PAPER TIGERS?

The Role of the U.S. Captive Tiger Population in the Trade in Tiger Parts

Douglas F. Williamson
&
Leigh A. Henry

A TRAFFIC NORTH AMERICA REPORT

This report was published with the kind support of

THE NATIONAL FISH AND WILDLIFE FOUNDATION
SAVE THE TIGER FUND

TRAFFIC®
the wildlife trade monitoring network

PAPER TIGERS?

The Role of the U.S. Captive Tiger Population in the Trade in Tiger Parts

Douglas F. Williamson
and
Leigh A. Henry

July 2008

TRAFFIC North America
World Wildlife Fund
1250 24th Street NW
Washington, DC 20037 USA

Visit www.traffic.org for an electronic edition of this report, and for more information about TRAFFIC North America.

Suggested citation: Williamson, D.F. and L.A. Henry. 2008. *Paper Tigers?: The Role of the U.S. Captive Tiger Population in the Trade in Tiger Parts*. TRAFFIC North America, Washington D.C.: World Wildlife Fund.

Front cover photos from the top, clockwise, are: Tiger by fence, Sybille Klenzendorf; Tiger cub, Doug Williamson; Tiger bones, Mohit Aggarwal; Tiger behind fence, Doug Williamson; Tiger pelts, Vladimir Shumkin.

Table of Contents

Acknowledgement iv
Preface v
Executive Summary 1
Methods 5
Background 7
Laws and Regulations Governing Tiger Trade and Captive Tigers in the U.S. 11
The U.S. Captive Tiger Population 17
Case Study: Florida 22
Domestic and International Trade of Tigers in the United States 29
Conclusions and Recommendations 43
References 47

List of Tables

Table 1. Conservation status of extant and historical tiger subspecies 7
Table 2. U.S. states that allow/ban possession of Tigers as pets 15
Table 3. State controls on Tiger breeding in the United States 20
Table 4. Live Tigers imported to and exported from the United States, 2001-2006 29
Table 5. Exhibition/circus Tigers imported into the United States by country of export, 2001-2006 (Number of Tigers) 31
Table 6. Exhibition/circus Tigers exported from the United States by destination, 2001-2006 (Number of Tigers) 32
Table 7. Scientific and biomedical Tiger imports, 2001-2006 34
Table 8. Seizures of Tiger-related medicinal imports into the United States, 2001-2006 35
Table 9. Import seizures of non-medicinal Tiger parts/derivatives 2001-2006 38

List of Figures

Figure 1. Historic range of Tigers 8
Figure 2. Live Tigers imported into the United States, 2001-2006 30
Figure 3. Live Tigers exported from the United States, 2001-2006 30
Figure 4. Number of exhibition/circus Tigers imported into the United States by country of export, 2001-2006 31
Figure 5. Number of exhibition/circus Tigers exported from the United States by destination, 2001-2006 (Number of Tigers) 32
Figure 6. Number of seizures of Tiger-related traditional medicine imports into the United States by country, 2001-2006 36

Acknowledgements

TRAFFIC and the authors wish to thank a number of people who provided invaluable assistance in the research, writing, and review of this report.

We wish to thank Sue Lieberman of WWF International; Craig Hoover of the U.S. Fish and Wildlife Service; Kristin Nowell of the IUCN/SSC Cat Specialist Group and Cat Action Treasury; Barney Long of WWF-US; Steve Olson of the Association of Zoo and Aquariums; Crawford Allan of TRAFFIC North America; and Steve Broad of TRAFFIC International for their careful and insightful reviews and comments on preliminary drafts of the report.

We would also like to thank Nicole Paquette of the Animal Protection Institute in Sacramento, California, for her assistance in identifying key laws and regulations regarding captive Tigers in the United States. Carole Baskin of Big Cat Rescue in Tampa, Florida; Lisa Stoner of the Peace River Refuge in Zolfo Springs, Florida, and Dave Orndorff of the Mill Mountain Zoo in Roanoke, Virginia also provided valuable information and insights on issues regarding the keeping and trade of Tiger in the United States for this report. Others who provided valuable information and comments include Ron Tilson of the Minneapolis Zoo and Mike Carpenter of the U.S. Fish and Wildlife Service.

TRAFFIC and the authors also express gratitude to the representatives of state fish and wildlife agencies, agriculture departments, and other agencies who patiently answered TRAFFIC's questions about specific laws, regulations and policies related to the keeping, breeding, trade, and disposition of Tigers within their jurisdictions.

The Rufford Maurice Laing Foundation is gratefully acknowledged for its support to TRAFFIC in the final review process for this report.

Finally, TRAFFIC wishes to extend its sincere thanks to the National Fish and Wildlife Foundation's Save the Tiger Fund and, in particular, to Judy Mills and Mahendra Shrestha for their generous support of this project.

PREFACE

The relationship between Tigers and the people who share their native ranges in Asia is longstanding, complex, and, in too many unfortunate circumstances, adversarial. At one time, Tigers were largely masters of their environs, which once stretched from the Pacific Ocean in the east to the Caspian Sea in the west. Over the past hundred years or so, that vast range has shrunk by more that 90%, and the contemporary population of wild Tigers may be less than three percent of its size at the turn of the 20th century.

Various reasons account for the decline of Tigers in the wild. Exploding human populations have eaten deeply into their habitat and reduced their prey base. Predations of livestock, and sometimes fatal encounters between Tigers and people, have led local populations to eradicate the cats in some areas. The value of Tiger pelts, bone, tonics, meat, claws, teeth, and other parts for human use or consumption have made the species a lucrative target for poachers armed with modern weapons.

Even so, Tigers continue to exert a mysterious and even mystical presence in their remaining redoubts. Yet few people get to witness firsthand the power, grace, and majesty of wild Tigers. Instead, public familiarity with these great cats comes either indirectly through nature documentaries or films, or in person through zoos, circuses, wildlife sanctuaries, or wild animal acts or shows. In fact, the two largest single populations of Tigers are now those that reside in captivity in China and the United States, respectively.

As this report explains, the emergence of a large captive Tiger population in China is a recent phenomenon, resulting from efforts to develop a new, legal source of Tiger parts to meet an enduring domestic demand for Tiger parts in traditional Chinese medicine. The United States' captive Tiger population, by contrast, grew slowly over many years, not for purposes of trade or consumption, but rather because of demand for live cats for exhibitional use, and also to feed a market for people who desire these cats as "pets".

The ongoing decline of wild Tiger populations, coupled with ongoing commercial demand for their parts, led TRAFFIC North America to question whether and how trade pressure might come to affect the U.S. captive Tiger population. We speculated that persistent demand for Tiger parts, combined with a potentially reduced supply from the wild, might lead those involved in the illegal Tiger trade to target the U.S. captive Tiger population. We looked at this issue with the end question always being whether and how this possible source of illegal parts might, in turn, impact tigers in the wild.

This report represents TRAFFIC's effort to determine whether the United States should be genuinely concerned about such a threat, or whether the issue is a "Paper Tiger", a term derived originally from a literal English translation of the Chinese phrase meaning something which seems as threatening as a Tiger but is really harmless. To answer that central question, TRAFFIC undertook to answer a set of very specific questions. Primary among these: How many Tigers really exist in the United States? What legal or other steps has the U.S. taken to protect them from illegal trade? What happens to U.S. Tigers, and their carcasses and parts, when the animals die? Is there evidence that U.S. Tiger parts are entering illegal trade, either domestically or internationally? And, finally, if there is evidence of trade or gaps in the U.S. system for managing captive Tigers to keep them out of trade, what needs to be done about it?

What we found in investigating these questions surprised us. At the outset of the project, we believed that answering them would simply require contacting relevant management authorities at the federal and state levels, and then assembling data on Tiger numbers, locations, rules for disposal, trade data, and other pertinent issues. We quickly learned that getting to the bottom of the issue would be far more difficult.

Although the United States keeps data on imports and exports of legally protected species such as Tigers, at the domestic level federal responsibility for monitoring captive Tiger populations is divided between two different agencies, neither of which has a mandate to comprehensively account for how many Tigers actually exist within the country. Among the 50 individual states that also have jurisdiction over these cats, not all even have laws and regulations governing their possession in private hands, and there is little uniformity among those that do. We further discovered that gray areas and legal or regulatory loopholes abound at both the federal and state levels. What we began as a project to find straightforward data and answers therefore turned out to be a massive jigsaw puzzle, with small pieces spread all over the United States, involving numerous jurisdictional levels and stakeholder interests. We struggled with accepting the fact that many of the questions we had laid out were, in fact, unanswerable.

This report summarizes the findings of our research. It finds no clear evidence that the U.S. captive Tiger population has played a role to date in illegal international trade. Ordinarily, such a finding should be considered good news. However, the report also shows that the current U.S. system for managing captive Tigers

is wholly inadequate to address the question of what would happen should this Tiger population become a target for those seeking to engage in such activity. Put plainly, when looked at in trade terms, the U.S. legal and regulatory system governing these cats is completely disjointed. There is no single source to turn to that knows how many Tigers exist in the country, where they are, who owns them, and, most importantly in terms of trade, what happens to them or their parts when they die. Though we knew going into our research that the system regulating captive Tigers would be somewhat complex and disperse, we were nonetheless taken aback at its complete inability to account for these cats with any level of accuracy.

This report attempts to identify key gaps in the U.S. regulatory system regarding Tiger trade that the country needs to address, quickly. Should wild Tiger populations continue to decline, and/or should demand for Tiger products persist or even increase, there is no guarantee that the U.S. captive Tiger population will not become a target. Some might argue that given other priorities and limited budgets, guarding against what is currently a prospective threat is a low priority. We would argue that the specific recommendations offered herein represent an opportunity for the United States to take action now to preclude the chance that U.S. Tigers ever become a trade target for the international market, thereby helping to reinvigorate latent demand for Tiger products, including traditional medicine—a demand which would, in turn, further threaten the world's remaining wild populations. While this may seem to some a tenuous link to Tiger conservation, wild Tigers simply cannot withstand any further pressures, and even the smallest additional threat now looms large as yet another roadblock to their continued survival. As the old saying goes, "an ounce of prevention…"

Two important caveats and limitations regarding the material presented should be kept in mind while reading this report. First, this report concentrates on issues related to trade in Tigers and their parts. We recognize that some may have wanted to see more concentration on issues regarding animal welfare and the propriety of keeping Tigers in captivity. We do not dismiss such concerns. In the course of the research that produced this report, we saw captive Tigers being well cared for in zoos and responsible animal sanctuaries that take in otherwise unwanted cats. However, we also witnessed Tigers in facilities and conditions—or put to commercial uses—that we found profoundly disturbing. We believe that while our recommendations focus on trade issues, their full implementation may address other concerns as well.

Second, we note that while this report focuses on Tigers, many of the issues and recommendations herein may well apply to other species of protected and unprotected cats (e.g., Leopards, Jaguars, African lions, Bobcats, Cougars, etc.).

It is our hope that the information, conclusions, and recommendations herein prove helpful to federal and state authorities charged with managing captive Tigers, policy-makers, and others involved in Tiger conservation. We look forward to collaborating with all interested parties in discussions on the lessons we have learned from this project, and how to move forward.

Douglas F. Williamson *Leigh A. Henry*

Executive Summary

Despite decades of conservation efforts, the future survival prospects for the world's wild Tiger populations remain uncertain. While intensive conservation efforts have made progress in stabilizing Tiger populations in some parts of their range, many have been decimated, and enforcement measures targeting illegal trade continue to be insufficient.

One of the most significant threats facing Tigers today stems from demand for their parts, especially bones for traditional Asian medicines and skins for ornamentation. As a result, most of the world's attention and attempts to resolve the Tiger conservation crisis have focused on Asia—particularly on key Tiger range and consumer States—but it is clear that a global effort is required to conserve this species in the long-term.

The role of countries such as the United States that have significant captive Tiger populations must be considered. This is because, unfortunately, the world's largest remaining numbers of Tigers are no longer found in the wild in Asia, but rather exist in captivity. With as many as 5,000 Tigers, the U.S. captive Tiger "population" was until recently considered the world's largest, far exceeding the fewer than 2,500 breeding individuals believed to exist in the wild today (Nowell and Xu, 2007; IUCN SSC Cat Specialist Group, 2008). As of the end of 2006, however, the estimated number of Tigers held in China's commercial Tiger farms alone had increased to an estimated 5,000 as well, with an annual re-productive rate of more than 800 animals (CITES, 2007a; Nowell, 2007). Although it is highly likely that China has now surpassed the United States as the country holding the most captive Tigers, the sizeable number of Tigers in the United States, and their potential role in illegal wildlife trade, cannot be discounted.

In the year covering the period January 2007 to January 2008, TRAFFIC researched and analyzed the status of wild Tigers and the trade threats facing them, the laws and regulations governing captive Tigers in the United States, the status of this population, the role of the United States in domestic and international Tiger trade, and, finally, the overall implications for conservation of Tigers in the wild. This research sought to answer two central questions. Are Tigers or Tiger parts from the U.S. captive population entering the international or domestic Tiger trade? And are there any implications of trade in parts from U.S. captive Tigers on the conservation of Tigers in the wild?

The report paints a mixed picture of the U.S. system for managing captive Tigers and their role in the illegal Tiger trade. On the positive side, the report finds no evidence that the U.S. captive Tiger population plays a significant role in illegal international trade at present. On the negative side, however, the report identifies critical flaws in the United States' management of its captive Tiger population as it relates to trade. These flaws need to be addressed to ensure that the U.S. Tiger population does not become a trade problem going forward.

Previous studies have documented that although wild Tiger populations may be stabilizing in some parts of their range, threats from habitat loss, fragmentation, and degradation, as well as human conflict and poaching, remain serious (see Dinerstein *et al.*, 2006; Sanderson, *et al.* 2006; Seidensticker *et al.*, 1999). Especially troubling is the ongoing demand in China and other Asian nations for Tiger parts—particularly bone—used in traditional medicine. Recent years have also seen some demand for Tiger skins for fashion and for traditional Tibetan clothing.

Commercial international trade in Tigers and Tiger parts has been prohibited under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) for all Tiger subspecies except for the Siberian Tiger since 1975; the Siberian Tiger received full protection in 1987. Subsequently, a series of CITES Decisions and Resolutions has called upon member States to pass measures to effectively implement the trade ban and undertake Tiger conservation measures, but not all have. Markets for illegal Tiger products continue to exist not only in Asia, but also in the United States, Europe, and other parts of the world.

The United States in particular has become the subject of attention for its potential role in the ongoing Tiger trade, both as a market for Tiger parts and because of its large captive Tiger population. As the report explains, there exists in the United States a legal bifurcation between these two issues. Whereas international and interstate trade of Tigers and their parts is governed under federal laws and regulations, the management of captive Tigers lies largely within the jurisdiction of individual U.S. states. Depending upon the state, this bifurcation can apply both to Tigers used for commercial purposes and to those kept privately, sometimes as "pets".

At the federal level, the United States has a number of strong laws that implement the United States' obligations under CITES, ban the sale of Tiger parts or derivatives (or anything labeled as Tiger parts or derivatives), regulate the interstate transfer of live Tigers, and require registration for certain species of captive-bred wildlife, including pure-bred Tigers (i.e., Tigers with a known breeding pedigree at the subspecies level). U.S. federal law also provides for the contribution of funding,

technical assistance, and other measures to conserve remaining wild Tiger populations in Asia; the U.S. Congress has appropriated significant funds for the conservation of Tigers in the wild through the *Rhinoceros and Tiger Conservation Act*.

As the report explains, however, regulatory gaps at both the federal and state levels have created loopholes that could undercut the overall U.S. effort to combat the illegal Tiger trade. At the federal level, while the U.S. Department of Agriculture (USDA) and the U.S. Fish and Wildlife Service (USFWS) have regulatory responsibility over aspects of the interstate transfer, take, sale, import and export, possession, and humane care of captive Tigers, exceptions and exemptions to the applicable laws and regulations mean in practice that Tiger owners need to simply maintain records of their animals. Requirements that Tiger owners regularly report on the inventory of their cats are more limited, so these federal agencies do not know at any given time how many Tigers actually exist in the United States, and there are no federal requirements that owners report what happens to Tigers or their parts when the animals die.

At the state level, laws tend to focus on the keeping of live Tigers and the threat that such animals may pose to human beings. As such, U.S. state laws tend to focus more towards issues of human health and safety, as well as the welfare of the animals, rather than on issues regarding the trade of products or derivatives of dead Tigers.

Furthermore, a number of U.S. states continue to allow for the private ownership of live Tigers with virtually no regulation. U.S. states also differ greatly on who may keep Tigers and under what conditions. Some states regulate captive Tigers through wildlife departments, while others do so through agricultural or other agencies, with vastly different loopholes or exceptions regarding ownership, licensing or permitting requirements, and other issues.

Even in states that have regulations regarding the keeping of Tigers in private hands, oversight is sometimes lax. A field visit by TRAFFIC to Florida, summarized in a case study later in this report, provides an example. Florida law allows for the private ownership of Tigers only for commercial purposes (exhibition, etc.). However, TRAFFIC found that while Florida has a significant population of Tigers in private hands, state regulatory authorities admittedly do not know exactly how many there are, who the owners are, or the commercial purposes that would justify such ownership.

The practical implications of this legal disconnect become clear in TRAFFIC's examination of the status of captive Tigers in the United States. A study by Werner (2005) categorized four different types of U.S. captive Tigers. The first are Tigers held in zoos or other facilities accredited by the Association of Zoos and Aquariums (AZA). These cats, which account for only a small fraction (as little as six or seven percent of the overall estimated U.S. Tiger population), are the most likely to be involved in conservation-based programs and well documented and tracked through the USFWS registration system for captive-bred wildlife. The second are Tigers held in facilities licensed and regulated by the USDA. These include cats imported, bought, sold, or traded (interstate), as well as animals in animal performances, zoos (AZA and other), carnivals, or promotional exhibits.

The third category involves Tigers held in rescue facilities or animal sanctuaries. It should be noted that while there are a number of reputable sanctuaries in the United States, as is explained in the body of the report, some facilities that call themselves "sanctuaries" or "refuges" are engaged in the breeding, sale, and trade of Tigers, both legal and illegal. Fourth are Tigers held in private collections.

A fundamental problem TRAFFIC identified in its research is that under the United States' diffuse regulatory system, there is no way to determine exactly how many Tigers exist in captivity in the United States, where they are, or who owns them. For example, while the AZA can account for the Tigers in its zoos, the USDA does not keep a species-specific database of Tigers held by its license-holders. USFWS regulations for captive-bred wildlife cover only a small fraction of Tigers in the United States. And some states either do not require Tiger owners to report their animals, or records are sketchy and incomplete.

For the above reasons, only anecdotal information is available about what happens to U.S. captive Tigers when they die; no precise data exist on how many Tigers may die each year or what becomes of their carcasses or parts. Indeed, especially with Tigers in private collections, disposal of the animals is typically at the discretion of the owners in compliance with state or local ordinances, if such ordinances exist. This report discusses what is known about the keeping and disposal of these animals and, just as importantly, how much remains unknown.

The report also details how some legal international "trade" of Tigers continues. The overwhelming majority of such trade involves the export and subsequent re-import of live U.S. captive Tigers for purposes of exhibition or entertainment (circuses, film projects, etc.). Live Tigers also continue to enter and leave the United States for zoological, educational, breeding, or other authorized purposes. Recent years have also seen the import or export of a very small number of Tiger products or derivatives (skins, rugs, claws, specimens, etc.). This aspect of the legal trade involves either items authorized for educational, scientific, or research

purposes, or parts or products from Tigers that can cross international borders under legal exceptions granted for items that pre-date CITES, or are antiques (more than 100 years old).

Official trade records also document a continuing illegal trade in Tiger parts or derivatives entering the United States. From 2001 to 2006, USFWS seized more than 250 shipments of products, most traditional Asian medicines labeled as containing Tiger, entering the United States. Trade records also show seizures of other illegal Tiger parts or products including skins, claws, teeth, rugs, and other items.

There is positive news, in that TRAFFIC's examination of trade records, seizures, and law enforcement operations shows no evidence that bone or other parts from U.S. captive Tigers are entering international trade. Trade data kept by the USFWS indicate that the United States market for Tiger products (all illegal) is being fed by imports from overseas, particularly China, with the most commonly seized product being traditional medicines (e.g., Tiger tonics, plasters, etc.) purported to be derived from Tiger bone. Data from 2001 to 2006 show no seizures of U.S. Tiger parts leaving the country, and USFWS has not found evidence that parts or products from U.S. Tigers are entering the global trade. There have been cases of domestic seizures of parts (particularly meat and skins) from U.S. Tigers, but these appear to be fairly isolated instances rather than evidence of widespread trade activity.

It should be noted, however, that the absence of current evidence of U.S. captive Tiger parts in international trade does not mean that such trade will not become an issue going forward. Even if U.S. Tigers are not entering global trade at present, the report shows that in some states there are significant numbers of surplus adult Tigers that their owners either do not want or struggle to support financially, given the substantial expense of their upkeep. Furthermore, weaknesses and gaps in the existing U.S. regulatory system mean that the potential for significant exploitation of parts from such U.S. Tigers represents a potential problem. This is especially true if China, which has banned domestic trade in Tiger parts and products since 1993, goes ahead with plans to trade in "farmed" Tigers[1] to meet domestic demand. Reintroducing such a legal supply into the market will lead to the resumption of a latent demand for Tiger products that many have worked decades to suppress. There is no guarantee that such market stimulation would be fed only from farmed Tigers in China. More probable is that any such action would increase demand for Tigers parts from all sources, including possibly captive Tigers in the United States and, of course most worrying, from wild Tigers.

The question for the United States is straightforward: How can the country develop and implement a consistent, nationwide system to manage captive Tigers and prevent their entry into illegal trade, thereby avoiding any U.S. contribution to the reinvigoration of demand that could further threaten wild tigers? As a nation that prides itself as a global leader in wild Tiger conservation, it is imperative that the United States do so, with actions needed at both the federal and state levels. Some key solutions will also lie outside of government with zoos, circuses, related associations and interest groups.

TRAFFIC recommends that the United States take steps on the legal, regulatory, oversight, educational, and law enforcement fronts to better track the U.S. captive Tiger population and ensure that these animals or their parts cannot enter illegal trade. These recommendations include:

- At the federal level, USFWS should issue new regulations to require that all persons and facilities breeding Tigers in the United States should be subject to the agency's Captive-Bred Wildlife registration system. At present, "generic" or inter-subspecific crossed Tigers are exempt, even though these are believed to represent most of the U.S. captive Tiger population.
- USDA should also require that all persons or facilities holding USDA licenses for exhibition or breeding/dealing in Tigers report annually on the number of Tigers held, births, mortality, and transfer or sale.
- All U.S. states that allow private citizens to keep captive Tigers must enact laws or regulations that require a comprehensive accounting of the number and location of all captive Tigers in their jurisdictions; such record-keeping must account not only for live Tigers, but also for the disposal of Tigers and their parts when they die.
- State and/or federal agencies tasked with regulating Tigers should further require that all Tigers in the United States be implanted with microchips containing essential identifying information. When a Tiger dies, owners should be required to notify regulatory authorities, who would collect the chips upon receiving proof that the animal and its parts had been properly and permanently disposed of.

1 Tiger farms are intensive operations breeding on a commercial scale; owners of Chinese Tiger farms have petitioned the government to legalize domestic trade in products derived from the captive-bred animals (Nowell 2007). It is important to note that whereas in China thousands of Tigers exist on these commercial farms, no such farms exist in the United States.

- States should also require that all facilities operating as Tiger "sanctuaries" adhere to strict criteria such as bans on breeding, sale, or trade in the animals; for example, complying with the 2007 USFWS definition of what constitutes an accredited sanctuary.
- States should also consider adopting laws or regulations that establish a system of "reciprocity." Under such a system, states would enact rules that require that any Tigers imported into their jurisdictions be micro-chipped and registered as suggested above; Tigers outside of the system would not be allowed.
- As an immediate interim measure, private stakeholders in Tiger conservation such as zoos, sanctuaries, circuses, and others could establish a voluntary system to inventory, regulate, and accredit holders of captive Tigers (and possibly other big cats) according to the principals outlined above. NGOs could further assist this effort by offering to help fund and/or manage a U.S. Tiger database that keeps track of U.S. captive Tigers more broadly.
- U.S. federal and state government agencies—as well as NGOs, facilities accredited with the AZA, and others interested in Tiger conservation—should continue and enhance public awareness programs to further reduce the demand and use of Tiger parts in traditional Asian medicines both in the United States and abroad.
- State and federal law enforcement should be provided more resources to conduct surveys and undercover operations of TCM shops in the United States—funding for the USFWS wildlife inspection program and related activities by U.S. Customs and Border Protection (CBP) also needs to increase. Furthermore, additional funding is also needed to enhance special operations and undercover investigations in the United States to identify and eliminate potential markets for Tiger parts in the United States and abroad.

Methods

TRAFFIC conducted research for this report in several stages. First, from late January to May 2007, data were collected primarily through published and unpublished reports, USFWS import and export data regarding Tigers and Tiger parts, CITES documents, and a review of federal and state laws and regulations pertaining to the trade, management, and keeping of captive Tigers in the United States. Further information was derived from press releases, the Internet, e-mail communications, and personal communications with organizations and individuals involved in issues regarding the U.S. captive Tiger population. Through this stage of the research, TRAFFIC attempted to determine the overall scope of the presence of captive Tigers in the United States, the types and extent of legal imports and exports of live animals, the existence and scope of illegal trade in Tiger parts (both domestic and international), and the potential impact of such trade on remaining wild Tiger populations in Asia.

Second, during the last half of 2007, government authorities at the federal and state levels, as well as to representatives of sanctuary associations, individual sanctuaries, safari parks and zoos, circuses, and others were contacted, primarily by phone, to try to determine how various laws and regulations are implemented in practice. Specifically, as many people as possible were interviewed to learn how much is known about the number of Tigers in private hands in the United States, how closely these animals are regulated and monitored, and what systems are in place to keep these Tigers and especially their parts out of illegal trade.

Third, in December 2007, some of the information gathered through interviews and research were ground-truthed by looking at some case studies *in situ* in the United States. This involved field trips to review operations that maintained Tigers in captivity in a region where such operations were relatively common—the south-east United States. The field trips included visits to small zoos, sanctuaries, and other facilities holding Tigers, to see the conditions under which the animals are held and ask questions of the owners about how they dispose of animals that die in their care.

Background

The status of Tigers in the wild

Five subspecies of Tiger exist today: the Bengal Tiger *Panthera tigris tigris*, the Amur or Siberian Tiger *P. tigris altaica*, the Indochinese Tiger *P. tigris corbetti*, the Malayan Tiger *P. tigris jacksonii*, and the Sumatran Tiger *P. tigris sumatrae*. The South China Tiger *P. tigris amoyensis* is considered possibly extinct; three other subspecies, the Bali Tiger *P. tigris balica*, Javan Tiger *P. tigris sondaica* and Caspian or Persian Tiger *P. tigris virgata* are extinct (IUCN SSC Cat Specialist Group, 2008).

Tigers overall are classified as Endangered by the IUCN Red List of Threatened Species, having suffered an estimated decline of greater than 50% in the last three generations, with a total effective population size estimated at fewer than 2,500 mature breeding individuals, and no subpopulation containing more than 250 mature breeding individuals. That figure represents a mere fraction of the 100,000 Tigers found in the wild at the beginning of the 20th century (IUCN SSC Cat Specialist Group, 2008). It is also a significant drop even from total population estimates in the late 1990s of 5,000–7,000 Tigers surviving in the wild (Seidensticker *et al.*, 1999). With poaching continuing and significant losses in some of India's Tiger reserves, that country's Tiger population very likely remains in decline. Table 1 summarizes the latest information provided for IUCN's Red List of Endangered Species on the conservation status of the world's historical and existing Tiger subspecies.

Another recent assessment showed that wild Tigers remain extant in widely varying population sizes in Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Russian Federation, and Viet Nam (Sanderson *et al.*, 2006). However, an accurate estimate of specific remaining wild Tiger populations and sub-populations does not exist. A Tiger census conducted by the government-run Wildlife Institute of India estimates that there are as few as 1,165–1,657 Tigers left in the wild in India (Government of India, 2008).

A positive indicator for the future of remaining Tiger populations is that a large area of suitable habitat remains (>1.1 million km^2), and four strongholds were found that can support more than 500 Tigers: the Russian Far East, North-east China, the Terai Arc Landscape of India and Nepal, the Northern Forest Complex-Namdapha-Roya Manas (Bhutan/Myanmar/India), and the Tenasserims of Thailand and Myanmar (Dinerstein *et al.*, 2006). With conservation efforts focusing on preserving these habitats, as well as on reestablishing a sufficient prey base, the prospects for some populations of wild Tigers may be positive.

Even so, future prospects for the survival of the world's few remaining wild Tigers remain uncertain. As a report to the 54th meeting of the Standing Committee of CITES noted in October 2006:

> *"If the number of Tigers (and other Asian big cats) in the wild is used as a performance indicator, it seems*

Table 1. Conservation status of extant and historical Tiger subspecies

Subspecies	Distribution	Status	Year Assessed
Bengal Tiger	India, Bangladesh, Bhutan, Myanmar, Nepal	Endangered	2007
Siberian (Amur) Tiger	China, Russian Federation, North Korea	Endangered	2007
Indochinese Tiger	South-east Asia	Endangered	2007
Sumatran Tiger	Indonesia	Critically Endangered	2007
Malayan Tiger	Peninsular Malaysia	Endangered	2007
South China Tiger	China	Possibly Extinct	2007
Bali Tiger	Indonesia	Extinct (~1940s-1950s)	2003
Javan Tiger	Indonesia	Extinct (1970s)	2003
Caspian Tiger	South-west Asia	Extinct (~1960s-1970s)	2003

Source: IUCN SSC Cat Specialist Group, 2008.

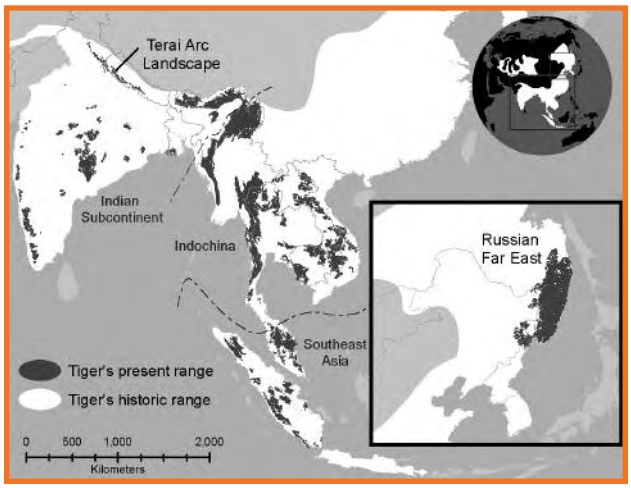
the efforts of governments, NGOs, the international community and CITES over recent decades have failed. Whilst there has been, and continues to be, good work taking place, the desired results of increases in population numbers and reductions in illicit activities have, overall, not been achieved, and the Secretariat sees little room for optimism" (CITES Secretariat, 2006, in Nowell, 2007).

Threats to Tigers

Wild Tiger populations continue to be threatened by an array of factors, including expanding human populations (and thereby conflict with local people), habitat loss and fragmentation, prey base depletion, commercial poaching and trade, and lack of law enforcement. Exploding human populations, for example, have led to loss, degradation, and fragmentation of Tiger habitat. Dinerstein *et al.* (2006) found that Tiger habitat in India, Indochina and South-east Asia is now 40% less than 1995 estimates, and that Tigers now occupy only 7% of their historic range. Figure 1 shows the historic range of Tigers, as well as their current range.

Loss of Tiger habitat, in turn, means a loss of habitat for, and thus a decrease in, Tiger prey. This loss of habitat, and encroachment of humans into the Tiger habitat that remains, has led to an inevitable increase in human-Tiger conflicts. These conflicts range from unexpected encounters between people and Tigers (which can result in human death or injury) to Tiger attacks on domestic livestock, which make an easy prey alternative (Dinerstein *et al.*, 2006). Both of these are likely to result in ill-will towards and retribution killings of the predator. Mitigation of this human-Tiger conflict, as well as habitat preservation, is critical to successful conservation of wild Tiger populations.

Figure 1. Historic range of Tigers



Source: Dinerstein, E., C. Loucks, A. Heydlauff, E. Wikramanayake, G. Bryja, J. Forrest, J. Ginsberg, S. Klenzendorf, P. Leimgruber, T. O'Brien, E. Sanderson, J. Seidensticker and M. Songer. 2006. *Setting Priorities for the Conservation and Recovery of Wild Tiger: 2005-2015. A User's Guide.* WWF, WCS, Smithsonian, and NFWF-STF, Washington, D.C.- New York.

More directly relevant for purposes of this report, one of the most significant trade threats facing Tigers today stems from demand for their parts and derivatives in traditional Asian medicines[2] (Dinerstein *et al.*, 2006). Cultures throughout the world have depended on traditional medicines for thousands of years, and these medicines depend on plants and animals as their key ingredients. Though the bulk of such medicines use plants, some also require parts of various animal species, including Tigers, although many TCM practitioners today, realizing the conservation implications, do not prescribe Tiger parts or parts of other endangered species.

Bone is the most widely used part of the Tiger in TCM, and is historically prescribed to treat migratory joint pain and stiffness, paralysis, weak knees and legs, spasms, stiffness and pain in the lower back, and pain in bones (Bensky and Gamble, 1993). Tiger bone derivatives used in traditional medicine include raw bone powder, gelatin, wine, pills, "tea balls", plasters or poultices, and tonics. These products are not necessarily prescribed by TCM practitioners. Many consumers of TCM believe that the parts of wild animals are more powerful and have a stronger desired effect than the parts of captive or farmed animals, and as such any opening of or increase in trade from captive or farmed Tigers will further threaten wild populations. Along with bone, Tiger skins, claws and teeth are used for clothing, charms, and decorations. Meat for dishes and penis for aphrodisiac can also be found in various domestic and international markets (Nowell, 2000; Nowell, 2007).

Despite efforts to combat trade in Tiger parts, demand for Tiger bone in Asia remains strong. For example, Nowell (2007) listed Tiger range States with substantial domestic markets in recent years as including China (skins, Tiger bone wine); Indonesia (bones, skins, claws and teeth); Malaysia (Tiger meat and manufactured Tiger bone medicines); Myanmar (skins); and Viet Nam (Tiger bone gel). Although commercial poaching pressure continues to exist at varying levels in all range States, the presence of substantial commercial poaching in recent years in India, Indonesia, and Myanmar, in particular.

2 For purposes of this report, TRAFFIC hereafter uses the common term "Traditional Chinese Medicine" (TCM) to refer to these practices, although we recognize that different Asian countries have their own specific variants and traditions.

China, which holds the largest market share of the global illegal trade in Tigers, instituted a domestic Tiger trade ban in 1993; this action has been successful in reducing demand. The Chinese government has also implemented many successful enforcement and public education efforts, and, since 1999, China has seized more Tiger products than any other Tiger range state (Nowell and Xu, 2007). China is to be commended for its enforcement efforts and its efforts to reduce demand. Much work, however, remains to be done.

For example, the demand has not been completely eradicated. Of particular concern is that, although response to a CITES recommendation to prevent illegal trade from farmed sources has been good in most range States, China's response to the issue has been inadequate, if not poor. While China has not allowed any commercial exports in Tiger parts derived from such farms, government management has to date failed to prevent illegal trade. There is, for example, disturbing evidence that Chinese Tiger farms are selling both Tiger bone wine and Tiger meat (Nowell, 2007).

Demand and markets for Tiger-based medicinals are not only found in China, but also elsewhere in Asia, as well as in Europe and North America. Medicines claiming to contain Tiger bone were found in a 2003 market survey in San Francisco and New York City. While the availability of and demand for these medicines in the United States has significantly decreased over the past decade, thanks to concerted outreach and enforcement efforts, it is clear that some demand still exists (Henry, 2004). As with any demand for an illicit product, vigorous education and enforcement must continue to prevent an escalation.

Additionally, in recent years, a resurgence in the Tiger skin trade emerged as another key trade threat to wild Tigers, as Tiger skins for traditional Tibetan clothing became fashionable amongst increasingly affluent Chinese populations in traditionally Tibetan areas. About 3% of Tibetans surveyed by TRAFFIC in major towns in these areas claimed to own *chubas*, or traditional robes, made with Tiger or Leopard skin, despite the fact that most are aware of its illegality (Nowell and Xu, 2007). China, along with numerous conservation organizations, publicized the illegality of this practice and its impact on wild Tigers in 2005. Since that time, surveys show that sales and use of traditional Tiger skin clothing has decreased, though it is clear that some demand still exists (Nowell and Xu, 2007).

Persistent demand for Tiger parts or derivatives is apparent not only in markets, but is also evidenced by the ongoing poaching of wild Tigers. For example, in June 2006, Thai police confiscated illegal wildlife parts, including the remains of six Tigers, during an inspection of air cargo at Bangkok's Don Muang Airport. The cargo had been transported from near Thailand's border with Malaysia to Bangkok in the cargo section of a Thai Airways flight. In January 2007, Russian law enforcement officials seized three Siberian Tiger skins, eight Tiger paws and 332 Tiger bones, among other items, near the Russian border with China. Police intercepted the contraband when they stopped a car that had its passenger seats removed and was stuffed full of bags, which the driver claimed contained potatoes. Most surprisingly, in 2005, staff at India's Sariska Tiger Reserve discovered that its entire population of Tigers had vanished due to poaching. It is clear that despite decades of good faith efforts by range States, consumer States, and the conservation community, demand for Tigers and their parts remains a threat to their continued existence in the wild (Dinerstein *et al.*, 2006; Nowell and Xu, 2007).

International trade controls

Given the international, and indeed global, scope of the trade in Tiger parts, preventing this threat from further decimating remnant wild Tiger populations requires a cooperative, multilateral effort. Global trade in wildlife and wildlife products is regulated by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). CITES, which entered into force in 1975, established a worldwide system of controls on international trade in threatened and endangered wildlife and wildlife products. As of February 2008, 172 signatory countries (known as "Parties") had acceded to the Convention (CITES, 2007b).

Some 5,000 species of animals and 28,000 species of plants are covered by CITES. Protection for species is provided through three CITES Appendices, which describe the status of the species and determine which may enter international commercial trade. The most threatened and endangered species are listed in Appendix I, which includes species threatened with extinction that are or may be affected by trade. Appendix II species are those that are not threatened at present but could become so if trade is not regulated. Appendix III species are subject to regulation within the listing nation for the purposes of preventing or restricting exploitation, and, as requested, promoting the cooperation of other parties in the control of trade (CITES, 2007c).

Tigers were listed in CITES Appendix I in 1975, with the exception of the Siberian Tiger, which was listed in Appendix II. In 1987, the Siberian Tiger was transferred to Appendix I, and all Tigers have since been listed in Appendix I. According to the Convention, commercial trade is not permitted for Appendix I species, and other trade for purposes such as scientific research or breeding

is strictly controlled. Any such trade requires the granting of permits from both the importing and exporting country, and these permits are only granted when certain criteria are met, including a determination that the import/export will not be detrimental to the survival of the species and that the animal or specimen was not obtained illegally (CITES, 2007d).

In addition to the Appendix I listing, CITES has also addressed Tiger trade and conservation through a series of Resolutions. In 1994, CITES Parties adopted *Resolution Conf. 9.13*, which directed Parties to implement certain Tiger conservation measures. The Resolution urged Parties to prohibit domestic trade and sale of Tigers and Tiger parts and derivatives, and recommended bilateral and multilateral cooperation on enforcement and information sharing, ensuring security of stocks of Tiger parts and derivatives, development of awareness campaigns in Tiger range and consumer States, and work with the traditional medicine community to eliminate the use of Tiger derivatives (CITES, 1994). Although CITES has no force of law over domestic policy, the strength of the Resolution lay in the fact that it was adopted by consensus of the Parties.

This Resolution was then revised and strengthened at the 10th Meeting of the Conference of the Parties (CoP) in 1997, and was subsequently superseded by *Resolution Conf. 11.5* in 2000 and by *Resolution Conf. 12.5* in 2002, which broadened the scope of the recommendations for Tiger conservation to include other species of Asian big cats listed in CITES Appendix I (CITES, 2002).

Implementation of CITES Resolutions and Decisions in Tiger range States remains incomplete, as range States have not always reported on their implementation and enforcement efforts. For example, only six of fourteen Asian big cat range States had submitted their reports at the time the CITES Secretariat drafted its document on Asian big cats for the 14th Meeting of the Conference of the Parties to CITES (CoP14), and only four of these—Malaysia, Myanmar, Thailand and Viet Nam—are Tiger range States. Several range States, though, have achieved success in combating poaching and illegal trade. In the Russian Federation, for example, which operates Inspection Tiger Brigades in the Russian Far East, Tiger populations have stabilized, according to a Wildlife Conservation Society–led 2005 Winter survey of Amur Tigers. However, the CITES Secretariat noted in CoP14 Doc. 52 that it believes that two important range States—China and India—remain a concern. China suffers from significant levels of illicit trade in Asian big cats, particularly in traditionally Tibetan regions, and India lacks coordination in wildlife law enforcement efforts (CITES, 2007e). The Secretariat noted that:

> *"Saying that proper implementation of the Convention is essentially what is required may be somewhat simplistic but it is also accurate. Experience shows that political will to provide the resources needed, combined with law enforcement priority in range and consumer States, is effective"* (CITES, 2007e).

At CITES CoP14 in June 2007, India, Nepal, the Russian Federation, and China introduced a draft Decision which addressed trade in Asian big cats, including strengthening efforts to implement CITES *Resolution Conf. 12.5*. The draft did not, though, adequately address the threat posed to wild Tigers by Tiger farms and any possibility of legal domestic trade in their parts and derivatives—a possibility that had been tabled by China in various forums. Therefore, the U.S. delegation and others intervened and offered amendments that significantly strengthened the Decision. Several range States—in particular India, Nepal, and Bhutan—also spoke of the significant threat posed by Tiger farms in other countries, and the threat of any commercialization from those farms. Two elements of the Decisions adopted are especially critical:

Decision 14.66 All Parties, especially those evaluating their domestic Tiger trade control policies, shall take into consideration the view of the Parties as expressed in *Resolution Conf. 12.5*.

Decision 14.69 Parties with intensive operations breeding Tigers on a commercial scale shall implement measures to restrict the captive population to a level supportive only to conserving wild Tigers; Tigers should not be bred for trade in their parts and derivatives (CITES, 2007f).

Although CITES cannot regulate the domestic laws of any Party to the Convention, it can suggest such actions and measures. The strength behind this particular Decision is that it was adopted by consensus of the Parties, and therefore provides a clear directive.

Because implementation of CITES obligations rests with the domestic legislation of individual Parties, the Convention can be effective only if signatory nations enact laws, policies, and regulations to enforce its provisions. As the focus of this report is the United States' role in the global trade in Tiger parts, the next section examines the U.S. legal framework governing international wildlife trade, and also domestic laws that affect Tigers specifically.

Laws and Regulations Governing Tiger Trade and Captive Tigers in the U.S.

Several U.S. federal laws govern the import, export, and domestic sale, trade, and transportation of Tigers and Tiger parts. At the federal level, the U.S. legal framework governing international trade in Tigers and Tiger parts is strong. Federal law explicitly bans the domestic sale of any parts or derivatives from Tigers, or items advertised as containing Tiger products. There are also federal laws and regulations that govern the keeping, care, breeding, and interstate trade or transfer of live Tigers: however, exceptions or exemptions to these laws and regulations create troubling loopholes that could have implications for illegal trade.

Many, although not all, individual states also have laws governing captive Tiger populations. However, at the state level, the U.S. legal framework can be described as decentralized and somewhat haphazard. This section describes U.S. federal and state laws and regulations governing trade in Tigers and issues regarding their captivity.

U.S. Federal Laws and Regulations

Key laws and regulations at the federal level include the *Endangered Species Act* (ESA), the *Lacey Act*, the *Rhinoceros and Tiger Conservation Act* (RTCA), the *Captive Wildlife Safety Act* (CWSA), the *Animal Welfare Act* (AWA), USFWS regulations governing captive-bred wildlife, and parts of the Criminal Code. The specific ways in which these laws or regulations relate to the international trade and domestic keeping of Tigers are as follows.

The Endangered Species Act (ESA)

Enacted in 1973, the ESA established the legal basis for the U.S. to protect and conserve species in danger of extinction, and the ecosystems upon which such species depend. Under the ESA, species may be listed as either endangered or threatened. According to the law, endangered species are those that are in danger of extinction throughout all or a portion of their range. Threatened species are defined as those that are likely to become endangered within the foreseeable future if measures are not taken to ensure their conservation (USFWS, 2002).

Tigers have been listed as Endangered under the ESA since the Act's inception, signifying that they are "in danger of extinction throughout all or a significant portion of [their] range," and cannot be traded commercially either internationally or interstate (50 CFR 17.11 and 17.12). In fact, even prior to passage of the ESA, all Tigers were added to the "U.S. List of Endangered Foreign Fish and Wildlife" in 1972, amending an earlier version of that list that had included only the Bali, Javan, and Caspian subspecies (Federal Register, 1972; Federal Register, 1970).

The ESA also serves as the U.S. domestic enabling legislation for implementation of CITES, and the law makes it unlawful to engage in trade contrary to CITES, or to possess any specimen that was "traded contrary to the provisions of the Convention" (50 CFR 17.11 and 17.12). USFWS is the principal federal agency charged with implementing and enforcing the ESA and U.S. CITES obligations. USFWS agents and inspectors are responsible for U.S. efforts to combat illegal trade and control international movement of Tigers and their parts and products (USFWS, 2006).

The Lacey Act

Originally enacted in 1900, the *Lacey Act* prohibits the import, export, transport, acquisition, receipt, sale, or purchase in interstate or foreign commerce of any fish or wildlife taken, possessed, transported, or sold in violation of any wildlife law or regulation of any state, or in violation of any foreign wildlife law. It also prohibits the import, export, transport, sale, receipt, acquisition or purchase of fish, wildlife, or plants taken, possessed, or sold in violation of any wildlife law, treaty, or regulation of the United States, or in violation of any Indian tribal law. Further, the Act prohibits attempts to commit any of these acts (Hoover and Tarr, 1997).

Particularly relevant to current efforts to halt illegal trade in Tiger parts, another provision of the *Lacey Act* prohibits the actual or attempted falsification of information, records, or accounts regarding species that have been imported, exported, transported, sold, purchased, or received in interstate or foreign commerce. The Act makes it illegal to import, export, or transport in interstate commerce any container or package containing fish or wildlife unless it has "previously been plainly marked, labeled, or tagged" in accordance with USFWS marking regulations, and authorizes USFWS to detain any package or container (and accompanying papers) being imported into or exported from the United States (Hoover and Tarr, 1997). As will be described further below in the section on international trade, this provision is particularly important because the vast majority of Tiger derivatives currently being seized by USFWS are shipments of medicinal products containing, or labeled as containing, Tiger bone being illegally imported into the United States.

The Rhinoceros and Tiger Conservation Act (RTCA)

In 1994 the U.S. Congress enacted the RTCA, which established the Rhinoceros and Tiger Conservation Fund to support conservation of wild Rhinoceros and Tiger populations through anti-poaching assistance programs, habitat and ecosystem management, public awareness campaigns, and other programs and efforts. Because the ESA and the *Lacey Act* apply only to international trade and interstate commerce, there remained a possible loophole regarding intrastate trade in parts from these species. Therefore, in 1998 Congress amended the RTCA through the *Rhino and Tiger Product Labeling Act*, which prohibits the import, export and, most importantly, sale of any product for human consumption or application containing, or labeled or advertised to contain, any substance derived from any species or subspecies of Tiger or Rhinoceros (USFWS, 2007a; USFWS, 2007b). Combined with the provisions of the ESA and the *Lacey Act*, the RTCA as amended closed any remaining loopholes regarding the legality of selling Tiger parts or products in the United States.

The Animal Welfare Act (AWA)

Through the AWA, which Congress last amended in 2002, the USDA has legal jurisdiction to protect warm-blooded animals used in research, bred for commercial sale, exhibited to the public, or commercially transported. The law requires that minimum standards of animal care be established and enforced. Authority to develop and enforce regulations, issue licenses, and conduct inspections and investigations falls under the jurisdiction of the Animal Care program of the USDA's Animal and Plant Health Inspection Service (APHIS) (APHIS, 2003; APHIS, 2005).

Under the AWA and USDA/APHIS regulations, anyone importing, buying, selling, or trading (interstate) animals foreign to the United States (wild or domestic) must be licensed. Licenses are also required to sell domestically-bred exotic animals. Anyone using Tigers in animal performances (circuses, etc.), zoos, carnivals, wildlife parks, promotional exhibits, and some sanctuaries must be licensed. For licensed animals, federal standards include periodic inspections covering issues of humane handling and care (housing, space, feeding and watering, adequate veterinary care, transportation, etc.). Licensed exhibitors must maintain on their premises accurate records of covered animals that come into their possession and of the veterinary care the animals receive; such information must be made available to APHIS during inspection (APHIS, 2003; APHIS, 2007a).

There are exemptions. Animal preserves or sanctuaries that maintain exotic or wild animals are exempt from regulation, for example, provided that they do not exhibit or use the animals for promotional purposes. A private facility that conducts donor tours or uses the animals for fundraising, however, must obtain a license (USFWS, 2003).

The Captive Wildlife Safety Act (CWSA)

In 2003, Congress enacted the CWSA to provide certain cat species, including Tigers, in the United States with another layer of protection; enforcement of the law went into effect in September 2007 (USFWS, 2007c). The purpose of the law is to further the conservation of certain species and to protect the public from dangerous animals. The CWSA makes it illegal to "import, export, buy, sell, transport, receive, or acquire, in interstate or foreign commerce, live lions, Tigers, Leopards, Snow Leopards, Clouded Leopards, Cheetahs, Jaguars, or Cougars, or any hybrid combination of any of these species, unless certain exceptions are met." It is important to note that there are no pre-Act exemptions under the law, so that regulated species acquired prior to the law taking effect will still be subject to the prohibitions of the CWSA (USFWS, 2007c; Federal Register, 2006; Federal Register, 2007).

It should also be noted that the law's regulation of interstate and foreign transportation applies to *all* transportation, not just that involving commercial activities. Anyone owning a Tiger, for example, is prohibited from transporting it across state lines unless they meet exemptions mandated under the law. Such exemptions apply to:

- Persons, facilities, or other entities licensed by APHIS under the AWA to possess big cats (typically zoos, circuses, and those who conduct research with wild animals);
- State colleges and universities;
- State agencies;
- State-licensed wildlife rehabilitators;
- State-licensed veterinarians; and,
- Wildlife sanctuaries that meet specific criteria (which are detailed later in this report) (USFWS, 2007c).

The law also does not, and cannot, regulate intrastate trade and transportation in these species, which is left to the jurisdiction of the states (Federal Register, 2007).

USFWS Captive-Bred Wildlife Registration

To decrease federal permit requirements for captive-born exotic, endangered, and threatened wildlife, USFWS has further implemented a captive-bred wildlife (CBW) registration and permit system. Under the system, otherwise prohibited activities can occur when the activities can be shown to enhance propagation or survival of the affected species, provided the principal purpose is

to facilitate captive breeding (USFWS, 2003; 50 CFR Part 17.3).

Eligible wildlife are limited to those listed as endangered or threatened under the ESA; includes only living specimens; pertains only to species exotic to the United States[3], and involves only animals bred in captivity within the country. Without a CBW wildlife registration, it is unlawful for a person to commit, attempt to commit, solicit another to commit, or cause to be committed any of the following activities:

PHOTO COURTESY DOUG WILLIAMSON

Captive Tigers in a wildlife "sanctuary" in central Florida. These cats are "white" Tigers, bred primarily for exhibition or animal show purposes.

- Take within the United States and its territorial seas or upon the high seas[4];
- Delivery, receipt, carrying, transporting or shipment in interstate or foreign commerce in the course of a commercial activity;
- Sale or offer for sale in interstate or foreign commerce;
- Import or export; or,
- Possession, shipment, delivery, carrying, transportation, sale or receipt of unlawfully taken wildlife (USFWS, 2003; 50 CFR Part 17.3).

Registration under the CBW system authorizes take and interstate commerce, provided that the purpose of such activities is to enhance the propagation or survival of the affected species. This is because, under USFWS regulations, the definition of take (i.e., harassment) of captive wildlife does not include generally accepted animal husbandry practices that meet AWA standards for facilities and care; breeding procedures; and provisions of veterinary care for confining, tranquilizing, or anesthetizing, when such activities will not likely result in injury to the wildlife. Interstate commerce pertains to the purchase and sale of affected species among CBW registrants who are not residents of the same state and who are registered for the species involved. If either the buyer or the seller lacks such registration, the buyer must obtain an endangered or threatened species interstate commerce permit prior to the sale. Further, registration may not be issued or used to sell protected species as pets or for hybridization of any listed species; neither are registrations issued for conservation education only (USFWS, 2003; 50 CFR Part 17.3).

There is a further exception that pertains specifically to captive Tigers in the United States. In 1998, USFWS issued a Final Rule amending the definition of "harass" in 50 CFR 17.3. The rule:

> *"…deletes the requirement to obtain a CBW registration for eight species of pheasants, parakeets of the species Neophema splendida and N. pulchella, the Laysan duck, and the 'generic' or inter-subspecific crossed Tiger"* (Federal Register, 1998).

In practical terms, the exception has two major implications regarding the issues covered in this report. First, as is discussed in more detail later, most Tigers kept in the United States are believed to be hybrids. According to the USFWS, there are currently 14 CBW permits for Tigers with a known breeding pedigree at the subspecies level, and another 66 CBW permits issued to facilities (mostly AZA facilities) that have CBW registrations for Tiger subspecies (M. Carpenter, USFWS Division of Management Authority, pers. comm. to D. Williamson, January 2008). If the United States is currently home to some 5,000 captive Tigers, it would appear that only a small fraction of that number do not fall under the exception.

3 USFWS may determine, on a species-by species basis, that particular species native to the United States are eligible. At present, only the Laysan duck *Anas laysanensis* has been granted eligibility under the registration.

4 Take is defined as to harm, harass, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct.

Second and related, reporting requirements differ for CBW-registered Tigers and those exempted. Specifically, holders of CBW-registered species must submit to USFWS an annual report including activities conducted with registered species and a year-end inventory of all such species for the previous year. Persons claiming the benefit of the exception, however, must only maintain accurate written records of activities, including births, deaths and transfers of specimens, and make those records accessible to Service agents for inspection; there is no reporting requirement (50 CFR Part 17.3; USFWS, 2008).

The Criminal Code

In addition to these laws relating specifically to wildlife, other ancillary federal laws can also apply to Tigers in trade or captivity. For example, federal prosecutors routinely use several provisions of the Criminal Code (Title 18, US Code) to prosecute CITES violations. The provisions of Title 18 most often used, in addition to penalties for violations of the wildlife laws themselves, include "Document Smuggling", which makes it illegal to import or otherwise enter into the United States by means of false or fraudulent declarations, or false oral or written statements. A provision against "Clandestine Smuggling" makes it illegal to knowingly and willfully import or clandestinely introduce into the United States any merchandise contrary to law. It is also illegal to buy, sell, receive, conceal, or facilitate the transportation of merchandise that has illegally entered the country (Hoover and Tarr, 1997).

Recent Tiger and Other Big Cat Incidents in the United States

State and other regulatory authorities charged with overseeing U.S. captive Tigers and other big cats have good grounds for concern about their threat to human health and safety. Information provided to TRAFFIC by the Animal Protection Institute (API) showed that during the period from 1990 to 2006, there were 157 documented incidents of escapes, attacks, sightings, or other events involving captive big cats, spread among at least 34 U.S. states. Not surprisingly, states that have no laws on the subject, have enacted laws only recently, or have laws that are permissive towards private possession of big cats accounted for most of these incidents. These include Texas (21 incidents), Florida (16), Ohio (14), Washington (9), and North Carolina (8). Together these five states accounted for 67 (43%) of total incidents.

Of these incidents, 41 (26%) were specific to Tigers or Tiger hybrids. Some may appear innocent, or even comical. For example, in 2002 two Tiger cubs in Las Vegas, Nevada were found loose on the roof of a neighbor's house, and subsequently recaptured. In a 2005 incident in Arkansas, a man released his "pet" Tiger—presumably unwanted—60 miles from his home. The Tiger found its way back. The owner then delivered it to a wildlife sanctuary.

Unfortunately, in the majority of cases, there is nothing innocent or funny about the results of such encounters between captive Tigers and people. From 1990 to 2006, U.S. captive Tigers attacked at least 27 people, resulting in seven documented deaths and 20 cases of severe injury. Three of those killed were adults, including two people—a trainer and an owner—killed by the same Tiger in separate instances in 1998. The other four people killed were children: ages three, four, 10, and 13. In all four cases, the children died from injuries inflicted by Tigers kept by adult relatives. Other children suffered severe injuries under similar circumstances. For example, in 2005, a "pet" Tiger and lion attacked a 10-year old boy in Minnesota, who suffered brain injury and a severed spinal chord resulting in quadriplegia and dependence on a respirator.

The Tigers involved fare no better; many cases result in the animals being killed by law enforcement or private individuals. For example, in 2004 a six-year old Tiger belonging to an actor who had played Tarzan escaped from its enclosure after jumping a 12-foot fence that surrounded the property where it was being kept. The animal was later located and killed. In that same year in North Carolina, a 14-year old girl was mauled by one of her father's four pet Tigers after entering one of the cages to take pictures; after the incident, all four Tigers were killed. Another Tiger was killed after escaping from a trailer at a truck stop in Illinois while its owner was trying to give it water. These stories have depressing similarities: a Tiger either escapes or gets access to a person, resulting in death or serious injury to the person and the subsequent killing of the Tiger.

Even Tigers in highly secure facilities can be dangerous. In a well-documented case on Christmas Day 2007, a Tiger at the San Francisco Zoo escaped from its enclosure, killing one man and injuring two others before it was killed by police.

These statistics and cases are not cited to be maudlin, but rather to point out that there is good reason for U.S. states to maintain tight regulatory control over captive Tigers and other big cats. With a large, predatory species such as the Tiger, there is zero margin for error.

Source: API 2007a

Another provision of the Criminal Code covers "False Statements", making it illegal to knowingly and willfully falsify a material fact, or make a false or fraudulent statement or entry. This provision is often filed in conjunction with document smuggling charges. Finally, those caught violating wildlife laws can be charged with "Conspiracy", which occurs when two or more persons conspire to commit any offense against the United States, or to defraud the United States, and one of the conspirators commits any act to implement the conspiracy (Hoover and Tarr, 1997).

U.S. state laws

While this panoply of federal laws and regulations controls the international and interstate trade in Tigers, and bans domestic sale of Tiger parts and products, state governments have the lead in regulating the possession and use of live Tigers inside their jurisdictions. At the state level, laws and regulations generally focus issues of human safety and welfare, as well as animal welfare, related to the keeping of live Tigers in captivity, rather than on trade-related issues. The picture is complex; individual state laws differ significantly on whether keeping Tigers is allowed, under what licensing or permitting requirements, and by whom.

According to information provided by the Animal Protection Institute (API), as of 2005, 39 U.S. states had laws governing the "private" possession of big cats and other exotic animals and 11 (Alabama, Idaho, Iowa, Louisiana, Nevada, North Carolina, Ohio, South Carolina, Washington, West Virginia, and Wisconsin) did not (API, 2007b). In 2007, Washington State and Louisiana enacted laws banning future private possession of Tigers and other dangerous species (API, 2007b; TRAFFIC review of state laws and regulations, 2007). More specifically to Tigers alone, Table 2 shows states that do or do not allow the keeping of Tigers in private collections, and under what permitting requirements. As the table shows, 26 states now have laws banning the possession of Tigers in private collections. Sixteen states allow for the keeping of Tigers by individuals, but require a state permit or registration. Nine states (Alabama, Idaho, Iowa, Nevada, North Carolina, Ohio, South Carolina, West Virginia, and Wisconsin) allow for the keeping of Tigers with no state permitting restrictions (API, 2007b; TRAFFIC review of state laws and regulations, 2007).

Furthermore, although at least half of U.S. states ban the keeping of Tigers in private collections as pets, virtually all state codes and regulations have exemptions that allow for the keeping of Tigers by other private (i.e. nongovernmental) individuals or entities under some conditions. These can include breeders, dealers, AZA facilities, roadside zoos, other exhibitors, circuses, rescue

Table 2. U.S. states that allow/ban possession of Tigers as pets

State	Tigers Allowed as "Pets"?	License, Permit, or Registration Required?
Alabama	Yes	No
Alaska	No	n/a
Arizona	No	n/a
Arkansas	No	n/a
California	No	n/a
Colorado	No	n/a
Connecticut	Yes	Yes
Delaware	Yes	Yes
Florida	No	n/a
Georgia	No	n/a
Hawaii	No	n/a
Idaho	Yes	No
Illinois	No	n/a
Indiana	Yes	Yes
Iowa	Yes	No
Kansas	No	n/a
Kentucky	No	n/a
Louisiana	Yes	Yes
Maine	Yes	Yes
Maryland	No	n/a
Massachusetts	No	n/a
Michigan	No	n/a
Minnesota	No	n/a
Mississippi	Yes	Yes
Missouri	Yes	Yes
Montana	Yes	Yes
Nebraska	No	n/a
Nevada	Yes	No
New Hampshire	No	n/a
New Jersey	No	n/a
New Mexico	No	n/a
New York	No	n/a
North Carolina	Yes	No
North Dakota	Yes	Yes
Ohio	Yes	No
Oklahoma	Yes	Yes
Oregon	Yes	Yes
Pennsylvania	Yes	Yes
Rhode Island	Yes	Yes
South Carolina	Yes	No
South Dakota	Yes	Yes
Tennessee	No	n/a
Texas	Yes	Yes
Utah	No	n/a
Vermont	No	n/a
Virginia	No	n/a
Washington	No	Yes
West Virginia	Yes	No
Wisconsin	Yes	No
Wyoming	No	n/a

Source: API 2007b; TRAFFIC Review of State Laws and Regulations 2007.

centers or sanctuaries, and educational, scientific and research facilities, among others (API, 2007b; TRAFFIC review of state laws and regulations, 2007). As noted above, in some circumstances the facilities in which these Tigers are kept normally fall under the jurisdiction of the USDA or the USFWS, as well as state laws. The states with the tightest restrictions are Alaska, which allows only temporary commercial use, education, and research, and New Mexico, which allows for only temporary exhibition. Most states have far broader exceptions. To provide one example, Arkansas, which specifically prohibits the keeping of Tigers and lions as pets, exempts AZA facilities, nonprofit humane societies, animal control and law enforcement agencies, veterinary hospitals and clinics, USDA exhibitors, employees of the Arkansas Game and Fish Commission (AGFC), persons holding scientific collection permits, and holders of AGFC breeder/dealer permits (API, 2007b; TRAFFIC review of state laws and regulations, 2007).

Further fragmenting the U.S. legal system regulating captive Tigers is the limited consistency at the state level regarding which agencies oversee these animals. Of the states that either prohibit or regulate possession of exotic wildlife, 26 designate wildlife or natural resource departments as the lead regulatory agency, seven designate agricultural agencies or boards, and the rest designate local animal control authorities or local law enforcement (API, 2007c). In yet another level of decentralization, in states that allow the private possession of Tigers, counties, cities, townships, and other municipalities may have their own local ordinances on the subject. There has never been a comprehensive study of all of the local ordinances governing the keeping of captive Tigers. Given the number of such jurisdictions in the United States, compiling such information would be daunting (API, 2007d).

Implications for the Tiger trade

As becomes clear below, this fragmented legal framework and bifurcation of responsibility between the federal and state governments in the United States for regulating captive Tigers has potential implications for the international Tiger trade. For example, at the federal level, regulations and exceptions/exemptions incorporated into the AWA and the USFWS registration system for captive-bred wildlife mean that not all facilities are required to provide a regular inventory of Tigers held. While these laws are strong regarding international and interstate trade, the fact that many facilities holding Tigers have to simply keep records of such cats, rather than provide regular reports of Tiger inventories, means that the federal agencies tasked with regulating these animals do not know how many Tigers actually exist in the country or, outside of inspections, where they are.

At the state level, the fact that some states do not regulate the possession of Tigers in private hands also makes it impossible to determine exactly how many Tigers there may be in the United States. State laws and regulations were not generally written with the Tiger parts trade in mind. These statutes tend to focus on issues such as mitigating the potential extreme danger that Tigers in private hands can pose to human beings by ensuring that captive Tigers are housed in facilities in which they are secure, and also that the animals are handled professionally and humanely.

At both the federal and state levels, a key issue regarding the implications for illegal trade—the disposal of Tiger bones and other parts when captive Tigers die—goes basically unaddressed. As the following sections describe, under this legal structure large gaps in knowledge remain regarding how many Tigers there are, how many are being bred each year and where, what purposes they are being used for, and, critically, what happens to these animals and their component parts (skins, bones, etc.) when they die.

THE U.S. CAPTIVE TIGER POPULATION

With that legal framework as a background, TRAFFIC found that it is realistically impossible to pinpoint the exact population of captive Tigers in the United States, although estimates have been made. For example, Werner (2005) estimated that as of 2005, the U.S. Tiger population was made up of approximately 4,692 Tigers.

Given the fragmented legal and regulatory framework governing U.S. captive Tigers, and the number of states that do not regulate their captive Tiger populations, the exact size of the population remains unknown. As Table 2 showed, in some states captive Tigers may be kept by private individuals without any licenses or records. As long as the owners of these Tigers do not engage in activities that would prompt the need for USDA licensing or annual reporting under the USFWS CBW registration system, they are very difficult to locate.

There are also some Tigers that likely exist "off-the-grid". For example, in 2003 a man was found to be keeping a captive Tiger and a caiman in an apartment in the Bronx, New York, even though the State of New York and New York City both have laws specifically forbidding possession of Tigers by private individuals. The Tiger was found only when it attacked its owner. Anecdotally, TRAFFIC also learned during field visits in the State of Virginia that zoos get periodic phone calls from owners of Tigers wanting to give up their cats, even though possession of private Tigers is illegal in that state as well. It is unknown how many other such Tigers may be in private hands unaccounted for in states that ban their possession.

This section discusses what is known about various captive Tiger populations in the United States, the legality and conditions for breeding and keeping them, and what is known about the disposition of Tigers and their parts when they die.

U.S. Tiger populations

Werner (2005) divided the U.S. captive Tiger population into four categories: Tigers kept in zoos accredited by the AZA, Tigers in animal sanctuaries, Tigers held by USDA permit holders, and Tigers in private collections. However, as that paper noted and TRAFFIC's 2007 research further revealed, there is the potential for significant overlap between some of these categories.

Tigers in AZA facilities

There are 214 "accredited" AZA facilities worldwide, including 206 in the United States. There are also 18 AZA-Certified Related Facilities, all in the United States (AZA, 2007a; AZA, 2007b). AZA accreditation means official recognition and approval of a zoo or aquarium by a group of experts—the AZA Accreditation Commission—that evaluates every candidate facility to make sure that it meets AZA's standards for animal management and care, including living environments, social groupings, health, and nutrition. The Commission also evaluates the veterinary program, involvement in conservation and research, education programs, safety policies and procedures, physical facilities, guest services, and the quality of the institution's staff (AZA, 2007c). As public exhibitors of Tigers and other exotic wildlife, all AZA facilities are also required to hold permits by the USDA, and are therefore subject to inspection under the AWA (APHIS, 2007a).

The AZA population of Tigers is the only one in the United States for which there is a reasonably exact population count, given births and mortality. Werner (2005) estimated the population at 264. More recent information provided to TRAFFIC by the AZA showed approximately 350 Tigers as of January 2008 (S. Olsen, AZA, pers. comm. to L. Henry, January 2008). There is no evidence that any AZA Tigers have entered illegal trade. However, as is discussed below, it remains uncertain exactly what happens to AZA Tigers when they die.

Tigers held in "sanctuaries"

A second population of captive Tigers in the United States resides in Animal "Sanctuaries" or "Refuges." Werner (2005) estimated this population at approximately 1,179 Tigers, or about 25% of the total estimate for that year.

However, TRAFFIC's 2007 analysis shows that these numbers change if conflicting definitions of what constitutes a sanctuary or refuge are taken into account. The 2005 study used a definition under which a given facility (sanctuary, refuge, zoo, USDA permit holder, etc.) was included based upon "primary operational mode". In other words, under those parameters there could be secondary uses (e.g., breeding, exhibition, dealing, etc.) for Tigers in sanctuary or refuge facilities as long as those were not deemed to be the primary mission of the facility.

Others use a much stricter version of what constitutes a Tiger sanctuary or refuge facility. Non-profit organizations that accredit facilities have in recent years developed their own criteria. Facilities applying to become accredited by the American Sanctuary Association (ASA), for example, must have precluded any secondary uses or purposes for Tigers in captivity. Some of the criteria involved for membership have included a ban on breeding, a ban on any use of the animals in commercial activities, lifetime responsibility for the animals, that the welfare of the animals is always

primary, and that member sanctuaries maintain all required licenses and permits in good standing, as well as their federal 501(c)(3) not-for-profit status (ASA, 2007).

In 2007, USFWS developed its own definition of an accredited wildlife sanctuary as part of the final rules implementing and enforcing the *Captive Wildlife Safety Act*, which is largely consistent with the standards listed above:

> "Accredited Wildlife Sanctuary means a facility that cares for live specimens of one or more of the prohibited wildlife species and:
>
> 1. Is approved by the United States Internal Revenue Service as a corporation that is exempt from taxation under Sec. 501(a) of the Internal Revenue Code of 1986, which is described in Sec. 501 (c)(3) and 170 (b)(1)9A0(vi) of that code;
> 2. Does not commercially trade in prohibited wildlife species, including offspring, parts, and products;
> 3. Does not propagate any of the prohibited wildlife species; and
> 4. Does not allow any direct contact between the public and the prohibited wildlife species.
>
> Direct contact means any situation in which any individual other than authorized keeper or care giver may potentially touch or otherwise come into physical contact with any live specimen of the prohibited wildlife species" (Federal Register, 2006; Federal Register, 2007; USFWS, 2007c).

Applying this revised definition, the number of facilities that could be considered true sanctuaries holding Tigers in the United States may be quite limited. Unfortunately, organizations such as the ASA have not required accredited facilities to provide an inventory of exactly how many Tigers are in their care; therefore it is impossible to accurately estimate how many Tigers would fall under this definition of "sanctuaries" or "refuges" (C. Baskin, Big Cat Rescue, pers. comm. to D. Williamson, December 2007; L. Stoner, Peace River Refuge, pers. comm. to D. Williamson, December 2007).

As the Florida case study below demonstrates, there are an undetermined number of other facilities in the United States that claim to be sanctuaries or refuges, but these may be involved in breeding, dealing, or other commercial activities. Furthermore, as the next section on trade in U.S. domestic Tigers shows, some of the most significant domestic cases of illegal trade of Tiger parts have involved Tigers "donated" from purported animal sanctuaries.

USDA permit holders

Captive Tigers residing within facilities licensed by the USDA and managed and inspected under department regulations and the AWA likely constitute the largest percentage of Tigers in the United States. Werner (2005) estimated that this population accounted for 2,120 captive Tigers, or approximately 45% of the total in that year.

Again, however, there may be some overlap with other U.S. captive Tiger populations. For example, under the AWA, persons or institutions that require licenses include:

- Animal dealers, including exotic animal dealers[5] and suppliers of specimens;
- Animal transporters, including carriers, intermediate handlers, and contract carriers;
- Animal exhibitors, including zoological parks, animal performances (any owner exhibiting animals doing tricks or shows), roadside zoos, carnivals, or promotional exhibits; and,
- Research facilities, including state and local government-owned facilities, drug firms, and teaching institutions (APHIS, 2007a).

As this list shows, the range of activities that require a license from the USDA is broad. Specifically regarding captive U.S. Tigers, it includes zoos (AZA accredited and non-AZA); those owning animals involved in circuses, amusement parks, carnivals, independent animal acts, television shows, movies, educational exhibits, and other animal performances; roadside zoos; promotional exhibits; public research institutions administered or funded by state or local government; sanctuaries or refuges that allow public exhibition of Tigers; and, private collections that are open to the public. Airlines, railroads, motor carriers, shipping lines, terminals, and freight storage are also covered, as is anyone taking custody of regulated animals in connection with transporting them on public carriers as intermediate handlers (APHIS, 2007a). These latter possessors or owners of captive U.S. Tigers are also covered under the CWSA should Tigers be transported interstate or internationally.

Unfortunately, for purposes of this report, TRAFFIC found that the USDA licenses owners of exotic animals by facility, not by species. In the summer of 2007, TRAFFIC reviewed available data on holders of various USDA licenses, especially Class C licenses, required for those exhibiting Tigers and other exotic animals. TRAFFIC found that the USDA, through APHIS, maintains an Internet web site that shows an extensive list of all holders of USDA Class C licenses, but, because such licenses are not broken down by species, it proved

5 Exotic animal dealers under USDA regulations include anyone importing, buying, selling, or trading animals foreign to the United States (wild or domesticated) (APHIS 2007a).

PHOTO COURTESY DOUG WILLIAMSON

A Tiger cub at a wild animal "sanctuary" in central Florida. Such cubs may be kept for display or breeding, or sold to wild animal shows or for other commercial purposes.

impossible to get a fixed number of Tigers in such facilities in the United States (APHIS, 2007b). A phone call to the APHIS office responsible for maintaining the database of USDA license-holders under the provisions of the AWA confirmed that records of how many of those license-holders may have Tigers, and how many, is not information that they keep (TRAFFIC survey of state, federal, and private authorities, 2007).

TRAFFIC's research also uncovered another troubling disconnect between U.S. states and the federal government in keeping track of how many Tigers may be held in USDA-licensed facilities in individual states. Some states that require licenses for individuals keeping Tigers in private collections exempt USDA licensed facilities from reporting or licensing requirements. If the USDA licenses the facility, it does not then also have to be licensed or include any Tigers present in the state's database.

For example, when a representative from the Oregon Department of Agriculture, which is responsible for licensing Tigers in private hands in that state, was called, we were informed that while Oregon does require individuals holding Tigers to obtain a license, no such licenses are currently issued, implying that there are no Tigers in private hands in the state. Furthermore, the state's database showed no Tigers having been imported into the state, which would also require a permit. However, TRAFFIC's call to a safari park in Oregon revealed that that facility, which is USDA-licensed, does have two Tigers. The Oregon Department of Agriculture representative explained that Tigers in USDA-licensed facilities do not have to be licensed separately by the state, and would not appear in the state's database, which is also not compatible with the USDA database. Under the current system, with Tigers regulated and reported to different standards at the state and federal levels, it is extremely difficult to get an accurate national view of exactly how many Tigers are being held in various facilities.

Tigers in private possession

The fourth captive Tiger population in the United States involves Tigers in private collections. Werner (2005) estimated that some 1,129 Tigers were in private collections as of that year. However, because not all states require that private owners register or license their Tigers, the precise number of cats in the country is not known. Ironically, the fact that the number of Tigers potentially in these collections is not known does not indicate that the owners of these cats are necessarily operating outside of the law. Quite the contrary, the laws and regulations in place in the United States can serve to encourage people not to display their Tigers publicly. As long as individuals in certain states do not deal their Tigers commercially, breed them for sale, exhibit them to the public, or move them across state lines, they can avoid the strict oversight of the AWA, the CWSA, USFWS CBW registration, or other possible state laws or regulations. Therefore, people interested in keeping Tigers as pets, but do not want to be subject to federal regulation, have an incentive to keep their animals outside of the public domain. Such aversion to regulation makes locating or accurately gauging the size of this Tiger population impossible for practical purposes.

TRAFFIC found in various conversations that evidence of the presence of such Tigers is often anecdotal. For example, one individual told TRAFFIC that he has seen Tigers in an enclosure at a private residence by the side of a state road in North Carolina. Another individual related that he knew of two Tigers in the back yard of an acquaintance's house outside of Las Vegas, Nevada. These examples are used to illustrate the difficulty in estimating precisely how many Tigers there might be in such circumstances in the United States. Neither North Carolina nor Nevada has a state law governing the keeping of Tigers in private collections. As long as the owners of the cats do not open their facilities to the public or sell or trade the Tigers, they do not have to be licensed by the USDA. Unless all states without current regulations change their laws to require the reporting, permitting, or licensing of all such Tigers within their jurisdictions, it will remain impossible to determine definitively how many Tigers exist in private hands in the United States.

Table 3. State controls on Tiger breeding in the United States

State	Tigers Allowed as "Pets"?	Breeding of Privately held Tigers allowed?	Breeding Exemption under license permitted?[6]	State	Tigers Allowed as "Pets"?	Breeding of Privately held Tigers allowed?	Breeding Exemption under license permitted?[6]
Alabama	Yes	No*	Yes	Nebraska	No	No	Yes
Alaska	No	No	No	Nevada	No Law	No Law	No Law
Arizona	No	No	Yes	New Hampshire	No	No	Yes
Arkansas	No	No*	Yes	New Jersey	No	No	Yes
California	No**	No	Yes	New Mexico	No	No	No
Colorado	No	No	Yes	New York	No	No	Yes
Connecticut	Yes	No	Yes	North Carolina	No Law	No Law	No Law
Delaware	Yes	Yes	Yes	North Dakota	Yes	Yes	Yes
Florida	No	No	Yes	Ohio	No Law	No Law	No Law
Georgia	No	No	Yes	Oklahoma	Yes	Yes	Yes
Hawaii	No	No	Yes	Oregon	Yes	Yes	Yes
Idaho	No Law	No Law	No Law	Pennsylvania	Yes	Yes	Yes
Illinois	No	No	Yes	Rhode Island	Yes	Yes	Yes
Indiana	Yes	Yes	Yes	South Carolina	No Law	No Law	No Law
Iowa	No Law	No Law	No Law	South Dakota	Yes	Yes	Yes
Kansas	No	No	Yes	Tennessee	No	No	Yes
Kentucky	No	No	Yes	Texas	Yes	Yes	Yes
Louisiana	Yes**	No	Yes	Utah	No	No	Yes
Maine	Yes	Yes	Yes	Vermont	No	No	No
Maryland	No	No	Yes	Virginia	No**	No	No
Massachusetts	No	No	Yes	Washington	Yes**	No	Yes
Michigan	No	No	Yes	West Virginia	No Law	No Law	No Law
Minnesota	No	No	Yes	Wisconsin	No Law	No Law	No Law
Mississippi	Yes	Yes	Yes	Wyoming	No	No	Yes
Missouri	Yes	Yes	Yes				
Montana	Yes	Yes	Yes				

* Must spay/neuter animals

** Grandfather Clause permitting keeping of Tigers owned prior to Ban

Source: API 2007b; TRAFFIC Review of State Laws and Regulations, Summer 2007.

6 Some states allow licensed breeder/dealers, businesses, sanctuaries, zoos, etc. to breed tigers in captivity.

Tiger breeding and sale in the United States

As is also discussed in the next section on trade, it appears that the U.S. captive Tiger population is self-sustaining. Very few live Tigers are being imported into the United States for breeding or zoological purposes on permits consistent with the Appendix I CITES designation.

Table 3 shows state laws regarding the breeding of Tigers in the United States. As it indicates, twenty U.S. states either have laws that allow for the breeding of Tigers in captivity or have no laws on the subject. Many more U.S. states do not allow for the private breeding of Tigers but do have exceptions so that approved facilities (AZA zoos, USDA licensed breeder/dealers, etc.) may breed Tigers (API, 2007b; TRAFFIC review of state laws and regulations, 2007).

As with estimating the number of Tigers in the United States, however, TRAFFIC found that determining a reliable number on how many Tigers are bred and sold in the United States each year is impractical. Along with a list of licensed exhibitors in the United States, USDA also keeps records of licensed animal breeder/dealers. Reviewing these records, TRAFFIC found literally thousands of individuals and company names with breeder and/or dealer licenses. But as with exhibitors, these licenses are not broken down by species, making it impossible to determine what fraction of them may breed or deal either partly or exclusively in Tigers (APHIS, 2007b).

Also, as was noted above and is discussed further below, USFWS CBW permits are required only for Tigers with a known breeding pedigree at the subspecies level, which represent only a fraction of the U.S. captive Tiger population. The majority of Tigers being bred in the United States currently fall outside of this system, meaning that those breeding them must only maintain accurate written records of their activities, including births, deaths and transfers; there is no periodic reporting requirement, and thus USFWS keeps no comprehensive data on how many Tigers are being bred or sold annually (50 CFR Part 17.3; USFWS, 2008).

TRAFFIC further tried to determine how readily available Tigers are for sale in the United States. TRAFFIC's Internet research found that Tigers are not readily available to the public, which is very positive. For example, a search using terms such as "Tigers for sale" or simply "Tiger sale" found links to Tiger-related products (not actually Tigers or Tiger parts) and species such as domesticated Tiger cats, but no actual Tigers. In less positive news, however, TRAFFIC found that there are private web sites and links to publications aimed at animal enthusiasts that do advertise Tigers, mainly Tiger cubs. TRAFFIC has decided not to publish or publicize information or addresses on specific sites or how to find them so as not to further facilitate this trade.

Although the breeding and sale of Tigers as pets in the United States is not the primary focus of this report, the fact that such transactions are occurring does present a potential challenge regarding the international Tiger trade. The link between the two issues comes about because, while the CWSA strictly prohibits the interstate sale or transport of Tigers in private hands to non-exempted individuals or facilities, the breeding and sale of such Tigers within states that allow such trade or have no laws regulating the activity is virtually untraceable.

Some of these Tigers inevitably end up unwanted. For example, from 1999 to 2006, one sanctuary in Florida alone took in several hundred unwanted big cats (not all of them Tigers) (Big Cat Rescue, 2007). These unwanted animals are often those that people purchased as pets when they were cubs. As is discussed in the next section, to date there has been no evidence that U.S. captive Tigers are being killed and sold for parts in the international Tiger trade, but the fact that the United States continues to generate Tigers that end up unwanted indicates that the U.S. could become a source for parts in the illegal trade in the future. The lack of regulations or reliable data in many jurisdictions makes it impossible to determine how many Tigers may be in such conditions, but this is certainly an area for concern.

Mortality and disposal of dead Tigers in the United States

Several key questions remain to be answered. Two of the most important of these are: What is the annual rate of mortality in the U.S. Tiger population? And what happens to captive U.S. Tigers and their parts when they die? TRAFFIC's research and investigation into these questions hoped to find a clear answer. However, TRAFFIC quickly found that U.S. laws and regulations, especially at the state level, were not written to specifically address these vital questions. Given that there are no comprehensive data on how many Tigers exist in the United States at any given time, there are similarly no accurate data on how many die annually, where, or how. Once Tigers die, they no longer present a threat to human life, and considerations of their humane treatment in captivity no longer apply. Their ultimate disposal falls largely outside of the legal framework, and again, some states have no regulations on private possession of live Tigers, much less on the ultimate disposition of their carcasses.[7]

7 Many states and localities do have laws or ordinances that generally restrict the burying of dead animals to approved pet cemeteries. Many of these laws relate to issues such as groundwater protection that are ancillary to the issue addressed herein, which is wildlife trade, and therefore TRAFFIC did not attempt to do a detailed analysis.

Case Study: Florida

In late December 2007, TRAFFIC undertook a field visit to the State of Florida to view firsthand some of the issues regarding captive Tigers in the United States. Florida was chosen because the state has a large population of Tigers, an interesting and controversial regulatory system, and a number of facilities breeding, selling, and exhibiting the animals. What TRAFFIC learned during the visit highlights the broader issues facing the United States in managing captive Tigers as they relate to possible illegal trade.

Four facilities were visited: two sanctuaries that do not breed or sell Tigers or other exotic cats; one "refuge" that does breed and sell Tiger cubs; and a commercial wildlife park that exhibits Tigers and conducts wild animal shows involving Tiger cubs. These visits revealed some startling and troubling facts about the Tiger situation in Florida that could have implications for potential illegal Tiger trade.

Florida law allows for the keeping of Tigers in private hands only for "commercial" purposes; individuals are not allowed to keep Tigers simply as pets. However, there are several thousand people or businesses that have licenses to own exotic animals, and several hundred have licenses to own the most dangerous animals, including Tigers. Although licensed wildlife owners must submit annual counts of their animals, a 2007 investigation by the St. Petersburg Times found that state wildlife officials have no idea exactly how many exotic animals are present in Florida. Some files were found to be missing, while others lacked the latest inventories.

The newspaper quoted a representative of the Florida Fish and Wildlife Conservation Commission: "In an ideal world, it would be better to have inventories on what is possessed on a daily basis, but that's not realistic. Especially with the frequency and amount of change. What's important is to know where all these facilities are located" (St. Petersburg Times, 2007). Information uncovered by TRAFFIC during the visit shows, however, that in the case of Tigers (in which preventing the animals or their parts from possibly entering illegal trade is paramount), that answer is inadequate for several reasons.

First, Florida already has a serious problem with unwanted Tigers. Carole Baskin, CEO of the Big Cat Rescue sanctuary in Tampa, told TRAFFIC that in 2003 alone, her operation was asked to accommodate some 300 Tigers. Lisa Stoner, who runs the ASA-accredited Peace River Refuge in Zolfo Springs, estimated that of the 500 animals her operation was offered in a recent year, as many as one-third were unwanted Tigers. According to both, this problem often arises from people who purchase Tigers as cubs, but then either cannot or choose not to maintain their care as adults.

The expense of keeping an adult Tiger is a major factor. An adult Tiger eats 10–20 pounds of meat per day, which means that simply feeding one can cost USD5,000–6,000 per year. Add in even routine veterinary expenses and the cost can reach USD7,500 per year for a healthy Tiger, and more if the cat develops health issues (as Stoner noted, these are not cats that can be simply driven to the veterinary clinic for check-ups). In addition, adult Tigers need to be housed in secure enclosures, and building such an enclosure to ASA standards can cost as much as USD45,000, though not all private Tiger owners meet such standards (most probably do not).

The presence of so many unwanted Tigers stems from a second major problem: the prevalence of Tiger breeding in Florida. It is unclear exactly how many people may be breeding Tigers in the state, but the number has apparently been high enough in recent years to sharply reduce the cost of Tiger cubs. Both Big Cat Rescue's Baskin and Peace River Refuge's Stoner estimated that, whereas a decade ago a Tiger cub might cost USD2,000, at present the cost would be

PHOTO COURTESY DOUG WILLIAMSON

An approximately six-month old Tiger at an animal show in Miami, Florida. When these young Tigers mature and their owners can no longer expose the public to them, their commercial value drops.

only USD200–500, which is less than the cost of many pedigreed dog puppies.

Breeding of Tigers in Florida may be driven by a quirk in the state's laws and regulations that make Tiger cubs a commercial asset, while devaluing adult Tigers. One purpose for which Tiger cubs are bred in Florida involves their use as "props" in photographs for tourists. Young Tiger cubs weighing less than 25 pounds can be handled by members of the public without any form of restraint. Tiger cubs that weigh 25-40 pounds require a leash. Once Tiger cubs reach 40 pounds or six months in age, no direct public contact is allowed. In addition, there are no caging requirements for Tigers less than six months in age; therefore, whereas keeping a Tiger more than six months old requires the expense of an enclosure, young Tiger cubs present no such financial outlay and greater potential for financial gain.

To view how the system works, two further facilities holding Tigers were visited. The first was a "refuge" advertising itself as a not-for-profit operation devoted to the conservation of big cats and other wildlife that, among other species, held Tigers. During TRAFFIC's visit, the owner of the facility openly discussed both the fact that he was breeding Tigers and that the operation had some connection to a commercial wildlife park in Miami. Close to a dozen Tigers were witnessed and photographed, ranging in age from a young cub, through some juvenile Tigers, to several full adults. Five of the cats observed were variants on the "white" Tiger, the significance of which is described below.

Subsequently, the facility in Miami was visited, which publicly exhibits at least two adult Tigers (one white) and a Liger (the product of cross-breeding a male lion and a female Tiger). During a wild animal show, the facility further produced five more Tigers advertised as being six-months of age. The first was described as being a Bengal Tiger, while the remaining four were described as a "white Bengal", a "golden tabbie", a "snow white ghost Tiger", and a "royal white" Bengal cub. The presentation stressed that one of the goals of the program breeding and displaying the Tigers was to raise funds for conservation and restoration of these Tigers in the wild.

At the close of the presentation, members of the audience were offered the opportunity, for USD40, to have a picture taken with a very young white Tiger cub, with one audience member holding the cub and up to five people allowed in each picture. TRAFFIC noted that a related facility, run by the same organization

PHOTO COURTESY DOUG WILLIAMSON

An adult "white" Tiger at an animal park in Miami, Florida. As adults, Tigers are potentially very dangerous and thus need to be kept in secure enclosures.

sponsoring the Miami show, charges USD79 for a photo with Tiger cubs in Myrtle Beach, South Carolina.

Whether or not the Tiger cubs witnessed in Miami came from the specific "refuge" facility visited earlier cannot be confirmed. However, several aspects of any such commercial breeding and use of Tigers raise disturbing questions. For one, there is no legitimate connection between the rearing and commercial use of white Tiger cubs in the United States and conservation of Tigers in the wild. All white Tigers in the United States originate from a single male white Bengal Tiger imported years ago. The variants witnessed in Miami are the result of various inbreeding and other genetic transformations over time. These Tigers may also have been hybridized, for example by crossing Bengal with Siberian Tigers to increase size and weight. It is furthermore dubious that funds from these commercial operations are contributing to the *in situ* conservation of wild Tiger populations in Asia (R. Tilson, Minneapolis Zoo, pers. comm. to D. Williamson, January 2008).

Another more serious issue, when considering the possibilities for illegal trade, is the ultimate fate of these Tigers. As noted above, Tigers in Florida can generate revenue as cubs, but often become a financial liability as adults. Along with the facility visited, TRAFFIC also identified the names and locations of several other commercial breeding operations that are likely producing Tiger cubs. The fact that the state is producing a stream of new Tiger cubs, while adult

Tigers go apparently unwanted, poses another question: Where are these Tiger cubs going when they mature?

Speculation on that question reveals another flaw in the state's management system. While Florida Tiger owners may have to account annually for the number of Tigers they possess, there is no requirement that these owners account for the fate of the animals. It is possible that some may enter breeding operations. It is possible that some may be sold to other organizations and even moved out-of-state. There is a third possibility, however—the Tigers may simply be killed. TRAFFIC's conversations with several sources, both within and outside of Florida, raise this outcome as a real option. For example, Peace River Refuge's Lisa Stoner noted that although such fate for the Tigers is completely abhorrent to her, for the owners of unwanted Tigers it may be the option that is "cheapest, easiest, and perfectly legal". Unfortunately, given constraints of space and the cost of keeping such Tigers, there is virtually nothing that legitimate sanctuaries could do to stop it.

Combining the elements and points above, states with Tiger management schemes such as the one TRAFFIC found in Florida could have potentially detrimental impacts on U.S. efforts to keep Tigers and their parts out of illegal trade. The state has an evident surplus of adult Tigers that their owners either cannot afford or do not want to keep. There is a continuing stream of Tiger cubs into the state's commercial population (although it is possible that some of these Tigers may not be used for truly commercial purposes). The state has not kept accurate records of how many Tigers may be present at any given time. And, the state does not require Tiger owners to account for the fate of Tigers leaving the population.

Given that each unwanted Tiger represents a possible source of hides, meat, bone, and other derivatives, states such as Florida need to significantly tighten their management programs for these endangered cats. It should be noted that, as of late 2007, Florida now requires that Tiger owners purchase insurance and deposit a bond for their facility. However, we also note that the purpose of these bonds and insurance is to guard against the potential that the cats may escape and cause harm to human beings; the initiative does not address the issue of potential trade in Tiger parts.

As is detailed in the recommendations at the close of this report, further specific steps need to be taken, not only in Florida but nationwide. These include requiring that Tiger owners microchip and provide photographic evidence to the state of every Tiger present, from cubs to adults; that the death, sale, loan or donation of every Tiger be reported, along with proof that, upon death, the Tiger's carcass has been properly disposed of in a way that its parts cannot enter trade; that Tiger breeding be far more closely regulated to prevent the creation of more potentially unwanted animals; and that steps be taken to address the issue of unwanted adult Tigers.

Simply put, the days when management programs that simply document which facilities may hold captive Tigers are considered adequate need to end. Precluding the chance that U.S. Tigers might enter into illegal trade means that all such Tigers need to be accounted for, from birth to death. This may seem a daunting task, but given that the rough estimate of the country's overall Tiger population is about 5,000 animals, it is not likely to be overwhelming or prohibitively expensive. The question is whether the United States has the collective will to recognize that, given the special threat that ongoing trade in Tiger parts poses to remaining wild populations, special measures need to be taken to ensure that U.S. captive Tigers cannot enter the trade stream and thereby exacerbate the problem.

PHOTO COURTESY DOUG WILLIAMSON

Tigers at an ASA-certified sanctuary in south-central Florida. Such sanctuaries take in Tigers no longer wanted by their owners, but because it costs a minimum of USD5,000–7,000 annually to feed and provide medical care for each animal, there are more unwanted Tigers than space or resources available.

Tiger mortality

TRAFFIC's attempt to determine how many Tigers die annually in the United States, and to extrapolate from that how much Tiger bone or other Tiger products the population may be producing on a yearly basis, produced no clear answer, for several reasons. First and most obvious, neither the federal government nor U.S. states maintain current data on the subject. Individual entities such as animal sanctuaries, zoos, circuses, or others may know how many Tigers die each year in their individual subpopulations, but these data are not combined and compiled by governmental authorities in a way that is publicly accessible. Furthermore, there are no annual mortality data regarding Tigers held by private owners, especially in states that do not require licensing or registration of the animals.

Second, various Tiger populations and hybridizations may have different lifespans. For example, Tigers held in zoos or legitimate animal sanctuaries may live into their teens or even early twenties. "White" tigers that are genetically bred for certain characteristics attractive to commercial exhibitors have far shorter lifespans (C. Baskin, Big Cat Rescue, pers. comm. to D. Williamson, March 2008.) As witnessed during TRAFFIC's visit to Florida, many Tigers in the commercial private sector are white Tigers selectively bred for such display, although the exact number is not known. Given the discrepancy, therefore, it is not possible to simply calculate that there are approximately 5,000 Tigers in the United States with a fairly fixed natural lifespan, and from that extrapolate an average rate of mortality.

Third, it is further unknown exactly what happens to Tigers used for commercial activities such as those in Florida once the cats reach maturity. As the Florida case study showed, the primary commercial value of Tigers used in shows derives from Tiger cubs. Once the Tigers reach an age or size at which they can no longer be used in shows or handled by the public, they may be transferred to other facilities or sold or donated to private owners. At that point, these Tigers essentially leave the public radar screen. Whether the cats then live on into old age, or whether owners have an incentive to dispose of the cats instead of paying to feed, house, and provide veterinary care for some number of these animals is unknown.

Fourth and related, little is known of the fate of Tigers that owners no longer want. As noted earlier, sanctuaries, zoos, and others regularly receive inquiries from Tiger owners looking to give up their cats, and these facilities simply do not have the capacity or funding to take them all. Some of the owners of these Tigers may succeed in finding new homes for their animals, and others may decide that if they cannot find a new home for a Tiger they will keep it. However, it is possible that other owners may decide to have their Tigers put down. In fact, there are known cases in the United States of owners killing surplus Tigers. As is described in more detail below in the section on illegal trade, a law enforcement investigation from 2001–2003 led to multiple prosecutions of individuals found to be killing exotic cats, including 19 Tigers, and selling their products (particularly meat and skins) in the illegal market. While such incidents appear to be isolated, they further point to the possibility that there may be a level of unnatural mortality in the U.S. Tiger population that is very difficult to detect or measure.

Together, this lack of comprehensive recordkeeping or regulatory oversight, differing lifespans between Tigers and Tiger hybrids, and general absence of data or knowledge about what happens to Tigers in the United States when they are no longer commercially viable or wanted by their owners, makes it impossible to accurately determine how many captive U.S. Tigers may be dying on an annual basis. Instead of trying to come up with a firm numerical estimate, therefore, TRAFFIC believes that the focus of attention should be on developing a regulatory and monitoring system in the United States that will make it possible to readily answer this question going forward. Some of the primary recommendations offered at the close of this report include specific suggestions for ways in which U.S. state and federal authorities charged with overseeing various segments of the U.S. captive Tiger population, in conjunction with private and non-profit organizations, can work together to address the issue.

Disposal of dead Tigers

TRAFFIC's inquiries to those involved in regulating, managing, or holding Tigers at the federal, state, and private levels also provided no satisfactory or comprehensive answers to the question of what actually happens to U.S. captive Tigers after the animals die. Responses varied across these different groups. For example, the AZA has a detailed written policy on the acquisition/disposal of animals. It states: "Dead specimens (including animal parts and samples) are only to be disposed of from an AZA member institution's collection if the following conditions are met:

1. Dispositions of dead specimens must meet the requirements of all applicable local, state, federal and international regulations and laws.
2. Maximum utilization is to be made from the remains, which could include use in educational programs or exhibits.
3. Consideration is given to scientific projects that provide data for species management and/or conservation.
4. Records (including ownership information) are to be

kept on all disposals, including animal body parts, when possible.

5. SSP and TAG necropsy protocols are to be accommodated insofar as is possible" (AZA, 2007d).

The first of those conditions clearly indicates that AZA Tigers cannot be sold for parts, which, depending on the nature of the sale could violate a panoply of federal and also possibly state laws. There is also a requirement for record-keeping.

TRAFFIC's inquiry to the ASA regarding the disposal of Tigers that die in certified sanctuaries produced a response that most Tigers that die at such facilities are likely cremated. The ASA representative further pointed out that in many jurisdictions local groundwater laws prohibit the burial of dead animals, and that the costs to bury such animals in special pet cemeteries are likely prohibitive (V. Weir, ASA, pers. comm. to D. Williamson, September 2007).

Similarly, a representative of the circus industry indicated that they have no formal policy or regulations regarding disposal of their Tigers. Ringling Brothers and Barnum & Bailey Circus normally sends out their deceased animals for necropsy, and disposal is then carried out by the necropsy facility. In the rare case where a necropsy is not needed, the animals are buried. Independent circus operators generally have their animals necropsied, buried on site, or collected by animal disposal providers. Again, though, none of these organizations have any established policy on disposal of deceased Tigers. (J. Galvin, The Livingston Group, LLC, pers. comm. to L. Henry, September 2007).

Most troubling, neither the federal government nor state regulatory agencies keep data on the disposition of Tigers that die under their jurisdictions. TRAFFIC's inquiries to state authorities typically elicited variations of the response that the Tigers' owners "probably bury them." This is a subject area which remains unregulated at a direct level, unless there are state or local ordinances regarding issues such as protection of groundwater (TRAFFIC survey of state and local agencies, 2007). There may be laws regarding disposition of live Tigers through trade or sale in some states (though not all), but the ultimate disposition of dead Tigers goes largely unaddressed at the state level.

As an example, when a representative of the Arizona Department of Game and Fish office that issues permits for captive Tigers in that state was contacted, we were informed that Arizona does not allow for the keeping of Tigers in private collections but does regulate them as a Restricted Wildlife species subject to permits for zoological display. When asked whether the state requires any reporting or permitting for the disposal of Tigers that may die in such captivity, the answer was no. Arizona only has reporting requirements for cervids, whose disposal is monitored as part of an effort to monitor and eliminate the current threat posed by chronic wasting disease. Given limited resources, and the mandates of state agencies, such responses make sense. The main priorities of game and fish departments tend to be protection of native wildlife and game, regulating and monitoring hunting seasons, enforcing anti-poaching laws, and other such mandates. The ultimate disposition of captive Tigers in zoos and other facilities does not seem to be a high priority. Should international demand for Tiger parts for medicinals or other purposes increase, however, this lack of focus on the disposition of Tigers and their parts as they die could represent a gap to be exploited by those seeking supply for illegal trade. This does not mean, however, that there is evidence that parts from dead U.S. Tigers are currently entering the illegal international trade, as there is no such evidence. The next full section on trade reviews what is known on that subject.

Policy & management options

The above findings suggest a troubling lack of solid available information regarding key aspects of the U.S. captive Tiger population as it relates to potential international trade. No clear census or regulatory system exists to detail the precise numbers or whereabouts of Tigers in captivity in the United States. There is no clear way to determine the numbers of Tigers dying annually in the United States, and it is further impossible to determine comprehensively what happens to these animals when they die. Stemming from those data and informational gaps, it is therefore impossible to accurately determine how much Tiger bone or other parts the United States is generating on an annual basis that could potentially enter domestic or international trade. TRAFFIC is continuing to investigate these elements of the U.S. captive Tiger management system, but has found to date that obtaining specific, numerical data is akin to completing a puzzle without access to all of the pieces, or even being able to determine exactly how many pieces there are.

Given these circumstances, the next obvious question that TRAFFIC asked was: What policy or management options are available to address the situation? As was noted in the section on laws and regulations, an increasing number of U.S. states have moved to simply ban the private possession of Tigers and other large exotic cats. In 2007, Washington and Louisiana became the latest states to take such action. While such a solution is very direct, and will over time likely reduce the number of Tigers in private hands in the United States, in the near term it is unlikely to resolve issues regarding potential trade in Tiger parts.

For example, even those states that are now moving to

ban the possession of Tigers as pets have not mandated or advocated the confiscation of extant captive Tigers. Conversations with people in several places suggested anecdotally to TRAFFIC that state authorities have neither the inclination for such action, nor the budgets or facilities to try to assume responsibility for Tigers currently living in captivity. In practical terms, this would indicate that even should all U.S. states that continue to allow the private possession of Tigers decide to ban the practice, a residual population of such cats, and thus a potential source of parts for illegal trade, would continue to exist for years to come.

The reason for this is that Tigers can live for a significant number of years in good conditions. For example, Big Cat Rescue in Tampa, Florida, had 17 Tigers as of December 2007; according to CEO Carole Baskin, most of the Tigers currently held are in their late teens or early twenties. Although not all captive U.S. Tigers live in optimal conditions, efforts to ban their possession in private hands may be a welcome long-term development, but it does not obviate the need for other, more immediate, regulatory actions specifically related to trade.

The fundamental trade-related policy and management issues that need to be addressed involve the ongoing breeding, sale, and transfer of live U.S. captive Tigers, and the disposal of Tiger carcasses when the animals inevitably (or prematurely) die. Options in these areas need to be focused, realistic, and cost effective. TRAFFIC's assessment of management and policy options is as follows.

The first issue that needs to be faced is ongoing breeding of new Tigers into the U.S. captive population. As described earlier, at present both federal and many state laws and regulations allow for the commercial breeding and sale of Tiger cubs without close scrutiny. USDA regulates by facility and, while facility owners are required to maintain records, they do not have to regularly report every birth, sale, or transfer of Tiger cubs. Similarly, because USFWS Captive Wildlife Breeding regulations require regular reporting only of Tigers certified to be pure-bred at the sub-species level, there is thus no regular reporting requirement to that agency by the majority of Tiger breeding operations. At the state level, some jurisdictions do not maintain their own records of Tiger breeding in federally regulated facilities, some may have laws but monitoring is incomplete, and some simply have no laws on the subject.

The second issue involves the sale or transfer of Tigers, both interstate and intra-state. At the federal level, implementation of the *Captive Wildlife Safety Act*, for which implementing regulations came into force in September 2007, may go a long way towards regulating the movement of live Tigers in private hands between state jurisdictions. It remains too early to know exactly what the effect of that law will be. In addition, sale or transfer of Tigers within a state, or among entities exempted from that law, would remain unaffected.

The third issue regards the disposal of Tigers once they die. On this subject there are clear federal laws that prohibit the sale of Tiger parts, but no federal or state legal framework that otherwise monitors or speaks directly to the subject. The closest the law comes lies in local or state ordinances regarding the generic disposal of pets for groundwater or other human health and safety reasons.

TRAFFIC's review of management options found that this current system can be dramatically improved regarding trade at fairly little cost. For example, to better monitor how many Tigers are entering the U.S. captive population each year, loopholes in current laws and regulations could be closed by requiring that breeders/dealers have to report on how many Tiger cubs they produce annually, and to whom they are sold or transferred. USDA and USFWS-regulated facilities already have to keep records of these activities, and it would not be very much of a stretch to require that such records be transmitted electronically to databases at the state or national level. Private groups or NGOs could assist in such an effort by helping to establish and maintain such a database, which would not be a tremendous endeavor if the generally accepted figure of about 5,000 Tigers in the country is taken as a starting point.

Another option to better manage and monitor the U.S. captive Tiger population could be to require that Tiger owners insert a microchip into every animal, with the identifying information to be entered into the above-suggested database. This practice of using microchips to identify and track animals is increasingly common for household pets such as dogs and domestic cats. By implanting such a microchip, animal owners have a much better chance of recovering animals that run away or get lost and are subsequently found by animal control officials or others. In the case of U.S. captive Tigers, applying this technology universally would be a ready identifier to connect individual animals to their legal owners, and, in terms of potential illegal trade, it would make it very difficult for Tigers to be killed or sold illegally because management authorities would have a mechanism to know if a Tiger went missing or was unaccounted for. To preclude the possibility that such microchips could be illegally transferred between cats, Tiger owners could be further required to submit a hair sample for DNA comparison, or even provide periodic digital photographs of each Tiger to the above-mentioned database to allay fears of such activities and enhance enforcement.

Furthermore, the microchipping process itself is relatively inexpensive–around USD10–25 for a Tiger cub–and can be done during a routine veterinary visit. An adult Tiger

requires tranquilization, which is more expensive–around USD300–1,000, depending upon whether it is done in the field or in a clinic. One possible approach to this issue would be to require that all cubs under six months of age be microchipped in conjunction with vaccinations. For adult Tigers, it would be required that the cats be microchipped if they are ever tranquilized for any other purpose, thereby reducing the costs to the owners by eliminating the need for a special visit or procedure (L. Stoner, Peace River Refuge, *in litt*. to D. Williamson, March 2008). Under such a system, it is likely that in a matter of a few years there would be only a very small number of remaining adult Tigers without microchips, and the system could be implemented at reasonable expense.

A final option to preclude illegal trade would be to require Tiger owners to report all Tiger deaths and certify that the animals are disposed of properly in a way that their parts cannot enter the illegal market. Here, the most cost-effective means of implementation would probably be to mandate the cremation of carcasses by licensed facilities. Anecdotal information provided to TRAFFIC by several sources estimated that the cost of cremating a Tiger at a funeral home is approximately USD500, or perhaps a bit more for a very large specimen. By comparison, burial in a dedicated pet cemetery can run into the thousands of dollars to buy the plot and inter the animal (not just for Tigers, but for other domestic animals as well). The practice of simply burying the animals privately may be common as noted above, but it may also be technically illegal under groundwater laws or other state or local ordinances.

Requiring Tiger owners to cremate their Tigers and provide subsequent proof may seem a burden. However, TRAFFIC notes that, as is also described above, providing these animals with an enclosure that would meet accepted sanctuary standards can cost some USD45,000, and even housing them in secure but lesser facilities can run into the tens of thousands of dollars. Adult Tigers also require some USD5,000 per year just to feed, and, when veterinary care is included, their annual upkeep can easily reach USD7,500 or more. Given those expenses, requiring that owners spend some USD500 to perhaps even USD1,000 to properly cremate and dispose of the animals so that their parts are rendered useless for potential illegal trade seems a reasonable requirement.

Taken together, implementing these options would change the current U.S. system of captive Tiger management from one in which very little information is available about the status and dynamics of the population to one in which there would be few loopholes for those potentially interested in exploiting U.S. captive Tigers for illegal purposes. From birth to death, federal and state regulatory authorities, as well as NGOs and others who monitor captive wildlife issues and the international wildlife trade, would have a much greater ability to track the U.S. captive Tiger population. Specific recommendations for how such a system might be implemented appear at the close of this report.

Domestic and International Trade of Tigers in the United States

Very limited legal trade in Tigers and some parts or derivatives continues; most of this trade involves the movement of live Tigers between countries for exhibition, entertainment, zoological, or breeding purposes. Of the 138 USFWS records of legal imports of Tigers or Tiger parts from 2001 to 2006, for example, 112 (81%) involved live Tigers, as did 96 of the 102 records of legal exports (94%).[8] Ongoing trade in Tiger parts or derivatives consists primarily of items imported or exported under CITES and/or ESA exceptions for scientific research or education, although during the period examined there were also a very small number of records indicating trade for personal or commercial purposes. USFWS exceptions to the ESA and CITES trade bans that allow such shipments are discussed below (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

Unfortunately, illegal trade also persists. Evidence of such trade consists primarily of USFWS seizures of medicinal imports containing, or purporting to contain, Tiger bone. USFWS records also show seizures of other Tiger parts or derivatives such as skins, rugs, teeth, claws, and other items. Domestically, recent years have also seen cases involving the illegal killing and sale or attempted sale of parts from captive Tigers within the United States. In a positive development, from 2001 to 2006 there was not a single seizure of Tiger parts being exported from the United States, which suggests that the U.S. role in the illegal international trade is that of consumer rather than supplier.

Legal imports and exports of Tigers/parts into and out of the United States

From 2001 to 2006, data provided to TRAFFIC from the USFWS Law Enforcement Management Information System (LEMIS) through the Freedom of Information Act (FOIA) show records of 138 imports and 102 exports cleared by USFWS. These fell into several broad categories.

Live Tigers

As noted above, live Tigers constituted the vast majority of ongoing legal trade involving the species. Table 4 shows the annual number of LEMIS records for live Tigers from 2001 to 2006, as well as the number of Tigers involved. As noted above, the number of LEMIS records here does not necessarily reflect the number of individual shipments of Tigers, which would be a significantly smaller number.

As the Table shows, during the period examined, several hundred live Tigers entered and/or left the United States. Declared purposes for these imports and exports in the

Table 4. Live Tigers imported to and exported from the United States, 2001–2006

	Imports		Exports	
Year	No. of Records	No. of Tigers	No. of Records	No. of Tigers
2001	28	64	12	36
2002	24	47	21	44
2003	34	59	27	50
2004	10	21	20	32
2005	9	21	7	16
2006	7	18	9	20
Total	**112**	**230**	**96**	**198**

Source: TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008.

8 TRAFFIC notes that the number of records shown in the LEMIS system does not necessarily indicate the number of actual shipments of Tigers into and out of the United States. For example, as the data below demonstrate, in some cases shipments of multiple Tigers to the same destination on the same date include an individual record for each individual Tiger imported or exported. When such shipments of multiple cats are aggregated, there may have been as few as 40 total import shipments and 43 exports in the six years of data examined.

LEMIS records included exhibition, zoological, commercial, educational, personal, and breeding. Figures 2 and 3 show the aggregate breakdown of live Tigers imported and exported from the United States by declared purpose.

The table and figures to the right indicate that from 2001 to 2006, the United States was a slight net importer of live Tigers. Further analysis of each of the categories and numbers involved, however, shows that without careful reading and interpretation they can be deceiving, and should be treated carefully.

Live Tigers for exhibition

LEMIS records show that 175 of the 198 Tigers (88%) listed as being exported from the United States, and 199 of the 230 Tigers (87%) listed as being imported from 2001 to 2006, were for exhibition purposes. Most of these records, however, did not represent Tigers that permanently left or entered the United States, but rather corresponding exports and imports of the same cats. These are most likely Tigers used in circuses, film projects, and other display or entertainment that temporarily traveled outside of the country and then re-entered. One needs to view these data with the understanding that if a circus or other entertainment entity takes a Tiger out of the United States for a show or exhibit, and then returns to the United States, this is counted in LEMIS records separately as both an export and an import in LEMIS records (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

For example, in 2001 the United States exported six Tigers to Canada on a permit for circus/exhibition purposes, and LEMIS records then show a subsequent import of the same six Tigers back into the United States in the same year, judging by the fact that the value, number of cats, and all other fields of data corresponded exactly. In May of 2003, LEMIS records show a circus export of 11 Tigers to Mexico, and then a re-import of the same cats in June of that year. In 2005, LEMIS records show two exports and subsequent re-imports of six and 10 Tigers, respectively. In short, the USFWS data show a consistent pattern of such activity in all six years of records examined, accounting for the vast majority of live Tigers leaving and entering the country (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

Second, TRAFFIC noted that USFWS data show that the United States is listed as the country of origin for 192 of the 199 live Tigers imported (96%), and 169 of the 175 Tigers exported from 2001 to 2006 for exhibition or circus purposes. The only other countries of origin for circus or exhibition imports were Japan (two Tigers in 2001) and the UK (five Tigers in 2004), which were imported

Figure 2. Live Tigers imported into the United States, 2001-2006

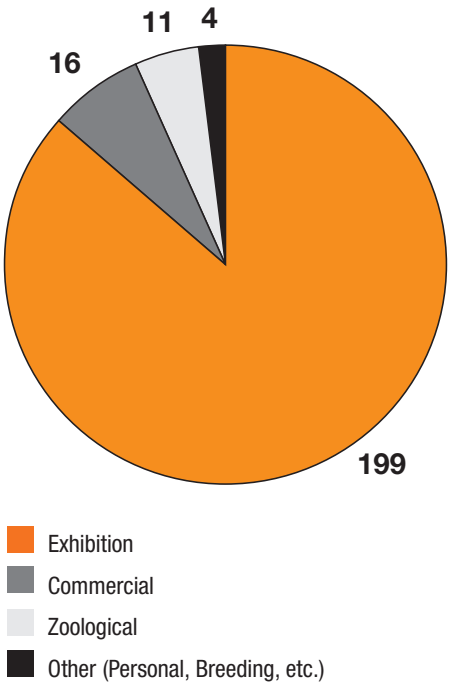
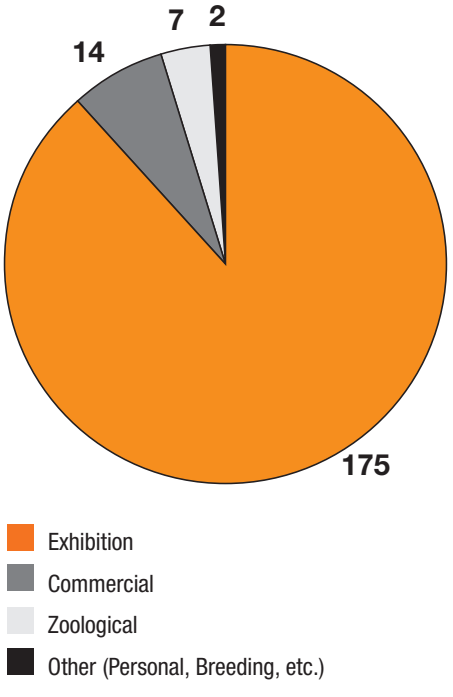


Figure 3. Live Tigers exported from the United States, 2001-2006

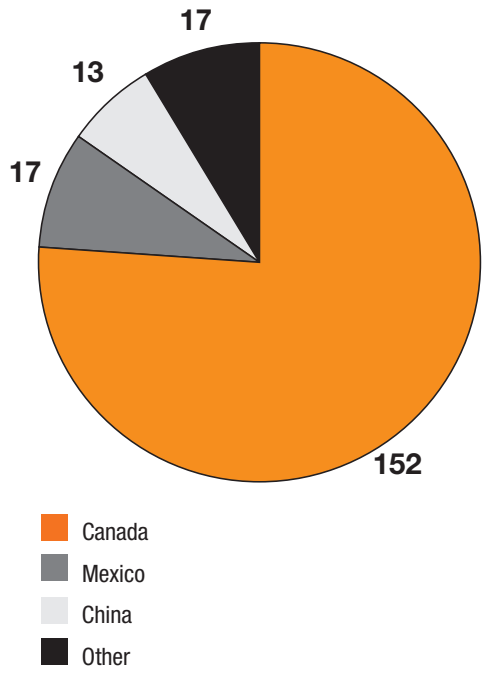


through Spain. LEMIS records from 2006 show an export of six Tigers to Spain whose country of origin is listed as the UK. It is possible that this re-export included the Tigers imported in 2004. USFWS records also indicated that all of the live Tigers being imported into or exported from the United States for circus or exhibition purposes came from captive sources. There were no records showing wild Tigers from any Tiger range States in this part of the trade (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

Furthermore, the reader should not assume that this movement of live Tigers involves imports from, or exports to, Tiger range countries, unless specified. In fact, TRAFFIC found that the majority of live Tigers imported into or exported from the United States from 2001 to 2006 for circus or exhibition purposes did not leave North America. For example, Canada accounted for 152 of the 199 Tigers imported into the United States in this category, while Mexico accounted for another 17. Together, those imports accounted for some 85% of exhibition Tigers imported overall (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

Other nations from which the United States imported circus or exhibition Tigers were China, Japan, Spain, Bermuda, Thailand, the Dominican Republic, and one Tiger from country unspecified in the records in 2001 (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008). Table 5 breaks these figures down by year; Figure 4 presents the data graphically.

Figure 4. Number of exhibition/circus Tigers imported into the United States by country of export, 2001-2006



Other includes: Spain 5; Bermuda 5; Japan 3: Thailand 2; Dominican Republic 1; Unspecified 1.

Table 5. Exhibition/circus Tigers imported into the United States by country of export, 2001–2006 (Number of Tigers)

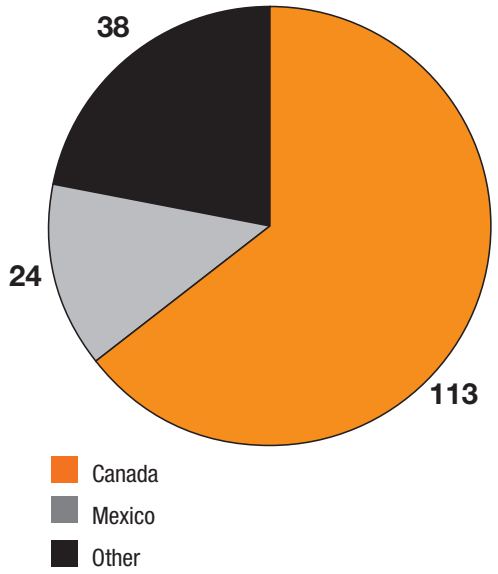
Country	Year						Total:
	2001	2002	2003	2004	2005	2006	
Canada	46	27	38	13	16	12	**152**
Mexico	0	5	11	0	0	1	**17**
China	0	13	0	0	0	0	**13**
Spain	0	0	0	5	0	0	**5**
Bermuda	0	0	0	0	0	5	**5**
Japan	0	1	2	0	0	0	**3**
Thailand	0	0	2	0	0	0	**2**
Dom. Rep.	0	0	1	0	0	0	**1**
Unspecified	1	0	0	0	0	0	**1**
Total:	**47**	**46**	**54**	**18**	**16**	**18**	**199**

Export records during the same period show a similar pattern. Canada accounted for 113 (65%) of the 175 live Tigers leaving the United States for circus or exhibition purposes. Exports to Mexico accounted for another 24 (14%) of the individual Tigers. Exports to South Africa, Japan, the Dominican Republic, Cambodia, China, Italy, Bermuda, Brunei; Malaysia; the UK, and Spain combined to constitute the remaining 38 (21%) of the total Tigers involved (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

Table 6 details exports of Tigers from the United States to other countries for circus/exhibition purposes from 2001–2006; Figure 5 shows the aggregate data in a pie chart.

As noted above, with the exception of the 2006 export of six Tigers to Spain, all of these records listed the origin of the Tigers as being from captive U.S. populations. For some species, in many cases wild-caught animals are falsely misidentified as captive-bred. However, there is no evidence whatsoever that this is the case for Tigers. Furthermore, captive-born Tigers are much more suitable for zoos, circuses, and private collections, and therefore there is no reason to think any wild Tigers are falsely identified as captive-bred in the U.S. trade of exhibition or circus Tigers.

Figure 5. Exhibition/circus Tigers exported from the United States by destination, 2001–2006 (Number of Tigers).



Other includes Spain (6), UK (5), South Africa (5), Cambodia (4), China (4), Japan (3), Thailand (3), Malaysia (2), Italy (2), Brunei (2), Bermuda (1), Dominican Republic (1).

Table 6. Exhibition/circus Tigers exported from the United States by destination, 2001–2006 (Number of Tigers).

Country	Year						Total:
	2001	2002	2003	2004	2005	2006	
Canada	27	25	33	12	16	0	113
Mexico	0	4	11	9	0	0	24
Spain	0	0	0	0	0	6	6
S. Africa	5	0	0	0	0	0	5
UK	0	0	0	0	0	5	5
Cambodia	0	2	2	0	0	0	4
China	0	0	0	4	0	0	4
Japan	0	1	2	0	0	0	3
Thailand	0	0	0	3	0	0	3
Italy	1	0	1	0	0	0	2
Malaysia	0	0	0	0	0	2	2
Brunei	0	0	0	2	0	0	2
Dom. Rep.	0	1	0	0	0	0	1
Bermuda	1	0	0	0	0	0	1
Total:	**34**	**33**	**49**	**30**	**16**	**13**	**175**

Tigers recorded as commercial

From 2001 to 2006, USFWS LEMIS data show seven records (two shipments) of Tiger imports for commercial purposes, all from Thailand, with a total of 16 Tigers (thirteen in 2001 and three in 2004). As with Tigers involved in the previous category, however, these figures should be treated carefully.

For example, it is important to keep in mind that USFWS permit and declaration information should generally be consistent with regard to the source, country of origin, purpose, etc. LEMIS data represent information recorded on the declaration, not necessarily on the permit. So these LEMIS records reflect declarations indicated as commercial, but not necessarily permits issued for commercial purposes. In addition, the purpose code on each declaration is a single data point. It is possible that a shipment can have multiple purposes or species; however, the USFWS declaration form and database allow for only one purpose to be entered for each entire shipment (C. Hoover, USFWS DMA, *in litt.* to D. Williamson, January 2008).

Additionally, as documented above, during the period 2001–2006, the United States exported Tigers to Thailand for circus or traveling exhibition purposes. It is therefore entirely possible that the subsequent LEMIS import records reflect re-export certificates issued by Thailand which indicated a purpose of commercial. In fact, the LEMIS database appeared to show cases where Tigers were exported for purposes originally entered into the system as commercial and then re-imported as circus or exhibition animals, or vice-versa. USFWS is working to correct and clarify such records. It would appear that what may appear on initial examination to involve "commercial" export or import of live Tigers actually involves U.S. captive Tigers leaving the United States temporarily for exhibition or entertainment purposes (movie productions, etc.) and then returning (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008; C. Hoover, USFWS DMA, *in litt.* to D. Williamson, January 2008).

Zoological trade

A third part of the trade in live Tigers from 2001 to 2006 involved Tigers imported or exported for zoological purposes. LEMIS records indicated that such trade is very limited, with only four records (three shipments) involving imports and four records (four shipments) of exports during the period covered by TRAFFIC's analysis. In total, the United States imported one Tiger from Canada in 2002, five Tigers from Malaysia in 2003, and five Tigers from Canada in 2005 for zoological purposes. Of these, the five Tigers from Malaysia were recorded as originating from the wild—these are the only live Tigers from the wild recorded in LEMIS as being imported into the United States in any trade category.[9] The United States exported for zoo purposes two Tigers to Brazil in 2001; five Tigers to New Zealand and six to Thailand in 2002; and one Tiger to Sweden in 2003. All of these Tigers were recorded as coming from the U.S. captive population (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

Other live Tiger trade

Beyond these purposes, LEMIS contained only four records of imports or exports of live Tigers from 2001 to 2006. These included three Tigers imported into the United States from South Africa in 2001 for personal purposes, and in the same year one Tiger imported into the United States from Mexico for breeding purposes. The listed origin of all four cats was the U.S. captive Tiger population, which leads to the assumption that these were Tigers that had been previously exported from the United States in years prior to 2001 and were now returning. The United States also exported two U.S. captive Tigers to the United Arab Emirates in 2004 for breeding purposes, and seven Tigers to Thailand in 2006 for educational purposes (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

Based on all these data, TRAFFIC concluded that although the trade in live Tigers constituted the vast majority of legal imports and exports during the years studied, this trade has very little impact on existing wild Tiger populations. With the exception of the five Tigers imported from Malaysia in 2003 for zoological purposes, this aspect of the international trade almost exclusively involves captive-bred U.S. Tigers periodically leaving and re-entering the United States on a regular basis for circus/exhibition or other purposes.

Legal trade in Tiger parts or derivatives

Along with live Tigers, a limited number of Tiger parts or derivatives were legally imported into or exported from the United States from 2001 to 2006. These fell into two broad categories. One category included specimens or parts imported or, to a very limited degree, exported from the United States for scientific purposes or biomedical research. The other included parts imported or exported for educational, personal, or commercial purposes.

During the period 2001 to 2006, LEMIS records show 12 import records involving imports of unspecified Tiger specimens for scientific purposes, one record of Tiger

9 These Tigers were taken from the wild under a Malaysian program to remove problem animals from areas of human-tiger conflict and to relocate them into a captive breeding program. These five Tigers had been in captivity in Malaysia for some time when they were exported to three U.S. zoos for breeding purposes. (Michael Moore, USFWS, *in litt.* to TRAFFIC North America. November 27, 2007.)

hair imported for the same purpose, and one record of a Tiger specimen imported for biomedical research. Table 7 shows these imports by description, quantity, and country of origin.

There were only three reported scientific exports during the period covered. In 2001, USFWS recorded a legal shipment of two Tiger claws to Canada for scientific purposes, and in 2005 three non-specified Tiger specimens were sent to Singapore. In 2006, the U.S. exported 200g of unspecified Tiger specimen to the Russian Federation. The origin for the first two shipments was recorded as U.S. captive Tigers; the 2006 specimen was recorded as originating in Japan (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

The final component of legal Tiger trade from 2001 to 2006 involved Tiger parts imported into or exported from the United States for educational, personal, or commercial purposes. Imports for educational purposes included a Tiger carcass (presumably stuffed) from Malaysia in 2001, a Tiger claw from Germany 2005, and a trophy from Australia in 2006. Exports included a Tiger trophy from the United States to the UK in 2005 and a Tiger claw to Germany in 2006 (possibly the same claw shown as an import in 2005).

Parts cleared for import for personal purposes included a skull from the UK and a trophy from Canada in 2002 (valued at USD2,449 and USD400, respectively), as well as three skins (two from the UK and one from India) in 2004, and a rug from the UK in 2005. LEMIS records also showed the legal export of a rug to Canada for personal purposes in 2005. Commercially, one rug valued at USD2,995 was imported from the UK in 2001, and a carcass valued at USD1,250 was legally imported from the UK in 2003 (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

It should be noted that USFWS permits for personal imports and exports must certify that the items involved came from pre-Convention sources (i.e., they were certified to have come from Tigers that died before Tigers were listed in the CITES Appendices in 1975). In addition, the imports cleared as commercial involved items certified to be antiques (more than 100 years old), which are specifically exempted from certain clearance and permit requirements, and therefore do not need ESA permits (C. Hoover, USFWS Division of Management Authority, pers. comm. to D. Williamson, January 2008).

Illegal international trade

Along with this limited amount of ongoing legal trade, there is also disturbing evidence of continuing illegal trade. Available evidence suggests, however, that such trade predominantly involves illegal imports for medicinal purposes. As is described below, there is no

Table 7. Scientific and biomedical Tiger imports, 2001–2006

Year	No. of Records	Description	Quantity	Country or Territory of Export
2001	2	Specimen	203	Thailand
	2	Specimen	23	Taiwan
	1	Specimen	32	Bangladesh
	1	Specimen	1	Iran
2002	1	Specimen	9	Cambodia
	1	Specimen	127	Russian Federation
2003	1	Specimen	2	Russian Federation
2004	1	Hair	11	Russian Federation
	1	Specimen	295	Russian Federation
2005	1	Specimen*	2	Singapore*
2006	1	Specimen	30	Thailand
Total:	**13**	**—**	**735**	**—**

* The 2005 import from Singapore involved two undefined Tiger specimens imported for biomedical research, with the country of origin listed as Malaysia. With that exception, the countries or territories exporting these specimens were also recorded as the countries of origin for them.

Source: TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008.

evidence at present that the United States is a source for Tiger parts entering the international market.

The illegal medicinal trade

TRAFFIC's review of USFWS LEMIS data from 2001 to 2006 found more than 250 records of illegal Tiger-related medicinal items being detected and either seized or abandoned entering the United States. These included seizures of more than 5,900 individual units of medicinals containing Tiger parts or derivatives (or products purporting to do so), as well as almost 7,500g and 450 ml of such medicinals recorded by weight or volume.[10] Table 8 shows Tiger-related medicinal seizures from 2001 to 2006.

The table and Figure 6 below show some clear trends. For example, China was the country of export for the overwhelming majority of medicinal shipments confiscated entering the United States from 2001 to 2006, accounting for 163 of the 258 total seizures (63%).

Furthermore, unlike the live Tiger trade, in which most of the trade involved exhibition purposes, LEMIS records show that the overwhelming purposes of medicinal Tiger imports were either for personal or commercial purposes. Of the 258 seizure records, 212 (82%) were listed as involving imports for personal purposes, while 45 (17%) listed commercial purposes as the reason for the import. Only one statistically insignificant seizure involved another purpose—a shipment of 15 unspecified units of Tiger medicinals imported from China for biomedical research in 2003. Also, whereas corporations, companies, or other entities (circuses, film companies, wildlife acts, zoos, etc.) dominated records of importers and exporters in the legal trade, individuals overwhelmingly dominated imports records concerning illegal trade (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

However, available data do not answer significant questions, and further research is required. For example, as Table 8 notes, LEMIS data show the countries of export for illegal shipments of (purported) Tiger medicinals seized. The same database indicates that all of these shipments came from either wild or unknown sources, and that the countries of export are also either listed as the countries of origin for the medicinals, or the origin is listed as unknown. Yet countries of export/origin in the database include nations or territories such as

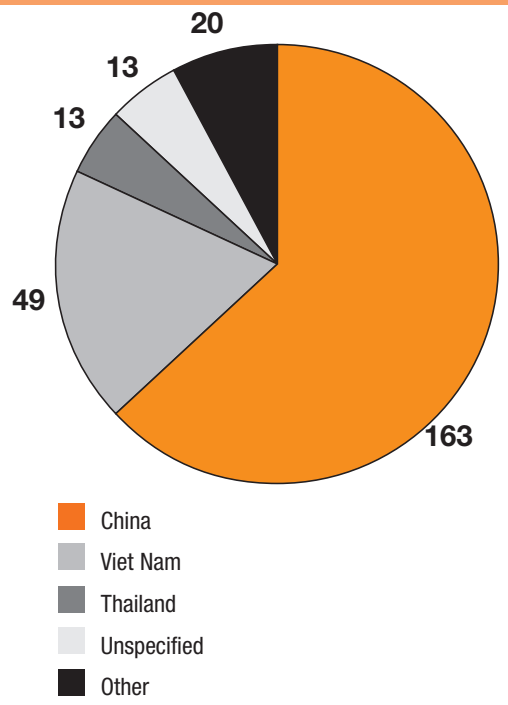
Table 8. Seizures of Tiger-related medicinal imports into the United States, 2001–2006.

Year	No. of Seizures	No. of Units	Exporting Countries or Territories (no. of seizures)
2001	68	1,881 + 12 g	China (59); Viet Nam (2); Thailand (1); Cambodia (1); Malaysia (1); Hong Kong (1); Philippines (1); Unspecified (2)
2002	58	896	China (50); Viet Nam (2); Thailand (2); South Korea (1); Cambodia (1); Hong Kong (1); Unspecified (1)
2003	18	392 + 5,087 g	China (13); Viet Nam (1); South Korea (1); Cambodia (1); Unspecified (2)
2004	11	59 + 450 ml	China (6); Viet Nam (1); Thailand (5); Hong Kong (1); Cambodia (1); Unspecified (2)
2005	43	1,134 + 1,200 g	China (19); Viet Nam (12); Thailand (5); Hong Kong (1); Japan (2); South Korea (1); Unspecified (3)
2006	60	1,583+ 1,200 g	Viet Nam (31); China (16); Laos (5); Unspecified (3); Hungary (1); Taiwan (2); South Korea (1); Japan (1)
Total:	**258**	**5,945 + 7,499 g + 450 ml**	**China (163); Viet Nam (49); Thailand (13); Lao PDR (5); Hong Kong (3); South Korea (4); Japan (3); Taiwan (2); Malaysia (1); Philippines (1); Hungary (1); Unspecified (13)**

Source: TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008.

10 It should be noted that, because of the way seizures are recorded in LEMIS, the number of units indicated is an absolute minimum. A seizure recorded as a single unit could be either one vial of Tiger bone or one box of such vials. For example, TRAFFIC noted one seizure recorded as a single unit that was in fact composed of 11 Tiger plasters. These data should be interpreted accordingly.

Figure 6. Number of seizures of Tiger-related traditional medicine imports into the United States by country or territory, 2001-2006



Other includes Lao PDR (5), Hong Kong (3), South Korea (4), Japan (3), Taiwan (2), Malaysia (1), Philippines (1), Hungary (1).

Japan, South Korea, Hong Kong, and in one case even 11 Tiger plasters imported from Hungary, none of which have wild Tigers (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

These glitches occur because in collecting wildlife trade data, key source and trade information is not likely to accompany illegal goods. Though the country of export/re-export is generally available, country of origin information is not, nor is information on the actual source of the wildlife. Wildlife inspectors therefore begin with a presumption that wildlife is of wild origin unless there is information that suggests another source. Often, if the country of origin is unavailable, that data point in LEMIS is completed with the same information as the country of export. Though this is often a safe assumption, it is obviously problematic when the wildlife in question does not occur in the country of (re-)export (C. Hoover, USFWS DMA, *in litt*. to D. Williamson, January 2008).

For example, previous studies by TRAFFIC and others indicate that a significant proportion of Tiger bone and other products found in China likely originate from wild Tigers in other range States. As Nowell and Xu (2007) noted, in the latter half of the twentieth century China went from being one of the range States with the most Tigers to the range state with the least, because of human population growth, habitat loss and fragmentation, depletion of the Tiger's wild prey base, and intensive hunting from the 1950s to 1977 of Tigers as pests, including the payment of government bounties for skin and bones. The number of wild Tigers in China now is well under 50 (IUCN SSC Cat Specialist Group, 2008). A review of Chinese CITES data also found that the source of big cat products seized in China include not only China itself, but also Myanmar, Nepal, and the Russian Federation among Tiger range States. Although none of the seizures were reported to have originated in India, China is believed to be the destination country for big cats taken in India and Nepal. Because India and Nepal are not traditional consumers of Tiger bone, such bone seized in those countries is likely destined for China (Nowell and Xu, 2007).

Other surveys in the late 1990s, summarized in Nowell (2000), showed that Cambodia, Indonesia, Lao PDR, Myanmar, and Viet Nam were also significant supply markets for live Tigers and Tiger parts, especially bones. Cambodia, Myanmar, and Lao PDR were singled out as countries with very limited local consumption of Tiger parts. Hunting and trade in these countries was believed to be commercially driven, catering to foreign markets primarily in China, Viet Nam, and Thailand.

Therefore, for purposes of this study, it is important to note that while China overwhelmingly dominates the number of LEMIS records showing the country of export of medicinal products derived from Tigers that are seized entering the United States, there is no way to determine the actual source country of the Tiger bone or other derivatives involved. The same is true of the Tiger medicinals from South Korea, Hong Kong, Japan, or any of the other countries or territories listed. This appears to be a fairly fluid cross-border trade.

A second unanswered question involves the commercial value of the trade in Tiger medicinals. An accurate calculation proved impossible to obtain for two reasons. For one, calculating the overall value of the illegal import trade of Tiger medicinals cannot be done because USFWS records show only products that have been detected and seized, not those which successfully enter the United States. Poaching and trade in Tiger products is covert, and like the illegal drug trade, seizures may represent only a fraction of what the total trade may be (Jackson, P., in Nowell, 2000). As is explained below, some of the methods being used to smuggle wildlife parts such as Tiger medicinals internationally (including into the United States) make the trade very hard to detect, and its full scope remains unknown.

For another, LEMIS data record the declared value of wildlife shipments cleared or seized. However, a significant proportion of the LEMIS records show no declared value. For example, in 2001 the 1,881 units and 12g of Tiger medicinals seized by USFWS had an aggregate recorded value of USD2,064. Yet that figure included financial information on only 57 of the 68 seizures. Eleven others, making up 772 of the total units of medicinals seized, had no declared value, including a single seizure of 680 unspecified units identified as Tiger medicinals recorded as being imported for commercial purposes. Similarly, in 2003, only 15 of the 18 recorded seizures included monetary estimates of the value of the products. Missing from these data was any estimate of the value of the 5,087g of Tiger medicinals seized in that year (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

This inconsistency in the data reflects the fact that declared value is generally not a data point provided by the importer or exporter of illegal wildlife. Therefore, if a value is assigned, it is generally assigned by the enforcement officer involved in the seizure. Such value may be based on documents accompanying the wildlife, past experience with these products, or some other basis. Further, current USFWS practice is to assign zero value to wildlife that is prohibited from sale in the United States, explaining why many of the records showed no value (C. Hoover, USFWS DMA, *in litt.* to D. Williamson, January 2008).

A third question that remains unresolved is whether seized imports of medicinal products purporting to contain Tiger bone or other derivatives are real or fake. Although it is not a major focus of this report, it should be noted that numerous previous studies have shown that a significant percentage of products advertised as Tiger bone or other products in internal domestic markets in Asia and international trade are either fake or so diluted as to be virtually undetectable (see: Gaski and Johnson, 1994; Mills and Jackson, 1994; Mills, 1997; Gaski, 1998; Nguyen *et al.*, 1999; Petrar, 1999; Sellar *et al.*, 1999; Hemley and Mills, 1999; Nowell, 2000; Nowell and Xu, 2007). For purposes herein, it should be made clear that, under the RTCA amendments of 1998, import, sale, or trade of medicinals or other products purported to contain Tiger products is illegal whether or not actual Tiger bone or other derivatives are present.

A fourth question involves whether the Tiger medicinals being seized are intended for commercial or personal purposes. LEMIS records that show one or the other of these purposes in the seizure data reflect the judgment of the law enforcement personnel involved in each individual case. The data recorded in LEMIS that reflect this input may very well be accurate. However, TRAFFIC noted that in some cases, seizures of substantial amounts of Tiger medicinals were recorded as being imported for personal purposes, while in other cases very small amounts (sometimes one or two units of insignificant monetary value) were recorded as being imported for commercial purposes. Because logic would seem to dictate the opposite, that large shipments of multiple units would more likely be for commercial purposes and small shipments for personal use, TRAFFIC concluded that it was impossible to determine definitively how many seizures represented commercial versus personal destinations in the United States (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

A fifth and final question regards the emergence of Viet Nam as a significant source of seized Tiger medicinals in 2005 and 2006. As was shown in Table 8, whereas the period from 2001 to 2004 saw a combined total of only six seizures exported from Viet Nam, in 2005 there were 12 seizures, and in 2006 31—more than half of the total for that year. Although there is not enough data to determine whether this represents a short term anomaly or an emerging shift in the illegal trade stream (or why it may be occurring), it bears watching by law enforcement agencies and those focused on Tiger conservation (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

Illegal imports of non-medicinal parts and derivatives

Beyond medicinals, LEMIS data show 28 seizure records[11] of other Tiger parts and derivatives, involving 51 individual items. The majority of these records (15) show the seizure of Tiger claws or teeth; other items included rugs, skin pieces, trim (garment or decorative), jewelry, specimens, a trophy, a Tiger penis, and one unspecified shipment. Table 9 details the items seized, by year.

Unlike the seizure of medicinals (or purported medicinals), no single country or territory stands out in the data as a primary source of these parts or derivatives. For example, claws and teeth were seized entering the United States from Malaysia, Taiwan, Laos, Nigeria, Cambodia, India, and Viet Nam. Rug seizures included shipments from France, the UK, and Argentina (two seizures, including a rug valued at USD100,000 in 2002). Tiger skins or skin pieces were seized entering the United States from Canada and China. Other seizures included an item of jewelry from India in 2003; a trophy from Singapore in 2004; 2 unidentified specimens from

11 As with imports of live Tigers, seizure records may differ from the number of shipments seized. For example, if seizures of claws and teeth from the same sources (in Malaysia and Taiwan in 2001, and Nigeria in 2002) are combined, there may only have been 26 seizures during the period examined, 12 (50%) of which involved claws or teeth.

Table 9. Import seizures of non-medicinal Tiger parts/derivatives, 2001–2006

Part/Derivative	Year						Total:
	2001	2002	2003	2004	2005	2006	
Claws	7	1	4	0	0	3	**15**
Teeth	11	0	1	4	0	3	**19**
Rugs	1	1	1	0	1	0	**4**
Skins/Pieces*	1	0	0	0	0	0	**1**
Trim	0	5	0	0	1	0	**6**
Jewelry	0	0	1	0	0	0	**1**
Trophies	0	0	0	1	0	0	**1**
Specimens	0	0	0	0	2	0	**2**
Genitalia	0	0	0	0	0	1	**1**
Unspecified	1	0	0	0	0	0	**1**
Total:	**21**	**7**	**7**	**5**	**4**	**7**	**51**

Source: TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008.

Australia in 2005, a Tiger penis from Viet Nam in 2006; and an unspecified import from China in 2001. However, TRAFFIC did note that, as with medicinals, Viet Nam emerged as a source of such parts only in 2006, at the close of the period examined (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

Illegal exports of Tiger parts from the United States

Missing from the LEMIS data is any evidence that the U.S. captive Tiger population is playing a role in this illicit international trade. While there have been a few cases within the United States of individuals charged with selling Tigers or parts (primarily skins and meat) from U.S. Tigers contrary to the ESA and the Lacey Act, TRAFFIC noted that LEMIS data did not show a single seizure of Tiger parts being illegally exported during the period 2001 to 2006 (TRAFFIC analysis of USFWS LEMIS data, February 2007 and January 2008).

This might be explained by the fact that the United States gives more scrutiny to people and goods entering the United States than it does to people and goods leaving the country. However, TRAFFIC noted a couple of factors that would seem to indicate that the U.S. captive Tiger population is not a real factor in the international market for Tiger parts. For one thing, although it is possible that the absence of seizure records of exports could mean that they are simply not being caught, previous TRAFFIC investigations into other CITES-listed species found that the United States was in fact catching some illegal exports of bear parts, caviar from North American sturgeon and paddlefish, and elephant ivory, even though these items can also be transported in small quantities by individual travelers (Williamson 2002; Williamson 2003; Williamson 2004). How it is that these items are detected, while there are no records of seizures of Tiger parts, may indicate that the United States really is an importer rather than a supplier of Tiger bone for medicinal purposes.

It is also important to note that China, which has become more aggressive in recent years in combating illegal trade in Tiger parts, has not indicated the United States as a source country for Tiger parts seized. As was noted above, China reported to CITES in late 2006 that major source countries for illegally imported Tiger parts were other Asian nations, not the United States. There is no evidence of other Asian or non-Asian consumer nations reporting quantities of Tiger bone or other parts coming from the United States. If the United States is not detecting Tiger parts leaving the country, and China and other nations involved in manufacturing and consuming Tiger medicinals and other parts are not detecting shipments coming in from the United States, a plausible conclusion is that the U.S. captive Tiger population is not at present a real factor in the international trade. However, the possibility that isolated incidences of such trade may have occurred undetected must be acknowledged.

Illegal domestic trade

As LEMIS seizure records of Tiger medicinals (or purported medicinals) entering the United States show, there is no doubt that the United States remains a market for illegal Tiger products. Several previous TRAFFIC studies have also shown this. For example, in a study published in 1998, 18% of TCM users surveyed in the United States indicated having used Tiger bone either sometimes or rarely (Lee *et al.*, 1998). A 2000 study on the Tiger trade showed the United States as a non-range consumer state for Tiger bone pills, plasters, wine, and gel (Nowell, 2000). And a 2004 study of TCM markets in the cities of San Francisco and New York showed that, while availability was in decline, medicines claiming to contain Tiger bone could still be found in TCM shops in both cities (Henry, 2004).

There have also been troubling examples of U.S. captive Tigers being killed or traded for domestic purposes. For example, an 18-month, multi-state, covert investigation known as "Operation Snow Plow" led to the prosecution and conviction from 2001 to 2003 of 16 individuals and one business for the buying, selling, and slaughter of exotic cats, including 19 Tigers. Subjects from 13 states identified in the investigation included exotic animal exhibitors and dealers, taxidermists, trophy collectors, a game and seafood company, and an exotic meat dealer in Illinois who bought and sold Tiger meat mislabeled as lion. Most of the endangered cats originated from USDA-licensed exhibitors and dealers who unlawfully sold the cats and then provided documentation that the transactions were "donations". Parts from the Tigers identified in the case included meat, skulls, gallbladders, and numerous skins sold to trophy collectors for display (Federal Wildlife Officers Association [FWOA], 2003).

In 2005, a husband and wife were convicted and sentenced to 18 and 15 months in prison, respectively, for false labeling of endangered and threatened animals, including Tigers. The couple had advertised their interest in buying, trading, and selling live exotic wildlife, including Tigers, through the Internet and publications. The investigation identified sources and customers in 19 states, including the above-mentioned Tiger found in an apartment in the Bronx, New York. At the same time, the couple was soliciting donations, memberships, and other sponsorships for the care of the animals in an animal sanctuary, neglecting to disclose the regular purchase and sale of the animals as part of a commercial enterprise (U.S. Department of Justice [USDOJ], 2006a; Big Cat Rescue, 2005; FWOA, 2004).

And, in 2006, an individual was sentenced to 25 months in prison and three years supervised release for selling and offering for sale in interstate commerce more than USD200,000 worth of endangered species, including Tigers. The investigation that resulted in the arrest originated from an unsolicited e-mail to a USFWS officer offering "cat skins" for sale. The agent was able to purchase Tiger, Snow Leopard, and Leopard skins from the defendant (USDOJ, 2006b).

These appear to be fairly isolated cases, rather than indicators of widespread trade in parts from U.S. Tigers. In addition, there is no indication that these activities involve the export of Tiger parts from the United States. In each case, the parts in trade appeared to involve trophy items such as skins and skulls, or meat for consumption, rather than Tiger bone for the medicinal trade. Available evidence suggests that the U.S. market for medicinals derived (or purported to derive) from Tiger bone continue to be supplied from outside the United States. It should not be implied, however, that no illegal trade involving captive U.S. Tigers may be occurring. It cannot be ruled out that there is some activity that has simply not yet been detected. Nevertheless, the fact that there have been no export seizures in recent years, and no evidence of a consistent pattern of illegal trade in Tiger parts, strongly suggests that any such undetected activity is likely to be fairly isolated in nature.

However, as TRAFFIC's visit to Florida demonstrated, it should also be noted that the prevalence of unwanted Tigers in some U.S. states, the expense involved for owners in keeping these animals alive, and the fact that neither the federal government nor states generally monitor what happens to these animals and their parts after they die means that there is a potential supply of Tiger parts being generated in the country. As discussed in the next section, the relatively low price of live Tigers in some parts of the United States, combined with high prices for Tiger parts in Asia, may come to provide an incentive to illegally export U.S. Tiger parts. Gaps in the U.S. regulatory and management system for captive Tigers, therefore, have possible implications for illegal trade and efforts to conserve the world's remaining wild Tiger populations.

Implications for wild Tiger conservation and CITES

The current management system governing the U.S. captive Tiger population is a cause for concern, and the United States needs to take further actions to tighten controls. At present, available evidence suggests that the contribution of the U.S. captive Tiger population to the illegal international trade in Tiger parts remains a potential issue rather than a current crisis. Recent years have seen no documented cases of parts from U.S. Tigers entering international trade (seizures of exports, arrests or law enforcement cases related to international smuggling

of U.S. Tiger parts, etc.). Left unaddressed, however, continuing lax management of the U.S. Tiger population could have global trade implications, as U.S. Tigers entering the illegal international market have the potential to act as a drip-feed, keeping demand alive and adding to pressure on wild Tigers. Increasing illegal supply into markets for Tiger products will lead to the resumption of a demand that many governments, traditional medicine practitioners, conservation organizations and others have worked decades to suppress in the interest of saving the world's remaining wild Tigers.

PHOTO © WWF-CANON / EDWARD PA

Wild Tiger populations are threatened by demand for their skins and for their parts, many of which are used in traditional Chinese medicines such as this Tiger bone plaster. These plasters are still being seized coming into the United States, even though they are completely illegal.

The possible role of captive Tiger populations in the international Tiger trade is an issue receiving considerable and justified attention among the Parties to CITES. Most immediately, there has been much discussion about the possible implications of proposals in China to allow domestic trade in medicines made from captive-bred Tigers.

There are believed to be more than 5,000 Tigers on China's commercial Tiger farms, where the cats are being bred intensively and the population may be growing by as many as 800 Tigers per year (CITES, 2006; Nowell, 2007). The government of China implemented a domestic Tiger trade ban in 1993; this ban is worthy of praise, and has been a major positive factor in the continued existence of Tigers in the wild. Tiger farm owners, however, have asked the Chinese government to allow the body parts of these farmed Tigers to enter into trade. They argue that the current ban on all trade in Tiger products has failed to conserve wild Tigers and protect public health. In 2006, Chinese Tiger farm operators and advocates suggested that a supply from 100,000 farmed Tigers in the next 10 to 15 years could produce up to 10,000 Tiger carcasses per year. The Tiger farm owners and their supporters believe that China's internal demand could be met by Tiger bone from these farmed animals (National Geographic, 2006).

Rebutting that argument, conservationists and other opponents of these requests (including many in the TCM community) point out that poaching of wild Tigers would almost certainly continue even if such an alternative supply of Tiger parts became available, and in fact would likely increase. There is already an alternative source of supply, in that an indeterminate but likely significant proportion of products labeled as containing Tiger bone at present may be fake. Yet clearly poaching of wild Tigers continues to occur. Many consumers prefer parts of wild Tigers, which they believe to be more potent. Also, given that raising a farmed Tiger to maturity is 150–200 times as expensive as poaching a wild Tiger, poaching will continue to be the more attractive and profitable alternative in supplying any demand for Tigers and their parts (R. Damania, World Bank, *in litt*. to L. Henry, January 2008). It is therefore too risky given the precarious state of remaining wild populations to take any actions that may expand the market (Nowell and Xu, 2007).

Similar arguments could be made as to how the presence of a large captive Tiger population in the United States might affect, and in turn be affected by, market conditions should China decide to re-open a domestic market for Tiger parts. If demand for Tiger parts rises in Asia, or indeed internationally, because China reopens its domestic market, two scenarios can be surmised. In the first, it could be argued that the ready availability of Tiger parts from Chinese Tiger farms might not stimulate economic incentives to try to exploit U.S. captive Tiger populations for international trade purposes, or even for the U.S. domestic market. With a ready, legal supply of Tiger parts available domestically, it may not prove economically attractive to exploit and smuggle Tiger parts from the United States to Asia or other markets.

In a second scenario, the stimulation of significant further demand in Asia could raise the price of Tiger parts high enough that seeking parts from Tigers in the United States or elsewhere becomes attractive. Given the size of China's population, domestic Tiger farms may not be able to meet demand. Furthermore, given that those seeking the Tiger parts would not have to pay to raise, feed, and care for the cats themselves—an expensive proposition—parts of Tigers from surplus captive populations such as those present in the United States could become cheaper to try to obtain.

Under either scenario it appears likely that the greatest consequences of increased demand or consumption of Tiger parts in Asia or elsewhere would fall on remaining wild Tiger populations whose numbers are too low to sustain even more poaching; wild Tigers cannot take the risk of any reopening of trade. Whether or not demand for Tiger parts rises enough that the U.S. population becomes a target for those who might seek to exploit it for illegal international trade, poaching of wild Tigers today remains the cheapest, and therefore most profitable, source of bone, skins, meat, and other products for the market. The key for the survival and possible recovery of remaining wild Tiger populations would therefore seem to lie in continuing efforts to dampen demand for Tiger parts, reduce human/Tiger conflicts, and enhance habitat conservation and other *in situ* conservation efforts.

There is, however, one scenario of particular concern. That would be that the continuing decline of remaining wild Tiger populations makes the U.S. captive Tiger population an especially attractive target for those involved in illegal trade, particularly given the large number of unwanted U.S. Tigers described earlier in the report.

It is arguable when the point may come—or if, in fact, it has already been reached—that the price is right to make the killing of U.S. captive Tigers and selling their parts on the international market economically attractive. Evidence of ongoing sales of Tiger tonics and other products in China, potential increased demand as affluence in China rises, and the growth of production, trade and consumption in other markets such as Viet Nam are ominous signs.

According to the IUCN/SSC Cat Specialist Group, there may be as few as 2,500 breeding Tigers left in the wild and, notwithstanding some locally successful conservation efforts, we are not seeing major signs of recovery. While parts of wild Tigers are likely always to be preferred in traditional medicines, and poaching remains a cheaper option to farming Tigers or seeking those in captive populations, the situation could change. The relationship between poaching effort and risk may shift, for example, should the transaction costs of poaching increase if wild Tiger populations decrease further and enforcement efforts rally around the few remaining Tigers in the wild.

A point may be reached—soon if not already—when a criminally minded individual may consider the opportunity costs of selling parts from U.S. captive Tigers worth the risks of detection, capture, and prosecution. It cannot be explained why this phenomenon has not already been seen. It is possible that it is not yet economically viable. It is possible that the risks of detection and federal prosecution under statutes such as the ESA, *Lacey Act*, RTCA, and other statutes provide an effective deterrent. It is possible that, as TRAFFIC heard anecdotally from multiple sources, most U.S. Tigers in captivity remain held by people who love the cats and would not contemplate such activity. It could be some combination of these factors, or others not contemplated here.

Whatever the reasons, it must be made clear that any use of U.S Tigers to feed international demand is illegal, and therefore would also be an intermittent, unreliable supply. This population should therefore not be looked to as any form of viable alternative to feed international or domestic demand for Tiger parts. Additionally, it seems highly unlikely that the United States will reverse its historic position and legalize any trade in parts and derivatives from U.S. captive Tigers. This is clear from the United State's leadership in June 2007 at CITES CoP14 to insert strong language on domestic trade controls and against intensive breeding of and trade from captive Tiger populations, which resulted in CITES *Decisions 14.66* and *14.69* (CITES, 2007f).

PHOTO COURTESY SYBILLE KLENZENDORF

Captive Tigers on a Tiger "farm" in China. China now has the largest population of captive Tigers in the world, surpassing that of the United States.

Regardless, there is the concern that, given the risks, gaps in existing regulations, monitoring, and reporting on U.S. captive Tiger populations could become very problematic. The United States at present cannot even account accurately for how many Tigers are in the country, much less what happens to the parts of Tigers that might either die of natural causes or be killed.

As noted, this issue of the potential impact of the U.S. Tiger population in the international marketplace, and of the international marketplace on the U.S. Tiger population, remains speculative. That said, the United States has two options. One is to maintain the status quo and leave the present regulatory system in place. Such a course might seem attractive given the uncertain nature of the trade threat and the paucity of financial and other resources for enhanced enforcement measures at both the federal and state levels.

The second is for the United States to take a proactive position. This second course would require addressing the disconnect between federal laws which regulate international and interstate trade, and state laws which largely focus on issues of animal care, welfare, and human safety. It would involve more closely monitoring the breeding, keeping, and sale or disposition of live Tigers, and the fate of Tiger parts post mortem. It would entail further enhancing U.S. efforts to educate the public both in the United States and abroad to reduce demand for Tiger-based medicinals or other products. It would mean further enhancing law enforcement efforts to combat illegal trade. And, finally, it would necessitate reaching out to representatives of conservation NGOs, zoos, responsible animal sanctuaries, circuses, and others involved with these cats to create a framework, both legal and voluntary, to better manage and monitor U.S. Tigers and prevent their entry into illegal trade.

The second course seems wiser. Although evidence of a direct trade threat regarding the U.S. Tiger population may appear prospective, there is no denying that wild Tiger populations continue to suffer losses. Absent an end to market demand for Tiger parts or derivatives—not only in Asia but in North America and other markets as well—continued dwindling of wild Tiger populations can only increase incentives for those involved in illegal trade to look at captive Tiger populations such as the one extant in the United States. While any impact of U.S. Tigers in illegal trade on wild populations remains speculative, and no one can say for certain what that impact would be, TRAFFIC maintains that it would most likely be negative, and that wild tiger populations are at such a critical juncture that such risks simply cannot be taken. As one of the leading voices among CITES Parties for strong, comprehensive measures to reduce threats to Tigers in the wild and promote their conservation and recovery, the United States has an obligation to put its own house in order on the subject.

Therefore, the United States must take a proactive position on the issue of shutting down avenues for illegal Tiger trade domestically as it has internationally. There are specific actions the United States should take now to insulate the U.S. captive Tiger population against the potential threat of illegal international trade, and to further establish itself as a leader in international Tiger conservation. To that end, TRAFFIC presents the following conclusions and recommendations.

Conclusions and Recommendations

Conclusions

- Despite some progress in conservation efforts, the number of Tigers remaining in the wild has continued to dwindle in recent years, from an estimated 5,000-7,000 in the late 1990s to as few as 2,500 mature breeding adults currently. Expanding human populations, habitat loss and degradation, and depletion of the prey base all pose ongoing threats to the survival of wild Tigers in Asia. Especially dire, however, is the threat posed by commercial poaching and trade for medicinals and other parts and derivatives used for TCM, clothing, and ornamentation.
- All Tiger subspecies are listed in Appendix I of CITES; commercial international trade in Tigers or their parts or derivatives is prohibited. Enforcement of CITES, however, is the responsibility of member Parties, and the record of compliance with CITES Decisions and Resolutions remains uneven in Tiger range States.
- Markets continue to exist in Asia and elsewhere for a variety of Tiger products and derivatives, including bone and bone derivatives, tonics, meat, skins, and other trophy or souvenir items. While most genuine Tiger products likely come from the poaching of wild cats at present, TRAFFIC and others are concerned about the potential impact of China's proposal to re-open a domestic market for Tiger derivatives from commercial Tiger farms. With the emergence of these farms, it is believed that China now claims the world's largest captive Tiger population. Re-opening of any legal trade in Tiger parts carries potential implications not only for wild Tigers but also for captive Tigers held in other countries.
- With a rough estimate of some 5,000 Tigers in captivity, the United States now likely ranks second behind China as the country with the single largest Tiger population. Although the United States has no commercial Tiger farms, all of these cats are held in captivity. Unfortunately, U.S. laws and regulations governing the keeping of these Tigers are not currently adequate to foreclose the possibility that parts or derivatives from these animals could enter illegal trade.
- The United States has a strong legal framework at the federal level governing international trade in Tigers or their parts through the ESA, the Lacey Act, and the Criminal Code. The RTCA, as amended in 1998, further prohibits any domestic sale of Tiger parts, as well as the sale of any products labeled or advertised to contain Tiger parts.
- Through the AWA, the CWSA, and the USFWS registration and permit system for captive-bred wildlife, the United States also has a federal legal framework governing the interstate movement of captive Tigers, rules for the sale, trade, or exhibition of live Tigers, and conditions for their confinement. All of these laws and regulations, however, have exceptions or exemptions that mean, in practical terms, that the majority of private owners of Tigers in the United States need to simply keep records of Tigers held. While such records must be made available upon request or inspection, federal agencies charged with implementing these laws and regulations do not have a mandate to maintain a current inventory of how many Tigers may be in the country, where they are, who possesses them, when they die, or how they are disposed of.
- At the state level, laws and regulations governing the keeping of Tigers in private possession vary widely. As of 2007, 26 states have laws banning the possession of Tigers in private collections, 16 states allow for the keeping of Tigers by individuals but require a state permit or registration, and nine states have no laws on the subject. Furthermore, requirements that owners of captive Tigers register or report their cats to state authorities are inconsistent; a number of states have either no reporting requirements or have laws and regulations that do not account for all Tigers present.
- Given that the vast majority of U.S. captive Tigers reside in private hands (individual or other), and that many of these cats reside in states that do not have laws or regulations requiring close monitoring or scrutiny, it proved impossible to account comprehensively for all captive Tigers in the country. Furthermore, there is no comprehensive legislative or regulatory system in existence at the federal or state level to document how many Tigers are being bred or born each year, how many may die (naturally or otherwise), or what happens to Tigers or their parts when the animals do perish.
- This finding is consistent among all of the primary U.S. captive Tiger populations—AZA facilities, USDA-regulated Tigers, sanctuaries and refuges, and individual collections or pets. In some cases, even these categories can be deceptive. Depending on the activities of the Tiger owners, sanctuaries or refuges may be USDA-regulated, yet in some cases have actively engaged in the breeding and/or selling of Tigers or their parts, legally or illegally. As the case study regarding Florida also showed, in some jurisdictions private possession of Tigers is

illegal except for commercial purposes.

- There are no national statistics available to document how many Tigers may die annually in the United States. Because so many Tigers are unregulated, life spans vary widely between different populations. Tigers in commercial operations may regularly cross state borders or be moved between facilities, and some Tigers may be disposed of because they are no longer economically viable or owners simply do not want them, determining an accurate rate of annual national mortality is for practical reasons impossible. When Tigers do die, potential disposal costs vary, ranging from practically nothing if the owner simply buries the cat privately, to approximately USD500 for cremation, to potentially much more if the animal is either buried in a special cemetery or mounted.
- There thus exists a potential supply of Tiger parts being generated within the United States that could reach illegal markets. To date, there is no evidence that parts from such Tigers are entering illegal international trade. Available evidence further suggests that the U.S. domestic market for Tiger parts is being fed from Asia—and China in particular—and consists mostly of medicinal products, be they real or fake.
- There have been cases of U.S. Tigers in illegal domestic trade, but these have been fairly rare and involved primarily parts such as skins and meat rather than Tiger bone for medicinal purposes.
- There are also records of ongoing legal imports and exports of Tigers into and out of the United States. The vast majority of such trade, however, involves live captive-bred U.S. Tigers leaving and subsequently re-entering the country for exhibition (circus, etc.), entertainment, zoological, educational, or breeding purposes.
- As noted above, USFWS data show an ongoing problem with the attempted smuggling of medicinal products (or purported products) derived from Tiger bone into the United States. It proved difficult to determine whether such shipments were commercial or personal in nature, but there clearly remains a market for illicit Tiger products.
- However, the fact that state laws and regulations governing U.S. captive Tigers focus on the dangerous nature of live animals and their humane treatment, rather than their potential as a source of parts for trade, means that not enough attention is being paid to this latter issue. Federal laws and regulations are stronger, yet the exceptions and exemptions within them mean that the agencies tasked with implementing their requirements also do not know where captive U.S. Tigers actually reside.
- Furthermore, TRAFFIC's research for this project indicates that there are potentially hundreds of mature unwanted Tigers in private possession or captive U.S. facilities in any given year.
- Should demand for Tiger parts rise to a level where the U.S. captive Tiger population becomes a serious target for individuals involved in the parts trade, the potential implications for conservation of remaining wild Tiger populations could be grave. Preventing such an outcome needs to be raised as a priority, including the following steps.

Recommendations

TRAFFIC recommends that the United States take steps on the legal, regulatory, oversight, educational, and law enforcement fronts to better track the U.S. captive Tiger population and ensure that these animals or their parts cannot enter illegal trade. The specific, directed recommendations below outline ways in which this could be undertaken.

TRAFFIC's first set of recommendations applies primarily to actions needed at the federal and, especially, state levels to improve the monitoring and oversight of Tigers in the United States. State and federal agencies tasked with regulating these animals need to better track their whereabouts, reproduction, and ultimate disposition; NGOs may be able to assist in this effort. Specifically:

- At the federal level, exceptions to rules that exempt certain categories of captive U.S. Tigers from regulation need to be rescinded. USFWS should issue new regulations removing the exemption for "generic" or inter-subspecific crossed Tigers under the agency's Captive-Bred Wildlife Registration system. As this report shows, it is believed that most Tigers in the United States are generic and thus exempt from the CBW registration system. Rescinding the exemption would require that many more persons and facilities holding captive Tigers would have to report annually their year-end inventory of Tigers and activities conducted with the cats, thereby exponentially adding to current knowledge of the number, whereabouts, and uses of the U.S. captive Tiger population.
- USDA, through the APHIS Animal Care program, should also require that all persons or facilities holding USDA licenses for exhibition or breeding/dealing in Tigers report annually on the number of Tigers held, births, mortality, and transfer or sale (including both "in house" transfers from one facility to another owned or managed by the same person or entity, and the name and location of outside buyers/recipients). This information should be kept in a distinct database, made available for public review.
- Furthermore, all U.S. states that allow private citizens

to keep captive Tigers must enact laws or regulations that require a comprehensive accounting of the number and location of all captive Tigers in their jurisdictions, whether they are pets, used for commercial or exhibition purposes, sanctuary animals, or other. Record-keeping at a minimum should include information on the number of Tigers, their locations, owners, births, and deaths. State laws should also clearly ban any breeding of Tigers in facilities that are not USDA-licensed and registered under the USFWS CBW system (as amended above to include all Tigers, not just those that can be proved to be pure-bred).

- Such record-keeping must account not only for live Tigers, but also for the disposal of Tigers and their parts when they die. Agencies tasked with regulating U.S Tigers (federal or state) should require that all Tiger deaths be immediately reported, with a further requirement that the carcasses be disposed of through prompt cremation by a licensed facility, with documentation of the incineration provided to the regulatory body. In that way, state and/or federal authorities would have a mechanism to ensure that the Tigers' parts do not disappear into illicit trade.
- State and/or federal agencies tasked with regulating Tigers should further require that all Tigers in the United States be implanted with microchips containing information on the animal's license or permit number, age, sex, and other identifying information. A hair sample also needs to be provided from every Tiger as a reference should DNA analysis need to be performed on the animal, its carcass, or subsequent parts and derivatives. Furthermore, because each Tiger has unique markings, Tiger owners should be required to provide a digital picture every year or two to confirm each Tiger's identity visually. These pictures could be compiled into a database kept by regulatory authorities to ensure that they have a comprehensive inventory of Tigers in each state. Regulatory authorities should maintain these photos and DNA reference samples securely until a Tiger's death and confirmed proper disposal. This will deter misuse of microchips and laundering of parts. Any Tigers found without such proof of legality would be confiscated, with the owners facing criminal prosecution. When the Tiger dies, owners should be required to notify regulatory authorities, who would collect the chips upon receiving proof that the animal and its parts had been properly and permanently disposed of.
- States should also require that all facilities operating as Tiger "sanctuaries" adhere to strict criteria such as bans on breeding, sale, or trade in the animals. Every state at a minimum should adopt the USFWS 2007 definition of what constitutes an accredited sanctuary, as some of the most prominent cases of illegal trade in Tiger parts in the United States in recent years originated from and among facilities that were calling themselves sanctuaries but were in fact breeding, dealing or trading Tigers.
- States should also consider adopting laws or regulations that establish a system of "reciprocity". Under such a system, states would enact rules that require that any Tigers imported into their jurisdictions be micro-chipped and registered as suggested above; Tigers outside of the system would not be allowed. For example, consider a hypothetical case of transferring a Tiger from State 'A' to State 'B'. State 'A' has not adopted the above protocols, but State 'B' has. In that case, State 'B' would refuse to allow for the importation of any Tigers from State 'A'.
- As an immediate interim measure, private stakeholders in Tiger conservation such as zoos, sanctuaries, circuses, and others could establish a voluntary system to inventory, regulate, and accredit holders of captive Tigers (and possibly other big cats) according to the principals outlined above. Formal legal or regulatory changes at the federal or state levels to achieve these goals may take time; responsible private entities may be able to move more quickly.
- NGOs could further assist this effort by offering to help fund and/or manage a U.S. Tiger database that keeps track of U.S. captive Tigers more broadly. Records in such a database could include each animal's license or permit number, microchip identification code, age, sex, owner, and location. The database could also include a digital photographic library of the cats, again to ensure that microchips are not transferred between Tigers. While this may seem a daunting task, the fact that there are only an estimated 5,000 Tigers in the United States means that it should be manageable.

On the educational front, TRAFFIC recommends that:

- U.S. federal and state government agencies should continue and enhance public awareness programs to further reduce the demand and use of Tiger parts in traditional Asian medicines both in the United States and abroad. Previous initiatives have shown that concerted efforts to reach out to the traditional Chinese medicine (TCM) community have been effective in reducing the use of endangered wildlife in traditional medicine. NGOs, facilities accredited with the AZA, and others interested in Tiger conservation should also be encouraged to participate in and support such initiatives.

On the law enforcement front, TRAFFIC recommends that:

- State and federal law enforcement should be provided more resources to conduct surveys and undercover operations of TCM shops in the United States. Just as TRAFFIC has done repeatedly in discovering ongoing availability of medicines either containing or purporting to contain Tiger parts in markets in various U.S. locations, law enforcement should be encouraged to conduct similar operations. The difference would be that while TRAFFIC can survey and document the availability, law enforcement has the ability to confiscate the products and prosecute the offenders, thereby supplementing public awareness initiatives with real enforcement action (and also thereby stimulating compliance).
- Funding for the USFWS wildlife inspection program and related activities by U.S. Customs and Border Protection (CBP) needs to increase. Additional funding is also needed to enhance special operations and undercover investigations in the United States to identify and eliminate potential markets for Tiger parts in the United States and abroad. The fact that USFWS and CBP inspectors have in recent years continued to detect and seize illegal imports of products, primarily medicinals, purported to contain Tiger bone in quantities that could indicate commercial activity shows that there remains some level of demand for these products in the United States. Should such demand increase, or should China stimulate further demand by re-opening its domestic market for Tiger bone from farmed sources, U.S. law enforcement will need to be increasingly vigilant to keep the United States out of the trade as either a consumer or a source for Tiger parts.

REFERENCES

APHIS (2003). Animal exhibitors. APHIS Factsheet, Riverdale, Maryland, July 2003. Available at http://www.aphis.usda.ac.

APHIS (2005). The Animal Care Program and the U.S. Department of Agriculture's authority under the *Animal Welfare Act*: Basic questions and answers. APHIS Factsheet, Riverdale, Maryland, July 2005. Available at http://www.aphis.usda.ac.

APHIS (2007a). Licensing and registration under the *Animal Welfare Act*: Guidelines for dealers, transporters, and researchers. www.aphis.usda.gov/lpa/pubs/awalicreg.html. Viewed April 20, 2007.

APHIS (2007b). www.aphis.usda.gov/animal_welfare/efoia/index.shtml.

API (2007a). Captive feline incidents. www.api4animals.org/popups/a3b_captive_feline_incidents.php. Viewed February 7, 2007.

API (2007b). State laws regulating big exotic cats. Unpublished document, provided by Nicole Paquette, API, *in litt.* to TRAFFIC North America, January 19, 2007.

API (2007c). Agencies regulating private possession of exotic animals covered under existing law. Unpublished document, provided by Nicole Paquette, API, *in litt.* to TRAFFIC North America, January 19, 2007.

API (2007d). Ordinances regulating private possession of exotic animals. www.api4animals.org/b4a2_exotic_animals_ords.php. Viewed January 19, 2007.

ASA (2007). Sanctuary criteria. www.asaanimalsanctuaries.org/Criteria/criteria.htm. Viewed June 25, 2007.

AZA (2007a). AZA accredited zoos and aquariums. www.aza.org/Accreditation/AccreditList/. Viewed February 7, 2007.

AZA (2007b). AZA certified related facilities. www.aza.org/Accrediation/certList/. Viewed February 7, 2007.

AZA (2007c). What is AZA Accreditation? www.aza.org/Accreditation/AccreditationIntro/. Viewed February 7, 2007.

AZA (2007d). AZA acquisition/disposal policy adopted by the AZA Board of Directors on July 29, 2006. www.aza.org/AboutAZA/ADPolicy/. Viewed May 7, 2007.

Bensky, D. and A. Gamble (1993). Chinese herbal medicine *Materia Medica*. Eastland Press, Seattle, Washington, USA.

Big Cat Rescue (2005). Killing captive bred Tigers. U.S. Fish and Wildlife Service Press Release, November 13, 2001. Headline: Five indicted in federal court for illegal trafficking of protected Tigers and Leopards. www.bigcatrescue.org/big_cat_news_files/2005/bearcathollow.htm. Viewed April 19, 2005.

CITES (1994). *Conservation of and Trade in Tigers. Resolution Conf. 9.13*, Ninth meeting of the Conference of the Parties to CITES, Fort Lauderdale, USA.

CITES (2002). *Conservation of and trade in Tigers and other Appendix-I Asian big cat species. Resolution Conf. 12.6*, Twelfth meeting of the Conference of the Parties to CITES, Santiago, Chile.

CITES (2006). Tiger: Report of the Secretariat. CITES document SC54 Doc. 25.1. http://www.cites.org/eng/com/SC/54/E54-25-1.pdf.

CITES (2007a). Report by the CITES Secretariat on implementing *Resolution Conf. 12.5* of CITES. COP14 Doc. 52 Annex 1. http://www.cites.org/common/cop/14/doc/E14-52A07.pdf. Viewed January 25, 2008.

CITES (2007b). Alphabetical List of Contracting Parties to CITES. http://www.cites.org/eng/disc/parties/alphabet.shtml. Viewed September 8, 2007.

CITES (2007c). CITES Species Database. http://www.cites.org/eng/resources/species.html. Viewed 17 April, 2007.

CITES (2007d) CITES Article II *Fundamental Principles* and Article III *Regulation of Trade in Specimens of Species Included in Appendix I*. http://www.cites.org/eng/disc/text.shtml#III. Viewed June 2007.

CITES (2007e). Interpretation and implementation of the Convention, Species trade and conservation issues, Asian big cats. Cop14 Doc. 52. Fourteenth meeting of the Conference of the Parties, The Hague (Netherlands).

CITES (2007f). Asian Big Cats. *Decisions* 14.65-14.72. http://www.cites.org/eng/dec/valid14/14_65-72.shtml. Viewed November 2007.

Dinerstein, E., C. Loucks, A. Heydlauff, E. Wikramanayake, G. Bryja, J. Forrest, J. Ginsberg, S. Klenzendorf, P. Leimgruber, T. O'Brien, E. Sanderson, J. Seidensticker and M. Songer. 2006. *Setting Priorities for the Conservation and Recovery of Wild Tigers: 2005-2015*. A user's guide. WWF, WCS, Smithsonian, and NFWF-STF, Washington, D.C. – New York.

Federal Register (1970). Title 50—Wildlife and Fisheries, Part 17—Conservation of endangered species and other fish or wildlife. *Volume* 35, No. 106, Tuesday, June 2, 1970. pp. 8491-8498.

Federal Register (1972). Title 50—Wildlife and Fisheries, Part 17—Conservation of endangered species and other fish or wildlife. List of endangered foreign fish and wildlife. Volume 37, No. 62, Thursday, March 30, 1972. p. 6476.

Federal Register (1998). Captive-bred wildlife regulation: Final rule. Federal Register, Volume 63, Number 176, September 11, 1998. pp. 48634-48641.

Federal Register (2006). Regulations to implement the *Captive Wildlife Safety Act*: Proposed rule. Federal Register, Volume 71, Number 20, January 31, 2006. pp. 5041-5048.

Federal Register (2007). Regulations to implement the *Captive Wildlife Safety Act*: Final rule. Federal Register, Volume 72, Number 158, August 16, 2007. pp. 45938-45947.

FWOA (2003). Operation snow plow gets 17th conviction in Tiger killing trial. *In*: The Federal Wildlife Officer, Volume 17, Number 2, Summer 2003.

FWOA (2004). Nine individuals indicted on wildlife related charges. *In*: The Federal Wildlife Officer, Volume 18, Number 4, Fall 2004.

Gaski, A. L. and Johnson, K. A. (1994). *Prescription for Extinction: Endangered Species and Patented Oriental Medicines in Trade*. TRAFFIC USA, Washington D.C.

Gaski, A. L. (Ed.). (1998). *While Supplies Last: The Sale of Tiger and other Endangered Species Medicines in North America*, 1996-1997. Revised report, TRAFFIC North America, Washington, D.C.

Government of India, Ministry of Environment and Forests (12 February 2008). Total Country Level Population of Tiger 1411. Press Release. http://pib.nic.in/release/release.asp?relid=35336.

Hemley, G. and Mills, J. A. (1999). The beginning of the end of Tigers in trade? In: Seidensticker, J., Christie, S. and Jackson, P. (eds.). *Riding the Tiger: Tiger Conservation in Human-Dominated Landscapes*. Cambridge University Press, Cambridge, U.K. pp. 217-228.

Henry, L.A. (2004). *A Tale of Two Cities: A Comparative Study of Traditional Chinese Medicine Markets in San Francisco and New York City*. TRAFFIC North America. Washington, D.C.: World Wildlife Fund.

Hoover, C. and Tarr, T. (1997) *The U.S. Fish and Wildlife Service Division of Law Enforcement: A Review of the Program Primarily Responsible for Enforcing CITES*. TRAFFIC USA and World Wildlife Fund, Washington, D.C. 34 pp.

IUCN SSC Cat Specialist Group 2008. Draft 2008 Red list of threatened species. In prep.

Lee, S., Hoover, C., Gaski, A., and Mills, J. (1998). *A World Apart? Attitudes Toward Traditional Chinese Medicine and Endangered Species in Hong Kong and the United States*. TRAFFIC East Asia, TRAFFIC North America, and World Wildlife Fund, Washington, D.C.

Mills, J. A. (Ed.). (1997). *Rhinoceros Horn and Tiger Bone in China: An Investigation of Trade Since the 1993 Ban*. TRAFFIC International, Cambridge, U.K.

Mills, J. A. and Jackson, P. (1994). *Killed for a Cure: A Review of the Worldwide Trade in Tiger Bone*. TRAFFIC International, Cambridge, U.K.

National Geographic (2006). China Tiger farms lobby to sell animal parts to aid conservation. http://news.nationalgeographic.com/news/2006/12/061222-tiger-farms.html. Viewed March 13, 2007.

Nguyen, X. D., Vu, N. T., and Cao, V. S., with Nguyen, T. M. and Compton, J. (Eds.). (1999). *The Trade and use of Tiger and Tiger Products in Viet Nam*. TRAFFIC South-east Asia-Viet Nam, Hanoi, Viet Nam. Unpublished report.

Nowell, K. (2000). *Far from a Cure: The Tiger Trade Revisited*. TRAFFIC International, Cambridge, U.K.

Nowell, K. (2007). *Asian Big Cat Conservation and Trade Control in Selected Range States: Evaluating Implementation and Effectiveness of CITES Recommendations*. TRAFFIC International, Cambridge, UK.

Nowell, K. and Xu, Ling (2007). *Taming the Tiger Trade: China's Markets for Wild and Captive Tiger Products since the 1993 Domestic Trade Ban*. TRAFFIC East Asia.

Petrar, B. (1999). *Searching for Tigers in Canada: Limitations of Forensic Analysis*. Paper presented by Environment Canada to the 15th triennial meeting of the International Association of Forensic Sciences, August 22-28, Los Angeles, USA.

Reuters. (August 2007) Indian Tiger Population More than Halved. http://uk.reuters.com/article/reutersEdge/idUKZWE34948920070803?pageNumber=1

Sanderson, E., J. Forrest, C. Loucks, J. Ginsberg, E. Dinerstein, J. Seidensticker, P. Leimgruber, M. Songer, A. Heydlauff, T. O'Brien, G. Bryja, S. Klenzendorf and E. Wikramanayake. 2006. *Setting Priorities for the Conservation and Recovery of Wild Tigers: 2005-2015: A User's Guide*. The Technical Assessment. WCS, WWF, Smithsonian, and NFWF-STF, New York – Washington, D.C.

Seidensticker, J., Christie, S. and Jackson, P. (Eds) (1999). *Riding the Tiger: Tiger Conservation in Human-Dominated Landscapes*. Cambridge University Press, Cambridge, UK.

Sellar, J. *et al.* (1999). *Tiger Technical Missions Report*. Presented at the 42nd meeting of the CITES Standing Committee, Lisbon, Portugal.

St. Petersburg Times. 2007. Records sparse on exotic animals in our midst, by Leonora LaPeter Anton, Times Staff Writer. Published November 11, 2007.

USDOJ (2006a). Department of Justice commemorates Earth Day, highlights successes in environmental enforcement. News Release, Friday, April 21, 2006.

USDOJ (2006b). Seller of Tiger and other endangered big cat skins sentenced to prison. News Release, Thursday, April 20, 2006.

USFWS (2002). USFWS basics fact sheet. U.S. Fish and Wildlife Service Endangered Species Program, Arlington, VA, October 2002.

USFWS (2003). Captive-bred wildlife registration under the U.S. Endangered Species Act. Factsheet, USFWS International Affairs, Division of Management Authority, Arlington, Virginia, Summer 2003. Available at http://international.fws.gov.

USFWS (2006). U.S. conservation efforts for tigers. U.S. Fish and Wildlife Service, International Affairs, Division of Management Authority, Arlington, VA, Fall 2006.

USFWS (2007a). Public Law 103-391 [H.R. 4924]: *Rhinoceros and Tiger Conservation Act of 1994*. http://www.fws.gov/international/laws/rtc-fv.html. Viewed February 7, 2007.

USFWS (2007b). Title IV–*Rhinoceros and Tiger Conservation Act of 1998*. http://www.fws.gov/international/laws/rtlabl2.html. Viewed February 7, 2007.

USFWS (2007c). *Captive Wildlife Safety Act*: What big cat owners need to know. U.S. Fish and Wildlife Service fact sheet, Office of Law Enforcement, Arlington, Virginia, August 2007.

USFWS (2008). Captive-bred wildlife registration. http://www.fws.gov/international/permits/captivebred.html. Viewed January 23, 2008.

Werner, B. (2005). Distribution, abundance and reproductive biology of captive Panthera tigris populations living within the United States of America. Feline Conservation Federation Magazine 49(2), March/April. http://www.thefcf.com/species/dynamics.asp?key=190. Viewed 21 March 2007.

Williamson, D. F. 2002. *In the Black: Status, Management and Trade of the American Black Bear* (Ursus americanus) in North America. TRAFFIC North America. Washington, D.C.: World Wildlife Fund.

Williamson, D. F. 2003. C*aviar and Conservation: Status, Management and Trade of North American Sturgeon and Paddlefish*. TRAFFIC North America. Washington, D.C.: World Wildlife Fund.

Williamson, D. F. 2004. *Tackling the Ivories: The Status of the US Trade in Elephant and Hippo Ivory*. TRAFFIC North America. Washington, D.C.: World Wildlife Fund.

TRAFFIC, the wildlife trade monitoring network, works to ensure that trade in wild plants and animals is not a threat to the conservation of nature. It has offices covering most parts of the world and works in close co-operation with the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

For further information contact:

The Director
TRAFFIC North America
c/o World Wildlife Fund-US
1250 24th Street, N.W.
Washington, D.C. 20037 USA
Telephone: +1-202-293-4800
Fax: +1-202-775-8287
Email: tna@wwfus.org
Web Site: www.traffic.org

TRAFFIC
the wildlife trade monitoring network

is a joint programme of

WWF IUCN