

Trade

Introduction

Trade in live animals, plants and the product made from them threatens many species with extinction. Approximately 15 percent of highly threatened mammals and birds have declined as a result of trade (Hilton-Taylor 2000). Internationally, billions of dollars are earned legally and illegally, and each year, more species become exploited. In a classic pattern, wildlife and plants are captured or extracted from their natural environments until they become rare. This rarity adds to their value, and in many cases, such as exotic cage birds, live reptiles and amphibians, and rare plants, for example, the rarer they become, the more they are sought after, increasing their value. Much of this trade is for luxury products or to supply collectors who have a desire to own rare birds, frogs, lizards, turtles or snakes, with no regard as to the effect on wild populations. For others, such as snakes and lizards killed for their skins to be made into exotic leather products, or whales slaughtered for their meat, one species is exploited until it becomes commercially extinct, and then non-endangered species are exploited until these, too, become endangered. Some animal products, such as ivory, are as valuable as gold, threatening elephants, among the most intelligent of all animals. Fisheries for expensive gourmet items, such as caviar, have endangered all Eurasian sturgeon. A majority of fish and shellfish species have been overfished to depleted status.

The fur trade has endangered many species and continues to use the skins of rare cats and canids. A major market for plants and animals to supply the Traditional Medicine (TM) trade has devastated Tigers, rhinoceros and hundreds of species, in spite of laws protecting these species. For the majority of species exploited for this trade, substitutes exist or they are not effective remedies. National and international laws and treaties, such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)*, have had major effects on trade in endangered and threatened species, but the illegal trade continues to flourish, worth an estimated \$3 billion a year in protected live animals and animal products. Ecological systems worldwide are being disrupted by the removal of predators and other keystone species, causing a loss of biodiversity.

*CITES is discussed in detail in the Legislation section and reproduced in the Appendix.

The methods used to capture and kill animals for the wildlife trade are often cruel in the extreme. Steel jaw leghold traps and wire neck snares, which cause great pain and injury, produce pelts for "fun furs." Whales die from exploding harpoons thrust into their heads and bodies. Frightened live animals are crowded into cramped, dirty cages and transported to pet shops and laboratories, suffering high mortality along the way. Man's inhumanity to animals reaches an extreme in the wild animal trade.

Whaling

While whales are revealing their intelligence and amazing communication abilities to scientists in one part of the world, they are being ruthlessly slaughtered in another. Once whales swam in enormous numbers in all oceans, communicating in complex sounds that resonate through the water. The beautiful and eerie songs of the Humpback Whale (*Megaptera novaeangliae*) resound for a thousand miles.* Each complex song lasts as long as half an hour, and different populations of these whales improvise their own dialects, evidence of an extremely evolved communication system. We are unable to decipher this language, and our knowledge of whales is extremely primitive. Hydrophones lowered into the icy waters near Bowhead Whales have picked up strange calls ranging from

groans to trumpet-like blasts to loud squeaks.* Through limited contacts, whales have shown intelligence and sensitivity. They soon become tame and friendly when approached by whale watchers. In recent years, Pacific Humpback Whales have approached boats of whale watchers in the manner of the friendly Gray Whales (*Eschrichtius robustus*), which swim up to tourists in Baja California, Mexico. The Humpbacks swim close to these boats and turn on their sides, flapping their huge white flippers on the water surface.

*These sounds can be heard in *Gentle Giants of the Pacific: Humpback Whales* (Sierra Club Films) and *The Bowhead Whale* (Wildlife in Production Films and Discovery Productions, 1998), which give an intimate glimpse into the lives of these whales and their feeding, habitat and the animals that share their world.

The devotion of whales to one another has been observed for centuries by whalers whose boats were attacked by distraught and angry whales after a member of the pod was harpooned. Carl Sagan, in *Cosmos* (1980), considered whaling to be monstrous when, instead, we should be seeking to communicate with these "intelligent masters of the deep." Whaling destroyed millions of these marine giants, pushing them close to extinction. A half century of protection has not resulted in their recovery. Many are still killed illegally. Whaling nations, many of them among the wealthiest in the world, continue to kill smaller whales openly, often in defiance of international agreements.

Early Whaling and its Effects

The decimation of the great whales has been going on for centuries, one species after another hunted to commercial extinction or to levels so low that it is no longer profitable to hunt them. Atlantic Gray Whales were hunted to actual extinction as described earlier in this book, and populations of these whales that once inhabited the waters off Korea and the western Pacific were hunted until 1966, when they disappeared (Reeves *et al.* 1992). In the early 1990s a Gray Whale was seen off the coast of Japan for the first time in decades, giving hope that the species might repopulate this area.

In the 8th century, the Basques of northern Spain hunted the Northern Right Whale (*Eubalaena glacialis*) for meat and whalebone in the Bay of Biscay, where they came to winter and have their calves. These whales once swam along the Atlantic coasts of Europe and North America in annual migrations, spending the summers in northern waters and winters in the warm waters off Florida and Spain. They were so named by English whalers because they were "right" for their purposes: they were easy to kill; they yielded large quantities of oil and whalebone, which was used for women's corsets; and they floated when dead (Allen 1942). The slow-moving Right Whales feed on plankton and krill, which they strain through baleen plates in their huge mouths.

By 1800, almost no eastern Atlantic Right Whales survived, and whalers sailed to American waters, where New England colonists slaughtered the western population. Where once thousands of these whales swam along coasts of eastern North America each fall, few remained after centuries of whaling (Allen 1942). Killing of this beleaguered species continued from whaling stations off Ireland and the Hebrides in spite of catches of only 10 to 18 whales a year. These whalers could find no more Right Whales by about 1910. Fortunately, a few remained elsewhere, but the species is the most endangered of all whales. Still extinct in the eastern Atlantic, they number only about 350 animals in the western Atlantic. In the eastern North Pacific, Right Whales once ranged from central Baja California, Mexico, to the Gulf of Alaska and into the Bering Sea; along the Asian coast, they were seen from the Bonin Islands north to the Kamchatka Peninsula of Russia (Leatherwood and Reeves 1983). Today, the North Pacific population is estimated by some experts at fewer than 300, having failed to recover from early whaling (Harrison and Bryden 1988). This species is on the edge of extinction.

The remnant eastern Atlantic population no longer swims close to shorelines, which are now cluttered with vacation homes, marinas and cities. Their ancestral feeding grounds are polluted, and constant boat traffic presents the threat of collisions. Swimming far offshore, they take months to reach their wintering grounds. A dead Right Whale calf was discovered in salt marshes in Georgia about a decade ago, probably the victim of a boat collision. This launched a research program to locate wintering whales by air and to tag and identify them as individuals. Dredging boats along the Georgia coast are notified when Right Whales are spotted nearby, and they must stop until the whales swim away. Further north, another team monitors the whales off New England in the summer with spotter aircraft, notifying ship pilots of their presence (McFarling 1994). Most collisions have taken place off Boston, where a stream of liners and giant cargo ships arrive from Europe. Off Florida there have been fewer incidents, as the Coast Guard keeps a very careful watch by air and immediately radios any ship in the area of the whales' location.

Genetic analysis of the DNA of Northern Right Whales has indicated that they may be inbred and becoming sterile, having been so reduced by whaling that only a very small number of whales remain alive. Scientists have obtained small tissue samples from these whales by firing arrows attached to lines that can be retrieved after firing. Preliminary results indicate that all North Atlantic Right Whales may have descended from only three families on the female side and, perhaps, from as few as three individual females (Allen 1995). Since the majority of individual whales have been identified, it is known that at least 13 of 65 sexually mature females have had no calves since 1989 (Allen 1995). In a species that reproduces so slowly and is suffering such casualties from ship collisions, this may spell extinction. The rate of increase for these whales is only about 2 percent. By contrast, Southern Right Whales (*Eubalaena australis*) in the South Atlantic and Antarctic waters, which numbered 100,000 until they were decimated by whaling (Leatherwood and Reeves 1983), are increasing at a rate of 7 to 8 percent a year, far faster than the North Atlantic population. However, with a population of only about 3,000, they are still highly endangered (Allen 1995).

The Bowhead Whales (*Balaena mysticetus*) of the North Atlantic and Arctic Oceans were killed in great numbers from early times by whalers from England and the Netherlands, nearly causing the whales' extinction (Lean and Hinrichsen 1992). Beginning in the 17th century, on the other side of the Atlantic, whalers from Nantucket Island, Massachusetts, pursued Sperm Whales (*Physeter catodon*) for their valuable oil, which was used in lamps and as lubrication. With a fleet totaling 150 ships, they eliminated the majority of these whales. Then in the 18th century, whalers discovered the enormous numbers of Sperm Whales in the Pacific. By 1846, New England whalers had 736 ships at sea, and only the discovery of petroleum in Pennsylvania saved the Sperm Whales. Right Whales, Gray Whales and Bowhead Whales of the Pacific were all mercilessly hunted until they, too, neared extinction (Allen 1942).

When an explosive harpoon was developed in Norway in 1865 that could be fired into a whale's body from a cannon mounted in the bow of a ship, a new wave of slaughter began (Allen 1942). Its deadly power was soon turned on the rorquals (Humpback; Blue (*Balaenoptera musculus*); Fin (*Balaenoptera physalus*); and Sei Whales (*Balaenoptera borealis*) far away from shore. These whales had been difficult for whalers to take prior to the development of the explosive harpoon because they were swift and strong swimmers of the open ocean (Allen 1942). The new explosive harpoons, although deadly, did not kill instantly, and these whales suffered slow deaths. The huge numbers taken by these harpoons over the next decades caused their populations to decline to commercial extinction.

Factory Ship Whaling

Whalers then turned to the Antarctic where vast numbers of Blue, Humpback, Sei and Fin Whales migrated each summer to feed on the abundant krill. In 1903, the first "floating factory" whaling ship sailed from Spitzbergen, Norway. These ships, when moored near a land base, could process whales brought alongside by small killer boats.

The initial victims of these new ships were the Antarctic Humpback Whales which congregated each summer near the Antarctic Peninsula. The factory ships were joined by some older vessels, and exploitation was unrelenting. About 70,000 Humpback Whales were killed between 1909 and 1913, and by World War I, these whales were almost extinct in the Southern Ocean (Garrett 1981). The toll of Antarctic whales taken in the early 20th century was staggering: more than 122,000 were killed between 1909 and 1927 (Reeves 1979). Humpback Whales finally received protection in 1966 from the International Whaling Commission (IWC), but pirate whalers as well as certain Caribbean nations continue to hunt them.

Factory ships were developed in 1925 with rear slipways through which whales could be winched onto the ships. Whales could be killed either in the open ocean or near ice floes and pulled onto the deck for flensing and rendering (Garrett 1981). With this development, the fate of the vast populations of Blue and Fin Whales of the Antarctic was sealed. First the Blue Whales were slaughtered. They stayed close to the pack ice, convenient for both factory ships and moored vessels. More than 15,000 a year were taken in the 1920s, with a high of almost 30,000 in 1930 (Allen 1942). Soon these mammoth whales, the largest animals on Earth, declined. By 1934, the average length of Blue Whales killed had dropped to 79 feet; 41 percent of the females caught were immature (Allen 1942). These great whales do not reach sexual maturity until females attain a length of 78 feet. The 1937 International Agreement for the Regulation of Whaling reduced the limit to 70 feet for Blue Whales, thus failing to conserve breeding females (Allen 1942). Between 1910 and 1966, a staggering 330,000 Blue Whales were killed in the Antarctic (Lean and Hinrichsen 1992).

After World War II, the IWC was established under the International Convention for the Regulation of Whaling to "provide for the conservation, development, and optimum utilization of the whale resources" (Ehrlich 1981). Member nations now include both whaling and non-whaling countries. The Scientific Committee of the IWC recommends restricting the number of whales killed when it determines that the species will decline as a result. In the early years of the IWC, these recommendations were rarely followed by whaling nations, and so little knowledge of great whale population, biology and status had been uncovered that quotas were far too high to sustain these slow-reproducing species. The destruction of the great whales is a true biological tragedy. Even after almost 40 years of protection, their populations have increased only slightly. Their life histories are certainly part of the explanation. Blue Whale females, for example, are thought to become sexually mature only when they reach 10 years of age. Gestation lasts 12 months, and the single 23 to 27-foot long calf stays with its mother for about two or three years. Sperm Whales do not mature until they are past 20 years of age, and mature bulls, who are the major breeders, are at least 50 years old. Killing of these whales, which did not end until 1983, wiped out the vast majority of big bull Sperm Whales.

Until recently, it was not known how long whales live. New findings are astounding. A Bowhead Whale recently killed by Eskimos was found to have two stone harpoon blades embedded in its blubber; as reported by *National Geographic* ("Geographica," March 1996). This discovery fixed the whale's age at more than 100 years because the use of stone harpoons ended a century ago when metal tools were brought to Alaska. The whale was only a few years old when it was wounded by the handmade pointed tool, and Stephen Loring, an Arctic specialist at the Smithsonian Institution, estimated that when killed, it was between 100 and 130 years old. Further research by the Scripps Institution of Oceanography on three Bowhead Whales killed by Inupiat Eskimos in northern Alaska estimated their ages at death at between 135 and 172 years old. The age of a fourth Bowhead was estimated at 211 years old, which would make the Bowhead Whale the longest-living of all animals, surpassing the oldest known land tortoises. The ages were determined by studying changes in amino acids in the lenses of the whales' eyes. Harpoon points made of ivory and stone, not used since the 19th century, have been found in other Bowhead Whales killed in recent years. Moreover, several generations of hunters have spoken of seeing the same Bowhead Whales, which they recognized as individuals based on their markings.

Whales knew few enemies in the sea before man, and they evolved no defenses that could have protected them from harpoons tearing through their flesh, nor could they increase their rate of reproduction to compensate for the extremely high kill. Another factor hampering their recovery has been illegal whaling. Blue Whales and other endangered species were illegally harpooned long after they received official protection, and this is still taking place.

During its first 30 years, the IWC permitted the deaths of 1.5 million great whales (Bright 1991). It pushed the very species that it had taken responsibility to conserve closer to extinction. Blue Whales, the largest whales, measuring up to 100 feet, were totally eliminated, and smaller and smaller whales were caught. The average length of the Blue Whales caught had declined to 73 feet by 1965 (Scheffer 1974). At this point, when the species had been reduced to only 6 percent of its original numbers, the IWC finally accorded protection (Scheffer 1974). Blue Whales number only about 12,000 worldwide. All populations of this whale in the Southern, Atlantic and Pacific Oceans are listed as Endangered by the 2000 IUCN Red List of Threatened Species.

Decimation of 81-foot Fin Whales in the Antarctic followed until their populations collapsed early in the 1960s. Fin Whales in the North Atlantic became overexploited in the 1970s. Whalers then turned to the Sei Whales, fastest of the whales, a sleek species reaching a length of up to 58 feet (Heintzelman 1981). When these whales became depleted, the Minke Whale (*Balaenoptera acutorostrata*), the smallest of the great whales at less than 33 feet long, became the major prey of whalers.

The Cruelty of Whaling

Added to the decimation of entire species, whaling involves great cruelty. An eyewitness on an Australian whaler in 1977 described the long death of a great whale:

The harpoon seemed to pass right through it, which can happen and the second explosion took longer. The whole event this time seemed in slow motion. The whale dived, and a great green cloud burst up to the surface. Blood turns green underwater at 50 feet...or was this some of its intestines? It came up on the starboard side, its huge head, a third of its total body size, shaking itself, and then it gave out a most terrible cry, half in protest, half in pain, and then it dived again. They loaded the next harpoon, the killer, but could not get a shot at it as it twisted and turned, hurting itself all the more. Finally, the lookout in the crow's nest shouted down that it was coming up dying. Its mouth was opening.

Australian Government Printing Office. *Whales and Whaling*. 1979.

No method exists to kill whales instantly. The cold harpoons used by some native peoples and by other whalers to kill thousands of Minke Whales are cruel, sometimes taking an hour to kill. Native whaling methods are not regulated. The trauma and rage experienced by stricken whales was documented by Greenpeace activists who sailed to the North Pacific in 1975 in order to place themselves between Russian whalers and their prey, the Sperm Whale. One of the first observations was a small whale, well under the 30-foot limit, floating dead on the water. The Greenpeace crew positioned their rubber raft between the killer boat and the whales, believing that the harpooner would not shoot the 250-pound harpoon with the possibility of killing their crew, but they were mistaken (Ellis 1991). The harpooner fired over their heads, scoring a direct hit on a large Sperm whale; the whale died in a sea of its own blood and guts. Then another whale in the pod charged at the Greenpeacers (Ellis 1991). As soon as the huge Sperm Whale perceived they were not the harpooners, it headed instead for the Soviet whaler, with its powerful jaw clapping; "this whale charged the harpoon boat and seemed to leap out of the water in an attempt to get to the gunner" (Ellis 1991). When the whale was close to the whaling boat, the gunner pointed his cannon almost straight down and shot the whale, killing it (Ellis 1991).

The whale filmed by Greenpeace had made a valiant attempt to destroy the gunner who had killed its fellow whale, perhaps its mate, and had also realized that the Greenpeaceers were not at fault. Killing such an intelligent and courageous animal for commercial profit is absolutely unjustifiable. Sperm Whales have, in fact, the largest brains of any animal, weighing 20 pounds (Ellis 1991). Yet we know little of their intelligence, habits and biology. Some scientists have theorized that Sperm Whales stun their prey with sonic blasts; they descend to depths up to 2 miles and are known to feed on Giant Squid, perhaps after stunning and holding the squids' slippery bodies in their sharp teeth (Ellis 1991). There is oil in the whales' heads, which may play a role in such acoustical feats.

In 1981, a major humane victory was won. The cold harpoon was banned for all commercial whaling effective at the end of 1982. The decision was a precedent-setting event. Humaneness became an issue to be considered, and the IWC undertook the responsibility to insure that methods are not unnecessarily cruel. This is a relative term, however, since all existing methods are intrinsically painful and inhumane. At the 1995 IWC meeting, a Workshop on Whale Killing Methods heard a research paper on the killing of Minke Whales. These whales are first mutilated by an explosive grenade then, several minutes later, shot with rifles or prodded with an electric lance. Although some have considered these methods to result in a quick death for the whales, researchers have maintained through examination of physiological evidence that breathing and heartbeat continue even when the body is immobilized. The limp and dying Minke Whale may be sensitive and capable of experiencing both fear and physical distress for significant amounts of time. In fact, the IWC tacitly acknowledged at its 1995 meeting that the electric lance was inhumane by passing a Resolution calling for a suspension of its use. At the 1996 IWC meeting, a United Kingdom/New Zealand proposal to ban the use of the electric lance failed.

During a recent investigation of the killing of Minke Whales by Norway for *National Geographic*, a whale already struck by a lance carrying a thermal grenade revived as it was being reeled on board (Chadwick 2001). It rammed the ship, causing the mast to break and sending two crew members into the sea; it then escaped (Chadwick 2001). Its fate is unknown, but its survival is unlikely.

Another cruel aspect of whaling is the killing of female whales, leaving their calves to starve. Some whalers in the past killed calves first, knowing their mothers would not desert them. In 1935, the killing of mothers and calves was finally prohibited by the IWC, but some whalers did not abide by the prohibition. Moreover, the rule may be impossible to enforce. The harpooner who fires into a pod of whales can hardly be sure that the whale he hits is not a female with calf.

Pirate Whaling

A young female Blue Whale was harpooned off the Peruvian coast in 1978, more than a decade after their killing was made illegal. As described by Craig Van Note in his expose, *Outlaw Whalers*:

A 150-lb. harpoon had been fired into the side of the whale . . . after penetrating three feet, a massive grenade at the tip of the harpoon exploded, tearing the whale's internal organs to a bloody pulp with jagged, fist-sized metal fragments. In her agony, the . . . whale tore at the heavy barbs that had expanded from the sides of the harpoon. Wrenching her 75-ton body, she pulled free from the harpoon and heavy rope that ran back to the catcher boat. With a gaping wound in her side, the whale dove deep to successfully escape her pursuers. But the terrible wound caused massive hemorrhaging and each succeeding day the whale grew weaker. Finally she could not hold herself up to the surface to breathe. So she swam ashore through the surf, sliding to a halt on the coarse sand at Conchan. There Peruvian conservationists gathered to witness the final hours of life of the blue whale. She lay on her side, with the harpoon-wound facing shore, gasping for breath" (Van Note 1979). The late Felipe Benavides, a Peruvian conservationist who fought to drive the foreign whalers from Peru's shores for 30 years said, 'This young whale was one of the most beautiful creatures I have ever seen. Watching her die was one of the saddest experiences of my life' (Van Note 1979).

In *The Blue Whale*, which won the National Book Award, George Small (1971) described case after case of illegal whaling. The Greek shipping magnate Aristotle Onassis, one of the world's wealthiest individuals, wantonly killed thousands of critically endangered whales. In the 1950s, a whaling fleet owned by Onassis illegally slaughtered numerous female Blue Whales as well as their nursing young. Its factory ship, the *Olympic Challenger*, registered in Panama, became a notorious pirate whaler; seven German citizens who served on this ship signed affidavits at the Norwegian Consulate in Hamburg in 1956, testifying that they had witnessed innumerable illegal whaling practices and had photographic evidence of whale carcasses and ship's logs (Small 1971). Among the infractions of the *Olympic Challenger* in 1954 was the slaughter of 285 Blue Whales, 169 Fin Whales, 105 Humpbacks, 4,648 Sperm Whales, and 21 Sei Whales. The ship declared a catch of only 2,348 Sperm Whales. Of the Blue Whales killed, many were young: 35 were 59 feet or less in length and two were less than 49 feet (Small 1971). IWC rules at that time prohibited all factory ship whaling of baleen whales between the Antarctic and the Equator (Small 1971). Onassis' ships shot baby Sperm Whales before they even had teeth; some were only 5 meters long and must have been newborn calves (Small 1971). On occasion, four young whales at a time were hauled on board by winch; often a whale was so small that it was only necessary to remove the harpoon and entrails before the carcass was dropped whole into the cookers (Small 1971). The entrails of baby whales jettisoned by the *Olympic Challenger* floated for some time, providing evidence of its illegal whaling (Small 1971). After many protests were lodged, Onassis made a payment of \$3 million to a special fund, which was taken as an admission of guilt (Small 1971).

In 1994, records from Soviet whalers were uncovered, documenting the illegal killing of hundreds of Blue Whales for decades, beginning in the 1950s and continuing long after they had been officially protected. These whales, under the direction of the KGB, developed sophisticated methods of preventing detection. The decks were surrounded in steam, hiding the carcasses of protected species, including highly endangered Right Whales. Several hundred of these whales were killed in the Okhotsk Sea in the 1960s, and more in the South Atlantic (AWI 1994). The Soviets' radio communications were coded, and messages such as "Sink the prohibited whales" were sent when aircraft appeared overhead. Professor Alexey V. Yablokov, a member of the Animal Welfare Institute's Scientific Committee, examined these records, which revealed this shocking flouting of whaling bans. Yablokov studied cetacean morphology during the 1950s and 1960s and received many specimens from Humpback and Right Whales that had been killed illegally (AWI 1994).

EFFECTS OF WHALING ON THE GREAT WHALES (chart)

The figures below represent estimates based on the sources cited.

Species	Northern Hemisphere		Southern Hemisphere		Totals		% Change
	Original	Present	Original	Present	Original	Present	
Blue <i>Balaenoptera musculus</i>	20,100	4,300	200,000	10,000	220,100	14,300	- 94%
Bowhead <i>Balaena mysticetus</i>	43,000	7,850	Not Present		43,000	7,850	-82%
Fin <i>Balaenoptera physalus</i>	95,000	63,000	600,000	15,000	695,000	78,000	-89%
Gray <i>Eschrichtius robustus</i>	45,000*	22,000	Not Present		45,000	22,000	-51%
Humpback <i>Megaptera novaeangliae</i>	50,000	8,000	100,000	20,000	150,000	28,000	-81%
Right <i>Eubalaena glacialis</i> <i>Eubalaena australis</i>	100,000	600	200,000	3,000	300,000	3,600	-99%
Sei <i>Balaenoptera borealis</i>	400,000	21,100	190,000	8,300	590,000	29,400	-95%
Sperm <i>Physeter catodon</i>	1,500,000	103,000	1,500,000	128,000	3,000,000	231,000	-92%
Totals	2,253,100	229,850	2,790,000	184,300	5,043,100	414,150	-61%

Hemisphere Totals			
	Original	Present	Change
Northern	2,253,100	229,850	-90%
Southern	2,790,000	184,300	-93%
Totals	5,043,100	414,150	-92%

*Includes estimations of extinct populations of Atlantic and western Pacific Sources: *Walker's Mammals of the World*, by Ronald M. Nowak, Sixth Edition, Vol. II, Johns Hopkins University Press, 1999, which assesses various sources & research by the Animal Welfare Institute.

The Long Battle for the Whales

The first major step toward ending whaling came in 1971 when the U.S. Secretary of the Interior banned commercial whaling by the United States. Also in 1971, Congress passed a Resolution calling on the Secretary of State to negotiate a 10-year moratorium on commercial whaling with other nations. The 1972 Marine Mammal Protection Act (MMPA) banned all harming and killing of marine mammals without a permit, further protecting whales. The same year, Canada stopped commercial whaling after failing to fill quotas allocated by the IWC (Ellis 1991). Years later, however, Canada became one of the countries voting against whaling moratoriums at IWC meetings. Listing of the great whales on the U.S. Endangered Species Act of 1973 banned import and export of eight species, thereby cutting off commercial imports of whale meat. At its 1972 meeting, the IWC rejected the U.S.

proposal for a moratorium, instead voting a quota of 45,000 whales.

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The Long Battle for the Whales: Page 1

For more than a decade, conservation and humane organizations fought to reduce quotas set by the IWC of whales that could be killed. Gradually over the years, representatives from non-whaling countries joined the IWC and voted for lower quotas. Public opinion in most countries is solidly on the side of the whales. The fight to stop commercial whaling through decisions of the IWC was finally won when a moratorium was passed in 1982. At present, virtually all the large whales and several smaller whales have been listed on the U.S. Endangered Species Act and banned from international trade through their listing on Appendix I of CITES. Japan refused to accept the CITES listings and took reservations on most species of great whales, meaning that it gave notice it will not enforce these listings. Any country may choose to do this without losing its membership--a major CITES loophole. Today, Japan retains reservations on Baird's Beaked Whale (*Berardius bairdii*), Sei, Bryde's (*Balaenoptera edeni*), Fin, Minke and Sperm Whales, although officially it stopped importing whale meat in 1992 (Chan *et al.* 1995a). When the ban on commercial whaling voted by the IWC took effect in 1986, many believed that the long fight had been won. Unfortunately, whaling continued in various forms--some allowed by the IWC, and some in defiance of it. On May 19, 1992, the U.S. House of Representatives set an excellent example when it voted unanimously to pass a Resolution supporting an indefinite moratorium on whaling, stating, in part, "Whereas there is significant widespread support in the international community for the view that, for scientific, ecological, aesthetic, and educational reasons, whales should no longer be commercially hunted . . ." This Resolution did not, unfortunately, change the minds of the few nations who continue to kill whales.

Aboriginal whaling by the Inuit tribe and other native peoples has long been permitted under quota by the IWC, even for endangered species such as Bowhead and Humpback Whales. The IWC, at its 1993 meeting, called upon its Scientific Committee to investigate management regimes to govern subsistence whaling in order to minimize depletions of whale populations. Inuits in Alaska have continued whaling as a tradition--more than a need--since they have received substantial settlements from the U.S. government, and some lease their lands to oil and gas companies for high royalties. A Bowhead Whale killed in a hunt in 1996 had been stabbed by 14 harpoons and shot with countless bullets before it died (Vlessides 1998). After two days, it rose to the surface and was towed to shore, one of the few of these endangered whales to have been taken in the eastern Canadian Arctic since hunting the species without a license became illegal (Vlessides 1998). Bowhead Whale populations in the eastern Arctic had fallen from more than 10,000 to about 700 in 1996, but this hunt was to be a rebirth of an old Nunavut tradition (Vlessides 1998). The Inuit used sonar devices to search for the whale after it had been struck and shot, and they carried satellite phones. When the whale was towed to a rocky beach, 100 villagers sliced a ceremonial piece of blubber from the whale, then the hunters left and the meat was never cut. The dead Bowhead rotted on the beach, and the following spring, the community members paid to get rid of the carcass, some of which was set adrift on ice floes and the rest burned (Vlessides 1998). This whale, which might have been more than 100 years old, died a slow and painful death for no good reason.

Another Bowhead Whale was killed off the Northwest Territories in 1998, with an exploding harpoon gun. It was

smaller than normal adults, only 43 feet instead of 60 feet long, and was fed on by natives of various Inuit settlements (Nickerson 1998). The International Whaling Commission condemned the hunt in a formal Resolution and implored Canada to ban it, as did many activists and conservation organizations (Nickerson 1998). In the waters where this whale was killed near Baffin Island, these whales have not rebounded in numbers from past whaling. Canada left the IWC in 1982, insisting that it is no longer a whaling nation, and defended the hunt as "sustainable" because designated communities may kill a single Bowhead every other year (Nickerson 1998). With a population of only about 7,200 worldwide, and a low population in the Canadian Arctic, any take might be more than the species can sustain. Moreover, the meat and blubber are laden with highly toxic chemicals (see below). Should the Inuit choose to let the Bowhead Whales increase without killing any of these extremely rare animals, they might come to realize that certain ancient traditions can be left behind without harming their culture.

Our knowledge of whales is only fragmentary, a science in its early stages. Research investigations are only gradually accumulating crucial data. Yet in 1974, effective in 1975, the IWC adopted the so-called "New Management Procedure" (NMP), under which whale populations were allowed to be reduced to 54 percent of their estimated original numbers. Changed somewhat, it became the "Revised Management Procedure" in the 1980s. This highly simplistic procedure is based on a lack of scientific data, including inaccurate estimates of populations and inadequate information about whale reproductive biology. Whale numbers are estimated by research vessels counting whales seen to surface, in itself a highly unscientific method resulting in "ball park" or vague estimates. First, whales spend only about 5 percent of their time on the surface. Second, estimates of original numbers, a crucial aspect to this approach, are based on records of whales killed, with guesses as to what percentage of the population these represented. Third, in order to understand the population biology of a species--its longevity, rate of reproduction, natural mortality rate, differences in survival between populations, diet, and behavior--other aspects of its life history must be known. This crucial information is lacking for every species of large whale.

A dramatic illustration of the inaccuracy of whale population estimates is that of Norway's whaling of North Atlantic Minke Whales. Norway killed an average of 3,500 Minkes a year in the North Atlantic in the mid-1950s, before cutting back to 1,800 a year until 1983 (Chadwick 2001). In Antarctic waters, Russian and Japanese whalers killed 65,000 between 1971 and 1981 (Chadwick 2001). In 1986, the year the moratorium on commercial whaling became effective, Norway, along with Japan, Peru, the U.S.S.R. and Iceland, filed objections (Bright 1991). IWC members may defy regulations merely by filing such objections. Norwegian whalers killed 383 Minke Whales in 1986 and 375 in 1987; in 1988 Norway announced it would kill whales for scientific research, which is allowed by IWC (Bright 1991).

For several years, Norway killed small numbers of whales for "scientific research" but, in 1992, resumed killing large numbers of these whales. The population estimate upon which they based their self-imposed quotas was 86,700 Minke Whales in the North Atlantic. On this basis, it killed 301 whales. Scientific estimates later revised the population number to 69,600--an enormous difference of 17,100 whales. Norway then lowered its own quota to 232, which the IWC's Scientific Committee believed to be still too high. To its credit, the IWC denounced the whaling and, at its annual meeting in 1995, passed a strongly worded Resolution against Norway. Not only did Norway begin commercial whaling in defiance of IWC resolutions, but attempts were made to smuggle the meat--misabeled--to Japan. This scheme was uncovered, and even this blot on Norway's international reputation did not result in a change of heart regarding this slaughter. In January 2001, Norway announced that it would openly sell whale meat and blubber to Japan, breaking a long-time agreement with the United States against international sale of whale products. Japan and Norway, recently supported by Iceland, have unsuccessfully petitioned the IWC to lift the moratorium on commercial whaling and allow Minke Whales to be hunted and have attempted to ease CITES restrictions that list the species on Appendix I, banning commercial trade, also without success.

How the IWC can arrive at any quota on Minke Whales is beyond reason, since almost nothing is known about Minke Whales--not even where they mate or calve (Chadwick 2001). These elaborate population estimates are obviously totally unscientific. Minke Whales have no distinguishing characteristics that might allow them to be identified as individuals as is the case with Humpback and Right Whales. Humpback Whales have a great variety of

black and white patterns on their tails, and no two are exactly alike. Northern Right Whales have callosities of various parasites, such as crustaceans, different with each whale. More than a decade has been spent by researchers working to document these individuals in the northwest Atlantic and enter the information into a database. No such research is possible as a means of counting Minke Whales.

The Long Battle for the Whales: Page 2

Off the coast of Scotland, where Minke Whales are protected, they approach boats and lift their heads above water, eyeing the boat and its occupants (Chadwick 2001). They have been seen leaping out of the water in apparent games that went on for more than an hour. Recently one was rescued after stranding on rocks. The Scottish rescuer said: "Off it went until it was almost out of sight. Then it returned. We were worried it would go onto the shore. But it swam away, and we decided the animal just came back to say thanks and cheerio. That's when we started to worry the poor thing might be going to Norway next" (Chadwick 2001). These whales have been swimming around boats and scuba divers along the Great Barrier Reef since the early 1980s, and some ecotours offer Minke-watching (Chadwick 2001). Some of these whales stay close to boats and divers for up to 11 hours, and while they seem silent in northern waters where they are killed, here they communicate in grunts, growls and "boi-oi-oings" (Chadwick 2001).

Whales have shown friendliness toward one another as well as toward humans who dive with them. An encounter between Blue Whales in the 1970s was witnessed by researchers on a vessel off the eastern Canadian coast. They spotted four Blue Whales: "Two pairs of whales coming from opposite directions met, churning the water as they rolled and dove about one another in what seemed, to human eyes, a tumultuous greeting. During the commotion one of the whales breached a third of its length . . ." (Vontobel 1975). This must have been a truly unforgettable sight and an indication that these whales communicate and form bonds with one another. Within the past decade, Blue Whales have increased somewhat. In the Pacific, they have recently begun congregating in or near a marine sanctuary off California's Santa Barbara Islands, where scientists from the National Oceanic and Atmospheric Administration (NOAA) are studying them. Almost 2,000 whales are regularly seen here, creating excitement for whale watchers and scientists alike.

The Long Battle for the Whales: Page 3

As one of the wealthiest countries in the world, Norway has profited from rich offshore oil reserves, and has a highly educated, liberal society. As the world's second largest oil exporter, it earns so much revenue that the government has been setting aside about \$8.2 billion a year (AP 1997). It does not have an economic need for whaling income. The Prime Minister who first endorsed Norwegian whaling, Gro Brundtland, was known as a "Green" world leader, preaching environmental concern and backing strong national legislation to preserve Norway's environment. As a conserver of marine life, however, Norway has recently proven to be wasteful and destructive. Its centuries-old fishery has collapsed, putting thousands of employees out of work, and causing resentment among a population dependent on Atlantic Cod as a dietary and economic mainstay.

As a totally flawed and specious argument, Norway explained its return to whaling by stating it was needed to allow cod to recover. A 1990 report by the Norwegian Fisheries Ministry concluded that the Atlantic Cod catch would jump 5.6 percent the year following a kill of 1,700 Minke Whales, and higher employment would result (Bright 1991). Other Norwegian researchers have suggested that causing actual *extinctions* of marine mammals would increase fisheries value by 150 percent! (Bright 1991). Olaf Flaaten, a Norwegian professor who advised Brundtland, described marine mammals in 1988 as "vermin," causing great losses of fishes, citing Minke Whales and Harp Seals as the worst offenders. Apparently, Norway has been conducting control operations of marine mammals for some

time. At least 60,000 Harp Seals died in Norwegian fish nets in 1987, taken intentionally (Bright 1991). A Norwegian seal hunt killed 14,000 seals in 1989, and Harp Seal populations in the Barents Sea have been halved since the early 1980s (Bright 1991). Scientists from the IWC and the National Marine Fisheries Service (NMFS) have called the theory that fish populations will be increased by killing marine mammals totally baseless (Bright 1991). The underlying cause of the fisheries collapse is overfishing of Atlantic Cod and other fish and their prey, Capelin and Atlantic Herring. In 1996, 10 tons of whale meat were allegedly smuggled from Norway to Japan, and the same year, Norway announced that it would increase the kill of North Atlantic Minke Whales to 425, almost double 1995's catch. Minke Whale meat is sold in Norwegian markets, and the country plans to begin exporting it--in defiance of CITES--to other countries that have taken reservations on whale listings (Chadwick 2001).

The views of Norwegians who endorse slaughter of marine mammals may not reflect the consensus of the Norwegian public. In 1995 a Norwegian newspaper, *Oslo Arbeiderbladet*, representing the Prime Minister's own Labor Party, editorialized: "The Norwegian battle to gain international acceptance for whaling is already lost. The sooner we realize this, the better. The only argument that could be used to defend the whaling, namely that the science is on our side, is no longer valid. The so-called 'secure' figures of Norway were shown to be based on wrong figures and mistakes in the data programs." The editorial concluded that Norway must stop whaling if it wishes to be taken seriously as an environmentally concerned nation. Some Norwegian whalers, however, claim that whaling does not differ from cod or herring fishing, and that whales are just "big mountains of meat" (Gibbs 1997).

The United States chose not to punish Norway for its illegal whaling. In Section 8 of the U.S. Fisherman's Protective Act, the "Pelly Amendment" permits the President to embargo any and all fisheries products from countries whose nationals have engaged in taking a marine resource in such a manner as to "diminish the effectiveness of an international fishery conservation program." In 1979, an additional sanction was voted into law, the Packwood-Magnuson Amendment. This amends the Fishery Conservation and Management Act to cut fish allocations by half on certification by the Secretary of Commerce that a nation has violated the provisions of the Pelly Amendment. If a nation persists, all fishing rights are canceled. For Norway, its exports of fisheries products to the United States are considerable, amounting to more than \$140 million each year. The Secretary of Commerce took the initial action of certifying Norway under the Pelly Amendment, but President Bill Clinton chose not to place an embargo on its fishery exports to the United States. In a letter to Congress in October 1993, President Clinton said the United States objectives could best be achieved by "delaying the implementation of sanctions until we have exhausted all good-faith efforts to persuade Norway to follow agreed conservation measures." Prime Minister Brundtland came to the United States and successfully lobbied to prevent economic sanctions against Norway. Before leaving office in 2001, President Clinton decided not to impose import restrictions on Japan under the Pelly Amendment for expanding its "scientific" whaling to include Bryde's and Sperm Whales.

The Long Battle for the Whales: Page 4

Traditionally, the United States has maintained a strong anti-whaling stance and has been a major force in bringing about reductions in whaling quotas and the 1982 moratorium. Japan and Norway, however, are now whaling without any basis on sound science, and in violation of the spirit of the moratorium. Iceland is planning to reenter commercial whaling as well. Japan's high take of Minkes in Antarctic waters violates the 1994 sanctuary designation of the seas surrounding Antarctica (Chadwick 2001). To open markets worldwide to many types of whales, Japan has presented numerous proposals to downlist whales on CITES: two would have placed North Pacific and Southern Hemisphere stocks of the Minke Whale on Appendix II, one would have transferred eastern Pacific stock of the Gray Whale to Appendix II, and one would have downlisted the northwestern Pacific stock of Bryde's Whales from Appendix I to II. Bryde's whales occur in all the world's oceans.

Japan has also continued its "scientific" whaling and announced in November 1994 that it would begin selling 65

tons of meat from Minke whales caught in the northwest Pacific. In an eight-year period from 1980 onward, Japan killed 28,818 Minke whales, and it has also imported enormous amounts of whale meat--123,955 tons between 1980 and 1991 (Chan *et al.* 1995a). This country provides the world's largest retail market for whale meat, buying illegally caught meat from pirate whalers around the world. A recent AWI-supported investigation by Steven Galster and Rebecca Chen (1994) uncovered enormous caches of illegal whale meat stockpiles held in Russia for eventual sale to Japan; 232 metric tons were found in Vladivostok alone, including thousands of pounds of meat from Bryde's Whales. This 50-foot species has been on Appendix I since the 1970s, and the illegal meat was being smuggled from Taiwan to South Korea and then to Japan. The latter smuggling operation began in 1988 and continued until at least 1994 (Galster and Chen 1994). Investigators found Bryde's Whales' skin and fat being openly sold in a Japanese shop in 1995 (Chan *et al.* 1995a). Yet Japan claims it has legal stocks of frozen Sei, Fin, Bryde's and Sperm Whale meat (Chan *et al.* 1995a). Similar studies in the intervening years have determined that, based on DNA studies of whale meat sold in Japan, protected and endangered whales, including the Blue Whale, are still sold in Tokyo (ABC News, July 14, 2001).

Japanese and American toxicologists have also analyzed whale and dolphin meat and found extremely high levels of heavy metals (such as mercury) and toxic chemicals (such as dioxin and PCBs)--high enough to pose a serious health threat merely by eating a few ounces of blubber (Chadwick 2001). A study in the Faroe Islands north of Scotland found brain and heart damage in children whose mothers had eaten whale meat (Chadwick 2001).

Japanese national legislation does not cover the regulation of all whale meat sales, and it retails at an average of \$64 per pound. In 1993 Japan enacted legislation that prohibited the capture, possession or sale of Blue and Bowhead Whales without a permit issued by the Minister of Agriculture, Forestry and Fisheries. However, this is not meaningful legislation since the Blue Whale has been legally protected from killing and international trade for decades, and Bowhead Whale meat can only be consumed by the native peoples who kill them. In another recent investigation by two scientists working for Earthtrust, DNA analyses were conducted on whale meat being sold in Japan. This sophisticated forensic study determined that the meat came from Humpback, Fin, and North Atlantic Minke Whale (AWI 1994). Humpback and Fin Whales are endangered species, and the revelation of this trade should have resulted in international sanctions, but it did not.

In 1996, the U.S. Secretary of Commerce formally certified Japan under the Pelly Amendment for outlaw whaling. Japan's continued defiance of the IWC by granting itself "Scientific Permits" for research represents a lack of compliance with international treaties. An IWC Resolution recommended that scientific whaling be non-lethal. Yet in 1996, Japan announced that it increased the quota its ships can kill in the Antarctic from 330 to 440 Minke Whales, and continued to kill 100 whales in the north Pacific (Kristof 1996). At the 1996 IWC meeting, a Resolution was passed requesting Japan to halt its scientific whaling, in particular in the Southern Ocean Sanctuary, and Japan's request for 50 Minke Whales from the North Pacific was turned down for the ninth year in succession. Although the Pelly Amendment allows trade sanctions on the enormous quantities of fisheries products that are imported into the United States, President Clinton announced on February 9, 1996, that he would not impose any penalty on Japan. The Animal Welfare Institute, through full-page newspaper advertisements and mailings, opposed the illegal whaling of both Japan and Norway, urging boycotts of products and services from these countries.

South Korea and Taiwan, while not permitting whaling, have shipped illegal whale meat to Japan. In 1993, South Korea received 3.5 tons of Minke Whale meat being smuggled from Norway, and one of its freighters was caught smuggling whale meat into Japan in 1994 (Chan *et al.* 1995a). Investigators found baleen whale meat and dolphin for sale in a vast fish market in Pusan, South Korea, in April 1995 (Chan *et al.* 1995a). Taiwan exported 14,590 boxes of whale meat to Singapore in 1993, and it is suspected of laundering illegal whale meat (Chan *et al.* 1995a).

The United States and other countries are under pressure to agree to a return to commercial whaling should whale populations increase. The IWC's "Revised Management Procedure" would authorize the slaughter. Estimates of a very large population of between 510,000 and 1.4 million Minke Whales in the Southern Hemisphere have proven to be too high, yet the IWC's Scientific Committee has approved a management plan that would permit the killing of

5,000 to 10,000 of these whales a year (Chadwick 2001). Japan's request for a Scientific Permit to kill Bryde's and Sperm Whales was turned down by the IWC in 2000, but it proceeded to take five Sperm Whales, 43 Bryde's Whales and 40 Minke Whales in a hunt in the North Pacific during that same summer. The same year, its proposals to downlist this species from Appendix I at the CITES Conference also failed. In the fall of 2000, Japanese whalers sailed to Antarctica for a five-month "research" trip, with plans to harvest up to 440 Minke Whales (Chadwick 2000). Both the IWC and CITES lack any enforcement powers, and the effectiveness of these Treaties depends on national legislation. For this reason, whalers have flouted regulations by killing protected whales for decades, with little fear of retribution. The Environmental Investigation Agency (EIA) compiled a list of known violations by whalers since 1942, involving thousands of rare and endangered whales to illustrate this (AWI 1995). Those countries and organizations that believe in a return to commercial whaling support a cold-blooded approach to whales that does not recognize their intelligence, friendliness, and the lack of information on the extreme stresses they endure from other threats, including: pollution by toxic chemicals; ozone depletion that is destroying phytoplankton, which is the basis of marine food chains; collisions with ships; entanglements in fishing nets; and coastal development, to name just a few.

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To end whaling and trade, economic alternatives such as whale watching should be seriously considered by those countries that continue to whale. Even Japan has recently begun whale watching tours in the Ogasawara Islands, bringing in sizeable revenues. One Japanese fisherman said: "Whales have always been regarded as a kind of divine omen in this area. I feel it is an atrocious thing to kill whales. We Japanese do not have to eat whales anymore" (Anon. 1992). In 1992, an estimated 19,267 people participated in whale watching in Japan, a \$10 million business according to *New Scientist* (May 8, 1993), which also reports that Japanese people are increasingly critical of their government's whaling. In 1996, anti-whaling pressures increased within Japan, and many young Japanese now consider the whale a mammal rather than a meal, but this has not influenced the government's policies (Kristof 1996). A Japanese harpooner quoted in *The New York Times* angrily disputed critics of whaling, saying: "I don't think of whales as especially smart. They're just like ordinary fish. We feel that they're just a big present from the sea" (Kristof 1996). Most Japanese are unaware that Japan is still involved in whaling (Kristof 1996).

In the United States, almost \$200 million was earned by whale watching boats and associated businesses in 1991 (WDCS 1991). In 1992, revenues from the whale watching industry increased to \$260 million, and a survey found that whale watching was carried out in 37 countries (*New Scientist*, 8 May 1993). By 1998, the worldwide total revenues from whale watching topped \$1 billion, according to a study by the International Fund for Animal Welfare (IFAW). This far exceeds revenues from whaling (BG 2000). Nine million people whale watched in 1998 in 87 countries, according to the IFAW study. The sale of whale meat represents a one-time profit, as opposed to the renewable benefits from watching whales that may live to be 50 or more years old. An adult Minke Whale brings about \$100,000 on the market (Talmadge 2000)--a significant amount, but a fraction of its potential income from whale watching. Products obtained from whales are not essential, and economically, far more people profit from whale watching than from the whale products industry. They include whale watching boat companies, local motels and restaurants and tourist shops. By contrast, whaling profits the whaler, the wholesale buyer and the retail seller. These arguments should not be necessary, however, in view of the extraordinary qualities of these fascinating animals. Whales possess tremendous appeal, and the research that will reveal the most about them will be based on observations of live whales, not necropsies of dead ones.

A growing number of people condemn the killing of all cetaceans. Iceland's illegal whaling in the late 1980s was halted when conservation and humane organizations persuaded many commercial importers of Icelandic fish to cancel orders, costing that country some \$50 million. The actions of governments, individuals, organizations and consumer boycotts, combined with public opinion, have brought about whaling moratoriums and country bans. Only stronger

enforcement of laws and better public awareness in the whaling countries themselves about the cruelty to these gentle and intelligent creatures may bring whaling to an end. The presence of these sentient beings in the ocean is an inspiration to all, but their survival may depend on active opposition to their killing.

Dolphin and Small Cetacean Fisheries

The killing of dolphins and Pilot Whales is not covered by the IWC regulations, and as restrictions on killing the great whales increase, some countries are turning to small cetaceans. The true extent of dolphin killing around the world is not known but is presumed to be well over 100,000 animals per year, with more than 60 species subject to commercial harvest. Sri Lanka, Turkey and other countries have unregulated--but considerable--dolphin fisheries. No international treaties cover this slaughter other than CITES, which lists some dolphins and porpoises on Appendix I, banning trade, and the rest on Appendix II, which regulates it. The fisheries may be endangering numerous species and eliminating local populations. Japanese fishermen are killing Dall's Porpoises (*Phocoenoides dalli*) in large numbers. These porpoises are known to "bow-ride" in the wake of their small dories. Taking advantage of this apparent dolphin game, fishermen are harpooning the frolicking dolphins in their backs with steel-barbed weapons, causing a painful and slow death. The meat is then marketed as "whale." At least 560 boats are killing these small black-and-white porpoises off the Japanese coast (Currey 1990). Approximately 111,500 of these porpoises were killed by Japan from 1986 to 1989 (Nowak 1999). In 1990, the IWC passed a Resolution calling for a reduction in the number of Dall's Porpoises killed to at least 10,000, but Japan killed 17,634 the following year (Chan *et al.* 1995a). The Japanese continue this killing, using 80 fishing boats that pursue migrating herds throughout the year. An estimated 67 percent of Dall's Porpoises have been killed by the Japanese, who killed 65,159 of these porpoises between 1990 and 1993 (Chan *et al.* 1995a). Annual kill is now about 20,000 and seems to involve mainly immature animals (Nowak 1999). The 2000 IUCN Red List of Threatened Species lists this species as Conservation Dependent, in spite of the fact that there seems to be little conservation preserving this species.

Striped Dolphins (*Stenella coeruleoalba*) have been nearly eliminated along the Japanese coast (Currey 1990). Recent statistics from the IWC show that Japan whales 18 species of small cetaceans, and kills many thousands more as incidental catch in its fisheries (Chan *et al.* 1995a). The 76,295 of these dolphins killed directly make up only a portion of their human-caused mortality; added to this, 35,002 Striped Dolphins drowned in fishing nets, for a total of 111,297 killed between 1990 and 1993 (Chan *et al.* 1995a). The combined killing from these two causes is resulting in declines. It, too, is listed as Conservation Dependent by the 2000 IUCN Red List of Threatened Species.

When Atlantic Pilot Whales (*Globicephala melaena*) gather in the bays of the Faroe Islands of the North Atlantic, as they probably have for thousands of years, they encounter local fishermen, who herd them toward the shore in small boats. Others wade into the water and kill the friendly animals with hooked fishing gaffs--perhaps the cruelest of all the whaling methods. Some use large meat cleavers to literally saw off the Pilot Whales' heads, while the animal writhes in the shallow water. The Faroese people consider this annual slaughter a "sport" and even encourage very young children to participate. Years of campaigning by groups such as the Environmental Investigation Agency, which has filmed the hunt in all its gore and shown wounded animals dying slow deaths, have failed to stop it. In spite of their name, Pilot Whales are actually closely related to dolphins and are social, forming very close-knit clans in which only a few young are born each year. The entire herd cares for the young. DNA analyses of animals killed in the Faroe Islands showed that all members of individual groups are related to one another. These herds are led by older females, who are the repositories of learned information about food sources and other survival lore (Harrison and Bryden 1988). This partly explains why they follow one another when one becomes stranded and keep returning to the beach if turned back to sea.

Chilean fishermen kill thousands of Commerson's Dolphins (*Cephalorhynchus commersonii*) to use their meat as crab bait. These small dolphins resemble miniature Killer Whales (*Orcinus orca*) with their black-and-white

coloration, although their body form is similar to that of Harbor Porpoises. Only about 4.8 feet long, these dolphins are found only in the Southern Hemisphere from Argentina south to the Kerguelen Islands (Harrison and Bryden 1988). So many have been killed that their population has declined precipitously. A closely related species, Hector's Dolphin (*Cephalorhynchus hectori*), native to New Zealand waters, has declined from pollution and trawling, which drowns thousands. The New Zealand government banned trawling within a 1,170-square-kilometer area where the species congregates. Its status has become more endangered in the past four years, and the IUCN raised its status from Vulnerable in 1996 to Endangered in 2000.

Russia announced early in 1997 that it is considering a return to commercial whaling, targeting Belugas, or White Whales (*Delphinapterus leucas*). They claim that these whales are depleting cod stocks in the White Sea, echoing the unscientific claims of Norway's scientists. These small whales have declined in many parts of their ranges. In the Arctic, Belugas swim in small groups, using their sophisticated echolocation system to navigate and locate fish in this frozen environment (Harrison and Bryden 1988). They have extremely flexible bodies, enabling them to rotate their flippers and heads, to twist their bodies around, and even to swim backwards using their flukes (Harrison and Bryden 1988). Recent research on captive Belugas at the Shedd Aquarium in Chicago has revealed them to be talented mimics, able to imitate a great variety of sounds (Yovich 1996). In one case, Belugas in a tank next to another tank used to train a dolphin with a low-frequency tone, began making the identical sound, which was a signal for the dolphin to swim away. Researchers were at first confounded when the dolphin would swim away before they gave her the tone sound, only to find out that the Belugas were mimicking it, either out of mischief or as a normal behavior (Yovich 1996). Their talents at mimicry extend to imitating whistles, human-produced sounds, bird calls, fire alarms, and scuba regulator sounds, among others (Yovich 1996). Research on the use of this talent by wild Belugas is now beginning.

There are separate populations of Belugas in the Arctic region, and several of these are in steep decline: the Cumberland Sound population has declined to only about 600 animals; and the St. Lawrence Belugas have declined from 10,000 to only 350 animals, decimated by the effects of pollution from factories (Nowak 1999). They are now so contaminated that their bodies constitute hazardous waste. These beautiful whales are hunted in Canada and Greenland by natives in a totally unmonitored fashion, with only fragmentary knowledge of their life history. Some populations have been reduced 20 percent by hunting (Darling *et al.* 1995), and for the first time, the IUCN listed this species in the Vulnerable category in its *1996 Red List of Threatened Animals* (Baillie and Groombridge 1996). The *2000 IUCN Red List of Threatened Species* also listed the species as Vulnerable. Worldwide populations have declined from 250,000 in 1965 to between 100,000 and 150,000 in 1996 (Yovich 1996), with the lower figure considered more likely (Nowak 1999).

Small cetaceans have incurred major declines from direct and indirect killing. Dolphins and porpoises have only one calf per year, and for some species, many adults are non-breeding members of the herd. Unrestricted hunting has the potential to endanger many species, and international controls are needed. Many species and populations of dolphins continue to drown in large numbers in tuna purse seine nets, and pollution has killed a large percentage of the Atlantic, North Sea and Mediterranean dolphins in the past decade. The number of threatened and possibly threatened small, saltwater cetaceans has grown from 35 species listed in the *1996 IUCN Red List* to 47 species, almost all in the category Data Deficient, indicating that more information is needed about their status, which might show the species to be threatened. It is an indication of the lack of conservation attention these species have received that so many are listed in this category. Obviously, much more research is needed. Dolphins and porpoises have captured our imaginations after many true stories of their having saved people from drowning and their role in the mythology of the Greeks and others. It is incumbent on us to maintain the diversity of these small cetaceans and prevent them from declining to endangered status or disappearing altogether.

Fur: A History of Endangering Species

The history of the fur trade, past and present, is evidence that no animal, no matter how abundant, is immune to possible extinction should its pelt become valuable to the fur trade. A pattern develops as fur pelt prices rise, and the species becomes rare from overtrapping. These pelts become more avidly sought out. Commercial extinction can result fairly quickly if animals with valuable pelts are killed at a rate greater than they can reproduce. Animals whose populations numbered in the millions and whose ranges extended over entire continents have been reduced to near extinction within the space of a few decades, as demonstrated by the trade in spotted cats. For those animals that are naturally rare in the wild, or rare due to ecological or geographical reasons--the Falkland Island Wolf (*Dusicyon australis*), the North American Sea Mink (*Mustela macrodon*) and the Rufous Gazelle (*Gazella rufina*), for example--extinction came quickly when their pelts were in demand by the fur trade.

Extinctions

The Falkland Island Wolf was an extremely tame and fox-like wolf about 3 feet in length, with a short bushy tail 11 inches long (Nowak 1999). This brown canid had a large skull with a short nose, broad muzzle and small ears. It was the only land mammal native to these subantarctic islands, and it lived on birds, especially geese and penguins (Nowak 1999). How these wolves arrived on the islands, which are 400 kilometers from the mainland, is not known, but in prehistoric times, natives may have brought them as domestic animals. Another theory is that sea levels during the Pleistocene might have been low enough to permit their migration from South America (Nowak 1999).

Charles Darwin, on his voyage in the *Beagle*, collected three skin specimens of the Falkland Island Wolf, two of which were presented to the London Zoological Society (Day 1981). Darwin found these animals very common and tame during his visit in 1833. They approached visitors to the islands out of apparent curiosity (Day 1981). According to some accounts, they even came to campsites and carried away supplies (Nowak 1999). The Falkland Island Wolf was exploited by fur trappers shortly after British settlement of the islands in 1800 (Allen 1942). The American fur magnate, John Jacob Astor, sent men in 1839 to collect pelts, and great numbers were taken; others were poisoned by sheep farmers. Darwin noted that they were so easily killed that men could hold out a piece of meat in one hand and stab the animal with a knife held in the other when it came within reach (Day 1981). By 1870, they had become very rare, and the last individual of this species was killed in 1876 (Allen 1942).

The Sea Mink of the coasts of northeastern North America was another casualty of the fur trade. Its brutal extinction was described in Chapter One. Both this species and the Falkland Island Wolf had very limited distributions, making their populations vulnerable to overexploitation. Also, both were the objects of intensive hunts for their furs. Only the very large distributions of some species whose populations were reduced to near-extinction, such as the large spotted cats and many species of otters, saved them from the same fate as the Falkland Island Wolf and Sea Mink.

A beautiful and delicate animal of North African forests, the Rufous Gazelle, was also killed for its pelt. One of the largest gazelle species, it was 5 feet long, with foot-long spiraled horns (Day 1981). Little is known of this species other than sightings of small groups of gazelles in the mountainous forests above the Chelif valley of Algeria. The only people who were familiar with the Rufous Gazelle were furriers of Oran who saw it as a rare and costly pelt that they acquired every three or four years in the 1920s (Day 1981). These delicate, reddish gazelles disappeared during this period and, by the 1940s, were considered extinct. Three specimens were taken by museums (Day 1981).

Prior to the 20th century, a long list of furbearers were nearly eliminated by the fur and hide trade. In North America, the Bison, Beaver, River and Sea Otters, Marten, Fisher and Kit Fox, disappeared from most of the continent by the end of the 19th century. Today, the Beaver has made a comeback, largely as a result of reintroduction, but the other species have greatly reduced distributions and numbers.

The international fur trade's beginnings in the 18th century endangered one species after another and continued unabated through the 19th century. This period marked the most extensive wildlife slaughter in recorded history. Vast numbers of wild animals which roamed continents and swam ocean waters were reduced to scattered remnants. Heavy fur trading continued into the 20th century. During the 1920s, U.S. sales peaked at more than 50 million wild animal pelts (Osborn and Anthony 1922). The fur trade soon discovered new species to replace those overharvested.

Trapping of fur animals involves extreme cruelty. One of the most widely used traps to take fur animals throughout the world is the wire snare. Loops of strong wire are designed to tighten until they cut through skin and organs. Leg snares are placed on the ground, and the animal walks into the loop, which then springs and tightens on the leg. Sometimes the animal is caught by other parts of the body and dies slowly. Neck snares, set higher up on tree trunks, are intended to grab the animal by the neck and strangle it. In tropical countries, these snares have been responsible for the agonizing deaths of hundreds of thousands of wild cats, antelope, primates, and perhaps an equal number of non-target animals. Elephants have blundered into neck snares and become entrapped by a leg--or even the trunk--and died slowly of infection after weeks of pain. These snares are totally non-selective, and present a major threat to virtually all mammals and many other types of animals, even in national parks. In Africa, Leopards, civets, and Cheetah are among intended victims snared and often found severely wounded. Wire snares are legal in many U.S. states, although they have been banned in some.

Trapping methods in North America, which produces the largest number of wild furs in the world, have changed little since the 18th century. The steel jaw leghold trap, used to obtain the majority of these wild fur pelts, is extremely inhumane. Holding the animal's paw or leg tightly, it usually cuts off circulation, and it often breaks bones. Many animals are so frantic to escape that they chew off their own trapped paws. These traps were decried by Darwin in an article in the *Gardeners' Chronicle and Agricultural Gazette* of August 1863. Darwin described the suffering of animals caught in these traps, "We must fancy what it would be to have a limb crushed during a whole long night, between the iron teeth of a trap, and with the agony increased by constant attempts to escape." He spoke of rabbits, still alive when the trap was approached, who started up, struggling violently to escape, "shrieking pitifully from terror and the pangs occasioned by their struggles." Darwin pleaded for a ban on these traps, but it was not enacted in England until the 1950s.

Trappers in many U.S. states and Canadian provinces do not have to check their traps for days on end; and in Alaska, Michigan, North Dakota and Montana, there is no time limit for trap-checking. The trapped animal suffers pain, trauma, hunger and thirst. There are even cases of trappers failing to return to check traps until the snow cover melted, revealing animals that had taken weeks to die. Gangrene and fatal infections result from injuries received in these traps to animals, such as pets, that had been trapped for long periods. Thousands of non-target animals, many of these endangered species, are caught in leghold traps every year. The AWI publication, *Facts About Furs*, discusses this and other traps and provides photographic documentation of the suffering animals endure to become fur coats. In 1994, the World Veterinary Association declared the leghold trap to be inhumane, and many other veterinary organizations, including the American Animal Hospital Association (AAHA) and the American Veterinary Medical Association (AVMA), have condemned it. The steel jaw leghold trap has been banned in 88 countries, including all European Union countries; but these traps are officially endorsed by U.S. and Canadian wildlife agencies, both federal and regional. Some U.S. states have restricted or banned use of the steel jaw leghold trap, and in several states, all lethal traps have been banned by voters through Referendums that bypassed state legislatures, which tend to support these traps and refuse to allow votes on their prohibition. New Jersey bans sale, possession and use of steel jaw leghold traps. California, Colorado, Florida, Massachusetts, Rhode Island and Washington prohibit their use (with exceptions under special circumstances). In Arizona, these traps are banned on public land (80 percent of land in Arizona is public), with exceptions permitted to protect public health and safety.

Fur Seals

The 18th and 19th centuries saw a massive slaughter of fur seals wherever they were found, from the Aleutian Islands to the Antarctic and shores and islands of all the major continents. These animals are especially vulnerable when on land, breeding and having their young, as they are slow and ponderous and can easily be blocked from entering the sea and being bludgeoned. Hundreds of thousands of fur seals lined coasts and off islands in cold water areas throughout the world. The Northern Fur Seal (*Callorhinus ursinus*) inhabits the North Pacific from the Channel Islands off California in a large arc to the Sea of Japan (Nowak 1999). Estimated to number 4.5 million in 1870, sealing reduced them to 200,000 by 1914 (Sparks 1992). Pelagic sealing had a catastrophic effect on these seals; more than 1 million Northern Fur Seals, of which 60 to 80 percent were females, were taken at sea from 1868 to 1911 (Nowak 1999). Many of the females were lactating and had left their pups on land while they foraged at sea. Major conflicts erupted between the countries where the rookeries were located, Russia and the United States, and the two major pelagic sealing nations, Canada and Japan (Nowak 1999). The situation was resolved when the fur seal rookeries on the Kuril, Commander and Robben Islands in the western Pacific were almost completely eliminated (Nowak 1999).

Pelagic sealing was banned by treaty in 1911, but commercial harvests on the Northern Fur Seal's breeding islands did not stop until the 1980s, when the species became depleted. This seal also suffers from a mortality of some 50,000 a year drowning in driftnets (Nowak 1999). When the regulated kill in Alaska was stopped, it was expected that the species would rebound, but numbers of pups born dropped on the Pribilof Islands from 450,000 in the mid-1950s to 253,000 in 1992, and the species population there is half what it was in the 1950s (Nowak 1999). The National Marine Fisheries Service, which has jurisdiction over marine mammals, designated it a depleted species but refused a petition to list it on the U.S. Endangered Species Act. It is a species "undergoing its most serious crisis since the era of pelagic sealing a century ago" (Nowak 1999). The 2000 IUCN Red List of Threatened Species lists it as Vulnerable, the category below Endangered, indicating a dangerous decline. The species spends much of the year in open sea, and there has been speculation that, in addition to losses from entanglements in fishing nets and gear, illegal killing for fur may be taking place by fishing and other vessels.

Three of the eight other species of fur seals are also listed as Vulnerable by the IUCN. They inhabit waters further south, from Guadalupe Island off Baja California, Mexico, to the Galapagos and Juan Fernandez Islands off South America. All originally had limited populations in restricted distributions and were heavily hunted for their fur. After a century of protection, they have not recovered their numbers, and were even thought extinct for a period. The Juan Fernandez Fur Seal (*Arctocephalus philippi*) is native to the islands made famous by Alejandro Selkirk, upon whom the novel *Robinson Crusoe* was based. Prior to any sealing, the species may have numbered 4 million; after 18th century sealers began exploiting them, they were quickly reduced to 2 to 3 million (Nowak 1999). Up to 3.5 million were taken from 1793 to 1807, with as many as 15 ships all killing seals at the same time (Nowak 1999). By 1824, the species was considered commercially extinct (Nowak 1999); it disappeared in 1891, considered extinct (Allen 1942). Small numbers were discovered in 1968 near Isla Robinson Crusoe, and a census in 1983-1984 counted 6,300 fur seals throughout the islands. Another count in 1990 estimated 12,000 Juan Fernandez Fur Seals, but there is some poaching and harassment by fishermen (Nowak 1999).

The Southern Fur Seal (*Arctocephalus australis*), native to the coast of South America, was also heavily exploited beginning in 1515 (Nowak 1999). Not until the 1940s was the killing controlled, but even with an authorized kill of about 12,000 seals a year, the population in Uruguay fell from 252,000 to 5,000 from 1987-1991, a precipitous drop (Nowak 1999). The species has not recovered from sealing and now numbers about 83,000 (Nowak 1999). Although its population is below that of the Northern Fur Seal, it is not listed as Vulnerable by the IUCN. Darwin saw these seals on Chiloe Island, off southern Chile. He described them in his notes on the epic voyage on the *Beagle*: "I

accompanied the Captain in a boat to the head of a deep creek. On the way the number of seals which we saw was quite astonishing: every bit of flat rock, and parts of the beach were covered with them. They appeared to be of a loving disposition, and lay huddled together, fast asleep . . .

The smallest fur seal is the Galapagos (*Arctocephalus galapagoensis*), with males weighing only 64 kilograms and females weighing 27 kilograms, (Nowak 1999). So heavily hunted by commercial sealers in the 19th century that it was thought extinct by the early 20th century, small populations were seen in 1932 (Nowak 1999). It has recovered to a population of 30,000 to 40,000. Although protected by Ecuadorian law in these islands, it is attacked by feral dogs (Nowak 1999) and, in view of the oil spill that took place in early 2001, is vulnerable to that threat as well.

The Guadalupe Fur Seal (*Arctocephalus townsendi*) was once found from Guadalupe Island off Mexico and along the coast of Baja California, Mexico, north to the Channel Islands, California. Originally numbering up to 200,000 seals on Guadalupe alone, thousands more lived along the coasts (Nowak 1999). Early in the 19th century, sealers killed the majority of the population, returning regularly to kill more seals until 1894 when no more could be found. It was twice considered extinct (1895 to 1926, 1928 to 1949) (Nowak 1999). Rediscovered on Guadalupe Island in 1926 by two fishermen, several seals were sent to the San Diego Zoo in 1928. After a quarrel between one of the fishermen who discovered the seals and the Director of the zoo, the former stormed off to Guadalupe Island in 1928 to kill the entire herd; he killed every seal he found and sold the skins in Panama, where he was killed in a barroom fight (Curry-Lindahl 1972). Not until 1949 was a lone male seen on Nicolas Island in the Channel Islands off southern California; in 1954, a small colony of 14 seals was found on Guadalupe Island, hiding in caves along the shore (Curry-Lindahl 1972). They were accorded protection by Mexico and, later, by the 1972 U.S. Marine Mammal Protection Act, but their populations have remained low. Several bulls of this species have been seen in the Channel Islands off California, but no breeding has been recorded there. The population on Guadalupe Island increased to about 1,600 by 1984 (Reeves *et al.* 1992) and to 7,000 in 2001 (Nowak 1999), a fraction of the original numbers.

Other fur seal species in South Africa, islands in the Antarctic region, New Zealand and Australia were also heavily hunted, nearly causing their extinctions. Exploitation of South African Fur Seals (*Arctocephalus pusillus*) began in 1610 and is still continuing. Their major population is along the southwestern coast of Africa, but they range as far as Australia, Tasmania and New Zealand (Nowak 1999). By the end of the 19th century, their populations along the coasts of Angola, Namibia and South Africa reached dangerously low levels, when sealing was curtailed (Nowak 1999). After increases in the 20th century, a large commercial harvest of 75,000 was authorized on a population estimated at 1.1 million (Nowak 1999). This species is the only fur seal still killed in a large, legal kill. In 2000, 60,000 were killed. Fishermen pressure the government to maintain this kill, claiming that the fur seals harm fish stocks, and fur dealers also exploit the seals for their pelts. The hunt in Namibia was filmed in 2000 and aired on CNN (Cable News Network), showing young male seals on shore being killed by men hitting them with heavy wooden bats. Activists are working to end this hunt, which is not humane. Ecological studies of their population status, food supply, persecution by fishermen, effects of the frequent oil spills that occur in this region, and other important factors affecting their populations have not been carried out. Populations in the Australia area numbered about 200,000 after several decades of sealing, and by the end of the 19th century, regulations limited the kill. The species gradually recovered to about 25,000 in the 1940s, and because of mortality from persecution by fishermen and drowning in nets, the population still only numbers about 30,000 to 50,000 (Nowak 1999). The New Zealand Fur Seal (*Arctocephalus forsteri*), which also inhabits coasts of Australia and Tasmania, was devastated by early sealing and has been slowly recovering. Originally numbering 1.5 to 2 million, they may number only about 27,000 at present (Nowak 1999). Along the Australian coast, they are strictly protected and now cluster in large numbers on the shore of Kangaroo Island, where boardwalks have been built above the rocks for tourists to see them.

Chinchillas

Chinchillas, native to the high Andes, have silky, gray fur, which became very popular in the fur trade in the late 19th century. These rodents were once abundant, and early explorers reported seeing hundreds in a single day (Nowak 1991). Somewhat larger than guinea pigs, chinchilla females are heavier than males, weighing up to 800 grams (28 ounces), while males weigh about 500 grams (17.5 ounces) (Nowak 1999). They are long-lived, with records of individuals surviving to be 20 years old and reproducing until the age of 15 (Nowak 1999). Pelt hunting intensified, with exports rising to an estimated 2 million pelts between 1895 and 1900 (IUCN 1994). In 1905 alone, 217,836 pelts were imported into the United States from South America (Poland 1892). These shy animals were relentlessly pursued when they became rare, and their skins rose to \$200 per pelt; fur buyers gave instructions to agents to obtain pelts "at any price" (Allen 1942). Early in the 20th century, populations of both species--the Long-tailed (*Chinchilla laniger*) and the Short-tailed (*Chinchilla brevicaudata*) Chinchilla, collapsed. In 1910, an agreement was signed by Andean countries where the two chinchilla species occur, to prohibit capture, trade and export (IUCN 1994). Once found throughout the Andes in Peru, Chile, Bolivia and Argentina, chinchillas remain highly endangered. A wild chinchilla coat sold for \$49,000 in Japan in 1981, and others have sold for as much as \$100,000 (Nowak 1999).

Wild populations of both species are now listed on CITES Appendix I, banning commercial trade. The Long-tailed Chinchilla is restricted to the Cordillera de la Costa and the Andean slopes of Chile; it has an estimated population of 5,500 in Las Chinchillas National Reserve and may occur outside the reserve (IUCN 1994). The Short-tailed Chinchilla once had the wider distribution of the two, extending from the mountains of Bolivia and Peru through Chile to northwestern Argentina, but information indicates that it is extinct in Peru and Argentina and is close to extinction in Chile and Bolivia (Thornback and Jenkins 1982; IUCN 1994). In fact, there are no recent records of the species in Lauca National Park in northern Chile, where it had previously been thought to occur, and Short-tailed Chinchillas have never been recorded in the adjoining Sajama National Park in Bolivia (Thornback and Jenkins 1982). Attempts have been made to introduce chinchillas into the wild, but without success to date (Nowak 1999).

As early as 1900, chinchillas were taken into captivity to breed for the fur trade. The International Fur Trade Federation estimates that 200,000 chinchilla pelts are produced annually, with the United States breeding the largest number; pelts sell for up to \$98 (IUCN 1994). Japan is the major market for this fur, followed by South Korea and China (IUCN 1994). The domesticated animals have been bred into different sizes and colors; they are larger than the wild species, with pelt colors ranging from gray and brown to various pastel shades (IUCN 1994). In 1994, films of genital electrocution taken on chinchilla farms resulted in a Sonoma Valley, California, farm being charged with cruelty to animals. Prosecutors documented that, according to veterinarians, the animals suffer during this process, in which the chinchilla is held upside down by the tail and electrodes are placed in the ear and in the anal canal or penis; a switch is then pulled to electrocute. According to guidelines established by the American Veterinary Medical Association, such euthanasia should be carried out only on unconscious animals.

Since ranched pelts are considered superior to wild ones, fur dealers have stated that no demand exists for wild chinchilla fur, and the government of Chile successfully proposed in 1994 that domesticated chinchillas and their fur not be covered by CITES Appendices. The *IUCN Mammal Red Data Book* stated, however, that "hunting of chinchillas still continues," and the highly endangered Short-tailed Chinchilla, whose fur is more valuable than that of the other species, was avidly pursued (Thornback and Jenkins 1982). This species has not been bred in captivity, and domestic animals represent hybrids between the two species. The *2000 IUCN Red List of Threatened Species* lists the Long-tailed Chinchilla as Vulnerable, and the Short-tailed Chinchilla as Critically Endangered.

Koalas

The loveable Koala (*Phascolarctos cinereus*) of Australia, which never recovered from killing by the fur trade in

the 19th and early 20th centuries that nearly caused its extinction, is now in decline again. Symbol of Australia's national airline, Qantas, and one of the most famous and popular animals in the world, it is threatened by a variety of factors, including logging, urban development, and disease. Prior to European colonization of Australia, Koalas numbered in the millions in eucalyptus forests from Queensland in the north to Victoria in the south (Phillips 1994). Koalas date back at least 14 million years, having evolved in rainforests that once covered large portions of Australia. Although climatic change turned much of Australia into desert, their range in 1800 still covered millions of square miles in a continuous forest zone (Phillips 1994). These slow-moving marsupials became quite specialized in their diets, feeding mainly on about 32 of the 500 species of eucalyptus trees native to Australia; but within this habitat, they thrived (Dayton 1991).

Beginning in the 19th century, Koalas were hunted mercilessly by European settlers for their soft fur pelts and were entirely helpless in the face of guns and dogs. The major means used by professional hunters were poisoning and snaring, and by the late 19th century, 300,000 Koala pelts a year were being shipped to the London fur market (Phillips 1994). By the early 20th century, they were almost eliminated in the southern half of the country and became extinct in South Australia in the early 1930s. In 1898, legislation was passed in Victoria to attempt to stem the killing, but it was not enforced (Phillips 1994). In 1908, 57,933 Koala pelts were exported, and hunting spread to Queensland; beginning in 1915, year-round hunting was allowed (Phillips 1994). The U.S. fur trade sold millions of Koala pelts during the 1920s; from 1919 to 1921, 208,677 Koala pelts were sold in the U.S. fur trade, along with more than 7 million Australian opossum and wallaby pelts, according to a study by two American Museum of Natural History biologists, Henry Fairfield Osborn and Harold Anthony (1922). After signs of depletion and public outcry, the Queensland government closed the hunting season in 1921, but commercial pressure resulted in a re-opening of hunting five years later. In a one-month season in 1927, 584,738 Koalas were killed and their pelts sent to the United States (Phillips 1994). This was the last year of hunting. The U.S. market was finally shut down at this time when President Herbert Hoover, who had worked in the gold fields of Western Australia, signed an order permanently prohibiting the importation of both Koala and Wombat skins, an order that remains in effect today (Phillips 1994).

Populations of these animals had been devastated, however. Extinct in South Australia, they numbered only about 200 in New South Wales by 1940 and a few thousand in Victoria. In Queensland, perhaps 10,000 or more Koalas survived, but they declined when millions of acres were cleared for construction and road-building (Phillips 1994). Fragmentation of their habitat throughout their range has played a role in preventing them from returning to former abundance (Phillips 1994).

Even in the 1990s, a time when public sympathy for Koalas had grown considerably along with an awareness of their habitat needs, the government of New South Wales granted a massive woodchip contract to a multinational company, Boral, which may level every native forest left in the northeast of this state. This is the only area in New South Wales where Koalas are reasonably common (Arnold 1992). Citizen lawsuits to halt logging and other development have no legal standing in Victoria and Queensland, and in New South Wales, the government uses taxpayer money to destroy habitat and fight lawsuits (Arnold 1992). An activist organization fighting to save the Koalas, Australians for Animals, states that a mid-1990s drought on the heels of devastating forest fires in 1993 eliminated the species from much of its remaining habitat (Arnold 1992). The Koala requires a large, undisturbed eucalyptus forest. Like many animals devastated by slaughter by the fur trade and failing to recover, it reproduces very slowly. Koalas do not mature until age 5, have only one young per year (although twins have been reported) and can live to be 18 years old in the wild (Nowak 1999).

Beginning in 1985, Koalas faced yet another devastating threat. The first diseased animals suffering from an epidemic of chlamydia were found, many of them blind, sterile or dead (Dayton 1991). Dr. John Woolcock, a veterinary microbiologist at the University of Queensland, has studied the organism attacking Koalas, a pathogen known primarily as an avian disease; the disease affects the eyes and the urinary and reproductive tracts of its victims (Dayton 1991). "It brings tears to the eyes to see blind animals or those with weeping inflamed eyes," said Woolcock (Dayton 1991). The Koala Preservation Society of New South Wales, first organized in 1972 by Jean and Max Starr, began caring for injured and diseased Koalas and constructed a Koala Hospital in the Macquarie Nature Reserve to

rescue the growing number of diseased animals that were brought to them (Phillips 1994). Enclosures were built with eucalyptus trees for their first patients; by 1990, more than 2,000 Koalas had been treated (Phillips 1994). A second hospital had to be built in 1986 near a regional headquarters for the National Parks and Wildlife Service; blind Koalas are kept in large enclosures and hand fed by volunteers (Phillips 1994). *Koalas. Australia's Ancient Ones*, a book by Ken Phillips (1994), describes the extraordinary care given by the organization to these sick and injured animals, who are remarkably stoic and patient throughout their recuperations.

According to some Koala experts, chlamydia is endemic to Koalas, yet few healthy animals succumb to the infection (Phillips 1994). Many biologists and veterinarians believe that the increase in the spread and the number of animals succumbing to the disease is a result of the species' vulnerability from combined stresses. The loss of 80 percent of their habitat in the last 200 years has resulted in their overcrowding in fragmented bits of forest. They are stressed by the threat of dogs that hunt and kill them when they walk on the ground between trees, and many are injured or killed by cars when they try to cross roads. Stranded Koalas have been found clinging to huge electric poles with high-tension wires on all sides; they had climbed up the poles in desperation, as the only tree-like structures in a denuded landscape (Dayton 1991). Removal of just one or two species of eucalyptus from a forest may force Koalas to travel far afield to find edible species, and if they eat leaves not compatible with their digestion, they will die of starvation (Phillips 1994). Very few preserves have been set aside for them, and they are a symbol of the many endangered Australian marsupials threatened by habitat loss.

After the 1993 forest fires, many of which were intentionally set by arsonists, hundreds--and perhaps thousands--of Koalas died or were seriously burned. One critically injured Koala was dubbed Terry Glen, for the two men from the electric company who rescued him with a cherry picker, so blackened by fire that they thought at first he was a bubble of burned sap in the top of the charred tree (Phillips 1994). Terry Glen had lost most of his fur, his ears and eyelids were singed, his nails burned off and he was in deep shock. In the Koala Hospital's intensive care unit, veterinarians treated him as if he were a human burn victim, with special bandages and rehydration. For months he had to be carried around because he could not walk on his bandaged feet; remarkably, he survived. After more than a year in treatment at the hospital, with volunteers providing eucalyptus leaves and special attention to encourage eating and exercise, Terry Glenn, looking like a normal, healthy Koala, was released back to the wild (Phillips 1994). Many burned Koalas were rescued by private citizens during the 1993 fires and treated in their homes, with guidance from the Koala Hospital and other veterinarians. Some were lucky enough to recover to be released to the wild. Although Terry Glen apparently survived after release, several Koalas, after lengthy care, were released only to be killed by dogs. The majority of Koalas, however, do not survive forest fires, another factor contributing to their decline.

The combined effects of land clearing, fire, hunting, disease, automobile collisions, predation, and continued failure by Australian states to protect Koala habitats may end in their extinction. The Koala's gene pool has been depleted, and its extreme vulnerability to disease in the late 20th century may be a symptom of a weakened species declining to extinction. The U.S. Endangered Species Act lists the species as Threatened, but it is not protected by CITES.

Spotted Cats

In the early 1960s, a disastrous fashion trend in spotted cat furs was launched when First Lady Jacqueline Kennedy appeared in a Leopard (*Panthera pardis*) coat sold to her by Ben Kahn Furriers in New York (*The New Yorker* 1967). An instant craze for spotted fur coats developed, and in 1968, 9,556 Leopard skins, 1,283 Cheetah (*Acinonyx jubatus*) skins, 13,516 Jaguar (*Panthera onca*) skins, and 133,064 skins of the small Ocelot (*Leopardus pardalis*) were imported into the United States (Stewart 1977). Profits were at first considerable, as skins were plentiful and reasonably priced to the importers. Soon, however, the spotted cats became rare in the wild, and prices for pelts rose. One employee of a fur manufacturer, who specialized in cutting the pelts of spotted cats into coats, told a reporter

from *The New Yorker* (1967) that as many as eight Somali Leopards were needed to make a coat, and at least 25 of the smaller cats. In 1966, he paid \$250,000 for spotted cat skins which he made into 900 coats. "They must be killing these animals off very fast," he said. "I handle the skins of animals that were in the jungle three days before. They are flown here with the blood still on the fur" (*The New Yorker* 1967). Tiger skins were also used, though only for extremely expensive coats. In the early 1960s, the actress Gina Lollobrigida appeared in a Tiger coat that had cost the lives of at least six of these endangered cats. When questioned about the morality of wearing such a coat, she exclaimed that they were already dead when she bought the coat.

By 1969, the fur industry had pushed many species of these beautiful and regal animals to the verge of extinction. The animals declined because they were rare in the wild, had large territories, were trophy hunted, were persecuted by livestock farmers, or pushed from their territories as a result of habitat destruction. Protests and publicity began to mount to ban sale of their fur. In 1969, the U.S. Congress enacted the Endangered Species Conservation Act, which included prohibitions on the importation for commercial purposes of many foreign species. Several subspecies of critically endangered Leopard and Tiger populations were added to the list, but entire species did not receive protection. Exploitation was scarcely affected because once they are made into coats, subspecies cannot be distinguished from each other. Even when skins are imported, Customs officials and even Fish and Wildlife Service Inspectors are usually not able to distinguish one subspecies from another. The trade in spotted cats continued until passage of state laws, beginning with the Mason Act in New York in 1970, which banned the sale of fur from the Leopard, Cheetah, Snow Leopard (*Panthera uncia*), Clouded Leopard (*Neofelis nebulosa*), Tiger, Jaguar, and two small spotted cats, Margay (*Felis wiedii*) and Ocelot. Six other states followed suit. The U.S. Endangered Species Act of 1973 finally cut off imports by adding the full species of most large and many small spotted cats.

World trade in spotted cat pelts remained a major threat to them, as Paris, London, Rome, Tokyo and other cities provided markets for garments made from endangered wild cats. In 1975 when CITES came into force, several species of large spotted cats received protection on Appendix I, banning legal commercial trade. CITES listings, and the worldwide publicity concerning the plight of spotted cats, stopped most legal trade, although the majority of countries had not yet ratified the treaty. Many countries in Europe and elsewhere enacted domestic legislation to cut off their markets. Education and public opinion condemning the wearing of these coats discouraged this trade in North America and most of Europe.

In 1977, the remaining wild cat species of the Felidae family were listed on CITES Appendix II, covering all species not already listed on Appendix I. Had this designation been properly enforced, requiring all export countries to allow trade only if it does not result in a decline in wild populations, many other wild cat species would not have become endangered. Unfortunately, the fur trade merely switched from Appendix I species to Appendix II species, the majority of which were small cats. Exports from Latin America of four species of small cats--Ocelot, Geoffroy's Cat (*Felis geoffroy*), Tiger Cat or Oncilla (*Felis tigrina*), and Margay--increased in spite of national bans. Brazil banned wildlife exports in 1967 and Paraguay in 1975, but the latter country did not enforce its ban. It continued to export skins of cats killed in Brazil as well as its own country, with the majority going to Europe and Japan in the early 1980s. More than 123,000 Ocelot skins were exported from Paraguay from 1980 to 1985 (Fitzgerald 1989). In 1980, Europe imported at least 430,000 small cat skins from Latin America and Asia. This decreased to 250,000 in 1984 (Fitzgerald 1989). West Germany was the world's largest importer for more than a decade, importing between 220,000 and 370,000 skins a year until 1984, when imports dropped to 90,000 skins (Fitzgerald 1989).

The Margay is a smaller version of the Ocelot, and the Tiger Cat is a tiny spotted cat weighing only 3 to 6 pounds, native to tropical forests from Costa Rica south to Argentina (Sleeper 1995). At least 50 pelts from the Tiger Cat are needed for a fur coat. After these two species experienced steep declines in their wild populations, they were listed on CITES Appendix I along with the Geoffroy's Cat, a spotted cat the size of a domestic house cat, after it, too, became threatened from the fur trade. The U.S. Endangered Species Act lists all three species as Endangered.

The exploitation of these small cats was carried out, for the most part, in countries totally protecting these species,

and is a shocking example of greed, lack of enforcement of laws in their countries of origin, and total disregard for conservation on the part of importing countries. Many of these cats remain endangered from illegal hunting and habitat destruction. The Ocelot, for example, has a low reproductive rate and requires dense forest cover and abundant small prey, making it vulnerable to declines resulting from the rampant deforestation occurring in much of its range. Moreover, in many parts of South America, spotted fur coats are still openly sold or exported to countries that lack strict legislation relating to the sale of endangered species. Population surveys have not been carried out for the majority of these wild cats, and their numbers are estimated based on available habitat, a less than precise method. The Ocelot and many other small spotted cats remain in the Endangered category on the U.S. Endangered Species Act and on CITES Appendix I.

The Asian Leopard Cat (*Prionailurus bengalensis*) became exploited when Latin American small cats declined until it, too, became endangered in India, Bangladesh and Thailand. These populations are now on Appendix I, but cannot be distinguished from other populations when in coat form, making the listing meaningless. In 1993, CITES committees made a recommendation to all member countries that they suspend imports of Leopard Cat pelts from China until that country implemented recommendations for the conservation of this species. One after another of the small cats have become threatened and listed on CITES Appendix I or the U.S. Endangered Species Act.

Exports of North American Bobcats (*Felis rufus*) and Lynx (*Lynx canadensis* or *Felis lynx*) rose during the 1980s for this voracious market. This has caused declines in many populations of both species, especially the Lynx, a northern wild cat with low population density. It is dependent on the cycles of the Arctic Hare, its main prey. At the height of the wild fur boom of the 1980s, trappers pursued Lynx into Alaskan national parks. In one case, a trapped Canadian Lynx was brought food for six weeks by other Lynx. South of Canada, Lynx are extremely rare and are listed by the U.S. Endangered Species Act as Threatened as of March 24, 2000. Eurasian Lynx (*Felis lynx*) are also being killed for the fur trade. In western Europe, this species verges on extinction from centuries of persecution and habitat destruction, but in eastern Europe and Central Asia exploitation continues. CITES committees recommended in 1993 that member countries suspend imports of Lynx from Azerbaijan, Latvia, Lithuania, Moldova and Ukraine until these countries implement the recommendations of the Animals Committee relating to the need for population surveys because of the listing of this species of Appendix II. These recommendations are not, however, legally binding.

Open sale of even the most endangered spotted cats continues in some countries. At various times in the 1990s, highly endangered spotted cat garments have been openly sold in Japan, Taiwan, Hong Kong, Greece and West Germany, as well as in some of the countries of origin, such as Argentina, Kenya, Nepal, Vietnam, Laos, India, South Africa and Indonesia. Tiger skins are still being sold illegally for as much as \$20,000 each. At a time when each Tiger's life is of utmost importance in conserving the species, illegal hunting is killing off the remaining Tigers at a far greater rate than they can sustain. In the first months of 1994, two Tiger skins were confiscated in India; one of the skins was from a Tiger that had been recently killed with poison near Kanha National Park (TRAFFIC 1994). In Ho Chi Minh City, Vietnam, Tiger skins and heads are sold in souvenir shops, with no apparent control of this trade by authorities. Leopard skins are also being smuggled by an international criminal network from India to the Persian Gulf (TRAFFIC 1994). Logging companies in Myanmar, formerly known as Burma, capture and kill wildlife on a large scale, offering Leopard and Marbled Cat (*Felis marmorata*) skins for sale (Hill 1994). The world's fastest land animals, Cheetah, number only between 9,000 and 12,000 in Sub-Saharan Africa, yet many are still killed and their pelts smuggled to parts of Europe and Asia. Farmers and ranchers in Namibia and other countries of southern Africa kill Cheetah as predator control, and then sell their pelts.

In Katmandu, Nepal, surveys in the late 1980s and 1990s by conservation organizations uncovered a major illegal trade in protected animals. In a 1988 survey, researcher L.J. Barnes posed as an American tourist and found 50 shops selling furs. In these stores, he counted 60 Leopard Cat coats, 19 Leopard coats, four Clouded and four Snow Leopard coats on open display (Heinen and Leisure 1993). In 1988 to 1989, a full-length Snow Leopard coat was openly offered for sale in a store along with two Clouded Leopard coats; in February 1992 and early 1993, Clouded Leopard coats were still being offered (Menon 1994). Coats made of the pelts from small cats, such as the Fishing Cat, Jungle

Cat and Desert Cat, were commonly offered for sale in 1991. The number of stores selling furs in Katmandu increased by 44 percent between 1988 and 1991, and the sale of endangered spotted cat coats had not declined. A few years later, a third survey of fur stores found that sales of these items actually increased: 29 Leopard coats made from an estimated 203 Leopards, and two Appendix I Snow Leopard coats made from at least 14 of these endangered animals were seen (Menon 1994). The 1993 survey found 76 shops selling 1,225 fur items from a variety of endangered species. An official from the CITES Secretariat traveled to Nepal in 1993 to meet with senior officials from the wildlife department to inform them of the surveys and their findings; the Nepalese officials agreed to take action to investigate irregularities (Menon 1994). A follow-up visit to Katmandu later in 1993 found no change; 35 shops were visited, and all continued to sell protected species openly (Menon 1994). A 1993 Nepalese law prohibits the killing, sale or trade in Snow or Clouded Leopards, with fines of \$1,200 to \$2,250 for offenses and a prison term of one to 10 years for killing or wounding; for illegal trade, fines of \$1,500 to \$3,000 and a prison term of five to 10 years, according to TRAFFIC International. Both the Clouded and Snow Leopards are listed on Appendix I of CITES, to which Nepal is a Party.

In neighboring India, the sale of certain furs was banned in 1979, but fur traders in Delhi received permission to continue to display their fur items for sale until stocks were depleted. This led to an indefinite reprieve in 1987 by the Delhi government, according to TRAFFIC India. The latter organization petitioned the government in 1993 to stop this trade, and the ban was reinstated, but delays in implementation resulted in the continued sale of many banned furs. A second petition to the Delhi High Court by TRAFFIC India and WWF India resulted in a court order calling for traders to stop sale by January 1994, pending a final decision. This applies only to Delhi, however, and endangered cat furs continue to be sold elsewhere in India. In 1996 alone, the skins of 14 Tigers and 64 Leopards were seized in various parts of the country, some as they were being exported, according to the Wildlife Protection Society of India.

The break-up of the Soviet Union has resulted in a wildlife slaughter by fur hunters in Central Asia. The poverty of rural people in Kazakhstan and other republics resulted in an appreciated value of furs; the skin of a Snow Leopard is worth 60 times the minimum yearly wage, or \$500 to \$2,000 (Koshkarev 1994). The scale of poaching is enormous; 12 Snow Leopard skins and 34 Turkestan Lynx (*Lynx lynx isabellinus*) were offered for sale in 1994 in a single village, and another 10 were trapped in the winter of 1993 to 1994 by a shepherd in the Bzhety-Oguzskiy region (Koshkarev 1994). In much of Central Asia and the Tibetan Plateau, Lynx and Snow Leopards are killed because they are considered a threat to sheep and also for their pelts (Schaller 1998). Hundreds of Snow Leopard skins from Tibet have entered the international fur trade, and so many of this species have been killed in Bhutan and India that the species is nearly extinct there (Schaller 1998). Even in the immense Chang Tang Reserve of Tibet, an area with extensive habitat for Snow Leopards, they are rare even though their major prey, Blue Sheep, were present (Schaller 1998).

Many people in Central Asia have turned to hunting furbearers at an unprecedented level, killing an estimated half of the Snow Leopard population in one region in a single winter (Koshkarev 1994). The major prey of the Snow Leopards in the area, Grey Marmots (*Marmot baibacina*), are also being eliminated by fur hunters, with 600 to 800 caught in a season (Koshkarev 1994). The Snow Leopard pelts are being sold through the black market to foreign tourists and Russian cities (Koshkarev 1994). These elusive and shy cats are among the most beautiful in the world, and their skins are one of the most coveted of all furs. They have been hunted, trapped and pursued throughout their high-altitude range in India, Pakistan, Afghanistan, China, Nepal, Mongolia, Bhutan and the former U.S.S.R. from the Altai Mountains to the Hindu Kush to the Himalayas (Sleeper 1995). Snow Leopards are rare throughout their distribution, ranging up to 18,400 feet, dependent on prey such as Blue Sheep, Ibex, Musk Deer, Tahr, Wild Boar and Marmot, which are themselves rare in this mountainous terrain, and are subject to heavy trophy and meat hunting. Fewer than 10,000 Snow Leopards may remain in the wild (Schaller 1998).

Vietnam and Laos also sell coats and skins of large spotted cats, and China has provided a new market for many of these products. In 1997, a survey in Yunnan Province on the border with Vietnam found skins of Asiatic Golden Cat (*Catopuma temminckii*), Marbled Cat (*Pardofelis marmorata*), Leopard Cat and Fishing Cat (*Felix viverrina*) being

sold in cities in the region (Li and Wang 1999). Officials in the region consider this trade, which includes many endangered species, to be of minor importance in spite of regulations and laws prohibiting it (Li and Wang 1999). Also in Yunnan Province, Customs officials uncovered a scheme to smuggle large numbers of animals by mail. Tracing information relating to packages of animal skins, officials arrived at a house where 11 Tiger skins and many Leopard skins were kept (*TRAFFIC Bulletin* 1999). Another raid in Fuzhou, Fujian Province, China, netted a large number of animal skins and parts in a truck; among the items were Tiger and Leopard skins. In a seven-month period between 1998 and 1999, 11 Tiger skins were seized, many near Kanha Tiger Reserve, along with Tiger skeletons and bones for the Traditional Medicine trade (*TRAFFIC Bulletin* 1999).

A survey of markets in Cambodia in 1994 revealed the pelts of Tigers and Leopards openly displayed in villages on the border with Thailand; Thai buyers cross the border to purchase these pelts (Martin and Phipps 1996). The investigators were told that live Tigers, usually young animals, are sold for \$200 to \$250 to traders in Phnom Penh, who then ship them alive to Vietnam, especially Ho Chi Minh City, where they can be sold for as much as \$5,000 (Martin and Phipps 1996). Leopard skins were seen in both 1994 and 1995 in Phnom Penh and Ban Long, offered for \$50 each (Martin and Phipps 1996). Cambodia is a member of CITES, and prohibits hunting and export of wildlife, but does not have strong legislation regulating sale of animals (Martin and Phipps 1996).

Leopards are still being killed for their fur in African rainforests as well. In 1999 and 2000, Michael Fay, a wildlife biologist with the Wildlife Conservation Society, walked 1,500 miles across Congo and Gabon to draw attention to the urgent need to protect this wilderness from loggers and bushmeat hunters. The National Geographic Society filmed the walk (*Extreme Africa* and *Ndoki Adventure*, shown in March 2001 on National Geographic Explorer), documenting the discovery of a large poaching camp with hundreds of dead animals, including the skin of an extremely large Leopard. Fay and the others set fire to the skin and burned the campsite down. The last rainforests of Central and West Africa are being stripped of their wildlife by bushmeat and animal skin hunters at a completely unsustainable level.

Clouded Leopards were not heavily exploited until the 1980s, but Appendix I listing has not prevented continued exploitation of these endangered Asian cats. Coats from these beautiful cats can sell for as much as \$80,000. The tale of one Clouded Leopard's death was recounted in the newsletter of the World Endangered Species Protection Association of Taiwan:

. . . in the jungles of South Pahang in Malaysia ..some aborigines came to my camp and told me they had caught a tiger. A few hours later I saw her. She lay in a bamboo cage with a shattered front paw; a mess of rotting tissue and splintered bone. I was filled with misgivings and should have put her out of her misery at once, but I loved her on sight and couldn't bring myself to do it. She was not a tiger, but that most handsome of felines, a clouded leopard. Her captors . . . gathered around, indifferent to her suffering. She was caught in a 'Jerat' or steel trap which tightens when the animal struggles. No trace of suffering showed as she faced me with eyes blazing with menace . . . Despite her terrible wounds and the cramped conditions of her cage, she looked magnificent . . . I got it back to my camp and amputated its wounded paw . . . [later]. I found her tearing at the bandages on the stump of her paw with her teeth . . . Two days later it was eating out of my hand, although growling menacingly as it did so. It seemed to be well on the road to complete recovery then, suddenly its wound became infected and it died. Few events have saddened me more.

Charles Shuttleworth, from *Adventures of a Sapient Primate* reprinted in *WESPA NEWS*
November 1994, Taipei, Taiwan

It is rare that one hears of the suffering wild animals endure in order to be turned into frivolous clothing. The pelt of the Clouded Leopard is a mosaic of large black, yellow and white rosettes, somewhat like the markings of a Giraffe, yet its beauty may spell its extinction.

Wild cats, especially large species like Tigers and Leopards, like many other endangered species, require a great deal of territory and are thinly distributed over their range. They live at least 10 years in the wild and have very few young each year, far fewer than domestic cats. Kittens stay with their mothers for up to two years, learning how to hunt and survive. Hunters killing a wild mother cat with kittens, even when they are 6 to 8 months old, kill two generations. All cat mothers are fiercely devoted to their kittens, willing to confront all types of dangers, including hunters and trappers, to protect them. These characteristics are shared with other families of animals that can quickly become endangered by killing and are slow to recover their numbers.

The trade in large and small spotted cats continues to decimate their wild populations because buyers for their pelts can be found throughout the world, whether sold openly, as in some countries, or as hidden merchandise. Official indifference, either from failure to enforce strict laws against hunting or sale, non-membership in CITES, or the failure to enact strict domestic legislation, can contribute to this trade. The present lack of enforcement powers or even sanctions by CITES has dire consequences for endangered species in view of the enormous market for their products. The *2000 IUCN Red List of Threatened Species* lists some, but not all, subspecies of the Tiger as Critically Endangered, and the species as a whole as Endangered. The actual status of this magnificent animal throughout its range appears to be Critically Endangered as a result of the fur trade; the Traditional Medicine trade, which uses its body parts for various purposes; along with persecution and habitat loss. At the present rate of loss of one Tiger per day out of a population totaling only about 5,000 animals, many conservationists and scientists have predicted its extinction in the wild within a decade or less. The IUCN also fails to list the full species of Leopard or Ocelot in any category, while including some of their subspecies. In the view of many, legislation and International Treaties have solved the problem of killing of these animals, but surveys of markets and seizures of poached animals indicate otherwise.

Otters

Among the most playful and intelligent of all animals, otters have been unfortunate in having durable, waterproof fur that is highly desired for coats, jackets and other fur items. Otters of 13 species are found on all continents except Antarctica and Australia, but throughout their ranges, they are thinly distributed and vulnerable to overtrapping.

Many species have incurred great losses from the fur trade. All species of otters (family Lutrinae) are now listed on CITES, with five species and one subspecies on Appendix I, and the remaining on Appendix II. Four species and two subspecies are listed on the U.S. Endangered Species Act. Seven species were listed in the *1996 IUCN Red List of Threatened Animals* (one as Endangered, four as Vulnerable and two as Near-threatened) (Baillie and Groombridge 1996). The downward trend of otters was reflected in the fact that the *2000 IUCN Red List of Threatened Species* listed 11 species (four as Endangered, three as Vulnerable, one as Near-Threatened, and three as Data Deficient). This represents 85 percent of all otters. The large number of species that are threatened is an indication of the massive declines that otters have suffered over the past century, in large part due to the fur industry.

The Sea Otter (*Enhydra lutris*) is a large marine species, heaviest of all otters, weighing up to 45 kilograms (Reeves *et al.* 1992). Living in groups called rafts that float just offshore, they were nearly exterminated throughout their range by the fur trade. Killed for their extremely valuable pelt, pursuit of these otters during the 18th and 19th centuries was among the most destructive and thorough of any in the history of the fur trade. Originally numbering from 250,000 to 300,000, Sea Otters once occurred throughout the North Pacific rim, from Baja California, Mexico,

north along the coasts of North America to Alaska, the Aleutian Islands, Russia and the northern Japanese archipelago (Reeves *et al.* 1992). The German-born Arctic explorer George Steller encountered thousands of Sea Otters during his stay on Bering Island in 1741; his party killed and ate 700 animals, describing adults as fairly good to eat, and the young as dainty as suckling lamb (Peck 1990). Steller's navigator, Vitus Bering, considered the soft, thick pelts a resource which could provide great potential wealth, bringing 900 pelts to Russia (Allen 1942). When Catherine the Great, Empress of Russia, saw one of the skins, she ordered a cloak of Sea Otter to cover her from throat to ankles, launching an onslaught of hunting. Many pelts were traded to the Chinese, who valued them highly (Allen 1942). By the late 19th century, its pelt sold for up to \$165, and as it became rarer, the price rose to \$1,125 by 1903 (Nowak 1999).

At first, Sea Otters were easy to kill, having no fear of humans (Peck 1990). One Russian traveler wrote, "They covered the shore in droves; they would come up to our fires and would not be driven away." Sea Otters approached the Russians on Bering Island and rubbed their noses against the legs of sailors, who immediately bludgeoned them to death (Nickerson 1984). "When it receives a vigorous blow upon the head," one hunter observed, "the otter falls upon the ground, covers its eyes with its paws, and keeps them so, no matter how many times it is struck." The native Aleuts considered them to embody spirits of their own dead, and at first refused to hunt them at all (Peck 1990). Russian seamen forced the Aleuts to produce otter pelts by threatening to rob and pillage their villages and take their women hostage for the furs (Peck 1990). If Aleut hunters failed to produce the furs, the hostages were raped and murdered (Peck 1990).

The Sea Otters were shot as they lay in kelp beds, clubbed when they surfaced from dives to breathe, and netted in wide coarse nets (Allen 1942). On land, they were pursued as they sought shelter among rocky shores, and then clubbed to death. Perhaps the cruelest method was the capture of a pup when the mother dove for food. A cord was tied to the foot of the pup, with fish hooks placed close to its body and attached by the cord. Retiring to the shore, the hunter would pull the cord, hurting the pup so it would cry, bringing the mother, who would become caught in the line or hooks or, so occupied in freeing her offspring, easy prey (Nickerson 1984). The killing of 15,000 Sea Otters by the Russian and English near Bering Island caused the otters' extinction on the island, and they remain absent there today. After less than a century of intense hunting, only 15 otters were found and killed in the entire Aleutian chain in 1826. During the next decade, however, new herds were discovered in Alaskan waters, and in the mid-19th century, about 5,000 Sea Otters were taken per year. Over the 30 years that they were hunted in southern California, an estimated 50,000 were taken, with at least 5,000 a year killed in San Francisco Bay (Nickerson 1984). By 1833, only 54 Sea Otters were found in the Farallon Islands off California; they were soon killed off. This hunting was carried out by enslaved Aleuts brought from Alaska (Nickerson 1984).

By 1900, the Alaska Commercial Company, operating five trading posts and 16 schooners, was able to find only 31 Sea Otters, whose pelts were sold at \$1,000 each (Allen 1942). In 1910, Sea Otters finally received protection under the North Pacific Fur Seal Act, but they had reached the verge of extinction, numbering, in the opinion of biologist Karl Kenyon, only between 1,000 and 2,000 animals (Nickerson 1984). They had been hunted out of much of their territory, including the long coastline from southeastern Alaska to northern California, where a tiny remnant population survived. An estimated 500,000 Sea Otters had been killed between 1740 and 1911 (Reeves *et al.* 1992). The scattered remnants of this species continued to be killed wherever they were found. When small numbers of Sea Otters were spotted between the 1890s and 1917 in the waters off San Luis Obispo and Monterey, California and near islands off Baja California, Mexico, they were immediately shot (Nickerson 1984). Although the Russians predominated in the hunts, Americans, alerted by Captain James Cook in the 18th century, were almost as responsible for the near-extinction of these beautiful animals.

In the 1950s, after an apparent recovery of the species in Alaska, the state Department of Game began a program of experimental harvesting; from 1962 to 1971, 2,933 pelts were taken for zoological data and for possible sale in the fur market (Reeves *et al.* 1992). Their world population numbered about 32,000 by 1965 (Nickerson 1984), and hunts were ended in U.S. waters by passage of the Marine Mammal Protection Act of 1972. Take by native Alaskans is permitted under certain conditions, and some native hunters have killed large numbers of Sea Otters (Reeves *et al.*

1992). Populations totaled an estimated 100,000 to 150,000 in the early 1990s, with the largest numbers off Alaskan coasts (Nowak 1999). The Sea Otter has not reoccupied many parts of its original range, including former strongholds such as the Pribilof Islands, Bering Island, the Queen Charlotte Islands off British Columbia, Oregon, Mexico and most of California (Reeves *et al.* 1992); and reintroduced populations have not fared well (Nowak 1999). The species numbers about 17,000 off Russian coasts (Nowak 1999).

The *Exxon Valdez* oil spill in 1989 killed up to 10,000 otters in this center of their population in Prince William Sound, Alaska (See Aquatic Ecosystems chapter for more about this spill). Yet another unexpected threat is killing large numbers of Sea Otters off Alaska. In an ecological catastrophe caused indirectly by human activity, Sea Otters are now being preyed upon by Killer Whales (*Orcinus orca*). The latter animal has been deprived of its traditional prey in Alaska, Steller Sea Lions (*Eumetopias jubatus*), which have become endangered as a result of overfishing of their prime food supply--herring, pollock and ocean perch--by commercial fishing boats (Stevens 1999). Scientists began noticing the decline of Sea Otters in the early 1990s in the Aleutian Islands and western Alaska, a coastline stretching for 2,000 miles. Populations in some areas had declined by 50 percent, and by 1997, a survey found losses up to 90 percent (Stevens 1999). In one 500-mile stretch, Sea Otters had dropped from 53,000 in the 1970s to only 6,000 (Stevens 1999). The entire ecosystem has also been affected by the decline of Sea Otters. They are a keystone species, keeping kelp forests healthy by eating large numbers of sea urchins, which feed on kelp. Now large stretches of coast have lost their kelp beds, causing the entire ecosystem, from mussels to Bald Eagles, to decline (Stevens 1999). Other threats to Sea Otters include persecution by fishermen, shooting, oil and toxic chemical pollution, loss of food supply from overfishing, and ship traffic. The small population in Southern California has also been declining. In 1996, the Sea Otter was not listed in the *IUCN Red List*, but its sudden loss in numbers in Alaska and elsewhere in its range has again placed the species in danger of becoming extinct. The *2000 IUCN Red List of Threatened Species* lists the Sea Otter as Endangered.

During the 1960s, otter fur became popular in the fur industry, causing an enormous decline in wild otters as trappers combed tropical rivers and wetlands for these vulnerable animals. The United States imported 45,000 otter skins per year from South America between 1965 and 1969, primarily from Brazil and Colombia, according to U.S. Department of Commerce statistics. All four of the Neotropical otters occurring from Mexico south to the southern tip of South America are now on Appendix I and have declined to threatened or endangered status from trapping.

The Giant Otter (*Pteronura brasiliensis*) is the largest of all otters, reaching almost 8 feet in length from its nose to the tip of its tail (Nowak 1999). Once common in river systems in Colombia, Venezuela, Guyana, French Guiana, eastern Ecuador, Peru, Brazil, Paraguay, Uruguay and northeastern Argentina, it has disappeared from most of its range and become extremely rare where it survives as a result of killing for the fur trade (Nowak 1999). These otters have been relatively easy to hunt because they live in large, friendly groups in feeder creeks and quiet, slow-moving rivers, denning in river banks. They vocalize to one another as they swim and gather on land, often in very loud chirps and barks. Thousands were killed, even after the species was protected by CITES Appendix I and hunting was banned throughout its range. When one otter is trapped or shot, others quickly come to its aid, becoming vulnerable to shooting; this seals the fate of entire groups of these beautiful animals. This trait of altruism is shared by other species of otters and has contributed to their elimination from entire areas. Trappers often set traps next to one another to take advantage of the extremely close ties between otters; one trapped otter might then bring others, which would become trapped as well. Pelts of Giant Otters were smuggled to European furriers in the 1980s, and this illegal trade has not been completely controlled by either exporting or importing countries. The Giant Otter is classified as Endangered on the *2000 IUCN Red List of Threatened Species*.

The Southern Marine Otter (*Lutra felina*), a very rare species, is considered one of the most endangered of all otters. These very small otters, less than 4 feet long, are native to the cold coastal waters along the coasts of Peru and Chile; they have been hunted for centuries for their valuable pelts (Reeves *et al.* 1992). Darwin found them abundant in the Cape Horn and Tierra del Fuego region in 1830, but 130 years later they had been hunted to extinction in that region (Thornback and Jenkins 1982). Although now protected and listed on Appendix I of CITES, they continue to be hunted for their fur and persecuted by fishermen. In Chile, where the Marine Otter is highly valued for its pelt, *The*

IUCN Mammal Red Data Book reported that the fur of this species is the most valuable of all otter fur, with hunting carried out from boats that cruise the coast for months at a time, killing any otters seen (Thornback and Jenkins 1982). On land, hunters with dogs chased them down and they were shot on sight, with pelts selling for up to \$75 in the 1970s (Thornback and Jenkins 1982). Legal protection in Peru was accorded in 1977, before which a trapping season had been designated. The extent of illegal trade in South American otters is not known. Fishermen persecute Peru them for supposed damage caused to freshwater prawns, killing many (Mason and Macdonald 1986). There may be as few as 1,000 Marine Otters left in the wild (Nowak 1999), and they are listed as Endangered by the 2000 *IUCN Red List of Threatened Species*.

Trade in the late 1960s also affected the other two species native to the continent. The Southern River Otter (*Lutra provocax*) is listed as Endangered by the 2000 *IUCN Red List of Threatened Species*, an upgrade from Vulnerable in the 1996 version of the list. It has a limited range in Patagonia in Argentina and southern Chile. Having been eliminated from the majority of its range by trapping for fur, the Southern River Otter is now confined to remote and inaccessible areas in Argentina, such as national parks. The species has been reduced to small, isolated populations in south-central and southern Chile, where illegal hunting continues (Mason and Macdonald 1986). The Neotropical or Long-tailed Otter (*Lutra longicauda*) occurs from northwestern Mexico south to Uruguay. Both are CITES Appendix I species and listed as Endangered on the US Endangered Species Act; the 1996 *IUCN Red Data Book* omitted the Long-tailed Otter (Baillie and Groombridge 1996), while the 2000 version of the list classified it as Data Deficient. The Long-tailed Otter, in spite of its extensive distribution, is considered by some experts to be "severely depleted" in many parts of its range in South America. The majority of the 113,718 otter skins exported from Peru from 1959 to 1972 were of this species (Mason and Macdonald 1986). In the early 1970s, between 6,000 and 8,000 Long-tailed Otters were legally killed per year, with probably an equal number taken illegally (Mason and Macdonald 1986).

In 1973, Colombia banned the killing of otters, but poaching continued because otter pelts have a very high value; in Chile, for example, an otter skin is worth two or three months' wages to an unskilled worker. In spite of legal protection since 1924 in Chile, otters continue to be hunted with very little enforcement of the law (Mason and Macdonald 1986). During the 1960s and early 1970s, trade records did not differentiate between the four South American otter species. Since that period, all trade has been illegal, but in spite of CITES Appendix I listings, a large number of pelts of these species are exported to the fur markets of Germany and Italy, and others are sold locally in fur stores in Buenos Aires and other South American cities.

Otters of all species produce relatively few young, and have evolved with a low natural mortality rate. They are known to live to an average age of 15, and perhaps as long as 30 years (Nickerson 1984). Species with these traits, along with their large habitat requirements and protective behavior toward one another, are extremely vulnerable to extinction. Otters play an important role in aquatic ecosystems by taking slow and injured fish, thus preventing fish overpopulation, which results in undersized fish.

Tibetan Antelope

Few people have ever heard of an antelope known as the Chiru, or the Tibetan Antelope (*Pantholops hodgsonii*), yet it produces shahtoosh, a wool far more valuable than gold. This statuesque animal is native to treeless steppe above 5,000 meters in Chinese Tibet and adjacent northwest India. Its extremely lightweight, delicate wool has traditionally been woven into shawls and sold in a limited trade in Tibet and Kashmir, India. Within the past few decades, however, a growing market has developed in major cities in India, Nepal, several western countries and Japan (Schaller 1998).

The Chiru has been listed on Appendix I of CITES since 1979, a listing which bans commercial international trade, and CITES Parties passed a resolution (Resolution Conf. 11.8) on the Conservation of and control of trade in

Tibetan antelope in 2000. It is totally protected by Indian (Kumar 1993) and Chinese law (Schaller 1996). Until recently, however, the major trading state of Kashmir in India allowed trade in shahtoosh, in defiance of a ban included in the national Indian Wildlife Protection Act (Currey 1996). In Tibet, illegal hunting, even by government officials, supplies the trade, with many thousands of Chiru killed each year--with the wool smuggled to India (Schaller 1998).

Populations in India probably do not exceed 200 animals, while in Tibet these antelope were estimated to number fewer than 75,000 animals in the mid-1990s, reduced from an estimated million animals a century ago. Great herds were seen on the steppe in the 19th century (Schaller 1998). The 1996 *IUCN Red List of Threatened Animals* listed the species as Vulnerable. In the 2000 version of the list, the species was upgraded to Endangered. Illegal trade and continued killing have pushed the species closer to extinction, with an estimated 20,000 killed per year.

In spite of this antelope's remote habitat, the enormous prices paid for shahtoosh (up to \$1,250 per kilogram), and low fines for infractions, have fueled this illegal trade (Kumar 1993). Dr. George Schaller, who has conducted many years of research on Himalayan wildlife, found this wool being illegally traded in a Nepalese town on the Indian border in the early 1990s (Kumar 1993). Forty shawls of shahtoosh were seen in several shops in New Delhi in 1993; half of these were in one shop, which is state-owned (Kumar 1993). Indian tradesmen have misrepresented the wool as obtained from bushes that the antelope rubbed up against; in fact, Chiru are killed to obtain the wool (Schaller 1996). In the early 1990s, shawls retailed at \$2,000 to \$8,500 in western markets. A single Chiru provides about 150 grams of wool, and each scarf represents at least two dead Chirus, according to Schaller (1996, 1998). In 1992, the wool of at least 13,000 Chirus was confiscated in India (Schaller 1996), and in 1993 and 1994, the wool of at least 17,000 Chirus reached Indian markets (Schaller 1998). In June 1993, Indian Customs officers at Delhi airport seized a shipment of 105 kilograms of shahtoosh arriving from Katmandu, Nepal (Kumar 1993).

Large numbers of Chiru are poached near the Chang Tang Reserve, established in 1993 to preserve Tibet's wildlife, and smugglers trade shahtoosh for Tiger skins and bones, providing conduits through which the contraband travels (Currey 1996). Schaller saw Tibetans in the early 1990s with truckloads of Chiru hides, and at least one driver was arrested with 300 hides. Families moved into the Aru Basin, a great stronghold for the species within the Chang Tang Reserve, specifically to hunt Chiru in 1991 (Schaller 1998). These previously impoverished nomads were able to purchase a truck from the profits of their sale of Chiru hides, which they offered to Schaller (1998) and his group in 1992 for the equivalent of \$28 each (Schaller 1998). In 1999, government officials came upon seven herds of just-slaughtered Chiru, including many females and newborns. Several wildlife organizations are organizing anti-poaching teams, but in such an enormous territory, patrolling every herd will not be possible. The herds are in constant motion, migrating from summer to winter areas. The Tibet Forest Bureau began an effort in the early 1990s to stop the shahtoosh trade, raising the fine for killing Chiru to \$118. Ten poachers were arrested in a two-month period in 1993, and checkpoints were set up in several areas (Schaller 1998). In 1995-1996, patrols in remote portions of Qinghai in western China encountered Chinese hunters armed with high-powered rifles and confiscated more than 1,600 Chiru hides (Schaller 1998). China's State Council issued a directive in 1996 that Chirus must receive better protection (Schaller 1998).

A record shipment of 400 kilograms of shahtoosh that had originated in Tibet was seized in northern India in January, 1994. Samples were sent to the U.S. Fish and Wildlife Service Forensic Laboratory, which verified them as wool from the Chiru, according to TRAFFIC International (1994). Indian courts released the 400 kilograms of seized shahtoosh in May 1996 after requests from tradesmen who claimed that the wool was perishable, according to TRAFFIC India. This decision was challenged by TRAFFIC India to India's Supreme Court which overturned the lower court's decision, keeping the wool in the possession of Customs authorities until the case was decided.

Research by the Environmental Investigation Agency (EIA) in Delhi uncovered large quantities of shahtoosh being sold in the mid-1990s, having been manufactured in factories in Kashmir (Currey 1996). A Delhi salesman offered to supply 200 to 300 shahtoosh shawls every three months, claiming that his best customers were Germans, French, Italians and Japanese, who provided a demand that exceeded supply (Currey 1996). In Bombay and Calcutta,

likewise, this wool is readily available and openly sold, marketed at \$1,085 a shawl, with bulk orders of 15 shawls sold for \$805 each (Currey 1996). One Calcutta dealer alone offered to supply 10 shahtoosh shawls every three months, and even instructed on methods of smuggling them abroad labeled as "handicrafts" with double invoices. Shahtoosh shawls offered at a government emporium in Bombay had official Kashmir Government labels and stamps and came with a certificate of authenticity (Currey 1996). The Bombay store offered 50 shawls per month (Currey 1996). Illegal trade has not stopped in spite of new education campaigns and a tightening of national legislation. The Indian Government appears to have little interest in enforcing its own regulations prohibiting sale of shahtoosh, although Kashmir finally banned sales in 2000 after much publicity on their role in endangering this animal. Elsewhere in the world, shahtoosh is still available. On January 22, 1997, for example, 21 shahtoosh shawls were confiscated in Hong Kong from a hotel room after a raid; the guilty party was fined \$2,580 two years later, in 1999 (*TRAFFIC Bulletin* 1999).

The New York luxury department store, Bergdorf Goodman, advertised shahtoosh in 1995 as a "royal and rare" fabric, making incorrect statements about the wool having been obtained from the Mountain Ibex goat of Tibet which "sheds its down undercoat by scratching itself against low trees and bushes" from where it is gathered by local shepherds (Schaller 1998). This misinformation created the false impression that the wool was legally obtained --without hurting the animals--by hardworking, indigenous people, in order to market it as a "politically correct luxury item" (Schaller 1998). Subsequently, scarves and shawls were removed from the shelves of luxury stores in the United States, and the CITES Authorities in Italy and France took action against several major fashion houses. In February 1997, police in London seized 200 shahtoosh shawls worth an estimated \$500,000 (Schaller 1998). Many famous and wealthy New York City socialites have worn these shawls, and in the late 1990s, many were interviewed during an investigation to find the stores illegally selling the shawls. By 1999, the price of a shahtoosh shawl had risen to \$10,000.

This situation is very dire for the Tibetan Antelope. A major campaign is needed to stop this trade. Efforts to guard wild herds and police markets for shawls and other goods made from this wool have been underfunded. The idea of ranching Chirus for their wool has been proposed, but Schaller considers such an idea disastrous for this species (Kumar 1993). Schaller has been interviewed by CNN several times about this situation, and he has expressed his extreme concern about the trade, stating that tens of thousands of Chiru are being killed, threatening the very survival of the species.

Reptile Trade

Sea Turtles

Crocodiles and Alligators

Lizards and Snakes

Reptile Trade: Sea Turtles

Huge sea turtles have been laboring up the beaches of tropical shores for 50 million years, digging deep holes with their flippers and depositing their slippery eggs before making their way back to the sea. Remains of extinct species of sea turtles 12 feet long have been found. The largest living sea turtle is about two-thirds that length. Other than humans, adult sea turtles have few enemies except sharks. Even today, the great turtles are enigmas. How they find their way over thousands of miles of open sea to return to the same beach on which they hatched--often a tiny islet--is not known with certainty. In 1986, scientists discovered that the temperature at which eggs incubate determines the

sex of the hatchlings. Cool nests produced males and warm ones, females. This discovery has influenced some conservation programs which hatch eggs in captivity for release to the wild. Research is very slowly unraveling some of their secrets through tagging and radio-tracking by satellite. Within the next few decades, much more will be learned about their movements and life history. Available data indicate that females may not nest until they are at least 10 years of age or older.

All seven species of sea turtles are now endangered. They face myriad threats. Killing for leather, meat, tortoiseshell, and to be stuffed for sale as curios is one of the foremost threats. For centuries, sea turtles were exploited by native peoples, most of whom did not kill large numbers or sell them as a commodity. Only when the products entered international trade and high-volume markets were created did turtle hunting have serious consequences. "They have a unique, and for them disastrous combination of characteristics; they are . . . excellent to eat, ridiculously easy to catch, and with virtually no way of defending themselves," in the words of turtle expert, Dr. Peter Pritchard (Lehrer 1990).

Commercial exploitation of the Green Turtle (*Chelonia mydas*) began in the 1600s in British colonies in Jamaica and Bermuda. Thousands of adult turtles were killed for their meat. As early as 1620, the Bermuda Assembly passed an act to outlaw the killing of young turtles because, even by that early date, they had been decimated (Carr 1973). The British colony in Jamaica sent ships in the mid-1600s to the Cayman Islands, once considered the species' largest breeding grounds in the world, to bring back turtle meat for the colony (Lehrer 1990). By 1688, ships were transporting 13,000 Green Turtles a year to Jamaica, and this meat became a staple food for colonists. By the early 1700s, Jamaican laws protecting the dwindling turtle colonies were enacted, but were not enforced, and by the late 1700s, Green Turtles had been almost eliminated from the Cayman Islands (Lehrer 1990).

In the 20th century, nearly every part of the Green Turtle's body and shell became valuable in international markets. These turtles are found throughout the world in all tropical oceans, and exploitation was relentless. Eggs and meat were sold locally and in gourmet restaurants, and the oil was used in cosmetics; the shell was carved into jewelry, and the neck and flipper skin was tanned for leather. Even baby turtles were stuffed and sold as souvenirs. Turtle hunters discovered their most remote nesting beaches and killed the females as they laid their eggs. Whenever they were spotted on the open ocean, they were caught and slaughtered. At the beginning of the 20th century, it was not unusual to catch Green Turtles that weighed almost 1,000 pounds, but after heavy exploitation, their average size began to decrease. Today, 300-pound animals are considered large (Lehrer 1990). By the early 1970s, Green Turtles were listed as Endangered in the *IUCN Red List of Threatened Animals*, but exploitation continued to decimate them. Both families of sea turtles (Cheloniidae and Dermochelyidae) were added to Appendix I of CITES in 1977, banning commercial trade between member nations. Unfortunately, several countries, including Japan, took reservations, a formal refusal to enforce the listing, and in the 14 years before 1994 when Japan finally withdrew its reservation, it imported 130,000 Green Turtles (Thornton 1994).

The U.S. Endangered Species Act finally listed Green Turtles in 1979, seven years after they had been proposed. Breeding populations in Florida and on the Pacific coast of Mexico are listed as Endangered, while the rest of its populations around the world are in the lesser category of Threatened. Green Turtles are still being killed in large numbers in Indonesia, where an estimated 20,000 are slaughtered each year for meat, shell and eggs, according to Reuters (August 1994). The Governor of Bali set a quota of 5,000 per year for use in Hindu festivals on the island; even the latter quota will result in the extinction of these turtles in these islands within a few years. Stuffed sea turtles with polished shells are sold openly in tourist shops throughout Indonesia.

Hawksbill Turtles (*Eretmochelys imbricata*) have been slaughtered to near-extinction worldwide, mainly for their beautiful shells, which are made into tortoiseshell jewelry and other items. Like the Green Turtle, the Hawksbill is found in all tropical oceans but is most commonly seen in coral reefs and along coastlines in mangroves and marshes. This 3-foot-long turtle received the protection of the U.S. Endangered Species Act as early as 1969, an indication of the depletions that it had undergone throughout the century. About 10 to 12 pounds of tortoiseshell are obtained from each turtle (Ernst and

Barbour 1989). Cutting off the U.S. market did not stop slaughter of these turtles, however. Tortoiseshell from Hawksbill Turtles is made into eyeglass frames that sell for up to \$4,000 in Tokyo luxury stores. The shell is also fashioned into bracelets, earrings and other trinkets. The meat and eggs are consumed, and hatchlings--as well as adults--are killed and sold as stuffed curios. Listing on Appendix I of CITES in 1977 hardly slowed the trade because Japan and several other countries took reservations on the species and continued trading. International trade in Hawksbills totaled more than 250,000 animals in 1976 and 1977, and shells from 500,000 of these turtles were traded in 1978, primarily exported from Asian and Central American countries to Germany, the United Kingdom and Japan (Fitzgerald 1989). Between 1970 and 1986, Japan imported 570,000 stuffed Hawksbills, which were used to adorn the walls of houses (Fitzgerald 1989). In an average year during the 1980s, Japan imported the shells of 28,000 adult Hawksbills that had been killed in the Comoros Islands, Jamaica, Haiti, the Maldives and Cuba; the latter country was the largest supplier (Fitzgerald 1989). By 1994, when Japan withdrew its CITES reservation on Hawksbill Turtles, it had imported 400,000 of these endangered animals in the previous 14 years (Thornton 1994).

Although the Hawksbill originally nested in 60 countries in the tropics and sub-tropics (WCMC 1993), decades of heavy exploitation caused major declines and the extinction of many nesting populations. Vietnam now kills and markets thousands of these highly endangered sea turtles. They are processed at seven nesting sites along the Vietnamese coast, and tortoiseshell and stuffed turtles are sold openly in Ho Chi Minh City (formerly Saigon) and in other cities (Duc and Broad 1995). The number of Hawksbills killed in Vietnam has increased greatly in recent years. Also, eggs are collected, and local operations hatch them--another loss to wild populations. Japan announced in 1994 that it is developing a simulated tortoiseshell made of laminated silk, but it continues to provide an illegal market for Hawksbill tortoiseshell. Urgent action is needed to protect nesting turtles and stop Vietnamese exploitation to prevent extinction of Hawksbills in this region (Duc and Broad 1995). Scientists and conservationists are pessimistic about the long-term survival of the Hawksbill Turtle because of continued killing for its valuable shell. The *2000 IUCN Red List of Threatened Species* lists it as Critically Endangered.

The Olive or Pacific Ridley Turtle (*Lepidochelys olivacea*) is found only in the Pacific region, with the majority of nests located along the coasts of Mexico and Central America. They have been slaughtered mercilessly on their nesting beaches, where they gather by the thousands. The market was controlled by one man in Mexico, Antonio Suarez, a Spanish national. In 1978, one of Suarez' plants processed 50,000 Olive Ridleys, 90 percent of which were females; this was 16,000 more than the quota permitted. Mexican government quotas were far higher than the turtle populations could sustain, and catches fell precipitously in 1979 and 1980. This exploitation endangered Pacific Ridley turtles on Mexico's coasts, which brought about listing on the U.S. Endangered Species Act in 1979 of breeding populations on the Pacific coast of Mexico as Endangered and other populations as Threatened. Prior to this, skins, shells and meat from hundreds of thousands of Mexican Olive Ridleys had been imported into the United States, the major consumer of these animals.

In 1980, some 106,000 pounds of Olive Ridley meat were seized as they were being smuggled in from Mexico to various dealers in the United States; the meat came from an estimated 8,800 turtles. Turtle slaughterhouses were still operating in Mexico in 1990, and Suarez owned three processing plants. Not only was Suarez indicted for smuggling thousands of pounds of turtle meat into the United States, but his purchases of turtles from fishermen in Mexico exceeded government quotas. The species is still exploited for other markets, and the *2000 IUCN Red List of Threatened Species* lists the species as Endangered.

Rarest of all the sea turtles, the Kemp's or Atlantic Ridley (*Lepidochelys kempii*) was once widely distributed throughout the Caribbean region. By the 1940s, it had become restricted to one nesting beach in northeastern Mexico on the Gulf of Mexico. In the 1960s, a mass nesting aggregation, or "arribada," of Kemp's Ridleys, totaling an estimated 40,000 animals, was filmed. A few days of slaughter over several consecutive years reduced the enormous arribadas to only 500 nesting female turtles by 1978. This species was listed on the U.S. Endangered Species Act in 1969 as Endangered, but this did not stop the slaughter. In 1995, nests totaled 1,430, showing a gradual recovery of the species as a result of intensive protection of nesting females and their eggs by the combined work of Mexican and U.S. patrols (Hastings 1996).

Between 1978 and 1988, more than 22,000 eggs were taken from the Mexican nesting beach to Padre Island off the south Texas coast, where they were allowed to hatch and were then kept in captivity for one year prior to releasing them into the wild. For many years, this project was thought a failure, but to the surprise of all, two female Kemp's Ridley Sea Turtles that had been released from Padre Island, one in 1983 and the other in 1986, returned to nest in 1996 (Hastings 1996). The only effective way of tagging young sea turtles is a skin graft of a special light-colored spot placed on the shell, and these turtles' grafts indicated the year each was released (Hastings 1996). One female was 11 years old, and the other 14. This highly unusual project is the first known success story for sea turtle egg transplants. These turtles are also dying in large numbers in the nets of shrimp fishermen, and hundreds more die when they become disoriented while migrating in the fall, ending up in cold New England waters. The 2000 IUCN *Red List of Threatened Species* classifies the Kemp's Ridley as Critically Endangered.

Loggerhead Sea Turtles (*Caretta caretta*) also drown in shrimp nets and suffer from a loss of nesting habitat. The Loggerhead is a large turtle, up to 7 feet long (213 centimeters), second in size only to the massive Leatherbacks (*Dermochelys coriacea*). Museum specimens of Loggerheads taken in past centuries weighed an estimated 1,188 pounds; today, they average only about 330 pounds (Ernst and Barbour 1989). Loggerheads have been so persecuted on their nesting grounds around the world that the original nesting range is unknown. Development of their nesting beaches and losses from drowning in shrimp nets and will probably result in the extinction of North American Atlantic populations, which nest from Florida to the Carolinas (Ernst and Barbour 1989). Within the past five years, Loggerheads of the Florida region have been found suffering from a mysterious disease which causes tumors on the head and neck, and a lethargy. Most do not survive. A sea turtle hospital in the Florida Keys has treated some of these and, in March 2001, found themselves treating more than 35 Loggerheads, only one of which responded to treatment. It is assumed that for every sick turtle found, hundreds more die at sea. The malady may be a virus caused by pollution, a toxin affecting their food supply of crustaceans and other invertebrates, or another cause as yet unknown. Although the 2000 IUCN *Red List of Threatened Species* lists this species as Endangered, the U.S. Endangered Species Act classifies it as Threatened.

The Flatback Turtles (*Natator depressus*) of the Australian region may be more secure than other species but still face losses from accidental drowning and some illegal hunting. This small sea turtle, only about 39 inches in length, is found mainly in shallow, coastal waters (Ernst and Barbour 1989). They are not hunted for their meat, which is considered unpalatable, but their eggs are exploited, which could eliminate the species from many nesting beaches (Ernst and Barbour 1989). The species is listed as Vulnerable by the 2000 IUCN *Red List of Threatened Species*, indicating a decline that might place it in Endangered status.

Largest of all living turtles, Leatherbacks can reach 8 feet in length and weigh up to 1,900 pounds (Ernst and Barbour 1989). They are highly endangered, as a result of overharvesting of their eggs, illegal slaughter and drowning in fishing nets. Of all sea turtles, the Leatherback is the most likely to be seen in temperate areas, even cold waters off Iceland, Labrador and Norway in the north, and Chile and the Cape of Good Hope in the south (Ernst and Barbour 1989). It also ranges through tropical oceans, occasionally entering shallow bays and estuaries. It nests on tropical beaches (Ernst and Barbour 1989). The body temperature of these turtles has been measured at 18° C. above the sea water temperature, an indication that their large body size retains heat from muscular activity, and their circulatory system in fore and hind limbs allows homeothermy (Ernst and Barbour 1989). Thus, these turtles can hardly be called "cold-blooded."

Until recently, western Mexico had enormous breeding colonies of Leatherbacks, but because of killing and egg-taking, nests at Mexiquillo, a major nesting beach, they declined from 6,500 in 1984 to fewer than 500 in 1995 to 1996, according to the *Turtle Newsletter*. So many of these huge turtles have drowned in driftnets that the IUCN reclassified the species from Endangered in the 1996 list to Critically Endangered in the 2000 *Red List*. In spite of having an enormous range worldwide, this species also seems destined to become extinct in the near future.

All of these sea turtles continue to be exploited, either illegally, by local peoples, or by countries not Party to

CITES. In spite of CITES and U.S. Endangered Species Act listing, the high rate of mortality from many causes is proving disastrous for these ancient reptiles. An enormous market for meat, leather and shell exists, fueled by countries that provide markets for turtle products. Hawksbills and Leatherbacks, in search of jellyfish, consume balloons and plastic bags, which prove fatal, blocking the turtles' intestines or suffocating them. Globes of floating tar and oil slicks can kill them. Many of their nesting beaches have been developed for tourism or business, discouraging nesting females, and lights at night along nesting beaches cause newly hatched baby turtles to turn away from the sea and proceed inland, instinctively crawling toward the greatest source of light. In natural conditions, this light would come from the direction of the sea and the horizon, but the misdirected hatchlings end up crushed by cars and piled up against buildings. Some seaside towns in the United States and elsewhere are prohibiting any type of beach lighting during the months when sea turtles hatch. Thousands more young sea turtles die when they swim off course during the fall and winter, ending up in frigid waters. In the winter of 1995 to 1996, hundreds of Kemp's Ridley and other species of sea turtles washed ashore on the beaches of the northeastern United States, from Long Island, New York, to Cape Cod, Massachusetts. The majority were about a year old, but some adults also died. Rescue centers were set up and saved the lives of some of these turtles.

To kill these fascinating and ancient animals to supply the tables of thoughtless diners in gourmet restaurants, or for knickknacks and eyeglass frames, is unjustifiable. At present, there is no evidence that these turtles, who breed at glacial speed and are dying from many causes that probably already exceed their rate of increase, can ever be taken in a sustained manner. Total protection from killing is needed to prevent the extinction of these venerable reptiles.

Reptile Trade: Crocodiles and Alligators

All 23 species of large crocodiles and alligators have been overexploited by hide hunting; they are now in varying degrees of threat and listed on Appendix I or II of CITES. South American caimans were so abundant in the early 1950s that millions were killed for export to Europe and the United States. Their hides are fashioned into shoes, handbags and suitcases for the luxury trade. Elsewhere, crocodiles in Africa, Asia and Australia came under similar pressure, as did the American Alligator (*Alligator mississippiensis*). In fact, the depletion of wild crocodiles which began in the 1950s caused reptile hide traders to turn to turtle skin, lizards and snakes, continuing their record of massive overexploitation.

One Colombian conservationist said that prior to this massive slaughter, it was easy to see 200 adult caimans on the banks of the River Ariari and elsewhere in Colombia, but within a few years, they had disappeared (Anon. 1981). In the 1950s and early 1960s, 6 to 8 million skins were traded per year, resulting in the near-extinction of the American Alligator and many other crocodylians (King 1994). One Brazilian state exported 5 million hides in 1950 (King 1994), and in that year 12 million Black Caiman (*Melanosuchus niger*) skins were taken from the Amazon basin (Fitzgerald 1989). By the late 1960s, Brazil and many South American countries had prohibited export of wildlife. The Black Caiman, a member of the Alligatoridae family, was listed on CITES Appendix I in 1975, along with most other large crocodiles, members of the family Crocodylidae. This designation officially bans international commercial trade among member countries.

Combined with CITES protection, these trade restrictions allowed some species to recover, but much of the trade went underground, involving the smuggling of hundreds of thousands of caimans poached in Colombia, Venezuela and Brazil. The skins were hidden in shipping crates, or transshipped from other countries. Paraguay, in spite of its export ban, was a major conduit for illegally taken wildlife, and remains so today. Another species that was highly sought after for its soft skin was the Broad-snouted Caiman (*Caiman latirostris*). This crocodile also became endangered from the trade and is on Appendix I, but during the 1980s, a black market for its skins was uncovered in West Germany, supplied by 20,000 skins poached annually in Brazil (Fitzgerald 1989). In 1980 alone, a Frankfurt, Germany, company imported--under false documentation--some 200,000 caiman skins of various species from

Paraguay (Fitzgerald 1989). Many caiman skins came from the Pantanal, a vast wetland in western Brazil that once teemed with these reptiles.

Approximately 85 percent of the world's crocodylians became endangered by the reptile product trade of the 1950s and 1960s. New World species were especially targeted. Besides the South American Black and Broad-nosed Caimans, two subspecies of the Spectacled Caiman (*Caiman crocodilus*)--the Yacare Caiman (*Caiman crocodilus yacare*) and the Apaporis River Caiman (*Caiman crocodilus apaporiensis*)--declined so precipitously that they were listed on both the U.S. Endangered Species Act and CITES Appendix I. Exploitation of the remaining subspecies of Spectacled Caiman continues, however. Identification of reptile products by subspecies is nearly impossible, thereby preventing proper protection of this species. In 1986 alone, the United States imported more than 65,000 Spectacled Caiman skins and more than 530,000 caiman handbags, shoes and other leather products (Fitzgerald 1989). A large portion of the trade in Spectacled Caiman is illegal, with violations including the poaching of endangered Yacare from Paraguay and caimans from national parks and other protected areas.

Other endangered New World species include the American Crocodile (*Crocodylus acutus*), whose range includes the Florida Keys; the Cuban Crocodile (*Crocodylus rhombifer*); Morelet's Crocodile (*Crocodylus moreletii*) of Mexico, Belize and Guatemala; and the Orinoco Crocodile (*Crocodylus intermedius*) of Colombia and Venezuela. All the latter species are listed as endangered on the U.S. Endangered Species Act. An additional 10 species and subspecies from Africa, Asia and the Philippines are also listed on the Act. Fifteen species of crocodylians are listed on Appendix I of CITES. All other alligators and crocodiles are listed on Appendix II.

Many of the CITES listings include exceptions that allow trade in some populations or subspecies. Also, some crocodile species are ranched, or raised in captivity expressly for commercial slaughter, in South America, Africa, Madagascar, Australia and Asia. Eggs laid by wild crocodiles are taken to supply these farms, and a percentage of the young crocodiles are released back to the wild. In Brazil, for example, the Yacare, an endangered subspecies of crocodile listed on the U.S. Endangered Species Act, is being exploited for the reptile products trade through ranching. Licenses are granted by the government to remove eggs based on the number of nests on each property. The eggs are hatched and raised in captivity, and 10 percent of the 1-year-old Yacares are returned to the wild (Bampi and Dal'Ava 1994). Through this ranching, 80,000 crocodile hides were produced between the 1992 and 1994 seasons (Bampi and Dal'Ava 1994). Brazilian Government officials maintain that in nature, fewer than 10 percent of the young would survive and, therefore, this is an environmentally benign activity (Bampi and Dal'Ava 1994). These animals, however, produce hides that are different from wild Yacare (Bampi and Dal'Ava 1994) and may differ in many other respects from their wild counterparts. They have been raised in unnatural conditions, and captive-raised crocodiles may not be able survive in the wild. The natural selection of crocodile egg and hatchling survival is also interfered with, negating the "survival of the fittest" principle with the possible effect of weakening the species. Another effect of ranching programs is the role that newly hatched crocodiles and alligators play in food chains; they provide a major food source for many waterbirds and are fed on by a variety of animals. By removing a large percentage of wild crocodylian eggs of a species, adverse ecological consequences may result.

A major trade in American Alligator hides began in the 1950s, and in the 1960s, state laws were passed banning killing and trade because of steep declines in its populations. In 1973, it was listed on Appendix I of CITES. In 1979, the species was removed from CITES Appendix I and placed on Appendix II, allowing trade. The federal U.S. Endangered Species Act originally listed it as Endangered, but reclassified it as Threatened throughout its range in the Southeastern United States under the Similarity of Appearance clause. Under this designation, some states may harvest Alligators. Louisiana supplies the largest number of skins, and also farms this species. The meat is also marketed in restaurants. Many Alligators that wander out of national parks and reserves are immediately killed as pests and threats to humans, and their skins are sold. In Florida, private companies respond to citizen calls about Alligators being present in waterways, and they send personnel in vans to capture and kill all Alligators over a minimum size limit, whether or not they present a threat. Although alligator hides entering trade must be marked by the U.S. Fish and Wildlife Service as legally taken according to management regulations, shipments are rarely inspected, and once out of the country and turned into handbags and shoes, their legality cannot be verified.

After 25 years of legal protection, about one-third of all alligators and crocodiles, or eight species, have increased their populations (King 1994). Many of the latter species are reentering trade, and advocates for the trade are stating that they are now "harvestable" (King 1994). This is being called a great conservation success, in spite of the fact that two-thirds of the species remain critically endangered, or "safe" but unharvestable (King 1994).

The incentive is high to poach crocodiles for this luxury trade. Crocodile handbags sell for as much as \$3,000. Briefcases can cost \$10,000 or more. Major markets for these products have been Tokyo, Singapore, New York, Los Angeles, Frankfurt, Berlin and Rome. By purchasing crocodilian products, one may be contributing to the overexploitation of a species, or unknowingly buying an endangered species product. Moreover, crocodilians have an important ecological role to play in nature. Adult crocodiles and alligators are at the top of their food chains. They weed out overpopulated fishes, including the voracious piranha, and dig water holes in times of drought that save the lives of numerous animals. In fact, when populations of South American caimans were decimated in the 1960s, piranhas increased to epidemic proportions. They also present a wildlife spectacle when large groups of caimans sun themselves on river banks, and are one of the prime attractions for ecotourists who travel to the tropics. If calculations were made of their value in ecotourism and in ecological systems, they would be considered worth more alive than dead.

Reptile Trade: Lizards and Snakes

The use of lizards in the reptile products trade began growing when crocodiles declined and became protected. Millions of Red Tegu (*Tupinambis rufescens*) lizard skins, exported from Argentina, have been used in the exotic leather trade. Heavy exploitation of this species and the Common or Banded Tegu (*Tupinambis teguixin*) of South America caused an overall decline in populations throughout their range (Fitzgerald 1989). All tegu lizards, *Tupinambis* spp., are listed on CITES Appendix II. Several Asian monitor lizards, extremely large reptiles including the world's largest lizard, the ten-foot-long Komodo Dragon (*Varanus komodoensis*), are listed on CITES Appendix I. The Bengal Monitor (*Varanus bengalensis*), Yellow Monitor (*Varanus flavescens*) and the Desert Monitor (*Varanus griseus*) are all endangered species. When they were added to Appendix I in 1975, Japan refused to abide by the listing and filed a reservation on these lizards, not lifted until 1994. All other monitor lizards (*Varanus*), which occur in Asia, Australia and Africa, are listed on Appendix II of CITES. In spite of the latter listing, African monitor lizards are killed in very large numbers for the reptile products trade.

The Caiman Lizard (*Dracaena guianensis*) is listed on Appendix II of CITES because it is threatened by exploitation, along with related lizards of its genus. In 1995, skins and boots of this species worth \$1 million wholesale were confiscated from the Tony Lama Boot Company of El Paso, Texas, by the U.S. Fish and Wildlife Service. Among the seizures were 907 pairs of Caiman Lizard cowboy boots and 2,554 pairs of boot vamps. A 15-count felony indictment for smuggling and violations of the Lacey Act was issued by a Grand Jury against two people who sold the skins to Tony Lama, using fraudulent export permits obtained in Mexico. The Lacey Act prohibits importation-- without permits--of species protected in their country of origin. This lizard is native to the Amazon Basin, and its lustrous skins are highly prized for boots, which can retail from \$700 to \$1,000 per pair. Four lizards are used to make one pair of boots. More than 13,800 Caiman Lizards were killed and sold to the Tony Lama Boot Company for the manufacture of the boots and skins seized. The indictment was the result of an undercover investigation by the Fish and Wildlife Service, begun in 1993.

Millions of snakes are killed for the reptile product trade, mainly in Asia. Indian Whip Snakes (*Ptyas mucosus*) and Oriental Water Snakes of the family Acrochordidae are heavily exploited. In the late 1970s, India supplied more than 3 million snake skins. India listed the Indian Whip Snake on Appendix III of CITES in 1984, indicating that it was protected by national law. After this export ban, a single government company held 5.7 million snake skins

which it exported in what was supposed to be controlled trade; smugglers removed thousands of snakes from India illegally, however (Fitzgerald 1989). The Indian Government made a seizure of one such smuggling operation with 150,000 snake skins destined for West Germany (Fitzgerald 1989). This system of controlled trade did not succeed in ending India's exports, since the stockpile actually grew to 6 million skins by 1979, after exports of hundreds of thousands of skins from this supposed stockpile (Fitzgerald 1989). Wild Whip Snakes continued to be killed and added to this stockpile, causing population declines and increases in grain-eating rodents.

Pythons are among the most popular snakes for shoes and handbags, and one subspecies of Indian Python (*Python molurus molurus*) is listed on CITES Appendix I, while other subspecies enter trade. This listing is totally ineffectual because of confusion with other subspecies of this snake. All pythons (*Python* spp.) are listed on Appendix II, but this has done little to slow the trade in their skins. The massive take of wild pythons in Asia for shoes, handbags, and even clothing has resulted in infestations of rats, which spread disease to humans and damage crops. Peter Brazaitis, a herpetologist and former curator of animals at the Central Park Wildlife Center in New York City, commented: I think we have to ask ourselves, what is the value of a python? Is it as a pair of expensive pants? Or is it as a means to check exploding rat populations in nations where communicable diseases are rampant? (Chivera 2000).

Likewise, Argentine Boa Constrictors (*Boa constrictor occidentalis*) are listed on CITES Appendix I, and other subspecies on Appendix II. Once made into reptile products, races of Boa Constrictor resemble one another, making the CITES listing meaningless. The largest Boa Constrictors, which are the oldest, have been a prime target for skin hunters in South America, and the enormous snakes of this species, once commonly seen in tropical forests, have disappeared as a result of this trade. Many are also taken for the pet trade. Retail prices indicate the popularity of snakeskin for luxury leather goods. A python handbags sell for \$300 or more, and a python belt costs \$120.

Lizards consume large quantities of insects and are extremely vital to ecosystems. Reptiles play an important role in nature, and the killing of millions of these useful animals is disrupting the balance of nature in many parts of the world.

The luxury reptile leather trade has pushed many species toward extinction, and it shows no signs of declining. Lizard and snakeskin products are now being sold in the volume that turtle and crocodilian leather once were. Handbags, wallets and shoes from these reptiles can be seen in department and shoe stores throughout the world. The endangered reptile species of tomorrow can be seen in the advertisements and luxury shops of today.

Traditional Medicine Trade

The Traditional Medicine (TM) trade has been disastrous to many species of wildlife. Even highly endangered species listed on CITES Appendix I continue to be killed to supply this huge market in southeast Asia and in Chinese communities around the world. In many cases, enforcement is impossible because endangered animals are sold in forms difficult to detect by Customs officials, such as powder made from ground bones. The majority of potions sold in this trade have substitutes from non-animal sources, and many do not cure the diseases they claim to, nor do they restore male potency. Yet the return to a capitalist economy in China and the relative wealth of many Asians has placed such high prices on the heads of rare animals that many species may not survive. This would mean the end of some of Earth's most magnificent animals. Among these is the Tiger, whose bones and body parts are highly prized and extremely valuable in the TM trade. All five species of rhinoceros are teetering on the edge of extinction, with this trade a major cause. While hundreds of rangers in Asia and Africa have lost their lives protecting Tigers and rhinos, and many government officials and conservationists have struggled fervently to stop the slaughter, bureaucratic indifference and weak enforcement have combined to negate conservation work in many markets. Internal trade bans on these animals have recently been enacted by China and Taiwan, but enforcement is not strong. Many of the animal products are intended to increase male potency, and a recent drug marketed in the West, Viagra,

may reduce demand for wildlife products such as Tiger and seal penises that have been sold at high prices for this purpose in the past. In fact, the market for seal sexual organs has already collapsed, resulting in a huge decline in the number of Harp and Hooded Seals killed in Canada, from 280,000 in the late 1990s, primarily for this market, to 91,000 in 2000 (Nickerson 2001). The price paid for seal has dropped from \$25 per animal to a few dollars, if a buyer can be found (Nickerson 2001). This is good news for some animals, but many others are killed to make products for other purposes, such as to lower fevers, treat rheumatism and heart disease and promote general vigor. Several organizations and national governments are combating the killing of rare animals for this trade through education programs which provide information on effective alternative medicines.

A 19th century victim of the Traditional Medicine trade was Schomburgk's Deer (*Cervus schomburgki*). Discovered in eastern Thailand in 1862, no European ever saw the species in the wild (Day 1981). They were heavily hunted for their large and many-tined antlers that supposedly possessed medicinal and magical properties (Day 1981). In the mid-19th century, herds of Schomburgk's Deer were seen in swamps, and during floods, they were pursued by boat, marooned on small islands, and speared (Day 1981). When swamp drainage and irrigation added to their threats, they retreated to bamboo jungles, to which they were not well adapted, until these, too, were cleared for rice fields (Day 1981). The last known Schomburgk's Deer was shot by a policeman in September 1932 (Day 1981). The species was considered extinct and officially listed as such by the IUCN (WCMC 1993). In 1991, a pair of antlers from an unknown type of deer was seen by Laurent Chazee, an agronomist with the United Nations, in a Traditional Medicine shop in a remote part of Laos (Schroering 1995). Chazee photographed the antlers, which were later identified as coming from a Schomburgk's Deer; the shop owner told him that the animal had been killed the previous year (Schroering 1995). Forests nearby may shelter more of these deer, and the site is considered by local people to have sacred animal spirits; hunting is prohibited there (Schroering 1995). A shop in Phnom Penh, Cambodia, in February 1994 offered antlers of what were represented as Schomburgk's Deer for \$10 a pair (Martin and Phipps 1996). The seller was obviously unaware of the extraordinary rarity of this deer. There is still no proof that the species survives, and it has been listed as extinct in *2000 IUCN Red List of Threatened Species*.

Rhinoceros horn, Tiger bone, ground deer antlers, gallbladders from many species of bears, musk glands from deer, and softshell river turtles are among the thousands of raw materials for Traditional Medicine. This trade has pushed a host of magnificent species precipitously toward extinction within the past few decades. Many were already rare from persecution, hunting and habitat loss. While these products have played an important role in Traditional Medicine for centuries, only within the past decade has the trade spiraled out of control, with a potential market of more than 1 billion people. A recent survey of Cambodia's markets found the products and body parts of numerous endangered species, including Asiatic Black Bear, Sun Bear, Tiger, Leopard and many rare and endangered deer and wild cattle, being openly sold (Martin and Phipps 1996). Civets, cat-like mammals, are roasted and their meat sold in the winter to warm blood (Schaller 1993).

Obviously, all the remaining wild rhinos, Tigers, Musk Deer, bears and other animals used by this trade cannot fill the demands of this enormous market. This trade has proven the most difficult in the world to control. Even the threats of international sanctions, strict national laws and CITES Appendix I listing of most of the species involved have not stopped it.

Snakes by the thousands are kept alive in Asian markets, offered as fever cures and tonics. When a customer selects one, it is hung up still squirming, and the gallbladder is cut out. Some are skinned alive, and customers drink the blood. In Cambodia, great numbers of snakes are sold, and at one market alone 4.4 tons of pythons were sold in 1993; cobras are shipped live by the thousands to Vietnam (Martin and Phipps 1996). A mongoose is often kept next to the snake cages to keep them angry and lively. In Taiwan's capital city, Taipei, a vast marketplace called "Snake Alley" sells thousands of live snakes in this fashion.

Primates, Pangolins and Fruit Bats

Dolphins and Seals

Saiga and Deer

Tigers
Rhinoceros
Bears
Sturgeon
Seahorses

Traditional Medicine Trade: Primates, Pangolins and Fruit Bats

Slow Lorises (*Nycticebus coucang*), nocturnal primates with huge eyes and thick fur, are gentle and shy tropical forest dwellers. Thousands are captured in Southeast Asia for Traditional Medicine. They are killed and cooked in lemon leaves in China to provide tonics. In Cambodia, hunted with crossbows, they are among the commonest wild animals sold in markets, with racks of hundreds of dried lorises exhibited for the buyer (Martin and Phipps 1996). Live lorises are often sold in Chinese markets to be killed later, or kept as pets. These nocturnal animals suffer in the bright daylight, blinking and cowering in their tiny cages. Educators from the Wildlife Conservation Society (WCS), headquartered in New York City, visited a Chinese market in Yunnan province with local schoolteachers to show them the many endangered species being offered for sale, and saw two threatened Pygmy Lorises (*Nycticebus pygmaeus*). A mother and her young cringed in a tiny wire cage with barely enough room to turn around; the mother loris wrapped her body around her tiny infant, shielding it from the noise and dazzling sunlight (Naiman 1997). In all likelihood, they would die from malnourishment, disease or dehydration, and one teacher suggested that the educator buy them to save their lives, but the WCS representative believed that this would only have resulted in more lorises being captured. This species is considered Vulnerable, a category for species only slightly less threatened with extinction than endangered species, by the 2000 IUCN Red List of Threatened Species.

The very rare and beautiful Golden Monkey (*Rhinopithecus roxellana*) is killed so that its brain may be used for Traditional Medicine. Macaques from Southeast Asia are being captured in Vietnam and shipped across the border to China, where they are kept alive in tiny wire cages and killed on order for the Traditional Medicine trade.

Pangolins, scaly armored mammals of Africa and Southeast Asia are so heavily hunted for their scales, which are used in various remedies, that all three species (*Manis* genus) are now listed on Appendix II of CITES.

Fruit bats are collected in Southeast Asia for sale in Traditional Medicine markets. The BBC filmed their capture for a PBS Nature special, *Castaways of Sulawesi* (1995). In Sulawesi, Indonesia, the island formerly known as Celebes, young boys fly kites with hooks that entangle the fruit bats as they fly off to feed in the evening. The fruit bats scream and squeal as they are hauled in and placed in boxes with rods for perches. Trappers ship them for four days, often without food or water in extreme heat, to tradesmen who kill them for use in Traditional Medicine. This trade is having a disastrous effect on the island's fruit bats. The loss will be significant if these bats are eliminated, because of their enormous value as pollinators of numerous species of trees, many of which provide economically important fruit. Fruit bats and flying foxes throughout Asia and the Pacific are killed for food and TM. Nine species of fruit bats have been placed on Appendix I, and the entire genus *Pteropus* of flying foxes on Appendix II of CITES, but this has had little effect on the trade.

Traditional Medicine Trade: Dolphins and Seals

Ganges River Dolphins (*Platanista gangetica*) of the Ganges and Brahmaputra River systems in India, Bangladesh, Bhutan and Nepal, are extremely rare throughout their range, with a total population that may number only about

2,000. In Nepal, where there are fewer than 100 animals, fishermen net them to sell their flippers for the TM trade which uses the bone for gastric problems. Appendix I listing has not stopped trade because Chinese authorities have failed to enforce it strictly. It is listed as Endangered on the 2000 IUCN Red List of Threatened Species.

Once common in the Amazon and Orinoco River systems from eastern Brazil to the Andes of Peru and Bolivia, Pink or Amazon River Dolphins (*Inia geoffrensis*) have disappeared from most of this region. A 1995 film, Legend of the Pink Dolphin, on National Geographic Explorer, depicted the species as threatened or endangered in all but the most inaccessible areas and described the bizarre trade in its body parts. A book on the subject, *Journey of the Pink Dolphins. An Amazon Quest* (Montgomery 2000), is an in-depth study of the people and their relationship with these dolphins. Shantytowns established on riverbanks built when forest clearance forced many people out of their traditional regions, have been the center of the illegal hunting of these dolphins. Many of the residents of these towns kill the gentle Pink Dolphins for their body parts, which are considered magical. Some fishermen drown them on purpose, and others accidentally. Many people in the Amazon believe that these dolphins can impregnate women, and others buy body parts, such as the left eye, penis, teeth and head, as good luck charms. Entire baby dolphins are sold in these towns as charms. Roxanne Kramer, an American biologist who has studied these animals since 1984, has become an active conservationist on their behalf. She found jars of Pink Dolphin eyes being sold in local villages for \$1.50 per eye in 1995, and estimates that in Brazil alone, more than 100 Pink Dolphins are killed a month just for their left eyes, considered to have magical properties. Dolphin corpses that have been mutilated now wash up on riverbanks their heads removed. Roxanne and another biologist, Fernando Trujillo, have conducted separate campaigns to persuade local people not to kill these dolphins, but at the present rate of loss, they may soon disappear altogether.

The decline in the seal hunt in Canada will mean a decrease in extreme cruelty that has been documented by various witnesses. The Earth Island Institute's *Journal* reports that in a 1994 hunt, seal pups' skulls were crushed, they were strangled with nooses, and in one case, a mother Harp Seal was beaten with the body of her screaming pup. When Paul Watson of the Sea Shepherd Conservation Society protested the hunt in early 1995 in the Gulf of St. Lawrence's Magdalen Islands, 150 angry sealers broke down the door to his hotel room. He was saved by police, who rushed him into a police cruiser, according to wire service accounts. Other seals, such as South African Fur Seals (*Arctocephalus pusillus*), are killed both for their pelts, which are sold to European furriers, and their penises for the TM trade. As described above, many thousands of young male seals are killed each year. Hopefully, this hunt will decline as well.

Traditional Medicine Trade: Saiga and Deer

The horns of Saiga antelope (*Saiga tatarica*), a species being slaughtered by the hundreds of thousands in Russia and Central Asia, are thought to cure many illnesses; in 1990, China imported 80 tons (Schaller 1993). This curious species has become so threatened by this trade that it was listed on CITES Appendix II at the 1994 Conference. The Saiga once numbered in the millions in the Central Asian steppes, an ecological equivalent of the American Bison or African Wildebeest, but were slaughtered to near extinction during the 19th century.

A trade study found that in 1994, 44 metric tons of Saiga Horn were exported illegally to China, South Korea, Japan and some European nations. One metric ton is equivalent to 5,000 horns; horn sold for as much as \$30 per kilogram in East Asia (Chan *et al.* 1995b). In a random survey in August and September 1994, TRAFFIC International investigators found Saiga horn in 131 shops in Hong Kong, from an estimated 15,000 animals. Taiwan banned the sale of Saiga horn in 1994 (Chan *et al.* 1995b). Populations of this species have declined in Kazakhstan and Kalmykia and have become endangered in Mongolia. Today, the trade in Saiga horn is so uncontrolled and massive that it threatens the species' future survival (Chan *et al.* 1995b). The status of the Saiga declined rapidly between 1994 and 1996. The 1994 edition of the IUCN Red List included only the Mongolian subspecies (*Saiga*

tatarica mongolica), but in the 1996 list, the entire species was listed as Vulnerable; two subspecies, the Mongolian was listed as Endangered, and the Russian (*Saiga tatarica tatarica*) was listed as Vulnerable. The 2000 IUCN Red List of Threatened Species classified the Saiga as Conservation Dependent, with the Mongolian race Endangered, and the Russian also Conservation Dependent. (For more on the Saiga, see Grasslands, Shrublands and Deserts chapter; and in the Video section, Mammals, The Saiga of Kazakhstan.)

Asian Red Deer (*Cervus elaphus*), known in North America as Elk, have been heavily exploited for their antlers to use in the TM trade, and many races are endangered. The 2000 IUCN Red List of Threatened Species lists five subspecies or races of the Red Deer native to China. The Yarkand Deer (*Cervus elaphus yarkandensis*) is listed as Endangered, and the other races are in lesser categories. The U.S. Endangered Species Act lists McNeill's Deer (*Cervus elaphus macneillii*) of Sinkiang and Tibet, and the Shou (*Cervus elaphus affinis*) of Tibet and Bhutan as Endangered. The Chinese Shou is on the brink of extinction, a tiny population having been rediscovered in a park in Lhasa, Tibet in 1988. The Yarkand Deer is considered probably extinct by *Mammals of the World* (Nowak 1999). Another Chinese race, the Kansu (*Cervus elaphus kansuensis*), is endangered by hunting. The Tibetan Red Deer (*Cervus elaphus wallichii*), which possibly exists in Bhutan and Tibet, and the Alashan Wapiti (*Cervus elaphus alashanicus*), endemic to China, are both possibly threatened. Shops in cities in Yunnan Province, China, visited in 1997, were selling numerous body parts from Red Deer including the velvet from antlers, a fetus, blood, tails, ligaments, genitalia, hooves and antlers (Li and Wang 1999). They also found similar items from other Asian deer.

A threatened species of deer, Eld's Deer or Thiamin (*Cervus eldi*), which ranges from India to Southeast Asia, is a CITES Appendix I species. A survey in Cambodia found 14 sets of Eld's antlers being offered for sale in 1994 at \$150 to \$200 a pair (Martin and Phipps 1996). The survey in Yunnan Province in 1997 also uncovered body parts from these threatened deer (Li and Wang 1999). Wild Asian deer are being slaughtered without restriction for commercial sale. One shop in Lomphat, Cambodia, reported receiving 100 to 300 whole Sambar deer (*Cervus unicolor*) and other deer per month, their antlers selling for \$200 to \$300 per set (Martin and Phipps 1996). Cambodian officials reported that Eld's Deer and Sambar are usually hunted with dogs in the wake of forest fires, which are sometimes started deliberately, or with torches at night (Martin and Phipps 1996).

Endangered wild cattle horns were also seen in Cambodian shops. Banteng (*Bos javanicus*), a statuesque species of wild cow verging on extinction throughout its Southeast Asian range, is still being killed for its horns and meat. A pair of horns on the skull were offered in Poipet market, Cambodia, in February 1994 (Martin and Phipps 1996). A skull with horns of Gaur (*Bos gaurus*), largest of the wild cattle and nearly as endangered, was seen for sale in the same market for \$40. Rarest of all wild cattle, the Kouprey (*Bos sauveli*), has been considered nearly extinct in the forests of Cambodia and possibly Laos and Vietnam (Baillie and Groombridge 1996). Yet a shop in the Poipet market, Cambodia, offered a Kouprey skull, a female with horns, for \$400 in February 1994 (Martin and Phipps 1996).

Five species of Musk Deer inhabit high-altitude forests from 2,600 to 3,600 meters. Ranging from Afghanistan to Siberia, and south to Vietnam and Myanmar, all species have declined as a result of hunting for their musk glands. The musk is used in Traditional Medicine, and buyers for Asian markets offer huge sums of money for the glands and for the pouch containing this valuable liquid. Their musk is also valuable in the perfume trade, worth \$65,000 per kilo (Fitzgerald 1989). Male Musk Deer mark their territories with the musk. Females do not have this gland, but snares set for these deer kill females and fawns along with the males. These once common and widespread deer have become rare or endangered throughout their ranges, especially in China, the Himalayas and Siberia (Nowak 1999); they suffer the additional pressure of habitat loss as their forests are stripped for firewood. Although there are musk deer farms in China, very little musk is produced, encouraging the wholesale slaughter of wild deer (Schaller 1993). They are known to be difficult to breed in captivity (Fitzgerald 1989). One species, the Siberian Musk Deer (*Moschus moschiferus*), native to mountains of China, Korea, Mongolia and Far Eastern Russia, has declined to endangered status as a result of this trade and is listed on Appendix I of CITES.

In 1987, 800 pounds of musk worth \$14 million were smuggled out of China, the product of 53,000 male deer.

More than 100,000 deer had been killed in the quest for these glands, since many of the dead deer were females and young which were discarded. The glands were exported to Japan (Schaller 1993). An average of 700 pounds of musk are sold in world markets each year, much of it going to Hong Kong, the international center for musk; Japan is a major consumer, using musk to treat a variety of illnesses (Fitzgerald 1989). Between 1974 and 1983, Japan imported between 250 and 700 pounds of musk per year, worth an average of \$4.2 million; imports increased in 1987 to 1,800 pounds, an all time high, and sold for \$32,468 a pound! (Fitzgerald 1989). French perfumes known to use musk include Chanel No. 5 and Madame Rochas (Fitzgerald 1989). From 1990 to 1994, half of Russia's musk deer were killed by poachers, and their glands were smuggled into northeastern China and South Korea (Galster 1996). A 1997 survey found that stores in southern Yunnan sold musk and medicine from these deer (Li and Wang 1999). Musk and medicine from it from three other species of musk deer were also seen in this survey. Musk deer native to Afghanistan, Bhutan, India, Myanmar, Nepal and Pakistan are listed on CITES Appendix I, while other species and populations are on Appendix II. Such listing is completely illogical in terms of enforcement, since only the glands are traded and cannot be identified as to species or population.

Musk deer (genus *Moschus*) are so different from other deer that some scientists place them in a separate family, the Moschidae (Nowak 1999). These small deer resemble hares because of their large hindquarters, the shape of their heads, and their long, thin legs. These are the only deer that climb low trees to feed on leaves, mosses and nuts (Grzimek 1968).

Traditional Medicine Trade: Tigers

The magnificent Tiger, largest of all cat species, may be driven to extinction because its body parts are in such demand in the Traditional Medicine trade that it is pursued and killed even in sanctuaries and national parks. The illegal trade in Tigers grew astronomically in the 1980s concurrent with the burgeoning of economies in many countries in Southeast Asia, and it continues at uncontrolled levels. These endangered animals are no longer safe, even in the remotest parts of their range. Fewer than 5,000-- and many believe that as few as 3,000--remain (Matthiessen 1997). Most experts say they will not survive in the wild more than a few decades at the present rate of killing, which is calculated at one Tiger a day for this market (Jackson *et al.* 1996).

This species has lived on Earth for at least a million years, and until the 20th century, its range covered most of Asia. During the Pleistocene Age, when sea levels were low, Tigers colonized Indonesian islands and Japan, spreading into almost every habitat except deserts (Matthiessen 1997). Thousands of years ago, warriors in Central Asia and China killed Tigers in shows of manhood, which are depicted in works of art. Even in 1900, an estimated 100,000 Tigers roamed from eastern Turkey to Russia's Far East, and south to Bali in Indonesia. Since the turn of the century, an estimated 95,000 Tigers have been killed. These great cats have played an important role in the mythology, art, culture and even religion of cultures throughout Asia. Their courage, even when cornered and trapped, has contributed to the almost mythic role in which Tigers have been cast. This is a major reason many practitioners of TM believe that Tiger body parts will impart virility and restore health to those consuming them.

Traditional Medicine practitioners use nearly every part of Tigers, from their whiskers to their eyes, claws, pelts, flesh and bones. Their bones are ground into a powder that is used to manufacture "Tiger Bone Wine," of supposed medicinal value, and elixirs from ground Tiger bones are used to treat rheumatism, convulsions, scabies, boils, dysentery, ulcers, typhoid and malaria (Ward and Ward 1993). There are medicinal substitutes to treat all these maladies. The male's penis is made into soup, said to give potency, for rich Asian businessmen who pay as much as \$18,000 for a dinner featuring it (Highley and Highley 1994). The trade continues because of the ingrained and widespread beliefs by the Chinese and many other Asians in traditional potions. The Chinese government encouraged the trade by sponsoring Tiger-bone medicine production until mid-1993 (Schaller 1993), and evidence indicates that the trade continues today without interference from Chinese authorities.

Tiger medicine products are marketed in China, Southeast Asia, and in Chinese pharmacies throughout the world. All of this trade is illegal under most national laws and CITES, but enforcement in Southeast Asia is weak. Because the Tiger bone is sold in powder form, it can be traded surreptitiously, even in countries with strict wildlife laws.

Not only are Tigers being killed in great numbers, but they are dying cruelly. Poisoned meat is spread in national parks in India that kills slowly and painfully. Pesticides, such as the toxic Aldrin, are placed in buffalo or cow carcasses already killed by a Tiger, to poison the Tiger when it returns to feed; sometimes water pools are laced with poison (Currey 1996). Steel jaw leghold traps and wire snares, which maim and slice through the flesh, are set in forests throughout its range. In Russia, they are trapped or pursued by howling packs of dogs. Tigers have been filmed as they were being killed by a knife inserted into the throat while strung up spread-eagled, all four legs stretched apart by tight ropes. Females have been shot and their cubs left to starve to death. Dealers in poached Tigers now employ villagers to kill Tigers for a fee, supplying the villagers with poison and traps. In the 1970s, bold Tigers lolled in national parks for tourist cameras, but today they have either disappeared or become frightened, nocturnal hunters.

Should the Tiger disappear, a remarkable animal will have been lost. The male Siberian, largest subspecies of Tiger, can reach 6 feet in length, with a tail another 3 feet long, and weigh more than 670 pounds, while females weigh about 360 pounds and are smaller in stature (Nowak 1999). The Lion, second largest cat, weighs--at most--550 pounds, well under the weight of the Siberian male (Nowak 1991). Its immense strength enables it to carry large deer for long distances and up into high trees. Tigers are able to leap vertically 10 or more feet while carrying a deer. Tiger mothers are extremely devoted to their cubs, which number up to four per litter. Cubs remain with the mother for almost two years, requiring a long apprenticeship to learn to hunt and survive in the wild. In some cases, cubs do not become independent until they are 3 years old (Nowak 1999). About half the cubs die in their first two years, but adult Tigers have a low natural mortality, with a potential longevity of 26 years (Nowak 1999).

The 20th century was witness to a drastic reduction in the numbers and ranges of the Tiger. It was eliminated in vast areas with the growth of human populations and the spread of cities, and when guns came into common use, its long tenure as the supreme predator was over. Wilderness areas that provided refuge in Central Asia and Russia became the domain of livestock, and prey species were hunted out by local people. In the absence of natural prey, Tigers killed domestic livestock, becoming the object of unregulated slaughter. Added to this, they were a great prize for trophy hunters, and killing for Traditional Medicine in Southeast Asia caused them to disappear from vast areas. Gone from Java, Bali, East Asia and most of its remaining range in Asia, it is probably extinct in south China and close to extinction in Sumatra (Matthiessen 1997). The Indonesian government admitted at an October 1995 Asia Regional Meeting of CITES that poaching of the Sumatran Tiger was "uncontrolled" and "overwhelming" (Jackson *et al.* 1996).

Education programs have been launched to discourage the use of Tiger products within China, attempting to kindle conservation zeal among the Chinese people. Jackie Chan, the star of many action films, volunteered to do Public Service Announcements discouraging the use of Tiger products. But the resistance is strong. A Traditional Medicine practitioner commented angrily to CNN news in July 1996 that laws against the use of Tiger products were thwarting his practice. American conservationists in the southern province of Yunnan found Tiger bone pills being sold in markets in 1996, in spite of legal prohibitions (Naiman 1997), and they were still being sold when another survey was taken in 1997 (Li and Wang 1999). The Kuming Zoo in the province has a "Tiger Shoot," an arcade game in which a player aims a model rifle at a target bearing the image of a Tiger. Speakers attached to the rifle amplify the sound of its firing, and a counter keeps score (Naiman 1997). This describes, in a nutshell, the attitudes that have pushed the Tiger to near-extinction in China and are providing the market that is killing hundreds of Tigers.

An investigation of Cambodian markets in 1994 and 1995 found Tiger products being sold in many cities. In one market alone, the bones and other body parts of an estimated 33 to 43 Tigers were found (Martin and Phipps 1996). Very large Tigers have been reported from Cambodia, with bones weighing almost double those of the average Tiger

(Martin and Phipps 1996). Prices in Phnom Penh have risen in the 1990s from \$80 per kilogram of bone to \$250, and live Tigers are sold for \$200 to \$250 each; these Tigers are sent to Vietnam, where they can be sold for as much as \$5,000 each prior to their slaughter (Martin and Phipps 1996). A 1995 workshop estimated populations in Vietnam at only 150 to 300, with another 300 in Cambodia (TRAFFIC 1995). The same year, Cambodia announced that two to three of its Tigers were being killed per month (Jackson *et al.* 1996). Tiger skins and body parts were offered for sale in November 1995 in Poi Pet, a town on the Cambodian-Thai border, with two large skins stretched out next to leopard pelts. This was only eight months after Cambodia had pledged at a World Wildlife Fund workshop to clamp down on the trade (Jackson *et al.* 1996). In January 1996, Tiger skins and products were still being openly sold in Phnom Penh, Cambodia, an indication that enforcement is not taken seriously in this country. The government of Cambodia granted logging concessions on 6.5 million hectares of forest land. This country still has sizeable forests, unlike Thailand, whose ancient teak forests were clearcut during the 1970s and 1980s. Burma is also opening its forests to logging, and once these forests are gone, the Tiger will have little habitat left in Indochina. In the process of constructing logging roads and opening the forests, hunters will enter and pursue the last Tigers in the region.

Throughout Indochina, wildlife is being decimated. According to biologists Alan Rabinowitz and George Schaller of the Wildlife Conservation Society, "People are literally wiping out everything--sambar, barking deer, even young elephants. The forests look good, but there are no Tigers because there is nothing for them to eat" (Matthiessen 1997). Alan Rabinowitz (1999) has spent years in the region and has documented the open sale of Tiger parts in towns and cities throughout the region. He found that Tigers remain mainly in isolated blocks of forest, and poaching is the most insidious threat to these populations; no effective Tiger management policies have yet been designed or implemented in Indochina (Rabinowitz 1999). Trade has increased since 1990 and occurs at local, regional and international levels, made more difficult to control by the political chaos in several countries and the fact that Laos is not yet a Party to CITES. Rabinowitz (1999) placed such importance on the effects of the trade that he concluded, "If the trade in tiger and other wildlife parts cannot be effectively controlled, the protection and management of tiger populations will become an almost insurmountable task in most range countries."

India's 23 Tiger Reserves lost 35 percent of their Tigers between 1989 and 1993, and at least 600 were killed between 1990 and 1994, according to the BBC film *Tiger Crisis* and *Time* reporter Eugene Linden (1994). Low fines and corruption among some wildlife enforcers and judges mean that such crimes, even when they result in arrests and indictments, are usually dismissed (Currey 1996). Despite the fact that hundreds of poachers and traders have been caught red-handed, they escaped conviction of Tiger-related offenses until very recently (Kumar and Wright 1999). Many cases of Tiger killing do not even result in arrests when corrupt park rangers accept bribes from poachers. Assam, a reserve with 90 Tigers lost almost half of them in just four months in 1994 (Linden 1994). The Indian government announced in October 1995 that it had seized 1,000 pounds of Tiger bone so far that year (Jackson *et al.* 1996). A scathing 1996 report by Dave Currey of the EIA, *The Political Wilderness. India's Tiger Crisis* (Currey 1996), revealed the depth of official indifference to the plight of the Tiger. It documented case after case of failures by the Indian government to preserve the Tiger and its habitat. The most notorious smuggler of Tiger skins and products, as well as other protected wildlife, Sansar Chand, has been arrested many times with smuggled animal skins that total almost 30,000, including Tiger skins, and 30 kilograms of Tiger bones. Each time he has avoided jail by various legal maneuverings and the refusal of the government of Uttar Pradesh in northern India to prosecute him (Currey 1996). The EIA undercover investigation in the State of Madhya Pradesh, where more than a quarter of India's Tigers are found, exposed the illegal offering for sale of the skins and bones of 39 freshly killed Tigers; they were informed that an additional 45 Tiger skins had been poached (Currey 1996). Leopard and Tiger skins were found in stores in all major towns and cities in Madhya Pradesh (Currey 1996).

India's 80 national parks and 441 sanctuaries have the highest designation of protection of all government lands, and they preserve 19 percent of the country's forests (Currey 1996). Yet EIA investigations have revealed an extraordinary deterioration in the quality of protection, with mining, tree-cutting, fishing and other illegal activities permitted in the parks, and underpaid and demoralized staffs. Kaziranga National Park, considered the jewel of the park system, has a highly dedicated staff, according to *The Political Wilderness* report by EIA (Currey 1996), but there are far too few rangers, and they receive very low pay (\$68 per month), out of which they must pay for

waterproof clothing and shoes, as well as food for their families. Often they have to go barefoot, and suffer from malaria (Currey 1996). The equipment and facilities are so inferior that the rangers are unable to properly protect the park's 70 Tigers, 1,100 Asian Elephants (*Elephas maximus*), Indian Rhinoceros (*Rhinoceros unicornis*) and Swamp Deer.

To combat this situation, Valmik Thapar and Bittu Sahgal, editor of the wildlife magazine *Sanctuary ASIA*; Belinda Wright, a prominent conservationist; and Tiger biologist Ullas Karanth founded the Wildlife Protection Society of India (WPSI) in 1994. Its major purpose was to protect Tigers from poachers and bring smugglers to justice (Matthiessen 1997). Ashok Kumar of TRAFFIC India joined the group in 1996, and this small organization has brought 82 people to court for wildlife violations; unfortunately, all have been set free because of the total failure of the Indian government to enforce its own laws (Matthiessen 1997). The organization has not given up, however, and they have recently seen signs of progress. They and other Tiger defenders believe that "The Tiger is the very soul of India" (Matthiessen 1997).

In Nepal, a \$650,000 U.S. government grant coordinated by U.S.-based conservation organizations will promote eco-development near Royal Chitwan National Park (Jackson *et al.* 1996). This park was once an important Tiger sanctuary, but it lost 25 Tigers to poachers between 1988 and 1990 alone (Ward and Ward 1993). In the 1990s, poaching has continued, and in spite of intensified anti-poaching patrols, nine seizures of Tiger parts--most of them complete skeletons--took place in 1995 alone in villages adjoining two protected areas, and 23 poachers were arrested (Jackson *et al.* 1996). Those Tigers that survive in Nepal remain in Royal Chitwan and Royal Bardia National Parks, and Royal Sukhla Phanta and Parsa Wildlife Reserves, which border on northern India. Tiger populations in 1993 were estimated at about 250, but no recent surveys have been carried out for the country. A program of paying rewards for information leading to Tiger smugglers has led to many arrests in the vicinity of Royal Chitwan National Park (Jackson *et al.* 1996).

Siberian Tigers have been pursued by hunters in snowmobiles, all-terrain vehicles, on horseback and with dogs, but most are caught in steel jaw leghold traps or wire snares. Some hunters are equipped with automatic weapons and night-vision devices (Specter 1995). U.S. researchers were offered Tiger body parts for sale at airports in 1995. Those who are caught poaching or selling illegally taken animals receive minimal penalties--119 people were arrested in the first nine months of 1995 in Primorsky, and none received jail sentences; fines were minimal (Specter 1995). Rangers in the reserves have few vehicles and are not permitted to carry weapons to protect themselves; in 1994, the leader of the Tiger task force was hospitalized when a poacher ran him down with a truck (Specter 1995). In one area near Lake Khanka near China, all 10 resident Tigers were killed between 1992 and 1995 (Specter 1995). Chinese poachers have entered Russia to kill Tigers, and the Russian Mafia is marketing Tiger skins and bones in China in an underground organized crime network (Specter 1995).

Linden participated in a 1995 undercover operation organized by Steve Galster. Posing as American businessmen, Linden, Galster, *Time* photographer Anthony Suau, and Russian environmentalist Sergei Shaitarov were approached by a poacher offering the bones and skin of a year-old Tiger for \$11,000 (Linden and Yar 1995). They met the poacher in Krasny Yar, homeland of the Udege people who have fought lumbering and Tiger poaching, and were told by the poacher that killing the Tiger was a bad thing for the Udege, but that it was okay for him to sell the skin because he had not killed the animal. "They all say that," Galster said later (Linden and Yar 1995). After photographing the poacher posing proudly with the Tiger skin, they told him that his price was too high, and informed a local biologist of the poacher's activities. They learned that this was not the poacher's first crime (Linden and Yar 1995). The Bikin Valley, where the Udege live, is besieged for Tiger goods by foreign buyers from Korea and China and some fly helicopters or small aircraft across the border to shoot Tigers and Brown Bears (Galster 1996).

Between 1992 and 1993, more than 100 Siberian Tigers were slaughtered (Galster *et al.* 1994), and in 1994, 20 to 30 (Linden 1995). Some suggest that far more--as many as 65 Tigers--were killed in 1994 (Specter 1995). In view of the enormous land area to be patrolled and the relatively small force of rangers, the actual number of Tigers killed may never be known. Numerous poachers were arrested in 1995, but local authorities failed to prosecute, as a result

of government corruption.

To counter this devastating slaughter, anti-poaching brigades were organized by various conservation groups. The U.S.-based Global Survival Network has funded patrols that have been in the field since January 1994 (Galster and Eliot 1999). The Russian Ministry of Environment launched Operation Amba with the ceremonial burning of confiscated Tiger bones and skins in Turrisk. It is a specialized, well-equipped brigade that patrols rivers and reserves in Primorski Territory, where 85 percent of Tigers remain (Galster 1996). Some 25 to 30 employees, showing courage and competence, slowed the rate of poaching from 60 or more Tigers a year to 10 to 15 (Galster 1996). The Russian government issued a decree in August 1995 calling for a national strategy to protect Tigers and their habitat and to order all government agencies to cooperate on saving the Tiger. By 1997, \$750,000 had been spent on anti-poaching patrols, and this special force has new uniforms, modern weapons and vehicles. Intensive work on the part of the joint U.S.-Russian team in early 1997 uncovered a major Tiger skin trading route and a sea route from Vladivostok to South Korea (Galster and Eliot 1999). Inspections of vehicles, hunters and potential poachers have turned the tide for the Siberian Tiger, aided by outside funding and public relations films, television shows and the help of non-governmental organizations (Galster and Eliot 1999).

In both China and Taiwan, facilities house captive Tigers for the express purpose of killing them for the Traditional Medicine trade. Caged Tigers on truck beds were paraded through the streets of Taipei, Taiwan, in 1986, with loud speakers blaring the date, time and location of the big cats' impending slaughter; their bodies were publicly auctioned (Highley and Highley 1994). Taiwan reportedly had more than 100 Tigers on farms in 1994, 60 more were kept in similar facilities in mainland China (Song and Lu 1994), and another 35 in Thailand. Humane organizations have inspected and filmed these facilities and found animals being kept in filthy conditions, and even starved to death.

China has attempted--unsuccessfully--to obtain permission from CITES members to sell body parts from these Tigers in international commerce.

Two representatives of the Chinese government, Wang Song and Houji Lu (1994), made such an appeal in an official magazine of the CITES Secretariat, *CITES/C&M*. They claimed that the Felids Breeding Centre in Heilongjiang Province had bred 73 Tigers, and now has financial difficulties which would be relieved if they could sell Tiger products from animals that "die from natural causes" (Song and Lu 1994). They both admit that the two subspecies kept there, the Siberian and South Chinese, have been interbred and suffer from various effects of inbreeding (Song and Lu 1994).

In Thailand, Tiger farms have received government approval but are provoking a bitter controversy. In late 1994 one Thai farm had 35 Tigers, and the owner bragged that a dead Tiger fetches up to \$10,000 on the black market (AP 1994). He showed a display case with a male Tiger's dried sex organs that sell for \$4,500. Dr. Parntep Ratanakorn, an advisor to the Thai Royal Forestry Department which licenses Tiger farms, believes that Tigers could be farmed as easily as pigs. "The West is too sentimental about animals," he said. "Western people must open their minds and accept the ideas of Asian people because this is mainly an Asian issue" (AP 1994). Maitre Temsiripong, a former pig farmer, runs a farm with two pairs of Tigers that have produced 20 cubs in three years. The Royal Forestry Department's Khao Pardap Chang Captive Breeding Center has bred cubs from a female Tigress mated with her brother. The cubs show signs of inbreeding; they have skeletal abnormalities and cerebral defects, as documented by the U.K. Tiger Trust. A cub photographed by Tiger Trust at the Kaho Pardap Chang facility has a haunted and crazed expression known as "star-gazing," a classic symptom of inbreeding (Tiger Trust 1994).

Cubs in these farms are removed from the mother at birth so that she will immediately mate again, and cages have been constructed at the Thai government's Khao Pardap Chang facility to house many more of these pathetic animals (Tiger Trust 1994). In a change of position, the Thai government stopped granting permission to the farm to kill any of its Tigers beginning in January 1996. Valmik Thapar, at a 1996 Tiger conference, expressed vehement opposition to Tiger farms, urging that they be banned. He stated that such legitimization of the sale of Tiger parts, far from relieving pressure on wild Tigers as its proponents claim, will actually put a bounty onto the heads of the last remaining wild Tigers by legalizing trade. These farms present a major threat to remaining wild Tigers as well as

extreme cruelty to these magnificent animals. International sanctions should force their closure. In the words of Tiger Trust (1994), if present plans are carried out in Thailand, cages will "soon be full of the mournful cries of wailing Tiger cubs awaiting their final and undignified journey to the slaughterhouse."

Maimed Tigers are used as tourist attractions in Thailand. Samutprakan Crocodile Farm outside Bangkok, Thailand, was visited by John Nichol (1987), author of *The Animal Smugglers*. Nichol described a captive Tiger at the farm: "He looked magnificent, lying in a sort of summerhouse ; a chain led from his collar to the wall. Nichol expressed concern that this restraint was inadequate, but he was told, "Tiger very tame," and they encouraged him to take a photo of the animal as it lay on a bed of straw (Nichol 1987). When he approached the Tiger, he saw why they called him "tame ; his feet were simply floppy stumps half hidden by the straw. He could not even stand. "I should have taken a photograph, but I felt too sick and felt I had to at least make a show of not encouraging the practice. Poor tiger . . ." (Nichol 1987). What had happened to this Tiger will never be known. Perhaps he was captured by both feet with wire snares or leghold traps, and wounds became septic, necessitating amputation. He may have had bones surgically removed for use in Traditional Medicine. Either way, his fate could not have been crueler.

China, a CITES member, legally banned exports of Tiger products in December 1992 (TRAFFIC 1995) but has turned a blind eye to this trade. South Korea obtained two-thirds of its imported Tiger bones from Indonesia (Jackson *et al.* 1996). The Republic of Korea finally prohibited the sale of Tiger products in 1994, and Singapore also banned sale. Japan has not prohibited internal trade in Tiger parts and derivatives (Jackson *et al.* 1996). Chinese Customs statistics show that more than 71,000 kilograms of Tiger bone medicines were exported between 1990 and 1992 to Japan, making it the largest importer in the world (TRAFFIC 1995). Investigators in 1994 and 1995 found wine and pills labeled as containing Tiger bone in Japanese stores (TRAFFIC 1995).

Chinatowns in North America and Europe have provided additional illegal markets for Tiger products. Some products labeled as Tiger bone in these stores were sent to the U.S. Fish and Wildlife Service Forensics Laboratory for analysis and found to be other material. Some real Tiger bone is being imported, however. A Chinese businessman was caught smuggling a Tiger skeleton worth up to \$50,000 into the United States in the early 1990s. In the United Kingdom, 28 Oriental pharmacies were visited in August 1994 by TRAFFIC investigators and, in cooperation with police and the Department of the Environment, they confiscated quantities of Tiger bone, rhino horn and bear bile from 14 stores. An investigation in Antwerp, Belgium, uncovered even more such items (TRAFFIC 1995). In 1992, China exported 250,000 pills and five containers of Traditional Medicine containing Tiger to Belgium; its world exports totaled 27 million items in the form of pills and other products from 1990 to 1992 (TRAFFIC 1995).

An upwelling of public concern in the United States and other countries about the impending extinction of the Tiger has inspired many efforts to preserve remaining wild populations. In the U.S. Congress, legislation enacted in September 1994, the Rhinoceros and Tiger Conservation Act, created a fund of appropriations of up to \$10 million per year until the year 2000 to be used for conservation programs and projects to enhance enforcement of existing legislation throughout the Tiger's range. The bill also required the Department of the Interior to identify which countries engage in activities that abuse international accords protecting Tigers and rhinoceros. In 1998, the Conservation Act was amended by adding a prohibition on the sale, importation, and exportation of products intended for human consumption or application containing, or labeled or advertised as containing, any substances derived from any species of rhinoceros or tiger.

In October 1995, a meeting between conservationists, Traditional Medicine practitioners, and traders in Tiger products was organized by TRAFFIC East Asia. The participants came from China, Hong Kong, Japan, Singapore and South Korea. Cooperation between these users and conservationists was the objective (Jackson *et al.* 1996). Its major goal was to convince practitioners to educate consumers to use substitutes for Tiger products.

There are about 1,000 Tigers in zoos, of which at least 360 are Siberian. Captive-bred animals have little chance of surviving if released to the wild, however, lacking survival knowledge which is passed on from generation to generation. Still, one day, they may be the only Tigers left in the world and will have to be used in reintroductions.

Peter Matthiessen, in his 1997 article in *Audubon* magazine entitled "The Last Wild Tigers," imagined a "... future in which the mysteries of wild tigers will be gone and the only tigers left on earth will be these listless specimens cooped up in zoos." The spine-tingling roars that once echoed for miles in tropical forests are fading, and epitaphs are already being written. A 1993 book by Geoffrey C. and Diane Raines Ward, *Tiger-Wallahs*, was subtitled, *Encounters with the Men who Tried to Save the Greatest of the Great Cats*.

The traditional lore upon which the trade in Tiger products is based can be traced to ancient veneration of this animal and the belief that it was capable of warding off evil; children in China wear caps with Tiger designs for luck and protection. Every 12 years, the Chinese celebrate the Year of Tiger, symbol of strength and good fortune, the source of which they are in the process of destroying.

The potential market of Asian consumers of Tiger products is approximately 2 billion people, and ancient traditions resist the reasonable approach of modern medicine and conservation concerns. In order to prevent the extinction of the last wild Tigers, much needs to be done in a very short time. Education must change traditional views to convince consumers to buy substitutes, anti-poaching patrols must be set up throughout their range, and enforcement of trade bans must be strong. Conservationists are working to achieve these goals with the hope that at least some wild Tigers will survive, but a lack of strong commitment on the part of the key governments involved, and the enormous market of uncaring or uneducated consumers, may doom their efforts.

Traditional Medicine Trade: Rhinoceros

All five species of rhinoceros are highly endangered, and within the past decade, illegal trade has pushed them to the brink of extinction. These ponderous, primitive mammals have survived on earth for millions of years. During the Pleistocene period, more than 10,000 years ago, species of rhinoceros now extinct lived in what is now Europe and North America. Today, three species occur in Asia, from India east to Sumatra, and two in Africa south of the Sahara. The White Rhinoceros (*Ceratotherium simum*) of Africa is the largest of the rhinos, with males weighing up to 8,000 pounds (Nowak 1999).

Within the past 25 years, at least 60,000 of the world's rhinoceros have been illegally slaughtered for the Asian trade (Ricciuti 1993). Their numbers have been reduced by more than 90 percent since 1970, and today the combined total of the five species does not exceed 12,000 animals (Kelso 1995). Their horns, which grow vertically atop their heads, have been their undoing. In great demand in the Traditional Medicine trade, and as carved ornaments on dagger handles in the Mideast, these animals have been pursued by poachers into national parks and even zoos. Some rhinos in Africa are guarded 24 hours a day against poachers. In Asia, they are disappearing even more quickly than in Africa because there are too few rangers to protect them, and the price of their horn is higher than for African rhino horn.

Rhinoceros horn is not actual bony tissue, but compressed, fibrous keratin, the material of hair and nails (Nowak 1999). It is ground into powder that has been a traditional medicine for hundreds of years in China and southeast Asia, used for various purposes, such as treating fevers. Asian rhinos vary in terms of horn size, two species having only one horn and the other two-horned species have horns that are often mere knobby bumps. African rhinos have two horns, in general longer than the Asian species, the front far longer than the rear horn, with a record length of 4.8 feet (Stuart and Stuart 1996).

With the invention of powerful guns in the 19th century that could penetrate rhinoceros' thick hides, they began a long decline. At first, the hunting was primarily for trophies, but also for their horns. Heavy hunting in India by maharajahs and Europeans in the 19th century, and elsewhere in Asia for sport, devastated rhino populations. By the beginning of the 20th century, all three Asian rhinoceros species were near extinction (Nowak 1999). India, followed

by many Asian countries, extended protection to the remaining populations and established national parks and reserves in the first decades of the 20th century.

The Great Indian Rhinoceros (*Rhinoceros unicornis*) was once found throughout the Indian subcontinent, including Nepal and Pakistan east to Bangladesh and Assam (Nowak 1991). As early as 1600, hunting caused these rhinos to begin disappearing from northwestern India and Pakistan, and they continued to decline over the next three centuries (Nowak 1991). By the first decade of the 20th century, they were nearly extinct. In Kaziranga, only 12 Great Indian Rhinos remained; and in Nepal, perhaps another 50. The Indian government banned hunting and bounties and established reserves (Nowak 1999). Rhino numbers rose until the 1980s and 1990s when poaching decimated them again. Nepal now has an estimated 460 of these rhinos, protected by nearly 1,000 armed troops and rangers, while Kaziranga National Park in eastern India has about 1,200. With scattered numbers elsewhere, the species totals about 2,000, with 134 in captivity (Nowak 1999).

Even in parks, poaching occurred in the 1980s and 1990s. Gangs in Kaziranga National Park, the stronghold of this species, cut high tension lines, letting them drop to a height of 2 to 3 feet above rhino paths, electrocuting the hapless animals when they encountered the wires (Speart 1994). Between 1979 and 1989, 500 Indian Rhinos were poached, and this continued in the 1990s, with 48 killed in 1992, and 46 in 1993 (Speart 1994). Since 1992, 123 Indian Rhinos have been poached in Kaziranga, and the species has been completely exterminated in Laokhawa Wildlife Sanctuary where, 13 years ago, 5 percent of its population survived (Currey 1996). In 1993, a Bhutanese princess attempted to smuggle 22 Indian rhino horns into Taiwan to raise cash for a bottling company she owns. Her factory is located near Manas National Park, northern India, where it is thought the rhinos were poached (Speart 1994). The horn was intercepted and confiscated, and legal actions were taken against the princess. An investigation into the smuggling of rhino horn and other wildlife products in the Himalayas found that poachers are exploiting civil conflicts in nations in the region, and they trade rhino horn and other endangered species items in exchange for drugs or Chinese arms which are used to supply the Burmese military (Currey 1996).

The Sumatran Rhinoceros (*Dicerorhinus sumatrensis*) is the most primitive and smallest of all the rhinoceros. This rhino is only 4 feet tall at the shoulder and weighs 2,200 pounds, compared with the 6-foot-tall, 8,000-pound African White Rhino (Line 1997). Although they have two horns, the upper one is usually a mere bump, and the lower one closest to the muzzle is less than a foot long, far smaller than horns of other rhinos. Sumatran Rhino calves are born with a long, dense coat of hair that becomes sparse and bristly as the animals age. The hairs scrape off from abrasion as these bulky animals move through forest undergrowth; captive animals are often very hairy (Line 1997). Different genetically and physically from other Asian rhinos (Rabinowitz 1994), Sumatran Rhinos have three populations, one of which, the Bornean, has been isolated from the others for many thousands of years, and is considered a separate subspecies. Only about 70 Bornean rhinos survive in Sabah province at the northern tip of the island (Line 1997). The majority are in Peninsular Malaysia, where there are between 85 and 126, and on Sumatra, with an estimated 233 to 241. Thailand has only an estimated 10 rhinos (Nowak 1999). Thus, the total population is only about 400 to 541 animals. Some zoologists believe that a few may survive in Myanmar as well (Rabinowitz 1994). The habitat of the Sumatran Rhino is a prehistoric setting of swampy tropical forests with dense vegetation and hilly country near water.

Originally, Sumatran Rhinos ranged from eastern India's Assam province and southeastern Bangladesh to the Malay Peninsula, and possibly Vietnam, south to Sumatra and Borneo (Nowak 1999). Centuries of hunting for their horns for the Traditional Medicine trade eliminated these rhinos in one country and region after another. Surviving Sumatran Rhinos inhabit only remote forests, primarily in national parks, and their populations are scattered. Because of the difficulty of studying them in the wild, their behavior and ecology remain a mystery. A few are now being radio-tracked by biologists, and in the future, more will be uncovered about these unique animals. The International Rhino Foundation (IRF) and the Asian Rhino Specialist Group of the World Conservation Union have proposed projects to save the species from extinction. Poaching is a major threat throughout its range, with local peoples entering reserves and national parks because the horn is so valuable that it represents many years' income.

The Javan Rhinoceros (*Rhinoceros sondaicus*) is the most endangered of the rhinos, with a population which may

total only about 58 to 72 animals (Line 1997). The majority of their population, about 50 to 60 animals, live in Ujung Kulon National Park on the western tip of Java, and an additional eight to 12 live in Vietnam (Nowak 1999). Almost as tall as the Greater Indian Rhinoceros, but less massive at 3,300 to 4,400 pounds, the Javan Rhino has a single short horn, and females often lack a horn or have only a small bump (Nowak 1999). This animal once occurred from eastern India to Vietnam and south to the Malay Peninsula, Sumatra and western Java in three distinct subspecies (Nowak 1999). Habitat loss and persistent killing drove them out of almost all their original range, and one subspecies of eastern India, Bangladesh, Assam and Burma is extinct (Nowak 1999). Poaching continues, and in November 1988, a Javan Rhino was killed 130 kilometers northeast of Saigon, Vietnam (Nowak 1991). There are no Javan Rhinoceros in captivity, and this species has been called the most endangered mammal in the world (Nowak 1999).

Asian rhino horn sells for \$27,000 per pound, and most pharmacies in Taiwan and other parts of Asia sell this horn (Rabinowitz 1994; Line 1997). So far, captive-breeding programs have failed, and 21 Sumatran Rhinos have died during capture or in captivity, leaving only 18 in zoos in the United States, United Kingdom, Peninsular Malaysia, Sabah and India (Line 1997). A major controversy has arisen about further captures. A Sumatran Rhino Trust was set up in 1985 to coordinate conservation of wild rhinos and those in zoos, but after eight years, during which time \$3 million was spent, it was disbanded in 1993. The program had been undermined by politics, greed and corruption, according to the Wildlife Conservation Society (Rabinowitz 1994).

During the 19th century, African rhinos were heavily hunted for sport, as well as for their hides and horns, which were shipped to Asian markets. In recent times, the Black Rhinoceros (*Diceros bicornis*) ranged from Sub-Saharan Chad and Sudan south to the tip of the continent (Nowak 1999). By 1900, it had been eliminated from West Africa, but its populations below the Sahara may have totaled 100,000 (Cunningham and Berger 1997). Both the White and Black Rhinoceros occupy different habitats in Africa, based on their diet. The White Rhinoceros is a grazer, cropping grasses at ground level with its square lips, while the Black Rhinoceros is a browser, feeding on brush and low tree branches with its almost prehensile lips. Both are steel gray, despite their common names. During the first decades of the century, East African colonial governments persecuted rhinos on the grounds that their presence was incompatible with human settlement (Nowak 1999). When Asian rhinos became scarce, sport and market hunters turned to the African species and named them as one of the big five game animals of Africa, attracting hunters from around the world. Market hunting for Traditional Medicine became an increasingly important factor in reducing African rhinos in the 1970s and 1980s. China and other countries in East Asia grew wealthy, and customers were able to pay high prices for rhino horn. Of all rhinoceros, the Black Rhinoceros declined the most dramatically in the 20th century. From 100,000 in 1900, its population fell to 15,000 in 1980, to only about 2,400 at present (Nowak 1999). Even in national parks where they were heavily protected, these rhinos were gunned down by gangs using machine guns, or strafed and allowed to die slowly of their wounds. Many orphan Black Rhinos were cared for by centers in Zimbabwe and Kenya, but most were killed by predators or died from other causes. At Daphne Sheldrick's animal orphanage in Kenya, tiny rhinos are tended around the clock, and play chase games with one another or with baby elephants. Contrary to the image that big game hunters disseminated about rhinos being fierce, dangerous animals likely to charge people to gore them to death, they are gentle and near-sighted and lack binocular vision. They are often unable to make out animals or vehicles approaching them and will charge only when they feel threatened or, in the case of females, if their calf is being stalked by predators.

The White Rhinoceros is only somewhat more numerous than the Black, totaling 7,533 in 1996, with the majority in South Africa. It, too, has been eliminated in most of its original range, and killed on sight in and out of national parks.

While some species of rhinoceros have bred in captivity, others, like the Sumatran, have not, and many animals have died while being captured or after short periods in captivity. A few herds of Black Rhinos have been established in semi-wild conditions in Texas and Australia, although for several of these, the purpose may be less to preserve them than to raise animals for trophy hunters to pay high sums to kill. Several captive herds of Black Rhinoceros in Zimbabwe are at extreme risk of being slaughtered as a result of political chaos in which government land seizures for

distribution to black farmers and uncontrolled snaring and hunting of wildlife has already killed many rhinos (Roberts 2001).

In Asia, rhino horn sells for an average of \$15,000 per kilogram, with higher prices paid for horn of Asian species. By 1996, black market values ranged from \$46,000 to \$150,000 per horn. The penis sells for \$600 or more and is used as an aphrodisiac. The skin is also valuable, worth at least \$7,000 per animal, for use in Traditional Medicine (IUCN 1994). Another threat that has caused the deaths of thousands of rhinos is their use in dagger handles in North Yemen. The rhino horn is carved into intricate designs for these daggers, which sell for \$300 to \$13,000 each (Fitzgerald 1989). From 1982 to 1984, about 3,700 pounds of horn entered North Yemen every year (Fitzgerald 1989). Taiwan's 22 million people use about 700 pounds of horn a year, or 80 rhinos.

Prior to the major killing spree that began in the early 1980s, CITES members voted to list one rhino species after another on Appendix I, banning commercial trade in their horns and bodies, whether for Traditional Medicine or trophies. By February 1977, the entire family Rhinocerotidae had been listed. Conservationists believed that this would stop the slaughter. Thousands of rhinos remained in national parks in Asia and Africa, and national legislation in many countries of origin banned hunting. Tragically, illegal trade nullified all legal prohibitions except in South Africa, where White Rhinos were effectively protected, and increased during the 1980s. For the rest of the world's rhinos, an all-out slaughter occurred. Organized gangs of poachers, some armed with machine guns, eluded the less well-armed rangers. They entered African national parks and strafed the helpless rhinos, cutting off their horns and leaving their maimed bodies to rot in the sun. In Asia, these enormous animals made easy targets for poachers, and many were poisoned, snared or fell into spiked pit traps.

One smuggling ring was broken up in 1993 by undercover work by Steve Galster, Executive Director of the Global Survival Network, and Rebecca Chen, a Taiwanese colleague. The two tracked shipments of rhino horn from Mozambique to Taiwan to Hong Kong, and finally to China, where they found a warehouse in Wuchuan housing the horns of more than 500 dead rhinos, a supply worth \$13 million (Linden and Yar 1995). They fabricated a reason to see the horn and produced a videotape that jailed guilty parties and called international attention to the smuggling (Linden and Yar 1995).

The United States banned all wildlife products from Taiwan in 1993 when it was revealed that open sale of Tiger parts and rhino horn was occurring. This embargo was lifted in less than a year when Taiwan showed evidence of controlling its illegal wildlife trade. Taiwan's new Wildlife Conservation Law brought about a registration of all privately held rhino products in late 1994; a total of more than 457 kilograms of whole rhino horns, taken from 153 animals, horn pieces and powder was registered (TRAFFIC 1995). These items are identified and photographed along with Tiger products but, unfortunately, allowed to remain in private hands.

In the past, confiscated rhino horns in Africa have been destroyed to keep them from entering commerce. A CITES resolution in 1994 changed this recommended procedure. Significantly, it urges Party countries with rhino horn to identify, mark, register and secure these stocks (Kelso 1995). This overturns the recommendation made in 1987 for these stocks to be destroyed, which was repealed. The current Resolution (Conf. 9.14) notes that Parties view destruction as being "no longer appropriate" because it may cause prices to escalate and lead to new poaching for rhino horn to replace the destroyed stock (Kelso 1995). Since stocks of seized rhino horn kept by various countries are, by definition, not available in any way to traders unless they are stolen or somehow given out, this appears to be the first step toward releasing these stocks for trade, and to allow trade in horns sawed off living rhinoceros.

Many conservationists believe that traders have built up private stockpiles of rhino horn for possible future sales (Ricciuti 1993), and some government stocks, such as China's, are considerable. An estimated 1.1 million pounds of horn from slaughtered rhinos are thought to be stockpiled in Taiwan and China. Other parts of the 1994 CITES Resolution were more laudable: it urged stricter domestic legislation to reduce illegal trade, and the education of Traditional Medicine sellers and users to eliminate consumption (Kelso 1995). South Africa had attempted at the 1994 CITES meeting to remove the South African population of the Southern White Rhinoceros from Appendix I, which bans commercial trade, and downlist it to Appendix II to open up trade. This proposal was not accepted, but

CITES Parties voted to allow sale of live animals and trophy hunts until the following meeting. The government of South Africa repropoed downlisting to Appendix II at the 1997 CITES Conference, again unsuccessfully, offering to submit annual quotas to CITES for approval and to use stockpiled horn and horn from natural mortalities, calculated at 230 per year. This would be augmented by horn obtained from dehorning of animals in the private sector (Hughes and Brooks 1996). Zimbabwe hopes to legalize trade in rhino horns, with state farms where herds of rhinos would have their horns cut off to supply the Chinese medicinal trade (Keller 1994). Both Zimbabwe and South Africa have enormous stockpiles of rhino horn obtained from poachers and dehorning programs that would be worth millions if the ban on international trade was lifted (Keller 1994).

Legalizing trade in rhino horn would prove disastrous for the species, just as the trade in ivory nearly caused the extinction of both species of elephants. The horns of Southern White Rhinos are not distinguishable from other rhino horn, except perhaps through forensic methods not available to import and export personnel. Even the live animals are difficult to distinguish by race (Hughes and Brooks 1997). The market for this horn far exceeds the supply and would not be appeased by the few hundred horns that enter trade each year from South Africa. Poaching would accelerate, and horns from illegally killed animals would not be distinguishable from those that had been stockpiled. This would further endanger the remaining wild populations of rhinos around the world, since their horns might be represented as legally obtained. In view of the enormous revenues that South Africa accrues from tourism--\$6 billion in 1995 by its own accounting (Hughes and Brooks 1997)--the funds from sale of rhino horn can only be considered of minor importance. Efforts should be made to funnel ecotourism funds to rhino conservation, since that is one of the arguments being used to justify reopening the trade.

Dehorning of rhinos with the declared objective of making the animals unattractive to poachers has been carried out in Zimbabwe and Namibia. They are darted with tranquilizer guns, and the horn is sawed off the unconscious animal. The horn grows back in about one year, and the process must be repeated. Preliminary evidence in countries conducting dehorning indicates that rhinos continue to be poached, apparently just for the stump or, perhaps, because the poachers were unable to see whether the animal had its horn (Keller 1994). Even more importantly, females that have been dehorned have, without exception, lost their calves to predators (Speart 1994). Rhinos use their horns in territorial displays, mating, and defense and, it has now been established, to defend their calves from hyenas, Lions and other predators. Moreover, this procedure is expensive and involves trauma and possible death to rhinos.

Zimbabwe, a country that prides itself on its "sustained yield" approach to wildlife, has an entirely different approach to protecting rhinos than East Africa and most other African nations. The government launched Operation Stronghold in 1984 to prevent poaching, with highly armed rangers trained to kill poachers, and a goal of preserving its once large rhino populations. Once a stronghold for the Black Rhinoceros, with a population of at least 1,400, the country's rhinos declined to 400 by 1992, and to 300 by 1994 (Speart 1994). Only 200 White Rhinos remain in Zimbabwe, and their numbers are also in decline (Stuart and Stuart 1996). Anti-poaching efforts failed to stop the killing of 954 rhinos between 1984 and 1991; during that period 145 poachers and four conservation officers were shot (Stuart and Stuart 1996).

The market in rhino horn has been extremely difficult to control, since the horn can be reduced to a powder that is easily smuggled, sold surreptitiously, or in some countries openly, in a vast network of apothecary shops in Asia and Chinatowns throughout the world. With fewer than 12,000 rhinos remaining alive and a potential market of millions of Asians, the future of these ancient animals is bleak. Throughout the millions of years that rhinoceros have existed, their armored hide and horns have helped them defend themselves against a wide variety of predators, but against a legion of new weapons and cold-blooded greed, they may not survive much longer.

Traditional Medicine Trade: Bears

Bears of all species have come under siege from a variety of causes, including habitat loss, hunting, killing for meat and as "nuisances." Their greatest threat today, however, is their slaughter for the market in bear products, mainly their gallbladders and paws. All of the world's eight species of bears, except the Giant Panda, have suffered population declines as a result of this Traditional Medicine trade (Knights 1996). Their gallbladders are ground into powder, and bile is extracted for various medicinal purposes, including digestive problems, inflammation and blood purification. Sold at extremely high prices, a record \$45,000 was paid for a single gallbladder (Barron 1991). To illustrate the avid market in this product, an Asian dealer in New York City was murdered in 1991 to obtain his profits from the sale of bear gallbladders. Japan imported 1,500 pounds of bear bile in 1989 alone (Schaller 1993).

The largest consumer of bear bile is now South Korea, and Koreans have even hunted Black Bears (*Ursus americanus*) in California and placed ads in newspapers to purchase bear gallbladders from hunters (Knights 1996). A Grizzly or Brown Bear (*Ursus arctos*) gallbladder can sell for up to \$10,000 on the black market, and the larger the gallbladder, the higher the price. A Black Bear gallbladder can be purchased from a poacher in Idaho for \$15, but in Hawaii, it brings \$1,500, and in Korea, as much as \$15,000 (Barron 1991). Some AIDS patients in the United States take extracts of bear gallbladder as a supposed cure for this disease, according to CBS News (July 7, 1993).

The Asiatic Black Bear (*Ursus thibetanus*), already endangered and listed on Appendix I of CITES before the 1980s, may now be verging on extinction, according to the Chairman of the IUCN Bear Specialist Group (Servheen 1989). Native to most of Asia from Iran and India east to Mongolia, Russia and Vietnam, this species has been the major target of the gallbladder trade. From 1979 to 1988, up to 59,000 gallbladders were illegally exported from China to Japan (Servheen 1989). A wild Korean Black Bear shot in 1982 was sold at auction for \$18,500 (Servheen 1989). Fewer than 10 of these bears remain in Korea, according to the Korean Federation for Environmental Movement after they were finally given protection. In 1996, five Koreans and two Thais were arrested in South Korea after they were caught with the carcasses of six wild bears with the paws chopped off and internal organs extracted (WuDunn 1997). Hunters of these bears will often frighten or wound the bear first in order to let it die slowly, in pain, in the belief that the gallbladder becomes larger when the animal suffers (WuDunn 1997). South Korea recently banned sale of bear parts except for U.S. bears, which are still allowed to be sold. The bear bile is touted as a magical cure-all, used in health tonics and aphrodisiacs throughout Korea (WuDunn 1997). An average of more than 2,000 Asiatic Black Bears per year are killed in Japan, and many are exported as live animals or parts, primarily to Korea.

The World Society for the Protection of Animals (WSPA) reported in 1995 in *The Protector* that an illegal shipment of 21 live small bear cubs, of which 20 were Asiatic and one was a Sun Bear, was seized in Thailand. All had been captured in Burma, and the smuggler had made an arrangement with airport authorities in Thailand to let these Appendix I species pass on their journey to Korea to be killed and their paws removed for restaurant diners. The Thai forestry department was informed and confiscated the bear cubs. After the seizure, three died of disease, brought on by their crowded and unhealthy captive conditions. These cubs, which would still have been with their mothers, were placed by the World Society for the Protection of Animals in a humane rescue center. This species has declined so dramatically throughout its range that the Traditional Medicine trade has turned to other bear species. The Asiatic Black Bear ranges into Siberia, where it is being slaughtered for its gallbladder in spite of being legally protected (Galster 1996). The IUCN Bear Specialist Group's Chairman, Christopher Servheen, in his report *The Status and Conservation of the Bears of the World* (1989), predicted that without strict controls on trade and hunting, the Asiatic Black Bear could become extinct throughout most of its range in the very near future.

An estimated 8,000 to 9,000 Brown Bear gallbladders are exported from Russia annually, of which half are legally hunted bears and half are poached animals, but no official records are being kept (Knights 1996). The Brown Bear is the national symbol of Russia, and yet the combined effects of disintegrating law enforcement, financial gain from selling bear body parts, and official corruption pose serious threats. Russian poachers receive about \$200 per gallbladder, and they are sold in Korea for up to \$5,000 apiece (Galster 1996). In 1995, in the Bikin Valley of Russia's Far East, bear poaching was reported on the rise, and the Amba patrol protecting Siberian Tigers reported seeing an increasing number of orphaned bear cubs (Galster 1996). Some cubs are killed along with their mothers; a

report by the Investigative Network included a photograph of a dead mother Brown Bear and her slaughtered infant cub, killed for their gallbladders in Russia (Galster 1996).

After floods in northeastern China in mid-1995, many Brown Bears crossed over the Amur River into Russia to reach higher ground, and hunters converged on them (Galster 1996). They were pursued into forests by four-wheel drive vehicles, and at least 60 were shot. Because the trade in bear parts is legal in Russia, little can be done to stop the poaching (Galster 1996).

The grisly consumption of bear paws, which are cooked as a gourmet delicacy that to some is also health promoting, is widespread in Asia. Served at Japanese business banquets, they can cost \$1,000 per person; a Seoul restaurant advertised bear paw soup in 1994 at \$1,000 per bowl (Knights 1996). More than 900 kilograms of paws were imported annually into Japan from China in the mid-1970s, and about 600 kilograms per year entered in the 1980s (Servheen 1989). In 1987, one Chinese city, Harbin, consumed 4,000 pounds of Brown and Asiatic Black Bear paws, and nine live bears were smuggled into Guangzhou City to lease to restaurants in order to lure customers (Schaller 1993). In 1990 a single load of 4,000 kilograms of bear paws from 1,000 bears was intercepted at the Chinese border headed for Japanese and Korean buyers (Knights 1996). Live bears, imported with the pretext of going to zoos, are killed in front of Korean restaurant customers (Servheen 1989). A Korean newspaper reported that live bears are lowered onto beds of hot coals, where they are held until their feet are cooked (Knights 1996). In China, servings of bear paws sell for between \$346 and \$576 each. At the Beijing Lou restaurant, braised bear paws are advertised on a three-sided, revolving, illuminated sign, with enlarged photos of the paws (Highley and Highley 1994).

Sun Bears (*Helarctos malayaunus*), smallest of all bears, are native to southeast Asia. Populations of this species have been severely reduced by the capture of many animals shipped to South Korea for their paws (Highley and Highley 1994). The Sun Bear is an endangered species on Appendix I of CITES, and total populations are thought to be less than 20,000; it ranges from India through Thailand to Sumatra and Borneo (Knights 1996). Another rare Asian species, the Sloth Bear (*Melursus ursinus*) of India, Sri Lanka, Bangladesh, Nepal and Bhutan, is thought to number less than 10,000 (Knights 1996). It is listed on Appendix I of CITES and listed as Vulnerable by the 2000 IUCN Red List of Threatened Species. An estimated 728 to 1,548 Sloth Bears in India alone are also being killed for the restaurant and gallbladder trades (Nowak 1999; Servheen 1989).

Asians are not the only ones who consume bear paws. An American entertainer, Tommy Tune, joked on a U.S. talk show about a banquet he attended in Japan where he ate a bear's left paw. It had been ordered one week in advance, probably so that a live bear would be killed or maimed for the purpose. Jay Leno, the host of the Tonight show, on which Tune was a guest, said "Imagine a bear getting its paw cut off! How could you eat that?" Tune replied, "Oh, you just don't think about it."

Bear farms have been established in several Asian countries, keeping these animals in captivity to extract bile from their gallbladders. China had an astounding 10,000 Asiatic Black Bears in bear farms throughout the country (Knights 1996); but that number has been reduced to fewer than 8,000 at the beginning of the new millennium. They represent at least a third of the species' entire population. An investigation by two researchers (Highley and Highley 1994), who visited a number of these farms and published a report, *Bear Farming & Trade in China and Taiwan*, found bears being kept in extremely cruel conditions in cages only 3 feet by 4 feet by 8 feet, so small they could barely move (Highley and Highley 1994). Some cages are raised off the ground like rabbit cages, and others are placed on the ground, with bears often lying in their own excrement. Films and documentation of the conditions in which these bears are kept have provoked international outcries (Highley and Highley 1994).

The extraction of the bile from caged bears is another cruelty. Christopher Servheen, a bear biologist, witnessed such an operation, in which the owner used a metal pole to harass the small bear, which already had a badly scabbed nose, into a narrow portion of its cage. As his wife distracted the bear with a pan of sweets, a door was lowered and metal rods inserted to confine the bear and keep its legs from interfering with its abdomen. The owner reached in,

unlocked the metal panel, and a plastic bag attached to a catheter dropped down, which was half full of a green-brown liquid. The bear scraped and clawed wildly at the cage when the owner proceeded to extract the liquid from the bag with an oversized hypodermic needle, withdrawing two full syringes (Highley and Highley 1994). Several caged bears with one or more paws cut off for sale to the restaurant trade have been seen on these farms (Highley and Highley 1994).

An organization based in Hong Kong, Animals Asia Foundation, run by Jill Robinson, has begun a rescue operation to save at least 500 Asiatic Black Bears from bear farms. They will live in a sanctuary where they are able to roam free. The organization signed an agreement with the China Wildlife Conservation Association in Beijing and the Sichuan Forestry Department to close the worst bear farms in Sichuan with the goal of expanding the initiative to other provinces and promoting the manufacture and use of synthetic or herbal substitutes for bear bile. Many of the bears rescued had severe wounds from the catheters implanted to drain bile, or from banging their heads against the bars. Their teeth were broken and worn down from biting cage bars in a vain attempt to escape. They are being given veterinary care at the Animals Asia Foundation.*

*Animals Asia Foundation, Hong Kong Headquarters Office, P.O. Box 82, Sai Kung Post Office, Sai Kung, Kowloon, Hong Kong; Web site: www.animalsasia.org. Donations are needed for this important rescue work.

The World Society for the Protection of Animals (WSPA) has been extremely active in rescuing bears from inhumane conditions in Europe and Asia, and its recent research on 44 bear farms was published in two reports in 2000: *The veterinary, behavioural and welfare implications of bear farming in Asia* details the conditions on these farms, in which cages are tiny metal boxes with holes punched for ventilation; the extremely abnormal behavior exhibited, such as self-mutilation; and the untreated wounds, deformities and health problems. *From Cage to Consumer* is a market survey showing that bear gallbladders and bile are being sold in most major U.S. and Canadian cities, with prices of up to \$650 for a whole gallbladder. The United States and Canada thus help to keep these cruel farms in business. Legislation to ban U.S. sales failed in recent Congressional sessions, but was reintroduced in 2001.

According to the Association of Chinese Medicine and Philosophy in Hong Kong, there are at least 54 alternatives to bear gall, including common rhubarb and a type of gardenia (Knights 1996). A chemical used in Western medicine to dissolve gallbladder stones, Ursodeoxycholic acid (UDCA), has been synthesized from cattle bile acid for the past 50 years (Knights 1996). Twelve tons of this chemical are produced by a single pharmaceutical company in Korea every year. This product has been approved by the U.S. Food and Drug Administration. Many practitioners of Traditional Medicine are unaware of synthesized UDCA, and most prefer to stock products from rare wild animals (Knights 1996). Korean practitioners claim that only the real bear bile is effective, a totally false assumption but one that keeps the demand strong (WuDunn 1997).

The Traditional Medicine trade in bear products is also practiced in South America, where the endangered Spectacled Bear (*Tremarctos ornatus*) is struggling for survival in its Andean habitat. Bear fat is used for bone bruises and claws for strength and fertility; machismo is associated with killing these bears (Servheen 1989). Total numbers of this rare species are estimated at only 10,000 animals (Knights 1996). Although protected throughout its range, enforcement is poor (Servheen 1989). It is listed on Appendix I of CITES.

The Fish and Wildlife Service's Forensics Laboratory, after intensive research, is now able to identify bear gallbladders by species if a bit of tissue is attached for DNA analysis (Knights 1996). However, law enforcement officers are unable to distinguish by sight alone whether the gallbladders come from an endangered species of bear. Detection of smuggled bear gallbladder in packages and luggage by trained dogs is one step in the right direction. British Columbia has begun training dogs for this purpose, and should this become widespread, confiscations might have a major effect on smuggling.

Traditional Medicine Trade: Sturgeon

Caviar, the eggs of sturgeon of many species and several other species of fish, is considered a great delicacy by gourmet diners around the world. The killing of sturgeon for the most valuable types of caviar has pushed many species of these ancient fish close to extinction. Caviar is the most valuable of all fisheries products. Prime Beluga caviar from Russia sells for as much as \$80 per ounce (\$1,280 per pound), and Iranian Beluga for \$125 an ounce (\$2,000 per pound) (Fabricant 2000). Beluga sturgeon (*Huso huso*) breed in the Volga River and spend their lives in the Caspian Sea, which is bordered by Russia, Kazakhstan, Turkmenistan, Azerbaijan and Iran. Two other species native to the Caspian, Russian Sturgeon (*Acipenser gueldenstaedti*) and the Sevruga or Stellate Sturgeon (*Acipenser stellatus*), have also declined to endangered status. Prior to the overfishing, damming of their spawning river and pollution of the Caspian by industry, pesticides and offshore oil rigs, these sturgeon were abundant and reached great lengths and weights (Tyler 2000). A Beluga caught in 1926 was estimated to be 75 years old, weighed 2,000 pounds and yielded 396 pounds of caviar (Sparks 1992). Even larger individuals weighing 2,500 pounds and measuring up to 28 feet in length have been reported (Sparks 1992). As recently as the 1970s, Beluga at least 60 years old were regularly caught (Platt 1995). Today, few giant sturgeon remain anywhere in the world. Ninety percent of Caspian Sea sturgeon are killed before they are mature enough to reproduce; the typical adult is now less than 18 years old and weighs only about 77 pounds (Platt 1995).

Sturgeon of the Caspian Sea produce 95 percent of black caviar, the most sought-after of all caviar. Their decline began with the construction of large dams on the Volga River which disrupted their migration to spawn. Fewer and fewer sturgeon are able to negotiate this river and its tributaries (Stewart 1992). The older females, aged 50 or more, produce great amounts of caviar, at least 3 million eggs, then go back to the Caspian for several years before returning to spawn again (Sparks 1992). Large sturgeon, because of their armor-like skin, become immobile and passive when caught (Stewart 1992). The fish are stunned and transferred to a fish barge in legal fisheries, where they are kept alive until processing. Then the sturgeon is cut open while still alive, and the roe is scooped out and placed in buckets (Stewart 1992).

After the breakup of the Soviet Union in 1991, well-armed poaching groups replaced the strict legal fishery and began netting female Beluga (Stewart 1992). Russian citizens offered small jars of illegal caviar to foreigners at hotels and airports at exorbitant prices (Stewart 1992). As proof of the continued illegal trade, 450 tons of caviar from Russia and Iran were sold by the European caviar trading company Dieckmann & Hansen in 1995, but legal production of caviar was only 225 tons (DeSalle and Birstein 1996). The U.S. Department of Commerce statistics on caviar imports show a recent increase of 100 percent since 1991, according to investigations by two molecular biologists with the American Museum of Natural History in New York, Rob DeSalle and Vadim J. Birstein (1996). In order to determine the species from which various caviars derive, these two scientists did DNA analyses on 25 samples, 23 from gourmet stores in New York City, and two brought from Russia. Many were mislabeled, and several had come from threatened species. One sample of Siberian Sturgeon (*Acipenser baerii*) was labeled as Beluga (DeSalle and Birstein 1996). The quota for the latter species was 200 to 300 tons for all Siberian rivers, but in 1994, in the Ob River alone, the illegal catch was 250 to 300 tons (DeSalle and Birstein 1996).

By 1995, populations of sturgeon in the Caspian Sea reached new lows. In 1996, the *IUCN Red List of Threatened Animals* listed Beluga, Sevruga and Russian sturgeon as Endangered. The vast majority of sturgeon species of Eurasia were also listed, as a result of overfishing. In June 1997, the entire Order of sturgeon, Acipenseriformes, including all species of sturgeon and paddlefish, was listed on CITES Appendix II. Appendix II does not necessarily ban trade, but only requires export permits that certify catch did not deplete wild populations, and it is generally not strictly enforced. Illegal fishing by organized poaching gangs in countries lining the Caspian Sea continued, pushing depleted populations closer to extinction in the following years. It was estimated in 2000 that actual catch totaled 25 tons, 5 to

10 times the official catch (Tyler 2000). Even this was 0.1 percent of the 22,000 tons regularly caught each year in the 1970s (Higgins 2001). In 1999, official U.S. Commerce statistics showed 14 tons of Beluga as imported into the United States, representing the eggs of 1,600 female fish (Revkin 2000). Twice that many Beluga are killed by poachers because of the difficulty in distinguishing between male and female (Tagliabue 2000). In an effort to stop international commerce in Beluga, the most endangered of the Caspian Sea sturgeon, the Natural Resources Defense Council, the Wildlife Conservation Society, and SeaWeb petitioned the U.S. Fish and Wildlife Service in December 2000 to list the species as Endangered under the Endangered Species Act. These organizations established a website, www.caviarempor.org, urging consumers to stop buying caviar (Revkin 2000).

A scientific report compiled for CITES by TRAFFIC, an organization of the World Conservation Union, was issued in December 2000. It concluded that Beluga and other sturgeon from the Caspian were not being sufficiently protected under the terms of their Appendix II listing (Tyler 2000). Proposals to list Beluga and other critically endangered sturgeon were discussed at a meeting of a CITES Scientific Committee in December 2000. The committee agreed that Beluga and Kaluga (*Huso dauricus*), a sturgeon of the Amur River of eastern Siberia and northeastern China that can weigh up to a ton, merited listing on Appendix I, banning all commercial trade, because of their status (Revkin 2000). However, the committee decided against placing them on Appendix I because the members concluded that the trade ban would cause economic disruption in the impoverished Caspian region and would bankrupt legal traders, importers and hatcheries (Revkin 2000). Instead, it recommended a reduction of 80 percent in fishing quotas. In June 2001, the CITES committee formally rejected Appendix I listings for these sturgeon, giving countries bordering the Caspian until the end of the year to formulate a management plan that would conserve the species (Higgins 2001). The black market in caviar, unaffected by quotas and management systems, was estimated by Russia's Prosecutor General's Office in 1999 at between \$2 billion and \$4 billion a year (Filipov 2001a). It has not been controlled by any country along the Caspian Sea, with the possible exception of Iran. A Russian program to stop all vehicles on roads bordering the Caspian Sea to check them for illegal caviar has been a failure, as a *Boston Globe* correspondent found when traveling in a sedan with a hidden 70-pound Beluga. The car was waved along by a policeman after he asked if the driver had any fish or a secret compartment but did not search the car (Filipov 2000b).

In June 2001, four former Soviet republics on the Caspian Sea agreed to cooperate to try to stem the precipitous decline in sturgeon by conducting a scientific survey of populations and then setting quotas, along with coordination of anti-poaching campaigns (Higgins 2001). Russia, Azerbaijan and Kazakhstan agreed to stop all fishing for sturgeon for 2001, and Turkmenistan is expected to approve management plans (Tagliabue 2001). This does not stop the international trade, however, either legal or illegal. Most chefs and restaurants in the United States and Europe have failed to boycott Beluga and other endangered caviar. An exception is the famous French chef, Jacques Pepin, who wrote an Op-ed essay for *The New York Times* on July 3, 2001, urging a boycott and stating that the temporary fishing ban in the Caspian was inadequate to protect these sturgeon. He commented: "There are many luxuries in life in which we can still indulge. The beluga sturgeon can't afford for us to indulge in this one" (Pepin 2001).

The snob value of caviar has been promoted for generations, and this, too, encourages overfishing. A lack of conservation among those who buy caviar may push Russian sturgeon past the point of recovery. Sturgeon are not alone in their dramatic declines from overfishing. Orange Roughy, Atlantic Bluefin Tuna, Atlantic Cod and Haddock, Chilean Bass and many species of shark are among other fish pushed toward extinction in the past decade.

Traditional Medicine Trade: Seahorses

Among the most unusual and delicate of marine creatures, seahorses have been admired for centuries by naturalists. They have been harvested since the 14th century Ming Dynasty in China, and their bodies dried and ground to a powder used to cure a variety of ills, including asthma; broken bones; impotence; kidney disorders; heart,

skin and thyroid ailments; and as an aphrodisiac (Vincent 1995). About 35 species of seahorses are found in both tropical and temperate oceans, all of the genus *Hippocampus*. They vary greatly in size and form. The smallest is about 10 millimeters (0.39 inches) long, and the largest, 300 millimeters (11.7 inches); they weigh from about 3 grams up to 25 grams (Vincent 1995). Some seahorses have evolved elaborate lacy fins resembling seaweed, but most have a distinctive armored body with an extended abdomen and long, tapered snout evoking the profile of a horse; their tails wind forward into a spiral. They swim in an erect posture, moving tiny, spineless fins at great speed. Their method of reproduction is highly unusual. The female deposits fertilized eggs in the male's abdominal pouch, and after gestation, he thrusts the young seahorses out of his belly. Seahorses mate for life, and if one of the pair is killed, the remaining one does not readily remate (Vincent 1995). Wherever they occur, seahorses tend to be sparsely distributed in their seagrass, coral and mangrove habitats (Vincent 1995).

A two-year study (1993 to 1995) by biologist Amanda Vincent in Southeast Asia, found an extensive trade in seahorses for Traditional Medicine, aquariums and the curio trade (Vincent 1995). Collectors in the Philippines receive as little as 25 cents, while dried seahorses sell for up to \$1,200 per kilogram at retail (Vincent 1995). They are also ground up and sold in pill form, mixed with other ingredients. By 1997, Vincent calculated that the worldwide trade consumes at least 20 million seahorses per year (quoted in *Kingdom of the Seahorse* film; see Video).

Hong Kong is the center of the trade, and Vincent's research revealed that traders offered to buy 500 kilograms to a ton a month, far more than the supply of wild seahorses can support. In Hong Kong, seven seahorses sell for \$75. They are shipped to China, which provides the largest market, followed by Taiwan, and Singapore. The Chinese market in the United States is also substantial. Some 200,000 dried seahorses were imported from the Philippines in 1987 (Vincent 1995). U.S. fishermen are now a source of seahorses. In the mid-1990s, Florida supplied 100,000 seahorses a year to the market, mainly gleaned from nets set for shrimp. Many of the seahorses caught in shrimp nets are injured, and the shrimp fishermen discard them, sweeping them overboard. A large percentage consist of pregnant males, whose young do not survive, according to Vincent. A single Japanese order for 100 kilograms involved the killing of 28,000 seahorses; Australia imported 140,000 dried animals in May 1995, and another million live ones for the aquarium trade (Vincent 1995).

The major capture method, scooping the seahorses in nets in shallow water, is used throughout Southeast Asia. Vietnam and the Philippines are the largest suppliers (Vincent 1995). Vincent interviewed many fishermen in widely divergent areas from India, where the fishery was state-sponsored, to Java, Bali and the Philippines. In the Philippines, catches are half or one-third what they were in 1993, indicating how fast the decline has taken place (Vincent 1995). With the high price offered, more fishermen are pursuing seahorses, causing declines. Another sign of depletion is the decline in size of seahorses caught, most of which represent immature animals that never bred before capture.

The *IUCN Red List* included more than 30 species in 1996, all as Vulnerable, a sign of the widespread decline of these fish. The majority were native to the Indian and Pacific Oceans, although the Atlantic, Mediterranean and Black Seas also harbored threatened seahorses. Without strong conservation programs, seahorses and their close relatives are likely to disappear from the wild.

Vincent has helped set up programs, in close cooperation with Philippine fishermen, in which sanctuaries are set aside where no fishing is allowed. They are patrolled by boat, and pregnant males are placed in these sanctuaries to have the young. The villagers, at first suspicious of Vincent's motives, have realized that this is the only way to prevent the extinction of the seahorses, and the management program is now being copied in other coastal fishing villages. The villagers, especially the children, are taken to the sanctuary to see these fascinating creatures in the wild, and have a new appreciation for them.

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Wild Pets and Laboratory Animals: Birds

Enormous numbers of wild birds are captured for the cage bird trade. The Environmental Investigation Agency conducted a field research project in Senegal in which they documented the capture of as many as 20 million wild birds, mainly finches. EIA's films and research of the trapping of wild birds in Senegal and Argentina revealed that 50 percent or more die of shock or injury prior to export. The birds are traumatized by the capture and often injure themselves trying to escape; few receive humane care and proper nutrition. In fact, EIA found birds held prior to shipping to export centers in unsanitary, crowded conditions, and cared for by people with little or inadequate knowledge about their feeding and care, causing considerable mortality in the first days after capture. In Senegal, EIA filmed the transport of thousands of these birds to export centers hundreds of miles away, in the tropical heat, crammed into cages strapped to the tops of the buses. At stops, the dead and dying birds were thrown out along the side of the road.

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Customers in pet stores, seeing docile parrots and chattering finches, rarely realize that these birds are the survivors of a trade that kills as many as 15 million birds per year. In the homes of pet owners, many wild-caught birds, especially large parrots, fail to adjust to captivity and die from a variety of illnesses, from salmonella contracted in quarantine stations to the lethal wasting disease which is untreatable. Since large parrots, such as macaws, cockatoos and Amazon parrots, may live to an advanced age, birds captured for the pet trade may have spent 20 years or more in the wild, in the company of other parrots, flocking, foraging and roosting together 24 hours a day. In recommending against the purchase of macaws, ornithologist Charles Munn (1988) said: "A long life in a small cage is dismal and cruel compared with life in the wild . . . For such intensely social birds, life alone in a cage must be the ultimate psychological torture." Parrots are long-lived birds, surviving 80 or more years, but in captivity, their lives usually last less than a decade.

Research has revealed that many parrots are highly intelligent. Their brain size is far larger in proportion to their bodies than other birds. One Gray Parrot (*Psittacus erithacus*), Alex, studied for many years by Dr. Irene Pepperberg, has an IQ equivalent to a 3-year-old child, and a vocabulary of more than 100 words that he understands the meaning of; he does not just repeat them. He recognizes more than 30 objects which he can identify by name, and when asked conceptual questions (Which key is green?), he is able to select the correct one more than 80 percent of the time. He understands what "round" and other shapes and sizes mean, and can tell what different objects might have in common, such as color (Kaufman 1991). Parrots compare in intelligence with primates, yet most pet parrots are treated like animated tape recorders, taught to repeat phrases. There are different standards for captive birds than for mammals. For example, if we saw a case of a pet deer or antelope hobbling about with its legs tied together to prevent it from running away, we would alert the local humane society and police. Yet bird owners routinely clip the wing feathers of their pets to prevent flight. This results in an equal hindrance of movement and causes the bird anxiety because it cannot fly from a potential threat, yet it is neither illegal nor frowned upon.

Until recently, the United States was the world's largest importer of wild birds, providing an enormous market for exotic finches, parrots, cockatoos, mynahs and other birds. Almost 1 million birds a year were imported during the 1980s. A large percentage of these birds, approximately 80 percent, were wild-caught in the tropical forests and grasslands of Latin America and Asia and the sub-Saharan region of Africa. All parrots (Order Psittaciformes)--except the Budgerigar, Cockatiel and Rose-ringed Parakeet-- were added to Appendix II of CITES in 1981. However, because of failure to enforce the provisions of the treaty, which require that export be allowed only if it does not adversely affect the species, this had little effect on limiting the massive trade. At the height of the 1980s wild bird trade, the Royal Society for the Preservation of Birds estimated that 500,000 wild parrots were being captured per year worldwide.

The U.S. Congress enacted the Wild Bird Conservation Act (WBCA) in 1992, a law that effectively stopped commercial imports of wild parrots and all other birds listed on the Appendices of CITES. It allows zoological imports, non-CITES birds, and some captive-bred birds. The law sharply reduced the importation of wild birds. For example, from January 1996 to July 1998, according to a study by the Animal Welfare Institute, 273,288 birds were imported, based on U.S. Fish and Wildlife Service import data and U.S. Department of Agriculture bird quarantine forms. Of those, an estimated 70 percent, or 191,324 birds, were captive-bred canaries, finches, budgerigars and cockatiels. Some illegalities were noted, such as the import of some 1,379 wild parrots from Latin America, of which only 457 were seized. Most of the other wild birds were finches from Tanzania, China and Vietnam. Since this study was done, China has ceased exporting wild birds. The study uncovered the need for a better system of recording bird imports by the Fish and Wildlife Service to assure accuracy and allow proper enforcement of the WBCA as well as CITES, the Endangered Species Act and other legislation. The data entry system of the Fish and Wildlife Service is based on a letter code assigned to individual species, but a large number of entries at the ports of entry were found to be inaccurate, and there was insufficient oversight at headquarters.

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More than 40 species of birds have become endangered by the pet and aviculture trade, and many more have declined to threatened status. The spectacular, large pink Salmon-crested or Moluccan Cockatoo (*Cacatua moluccensis*) of Indonesia is endemic to the island of Seram and its satellite islands in the Moluccan Islands. In the 1980s, international exploitation began with thousands exported yearly, the majority to the United States. Although once considered abundant in its restricted range, the overall population could not withstand such high rates of capture. The Indonesian government placed an export quota of 5,000 in 1988, and 3,000 in 1989. These high quotas were not based on scientific surveys of the birds' populations. In 1989, U.S. imports alone totaled 5,252 Salmon-crested Cockatoos, exceeding the export quota by 2,252 birds, a clear indication that the Indonesian government had not

controlled this trade. Between 1980 and 1990, when U.S. imports finally ended, 43,083 of these beautiful parrots had been imported, threatening this species with extinction; thousands had died in capture, transport and quarantine. World trade in the 1980s may have totaled as many as 100,000 birds. In 1989, the Salmon-crested Cockatoo was finally listed on CITES Appendix I, banning international commercial trade. *Threatened Birds of the World*, compiled by BirdLife International, classifies this species as Vulnerable and in a decline that is expected to continue (BI 2000).

During the 1990s, Salmon-crested Cockatoo populations did not recover as a result of the new protection accorded, but surveys found that this species had disappeared from several islands within its range and had become confined to Seram, where it declined 20 to 40 percent during the 1990s (BI 2000). In spite of the CITES Appendix I listing and an Indonesian export ban, Salmon-crested Cockatoos continued to be illegally captured on Seram. The Royal Society for the Protection of Birds (RSPB) filmed the capture of these cockatoos on their roosting trees at night in the early 1990s. When caught by the feet, these birds shrieked in terror. This film, entitled *Bird Traffic* (see Video Section), chronicles this poaching and subsequent smuggling out of Indonesia. The RSPB researchers found that local villagers within the range of this cockatoo had not been informed by the government of the species' rarity and legal protection, with the result that villagers willingly captured them when logging company employees placed orders. Outside Manusela National Park, these cockatoos are extremely rare, and their rainforest habitats are being destroyed by logging (BI 2000). Captive birds now far outnumber wild populations. Salmon-crested Cockatoos are no longer imported into the United States or Europe but are still sold in Asian markets. Should this beautiful cockatoo become extinct in the wild, the U.S. market will have to bear much of the blame, having been responsible for depleting a once common species. Wild-caught specimens of these magnificent birds are still seen in U.S. pet stores, exhibiting extremely neurotic behavior reflecting their inability to adapt to living in a tiny cage. They bob in circles while shrieking loudly, or shift rapidly from one foot to another, continuing this behavior for long periods.

Equally high quotas for other species of Indonesia's beautiful parrots and lorries ended in endangering many species. By the end of the 1980s, five species of large Asian cockatoos, Salmon-crested, White (*Cacatua alba*), Goffin's (*Cacatua goffini*), Yellow-crested (*Cacatua sulphurea*), and Philippine (or Red-vented) Cockatoos (*Cacatua haematuropygia*), had become threatened with extinction as a direct result of massive, uncontrolled capture for the pet trade (Collar *et al.* 1994). Only the Goffin's, Salmon-crested and Red-vented Cockatoos are listed on Appendix I of CITES. The Yellow-crested Cockatoo, endemic to a small range in East Timor, Sulawesi and nearby islands, is now Critically Endangered, in imminent danger of extinction (BI 2000). As noted in *Threatened Birds of the World* (BI 2000), "Its precipitous decline is almost entirely attributable to unsustainable exploitation for internal and international trade." Logging, pesticide use and persecution have also played roles. This white cockatoo with yellow crest was imported into the United States in very large numbers for the cage bird trade during the 1980s. Although a program to recover its populations and preserve them in the national parks and reserves where they occur has been adopted, CITES Appendix I listing would provide additional protection. In parts of Indonesia, ecotourism based on bird watching is being developed. This country has an enormous variety of beautiful, dramatic and colorful parrots and other endemic birds.

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In the early 1980s, Bolivia was the largest exporter of parrots from South America, illegally transshipping the protected birds of neighboring countries, and depleting its own parrot populations. The Red-fronted Macaw (*Ara rubrogenys*) and the Blue-throated Macaw (*Ara glaucogularis*), for example, are endemic to Bolivia, and trade nearly extinguished their already small populations. These birds are now on Appendix I but are at risk of extinction. In 1984, the Government of Bolivia publicly admitted that its wildlife export trade was out of control, its bird exporters funneling protected birds from neighboring countries, and its own CITES personnel had forged export permits. A temporary export ban was enacted, and this later became permanent--to the great credit of this country, which harbors a wealth of bird life and extensive tropical forest. The Red-fronted Macaw, imported into the United States in the

hundreds during the 1980s, is now Endangered in the 2000 IUCN Red List of Threatened Species. Its population has declined to as few as 1,000 birds, with continued illegal capture for wealthy bird collectors (BI 2000). The Blue-throated Macaw, native to northern Bolivian rainforests, is in Critically Endangered status, according to IUCN and BirdLife International with fewer than 249 birds left in the wild; it, too, continues to be illegally captured for trade (BI 2000). A 1984 study by two South American biologists, Manuel Nores and Dario Yzurieta (1984), found that eight of the 11 macaw species in Bolivia were endangered, rare or declining as a direct result of the wild bird trade. Bolivia's forests are largely intact, and the enormous trade in wild parrots during the 1980s is the sole explanation for the depletion of all the large parrots and many of the small ones in that country.

Numerous other Latin American parrots, once common, were so heavily traded in the 1980s that they, too, became threatened with extinction and were listed on CITES Appendix I. Among these is the beautiful Scarlet Macaw, symbol of tropical forests, which was listed in 1985, along with the Military Macaw (*Ara militaris*) and the similar Great Green or Illiger's Macaw (*Ara ambigua*), all being overexploited for the pet trade (BI 2000). The Scarlet Macaw has disappeared from areas close to villages and towns throughout its large range, which extends from southern Mexico to Amazonian South America. In Mexico and Central America, it has been protected from trade since the early 1980s, but illegal capture and smuggling continue to decimate wild populations. With passage of the Wild Bird Conservation Act, this species is now more secure, making illegal sales in U.S. pet stores much more conspicuous. By the end of the 1980s, 10 of the 17 macaw species had been listed on Appendix I of CITES, and others were experiencing steep declines.

Further west in Peru's massive Manu National Park, biologist Charles Munn has been studying macaws and parrots since 1984, climbing 100-foot trees to observe them closely, locating wild nests and researching their productivity. He found that in spite of the undisturbed extensive rainforest habitat in the park, large macaws raise very few young; 100 pairs of large macaws might fledge as few as 15 to 25 young per year (Munn 1988). He concluded, "Such a low reproductive rate indicates that macaws *cannot* be harvested from the wild without depleting their populations." This explains how species of macaws and parrots that had flown in huge flocks of hundreds of birds became reduced to scattered numbers within a few years after the onslaught of the parrot traders. Another factor in the vulnerability of parrots is their refusal to leave trapped flock-mates. Trappers would continue capturing birds that flew to the aid of their fellows until entire flocks were caught. North America's only native parrot, the Carolina Parakeet, had this trait as well and was trapped to extinction.

Trapping breaks bonds between lifelong mates and leaves females with chicks that often starve when the male is caught. This cruel trade causes the premature deaths of thousands of parrots from disease, improper care and stress. Methods of capture are particularly inhumane. Some trappers set nooses on tree limbs that flip the bird upside down when its foot becomes trapped. Birds can remain caught in this manner for hours or days, screaming and flapping their wings, while fellow parrots gather around squawking helplessly, unable to free them. Other parrots and many types of small finches are caught by bird lime, an adhesive that is smeared on tree branches. Birds' wings or feet become stuck to the branches, and they struggle in vain to free themselves, often resulting in injury or death. Decoy birds are also used to attract flocks to baited nets which are sprung by a trapper hidden in the bushes. So efficient are these methods that trappers nearly caused the extinction of South American Military Macaws that congregated annually when the fruit of a certain type of tree in northwestern Argentina ripened. The flock members returned annually to this ancestral feeding area, and trappers set nooses on and near these trees, using decoy birds to attract them. Only CITES Appendix I listing saved the remnant population of these magnificent birds from extinction. The taking of nestling parrots from tree holes, often cutting down entire nest trees in the process, is another method of capture that had extremely serious consequences for the once abundant Blue-fronted Amazon (*Amazona aestiva*) of Argentina (Bucher and Martella 1986), so depleted that only the threat of a CITES Appendix I listing forced the Argentinean government to enact an export ban, which remains in force.

The world's largest parrot, the beautiful Hyacinth Macaw (*Anodorhynchus hyacinthinus*), is another casualty of the cage bird trade. These magnificent cobalt blue parrots, more than 3 feet long, are native to open, palm-studded grassland and gallery forests of west-central Brazil, with small populations in neighboring Bolivia and possibly

Paraguay. They are endangered by a totally illegal bird trade. From an original population estimated in the hundreds of thousands, the species has been reduced to between 3,000 and 5,000 birds. The United States imported a minimum of 2,130 Hyacinth Macaws between 1977 and 1988, and thousands more were imported by European countries. These birds were imported under "legal" papers from Bolivia and Argentina during the early 1980s, having been illegally captured in Brazil, which bans export of all its native birds. Bolivia has a very small population of fewer than 100 Hyacinth Macaws, yet thousands were exported from that country, listed as native on CITES documents. Transshipment of this type has nearly decimated many species of wild birds. They were sold in U.S. pet stores for \$10,000 or more per bird, and shown on television shows, which whetted the public's appetite to possess these beautiful birds. Bolivia's 1984 export ban and the listing of the Hyacinth Macaw on Appendix I of CITES in 1987 stopped the disastrous "legal" trade, but unfortunately, many continue to be smuggled. Their status is now Endangered, and declining, with fewer than 10,000 birds remaining in the wild (BI 2000).

Of three other blue macaws native to South America, one is extinct, and the other two verge on extinction. The Glaucous Macaw (*Anodorhynchus glaucus*) has not been seen this century. It was the smallest of South America's three blue macaws and, in the 18th and 19th centuries, was considered numerous along major rivers in southeastern Brazil, adjacent Paraguay, northern Argentina and perhaps Uruguay (Forshaw 1989). Captured for the cage bird trade and zoos in the 19th century, trade may have caused its extinction, since its habitat remains intact (Forshaw 1989). There are continued rumors of sightings, and BirdLife International includes it in *Threatened Birds of the World* (BI 2000) as Critically Endangered.

Lear's Macaw (*Anodorhynchus leari*), which inhabits an arid, rugged terrain in northeastern Bahia, Brazil, numbers fewer than 150 birds (BI 2000). Although a few specimens had been captured in the mid-19th century, the bird was not seen in the wild by ornithologists until 1978 when Dr. Helmut Sick, a Brazilian ornithologist, finally located a small population of about 60 birds; two more tiny populations of 14 and three birds were discovered in the early 1990s a few hundred kilometers away (Collar *et al.* 1994). The main population numbered about 117 birds in 1995, but illegal trapping took as many as 25 birds in the late 1990s. In May 1999, three of these macaws were seized in a raid in North Yorkshire after being smuggled into England (*TRAFFIC Bulletin* 1999). This species faces extinction in the near future from destruction of its licuri palm trees, which provide its major palm fruit diet, hunting by local people and illegal capture for aviculture collections (BI 2000, Collar *et al.* 1994). Only a portion of the Lear's Macaw's habitat is protected by a reserve (BI 2000).

The fourth blue macaw, Spix's Macaw (*Anodorhynchus spixii*), is the most endangered bird in the world. Endemic to a very small area of northern Bahia, an arid region of northeast Brazil, hundreds of these macaws were smuggled out of Brazil in spite of being officially protected from capture, trade and export since 1967; it was listed both on the U.S. Endangered Species Act and CITES Appendix I by 1975, but this did not discourage unscrupulous aviculturists and zoos who offered prices as high as \$40,000 per bird. By 1986, only three birds were known to remain in the wild (da Re 1995), and these were illegally captured by 1988. In 1990 a single male bird was discovered, the very last wild bird of his species. With no females of his species left in the wild, he began courting another species of macaw, a female Blue-winged Macaw (*Ara maracana*). A captive female Spix's Macaw was released to the wild in 1995 in the hope that they would breed, but although the two birds stayed together for a short period, they then separated and the male returned to the Blue-winged Macaw (da Re 1995). The female Spix's Macaw disappeared altogether, and is thought to have collided with a power-line (BI 2000). While kept in a zoo, this female macaw had been paired with a male, who remains in captivity (da Re 1995). Eggs laid by captive Spix's Macaws were to be placed in their nest in 2001 to be raised by this pair (BI 2000). However, this last wild Spix's Macaw, a repository for the knowledge and skills of survival for his species and crucial to the success of future releases, was illegally captured in the Fall of 2000, rendering the species extinct in the wild. Some people hope that others of his species remain undetected, since the original habitat is extensive.

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About 60 wild-caught Spix's Macaws are in captivity (BI 2000), and they could provide additional vital genes and experience for reestablishment of the species. Most of these are captive-bred, and may be inbred because they descend from only ten wild macaws (da Re 1995). Undoubtedly, many more Spix's Macaws are held in unknown locations by private collectors who purchased these smuggled birds. This species' habitat of gallery forests near the Sao Francisco River has become degraded by tree cutting and livestock overgrazing, preventing the growth of young trees (da Re 1995). Only 30 square kilometers of this gallery forest remains in three fragments (BI 2000). Although the remaining wild birds are being guarded by rangers, no reserve has been established. The smuggling of these birds continues. In April 1995, three Spix's Macaws that had been illegally captured in prior years were confiscated in Chile as they were being smuggled to Russia, according to the World Society for the Protection of Animals (WSPA). The Costa Rican representative of WSPA flew with the birds to Sao Paulo, Brazil, where they were placed in the zoo with others of this species. The Spix's Macaw is an extreme example of the avid pursuit of rare birds by aviculturists--and even zoos--in defiance of all national and international protective legislation. Some of the individuals who obtained these birds illegally have refused to donate their birds to breeding projects, even though the species' status could not be more precarious. Other Spix's Macaws are possessed in secret, and owners have not stepped forward to allow their birds to be part of a cooperative breeding program.

These cases represent the tip of the iceberg of birds that have been threatened by the cage bird trade. Many island species have been endangered by this trade. Amazon parrots from Caribbean islands are among the most coveted of birds. The magnificent Imperial Amazon (*Amazona imperialis*), a highly endangered endemic from Dominica, has iridescent purple and green feathers, making it one of the most beautiful of parrots. Smugglers have paid as much as \$50,000 for a single Imperial Amazon, which now number only about 300 birds in the wild. Fortunately, it is finally increasing, and a new national park protects a portion of this endangered bird's population (BI 2000). The St. Vincent Amazon (*Amazona guildingii*), of the island of St. Vincent, is the most numerous of the endangered Caribbean amazons, numbering about 800 birds as of 1994 (BI 2000). The rarest is the Puerto Rican Amazon (*Amazona vittata*), which declined from a population of 2,000 in the 1930s to about 41 birds in 1993, in large part due to illegal capture for the pet trade (Collar *et al.* 1994). It numbered 44 birds in the wild and 87 in captivity in 1996 (BI 2000). Once reduced to small numbers, many parrot species, like the Puerto Rican Amazon, do not recover. This parrot's population has not increased substantially in spite of legal protection for almost a century and an intensive conservation program. There is still a demand for Caribbean parrots, with collectors offering \$20,000 or more per bird for smuggled specimens. In the book, *The Parrots of Luquillo: Natural History and Conservation of the Puerto Rican Parrot* (Snyder *et al.* 1987), the authors state: "Clearly, the high price that some aviculturists are willing to pay for rare parrots is one of the most serious threats to survival faced by the West Indian *Amazona*. It is ironic that the rationalization often used by such individuals for obtaining rare species is that they hope to 'save' them from extinction by captive propagation" (Snyder *et al.* 1987).

For one Caribbean parrot, the future is brighter. A very successful conservation program is bringing the St. Lucia Amazon (*Amazona versicolor*), endemic to the island of St. Lucia, back from near-extinction. This parrot was in steep decline until a biologist, Paul Butler, working for RARE Center for Tropical Bird Conservation in Philadelphia, Pennsylvania, began a long term project to prevent its extinction. From 150 birds in 1976, the population has risen to 200 to 250 birds in 1990 (Butler 1992), to 300 to 350 in 1996 (BI 2000). The program educated children in grade schools using songs, parrot costumes and puppets, and enlisted the help of many local businesses to use the bird as their logo or in their ads. In 1979, the St. Lucia Amazon was named the country's official bird (Butler 1992). Posters and billboards illustrating St. Lucia Amazons were put up in public places throughout the island, and the program has sought to identify the species with national pride. Its protection is now a concern of most members of the public, and this enthusiasm to protect "their" parrot has made illegal capture and shooting almost unknown (Butler 1992). Paul

Butler's work has been so successful that he carried his program to St. Vincent to protect its native parrot, and to other islands for programs conserving their native birds (Butler 1992). The National Audubon Society's film, *Caribbean Cool*, about Butler's work on St. Lucia, shows the beautiful St. Lucia Amazon and programs in schools in the Caribbean region (see Video, Activism and Attitudes).

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A bird that has proven almost impossible to protect from bird trappers is the lovely, white Bali Starling or Rothschild's Myna (*Leucopsar rothschildi*), endemic to the island of Bali, Indonesia. It is now confined to a tiny area on the island's extreme northwest tip inside the Bali Barat National Park. By 1990, the wild population had been reduced to 13 birds, although the captive population was about 700 (Collar *et al.* 1994). The Bali Starling Project sought to reintroduce captive birds and reinforce guarding of the park. By 1994, the population had risen to between 35 and 55, but poaching continued, off-setting gains of successful breeding (Collar *et al.* 1994). In 1999, the wild population totaled 12 birds; the same year, 39 captive individuals in the park awaiting release to the wild were stolen by an armed gang (BI 2000). The park and conservation program have suffered from mismanagement and corruption, and the price for these birds on the black market has risen to \$2,000 a bird (BI 2000). The protection offered these reintroduced birds has been inadequate, and possibly involves complicity with poachers by park guards.

The keeping of sparrows and finches is extremely popular in Latin America and parts of Asia. Two songbirds, the Brown-backed (*Myadestes occidentalis*) and Slate-colored Solitaires (*Myadestes unicolor*) in Central America, are heavily trapped, disappearing from many areas. Two ornithologists commented, "It is a sad morning indeed that one experiences forests deprived of these fine songsters" (Howell and Webb 1995). A finch that has long been subjected to bird trapping because it is bred with domestic canaries for "Red Factor Canaries," the Red Siskin (*Carduelis cucullata*), of northern Venezuela and a small area in Colombia, has become endangered from this illegal trade (Collar *et al.* 1994). This bright red bird requires moist evergreen forest, dry deciduous woodland and shrubby grassland habitat, moving from one to another seasonally. It has disappeared from Trinidad and from almost all its original range in Venezuela and Colombia (Collar *et al.* 1994) and is listed as Endangered by the 2000 IUCN Red List of Threatened Species and the U.S. Endangered Species Act. It is also listed on Appendix I of CITES.

Steve Howell and Sophie Webb (1995), authors of a guidebook on birds of Mexico and northern Central America, commented on the bird trade in Latin America: "Paradoxically, keeping parrots and songbirds in cages about the house is considered an appreciation of nature. Sadly, the desire to have birds, particularly parrots, as pets has spread far beyond Middle America . . . Within 20 years or less, we predict that wild Scarlet Macaws and Yellow-headed Parrots may be things of the past in Mexico."

The Java Sparrow (*Padda oryzivora*), endemic to the Indonesian islands of Java, Bali and Kangean, once flocked in large numbers to towns, villages, gardens and agriculture fields. Within the past few years, however, it has undergone a precipitous decline as a direct result of heavy trapping for the cage bird trade and has become scarce, listed as Vulnerable in BirdLife International's (2000) *Threatened Birds of the World* and by the IUCN. It is not listed on CITES. In 1995, an embargo on exports from Java and Bali was put in place by the Indonesian government, and the species occurs in several national parks (BI 2000).

Sold for a Song. The Trade in Southeast Asian Non-CITES Birds, by Stephen V. Nash (1993), found that a number of birds not protected by CITES were threatened by the trade. For the most part, the species and numbers involved in the Asian bird trade are undocumented (Nash 1993b). The dual threats of bird trapping and habitat loss are causing declines in many Southeast Asian birds. Endemic species can become endangered by relatively low levels of trade because of their limited habitat. For Asian finches and other species not listed on CITES, most trade is legal, with little concern for their status in the wild. In Southeast Asia, the majority of countries allow capture and sale of wild

birds. The few countries that ban trade in wild birds, such as Thailand, have not shut down illegal bird markets in Bangkok and other cities. In Bangkok's Jatujak Market, on a given day, 616 species of native birds are offered for sale (Nash 1993b). Most Western bird owners would be startled at the types of birds sold in these markets. Although doves and finches are sold in great numbers, partridges, pheasants, geese, and barbets are offered, as well as species totally unsuited to captivity, including kingfishers, bee-eaters, storks, woodpeckers and flycatchers. Native birds that are not listed on CITES lack any protection in Indonesia, Vietnam, Laos, and Cambodia (Nash 1993b). Nowhere else in the world are there so many endemic bird species with so many countries in the region that fail to protect them, or that serve as exporters of non-native birds, such as Hong Kong and Singapore.

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Although the United States has strict laws prohibiting importation of endangered birds without permits, some aviculturists have managed to smuggle birds by using complex and clandestine routes. One truly stunning case was the indictment in 1994 of Tony Silva, an aviculturist who had represented himself as a parrot conservationist, and served as Curator of Birds at Loro Parque, a parrot zoo in the Canary Islands. This zoo has many endangered birds, including several Spix's Macaws, which have never been legally exported from Brazil, either for zoos or any other purpose. Silva was caught in a Fish and Wildlife Service Law Enforcement sting called Operation Renegade, after search warrants were issued on business records in his home and that of his mother. Searches of their premises uncovered documentation of a major smuggling operation specializing in endangered birds. Silva and his mother, who was also indicted, conspired to smuggle numerous rare birds from 1985 onward with the cooperation of a Paraguayan citizen who was also indicted, as was Hector Ugalde, a Miami citizen who aided in the conspiracy (USDJ 1994). Silva earned an estimated \$1.3 million from this smuggling. Among the CITES Appendix I birds smuggled were 186 Hyacinth Macaws, seven Blue-throated Conures (*Pyrrhura cruenta*), several highly endangered Vinaceous Amazons (*Amazona vinacea*), and two endangered Golden Conures (*Aratinga guarouba*), the latter being one of the most coveted of all birds by collectors. The latter three species are also listed on the U.S. Endangered Species Act. Silva also smuggled Red-fronted and Great Green Macaws, listed on CITES Appendix I and extremely rare in the wild. Other rare species smuggled by Silva included three protected Brazilian Crimson-bellied Conures (*Pyrrhura rhodogaster*) and another Brazilian bird, and threatened Yellow-faced Amazons (*Amazona xanthops*), along with several endangered primates. Silva also illegally exported Gray Parrots from the United States to New Zealand and smuggled two endangered Red-vented Cockatoos from the Philippines, according to the indictment. In 1987, Silva received an illegal shipment of nine protected Chilean Flamingos (*Phoenicopterus chilensis*), a CITES Appendix II species (USDJ 1994). He smuggled three endangered Yellow-shouldered Amazons (*Amazona barbadensis*) as well.

According to Fish and Wildlife Service Law Enforcement agents, Silva and his co-conspirators were the foremost illegal dealers in rare birds during the entire decade of the 1990s. Lois J. Schiffer, Assistant Attorney General in charge of the Justice Department's Environment and Natural Resources Division, said: "The defendants were involved in nothing less than plundering the national treasures of other countries. These crimes threaten not only our ability but that of the international community to protect endangered species and global biodiversity" (USDJ 1996). An affidavit by an undercover Fish and Wildlife Service Special Agent (Marks 1992) attested that Silva had invited an unnamed source to his home and showed him resin-like glue that was extracted from a certain species of tree and was used in South America for the express purpose of trapping Hyacinth Macaws. Silva showed the source photographs of rare parrots dyed to look like other species of birds to avoid detection in transport. Enrique Basan, an unindicted co-conspirator who resided in Brazil, trapped many of these endangered birds and shipped them to Gisela Caseres in Paraguay, who then smuggled them to the United States (USDJ 1994).

The Hyacinth Macaws were then transported by charter aircraft and across the Mexican border, placed in PVC plastic tubing and hidden in car door panels. Many died of suffocation and overheating on the way. Some smuggled parrots were placed in false-bottomed suitcases under mounds of clothing. In 1989, wasting disease ravaged Silva's

aviary, killing many of the surviving rare birds, which he kept in a basement aviary (Marks 1992). Silva shipped 35 of the smuggled Hyacinth Macaws to Mario Tabraue, who spent time in prison on a 100-year sentence for murder and drug-related crimes. Prior to his conviction, he ran a quarantine station and wildlife importation business known as Zoological Imports. Tabraue paid Silva and his mother \$100,000 for this shipment and had previously bought other smuggled animals; he would then offer the wildlife for sale in interstate and foreign commerce (USDJ 1994). All the macaws were dead on arrival (Marks 1992). Silva used closed legbands to identify fraudulently smuggled Hyacinth Macaw chicks as bred in captivity, and conspired with a bird importer, Larry Lafeber of Rosemont, Illinois, to use the latter's quarantine facilities to launder smuggled wildlife. He and Silva illegally removed U.S. Department of Agriculture quarantine seals from Lafeber's station to take smuggled wildlife out of the station. Lafeber also forged health certificates for two smuggled Hyacinth Macaws (USDJ 1994).

Silva wrote a book on endangered parrots, in which he described the Hyacinth Macaw as being "worth its weight in gold," and regularly gave lectures on parrots, presenting himself as a conservationist. In a 1991 article on the Hyacinth Macaw, he stated, "Unless all of the pressures are brought under control, this species may be unable to survive in the world to greet the 21st century" (USDJ 1996). In fact, he contributed to its endangered status. With its very slow reproduction rate, lack of protected reserves or parks in its range, and continued threats by hunters and destruction of its nesting trees, this beautiful macaw may indeed fade into extinction as a result of smuggling. Since these birds are easily recognized, and the CITES listing ended legal trade, only an extremely well-financed operation such as that conducted by Silva, involving the use of small aircraft that carried the birds from remote parts of South America to Mexico where they were smuggled over the border, could have succeeded in obtaining these birds. Australian government studies have documented that up to 10 birds die for every bird that survives smuggling, and most operations incur a mortality rate of 80 percent (PCA 1976). The Fish and Wildlife Service investigation uncovered high mortalities among the macaws Silva smuggled and, thus, he is probably responsible for the deaths of 1,860 (10 times the 186 for which he was indicted) of these rare birds.

Silva had warned of the serious consequences of rampant poaching of wild birds in a 1991 speech at the Parrot Symposium International (*The New York Times* 1996), and in a November 1995 interview, he stated, "I love birds. I could never be involved in anything that killed them" (*The New York Times* 1996). Through his smuggling, Silva was responsible for the deaths of hundreds--and perhaps thousands--of birds, of which the majority were rare and endangered species. Prior to the indictment, but after it was revealed that he was being investigated, he was interviewed by the public television station WGBH in Boston for a NOVA program, *The Great Wildlife Heist* (1994); he made statements admitting an uncontrollable desire to own rare birds (See Video - Trade).

Smuggling is the cruelest activity associated with the bird trade. Smugglers have used hundreds of concealment techniques to avoid detection when crossing borders. These include placing small birds in the center of hair curlers stacked in enclosed boxes or suitcases; stuffing parrots inside tire wells and even hubcaps in cars; and placing them inside clothing being worn and in stifling secret compartments in shipping crates and suitcases. Birds are smuggled on rafts across the Rio Grande River, and in many cases, the rafts have overturned and the birds drowned. Sometimes when smugglers believe that they have been spotted by law enforcement officers, they kill the birds they are smuggling by intentionally drowning them or throwing them out of moving cars. Often the birds are wrapped tightly, with their wings unable to spread and their beaks taped. They die of overheating.

Silva faced a combined maximum prison term of 45 years and a maximum total fine of \$2.5 million, but he reached a plea bargain with the Justice Department the day his trial was to begin in January 1996. In early June, he was jailed as a flight risk prior to sentencing. Because he was fluent in Spanish and had many contacts in other countries, the Justice Department was convinced that, in spite of the fact that a lien had been placed on his house and his passport had been seized, he might leave the country to avoid going to jail. His plea of guilty to conspiracy to violate wildlife and Customs laws, and filing a false income tax return, resulted in the longest prison term ever given to a bird smuggler, handed down in late 1996: 6 years and 10 months. His mother received a sentence of 27 months in jail. This case, like other smuggling cases in Operation Renegade, was based on a long investigation which uncovered

indisputable proof of the Silvas' guilt, as have many such indictments. Most, however, end in penalties far below what would be allowed by law. Judge Elaine Bucklo of the U.S. District Court, Northern District of Illinois, deserves considerable praise for rendering this stiff jail sentence, and also for ruling that Silva be jailed for six months prior to the sentencing. In another Operation Renegade case involving the indictment of a Florida bird importer, Louie Mantas, the defendant left the country prior to the commencement of his trial and is now a fugitive with outstanding warrants for his arrest.

Much progress has been made in giving longer sentences to wildlife smugglers. A decade ago, jail sentences for wildlife crimes were virtually unknown. New sentencing guidelines enacted by Congress recommending higher penalties have had a major role in the imposition of longer jail sentences, and judges have begun taking these crimes far more seriously than in the past.

Wild Pets and Laboratory Animals: Primates

All gibbons, tailless apes of the Hylobatidae family, are endangered, listed on Appendix I of CITES and as Endangered on the U.S. Endangered Species Act. Ten species are listed in the *2000 IUCN Red List of Threatened Species*. Gibbons inhabit the rainforests of Southeast Asia, where they have declined as a result of logging and capture for the zoo and pet trades. They communicate in whoops and haunting songs that carry for miles in the forest, and they mate for life. Their long, spidery legs and arms give them great agility as they leap large distances between trees. Until the 1970s, thousands of gibbons were imported by U.S. zoos and laboratories. CITES Appendix I listing stopped this trade, but in Asia, they are still captured for the pet trade, and babies are used to pose for photos with tourists. This trade involves the killing of many mother gibbons in order to obtain a few baby gibbons, which are so poorly treated that most die within months. In Thailand, there were an estimated 1 million gibbons as recently as 1975, but only a fraction of that number survives today. Thai forests have become fragmented, and old growth, which most species require for habitat, is nearly gone. Thailand is a country that now has laws prohibiting logging and capture and sale of most native wildlife, but enforcement is very weak. Gibbons are sometimes used as mascots in bars and stores. This is often done in the evenings on busy streets, and the gibbons are given drugs to keep them awake. In Bangkok, Leonie Vejajiva has worked for 20 years to rescue these orphaned and mistreated gibbons. Some are abandoned by their owners when they grow too large, and others are confiscated by wildlife authorities. Vejajiva estimates that 20 mothers and 19 babies are killed to get one baby for sale. The gibbons in her care have been very traumatized and abused. One is missing a finger and had all his teeth filed down to the gums to prevent him from biting. Pileated Gibbons (*Hylobates pileatus*), native to Cambodia, Laos and Thailand, are so endangered that 15,000 at most remain in the wild. Vejajiva has taken in many Pileated Gibbons, and one female had been owned by someone who put cigarettes out on her back and beat her for years. It has taken a long time for her to trust Leonie, but she remains angry and hates men. Leonie has seen her gibbons show great emotions and pine away when sad, and considers them extremely emotional and sensitive. The Thai government recently set aside a tract of 80 acres where confiscated gibbons can be kept in large, treed enclosures.

Other primates are captured for the pet trade throughout the tropics. Most countries have laws banning this practice, but it continues, nevertheless. In Vietnam, it is illegal to capture native primates, but baby macaques are commonly seen by the roadside, offered for sale by hunters who have shot the mothers. In cities, these pathetic, underfed and traumatized monkeys are kept in tiny, dirty cages and sold as pets to locals and tourists. Vietnam is exploiting its wildlife commercially on an unprecedented scale. Markets in Ho Chi Minh City and other cities offer many primates for sale, even including gibbons, and thousands are exported for the pet and laboratory trades.

In many countries, regulations ban importation of primates for the pet trade because the Public Health Services have deemed them to be a health hazard to humans. They can spread rabies and many respiratory diseases. Importation of primates for the pet trade was banned in Denmark in 1965; in the United States in 1975; and in

Finland, West Germany, Italy and Switzerland during the 1960s and 1970s (Fitzgerald 1989). Pet monkeys are still occasionally seen advertised, however, and many are brought into the United States and other countries illegally by travelers to tropical countries.

In the 1950s, 15 million monkeys were exported annually from tropical countries for medical research, primarily to develop a polio vaccine, endangering a number of species. During the 1960s, many South American countries banned commercial exports of their wildlife, but exports of primates continued. Conservationists began protesting the enormous drain on wild primate populations, and humane organizations protested the cruel treatment they received. The U.S. Endangered Species Act of 1973 listed a number of species, banning their importation, but some countries continued to export primates for this trade. Laboratory dealers would switch from one species to another to continue high imports. The U.S. Congress enacted the Laboratory Animal Welfare Act in 1966 (later renamed the Animal Welfare Act) with standards for the care of monkeys and other animals used in research. When CITES came into force in 1975, the trade was restricted greatly. All primates are now listed on either Appendix I or II. By 1979, the world primate trade dropped to 65,000 per year (Fitzgerald 1989). In the 1980s, African monkeys and Asian macaques became the major laboratory primates. These animals were often subjected to extremely cruel and unnecessary experiments. American taxpayers financed hundreds of these through grants from the National Institutes of Health. Many laboratory monkeys are now bred in captivity, yet thousands continue to be captured for the laboratory animal trade.

Almost 50,000 primates were listed by the Department of Agriculture as used in research in U.S. laboratories in 1993, according to a study by the International Primate Protection League; 19,461 of these primates were used in research causing pain and distress alleviated by drugs; and 1,353 were used in experiments causing pain and distress *not* alleviated by drugs (*IPPL News* 1995). Many of these animals are endangered species such as Chimpanzees, kept in isolated, sterile cages and used in AIDS research.

There are approximately 1,500 Chimpanzees in U.S. laboratories. The Coulston Foundation is a facility that maintains hundreds of these intelligent primates, with a record of high mortality, poor care and more than 40 violations under the Animal Welfare Act of 1966. In May 2000, the National Institutes of Health (NIH) took title to 288 Chimpanzees. Coulston tried to get them back, and NIH decided to leave them in the facility prior to a final decision about their fate. During this period, one 10-year-old Chimpanzee died after "allegedly being left sick for days without receiving veterinary care" (AWI 2001). In spite of its record, NIH continues to award funds to The Coulston Foundation, preventing its bankruptcy (AWI 2001). The 600 Chimpanzees at this foundation need to be transferred to a sanctuary where they would receive needed veterinary treatment and compassionate care (AWI 2001).

Many laboratories have made public statements indicating that when they have completed research studies on these Chimpanzees, the animals will be euthanized. Humane organizations have loudly protested this, and campaigns are being waged to place these animals in spacious enclosures so that at least the last years of their lives will be spent without trauma. When the New York University Medical Center disbanded its animal research laboratory, it planned to donate its Chimpanzees to The Coulston Foundation. Dr. Jim Mahoney, veterinarian for these primates, took it upon himself to place them in humane surroundings where they would never be experimented on again. At his own expense, even driving them to the centers in a special van, he found homes for 90 Chimpanzees in various rescue centers, including Primarily Primates in Texas and a center in Quebec where they could socialize in large areas with sleeping shelves, toys, soft blankets and jungle bars. One Chimpanzee who had never slept anywhere except the cold cement floor of his cage or felt a soft object, hugged a blanket, rolling in it in joy when he first entered the sanctuary. Jane Goodall encouraged this project and spoke of the need to treat these very sensitive animals with respect and kindness on a National Geographic Explorer program, *Chimp Rescue*, shown in November, 1998, which traced Dr. Mahoney's steps in rescuing the chimps as well as 100 monkeys.

The Chimpanzee Health Improvement, Maintenance, and Protection Act, signed into law in 2000, will facilitate projects such as Dr. Mahoney's. It will provide \$30 million from the budget of the National Institutes of Health to

establish a national system of sanctuaries to provide for the long-term care of Chimpanzees no longer needed in biomedical research.

Wild Pets and Laboratory Animals: Land Turtle and Tortoise Pets

In Europe there is a sizeable market for pet tortoises and land turtles. The Mediterranean area--Greece, the Mideast and North Africa--provided millions of tortoises for decades. The Royal Society for the Prevention of Cruelty to Animals (RSPCA) investigated this trade in the 1970s and found a mortality rate of more than 80 percent in the first year of captivity (RSPCA 1980). A 1982 study found that 92 percent of 2,000 tortoises imported did not survive more than three years in captivity (Fitzgerald 1989). The number of tortoises involved was astounding--almost 2 million Spur-thighed Tortoises (*Testudo graeca*) were imported for the British pet trade between 1965 and 1977 (RSPCA 1980). More than 350,000 Hermann's Tortoises (*Testudo hermanni*), native to the northern Mediterranean, were imported during the same period (RSPCA 1980), and this species was categorized by the IUCN in 2000 as Near-Threatened (Baillie and Groombridge 1996). A species from Afghanistan, Iran, Russia and other countries of Central Asia, Horsfield's Tortoise (*Testudo horsfieldii*), has been collected in enormous numbers; 150,000 per year are taken from the wild, with nearly 100,000 exported to western Europe (Fitzgerald 1989). It is now listed as Vulnerable by the IUCN. All these species have declined precipitously in the wild (Fitzgerald 1989), and these slow-reproducing species rarely rebound quickly, even after receiving protection.

Because of the heavy exploitation of these land tortoises for the pet trade, the entire genus *Testudo* was placed on Appendix II of CITES in 1975, but this scarcely slowed the trade. Some import restrictions were enacted in 1979 by the United Kingdom, and internal trade and possession of Spur-thighed, Hermann's and Marginated Tortoises became prohibited under the 1982 Convention on the Conservation of European Wildlife and Natural Habitats (Fitzgerald 1989). However, these measures served only to slow the trade. A major development occurred when the European Economic Commission (EEC) banned imports of all three species in 1984. Hermann's Tortoises are not fully protected, however. They have been sold in California for \$525 each (Fitzgerald 1989). Hundreds of protected Sri Lankan Ceylon Star Tortoises (*Testudo elegans*) were smuggled to an Australian animal dealer in the early 1980s (Fitzgerald 1989). In 1984, the only record for Horsfield's Tortoise trade was 18,000 shipped to Italy from Turkey (Fitzgerald 1989). Trade has switched to Egyptian Tortoises (*Testudo kleinmanni*), native to Egypt, Libya and Israel. This species is now one of the most threatened of Old World tortoises, listed as Endangered by the 2000 IUCN Red List of Threatened Species. This is the smallest of the *Testudo* tortoises, only 6 inches in length, and is now being exploited only because the other species have reached near extinction.

Bolson's Tortoise (*Gopherus flavomarginatus*), native to a small remnant habitat in northern Mexico, has been decimated by the pet trade and is now listed as Endangered by the U.S. Endangered Species Act to stop imports of these tortoises across the border into the United States. The South American Chaco Tortoise (*Geochelone chilensis*) was imported from Argentina and Paraguay by European traders in the 1980s, prompting Argentina to prohibit exports in 1986 (Fitzgerald 1989).

Following the depletions of the Mediterranean tortoises, the European pet trade began exploitation of North American box turtles, genus *Terrapene*. Terrapin turtles occur in eastern North America and northern Mexico. Box turtles are about 4 to 5 inches long, with yellow geometric patterns on a black background on their shells and bodies. They spend the majority of their lives on land, and the most familiar of these, the Eastern Box Turtle (*Terrapene carolina*), lives in moist deciduous forests and grasslands. The Ornate Box Turtle (*Terrapene ornata*) inhabits grasslands and dryer areas, and the endangered Coahuilan Box Turtle (*Terrapene coahuila*) is strictly aquatic and lives only in the Cuatro Ciénegas basin in northern Mexico. Until the early 1990s, the Eastern and Ornate Turtles were quite common, although declining from fragmentation and development of their habitat and losses from road traffic and lawn mowers. More than 3,000 Eastern Box turtles were exported from the United States in 1990 to pet dealers in

Europe and Japan, and exports increased exponentially thereafter. Records show that at least 13,585 Eastern Box Turtles were exported in 1991; 26,361 in 1992; and 23,420 in 1993, for a minimum total of 66,366 for the four years. Ornate Box Turtle exports also increased, from 7,018 in 1992 to 7,768 in 1993 (IUCN 1994). Thus, at least 78,152 of these two species of box turtle were exported in these four years alone; they are sold in European pet stores for \$100 or more (Lieberman 1994). Herpetologists have been shocked at the numbers of box turtles involved in this trade, and Dr. Michael W. Klemens of the Wildlife Conservation Society said that the pressure from the collection of these turtles is "just disastrous" and "if it continues at the present rate, it is not sustainable" (Stevens 1994).

England has been a major market, as it was for the Mediterranean tortoises. "The British have always been turtle crazy," said Dr. Klemens. The irony is that the English are animal lovers, and yet many apparently fail to realize that the deaths in captivity of these long-lived turtles are a direct result of their captive conditions, improper food and treatment, and that purchasing them contributes to the turtles' endangerment. The Fish and Wildlife Service requested information from scientists and government agencies on North American box turtle status prior to the 1994 CITES meeting and documented that both the Eastern and Ornate Box Turtles are rapidly disappearing as a result of this trade.

Declines have already been recorded for these box turtles in 16 U.S. states, from Massachusetts, Connecticut and New Jersey south to Florida and west to Missouri, Oklahoma and Wisconsin (Lieberman 1994). Many states protect them from capture, and illegal trade has resulted in more than 20 arrests (Lieberman 1994). State regulations differ greatly, making conservation of the species difficult. In Florida, for example, one may possess two box turtles, Virginia allows capture of five turtles, and Mississippi as many as 20. At least 17 of the 28 states where box turtles are found prohibit or regulate commercial trade. In states without regulations, turtles can be possessed, sold or shipped out of state. Suzanne Dohm, President of the New York Turtle and Tortoise Society, which has begun a program of conservation for these turtles, expressed frustration at the legal loopholes allowing these species to decline toward extinction: "That foreign market is absolutely draining us. You can't buy a box turtle legally in New York State, but you can ship thousands of them out of Kennedy Airport. We cry about saving animals, and yet we let situations like this go on. Something's not quite right" (Stevens 1994). Based on information gathered, the United States proposed that the entire genus *Terrapene* be listed on Appendix II, which the CITES Parties did in November 1994. This listing is meant to prevent further overexploitation, since Appendix II requires that exports not be detrimental to the wild populations of a species.

The State of Louisiana applied in 1996 to export two subspecies of the Eastern Box Turtle--Gulf Coast Box Turtles (*Terrapene carolina major*) and Three-toed Box Turtles (*Terrapene carolina major*). Fortunately, the U.S. CITES Office of Scientific Authority recommended a zero quota for U.S. exports. Herpetologists have determined from studies of the closely related Ornate Box Turtle that long-term population declines result if total annual adult mortality exceeds 5 percent, according to the Office of Scientific Authority. Moreover, the Authority determined that domestic trade in Louisiana totaled 9,500 Gulf Coast Box Turtles, and 3,800 Three-toed Box Turtles, a significant local market. The high proportion of adults that were collected, and the very slow reproductive potential of the species, led the Scientific Authority to conclude that insufficient information on the Louisiana population exists to allow export that would not result in depletions. They, therefore, recommended a zero quota on exports of North American box turtles, an important step in preserving these animals. The lack of long-term studies showing that these turtles can be collected without harming their wild populations is another argument against the trade.

Added to the declines in wild populations is the cruel treatment these turtles receive. Many die or are greatly weakened when jammed together without food or water for shipping. A Fish and Wildlife Service inspector at Kennedy Airport in New York described their condition, "What we've been seeing is very large numbers in shipments, 1,000 or more, sometimes 2,000 box turtles going to Europe in horrible condition, kept in wet burlap sacks and cardboard boxes in their own excrement, with no food or water" (Stevens 1994). Article IV of CITES requires that the Management Authority of the export country must be satisfied that "any living specimen will be so prepared and shipped as to minimise the risk of injury, damage to health or cruel treatment." This cannot be assured under U.S. law, since no legislation exists that requires humane treatment of reptiles or amphibians in shipment. The Humane

and Healthful Transport of Mammals and Birds regulations of the Lacey Act should be expanded to include reptiles and amphibians.

Box turtles, like many land turtles and tortoises, can live very long lives, and a female box turtle typically takes a half century or more to produce just two offspring (Stevens 1994). According to Dr. Klemens, box turtles reproduce for 50 years or more, and one is said to have died at the age of 138 (Stevens 1994). This slow reproduction explains why their populations suffer immediate declines when exploited.

Trade in Radiated and Plowshare Tortoises, two of the most endangered species in the world, native to Madagascar, is discussed in the Islands chapter.

Wild Pets and Laboratory Animals: Snakes

The keeping of snakes as pets is a growing trend in the United States and elsewhere. It involves the removal of thousands of these animals from the wild, endangering many species. Some species of American snakes have become threatened by trade. The Florida Indigo Snake (*Drymarchon corais couperi*), listed as Threatened on the U.S. Endangered Species Act and a protected species throughout its range in the Southeast, can sell for \$300 or more, and illegal trade has been very difficult to control. Snakes and other reptiles may be illegally captured in states protecting them, then transported to other states that allow sale of reptiles. These poached rare reptiles are also misrepresented as having been bred in captivity to avoid Lacey Act prosecutions. Many of these illegal reptiles are advertised on the Internet, where a new and huge market for reptile pets has developed, and many are sold illegally through the mail. Some pet shops sell illegally obtained reptiles, either knowingly or unknowingly. The market for rare snakes has grown to such an extent that an increasing number of species are threatened by capture.

Snakes have become prestigious status symbols for some people. Pythons and boa constrictors of various species are popular pets in spite of--or perhaps because of--their enormous size. They can reach lengths of 20 feet or more, and these large constrictors prefer live prey the size of rabbits. They present a danger to their owners and to the public, especially children, should they escape from captivity. In the summer of 1996, a 9-foot-long Burmese Python, kept as a pet by a man and his pregnant wife, was allowed to roam the house freely. The snake wrapped itself around the wife and began biting her in the back, refusing to let go even when the husband tried prying it off with a crowbar. He then called emergency 911 paramedics, who cut off its head with a hacksaw to kill it. Several cases of large constrictors, such as boas and pythons, biting adults and children have been publicized in recent years.

Wild Pets and Laboratory Animals: Frogs

A thriving trade in terrarium frogs has resulted in a worldwide market for many species of these amphibians. The world's largest frog, the Goliath Frog (*Conraura goliath*) of Central Africa, weighs 7.2 pounds and reaches a length of at least 32 inches. It is found along major rivers in dense tropical rainforests in Equatorial Guinea and southwest Cameroon (FWS 1991). Throughout its range, it is very rare and has unusual habitat requirements. It needs rapids and cascades with sandy bottoms and very clean, oxygen-rich water; deforestation has reduced this habitat (FWS 1991). Collectors have offered huge sums up to \$2,500 for capture and export of Goliath Frogs--for personal pets or public exhibition. This species is listed on the U.S. Endangered Species Act as Threatened and protected from export in most of its range. Yet unscrupulous dealers capture them and ship them to collectors under false documentation. The Fish and Wildlife Service Law Enforcement Division conducted an undercover investigation in which an English animal dealer in Cameroon shipped 10 Goliath Frogs to California with false documents. Nine arrived dead, and a California judge sent the dealer to jail for 70 days. The trade in live frogs, which have extremely high death rates in

transport, extends to rare poison dart frogs of South America and threatened frogs of Madagascar (see Islands chapter). Wealthy collectors are willing to pay high prices for these amphibians. This destructive and unnecessary trade is now growing, threatening more species each year.

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Trade Effects Draft

The figures below represent estimates based on the sources cited.

Species	Northern Hemisphere		Southern Hemisphere		Totals		% Change
	Original	Present	Original	Present	Original	Present	
Blue <i>Balaenoptera musculus</i>	20,100	4,300	200,000	10,000	220,100	14,300	- 94%
Bowhead <i>Balaena mysticetus</i>	43,000	7,850	Not Present		43,000	7,850	-82%
Fin <i>Balaenoptera physalus</i>	95,000	63,000	600,000	15,000	695,000	78,000	-89%
Gray <i>Eschrichtius robustus</i>	45,000*	22,000	Not Present		45,000	22,000	-51%
Humpback <i>Megaptera novaeangliae</i>	50,000	8,000	100,000	20,000	150,000	28,000	-81%

Right <i>Eubalaena glacialis</i> <i>Eubalaena australis</i>	100,000	600	200,000	3,000	300,000	3,600	-99%
Sei <i>Balaenoptera borealis</i>	400,000	21,100	190,000	8,300	590,000	29,400	-95%
Sperm <i>Physeter catodon</i>	1,500,000	103,000	1,500,000	128,000	3,000,000	231,000	-92%
Totals	2,253,100	229,850	2,790,000	184,300	5,043,100	414,150	-61%

Hemisphere Totals			
	Original	Present	Change
Northern	2,253,100	229,850	-90%
Southern	2,790,000	184,300	-93%
Totals	5,043,100	414,150	-92%

*Includes estimations of extinct populations of Atlantic and western Pacific Sources: *Walker's Mammals of the World*, by Ronald M. Nowak, Sixth Edition, Vol. II, Johns Hopkins University Press, 1999, which assesses various sources & research by the Animal Welfare Institute.