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THE WCS TIGER CAMPAIGN

THE WILDLIFE CONSERVATION SOCIETY (WCS) has been dedicated to protecting tigers in the wild since the 1960s when Dr. George Schaller, WCS Director for Science, completed the first scientific study of tigers in Kanha National Park, India. In 1995, a comprehensive effort was launched with a generous matching challenge grant from Gary Fink and MCG HealthCare Inc. The WCS Tiger Campaign has mobilized field research and conservation initiatives in countries where tigers remain including India, Myanmar, Lao People's Democratic Republic (PDR), Cambodia, Malaysia, Indonesia, Thailand, and, the Russian Far East. While much of our work focuses on conserving tigers in the wild in these countries, it is also being complemented with public awareness and educational campaigns, particularly in China, to reduce the demand for tiger bones and tiger-based products that has fueled widespread poaching and illegal hunting throughout much of the tiger's remaining range.

The WCS Tiger Campaign builds on rigorous scientific research to: determine the status of tigers and their prey; identify key tiger populations; assess the effects of various human activities, such as hunting and habitat degradation on tigers; and, implement conservation strategies in cooperation with national and local governments. We help build a permanent local capacity for conservation and management by training guards and senior staff in protected areas as well as local researchers in scientific methods and management techniques. The WCS Tiger Campaign encompasses public awareness initiatives and education programs among consumers of tiger products in both Asia and the United States to reduce the demand for tiger bones and tiger-based products. Finally, our commitment to saving the tiger includes our participation in captive breeding programs and educational programs administered at the Bronx Zoo.

In southern India's Nagarahole National Park, WCS Conservation Zoologist Dr. Ullas Karanth has conducted studies on tiger and prey ecology since 1986. This work is coupled with an education program in the local communities surrounding the National Park. Currently, he is conducting a survey of tigers and their prey in critical tiger habitats throughout the country to develop a long-term conservation strategy for India's tigers. His work has been funded primarily by the United States Fish and Wildlife Service and involves collaboration with the state and local governments of India and a number of non-governmental organizations. The model for tiger conservation developed in Nagarahole will be extended to three additional protected areas in the State of Karnataka. Major funding for this initiative comes from the "Save the Tiger Fund," administered by the National Fish and Wildlife Foundation and funded by the Exxon Corporation.

Indochina, with Asia's largest tracts of remaining forests, may be the best hope for the future of tigers, yet little is known about where they remain and how many persist. WCS supports, conducts, and directs field surveys in a number of countries to assess and monitor the status and distribution of the Indochinese tiger.

WCS also facilitates workshops and training programs for local researchers. In Myanmar and Lao PDR, we are providing critical support to national agencies responsible for the management and conservation of wildlife. In Cambodia, we have initiated a collaborative project with the government to develop a tiger action plan. In Vietnam, WCS has funded tiger surveys conducted by national and international scientists. In Malaysia, WCS has just begun a comprehensive training program to assist the national government in surveying their protected areas to assess the status of tigers, and to implement monitoring programs. In southern Sumatra, one of the few places where the tiger can survive in Indonesia, WCS scientists have initiated a long-term tiger conservation project incorporating the techniques and approaches developed in India and Thailand. In Thailand, Dr. Alan Rabinowitz, WCS Director of Science for Asia, in collaboration with Wildlife Fund Thailand, a national nongovernmental organization, has carried out field research in

Thailand's extensive network of protected areas since 1987. He has conducted a country-wide assessment of tiger and prey abundance and has developed and conducted local field training workshops. In 1996, WCS Indochina Tiger Coordinator, Dr. Tony Lynam, began a comprehensive scientific survey of the tiger in Thailand and continues to train staff members of the Thai Royal Department of Forestry.

In the Russian Far East, WCS formed a partnership with the Hornocker Wildlife Research Institute. Since 1991, the Institute's Russian and American biologists, led by WCS Conservation Scientist, Dr. Dale Miquelle, have conducted field research on the Siberian tiger, trained local researchers in census methodology, initiated anti-poaching efforts, and improved the existing protected area system to conserve this subspecies.

The border areas of many Asian countries contain a significant portion of the region's remaining biodiversity that is shared amongst countries. WCS has led the way in conservation by co-sponsoring three Transboundary Biodiversity Conferences. The first conference, held in China, brought together officials from China, India, Lao PDR, Myanmar, Nepal, Thailand, and Vietnam to discuss trans-national environmental cooperation, including joint surveys of wildlife such as tigers and monitoring of trade across borders. Cambodia, China, Lao PDR, Malaysia, and Thailand attended the second conference held in Thailand. In 1998, the third conference will focus on the issue of trans-national parks and reducing the illegal trade in wildlife products across borders.

Tigers play an important role in Traditional Chinese Medicine (TCM). Their bones are used in prescriptions and in mass-produced, over-the-counter, TCM products to treat a variety of ailments including rheumatism and arthritis. Consumers of these products are unaware that their demand for these products fuels poaching and illegal hunting of tigers in the wild. With funds from the Cline Foundation Fund, WCS launched the Asian Conservation Communication Program, directed by Dr. Endi Zhang. This is the first effort ever to raise public awareness and reduce demand for tiger products in mainland China. With support from the "Save the Tiger Fund", this project is assessing the most effective techniques for reaching consumers through its work with the TCM community, middle school children, the Shanghai zoo, and Shanghai Ogilvy & Mather among others. Shanghai Ogilvy & Mather is collaborating with WCS to develop and implement a public service advertising campaign for the Chinese Year of the Tiger in 1998. This is the first time advertising has been used in mainland China on a conservation issue. This continues our successful partnership with Ogilvy & Mather-Worldwide who implemented an extensive *pro bono* and internationally award-winning advertising campaign on the tiger that targeted the Asian region in 1995.

In 1996, WCS conducted a pilot study in New York City's Chinese communities and found that a wide variety of tiger-based TCM products were readily available and openly for sale. WCS is working to improve law enforcement, educate consumers, and pass national legislation that would make the sale of these products expressly illegal as well as increase funds for tiger conservation. WCS has offered expert testimony in support of legislation efforts and assisted in drafting the Rhino and Tiger Conservation Act of 1994 that established a \$10 million dollar fund for conservation efforts for tigers and rhinos. WCS continues to advise the United States and Indochinese governments on trade activities in tiger parts and products.

At its world-renowned Bronx Zoo, WCS ensures the perpetuity of tigers through our participation in the American Zoo and Aquarium Association's (AZA) Species Survival Plan (SSP), a cooperative captive breeding program among North American zoos. The tiger was the subject of the first SSP. The Bronx Zoo's Education Program educates zoo visitors and school children across the United States and in China on wildlife conservation issues, including the status and conservation of tigers.

**The Availability of Tiger-Based Traditional Chinese Medicine Products and Public Awareness about the Threats to the Tiger in New York City's Chinese Communities:
A Pilot Study¹**

By

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EXECUTIVE SUMMARY

Traditional Chinese Medicine (TCM) is a holistic approach to curing illness and maintaining health. It focuses on rest, exercise, and the consumption of plant, animal and mineral substances, or *materia medica*, as foods and medicines. Herbalism as an approach in TCM is a centuries old tradition based on the use of these ingredients, some of which include endangered species like the tiger. Tiger bone, the most valued of the many parts of the tiger that are used, is prescribed by TCM practitioners and is also listed as an ingredient in a variety of manufactured or “patented” TCM products. With the relatively large Asian communities in the West and the growing interest among Westerners in TCM herbalism, tiger-based TCM products have become widely distributed outside Asia, including in Europe, Canada, and the United States, despite the fact that international trade in any tiger product is prohibited under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). During the 1980s, it became apparent that the demand for these products was fueling widespread poaching of tigers for their bones and continues to pose a serious threat to tigers in the wild today.

One purpose of this study was to assess the nature of the market and demand for tiger-based TCM products in New York City, the largest Asian community on the East Coast of the United States. This study, conducted from June through December, 1996, found that tiger-based TCM products were widely available. Sixteen different products in the form of pills, plasters, capsules and wine were easily purchased. These products claimed to treat rheumatism and a variety of ailments of the bones, muscles, and joints.

Repeated visits to 37 Oriental herbal shops and supermarkets in New York City’s Chinese communities found that 67% of them carried at least one tiger-based TCM product. Products ranged from \$2 to \$8 in price, with one product selling for \$50. Raw tiger bone or any other bone that was labeled as tiger was not observed for sale nor did any of the TCM practitioners approached offer to fill a prescription that called for tiger bone as an ingredient.

All of the tiger-based TCM products purchased during this study that had manufacture dates on them, post-dated CITES and are consequently illegal. However, a complicating factor is that many of these tiger-based TCM products do not actually contain real tiger bone or bone at all. Forensic tests have failed to positively identify tiger derivatives in a number of products. This may be because the preparation of some tiger-based TCM products destroys the elements necessary for positive identification using forensic analysis. While United States law enables the authorities to confiscate TCM products labeled as containing tiger on importation, the laws do not expressly prohibit products claiming to contain tiger or other endangered species. In New York, this has hamstrung law enforcement efforts to confiscate these products at the point of sale. Current legislation requires that the law enforcement agencies prove that the seized products actually contain tiger ingredients. Some of the tiger-based TCM products also potentially violate consumer product labeling laws by making false claims to contain tiger ingredients as well as potentially violating federal food and drug safety laws by making unsubstantiated claims to cure and treat diseases or symptoms. Further research has shown that some of them may pose serious health risks to users. Regardless of whether tiger-based

TCM products do or do not contain any tiger ingredients, these products maintain the demand for authentic tiger ingredients for TCM prescriptions and products. The various federal and state agencies with authority over endangered species protection laws, food and drug laws, and product labeling laws have not made it a priority to determine how to remove tiger based TCM products from the shelves in New York using existing laws.

The public outreach component of this study found that New York City's Chinese community, not unlike the broader American public, is generally ignorant of the threats facing the tiger in the wild.

Sixty-five eight to ten year old students, in a Chinese community public school, knew little about the biology or the threats facing the tiger. Sixty-four percent thought that tigers were found in Africa, a similar finding to other surveys. This pilot outreach effort, in the form of a 35 minute presentation using slides and videos indicated that the presentation, was effective in improving the students' knowledge and making the link between the threat to the tiger and the use of tiger parts in TCM. Students also demonstrated a strong interest in taking specific actions to address this problem such as informing others to avoid using tiger-based TCM products. Based on informal interviews with many sectors of the Asian community, we found a strong interest from Chinese community groups and schools in participating in public awareness efforts. We also identified several TCM store owners and practitioners that did not support the use of endangered species in TCM and who were interested in conserving wildlife. Different segments of the TCM community along with the Chinese community at large were identified as potential target groups for a strategic public awareness campaign to raise support for eliminating the sale of tiger-based TCM products and to reduce the demand for the use of tiger in TCM.

The following recommendations are made based on this study:

1. Remove tiger-based TCM products and other products claiming to contain endangered and threatened species from store shelves.
2. Initiate law enforcement efforts, using current laws, at the federal and state level to remove products containing or claiming to contain endangered species. This would require increasing financial resources for law enforcement efforts and supporting coordinated efforts between the agencies responsible for protecting endangered species and human health.
3. Pass federal legislation that prohibits the sale of products claiming to contain tiger and all other CITES Appendix I listed species, as well as those species listed as endangered under the Endangered Species Act (ESA).
4. Design and implement a targeted public awareness effort in New York and other Asian communities in the United States to reduce the demand for tiger and other endangered species in TCM and TCM products.

INTRODUCTION

Traditional Chinese Medicine (TCM) is a holistic approach to curing illness that focuses on rest, exercise, and the consumption of plant, animal and mineral substances, or *materia medica*, as foods and medicines. TCM includes a variety of approaches to curing illness, including acupuncture and herbalism. The focus of this report is on herbalism in TCM. It is a centuries old tradition that has evolved through empirical observations on the therapeutic and clinical effects of *materia medica* as well as from folklore traditions (Bensky et al. 1993). It is thought that the classical *materia medica* was first written in the late Fifth Century A.D.; however, there is no consensus on what constitutes the “official” body of herbal TCM. Over the past 50 years, the herbal practice of TCM has expanded dramatically with official encouragement and subsidies from the Chinese government (Bensky et al. 1993). In addition, throughout the West, there has been a huge surge in the use of herbal TCM, used as a complement to Western medical treatment and drugs (Carter 1996).

The majority of TCM herbal ingredients is derived from plants; however, domestic and wild animals are also used (Read 1982, Reid 1993, Bensky et al. 1993, Gaski and Johnson 1994). The tiger is one of a number of endangered, threatened, or rare animal and plant species whose parts are ingredients in TCM. Tiger bone, fat, stomach, kidney, eyes, whiskers, gall bladder, nose, teeth, claws, feces, and even animals bones in the feces are all considered ingredients either among the folk herbal traditions or in the texts used by trained TCM herbal practitioners. The bones are the most valued body part of the tiger in the TCM herbal texts. In general, it is used in formulas for rheumatism and ailments of the bones, joints, and muscles (Read 1982, Ou 1989, Zhang 1991, Nowell 1993). Tiger ingredients are mixed with other raw materials according to traditional formulas that can be customized for the patient. These prescriptions can be individually prepared by the practitioner or prepared at clinics and pharmacies.

In addition, there has been a surge in over-the-counter or “patented” TCM products that are mass-produced and distributed to Asian communities throughout the world. Tiger-based TCM “patented” products are in the form of pills, tablets, boli, tonics, wines, plasters, and capsules (Gaski and Johnson 1994, Mills and Jackson 1994). Many of these products are based on the folk traditions of using animal parts to strengthen the function of the equivalent human organ or body part. The use of tiger and other animal penises as an aphrodisiac is based on this concept as well, but the use of this body part as an aphrodisiac is not prescribed in the herbal TCM literature.

In the 1980s, it became apparent that besides habitat loss, the demand for tiger parts to supply the TCM market was posing a serious and immediate threat to the tiger. Populations of tigers (*Panthera tigris*) have declined dramatically throughout the species’ range as the result of poaching and illegal trade in tiger parts, particularly for the bones (Read 1982, Mills and Jackson 1994, Norchi and Bolze 1995). Under the Convention on International Trade in Endangered Species of Fauna and Flora (CITES), the international commercial trade in tiger products has been prohibited for four of the five subspecies since 1975, and for all subspecies of tigers since 1987. Recent efforts to design comprehensive strategies to protect the tiger across its remaining range have highlighted the need to focus on controlling the illegal trade and to reduce demand for tiger-based products, especially for

tiger-based TCM products (Norchi and Bolze 1995, Hemley and Bolze 1997).

A complicating factor in the market for tiger in TCM is determining the authenticity of the ingredients in “patented” medicines and of the raw bones used in prescriptions. The bones of other large cats, bears, cattle, pigs, and dogs are commonly sold as raw tiger bone or used in manufacturing medicines. There are numerous “patented” medicines on the market that purportedly contain tiger derivatives, but forensics testing could not detect them (Espinoza et al. 1994, E. Espinoza, personal communication). It is also possible that the preparation of certain products destroys any trace of the derivatives. Ultimately, regardless of whether these products do or do not contain tigers, their presence in the market maintains the demand for authentic tiger ingredients in prescriptions and TCM products.

With the increasing interest in TCM in the West, it is important to determine the extent and nature of the market for tiger-based TCM products to guide efforts in reducing the demand and controlling illegal trade in these products. The demand for tiger-based TCM medicines and raw bones is predominantly in East Asia, primarily in China, Japan, Hong Kong, and South Korea (Mulliken and Haywood 1994, Mills and Jackson 1994). However, market surveys of Asian medicine shops in Asian communities in Australia, the United Kingdom (UK), Belgium, Canada and the United States, found a variety tiger products for sale (Mills and Jackson 1994, Callister and Bythewood 1995, Chalifour 1996). Based on the annual country reports to CITES that document seizures, refusals, and confiscations of prohibited materials, the United States is considered a major importer of tiger-based products (Mulliken and Haywood 1994, Mills and Jackson 1994). Even recognizing the limitation of these data, such as the overall inadequate or total lack of reporting by other major consumer nations which would tend to over-emphasize the role of the United States as a leading market, tiger products are still being seized or confiscated on importation and are readily available for sale in TCM shops and pharmacies in the Asian communities on the East and West coasts.

The Chinese communities in New York City are the largest on the East coast of the United States, though the Chinese communities on the West coast are larger. Two characteristics offered justification for this pilot study to assess the nature of the market in New York City's Chinese communities for tiger-based TCM products and the community's awareness of the threats to the tiger from the demand for these products. First, these communities interact in many ways with China. Second, a limited survey of Asian pharmacies and herb stores along Canal Street in Manhattan in 1993 found that a number of tiger-based TCM products were readily available (Gaski and Johnson 1994). The overall intent of this pilot study was to determine what level of effort, if any, is needed to eliminate the availability of tiger-based TCM products and increase consumer awareness to reduce the illegal trade and demand for these products.

This project consisted of two components: 1) a market study; and, 2) a public awareness effort. The market study focused on the availability and use of products labeled as containing tiger or their parts in stores in the major business districts in the Chinese communities in New York City. The market study attempted to describe the market for tiger-based TCM by examining product forms, the nature of the retailers, doctors, pharmacists, practitioners, and wholesale businesses as well as their

customers. Another objective of the market study was to ascertain the types of consumers and retailers involved with herbal TCM, their views and knowledge of the conservation issue with respect to tiger-based TCM and the conservation of the tiger in general. The second component of this project focused on assessing the attitudes and knowledge of students about the threats facing the tiger and the use of tiger-based TCM products. The primary objective of this component was to help target future public awareness campaigns by identifying areas of misconception, ignorance and their willingness to reduce demand.

STUDY AREA

New York City has a large, well-established, and relatively wealthy Asian community. The Asian communities in New York City are located in lower Manhattan and in two satellite communities: Main Street and Roosevelt Avenue in Flushing, Queens, and in the vicinity of Sunset Park in Brooklyn. Approximately 230,000 Asian Chinese live in these three areas of New York City (United States Census Bureau statistics from 1990). The Asian community in Manhattan is concentrated around the core area defined by Mott, Pell, Mulberry, and Bayard Streets and along portions of Canal Street, Broadway and adjacent streets. The concentration of Chinese in this area of Manhattan is a result of the historical settlement of Chinese immigrants from the 1840s to early 1900s (Kwong 1996).

The establishment of the newer satellite communities in Queens and Brooklyn have been in response to the high rents and limited space in Chinatown, the overall decentralization of Chinatown, and the immigration patterns from other Asian countries such as Korea and Taiwan (Kwong 1996). Cantonese is the main dialect used, although Mandarin, the official Chinese dialect, is now more accepted because of the business links between Asian communities in the United States with mainland China. Taiwanese and Korean are also important languages in the satellite communities as a result of recent Asian immigration patterns.

METHODS

1. MARKET STUDY

Stores in the major Asian communities in New York City were selected based on a review of the telephone directory for “herbal” shops and trading companies and through advertisements in the *World Journal*, the largest Chinese language daily in the United States. The Chinese Business Directory was also consulted to obtain pharmacy names and telephone numbers. The nature of training in TCM that is offered in the New York area was determined by contacting State approved Acupuncture and TCM schools (Appendix I).

The Principal Investigator, Qiu Mingjiang, was fluent in Mandarin Chinese and English. Although he had no previous experience with this type of assessment, attempts were made to maintain anonymity and the investigator presented himself as a potential customer when approached by the storekeeper, using methods similar to those of other organizations such as TRAFFIC and World

Wildlife Fund (WWF) (see Callister and Bythewood 1995, for example). In all situations, the Principal Investigator remained flexible, using his judgement to inquire about the products without creating suspicion.

In the stores, the name of each product and the manufacturer's name were recorded. The Principal Investigator also attempted to acquire the following: 1) samples of all medicines that claimed to contain tiger parts; 2) business cards, to ensure accuracy and authenticity of the business; and, 3) the availability and cost of tiger products that were not on display, such as tiger bones and tiger bone wine. The Principal Investigator also asked the store owners if they were aware of the legalities regarding the sale of tiger-based TCM products. Many of these interactions involved informal discussions about the products, their availability, and the status of the tiger. He did not attempt to ascertain the volumes of products available (e.g., establish or conduct an inventory) or the transit routes for these products into the United States and ultimately to the store.

At three major herbal TCM shops on Canal Street and Bowery Street in Manhattan, systematic questions were asked of the customers, such as their age and what they thought the efficacy was of the TCM product that they were purchasing. The ethnicity of the customer was noted after the conversation.

In addition, the Principal Investigator made telephone calls to advertised TCM practitioners to fill a prescription for arthritis that required tiger bone. This method was used to find out whether any practitioners or pharmacists would prepare medicinals on-site or offer "home-made" preparations containing tiger bone or if they had any raw bones that were labeled as tiger bone. This effort was to determine the availability of on-site preparations of prescriptions as opposed to the "patented" products.

2. PUBLIC OUTREACH

A pilot presentation on the threats to the tiger and the role of the market for tiger-based TCM products was developed and given to school and community groups as a possible component in a strategically designed public awareness effort. A one-page announcement describing the conservation issue regarding the tiger and the role of tiger-based TCM was sent to the Chinese community public schools and some private schools. Based on the response received from these schools, a focal area for this pilot study was selected.

A ten-question, multiple-choice questionnaire, in English, was designed to both assess the knowledge and attitudes of the audience and the effectiveness of the presentation as a tool in educating and encouraging changes in attitude and behavior. The student completed the questionnaire prior to watching a presentation given by the Principal Investigator. They were then asked to complete the same questionnaire again immediately following the presentation.

A 35 minute educational presentation, based on the major themes of the WCS Policy Report, *Saving the Tiger: A Conservation Strategy* (Norchi and Bolze 1995), was developed. It consisted of both

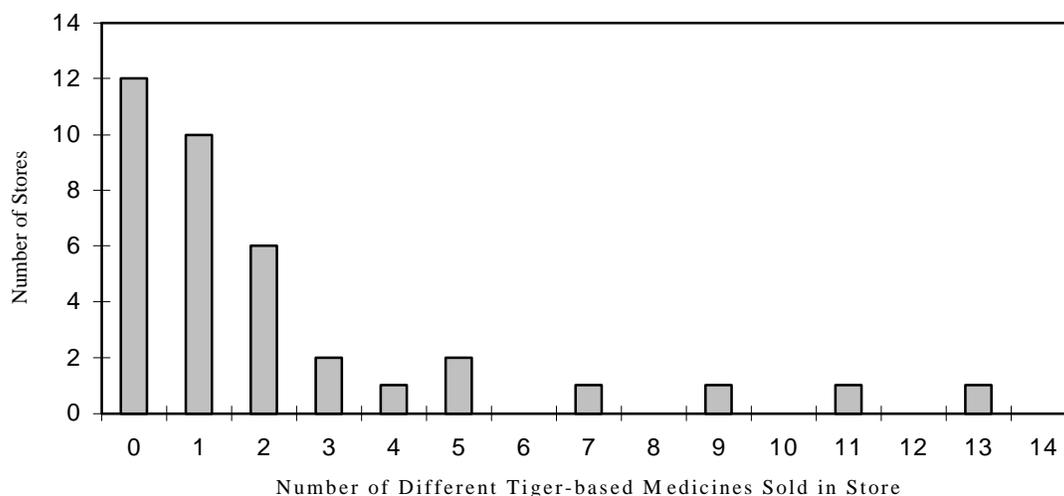
slides and video. The video component included: 1) a ten-minute presentation produced by WCS, "Tigers in Crisis: The Global Tiger Campaign"; 2) a seven-minute news story by DayOne of ABC News, that aired on June 8, 1995, about the illegal tiger bone trade; and, 3) a 20-second television advertisement from the WCS "Save the Tiger" public service advertising campaign that was produced by Ogilvy & Mather-worldwide on a *pro bono* basis and aired throughout Asia in mid-1995. All the presentations were made in English at the request of the schools.

RESULTS

1. MARKET STUDY

From July to December 1996, 37 shops were visited one to two times per week. Retail outlets included Asian medicine shops and grocery stores or supermarkets. Sixty-seven percent of the stores surveyed contained at least one product. The majority of the stores (64%) carrying tiger-based TCM products stocked only one or two different products. But, four stores carried more than five different tiger-based products (Figure 1).

Figure 1. Number of tiger-based products in stores visited and surveyed in Chinatown, New York City, July-December 1996.



Seventeen products containing, or claiming to contain, tiger parts were readily available for sale in the shops surveyed (Table 1). In these different products, tiger was classified as an ingredient under the names “*Felis tigris* Linn.”, “*Felis tigris slyani* pocock”, “*Os tigris*”, *Panthera tigris*”, “Tiger-bone paste”, “Tiger Bone”, “Hu-Ku”, and “Tiger’s sinews and bones”. Products that were available consisted primarily of pills, but plasters and capsules were also available. Tiger bone wine was not on display. In one case, the wine was produced from behind the counter after the Principal Investigator had asked if it was available. Sixteen of these products were purchased by the Principal Investigator. Prices for these products ranged from \$2.00 to \$8.00. Tiger bone wine was available for \$50.00.

Table 1. Tiger-based TCM products readily available in shops surveyed in Manhattan, New York City, July-December 1996.

Product Name Advertised (translation)	Manufacturer ^a , <i>Country</i>	Ingredient Advertised	Format	Lot date
Du chong hogu wan	Huabei, <i>Hong Kong</i>	Tiger Bone	Pills	**
Fu Quat Musk Tou Ku Wan	Kwang Chow, <i>China</i>	Tiger Bone	Pills	**
Hu Ku Wan (Tiger Bone Pills)	Fu Sung/Fusung, <i>China</i>	Tiger-Bone	Pills	1987
Hugoo Pain-Relieving Pills	Congqing Tong Jun Ge, <i>China</i>	Panthera tigris	Capsules	**
Hugushexiang	Fifth Chengdu, <i>China</i>	Tiger-bone	Plaster	1990
Jian Bu Hu Qian Wan (Tiger bone Tonic Pills)	Lanzhou Fo Ci, <i>China</i>	Felis tigris Sinew and bones	Pills	1991
Musk-Tigerbone Pills	Chong Qing, <i>China</i>	Tiger Bone	Pills	**
Natural Rheumatic ^b	Fifth Chengdu, <i>China</i>	Tiger bone	Plaster	1993
Pilule Cortex Eucommiae et Os Tigridis	Guiyang Chinese, <i>China</i>	Os tigris	Pills	1993
Qiang Li Ho-Gu Zhai Zhaowan (Super Tiger Bone Pill) ^c	Venus, <i>China</i>		Pills	**
Shen Jung Hu Ku Wan (Ginseng Antler Tiger- Bone Pills)	Fu Sung/Fusung, <i>China</i>	Tiger-bone	Pills	1987
Tian Ma Hu Ku Pien	Si Chuan/Sichuan, <i>China</i>	Hu-Ku	Pills	**
Tian-ma Hu-gu-wan	Seventh Chengdu Dong Feng, <i>China</i>	Panthera tigris	Pills	1986
Tianma Duzhong (Tiger-Bone Pills)	China National Native Produce and Animal By-Products, <i>China</i>	Tiger Bone	Pills	**
Tienchi/Tian Qi Hugu Wan	Seventh Chengdu Dong Feng, <i>China</i>	Tiger-bone Os tigris	Pills	1992
Tiger Bone Wine ^d	Beijing Tung Jen Tang, <i>China</i>	Tiger bone	Wine	**
To Chung Fu Quat	Kwong Cheong, <i>China</i>	Felis trigris Linn.	Pills	**

^a Standardized with Gaski and Johnson 1994 where possible.

^b Chinese translation and insert calls this product "Natural Musk Deer and Tiger Bone Plaster".

^c English name on box reads "Fu Kwuk Zai Zao Wan".

^d Product not purchased.

** Information missing.

All of the products observed in this survey were manufactured in the People's Republic of China, by approximately 12 different manufacturers and one product was manufactured in Hong Kong. Nine products that had lot numbers indicated that they were manufactured in the late 1980s and early 1990s (Table 1). These products were produced after the CITES prohibition on the international trade in tiger products and, therefore, were illegal to export from those countries that were signatories to the treaty prior to these dates. The majority of the products that listed tigers as an ingredient were labeled in both Chinese and English. One product was advertised as a Natural Rheumatic Plaster in English on the outside, but the Chinese name on the outside packaging and the insert described the product as Natural Musk and Tiger Bone Plaster.

Many of the shops visited had a "Chinese doctor" sign in the window, which typically means that a practitioner's office is located in the back of the store. These TCM practitioners will both prescribe a treatment that they typically make themselves or recommend a "patented" product. The practitioner's offices tend to have a variety of raw ingredients. TCM herbal practitioners also work independently of shops. The Principal Investigator made 25 telephone calls to advertised TCM practitioners to fill a prescription for arthritis that required tiger bone. In all cases, he was told that the tiger was getting rare and raw bones were not available. In one instance, the investigator was told that arthritis did not require tiger bone and substitutes could be found. The Principal Investigator did not see any raw bone claiming to be, or labeled as, tiger in any TCM practitioner's office that he visited, although he was shown what were claimed to be home-made concoctions containing tiger bone. A series of these herbal balls were being offered at \$50 by a TCM practitioner.

Another typical situation is that the TCM herbal store owner may be a "pharmacist" who will both recommend "patented" medicinals and fill prescriptions. These shops varied in the amount of raw materials that were available or on display. The Principal Investigator did not see any raw bone claiming to be, or labeled as, tiger in any of the stores visited.

Most of the pharmacists and shop owners interviewed were aware of the illegality of the products that they were selling. Some of them avoided the questions while others seemed relatively informed about the tiger's status, openly discussed the issue, provided suggestions on how to address proper labeling of TCM products, and discussed the use of substitutes for tiger bone. These people were supportive of efforts to eliminate the use of tiger parts in TCM because of the need to conserve the species.

Some TCM herbal practitioners and store owners were wary during informal questioning about their business and the use of tiger as an ingredient in herbal TCM prescriptions and products. This cautiousness is likely due to a different issue currently facing TCM practitioners in New York. Currently, the state of New York licenses acupuncturists based on training, examinations, and education. These practitioners may also be practicing herbalism. Although herbalists do not require a license, bonafide training and education is available in China and a herbalist should have a diploma attesting to having completed a four-year degree in TCM herbalism. An undercover investigation by the *Daily News* revealed that people claiming to be "Chinese doctors" were practicing acupuncture without a license and a range of Western treatments from abortion to minor surgery without any Western medical training (Gordy 1996, Pierre-Pierre 1996, World Journal, August 9, 1996). It is

highly likely that there are many herbalists claiming to be qualified when they are not. It is likely that the licensing issue and the subsequent law enforcement which occurred during the time of this pilot study were responsible for some of their apprehension in talking to the Principal Investigator.

Customers at TCM herbal shops were Asian and Non-Asian in ethnic origin. Forty customers were questioned in three major TCM stores on Canal and Bowery Streets in Manhattan. Sixty-three percent were Asians. The majority of Asian customers (64%) were 26-50 years old. This appears to be the main consumer group (Figure 2).

Among non-Asian customers, the largest age group was less than 25 years old, though 40% were 26-50 years old (Figure 3). When observed and asked, customers from the younger age group were visiting the stores out of curiosity. In general, the products that Non-Asians tended to buy were the “patented” medicinal pills, herbal balls, and capsules. These products are similar to Western medicines and easy to take. According to experienced practitioners, Western consumers avoid other forms of TCM products that require boiling the concoction and drinking, what is usually, a bitter tasting tea. This method of administering the herbal TCM product is more familiar to Asian consumers.

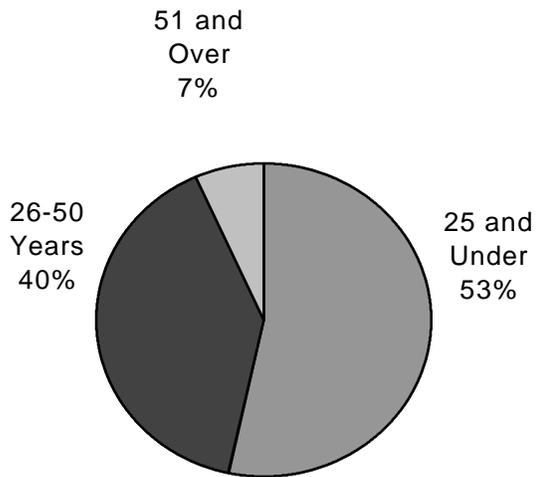
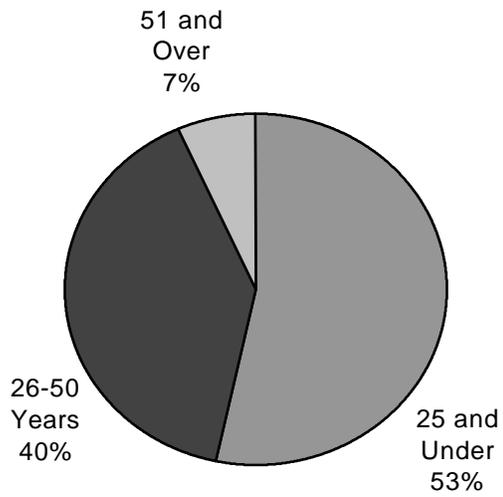


Figure 2. Age of Asian customers surveyed in three stores in Manhattan, New York City, July-December 1996. Total number of customers = 25.

Figure 3. Age of Non-Asian customers surveyed in three stores in Manhattan, New York City, July-December 1996. Total number of customers = 15.



2. PUBLIC OUTREACH

There was a strong initial positive response from several Chinese communities, cultural centers, and public schools in the Chinese communities requesting a presentation for a class or at an assembly. The Principal Investigator delivered the presentation to eight different groups, but was unable to make presentations at all the schools that requested them because of the limited time frame for the pilot study. The response from the schools and subsequent discussions with school principals and staff at the cultural centers indicated a strong interest in the conservation issues facing the tiger and a willingness to inform the Chinese community at large about the need to avoid using tiger-based TCM products.

The questionnaire was used for three different presentations at Public School (P.S.) 314, located in a Brooklyn neighborhood with a large Chinese-American population. Sixty-five students at P.S. 314, aged eight to ten years of age, completed the questionnaire initially. The class included students of Asian (32%), non-Asian (57%), and “unknown” (11%) ethnicity. Their ethnicity was based on their names. Any stated changes in the students’ knowledge and attitudes were considered to be the result of the combined educational potential of the presentation and the questionnaire since the study design did not include an assessment of the influence of the questionnaire itself.

The students initially exhibited a poor grasp of basic information about the tiger, but showed marked improvement after the presentation. Before the presentation, 64% of the students believed that tigers live in Africa, but after the presentation, 84% wrote that tigers live in “India” or “India and most other Asian Countries”. Sixty-one percent of these students (27 of 44) had corrected their initial error. Still 14% responded that tigers lived in Africa *after* the presentation.

In a multiple choice question that offered four correct statements regarding the different threats to the tiger and “All of the Above”, students chose equally amongst the five answers. After the presentation, 34% of the students (n = 44) chose the “use of tigers in TCM”, making it the top answer choice. This was almost double the pre-presentation percentage.

Responses to several questions indicated that while most students did not use tiger products, a few of them or their family did. Prior to the presentation, 76% of the students (n = 44) answered that they would not use a tiger-based TCM product if it was possible that the product did not contain tiger or if the product’s effectiveness was questionable. This increased to 81% after the presentation. A total of four students, two of whom were Asian, stated that they or their families used tiger-based medicines or products. Two students changed their answer from “yes” to “no” and vice versa. The names of the products used were not provided although the questionnaire requested it.

Finally, a multiple choice question offered four ways in which students could actively participate in conserving the tiger and an “All of the Above” choice. Prior to the presentation,

students selected all five choices in relatively equal proportions with the top choice (26%) being that of donating to a conservation organization. After the presentation, the percentage of students selecting the two actions to inform others not to use tiger parts and “All of the Above” increased from 56% to 72%. The ethnic breakdown of this subset was very similar to that of the whole and indicated that there was no obvious reluctance on the part of Asian students to actively inform others not to use tiger-based products. One student who used tiger medicine answered that she would tell friends and family not to buy tiger products. The choice to donate to a conservation organization dropped to 12%, last place.

In general, the presentation and subsequent discussions with the students indicated that this was a useful tool for increasing public awareness and a first step in encouraging students to take specific actions that could reduce the demand for tiger-based products.

DISCUSSION

1. MARKET STUDY

This six-month study is probably the most thorough survey on the availability of “patented” tiger-based TCM products in New York City’s Chinese communities. The finding that tiger-based TCM products were widely available corroborates and substantiates findings of two other more limited surveys in New York City. These other surveys, one conducted in 1993 by TRAFFIC (Gaski and Johnson 1994) and another in 1997 conducted by the Environmental Investigation Agency (EIA) (EIA 1997), were restricted to one small area and were conducted over the period of a weekend.

Our study found a number of different types of tiger-based TCM products for sale than has been recorded in previous surveys. For example, the TRAFFIC USA database of “patented” medicines found in United States markets lists seven of the sixteen products seen in our market survey (Gaski and Johnson 1994). The survey by EIA did not list product names in their report that we could compare our findings with, but they did find two stores displaying bone claiming to be tiger. This is in contrast to our study since the Principal Investigator did not observe raw bone labeled as tiger nor was he able to fill a prescription with tiger bone as an ingredient. Whether real raw tiger bone is available or not, the widespread presence of TCM products labeled as containing tiger maintains the demand for authentic tiger ingredients in TCM prescriptions and products.

This study found that some products have dates of manufacture on them from the late 1980s and early 1990s. It is unclear whether these products are old stocks that have recently moved into the country illegally or whether they escaped detection at United States ports of entry years ago. Some of these products are now at least ten years old. It would appear that manufacturer dates are a useful, albeit inconsistent method for assessing whether the presence of these products violates various international and national laws.

The international commercial trade in tiger, tiger parts and their derivative products is strictly prohibited by CITES. This prohibition includes any products that state they contain tiger, whether the claim is true or not. In the United States, there are a number of federal laws that implement CITES and affect the trade in TCM products that contain or claim to contain tiger and other endangered species. Gaski and Johnson (1994) provide an excellent overview of these laws that are briefly summarized here. These include: 1) the Endangered Species Act (ESA), which is the implementing legislation for CITES in the United States and therefore prohibits the import, export, and interstate commerce in live animals, raw parts, or products of species that are listed as threatened or endangered; 2) the Lacey Act, which prohibits the import, export, transport, sale, or purchase of fish and wildlife taken or possessed in violation of state, federal, Indian, tribal, or foreign laws; and, 3) the *prima facie* principles of United States criminal law that enables officials to seize a product that claims to contain a prohibited substance without physical proof that the claim is true. These federal laws are enforced by the United States Fish and Wildlife Service (USFWS).

In New York state, the Environmental Conservation Law (ECL), which is modeled after the federal ESA, prohibits the taking, importation, transportation, possession or sale of any endangered or threatened species or their parts. In addition, the sale of certain wild animals or wild animal parts, whether raw or manufactured, including tigers, is prohibited within the state of New York. The Department of Environmental Conservation (DEC) is responsible for the administration and enforcement of the ECL and has the authority to confiscate and seize products at the point of sale.

An important aspect of the ESA and New York state ECL is that neither law expressly prohibits products that claim to contain tiger as an ingredient regardless of the label's veracity. Only products that actually contain tiger are in violation of these laws and the law enforcement authorities must prove that the products are actually derived from tigers. However, forensic testing for the presence of bone in various tiger-based TCM products, seized on importation into the United States, found no presence of hydroxyapatite, a mineral signature for bone (Espinoza et al. 1994, Espinoza, personal communication). One such product that claims to contain tiger when it does not is the Natural Musk and Tiger Bone Plaster (Espinoza et al. 1994). This product was widely available during our survey. Eight of the products we observed appear in the Asian Medicinal Endangered Species Database that is administered by the USFWS National Forensics Lab in Ashland, Oregon (<http://toltecs.lab.r1.fws.gov/lab/am/cover.htm>). Although these products have likely been tested, the results were not available for this report (E. Espinoza, personal communication). A further complication is that some processing methods used to produce tiger-based TCM products destroy the traces of minerals and proteins needed for forensic analysis. Therefore, without extensive testing and investigative research, it is difficult to "prove" that a TCM product actually contains tiger.

The significant cost in terms of money and time to verify the claims on tiger-based TCM products has been a major factor in the lack of action in New York from both the DEC and

USFWS with respect to the sale of TCM products that claim to contain tiger (Nowell 1993, Mills and Jackson 1994, Espinoza et al. 1994, Jackson 1995, Mills 1997). USFWS confiscates products that claim to contain tiger at CITES designated ports. With limited staff to monitor shipments, many tiger-based TCM products escape detection and wind up for sale in a variety of shops and outlets in New York. Though neither the federal ESA nor the Lacey Act apply to the sale within the state, the New York State ECL specifically prohibits the sale of TCM products that contain tiger. However, DEC has been hesitant to conduct seizures at the point of sale expressly because they will have to prove the seized products actually contain tiger and are in violation of state law. Though there is adequate coordination between the state and federal agencies, the problem of the widespread availability in New York City of tiger-based TCM products in strict violation of CITES and federal and state laws seems to be a low priority. There is currently no commitment by the USFWS or the DEC to provide adequate financial and personnel resources to monitor shipments, conduct forensic analyses, or conduct investigations.

To correct the existing inadequacy in United States federal law with regard to tiger-based TCM products, legislation has been developed in both the United States House and Senate that would make products that claim to contain tiger as an ingredient expressly illegal. The Rhinoceros and Tiger Product Labeling Act (H.R. 2807), currently in the House, would amend the Rhinoceros and Tiger Conservation Act and make any product that contained or claimed to contain rhinoceros or tiger illegal to sell. This bill is similar to a bill in the Senate, the Rhino and Tiger Product Labeling Act (S. 361), that would amend the ESA to prohibit *all* products labeled as containing species listed under the ESA. Ironically, this specific labeling prohibition was adopted by Taiwan, China, and Hong Kong several years ago because of pressure placed on them from CITES and the United States which imposed its own trade sanctions against Taiwan between 1994 to 1995 in response to Taiwan's illegal trade activities in tiger and rhino parts and products (Federal Register. 62(83). April 30, 1997).

At the federal level, tiger-based TCM products are also potentially violating current food and drug laws and product labeling laws. The United States Food and Drug Administration (USFDA) administers two federal laws that are potentially applicable to tiger-based TCM products (Gaski and Johnson 1994). These include: 1) The Federal Food, Drug, and Cosmetic Act under the Nutrition Labeling and Education Act Amendments of 1990 that deals with products that claim to cure, diagnose, prevent, mitigate, or treat a disease or symptom and prohibits the labeling of preparations with any characterization or implication that the use is related to a disease or condition; and, 2) the Fair Packaging and Labeling Act which prohibits the use of a label on a product that purports to contain an ingredient when the product does not.

When "patented" TCM products make claims with respect to curing, diagnosing, preventing, mitigating, or treating a disease or symptom, they are potentially violating the Federal Food, Drug, and Cosmetic Act if the product has not been approved to make such claims. The law

defines such a product as a drug and as such it is subject to stringent testing before the manufacturer can legally make such claims. It is possible that the indications and actions described on inserts and packages of many of the “patented” tiger-based TCM products meet the criteria for a drug with such claims of use in treating rheumatism, arthritis, and other ailments. However, potential violations of this law seem to be a low priority with the USFDA.

The potential health risks associated with these products has received little attention from the USFDA. Detection of toxic metals such as arsenic and mercury during testing for the presence of endangered species in TCM products (Espinoza et al. 1994, 1995, 1996) should be a cause for concern with the USFDA. To date these products have received limited testing or investigation from the USFDA which has also done little to coordinate with the USFWS and DEC on this issue.

The USFDA has been criticized for failing to apply the Fair Packaging and Labeling Act to TCM products that falsely claim to contain tiger. The agency has shown little interest in pursuing this legal avenue despite results from forensics testing that these products do not contain tiger even though they are labeled as such. This legal avenue does not appear to have been pursued completely although its enforcement could remove some of these tiger-based TCM products immediately.

Western attitudes and the growing interest in TCM herbalism in the West provide a growing demand for TCM products and prescriptions derived from the tiger. Many Westerners believe that because of their “natural ingredients” alternative medicines are safer and free of side effects that are common with Western medicines (Carter 1996). A growing number of Westerners are complementing Western medical treatment with TCM products with little regard for the potentially harmful consequences. With the surge in use of herbal TCM, researchers in the UK have begun investigating the interactions, that are sometimes fatal, between herbal TCM and prescription drugs (Carter 1996). Although many of these TCM treatments and products are legitimate, the recent exposure of charlatans practicing a variety of TCM and Western medicine without licenses or training or prescribing treatments containing toxic metals indicates a broader problem within the TCM industry as a whole. While it is beyond the scope of this paper to conduct a thorough review of these issues, a healthy skepticism, desire for better testing, licensing, labeling, and public information should be promoted.

2. PUBLIC OUTREACH

The results from our questionnaire regarding what students aged eight to ten know about tigers corroborates findings from other surveys. In general, there appears to be a lack of knowledge about the tiger among the public in this country. This ignorance persists in light of all the media coverage about the threats to the tiger that has occurred over the past several years in the United States. A survey of visitors to a new exhibit on the tiger at the National

Museum of Natural History in Washington, D.C. found that most people believed that tigers occurred in Africa (Seidensticker 1997). Similarly, 64% of students surveyed by Kellert (1985) in the second, fifth, eighth, and eleventh grades also incorrectly thought tigers lived in Africa.

The assessment of the presentation developed for this pilot study indicated that it increased awareness among the students about the tiger and established the link between the use of tiger-based TCM and its detrimental effects on tigers in the wild. For example, after the presentation, out of 44 students who had made an error in identifying the range of tigers, 27 (61% change) changed their answer to the correct one after the presentation. After the presentation, the use of tigers in TCM was the top choice among the list of threats facing the species.

Additionally, the presentation appeared to have gone the next step of encouraging students to take action to address the problem. After the presentation, 7 more students out of 44 (16% increase) selected the choices that referred to informing others to avoid using tiger-based TCM products.

It was beyond the scope of this pilot study to fully explore the attitudes of the various groups in New York City's Chinese community regarding the use of tiger-based TCM products and the need to conserve the tiger. From the informal discussions the Principal Investigator had, we did learn that many of the people involved in the herbal TCM business, specifically practitioners and herbal TCM store owners, know that tiger-based TCM products and using tiger bone in TCM herbal prescriptions is illegal. Since these products are widely available in the Chinese community, it is clear that a public awareness effort is needed to raise support for the removal of tiger-based TCM products from the shelves and to reduce demand for authentic tiger ingredients in TCM.

A strategic public awareness campaign requires defined target audiences and the use of specific techniques for reaching them with the goal of attitudinal and behavior change. From this pilot study, potential target groups are the TCM store owners, TCM herbalists, the TCM schools in the area, and the Chinese community at large. The last group was not well-defined by this pilot study because of its limited scope. Much of the pilot outreach effort focused on school children based on the assumption that they, or the schools as an organized entity in the community, could be an effective conduit into the family to influence the potential purchaser of tiger-based TCM products. We were unable to substantiate this assumption. However, research by Kellert (1985) on children's attitudes toward wildlife indicates that, in general, children over the age of thirteen should be targeted since by this age they can grasp ethical and ecological concepts that underlie conservation arguments.

Though the ultimate goal of a strategic public awareness effort would be to reduce demand for the use of tigers in TCM, specific attitudinal changes and actions should be intended for each target group. For example, TCM herbal shops and other retail outlets would be

encouraged not to sell tiger-based TCM products. TCM practitioners would be encouraged not to recommend these products and inform patients of the need to avoid using tiger ingredients. The Chinese public at large would be targeted with the message to avoid purchasing “patented” medicines. The Principal Investigator identified several informed TCM store owners and practitioners who were concerned about conserving wildlife and did not support the use of endangered species in TCM. Collaborating with the TCM schools would also be important with this target group, though these entities may not reach those practicing TCM herbalists that have received no formal training at all. There is interest within the community about the conservation implications of herbal TCM. The Principal Investigator was also invited to write an article regarding the use of tiger in TCM for the largest bi-monthly journal on TCM in the United States (Mingjiang 1996) (Appendix II).

Public awareness efforts need to include some form of evaluation to assess how effectively the target audiences have been reached and whether attitudes and behaviors have changed. Pre- and post-attitudinal surveys of the target audiences will indicate "claimed" changes in attitudes, but actual behavior change would need to be assessed with long-term monitoring and assessing independent indicators. One possible independent indicator could be assessing whether there is a noticeable change in the availability of tiger-based TCM products in stores.

RECOMMENDATIONS

1. Remove tiger-based TCM products and other products claiming to contain endangered and threatened species from store shelves.

A variety of “patented” TCM products claiming to contain tiger as an ingredient are widely available throughout New York City's Chinese communities. Though this pilot study focused on the availability of tiger products, a variety of other products were readily available that claimed to contain leopard, seal, pangolin, musk deer, and rhinoceros. All of these species are listed under CITES Appendix I and are prohibited. Since the tiger has such a strong imagery in Asian culture, this species can be the focus of a broader effort to reduce demand for endangered and threatened wildlife in TCM and related products.

The increasing growth in Western consumer interest in Eastern medicinal philosophy, including herbal TCM, is fueling demand beyond that generated by the Asian communities in Western countries. Numerous books and articles have been published in English by Asian and non-Asian authors on the herbal practice of TCM (e.g., Reid 1993, Bensky et al. 1993), although some authors such as Haddady (1996) are including less about the use of animal ingredients and offering substitutes. Much of the Western interest in herbal TCM is based on assumptions that TCM herbal products for sale are both legal and safe even though these products are mostly unregulated by most Western nations' food and drug safety laws. With a clear lack of awareness among the Asian and Western public that the tiger is threatened by poaching for its bones for use in traditional Asian medicines, the presence of TCM products on the shelves purporting to contain tiger ingredients implies that the purchase of these products does not threaten the species.

2. Initiate law enforcement efforts, using current laws, at the federal and state level to remove products containing or claiming to contain endangered species. This would require increasing financial resources for law enforcement efforts and supporting coordinated efforts between the agencies responsible for protecting endangered species and human health.

The fact that many “patented” TCM products claiming to contain tiger are widespread throughout New York City's Chinese communities indicates a failure in United States law enforcement to prevent the sale of these illegal products. Federal enforcement efforts have focused on confiscating tiger-based TCM products at the point of entry where both personnel and resources are limited. Consequently, TCM products containing tigers continue to enter the United States undetected. Once within the state, these products are openly for sale. The DEC has the authority to confiscate at the point of sale, but has been reluctant to do this because of the time and costs in proving the seized products actually contain tiger as an ingredient. It is clear that despite coordination and cooperation between the two levels of government, they have done very little to address how to remove tiger-based TCM products from the shelves in New York City. It is unclear whether the agencies have been waiting for

changes in federal legislation to address this problem that TCM products are not expressly illegal if labeled as containing tiger, whether the claim is true or not (Recommendation 3).

Regardless of whether tiger-based TCM products do or do not contain any tiger, these products maintain the demand for authentic tiger ingredients in TCM prescriptions and manufactured products.

There are at least two laws under the jurisdiction of the USFDA that have not been pursued adequately and warrant investigation. A task force involving federal and state agencies should be established to conduct an assessment of current legislation in an effort to remove products containing or claiming to contain tiger and other endangered species, especially if these medicines have health risks associated with them. This task force should include the USFDA and any state and local agencies with jurisdiction over human health and product labeling laws given the potential health issues evolving with the “patented” TCM medicine industry.

3. Pass Federal legislation that prohibits the sale of products claiming to contain tiger and all other CITES Appendix I listed species, as well as those species listed as endangered under the ESA.

Enforcement efforts to confiscate products for sale that contain or purportedly contain tiger as an ingredient or other endangered species would be facilitated by correcting a legal inadequacy in the ESA. Bills currently in the United States House and Senate would make products that claim to contain tiger as an ingredient expressly illegal. This would eliminate the need to prove whether the products were authentic in order to prosecute under the ESA. The Rhinoceros and Tiger Product Labeling Act (H.R. 2807), currently in the House, would amend the Rhinoceros and Tiger Conservation Act and make any product that contained or claimed to contain rhinoceros or tiger illegal to sell. This bill is very similar to the Senate bill, The Rhino and Tiger Product Labeling Act (S. 361), that would amend the ESA to prohibit *all* products labeled as containing species listed under the ESA.

4. Design and implement a targeted public awareness effort in New York and other Asian communities in the United States to reduce demand for tiger and other endangered species in TCM and TCM products.

A public awareness effort is needed in New York City's Chinese communities because of the widespread availability of tiger-based TCM medicines and the general lack of knowledge that the demand for these products is threatening tigers in the wild by fueling poaching for their bones. The goal of this effort is to raise support for removing these illegal tiger-based TCM products from the shelves as quickly as possible and reduce demand for authentic tiger ingredients in TCM prescriptions and products. From this study specific target groups include Asian medicine shop owners, TCM practitioners, the TCM schools in the areas, and the consumers.

Though it was beyond the scope of this study to design specific messages and techniques for

targeting different groups, genuine interest and concern regarding the use of endangered species in TCM and related products was identified among TCM practitioners, Asian herbal store owners and TCM school administrators. All the individuals that were directly involved in TCM knew that the sale of tiger-based TCM products was illegal. In addition, a pilot educational presentation targeting older elementary school children indicated that this audience was interested in taking action to inform others to avoid purchasing tiger products.

A variety of Chinese community centers and many public and private schools were very interested in becoming a part of a public awareness effort as indicated by the interest generated on this subject amongst the public once it was brought to their attention. In general, designing a public outreach effort targeting sectors of the public, a primary message for consumers is to avoid purchasing "patented" TCM products that claim to contain tiger.

The Chinese community media has shown a strong interest in the overall issue of the use of endangered species in TCM and should be integrated into a public awareness effort (e.g., Liu 1996). Even with all the coverage in English in the western press regarding plight of the tiger, it does not appear to have reached the Chinese communities nor saturated the Chinese media.

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APPENDIX I. List of State Approved TCM schools in the Greater New York City Area.

Kevin V. Ergil, Dean, Pacific Institute of Oriental School, 915 Broadway, 3rd Floor, New York, N.Y. 10010-7108. Tel.: (212)685-3456; Fax: (212)658-3478

Chi Chow, Executive Administrator, New York Institute of Chinese Medicine, 142 Mineola Boulevard, Suite 103, Mineola, N.Y. 11501. Tel.: (516)739-1545; (516)385-7569

Steve Schenkman, President, The New Center for Holistic Health Education and Research, 6801 Jericho Turnpike, Syosset, N.Y. 11791-4413. Tel.: (212)496-7869

Kathleen O'Brien, Assistant Dean Mercy College, 555 College Broadway, Dobbs Ferry, N.Y. 10522. Tel.: 1-800-637-2969, (914)693-7600

Mark D. Seem, President, Tri-State Institute of Traditional Chinese Acupuncture, P. O. Box 890, Planetarium Station, New York, N.Y. 10024-0890. Tel.: (212)496-7869

APPENDIX II. Mingjiang, Q. Tigers worldwide face extinction: environmental groups appeal for better management of traditional Chinese medicine. New York's Chinese Medical Report. August 8, 1996 (in Chinese with English translation).

Title: The Tiger Worldwide Face Extinction; Environmental Appeal for Better Management of Traditional Chinese Medicine

Author: Qiu Mingjiang, International Programs, Wildlife Conservation Society

Source: The Chinese Medical Report (Bi-monthly)

Date: August 8, 1996

Language: Chinese

Distribution: Major Chinese Medicine Practitioners in North America

Circulation: 30,000

Translation

The tiger, *Panthera tigris*, has a natural history of at least one million years. Tiger canines were discovered at Zhukoudian near Beijing, where the Peking man's fossils were found early this century. According to paleontologists, the tiger around that time began to spread from mountains in southern China to various types of habitats in Asia, from Caspian Sea region to Taiwan, Korea, and Japan, and from the boreal forest in Siberia to the tropical jungle in Bali. It had become the most adaptable animal on earth other than human being.

The tiger occupies an important place in our culture. Other than the current name of hu or lahu, it appears in Chinese literature under more than ten different names, such as body, yutu, shanjun, li'er (The Li), lifu (Father Li), Daling (the Giant Spirit), and Dachong (the Giant Worm). Regarded as a symbol of prowess and masculinity, the tiger has inspired generations of artists who produced immortal artistic works in China's history.

However, its very beauty and strength has created a myth that threatens its very existence today. Since 500 A.D., tiger parts have been utilized in traditional Chinese medicine. This tradition spread later to other Asian countries, such as Japan, Korea, and India. All tiger parts are claimed valuable. Tiger bone is said to clear cold in a patient's body, a condition associated with poor circulation. Tiger penis is believed to be an aphrodisiac.

Tiger whiskers are prescribed to relieve toothache, tiger hair for driving away centipedes when burnt, tiger eyes for malaria, epilepsy and convulsions, and tiger fat for vomiting and hemorrhoids. Even tiger feces and urine are prescribed as medicines. Such blinded worship of the tiger has cast a shadow on the fate of the animal.

By late 19th and early 20th centuries, the tiger had disappeared in many places in Asia due to increasing human population, rapid deforestation, and habitat loss. In the 1970s, thanks to the dedications of conservation groups, the tiger's decline was stabilized, at least locally in India. In 1991 when the former Soviet Union broke up, a large number of tigers were killed due to the lack of law enforcement during the transition. In the summer of 1992, many tigers in India's famous tiger reserve, the Ranthambhore Tiger Reserve, were killed. In

August 1993, Indian law enforcement personnel confiscated 400 kg of tigers bones, an equivalent to the weight of 40 tigers' skeletons.

According to the estimate of field scientists, there are no more than 5,000 wild tigers left in the world presently. In mainland China, the tiger has become extremely rare. Less than 100 animals live in the remanent forests in south and northeast China, and in southeastern Tibet. Protecting the South China tiger, *Panthera tigris amoyensis*, a distinctive subspecies, has become one of the high priorities in tiger conservation.

According to surveys conducted by WWF-US, up until 1994, out of the 249 traditional Chinese medicine manufacturers in Mainland China, Hong Kong, Taiwan, South Korea, Japan, and Singapore, 19 produced medicines containing or purporting to contain tiger bones. Various tiger-based medicines are found in Chinese medicine shops all over the world, such as Musk Deer-Tiger Pill, Tianqi Tiger Bone Pill, Tiger bone Tonic Pill, Tianma Tiger Pill, and Duzhong Tiger Bone Pill.

Are tiger parts really medicinal? Is it scientifically valid to use animal parts to nourish analogous human organs? Answering such questions is a challenge to traditional Chinese medicine. In 1994, the United States Fish and Wildlife Service scientists employed sophisticated laboratory equipment to analyze the traditional product, Musk Deer and Tiger Bone Plaster, an externally applied medicine for curing arthritis and backache. In the plasters, the experts did not find any hydroxyapatite, the main inorganic component of tiger bone, which was claimed by the manufacturers as the one of the ingredients. This test has demonstrated that what has made the Musk Deer and Tiger Bone Plaster work for centuries has not really been the tiger bone, but other constituents of the prescription. Another medicine that claims to contain tiger bone is the Tiger Bone Tonic Pill. Apart from the claimed tiger bone (1.86%), the medicine also contains 59.26% mutton and some medicinal plants such as *Phellodendron amurense*, *Cypomorium coccineum*, and *Anemarrhena asphodloides*. What is really playing a role in the warming effect of the medicine, the tiger bone, the mutton or the tonic herbs? Anyone who has had a bowl of mutton soup in a cold winter will have no problem answering that question.

Findings above suggest that tigers are illegally traded on black market. It was estimated by field scientists that 3, 000 tigers were killed between 1990 and 1995, their bones and other body parts used by business people for profit or by ill-informed individuals as medicine.

Therefore conservation efforts must be focused on investigating the illegal trade of raw tiger products. But what should we do with the medicines that claim to contain tiger bone but they actually do not? From an environmental conservation point of view, those pharmaceuticals should be prohibited for sale, as they violate the Federal Government's Endangered Species Act. On the other hand, if they do not contain tiger parts, they violate the Federal Labeling Law. In June 1996, a testimony was conducted at the House of Representatives on the Rhino and Tiger Protection Act. Future regulations and improvement of the management of those

products are expected. The best way to avoid litigation is not to import those products or put pressure on the manufacturers to label those products properly before they are shipped to different parts of the world.