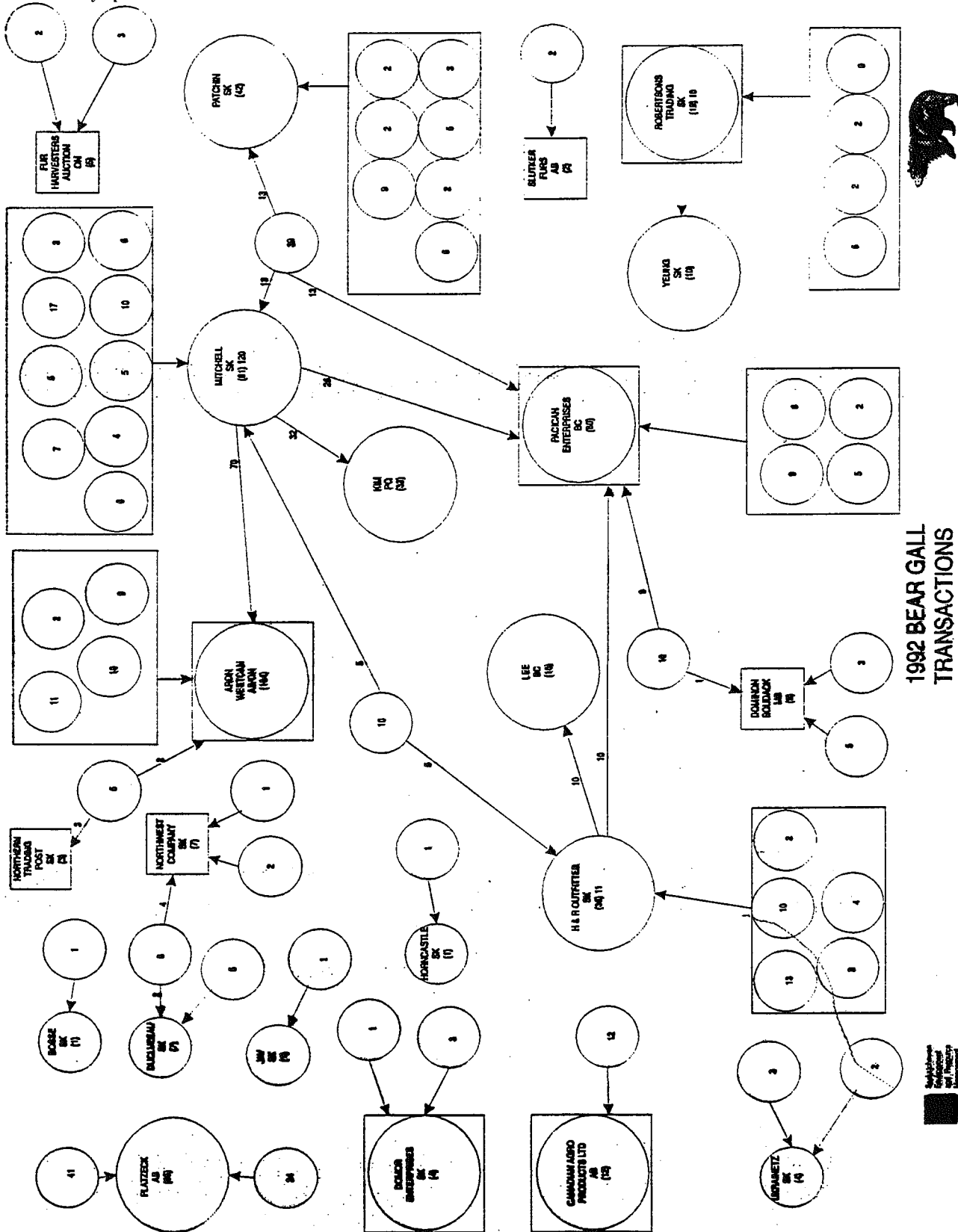
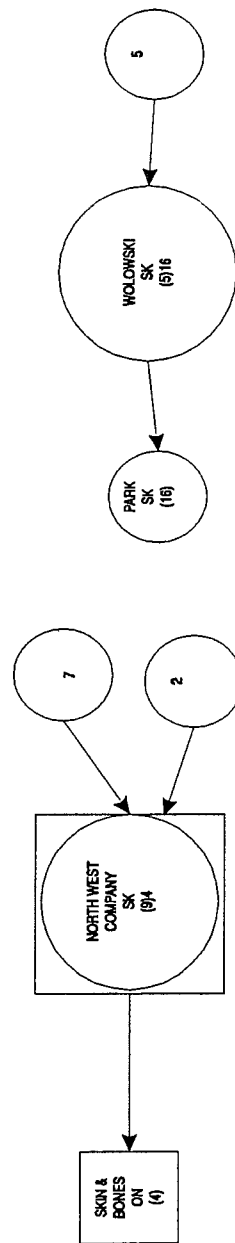
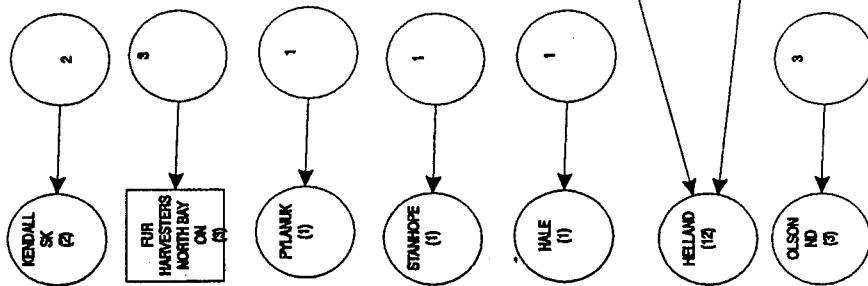
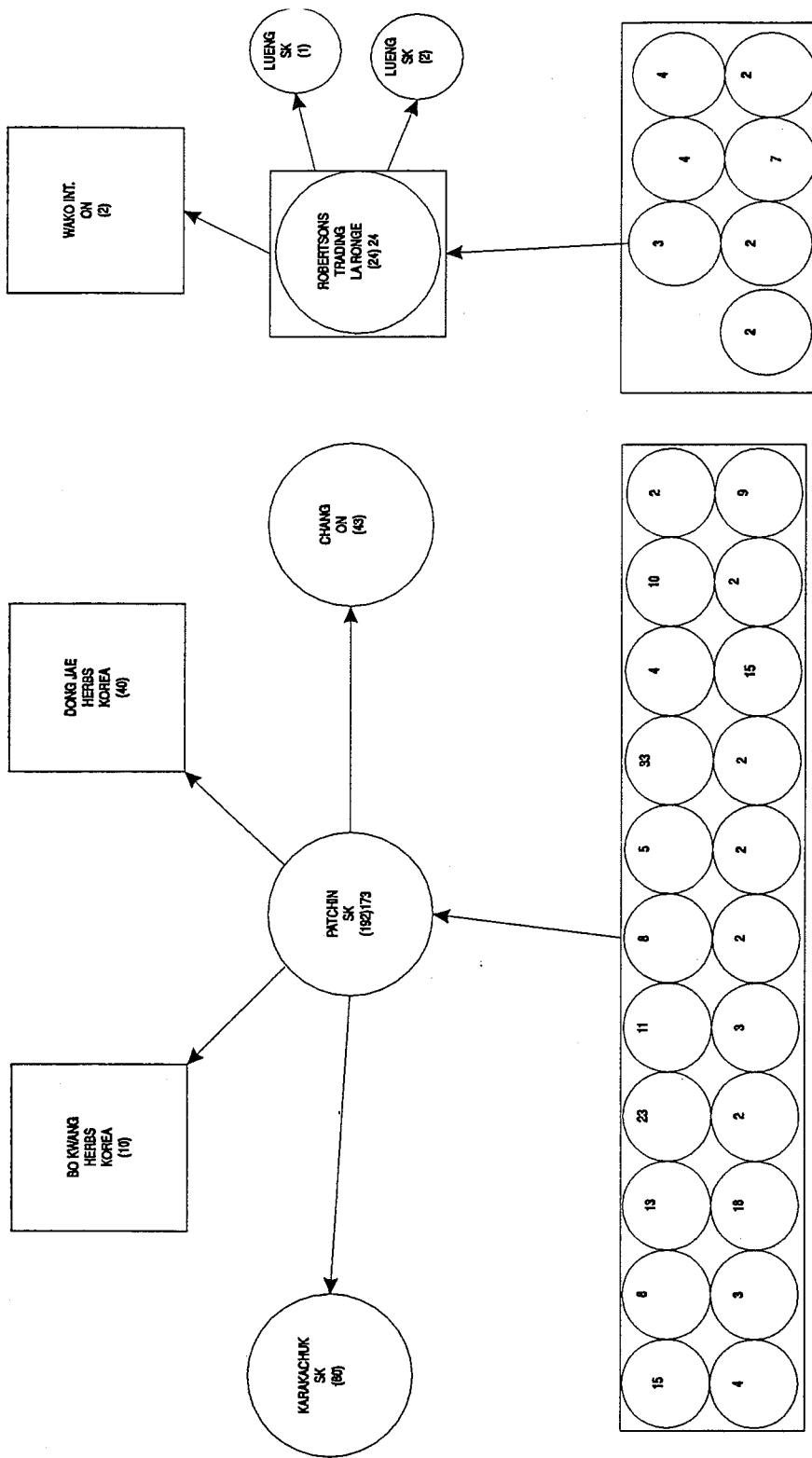


FIGURE 3.







REGULATING THE LEGAL SALE OF BLACK BEAR GALLBLADDERS AND OTHER PARTS IN NEW YORK

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Abstract. The American black bear (*Ursus americanus*) has been classified as a big game animal in New York State since 1903. The possession and sale of bears parts, excluding flesh, has always been legal and unregulated. In 1993, a comprehensive black bear management bill was passed by our legislature and signed into law. That enables the Department of Environmental Conservation (DEC) to fix by regulation the possession and disposition of bear and parts of bears. DEC is currently promulgating regulations which will require that bear parts from legally taken bears be tagged before being sold.

Black Bear Management in New York

New York State has always been blessed with a resident black bear population. However, by the end of the 1800s approximately 75 percent of New York's forest habitat was destroyed by the expansion of farmland and the excessive harvest of forest products at a nonsustainable rate. This habitat destruction also greatly reduced our bear population.

Bears were heavily pursued, especially in and around agricultural areas. They were considered to be little more than pests. Bears were unprotected until 1903, when the New York legislature, recognizing the positive values of bears, prohibited the killing of bears during three months of the year. Such protection was considered a novelty and faded but was eventually reestablished and strengthened. Soon bears could only be taken during the fall and the sale of bear meat was prohibited.

The trend in clearing forest habitat was reversed. Abandoned farmland and previously cleared forest were allowed to revert back to brushland and then forest cover. Suitable black bear habitat returned in three separate ranges in New York. Bear population became established and expanded in each of there ranges.

During the fifties and sixties, one of these ranges, the Catskill range, experience a declining harvest. Field investigation indicated that the Catskill bear population was declining and was well below the biological carrying capacity. DEC sought and received the authority to establish the open hunting bear seasons, bag limit, areas open to hunting, and disposition of bears.

DEC established an additional mandated telephone reporting system. Prior to that time, a successful hunter was only required to mail in a harvest report card within five days of the close of the legal hunting season. DEC also required that all bears taken in the southern part of the state, where the two smaller bear ranges are located, had to be physically checked by DEC wildlife personnel. Similar non-mandatory checks are performed in the northern portion of the state by wildlife personnel, Environmental Conservation Officers, Forest Rangers and taxidermists. That enabled DEC to determine a reporting rate and a calculated harvest for northern New York and an exact count of the legal harvest in the southern portion.

Two reporting methods and multiple checking opportunities opened the possibility of counting the same bear twice. This required a significant amount of manpower to sort all reports by hand to check for duplicates before harvest figures could be established. This forced DEC to computerize all bear harvest information. After a decade of evolution, DEC is currently using a dBase program for data entry. The first thing the program requests from the operation is the hunter's unique license number. The program searches the file for that number and if it is already in the file, it brings up that existing file for an update. If the license number is not in the file, the program allows the operation to enter the new record. Periodically, the file is sorted by a variety of fields such as last name, zip code, location of kill, etc. to check for possible duplicates and for law enforcement considerations.

Regulations on the Sale of Bear Parts

In 1993, DEC's authority to manage black bears was renewed and expanded. Among other new elements was the authority to regulation the disposition and possession of bears and parts of bears.

DEC is currently in the final process of promulgating first time regulations on the sale of bear parts. Only parts from bears legally taken and reported may be sold. Such parts must be tagged with a tag provided by the taker or buyer that includes the following information: taker's license number, name, date of birth and signature and the location of kill. This will allow DEC to more efficiently monitor the sale and movement of bear parts in New York. Since all of DEC's reported bear harvests are computerized, DEC will be able to provide fast information retrieval for our law enforcement officers and other agencies.

It is important to mention that New York's legislature did not prohibit the sale of bear parts. Instead, they granted DEC the authority to regulate such sale until October 1, 1995. Without new legislation, the sale of parts will not be regulated or prohibited on October 2, 1995. These new regulations are the initial steps in improving our ability to monitor and evaluate this activity. If the legislature approves of this initial step, the

authority should be renewed. If authority is renewed, I would expect future tagging regulations to become more restrictive and standardized, as with sealed pelts of river otter (*Lutra canadensis*) or certified roots of ginseng (*Panax quinquefolius*). State, national and international traffic in these parts can be monitored and further regulated if and when needed to ensure the future of the American black bear and other affected species.

CONTROL OF TRADE IN BEAR PARTS IN HONG KONG

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Introduction

In Hong Kong, CITES is administered by the Agriculture and Fisheries Department (AFD), which is the local CITES Management Authority. CITES is implemented through the application of the Animals and Plants (Protection of Endangered Species) Ordinance, Chapter 187 of the Laws of Hong Kong.

Licensing

The Ordinance provides that no person shall import, export, or possess any endangered species, including its parts and derivatives, except under and in accordance with a license issued by the Director of Agriculture and Fisheries.

Licensing policy follows closely the spirit of CITES and includes some stricter domestic measures. For example, a person wishing to import any endangered species, including CITES Appendix II bear species, should apply for and obtain an import license from the Department in advance. The application has to be supported with a copy of the CITES permit from the exporting country. An import license will only be issued if the specimens have been obtained from CITES-approved sources. This stricter requirement enables the Department to check the validity of documents well before shipments arrive. The import and export of Appendix I bear species are generally not allowed.

With the inclusion of the American black bear in CITES Appendix II, the Animals and Plants (Protection of Endangered Species) Ordinance was amended on 28 January 1994 to extend control to cover all bear species (Ursidae) and their parts, including gallbladder, bile, and bile powder.

As with other endangered species, bear parts imported into Hong Kong are detained by the Customs and Excise Department at the point of entry and referred to the Import Control Section of the Agriculture and Fisheries Department for inspection. The type, number, and weight of bear parts imported are checked against the licensed quantity. When everything is in order, the consignment is sealed and released. Arrangements are

then made for the Inspector of the Fauna Conservation Section of the Department to tag the gallbladders individually.

Control of Old Stock

Local possession and sale of bear parts are subject to strict control in Hong Kong. Any person holding an old stock of bear parts is required to apply for a Possession License from the Department within the three-month grace period from 28 January 1994. The control over possession is a stricter domestic measure taken by the Hong Kong Government in registering the stock held by traders, monitoring the movement of the specimens, and deterring the smuggling in of new items.

As bear gallbladder and bile are not readily recognizable by physical inspection, the existing stock are subject to chemical testing to confirm their authenticity. Upon receipt of an application for a possession license, an Inspector of the department inspects the stock and takes samples randomly from 10 percent of the specimens declared to be bear parts. The "bear parts" sampled are marked and all the stock are sealed by the Inspector. Thin layer chromatographies are performed on the samples taken by an accredited laboratory to test the presence of three types of bile salts, namely taurocholic acid, taurocheno-deoxycholic acid, and taurourso-deoxycholic. The cost for the test is borne by the applicants.

If the test results of all the samples are positive, the stock will be unsealed, the gallbladders will be individually tagged, and bile powder will be sealed, leaving an amount of less than 500 grams for retail sale. A possession license will be issued subsequently. In case the test result for any sample is negative, a larger sample covering 20 percent of the stock will be tested. If any sample again fails to pass the test, all the gallbladders will be tested. The application for a possession license will be refused if the tests fail again.

Under the license conditions, the license holders are required to keep the bear parts under lock and key. Moreover, a register of the sale transactions should be kept.

Enforcement

The Ordinance provides for fines and imprisonment terms for offenders and mandatory forfeiture of goods upon conviction (currently up to HK\$25,000 for the first offense and up to HK\$50,000 and six months imprisonment for a subsequent offense). A substantial increase in these penalties is under consideration.

In response to international concern over the use of traditional medicines containing highly endangered species, the Department has stepped up inspection of local Chinese

medicinal shops. Since January 1994, the Department has inspected 1,756 shops and seized 38 items claimed to be bear gallbladders and 0.25 kilos of powder claimed to be bear bile. Arrangements for prosecutions are in progress.

Moreover, an Endangered Species Protection Liaison Group was established in December 1993. The Group is convened by the Agriculture and Fisheries Department and includes representatives from the Customs and Excise Department and the Police. The group gathers intelligence and plans and coordinates major enforcement operations and major publicity campaigns.

In addition to law enforcement, the Department organizes publicity and public education programmes to improve public awareness of the protection of endangered species. These include announcements on TV and radio and specific advice to traders, the public, and travellers. Schools and teachers are also involved.

Conclusion

Hong Kong is committed to controlling the trade in endangered species. International cooperation with regard to information and intelligence exchange will be most welcome.

**V. REGULATING COMMERCIALIZATION AND TRADE
OF BEAR PARTS:**

INTERNATIONAL DIMENSIONS

BEAR FARMS AND THE IMPACT ON BEAR POPULATIONS

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Bear farms are those facilities where bears are raised for the purpose of production of bear bile and other parts. The impacts of bear farms on bears involve several factors, including the source of the bears for use in such facilities, the public image of bears gained from the association of bears with domestic production of commodities, the promotion and legitimization of the use of bile by its commercial production and the impacts of marketing on bile use.

Bear farming for production of bile is a fairly new idea. It provides an opportunity to produce bear bile without having to kill the bear. This results in increased production of bile per bear, with the resultant potential for commercial scale production of this product. Since bile is so valuable, commercial production of this product holds great profit potential.

This profit potential is significant at existing demand levels, and could be increased through marketing of bile use. Such marketing, combined with existing belief systems that value the use of bear bile in traditional medicine, could expand the use of this product and its commercial demand. Increased commercial demand will in turn increase profit potential, with a resulting increased demand for bears for use on farms. Some of this increase could come from captive breeding, but some would also likely be satisfied by capture of live bears from the wild. This is most likely in areas where law enforcement preventing such illegal capture is limited in scope and/or ineffective. Increased capture of wild bears for use in bear farms has the same impact as the killing of bears for parts--the animals are gone from the wild population.

Another impact of bear farming is the need to increase commercial demand for bear bile, which could come about through bile marketing. Marketing will increase use of the product among the general public, and thus increase demand for the product. Since there is no way to identify bile from farmed versus wild bears, some of the increased demand may be met by killing of wild bears. Thus, the farming of bears for bile could increase the pressures on wild populations by increasing the demand for bile, which would still be available from wild bears.

A further impact of farming is that it legitimizes the use of a product that originates from wild animals. Farming and the associated marketing of the product will make it more acceptable to use bear bile. Since certain individuals will continue to supply bear

bile from wild bears, farming will legitimize the sale and use of bile that cannot be identified as to its origin. This problem is aggravated by the fact that farming is concentrated in countries where the legal limitations on the killing of wild bears are limited due to financial constraints and ineffective wildlife law enforcement implementation. In summary, bear farming will likely increase and legitimize the use of a product that will continue to come from wild bears and therefore negatively impact their populations.

CONSERVATION AND MEDICINAL USE OF BEARS IN CHINA

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Introduction

Three species of bear occur in China: Asiatic black bear (*Selenarctos thibetanus*), brown bear (*Ursus arctos*), and sun bear (*Helarctos malayanus*), all listed on Appendix I of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) and protected by the Wild Animals Protection Law (WAPL) of China since 1988 as a result of drastic habitat loss and overhunting. Conservation measures have been taken to reverse the trend of population decrease through establishing natural reserves, carrying out research programs, and formulating protective legislation. While the medicinal use of bear parts for over one thousand years has placed a constant demand on wild populations, new methods have been used to collect bile from live bears, with nearly 10,000 bears (Asiatic black bears account for 80 percent) in captivity on hundreds of farms. Meanwhile, new regulations and laws have been and are being made with respect to bear farming in order to meet demand for traditional Chinese medicine and perpetuate stable populations in the wild.

Distribution of Bear Populations

Historical records of bears as totems in ancient China can be found as early as 2,000 years ago. Later documentation up to the late 19th century indicated that bear populations were found in 28 of China's present provinces. In the past one hundred years, however, Asiatic black bears have disappeared from Henan, Hebei, Shanxi, Shandong, and Jiangsu, brown bears have become extinct in Shaanxi and Liaoning, and sun bears have disappeared from Sichuan and Shaanxi (Xu and Jiang 1992).

The Asiatic black bear is distributed in northeastern China, northern China, southern China, southwest China, and Taiwan, with five subspecies: *S. t. thibetanus*, *S. t. laniger*, *S. t. mupinensis*, *S. t. ussuricus*, and *S. t. formosanus*. Four subspecies of brown bear are recognized, *U. a. arctos*, *U. a. isabellinus*, *U. a. pruinosus*, and *U. a. lasiotus*, current distributed in Qingzang Plateau, northwestern China (Xinjiang) and northeastern China. One subspecies of sun bear occurs in Yunnan (Ma 1994).

Table 1. Population Estimates of Three Species of Bears in China

<u>Species</u>	<u>Population estimates</u>
<i>Ursus arctos</i>	4,550-7,650
<i>U. a. lasiotus</i>	550
<i>U. a. arctos</i>	200
<i>U. a. isabellinus</i>	200-300
<i>U. a. pruinosus</i>	3,600-6,600
<i>Selenarctos thibetanus</i>	11,795-18,259
<i>S. t. ussuricus</i>	1,270-1,830
<i>S. t. mupinensis</i>	8,525-12,929
<i>S. t. thibetanus</i>	2,000-3,500
<i>S. t. laniger</i>	few
<i>S. t. formsanus</i>	not known
<i>Helarctos malayanus</i>	few

The Status of Wild Populations

Ma (1994) recently released the estimates of wild populations of the three bear species (Table 1). While the populations of three subspecies of Asiatic black bear, *S. t. thibetanus*, *S. t. laniger*, and *S. t. mupinensis*, have been estimated at 10,000-15,000 and one subspecies of brown bear (*U. a. pruinosus*) at 4,000-5,000 (Hu 1994), studies on the status of the black bear population in northeastern China by Ma and Zou (1994) show that there are 3,663 black bears and 1,188 brown bears left in the wild.

Generally speaking, the population and distribution of the three species of bear are decreasing as a result of habitat loss and overhunting (Zhang *et al.* 1994, Ma and Zou 1994). Statistics up to 1978 show that as much as 5.88 million hectares of forest have been logged in 15 provinces. In spite of later reforestation of 3.3 million hectares, 56.5 percent of the logged areas, only 1.36 million hectares, were naturally regenerated, with the remaining forests having been artificially planted. The survey on the black bear population in Hubei Province indicated that artificially planted forests could not provide suitable habitat for bears (Zhang 1994). Human population in Heilongjiang Province, a major range of bears, has increased 3-5 times in the past 30 years, in contrast to the halving and segmentation of forested areas to 24 million hectares (Cheng 1994). The increase in the human population, in consequence, has caused direct conflicts with bears in

most parts of China, leading to human treatment of bears as a pest to crops and human life. In Heilongjiang Province, more than 1,000 bears were killed as pests annually in the 1960s (Ma 1994).

Another cause of declining bear populations is overhunting for use of bear parts as food and medicine. In Da-xin-an-ling Mountain and other eastern mountainous areas in Heilongjiang Province, a purchase of 44,000 kilograms of meat and 2,600 kilograms of paws was reported in 1982-1983 (Ma 1994). Later reports include the seizure of shipments of 2,720 kilograms of paws in 1990 and subsequent prosecution. It goes without saying that killing and capture of bears for bile production in the beginning of bear farming five years ago have taken a toll of plenty of bears in China (Gui 1992). However, to what extent wild bear populations have been affected by bile production has not yet been well studied.

Status of Research on Bear Conservation

Scientific research on bears by Chinese scientists started as early as the 1950s, with a total of 159 published papers by 1994 (Ma 1994). Earlier research efforts up to the mid-1980s mainly focused on systematics and distribution of bears, in addition to preliminary observation and description of ecological behavior. Subsequent research emerged with the advent of the bear farming boom and was extended to ecology, physiology, biochemistry, histology and anatomy, feeding, reproduction, diseases, etc. Identified inadequacies in this research include the low level of studies, limited research fields, lack of in-depth and systematic focus upon special disciplines, and unbalanced concentration on the different species of bears.

Conservation Measures Taken

Establishment of natural reserves

Over 800 natural reserves have been set up to protect different kinds of landscape, cultural heritage, wildlife and their habitat, etc. According to Ma *et al* (1994), 188 natural reserves with bear populations have been set up in China. Hu (1994) reported that effective protection has been accorded to black bears through the establishment of 83 natural reserves in four provinces of southwestern China up to 1993, covering a total area of 260,000 square kilometers. Piao (1994) also documented that in recent years, the black bear has been noticeably declining as a result of overhunting, while the increase coefficient is 12.17 percent in some natural reserves after ten years of protection. Wu (1992) reported a total of 12 reserves for the protection of different species and subspecies of bears in five province in northwestern China. Natural reserves will play a greater role in the future and provide the last stronghold for the remaining bears in China.

Research programs

Two large-scale and comprehensive censuses have been initiated with a concentration on the status of wild bear populations. The first survey, from 1991 to 1993, was funded by the CITES Management Authority with 1.45 million yuan (equivalent to US\$170,000) and organized by the Chinese Wildlife Conservation Association, with participation by provincial forestry staff, scientists from research institutions, university faculty members, and nature reserve staff. Twenty-four provinces with bear populations were involved, with additional financial support by local forestry departments. The results of the census are currently under review and analysis.

Another survey intends to provide further detailed information on bear population, threat to survival, evaluation of bear farming, and conservation measures to be taken, with recommendations on conservation needs and effective implementation of national legislation. This one year project by two Chinese scientists started in early 1994 and was funded by the CITES Management Authority of China with 280,000 yuan (equivalent to US\$32,000).

Legislation

The sun bear is included in Category I, and the Asiatic black bear and brown bear are included in Category II, of the List of Wild Animals under the State's Key Protection, an annex to WAPL enacted in 1988 and taking effect on 1 March 1989. WAPL prohibits the capture and killing of wild bears, which otherwise requires prior grant of a Special Hunting Permit by the Ministry of Forestry (MOF) for sun bear, and forestry departments at the provincial level for the other two species of bears for the purposes of research, captive breeding, etc. Sale and purchase of bears, their parts and products are also prohibited without prior approval by forestry departments at the state or provincial level. Controls on the transportation of bears, their parts and products across county borders should also be approved.

Regulations for the Protection of Terrestrial Wild Animals, which took effect on 1 March 1992, provide for, among other things, details on the special hunting permit system, breeding permit system, and other regulations with respect to management of wild animals.

On 9 May 1994, the Ministry of Forestry and the Ministry of Public Security jointly put forward a minimum criteria for eligibility for three levels of wild animal cases on the basis of the number of animals killed, economic gain, frequency of illegal activities, etc. Poachers killing one sun bear will be taken to court, killing two will be judged as a major case, killing three a super case. The criteria also apply to Asiatic black bear and brown bear; poachers killing two of either of the species will be taken to court, killing three will be judged a major case, and five a super case.

Detailed regulations and supplementary notices and decrees for implementation of WAPL have been laid down by the Ministry of Forestry and the departments concerned. Such legislation includes, among others, the Regulation of Permits for Rearing and Captive Breeding of Species included in the List of Wild Animals under the State's Key Protection, Measures for the Control of Hunting Guns and Ammunition. Notices in relation to transporting, selling, purchasing, and possessing of wild animals, their parts and products are also formulated by the Ministry of Transportation, the Ministry of Commerce, National Tourism Administration, etc. The Regulation on Preservation of Wild Resources of Medicinal Use issued by the State Council has listed gallbladders from brown bears and Asiatic black bears as Category II medicine from wild animals. Their collection and purchase are subject to government plans and permit controls.

The three species of bears occurring in China are all listed on CITES Appendix I, with international trade in live or dead bears and their parts and derivatives strictly controlled and international trade for commercial purposes currently prohibited.

The Medicinal Use of Bear Parts

Traditional medicine has a profound impact on medical culture in China and throughout the world. In China alone, this industry has provided employment for 460,000 people in nearly 2,200 medicine factories and other sectors. Medicine from animals plays a unique part because of its potency, efficacy, and low side effects.

The use of bear parts, particularly of gallbladders, in traditional Chinese medicine to guarantee human health dates back to 600 AD. Of the different bear parts recorded as being used as ingredients in traditional medicine, only gallbladder is included in the Medicine Dictionary of the People's Republic of China for its ability to cure diseases of the eyes, liver, etc. So far, as many as ten forms of medicine containing bear gallbladder have been developed, such as balls, powder, ointment, oil, chips, liquid, and injections, in a total of 80 types of traditional medicines and 130 traditional prescriptions (Jin *et al.* 1993).

Bear Farms

Before the early 1980s, the taking of wild bears for gallbladders was out of control and caused the loss of thousands of bears from the wild. Since 1984, bear farms have been set up to obtain bile from live bears in order to relieve pressure on wild bears. To date, hundreds of bear farms have been set up, with nearly 10,000 bears in captivity (Ma 1994) and 4,500-5,000 bears currently used for bile production (Gui 1992). These farms are located in over 20 provinces with Sichuan, Jilin, Yunnan, and Guangdong keeping the

largest number of bears. The majority of bears on farms are subspecies of the Asiatic black bear, *S. t. thibetanus*, *S. t. mupinensis*, and *S. t. ussuricus*, with a few of two other subspecies. There are also some brown bear (Gui 1992). Ma and Zou (1994) recently reported 206 bear farms in three provinces in northeast China, with a total of 1625 black bears (1066 in Jilin, 295 in Heilongjiang, and 264 in Liaoning) and 260 brown bears (106 in Heilongjiang and 84 in Jilin, 70 in Liaoning).

Bile Production

Bear bile is collected in several ways through a surgical operation in which anesthetics, disinfectant, and antibiotics are used (Zhang 1993). The percentage of ursodeoxycholic acid (UDCA) and chenodeoxycholic acid (CDCA) content in gallbladders of wild bears is primarily the same as that of siphoned gall powder (Liang *et al.* 1994).

Reports from a survey of several bear farms in Heilongjiang Province (Han *et al.* 1993) indicate that all surveyed farms have good sanitary conditions, with heating systems and closed workshops. Most bear farms in China have installed 1.5-2.0 meter long, 0.8-2.0 meter wide and 1.1-1.2 meter high iron bar cages, normally 0.60-0.90 meters above ground to aid bile collection.

Daily production of bile differs among farms and individuals. Han *et al.* (1993) reported 3-5 collections of 45-70 ml of bile every day from each bear, based on investigation of several farms in Heilongjiang Province. Sun (1994) observed a minimum average daily collection of bile from 10 black bears of approximately 140.20 ml, with a maximum of 163.10 ml. Gui (1992) estimated the annual production of siphoned gall powder in the neighborhood of 10,000 kilograms, based on a daily collection of 70 ml of bile from each bear and a 14 percent production rate.

Government Controls on Bear Farms

Current controls on bear farms mainly concentrate on the quality of siphoned gall powder as a kind of medicine and the eligibility of bear farms pursuant to WAPL. A provisional regulation on the control of siphoned bear gall powder was published by the Ministry of Health in November of 1988. Based on this regulation, farms for gall powder production are required to obtain New Medicine Certificates, together with a Approval Number. In addition, the regulation also sets forth requirements for technical staff, rearing conditions, siphoning and manufacturing methods that ensure quality control, packing and marking of gall powder, etc. Supervision is also requested for the production, manufacturing, sale, and use of gall powder. As of 1994, 49 bear farms have obtained a New Medicine Certificate and are eligible for the production of siphoned gall powder.

The permit system came into being on 1 March 1991 as a supplementary regulation to WAPL. This system provides controls on the eligibility of bear farms for rearing and breeding of nationally protected species. Additionally, a suspension on setting up new bear farms was introduced in 1993, and bear farms are now under an comprehensive investigation by local forestry departments.

Trade of Bear Parts

Statistics on domestic trade in bear parts is not available, except for a reported domestic demand of several thousand kilograms of siphoned bear gall powder. Export of one shipment of 25 kilograms of siphoned gall powder is recorded by the Chinese Management Authority for CITES. However, it is feared that illegal export of siphoned gall powder may exist because of its high value in international markets.

Much attention has been paid by many countries to the management and control of illegal national and international trade of bear gallbladders. Concern by international organizations interested in bear conservation for the future of the world's bears has also been expressed in response to the killing of bears in South America and some European countries for their gallbladders, as well as the involvement of bear gallbladder smuggling with cocaine trafficking in the United States. Should high profits be the primary momentum to these illegal deals, legal international trade that meets the demand of the international marketplace may in a sense function more effectively than costly anti-smuggling mechanisms and conservation efforts. Given China's supply capacity and sustainable bear populations elsewhere in the world, bear gallbladder smugglers should find this international strategy, so to speak, a hard nut to crack.

Conclusions

The population decline of all three species of bears, in particular of the Asiatic black bear, at the beginning of the first five years of bile production in China are mainly attributed to habitat loss and overhunting. Differing population census results are also observed, possibly as a result of different methods used and the unavailability of the latest census results. In spite of reported population increases for all bear species in the wake of legislation and control measures, population trends of bears have not been dealt with. Current laws and regulations seem to be adequate enough to accord a better protection to bear species, not to mention implementation and enforcement. However, with China's explicit commitment to the international community on bear conservation and to controls of bear farming, stable populations of all three species of bear will be ensured in the foreseeable future.

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APPENDIX I. THE REMARKABLE PROGRESS IN THE CONSERVATION OF BEARS IN CHINA

The Chinese government has placed great importance on the conservation of bears and other living resources with current policies that stipulate "strengthening the conservation of resources and carrying out captive breeding programmes so as to ensure sustainable use of resources." As a result of strict law enforcement and widespread education programmes of nature conservation, together with setting up natural reserves and advocating scientific research, bear resources are better preserved. Results of research has concluded that the population of bears in China are increasing in recent years.

Bear gall has been used as an ingredient in various traditional Chinese medicines for thousands of years. But it was not until 1984 that bear gall was obtained from live bears instead of traditional practice of killing wild bears, with an aim at relieving the pressure on wild population and ensuring a better conservation. The 1988 Wild Animals Protection law has afforded protection to the three species of bears in China with inclusion of Asiatic Black Bear (*Selenarctos thibetanus*) and Brown Bear (*Ursus arctos*) in Category II and Sun Bear (*Helarctos malayanus*) in Category I. According to Wild Animals Protection Law, Category II species can only be captured on a rational and scientific basis subject to the approval of competent administrative departments and under the circumstances that wild populations of the species are well protected. As a matter of fact, capturing of wild bears has not been approved ever since their inclusion in the Law Categories. To better protect bear resources, China has carried out captive breeding programmes through establishing a number of bear farms and obtaining gall from live bears. Bear gall production in subsequent years has met the demand of traditional medicine and effectively preserved wild bears, resulting from simultaneous controls on bear farming and its conformity with scientific, sanitary and standardized operation as well as painless collection of gall.

Rearing bears for gall production primarily intends to achieve the objectives of long term conservation of bear resources and their sustainable use while at the same time ensuring the well-being of human health, similar to the use of primates as a model in biomedical research. A wild bear can produce 47-52 grams of gall, while a captive bred bear can annually turn out an average of 2.2 kilos of gall powder for a continuous 5 year production life. A farmed bear can produce the same amount of gall every year as killing 44 wild bears, i.e. in an average 5 year production life a farmed bear spares the killing of 220 wild bears. That gall production bears make no significant physiological difference with normal bears and are able to breed offsprings indicates that gall production will not affect the health conditions of bears. In view of this, China has been doing research on reintroduction of production bears to the wild in varied areas based on different management plans.

Since the Eighth meeting of the Conference of the Parties of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) was held in Japan in March 1992, an overall inventory of bear farms in China has been going on, which will revoke farms that either do not meet with conditions of CITES and Wild Animals Protection Law, or involved with cruel treatment of bears. Nanping Bear Farm in Zhuhai for instance has been closed down and prosecuted thanks to the disclosure by international animal welfare organizations.

Gall production from captive bred bears represents an effective way towards rational and sustainable use of wild animal resources to the effect that it not only meets with demand for traditional Chinese medicine but also helps to conserve wild bears. Now that gall production has provided a sufficient supply for domestic markets and made it unnecessary to kill wild bears, it is do doubt that China has made a great contribution to wildlife conservation and sustainable use in the world.

The Chinese government will continue its efforts in conservation and management of wild animal resources and their habitats along with adequate implementation of international treaties and conventions. Illegal taking and killing of wild animals shall be thoroughly investigated and prosecuted, and illegal wild animal enterprises shall be firmly cancelled.

CHINA'S BEAR FARMS AND THE TRADE IN BEAR PARTS*

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Abstract. China began experimenting with bear bile extraction techniques in the 1980s. Today hundreds of government approved bear 'farms' are spread out over at least six provinces. These facilities hold a total of nearly 10,000 bears. In early 1994 one of the authors of this paper visited two 'farms' and gathered further data concerning other facilities through direct communication with representatives and others familiar with the practice.

Introduction

Contrary to government claims, Asiatic black (*Ursus thibetanus*) and brown bears (*Ursus arctos*) are still being captured from the wild to stock 'farms.' 'Milked' bile is used to produce products other than medicines. Aggressive marketing of bile products stands to increase demand for existing products used in traditional applications and spur consumption of products for non-medicinal uses. Evidence of continued illegal trade in bear gallbladders and paws was also gathered. In contravention of CITES, international export of extracted bile products and whole gallbladders still occurs.

In addition to documenting these aspects of the trade, this paper also offers suggestions as to what China's authorities can do to better regulate 'farms' and gradually reduce the number of bears utilized.

Background

Prior to 1989, killing bears for their parts was "legal and encouraged,"¹ but today all hunting and trade in bear parts are forbidden.² Under China's Wild Animal Protection Law, effective on March 1, 1989, both sun bears, which probably no longer inhabit China,³ and pandas rate Class I listings—the highest level of protection possible. Wildlife listed in this category are "endangered in or peculiar to" China and hunting and trading in their specimens is "strictly forbidden." However, black and brown bears are afforded only Class II protection. Class II applies to animals found in China whose numbers, "though

* Excerpted, with permission, from Highley, K. and S. Chang Highley, 1994. *Bear Farming and Trade in China and Taiwan*, The Humane Society of the United States, Washington, DC, USA.

considerable at present, are dwindling markedly." Species in this category, "subject to approval of competent state authorities, may be caught at specified times and places."⁴

Black bears, also known as moon bears, are the most common species found in China's bear farms, but brown bears are also farmed. PRC officials claim black bears are numerous and estimate the population in Sichuan province alone at between 20,000 and 21,000.⁵ One bear expert calls this estimate extremely optimistic, saying that it is probably off by 15,000 to 18,000 animals. Neither of the species' country-wide population is known.

Responding to criticism from abroad and the threat of trade restrictions from the United States under provisions of the Pelly Amendment to the Fishermen's Protective Act of 1967,⁶ in 1993 China increased enforcement of its Wildlife Conservation Law. Besides outlawing trade in medicines containing tiger bone and rhinoceros horn, the National People's Congress and the State Council organized more than forty thousand wildlife protection law inspectors to investigate 3,185 markets and 30,085 restaurants and hotels.⁷ The crackdown, carried out to "vindicate effectively the honor of the law and suppress criminal activity," netted 4,304 violations.

Despite this effort, in early 1994 the authors still found widespread trade in bear parts. Braised bear paws were openly advertised in one location and uncooked paws and meat were offered in others. Whole bear gall bladders were for sale, and despite claims to the contrary, we discovered that bears are routinely captured from the wild for a life of incarceration in China's farms.

China's wildlife conservation authorities seem willing to try to stamp out the endangered species trade. Unfortunately, the growing spending power of a small portion of the population; continued demand for contraband products from Taiwanese, Korean and other foreign nationals; and increased autonomy and lack of provincial law enforcement make effective enforcement a daunting task. As organized crime, graft, and corruption increase (factors that show the central government is losing its grip on Chinese society)⁸ the status of the country's, and region's, bears and other wildlife can only worsen.

Survey Methods

In early 1994, author Suzie Chang Highley, an overseas Chinese fluent in Chinese-Mandarin, visited two bear farms, one in Guangdong Province and the other on the outskirts of Kunming, the capital of Yunnan Province in southeastern China. She also spoke with representatives and individuals familiar with other farms located in somewhat more remote areas of Yunnan. Pharmacies, hotels, and Friendship stores (government-run tourist shops) were also visited to determine the availability and range of products containing milked bile.

While surveying pharmacies, the author inquired about the purchase of bear gall bladder, either whole or in prescription form, before surveying for availability of farmed

bile products. Some traditional medicine pharmacies in China offer mostly manufactured medicines, while others offer raw herbal medicines. Still other pharmacies stock both raw herbs and manufactured medicines. The author carried a prescription calling for bear gall bladder and, depending on the situation, either presented the prescription or inquired about the purchase of whole bear gall bladders.

The exchange rate used for PRC currency *Ren Min Bi* (RMB) amounts given in this report is RMB8.68 to US\$1.00.

Bear Farms

The Chinese have a history of farming wildlife. In the 1950s musk deer farms sprang up to meet growing demand.⁹ Today, civets, pangolins, flying squirrels, snakes, turtles, frogs, toads, scorpions, and various types of fish and insects are also captive-bred.¹⁰ Even sea horses, prized libidinal aids, are purportedly bred in captivity, but those claims have been refuted as "spurious."¹¹ In an attempt to legalize trade in tiger bone, in 1985 the PRC established the Breeding Center of Felidae Animals in Heilongjiang Province to breed Siberian tigers.¹²

China began experimenting with bear bile extraction techniques in the 1980s.¹³ In 1985 the China News Agency announced that because of raw material shortages for medicines, the Chinese Crude Drugs Company planned to raise bears in captivity and extract their bile.¹⁴

Bear farms are regulated under the License Regulation on Domestication and Breeding of Animals. The 1991 law requires that "suitable technology and other conditions" be met before a farm can be legally established.¹⁵ According to the Ministry of Forestry, all bears pressed into service on China's farms were captured from the wild before 1989 or bred in captivity.¹⁶

By 1991, government approved bear farms in Sichuan, Yunnan, Shanxi, Guangdong, Heilongjiang, and Jilin provinces held between 6,000 and 8,000 bears.¹⁷ According to Forestry Vice-minister Shen Mao Cheng, there is approval to farm only about 5,000 bears.¹⁸ But at the Third East Asiatic Bear Conference held in Beijing (August 4-8, 1994) it was reported that there are now nearly 10,000 bears on "hundreds" of farms.¹⁹

In 1993 an investigator visited several farms in Sichuan Province where nonsanctioned family-run facilities have sprung up to capitalize on the boom in demand for bear bile.²⁰ These small operations house only a few animals each but three to four such farms are said to exist in each of over 100 villages in one part of Sichuan.²¹

PRC officials say that the gall produced by a single bear in one year is equal to that obtained by killing forty-four wild bears and that over a bear's five-year production span,

220 wild bears' lives are spared.²² Thus, the benefits of extracting bile from captive bears are said to be threefold: farming protects bears in the wild, produces revenue, and contributes to the prevention and treatment of human disease.²³

During this investigation the authors found that while the second of the goals, increased revenue, is true, the benefits to wild populations of farming bears are unsubstantiated. We also discovered that some products marketed that contain farmed bile fall far short of aiding in the "prevention and treatment of human disease."

The first farm we visited, the Guangzhou City Tianhu Deer Farm, is in Chonghua, Guangdong Province, approximately three hours from Guangzhou by car. The facility is small, housing some fifty bears, and is located within what is a reportedly protected area. The name and address came from a contact in Taiwan who had been told that Taiwanese businessmen had invested in the farm in order to maintain a steady supply of bile for distribution in Taiwan.

Prior to visiting, the author arranged a meeting with one of the farm's managers to discuss purchasing a large quantity of bile products for export to Taiwan. At the Tianhu farm the author met Mr. Liao Guichu, the factory manager. Mr. Liao confirmed that Taiwanese businessmen are investors, but he would not say to what extent.

Inside the farm a showroom displays the facility's many products. Besides bile crystals in small, one gram vials, visitors to the farm are offered bile juice for RMB30 (US\$3.50) per shot glass and Flying Deer Shower Gel, which also contained bile, for RMB15 (US\$1.75) per bottle. The purpose of the gel, according to the label, is to "give your skin special care, eliminate skin inflammation, and provide your skin with various nutrients, keeping it smooth and soft, and giving you a refreshed feeling." The discovery of Flying Deer Shower Gel made us wonder just how many other cosmetic products are produced in the scores of farms across the country.

According to Mr. Liao, Tianhu Deer Farm's fifty bears produce 100 kilos of bile each year at a profit of US\$69,100 per year. When chided about the relatively small output and asked what he would do when demand exceeded supply, Liao replied that he would simply capture more bears. Adding to the existing stock, he said, would be an "easy" matter.

When asked to see the bears, Mr. Liao told the author that she could have a tour when she was ready to make a substantial purchase. Left alone at one point during the visit, the author was able to hold a still camera over a wall surrounding the compound and photograph the rows of caged bears. The photos revealed Asiatic black bears in what seems to be the industry standard three-by-four-foot cages, raised a few feet off the ground.

The photographs also revealed that the Tianhu bears wear abdominal plates, held

tightly in place by a harness. The plates conceal a catheter and a collection sack into which the bile drains. Larger bears are milked once a day and smaller animals once every three days.

To the best of our knowledge, only two conservationists, Judy Mills and Christopher Servheen, have ever seen a milking. The following text describes an event they witnessed on a South Korean farm in 1991:

The owner went over to one of the harnessed black bears that was small and had a badly scabbed nose. The bear woofed and snapped its jaws, obviously angered. The owner used a metal pole to harass the bear into a narrow portion of its cage. As his wife distracted the bear with a pan of sweets, a door was lowered and metal rods inserted to confine the bear and keep its legs from interfering with its abdomen. [The owner] reached in, unlocked the metal panel and a plastic bag attached to a catheter dropped down. The bag was half full of a green-brown liquid. The bear scraped and clawed wildly at the cage while the owner then extracted the liquid from the bag with an oversized hypodermic needle, withdrawing 2 full syringes. The process took approximately 5 minutes, after which the bear's tap was again locked behind a metal plate and the bear bounded angrily back into its living quarters.²⁴

While in Guangzhou City the authors visited Yue Shou Park. The entrance ticket advertised a Guangzhou distributor of bile products manufactured by the Kunming Jindian Pharmaceutical Factory, also known as the Gold Bear Farm, located in Kunming, Yunnan. The ticket promoted Gold Bear Oral Liquid as the best bear bile product on the market and listed the tonic's many claims: It reduces high blood pressure, protects the liver and gall bladder, dissolves gallstones, reduces body heat, detoxifies the body, and treats hacking coughs and asthma.

Upon visiting Gold Bear's Guangzhou office, the author was invited to visit the facility. Gold Bear is a state-owned operation located on a military installation that also houses a canine breeding business, which supplies the pet trade. The base is a training camp for military veterinarians who care for the bears and dogs.

The bears' environment at Gold Bear was vastly different from the conditions in the Tianhu Deer Farm in Guangdong. In contrast to other facilities, the cages at Gold Bear were large enough for the bears to stand upright and take a few steps from one side to the other. The facility was also clean.

According to an on-site manager, Mr. Zhang,²⁵ there are 100 bears at Gold Bear and room for 100 more. Feeding each animal costs RMB5,000 (US\$576) annually. Each bear earns the facility approximately RMB25,000 (US\$2,880) per year from an output of between 1 to 2.5 kilos of bile. The bears are milked from age one.

These figures contrast with those of what seems to be China's premier facility, the Deer Farm of Sichuan Provincial Chinese Traditional Medicine Corporation. There bears are subjected to the surgery only after reaching age three and after attaining a body weight of 100 kilos.²⁶ On average, each of the Sichuan farm's milking bears produce 3 kilos of bile per year.²⁷

All of Gold Bears' animals have had stainless steel taps surgically implanted by the veterinary staff. The same veterinarians also performed the procedure on the approximately 100 bears on a farm in Dali, also in Yunnan Province, for a price of RMB3,000 (US\$345) per procedure.

The stainless steel taps, which were described as being similar in function to a water faucet, are viewed by Zhang as somewhat of a breakthrough in bile extraction. Zhang feels strongly that the older milking techniques with its abdominal plates (vests) and constant drainage of bile is harmful to the bears. The tubing used to drain bile from vested bears lends itself to infection, whereas the steel taps can be flushed out to reduce the chance of infection. Zhang also claims that vested bears must be given some form of anesthesia prior to each milking—a procedure previously unheard of. According to Zhang all bears in Guangdong Province and Ruili (Yunnan Province) wear abdominal plates, despite problems with infection and product quality. The bile extracted from vested bears, he maintains, is inferior to that of tapped bears.

During multiple visits to Gold Bear, the author noticed that the bears, all of them moon bears, varied greatly in size, ranging from adults to very small animals, perhaps under one year old.

When asked whether the younger bears were captive-bred offspring, Zhang said that all were captured in Burma (Myanmar) and China. For domestically obtained bears, hunting licenses are issued at the provincial level. If the facility ever expands, bears can be easily obtained from Burma or within China. He quoted the current market price for an adult black bear as RMB8,000 (US\$922) and RMB3,000 (US\$346) for a juvenile.

Zhang said the Dali farm mentioned above is privately owned but, like Gold Bear, is located on a military installation. A clerk selling products from the Dali farm said that none of the 100 bears at Dali were from captive-bred stock.

Yet another farm, the Nationality [sic] Pharmaceutical Factory,²⁸ in Ruili, is located near the Burma border in southwestern Yunnan Province. Ruili is a well-known entry point for illegal drugs and wildlife products brought into China from Burma. A Kunming-based distributor for the Ruili farm, which was established in 1983, says that none of the site's 300 bears are from captive-bred stock. According to the representative, the Ruili facility is now contemplating captive breeding—not out of conservation considerations but because the cost of using wild-caught bears to meet their goal of "500 milking bears by the year

2000" would be prohibitive.

The Nationality [sic] Pharmaceutical Factory produces 300 to 400 kilos of bile per year. The representative explained that every 30 to 40 kilos of freshly extracted bile, after drying, weighs approximately ten kilos. According to a pamphlet describing the facility, both Asiatic black and brown bears are used in the operation.

Taiwanese nationals regularly visit the Ruili distributor's shop, which is located in the heart of Kunming City. Taiwanese customers frequently hand carry as much as 7 to 8 kilos of bile crystals back to Taiwan in suitcases, according to the representative. The facility's wholesale cost of a kilogram of bile is RMB17,250 (US\$1,987).

Taiwanese also frequently inquire about purchasing whole bear gall bladders. The representative claims that when a bear dies, the entire animal is buried because it is illegal to sell the parts. While the distributor may actually believe this to be the case, it is highly unlikely that any of the farms in China would pass up the opportunity to profit by selling a dead animal's gall bladder or other parts.

While in Beijing attending the CITES Animals Committee meeting in May, the authors were told of the Badaling Bear Park, also known as the Badaling Bear Paradise. For the purpose of education, the park houses 380 black bears, all of which are kept in three concrete pits, measuring roughly twenty feet by fifty feet. While the facility is relatively clean, it is anything but a paradise for its tenants, several of whom exhibited clear signs of dementia from living in such cramped quarters.

A few Chinese government officials said that the Badaling bears were all bred in captivity; however, a conversation with four park employees revealed the truth: The park's owner also owns a bear farm in Jilin Province. He had been collecting bears with the expectation of moving them onto a new farm, but for unknown reasons he was denied permission. Two of the farm's caretakers confirmed that all of the Badaling bears are taken from the wild. One even said they had three sun bears (which the authors saw), a species they cannot legally keep. None of the bears have reached breeding age, but some will be used in a captive breeding operation in the future.

It is hard to determine the precise ages of the Badaling bears. During the visit, an accompanying biologist estimated some of the animals to be less than two years old. It is quite likely that a portion of the Badaling bears will be moved to their owner's farm in the future.

Availability of Bear Gall Bladders

Detailed market surveys on the availability of bear gall bladders have not been carried out in China, where the sale of gall bladders has been illegal since 1989. A few facts do show, however, that over the past fifteen years, in China alone, tens of thousands of bears have been killed to satiate Asia's appetite for bear gall bladders:

- From 1979 to August 1988 TRAFFIC Japan estimated that between 11,000 and 59,000 bear gall bladders were imported into Japan from China.²⁹ Import statistics show that from 1988 to 1990 China exported another 1,051 kilos of bear gall bladders to Japan— representing perhaps another 10,000 bears.³⁰
- In a Chengdu marketplace, during a one-hour period, two men viewed the "skeletons and parts" of 168 black bears.³¹ Other surveys have reported similar numbers.³²
- South Korean nationals visiting northeastern China are notorious for smuggling bear gall bladders out of the country. To combat the smuggling, the Heilongjiang government issued a ban on bear gall bladder exports until 1995.³³ In 1991 the decree had yet to stop the outflow, as ROK visitors, some wearing clothing designed to hide the fig-size gall bladders, continued to smuggle the contraband out of the country.³⁴

Although this investigation did not include Chengdu, the capital of Sichuan, IFAW investigators report that in November 1993 they were offered bear gall bladders and bear paws in Chengdu's Chinese medicine market.³⁵ Prices quoted to the investigators were RMB2,000 (US\$230) per gall bladder or RMB40,000 (US\$4,608) per kilogram.

No information is available about Heilongjiang and Jilin provinces to the Northeast. Mills and Servheen say that Heilongjiang and Jilin may comprise "China's last, best bear habitat,"³⁶ thus poaching and trade in bear parts certainly occur there.

The scope of the investigation covered by this report encompassed Guangzhou, Shanghai, Dalian in Liaoning Province, and Kunming in Yunnan Province. Products containing farmed bile were widely available but only in Guangzhou were merchants willing to sell whole gall bladders.

Guangzhou merchants are well known for trading in protected and endangered wildlife. In the city's notorious Qingping market, wildlife products ranging from dried seahorses and snakes to live turtles, pangolins, and even peacocks are sold for human consumption. Trucks laden with live bears bound for Guangzhou restaurants or other markets have been widely noted (see section on bear paws). In the 1980s rhinoceros horn was openly available in local pharmacies³⁷ In 1993, after the state-mandated May 29 ban on trade in rhino horn, Environmental Investigation Agency (EIA) investigators were

offered more than one ton of rhinoceros horn by Guangzhou traders.³⁸

Four of thirteen pharmacies visited in Guangzhou offered the author whole bear gall bladders, or what were purported to be bear gall bladders. A few of the pharmacies offered only manufactured medicines; however, the author inquired about purchasing whole bear gall bladders in these shops anyway. Prices were quoted by the gram in two of these pharmacies. These shops offered a discounted price for whole gall bladders and slightly higher prices for smaller purchases. In the first case, a gall bladder weighing 144 grams was quoted at RMB48.82 (US\$5.62) per gram for the entire bladder and RMB64.54 (US\$7.44) per gram for part thereof. In the second case, prices were RMB50 (US\$5.76) per gram for the entire gall bladder and RMB70 (US\$8.06) per gram for a portion. The gall bladder in the latter pharmacy weighed 90 grams. The author was urged to buy the gall bladder because, although the pharmacist was willing to check with her warehouse, she could not say for sure whether or not they could get more gall bladders in the near future. A third shop offered bear gall bladder for RMB51 (US\$5.87) per gram.

In Guangzhou, the most significant indicator of substantial trade came when the investigator visited the Guangzhou City Raw Medicine Trade Center, a wholesale outlet. Mr. Zhou Zhi-wei, a manager at the center, was willing to sell whole bear gall bladders for RMB35,000 (US\$4,032) per kilogram. Zhou said he frequently sells bear gall bladders, several kilos at a time, to Taiwanese nationals. In March 1994 he sold his entire on-hand stock of 8 kilos to a Taiwanese man who had hoped to purchase even more. Zhou had already begun collecting more whole gall bladders to sell to the next buyer. He was extremely confident that in the near future he could sell 10 kilos or more at a time.

On July 12, the author phoned Mr. Zhou from Taiwan to inquire about purchasing 5 kilos of bear gall bladder. Zhou said that he did not have that amount in his possession but that when the author next visited Guangzhou he could arrange the transaction.

Another pharmacy in Guangzhou was the site of an odd encounter. When queried, the shopkeeper stated he had just received a government notice forbidding any further sale of bear gall bladders. Nonetheless, the shopkeeper invited the author to the shop's second floor, where he unlocked a safe and pulled out packaged bile crystals from Jilin and Heilongjiang. Both products were and still are legal, but the store owner genuinely thought they were illegal. Perhaps he misunderstood their origin and believed they contained bile from wild bears. The perplexed author did not prompt him about buying the crystals, but in the end, despite his perception of illegality, he offered to sell them.

The pharmacist's behavior might have been because of recent efforts by Chinese officials to stop the trade in other endangered species. The authors' investigation in Guangzhou in April 1994 came less than a year after the May 1993 Public Notice banning the use of rhinoceros horn and tiger bone. The circular called for an immediate halt to production of medicines containing the two substances. It also allowed a six-month grace

period, ending November 30, 1993, for traders to dispose of existing stocks containing these products. Although trade in bear gall bladders had previously been outlawed, the official notice referred to by the pharmacist may have been a reminder handed down from the state or provincial levels.

Bear Paws

In China bear paws are served as an expensive entree in some restaurants and can be purchased in a small number of pharmacies. Consumption, however, is illegal under China's 1989 Wildlife Protection Law.³⁹

Bear paws are also a popular food in South Korea and Japan. To satisfy market demand, in the 1970s an estimated 900 kilos of bear paws per year were exported from China to Japan.⁴⁰ That figure decreased to an average of 500 to 600 kilos per year in the late 1980s.⁴¹ In 1990 4,000 kilos of bear paws destined for Japan and Korea, in contravention of CITES, was intercepted in the port city of Dalian.⁴² The paws had been illegally collected by Chinese Forestry officials.

For the domestic market, Mills and Servheen report that in Harbin alone an estimated two tons of bear paws were consumed annually prior to 1989.⁴³ Although the practice is now illegal, it is likely that in Harbin and other northern areas, citizens consume substantial quantities of bear paws and meat.

Other documentation shows bear paws being sold in other parts of China since 1990. Over a one-month period in the winter of 1990, an investigator in southeastern China working for the TRAFFIC network, viewed over fifty paws from Asiatic black bears and more than twenty paws from brown bears.⁴⁴ Paws were offered to two IFAW investigators in Chengdu in 1993,⁴⁵ and Taiwanese nationals who travel to southeastern China also state that paws are available in restaurants and street markets.

A writer who travels extensively in China says one PRC source reports seeing an increase in automobiles with Guangzhou license plates in Yunnan Province. The vehicles are loaded with wildlife taken illegally from neighboring countries like Laos, Vietnam, and Burma,⁴⁶ all of which border Yunnan Province. Bears or bear parts are more than likely at the top of these traders' shopping lists.

Further documented incidents of illegal trade include some live shipments of bears that were confiscated. In 1988 six men were arrested in Guangxi Province with forty live bear cubs taken from Sichuan Province.⁴⁷ Another smuggler with nine black bears purchased in Yunnan was caught in Guangxi as he made his way to Guangzhou.⁴⁸ Bears smuggled into Guangzhou and other cities in China are probably sold live to restaurants or butchered and sold piecemeal to local restaurants and pharmacies.

Bear farms are also a possible source of paws and meat. The owner of the Wei Zhou Technology Development Centre for Bears in the Guangdong Province Farm of Animals for Medicinal Use told IFAW investigators he will consider selling his bears, when they are beyond their milking prime, to Taiwanese gourmards for a bear banquet at Hong Kong dollar (HK) 10,000 (US\$1,152) per bear.⁴⁹

IFAW investigators visited another operation, the Nanping Bear Farm of the Special Economic Zone of Zhuhai, on several occasions in 1993. While documenting the horrendous conditions of the farm, they also noticed that three of the bears were each missing a paw.⁵⁰ IFAW ultimately persuaded the Chinese government to shut down the facility.⁵¹

Nanping farm manager Chan Jin Shi angrily denies reports that his bears had their paws amputated. During an interview with Chan, however, a reporter noticed bottles of bear paw liquid lining the farm's shelves.⁵² Chan accounted for the liquid by claiming that he had had two bear deaths due to illness. "The hospital could not cure them and they died. Therefore we applied for permission to use the paws in our production of bear paw liquid."⁵³

While in China the authors came across bear paws on only three occasions: in a hotel restaurant in Dalian, in a village in rural Guangdong Province, and in a Kunming City pharmacy. At the Beijing Lou restaurant in Dalian's Regent Hotel, braised bear paws were advertised on a three-sided, revolving, illuminated sign, with enlarged photos of several dishes, including bear paws. A waitress at the restaurant claimed the fare was popular as a banquet entree and was sold "by the table" for RMB5,000 (US\$576) or more, depending on the number of diners.

At a small restaurant in Chonghua, a village in Guangdong Province, the authors inquired about bear paws and tiger meat and were informed that the restaurant did not serve bear meat or other endangered species. However, a man who happened to overhear the query said he could supply bear paws and tiger meat and asked the authors to accompany him to a different part of the village to discuss the matter.

After a quick drive to another restaurant, the man, surnamed Wen, explained that he could not discuss endangered species at the other restaurant out of fear of being overheard and turned in to the authorities. That restaurant is government-run, and tigers and bears, he said, are "number one species on China's animal protection list."

Wen said that bear paws are available for RMB3,000 (US\$346) each. The price included preparation by a chef. Wen added that he would need advance notice, as the paw takes several days to stew.

Wen also offered tiger meat for between RMB550 (US\$63) to RMB800 (US\$92) per

kilogram, depending on the amount purchased. He claimed to have 40 kilos of tiger meat on hand.

The author also saw bear paws at the aptly named Yunnan Rare Drugs Pharmacy in Kunming City. A pair of what were claimed to be the rear paws of an Asiatic black bear, priced at RMB270 (US\$31) per paw, were prominently displayed in a glass counter along with elephant hide, deer penises, and other animal products. At a subsequent visit two weeks later, only one paw was displayed in the window.

During the second visit, the author asked several questions about using bear paws. The clerk first explained that the shop frequently sells bear paws: rarely does a pair go unsold for more than a few weeks. The clerk said she believes that the paws are taken from bears from northeastern China. She explained that bear paws can be prepared in a soup or a stew with a wide range of herbs. She was not familiar with specific medicinal uses, although like most Chinese, she believes a bear's front paws are more potent because bears lick them more. The Chinese also prefer front paws over rear paws because the front paws carry less of the animal's weight and are, as a result, more tender. The clerk also said she believes that because bears lick their left paw more than their right, the left paw is better.

During the course of the conversation the clerk went to the back of the pharmacy, returned with a small sack, and invited the author to pull out and examine the contents: two fresh front bear paws, priced at RMB360 (US\$41) per paw. The paws were pungent and had white, fatty oil deposits at the point where the paws were severed.

Discussion and Recommendations

China's conservation officials who speak out in defense of bear farms may not be aware of the many problems inherent in the industry. The general feeling among Chinese conservation officials is that the PRC is under attack by a "small number of international activists who put undue emphasis on protection and oppose any opinions that support use of animals."⁵⁴

To be sure, the bears on China's farms are condemned to a life of unspeakable mental and physical pain—and animal protection organizations are right to oppose farming. The goal of the project, however, was to look beyond the question of the animals' treatment to the broader question of whether artificial extraction of bear bile reduces the pressure on bears in the wild.

Taken individually, any one of the farms discussed here might not be cause for conservation concern. Collectively, however, the various corroborating comments made by farm managers and industry representatives paint the picture of an industry out of control. Specifically, there are three main problems with bear farming:

(1) Bears are illegally wild-caught to supplement existing farm populations. Little is known about the status of China's bears in the wild. It is extremely unlikely that the black bear is anywhere near as plentiful as Chinese officials claim. With this in mind, and based on the findings of this report, the proliferation of farms stocked with wild-caught bears is directly affecting China's wild populations of the Asiatic black bear and brown bear. Bears are also being taken, in violation of CITES, from Burma (Myanmar) and neighboring countries to supply the farm trade in China.

Although the government claims to discourage the capture of wild bears (no permits to capture bears have been issued since 1989), few farms are stocked with anything *except* wild-caught bears. Of the farms visited or researched during this investigation, only one, the Nationality [sic] Pharmaceutical Factory in Ruili, is even contemplating breeding its bears. Economics—not conservation—is the primary motivation for considering this option; purchasing enough wild-caught bears to meet the farm's ambitious goal of possessing 500 milking bears by the year 2000 may be financially prohibitive. Other farms' representatives readily admit that when the need arises bears are captured from the wild.

The past, present, and projected taking of wild bears probably occurs on the majority of farms in the PRC. The Sichuan Deer Farm, which is said to have a captive breeding program, is the exception rather than the rule. As a result, the day when China's caged bears outnumber their wild counterparts may come very soon, if it is not already upon us.

(2) Bear bile is used to create nonessential or even luxury goods. The thought of subjecting bears to a life of suffering in cages so small that the animals cannot stand erect or turn around, for the purpose of extracting bile, is unconscionable to most people. Proponents of farming argue that the means justify the end because the extracted bile is used in medicines that prevent and treat human disease. Too many bear by-products, however, are evidence to the contrary. The fact that shampoo, throat lozenges, hemorrhoid cream, herbal tea, cough syrup, and cosmetics are the products of a bear's imprisonment belie claims that the animals' plight alleviates human suffering.

(3) Aggressive marketing and advertising stands to increase demand for bile products. In Guangzhou, Gold Bear Oral Liquid is aggressively marketed as a cure-all elixir. Similar marketing practices exist for other bile products. Government-run airports, Friendship stores, and popular tourist attractions such as the Forbidden City sell bile crystals in smartly packaged felt-lined boxes.

It is difficult to gauge the extent to which these goods are consumed by the general population. Clerks selling bile products claim to never have tried them because they are too expensive and say that they are beyond the financial reach of most people in China.

If these goods, which transcend the traditional uses of bear gall bladder, should become affordable to the general public, there is a danger that demand for bear bile will

increase. Should this happen, farm managers will seek to meet demand by increasing output. The standard method of increasing output, at least in the farms documented here, is by augmenting their existing stock with wild-caught bears.

It is not clear whether the availability of farmed bile products has reduced the amount of whole bear gall bladders in trade in China. This investigation documented relatively few pharmacists and just one supplier in Guangzhou willing to sell whole bear gall bladder. That supplier, the Guangzhou City Raw Medicine Trade Center, regularly sells bear gall bladder by the kilogram—an amount that indicates that a relatively large number are still in trade.

In addition, no hard evidence exists that the bear gall bladders on the market in Guangzhou are genuine (as opposed to being from pigs or other animals) and, if genuine, whether they were obtained from poached or farmed animals. Analysis of bear gall bladder samples purchased in a recent study indicate a "strong possibility that genuine bear gall bladders on sale in Hong Kong are from farmed bears."⁵⁵ The samples analyzed indicate that bile acids secreted by farmed and wild bears may be different, making identification of the two types of bear gall bladders possible.⁵⁶

If a portion of the gall bladders offered for sale in Guangzhou or elsewhere are from farmed bears, it certainly does not mean that wild bears are not taken whenever possible in their remaining range in China and sold in markets in Guangzhou, Chengdu, northeastern China, or exported to South Korea, Taiwan, and Japan.

Farmed bear gall bladders possibly make up the majority of genuine bear gall bladders in Hong Kong. This indicates that when a farmed bear dies, in many cases, at least its gall bladder is illegally marketed internationally. Chinese officials often state that bears on farms live long lives, but the market volume of gall bladders originating from farmed bears indicates that these bears must be dying, or are purposely killed to market their gall bladders, in large numbers.

The findings of this investigation suggest that bear farms do not contribute to the conservation of wild bears. Artificially extracted bile may never be seen as a viable alternative to that of wild bears in other consumer nations. Meeting domestic demand with captive animals should be possible, however, because so-called patent or processed medicines are accepted and more popular than raw medicines in China. In fact, officials claim that output already exceeds demand. But can China's bear farms supply the domestic market without affecting wild bear populations? At present the answer is no, but it may be possible in the future.

The two most important steps China can take to lessen the impact of farms on wild bear populations are (1) to immediately begin an inventory of all existing farms to determine which facilities continue to capture bears from the wild and take steps to ensure

the practice is stopped and (2) to immediately disallow production of cosmetics and other nonmedicinal products.

PRC officials state that the production of milked bile already exceeds the country-wide demand. A halt in the production of shampoos, teas, throat lozenges, hemorrhoid creams, and other dubious products containing bile will further widen the gap between production and domestic consumption.

A critical self-evaluation of registered facilities will undoubtedly uncover installations that fail to meet minimum standards. It should also be relatively easy to determine the location of nonsanctioned farms. These facilities, especially those that were illegally set up, will be prime candidates for closure.

If PRC officials should undertake the above recommendations and investigations, what would be the fate of surplus bears? The IFAW first proposed that substandard farms be closed and the unemployed bears relocated to sanctuaries. Although establishing sanctuaries in natural settings could be difficult, it would not be impossible. Ultimately the number of sanctuaries and bear inhabitants would be limited only by China's resolve to tackle the out-of-control bear farming industry.

Another important step is to promote the use of substitutes for bear gall bladder. Just as patent medicines are more easily accepted by consumers in China than in other Asian countries, it is probable that herbal substitutes will be more readily adopted in China than elsewhere.

A plethora of accepted, natural substitutes for bear gall bladder exist (see section on substitutes). Bear farms have been promoted by the government as a means of promoting Chinese medicine, generating revenue, and conserving bears. With government support, large-scale farming of herbal substitutes for bear gall and other endangered species could become a profitable industry. More importantly, the switch to a plant-based medicine industry would be totally consistent with the promotion of Chinese medicine and the conservation of bears in the wild.

A gradual, government-assisted transition from bear bile to herbal drugs with the same medicinal qualities is the best possible way to reduce the demand for bile and the number of bears on farms. China should adopt the above recommendations and abandon thoughts of international commercialization of artificially extracted bear bile.

END NOTES

1. J. Mills and C. Servheen, *Asian Trade in Bears and Bear Parts*, World Wildlife Fund USA, 1991 (hereinafter *Asian Trade in Bears*), 8.
2. Wang Sung, personal communication with author (16 May 1994).
3. C. Servheen, "The Status and Conservation of the Bears of the World." Paper presented at the Eighth Conference of the Parties (COP8) on Bear Research and Management, Monograph Series No. 2 (1990) (hereinafter *Bears of the World*), 3.
4. Law of Wild Animal Protection of the Peoples Republic of China, adopted 8 November 1988, effective 1 March 1989. *The Conservation Atlas of China*, Beijing: Science Press, Distribution of Endangered Rare Animals of China, 76–77.
5. "Asiatic Black Bear Population and Habitat Viability Assessment," workshop briefing book for a Formosan black bear PHVA, Taipei, Taiwan, 14–16 June 1994 (hereinafter "Viability Assessment"). PRC Proposal to Register Breeding Asiatic Black Bear in Captivity and Bile Drainage for Commercial Trade. Proponents are the PRC and the Deer Farm of Sichuan Provincial Chinese Traditional Medicine Corporation. The proposal was not submitted for consideration at COP9 of CITES.
6. On November 12, 1992, the World Wildlife Fund (WWFUS) and the National Wildlife Federation (NWF) formally petitioned the U.S. Department of the Interior (DOI) to invoke the Pelly Amendment to the Fishermen's Protective Act of 1967. The two organizations wanted DOI to "certify" to the President that citizens of Taiwan and China, along with South Korea and Yemen, were "engaging in trade or taking which diminishes the effectiveness of an international program for [the protection of] endangered or threatened species," in this case, CITES. The petition was filed specifically for the four nations' roles in the rhino horn trade. In November of 1993 DOI Secretary Bruce Babbitt added tigers to the petition. Secretary Babbitt "certified" Taiwan and China on September 7 and, almost a year and a half after the Pelly petition was filed, on April 11 President Clinton announced a prohibition on imports of wildlife specimens and products from Taiwan—but not China. During the entire Pelly process, CITES also threatened to suspend trade in all CITES-listed wildlife with Taiwan and China.
7. Text of an English-language handout of a December 22, 1993 press conference titled *The Great Efforts Made by China in the Establishment of Wildlife Paradise and Conservation of the World's Endangered Species* (hereinafter "Great Efforts"), para. 6.
8. L. Kaye, "Disorder Under Heaven," *Free China Review*, and three other stories concerning law and order in the PRC, 9 June 1994, 22–30; D. Biers, "Beijing Losing Grip as Graft, Vice Soar," *China Post*, 23 April 1994.
9. J. Mills, "I Want to Eat Sun Bear," *International Wildlife*. (January/February): 40 (hereinafter "Sun Bear").
10. *Ibid.*

11. D. Melville, "Wildlife Trade—Hong Kong Is Still China's Back Door?," *About Life*, WWF Hong Kong, Spring 1994, 8.
12. *Bones of Contention, Part 2; The Tiger Trade Continues*. Report by the Tiger Trust (July 1993), 4.
13. "Commercial Raising Saves Bears," *Beijing Review*, 7–13 March 1994, 34.
14. *Asian Trade in Bears*, *supra* note 1, 12.
15. "Commercial Raising Saves Bears," *supra* note 13.
16. "Great Efforts," *supra* note 7, section on "Captive Bears," para. 29.
17. IUCN Analyses of Proposals to Amend the CITES Appendices at COP8, Kyoto, Japan, 2–13 March 1992, 55.
18. "Commercial Raising Saves Bears," *supra* note 13.
19. Jill Robinson, IFAW, personal communication with author, 12 August 1994.
20. P. Knights, "Doom in the Marketplace," *Defenders* (Winter 1993/94): 27.
21. *Ibid.*
22. "Commercial Raising Saves Bears," *supra* note 13.
23. "Great Efforts," *supra* note 7, para. 29.
24. *Asian Trade in Bears*, *supra* note 1, 31.
25. "Zhang's" real name is not being used.
26. "Viability Assessment," *supra* note 5, 2.2.4.
27. *Asian Trade in Bears*, *supra* note 1, 13.
28. Names of bear farms and the pharmaceutical factories that process bile are slightly confusing. It may be that some farms and processing centers are separate entities. To the best of our knowledge the Ruili Pharmaceutical Factory houses bears and processes extracted bile.
29. *Bears of the World*, *supra* note 3, 9.
30. Proposal submitted by Denmark for the Inclusion in Appendix II of all populations of *Ursus arctos* not included in Appendix I or II, 43. submitted at COP8, Kyoto, Japan, March 1992.
31. T. Domico and M. Newman, "Asian Black Bears: Moon Bear in the Mountains," in *Bears of the World*, no date, 120.

32. *Bears of the World*, *supra* note 3, 9.
33. *Asian Trade in Bears*, *supra* note 1, 12.
34. *Ibid.*
35. Trip report of a joint IFAW/Earthcare investigation in Chengdu, 31 October–2 November 1993 (hereinafter "Chengdu Investigation").
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56. E.O. Espinoza, J.A. Shafer, and L.R. Hagey, "International Trade in Bear Gall Bladders: Forensic Source Inference," *Journal of Forensic Sciences*, 38, no. 6 (November 1993): 1363–1371 (hereinafter "International Trade"). Results showed that the main bile acids in farmed bears consist of ursodeoxycholy-*l*-taurine, chenodeoxycholy-*l*-taurine and little or no choly-*l*-taurine while choly-*l*-taurine is present in much higher levels in wild bears. No wild Asiatic black bear gall bladders were available for the study and suspected farmed bear gall bladders were compared against four other species, the polar, grizzly, North American black and unknown NA bears.

A SURVEY OF BEAR GALLBLADDER IN THE TAIWAN MARKET

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The bear gallbladders in traditional Chinese medicine stores are divided into three types: (1) true bear gallbladder in whole form; (2) farm bear gallbladder in dried powder form; and (3) miscellaneous "bear" gallbladder in whole form and dried powder form, which is not from bear, but instead comes from other animals (i.e., pig, water buffalo, sheep, etc.).

There are also many grades of the above categories. For example, true bear gallbladders are divided into golden silk gallbladder and black oil ink gallbladder, or classified according to their country of origin. The farmed bear gallbladders may be 100 percent pure or mixed in different ratios with the gallbladders of pig, water buffalo, sheep, etc. The miscellaneous bear gallbladders are more complex; in fact, they are not from bear, but the trade names are "cheap bear gallbladder", "common bear gallbladder", "various gallbladder," "miscellaneous gallbladder," etc. It is never identified by the animal it derives from, i.e., pig, water buffalo, sheep, etc. With such complex commodities, the traditional Chinese medicine stores have their own experimental identification methods, which do not include chemical analysis.

Substitute gallbladder plays an important role in the traditional Chinese drug market. For example, the Board of Foreign Trade and Republic of China Customs statistics reported that from 1975 to 1985, Taiwan legally imported 8,250 kilos of bear gallbladder. In 1978 and 1979, there were two very big lots of 1,293 kilos and 5,293 kilos imported from Thailand. This total of 6,586 kilos was not true bear gallbladder; it was miscellaneous gallbladder. I visited the main importer of the 6,586 kilos in Thailand, who reported that all of it was gallbladder of pig and water buffalo, and reported as such on the import application to the Board of Foreign Trade. Because there was no customs code for pig or water buffalo gallbladder, it was declared as bear gallbladder, with the real origin noted only on the permit application.

From government import statistics, the unit price of the above 1,293 kilos and 5,293 kilos were respectively, N.T.\$378/kilo and N.T.\$455/kilo. Let us compare the imported statistics in 1975 to 1985. When it contained true bear gallbladder, the unit price was N.T.\$19,333/kilo to N.T.\$107,000/kilo. So, it was very clear that the unit price of N.T.\$455/kilo was the substitute miscellaneous gallbladder. This substitute miscellaneous gallbladder accounted for 94 percent of the 8,250 kilos imported between 1975 and 1985.

The above example will explain how complex it is to investigate the use of endangered species in traditional Chinese drugs. If you do not understand the real conditions, you will be misled by available information, even from official government statistics. You will think the 6,586 kilo was from 170,000 bears killed in Thailand in 1978 and 1979, which would be the biggest tragedy for bear populations in the world.

Because farm bear gallbladder has had a very strong competitive price in the past two years, it has taken the position of true bear gallbladder whole size form in the Taiwan market. For example, the wholesale average cost of 100 percent pure farm bear gallbladder is US\$2,500/kilo; the true bear whole size form is US\$8,000-\$11,000/kilo. According to the director of a bear farm in China, the amount produced by one bear per year is roughly equal to the gallbladders of 15 bears, and there are 8,000 bear farms in China. One bear can produce 1-3 young per year. In the future, the cost of bear farm gallbladder will decrease more. Of course, whether the farm bear is accepted or not by CITES will depend on more detailed research and discussion in the future.

Canadian and U.S. bear gallbladders are very rare in the Taiwan market. It is said that there are 45,000 bears hunted legally per year in the United States. In my personal opinion, if we can establish a formal channel to use these bear gallbladders to exchange between states, it may be helpful for protecting the endangered Asian bear species. Of course, a complete monitoring system should be set up first to prevent any further illegal trade.

The traditional Chinese medicines stores are run by very conservative and traditional people, who are not college-educated pharmacists. It is very difficult to change their attitudes in a short time. It is very difficult to conduct any investigative research among these closed groups of people. Above all, the twisted and unfortunate affair of the rhino horn and tiger bone in Taiwan made the gap wider between traditional medicine stores and the government and conservationists. The study methods should be arranged more carefully as the research work is very, very hard.

In medicine, if people believe that a drug possesses very effective medical properties or certain magical powers, it is very difficult to stop them from using it. To seek the accepted point between the protection of endangered species and traditional Chinese medicine, we think that controlled trade is better than a total ban. We will conduct further research to make clear the issues and problems and seek desired solutions and methods.

We are currently investigating bear gallbladder in the Taiwan market, targeting the traditional Chinese medicine stores to discover the trade situation, items, series, price, complex conditions between the true and non bear gallbladder, etc.

VI. DISCUSSION GROUPS:
RECOMMENDATIONS AND PRIORITIES
FOR THE FUTURE

**DISCUSSION GROUP:
PERSPECTIVES FROM THE STATES, PROVINCES, AND TERRITORIES
ON THE TRADE OF BEAR PARTS**

This discussion group met to discuss four key issues in the trade of parts from the American black bear: (1) Law enforcement needs; (2) Desired improvements in monitoring and controlling the trade in North America; (3) Black bear management information needs; and (4) The impact of trade and commercialization on the American black bear and on Asian bear species. Due to time limitations, it was decided by the working group to focus the discussion on law enforcement needs and monitoring and controlling the trade in North America.

Issues

Commercialization: The discussion group began by recognizing the plight of Asian bear species as a result of commercialization and trade as well as habitat loss. Although the American black bear is not currently threatened, the trade of parts from the American black bear is also an issue that merits careful attention, research, and monitoring. In many jurisdictions, both sales of bear parts and the prices involved appear to be increasing, raising concerns in some regions about our ability to control the trade and prevent negative impacts on bear populations. It was also recognized that this trade involves a variety of products, including skulls, skins, claws, and meat as well as gallbladders and paws, and that future discussion of trade of bear parts should address this trade more broadly.

Poaching: Several participants noted the need to more carefully analyze the scale of illegal hunting and its impacts on bear populations. Although there are currently no documented instances of declining bear populations as a result of poaching for the parts trade, population estimates are highly uncertain, and many jurisdictions have not developed estimates of the number of poaching kills that occur annually. The degree of threat, if any, to black bear status as a result of the trade cannot be realistically assessed without considerable effort to improve the availability and reliability of population and harvest data.

Trade Dynamics: The participants also recognized that the scale, dynamics, and impacts of the trade vary greatly among different regions and jurisdictions within the United States and Canada. Many participants from western states and provinces describe the trade as highly lucrative, well organized, and increasing, with much of the trade destined for Asia. In such situations, the trade tends to be secretive even when permitted by law. By contrast, participants from many eastern states and provinces believe that the trade remains smaller in scale, involves lower prices and profits, and is primarily directed at markets within North America, with a higher proportion reported voluntarily in states that allow legal sale of bear parts. It is not yet clear to what extent these apparent

differences reflect varying law enforcement effort, or, if real differences do exist, how likely it is that eastern states and provinces will be able to continue to control and monitor the trade through regulated legal sales.

Possible Solutions

Bans or Controlled Trade: Given the different trade contexts facing state, provincial, and territorial agencies, there is presently no consensus among jurisdictions on the issue of whether a regulated legal trade or a complete prohibition of trade is the most effective policy response. Where the trade remains small in scale, easily controlled and enforceable, and apparently derived primarily from legally harvested bears, a regulated legal trade may be chosen as the best means to meet management, information, and law enforcement needs and goals. In areas where trade controls have proven difficult to enforce, there has been a general movement toward tightening of trade restrictions or the complete prohibition of trade.

The possibility was recognized that as a growing number of jurisdictions prohibit sale and export of bear parts, those jurisdictions that continue to allow sale and export may increasingly serve as laundering points for illegally commercialized parts. The legal and regulatory frameworks and law enforcement strategies of individual states, provinces, and territories should recognize not only current conditions within that jurisdiction, but also the situation and needs of other jurisdictions. Cooperation and coordination among jurisdictions should take into account not only mechanisms for recording and tracking the origins and destinations of parts in trade, but also controls on interstate, interprovincial, and international commerce.

Cooperative Regional Law Enforcement: The participants believe that law enforcement is a critical tool for understanding and monitoring as well as controlling trade in North America, and that special operations and undercover investigations currently play a particularly important role in efforts to understand and respond to the trade. Unfortunately, budgetary and personnel cutbacks in many jurisdictions have severely reduced the amount of resources available for such operations. There are also many obstacles to the adequate exchange of information on the scale and impacts of the trade among personnel engaged in law enforcement, wildlife management, and administration within and among state, provincial, and federal wildlife and law enforcement agencies, a situation that must be addressed if the trade is to be effectively monitored and controlled. Greater collaboration and exchange of information is also needed with agencies in importing countries, the CITES Secretariat, non-profit environmental organizations, and other interested parties.

Information Exchange: More generally, the greater availability and exchange of information is considered a high priority by participants. Among the types of information

desired are current prices and market trends; reports of recent law enforcement strategies, investigations, and seizures; and updated information on state, provincial, and territorial regulations, recorded sales, and exports. Symposium participants agreed on the usefulness of holding a similar symposium in approximately one year's time, and also discussed various means of exchanging information between meetings. It was also decided to explore means of establishing a newsletter or other mechanism to keep participants updated on recent developments. It was also decided to explore possibilities for introducing the subject of trade of bears and bear parts onto the agendas of other meetings, such as the Eastern and Western Bear Workshops and the International Conference on Bear Research and Management.

This summary was prepared by Debra Rose of TRAFFIC USA and reviewed by five discussion group participants.

**DISCUSSION GROUP:
REGULATING COMMERCIALIZATION AND TRADE OF BEAR PARTS:
INTERNATIONAL DIMENSIONS**

The facilitator focused the discussion by stating that the American black bear was listed in 1992 on CITES Appendix II under Article II.2.b in order to help regulate the parts and products of the critically endangered Asian bears. The purpose of this discussion group was to discuss the impact of the commercialization of North American black bears on global bear populations.

Korea

The discussion group began by noting problematic bear gallbladder trade in Korea. South Korea, one of the primary consumers of bear gallbladders, currently maintains the only CITES reservation on bears. It is anticipated that the dealers in that country will begin to stockpile bear gallbladders in anticipation of the withdrawal of the reservation by the government in 1996. Participants agreed on the need to send a strong message from the symposium urging Korea to drop its reservation as soon as possible. In the interim, Korea should attempt to control stockpiling of bear gallbladders in order to prevent increased poaching and internal domestic trade regulation problems, as occurred with tiger bone stockpiling prior to Korea's accession to CITES in 1993. One participant noted that it is possible to store bear gallbladders for a period of several years.

Korea also has significant CITES implementation problems that need to be addressed if bear trade controls are to be effective. One participant stressed the need for Korea to improve record-keeping and reporting. For example through 1993, when Korea acceded to CITES, Korean customs data had a commodity category solely for bear gallbladder, *Fel Ursi*. That classification was discontinued, and there are now no data available on Korean bear imports. The facilitator pointed out that under a recent CITES resolution, Korea is obligated to report its trade of bears despite its reservation.

Recommendations: The participants suggested that a letter be written to the CITES management authority in Korea advising them of the conclusions of the symposium and the need to drop their reservation, urging them to prevent stockpiling of bear gallbladders, and recommending that their legislation be amended to allow full implementation and enforcement of CITES.

Taiwan

The discussion then moved to trade problems in Taiwan. It was noted that Taiwan's Wildlife Conservation Law (WCL) does not list the American black bear on its list of protected species, despite its listing on CITES Appendix II. It was also indicated that the

penalties for violations are very low, and that failure to register stocks of parts from select prohibited endangered species is not currently regulated. [Editor: The October 1994 WCL amendments drastically increased all penalties and made future registrations mandatory and any registration violations subject to penalties.] In addition, registration of these stocks is not adequately implemented or enforced. Finally, a participant suggested that Taiwan begin to gather information on the internal trade in bear gallbladders, which will ultimately help them regulate the international trade.

Recommendations: The participants recommended that a letter be written to the CITES management authority of Taiwan urging them to add the American black bear to their list of protected species as a CITES Appendix II species and strengthen the penalties and enforcement of existing laws.

China

The discussion also included bear trade in China. It was noted that China needs to address the international trade problems created by Chinese bear farming and the manufacture and export of its traditional pharmaceuticals. Information presented at the symposium indicated that bear farming was creating new markets for bear bile products, rather than easing pressure on wild bear populations by meeting existing demand. Furthermore, bear farming is conducted without endorsement from CITES, so that all exports are presently illegal.

Recommendations: The facilitator pointed out that the Asian regional meeting of CITES recently held in Israel passed a resolution urging China to provide the CITES Animals Committee with information internal bear trade and legislative controls as well as information on its bears farms (see Table 1.) This resolution was distributed to all symposium participants. It was agreed that symposium participants should request China to address the issues raised by this resolution.

Other Countries

Other countries identified as consuming nations were Japan, Hong Kong, Singapore, Viet Nam, Laos, Cambodia, and Nepal.

Recommendations: It was suggested that Japan be advised to tighten controls on the bear gallbladder trade within its borders, since that may impact international trade. Hong Kong and Singapore should increase their penalties for bear trade violations. Viet Nam, a new party lacking rudimentary wildlife trade legislation, should immediately implement legislation to regulate the trade of CITES species. Both Laos and Cambodia should be

encouraged to join CITES and institute wildlife trade controls. Nepal was also recognized as having very weak legislation regarding bear trade.

Possible Solutions

Control of Legal Trade: Participants considered the possibility that well-controlled trade in North American bears would reduce pressure on endangered Asian populations. However, it was the general feeling of the discussion group that even a well-controlled trade would be additive rather than compensatory in its impact on wild bear populations. Furthermore, with regard to North American bears in trade, participants stressed that, based upon the information presented at the symposium, it was obvious that the trade in bear gallbladders was already underground, despite its legality in some states, provinces, and territories, and becoming more so as an increasing number of jurisdictions prohibited domestic sale and trade. Therefore, controls on trade would be difficult if not impossible to enforce.

Reduce Demand: The difficulty of enforcing trade controls led participants to conclude that it was instead necessary to reduce demand for bear gallbladders and bile products. This could be done in two ways, by finding alternatives to bear bile and/or by educating consumers. Participants agreed that implementation of these suggestions faced basic cultural differences regarding attitudes toward the intrinsic versus use value of bears. Furthermore, medicinal practices are engrained in centuries of use and culture and cannot be easily altered. However, one Asian participant responded that all cultures evolve, and that the existence of ancient cultures should not be an excuse for failing to alter or control demand.

Medical Alternatives: In discussing alternatives to bear bile, it was pointed out that supposed alternatives, notably synthetics, are not always preferred by practitioners or their patients. One participant noted that in Taiwan, synthetic substitutes for bear gallbladders are considered to be western pharmaceuticals and are therefore often unacceptable to medical practitioners in that country. Therefore, the study and use of alternatives is a long-term solution to the problem that should be carefully examined and the use of natural substitutes, such as products from non-threatened wild animals and plants or domesticated animals. But other solutions should be sought as well.

Education: Education is also needed to reduce demand and increase acceptance of alternatives. Both practitioners of Asian medicine and children should be targeted for education on the problems of bear gallbladder trade. Possible messages for educational efforts included the threats to bear species, the lack of genuine bear gallbladders in the marketplace, and the existence and usefulness of alternatives.

Group Recommendations

The recommendations of the discussion group are summarized as follows. First, letters on behalf of symposium participants should be sent to China, Taiwan, and Korea urging the actions noted above. Second, no consensus emerged on the best means of controlling trade of North American black bears entering the international marketplace. Third, it was generally agreed that there was clearly a need for greater international cooperation and information sharing to aid enforcement efforts. Fourth, there was general agreement that education of practitioners and children and the search for medically acceptable alternatives were the best, although long-term, solutions to the problems raised by international trade of bear parts.

This summary was prepared by Andrea Gaski, Ginette Hemley, and Debra Rose of TRAFFIC USA and reviewed by two discussion group participants.

TABLE 1.

PROPOSAL FOR CONSIDERATION BY ASIAN REGIONAL COMMITTEE

Trade in Appendix I Asian Bear Products

As part of the Asian initiative to improve the enforcement of CITES and domestic wildlife legislation and to protect Asian wildlife from poaching pressure, the Asian Regional Committee requests that the Standing Committee ask for reports on trade in bear products to be presented to the Animals Committee at the May meeting in Beijing, China.

Asian bear range states should provide a brief report on available information of wild bear populations and the threats to these populations.

Bear consuming parties and non-parties (including China, Taiwan, Korea, Hong Kong, Japan and Vietnam) should be asked to provide a brief report on the legislative controls on the domestic trade and possession of bear parts; the availability of bear products; prosecutions for violations relating to bears; other measures taken to dissuade the use of Appendix I bear parts in traditional Chinese medicine; the promotion of substitutes and public education programmes.

In order to enable other parties and non-parties to assist China in implementing its domestic legislation on farmed Appendix I bear bile China should provide a detailed report on the bear farm industry, including, but not limited to, accurate numbers of bear farms and numbers of bears held in captivity; numbers of bears bred in captivity, identifying the farms operating captive breeding projects; total production and exports of farmed bile; overall annual mortality in bear farms.

SUMMARY COMMENTS ON THE INTERNATIONAL SYMPOSIUM ON TRADE OF BEAR PARTS FOR MEDICINAL USE

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This was the first major gathering of nongovernmental organizations and government officials from federal, state, and foreign governments to discuss the trade in bear gallbladders. It was a great success in terms of information exchange, and discussions were open and candid. This meeting represents a step forward in understanding this issue.

Why are we concerned about the gallbladder trade?

Because it is impacting wild bear populations worldwide, especially in Asia.

What were our objectives?

- (1) To understand the impacts of trade;
- (2) To understand the complexities of the trade;
- (3) To understand the demand for this product; and (4) To understand the supply of this product.

Is there an impact of the trade in bear parts on bears?

Yes, in Asia, mostly on Asiatic black bears and Asian brown bear populations. Yes, in some areas of North America on black bears and brown (grizzly) bears, but it is likely not impacting overall populations.

Is the demand increasing?

Yes, everything we have heard suggests that it is.

Why?

Because of more people with the beliefs to use it and more people with the money to buy the product.

In summary

- We heard of farming of bears for bile. We are concerned that this farming, associated with marketing of commercialized bile, will add to demand and thus increase impacts on wild bears. There is also a humane side to farming of bears for bile, but we did not discuss this.
- We heard that there are a multitude of different laws that regulate or fail to regulate the sale and possession of bear gallbladders in the United States and in Canada. We heard that each state has its own interpretation of how its laws on sale of bear parts affects bears. There seems to be no clearcut answer to what is best. It certainly seems that uniformity of laws would be useful for enforcement.
- We know that about 40,000 black bears and about 3,000 brown bears are killed legally each year in the United States and Canada. There is some trade in the gallbladders from these legally killed bears. There are some problems in the trade and possession of these gallbladders related to different laws between areas, the high demand for these parts, and the reluctance of some traders to report trade and possession. Some estimate that for each legally killed North American bear there is an illegally killed bear.
- If legally taken North American gallbladders were marketed in Asia, would this ease pressure on Asian wild bears? This seems doubtful because marketing of bear bile continues to increase demand in Asia and the number of consumers far exceeds availability and will likely continue to do so.
- There seemed to be a general consensus that bear farming and sale of legally killed bears increases demand and thus pressure on wild Asian bears.
- An interesting fact brought out at the conference was that more than 94 percent of bile used in Taiwan is not in fact from bears, yet it is bought anyway.
- China has 20 percent of the land surface of the Earth. The bear populations in China are very small given this area, if Asiatic black bears number only 20,000, according to Professor Ma Yiqing.
- Two major threats face the world's bear populations--habitat loss and unregulated killing. Demand for bear gallbladders and parts is driving unregulated killing. Unregulated killing is most serious in those countries where wildlife law regulation and enforcement are less effective.
- Encouragement of herbal alternatives to bear bile has the potential to curb demand. In China, this encouragement would have to be done by the government if it were to

work. This effort should target the traditional medicine community--the prescribers of bear bile.

- A series of resolutions and consensus items were drafted as a result of this conference. These will be transmitted to the appropriate countries and will be part of the proceedings.

In conclusion

- The trade in bear gallbladders is impacting wild bears in Asia and, to a lesser degree, in North America.
- The best way to help Asian bears seems to be to limit the use of bear bile products, perhaps through government promotion of alternatives. Use of farmed bile and bile from legally killed bears is unlikely to ease the pressure on wild bears, and in fact may increase this pressure.
- As long as there is use of bile and its use is sanctioned, there will be a market. The market will promote the unregulated killing of Asian bears, further endangering them. This illegal killing combined with habitat loss does not bode well for Asian bears.

I believe that this meeting was very useful, and that we should have another such meeting in one to two years. This symposium was a positive step toward the conservation of wild bears. The organizers are to be congratulated.

Thank you.

CURRENT PRICES (US\$) FOR BEAR PARTS AS REPORTED BY SYMPOSIUM PARTICIPANTS - SEPTEMBER 1994

UNITED STATES

Alaska:

Gallbladders: \$40/oz. wet, up to \$40/gram
\$250-1000 whole brown bear gall
Skulls: Unknown
Claws: \$2-5
Hides: \$300 green
\$1,000 rugs (highest price)
\$1,500 for mounts (highest price)

Arizona:

Gallbladders: \$50-250/gall to hunter, usually wet

California:

Gallbladders: \$180-200 to poacher
\$400 to collector
\$1,200-2,000 to retailer
\$30/gram for non-bear galls sold as "bear"
(about 99 percent of gall sold in shops is non-bear)
Skulls: \$20-50
Claws: \$5-10
Hides: \$200 green
\$400-600 tanned

Colorado:

Gallbladders: \$40-120 wet, each, depending on size
\$40-120 dry, each, depending on size
Paws: \$25-100
Meat: Up to \$10/lb
Skulls: \$50 and up, depending on size/quality
Claws: \$2-10, depending on size/quality
Hides: \$50-400

Idaho:

Gallbladders: \$20-25
Paws: Unknown
Meat: Not legal to sell
Skulls: Very little market
Claws: \$1-2
Hides: \$100 maximum

Washington:

Gallbladders: \$100-150 wet
Paws: \$25
Skulls: Little market
Claws: \$1-5

CANADA

British Columbia:

Gallbladders: \$7-9/gram, \$150-250 per whole gall
\$800 wholesale
\$1,200 retail
Black bear preferred, dried gall preferred, evidence of both domestic
and overseas markets

Manitoba:

Gallbladders: \$8-15/gram
Paws: Unknown or no apparent demand
Skulls: No apparent demand
Claws: Unknown or no apparent demand

Saskatchewan:

Gallbladders: \$7-8/gram or \$80-110 per gallbladder dry; few galls sold wet
Paws: \$10-20
Meat: Not sold
Claws: \$2
Hides: \$80-200

HONG KONG

Gallbladders: \$6-10/gram dry

JAPAN

Gallbladders: \$200/gram (highest price)
\$3,000-12,000 whole dried
Meat: \$80/kilo
Hides: \$3,000

KOREA

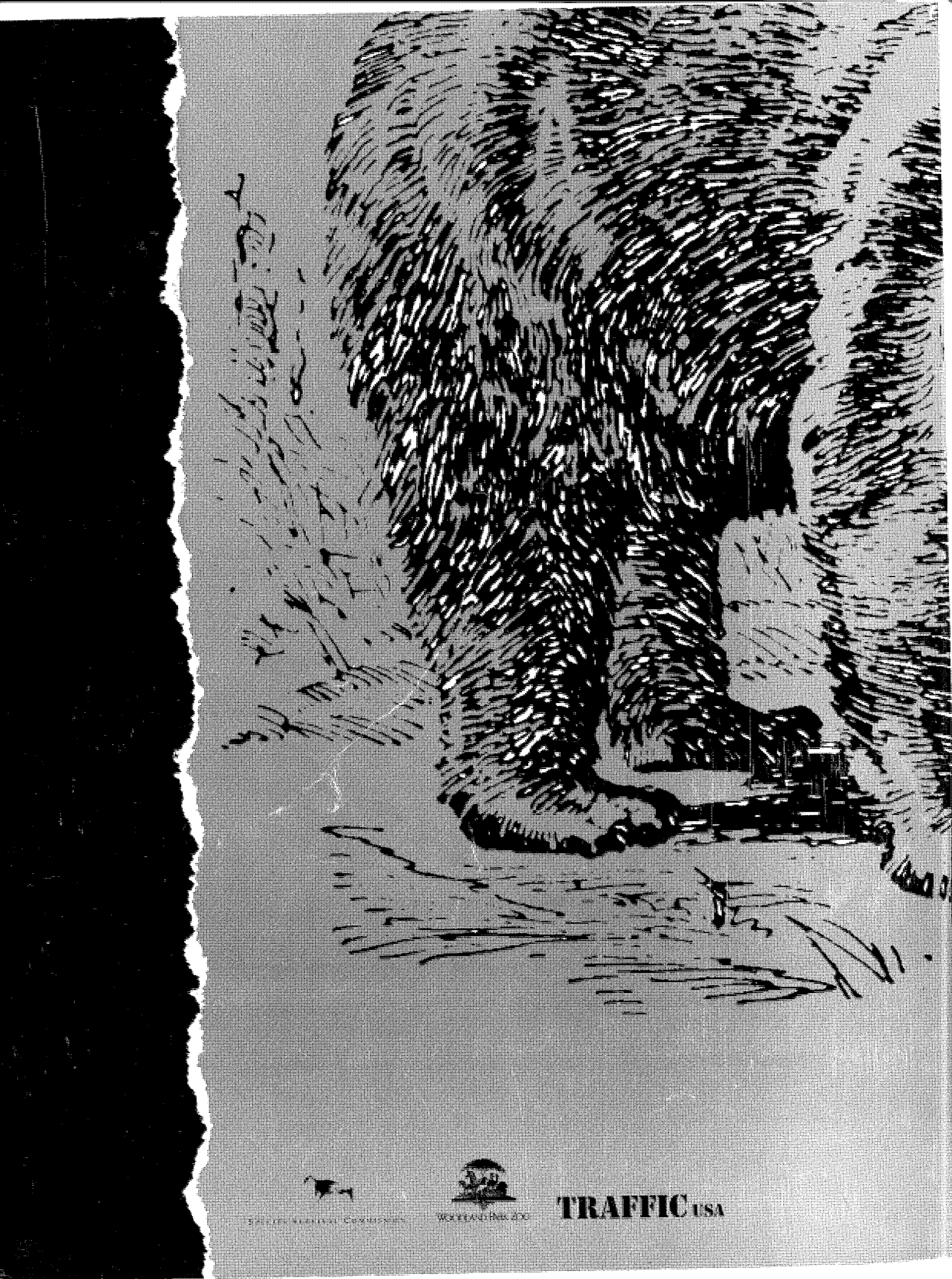
Gallbladders: \$1,000/gram

RUSSIA

Gallbladders: \$2-3/gram
Hides: \$500

TAIWAN

Gallbladders: \$8,000-11,000/kilo dried whole gallbladder
\$2,500/kilo dried farm bear gallbladder in powdered form



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