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Bears in the Wild

Written by Elizabeth Kemf, Alison Wilson, and Christopher Servheen

Executive Summary

1999 WWF Species Status Report

Executive Summary

Bears are both magical and frightening creatures. For many cultures, from the Inuit of the North to indigenous communities in the Americas, to Europeans and Asians, bears still represent strength, kinship, healing, and rebirth.

Despite the threats that bears sometimes pose to humans, they have been venerated as objects of worship for thousands of years and their parts used in traditional medicine or as amulets or food. Bear parts have been an important part of traditional Chinese medicine (TCM) for over 5,000 years, and bile, more specifically, for some 2,000 years.

Bears inhabit every continent except Africa, Antarctica, and Australia. Two species occur in Europe, three in North America, one in South America, and six in Asia. Around 62 countries have bears, the most widespread of which is the brown bear in some 38 countries. All bear species, with the exception of brown bears in Alaska, western Canada, and north Eurasia, the American black bear, and the polar bear, have undergone dramatic population declines in recent decades. The sloth bear and sun bear of Southeast Asia, the Asiatic black bear, and the spectacled bear have probably suffered the most significant declines. Bear numbers are notoriously difficult to determine, but we do know some brown bear populations in Europe and North America have responded well to management. Loss of habitat and increased human-caused mortality pressure are having devastating effects on bears in Asia. They are now absent from large parts of their former range, and remaining populations are becoming increasingly fragmented. As Asian bear populations continue to decline, pressure is rising on North American bear populations to meet demands for trade in their body parts.

Habitat threat is also a serious problem for spectacled bears in South America. Less than 10 per cent of Colombia's original montane forest remains, while less than 4 per cent is left on the western Andean slopes in Ecuador, and practically none in that country's central valley between the Andean ranges. These forests are under intense pressure from logging, conversion to agriculture, cattle ranching, and clearance for poppy and coca fields that feed the lucrative drug trade. Spectacled bears are being hunted for their bile and other parts. The surviving forest along the spine of Ecuador, Colombia, Venezuela, Bolivia, and Peru - still largely untouched - is where spectacled bears and other forest creatures have a last, imperilled, refuge.

All bear species appear in the Red List of Threatened Species of IUCN - the World Conservation Union, where the giant panda is listed as endangered. In China, giant panda habitat has shrunk by more than half since the mid-1970s. The global range of the brown bear has diminished considerably in the last two centuries, due to overhunting and habitat loss. They have all but disappeared from the lower 48 United States and western Europe and are extinct in Mexico. The forests of India and Sri Lanka are now greatly fragmented and sloth bears have become rare outside protected areas.

Polar bears face a new threat from mankind in the form of chemical and radioactive pollution and the effects of global warming. Their Arctic environment is widely contaminated by a number of persistent organic pollutants (POPs) such as polychlorinated biphenyls (PCBs) and chlordanes. In 1997, Norwegian scientists found several hermaphrodite polar bear cubs with high levels of PCBs in their systems. Radioactive contamination is of potential concern in the Russian Arctic (Pearce 1998): reactors discarded from nuclear submarines, as well as dumping of nuclear waste (which has also occurred in Alaska) is "a time bomb", according to some experts.

Members of the IUCN/SSC Bear Specialist Group (BSG) have also expressed concern about the effects of the illegal trade on bear populations. For example, South Korea has been one of the principal markets for gall-bladders, as has Japan. In the 1970s, Indonesia legally exported a total of 206kgs of bear bile, representing some 7,000 sun bears, to South Korea. Between 1980 and 1990, this

dropped to 1kg, according to TRAFFIC* East Asia. However, Eric Meijaard, an expert on the sun bear in Borneo, says that in Sarawak and Sabah (East Malaysia) trade in gall-bladders still seems to continue at a high level. A short survey carried out by Meijaard in 1997 indicated that the majority of TCM shops sold or could obtain bear gall-bladders. In many areas of sun bear range, such as Myanmar, Laos, Cambodia, and Vietnam, the capture of bears for sale or for food is unregulated and increasing. More than 40 bear gall-bladders were seen recently for sale at the border between Myanmar and Thailand.

Probably the most beleaguered bears struggle for survival as part of six small, fragmented populations in western Europe. These are located in the Pyrenees Mountains on the border of France and Spain, the Cantabrian Mountains of Spain, the Trentino Alps and Apennines in Italy, and in Austria, where they have been reintroduced and appear to be increasing. France's bear populations, however, are "doomed to extinction" unless drastic measures are taken soon.

One of WWF's earliest contributions to bears was its assistance to IUCN in the formulation of the Agreement on the Conservation of Polar Bears, signed in 1973 by the five circumpolar Arctic nations. WWF, the first NGO to work in China starting in 1980, has also helped the government of the People's Republic of China to conserve the world's remaining wild giant pandas. IUCN's and WWF's TRAFFIC office in Japan, set up in 1982, was the first in Asia and laid the cornerstone for the network's ongoing monitoring of the trade in bears and their parts. Currently, four regional TRAFFIC Network offices - East Asia, Europe, North America, and Southeast Asia - as well as TRAFFIC India are working on various aspects of the bear trade. These include monitoring of key markets, increasing communication among officials, encouraging better law enforcement or passage of stronger laws or penalties, and working with local health industries to seek alternatives or reduce demand for bear parts in TCM.

Through a new programme called the Large Carnivore Initiative for Europe, WWF is also promoting the natural recovery of bear, lynx, wolf, and wolverine populations in Europe where suitable habitat still exists.

Member nations of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) have also taken a number of steps recently to increase controls on the international trade in bear parts. At the 1997 meeting of the Parties in Harare, a draft resolution on bears, sponsored by Japan, South Korea, Russia, the US, and China, was adopted. The resolution noted the concern of the Parties over the trade in bear parts and asked Parties "demonstrably to reduce the illegal trade by the next CITES meeting" (in 2000).

However, this will not happen until countries involved in the trade strengthen controls within their borders and put in place extensive public awareness and education programmes that inform them about CITES regulations. They also need to work with the practitioners and consumers of TCM to lessen the demand for bear bile and other bear parts.

The future of bears depends on knowledge of the animals' needs - and the will and ability to provide these needs in a world where human demand for resources pushes into the last undisturbed areas of bear habitat. We must understand the social, economic, and cultural relationships of local people to bears and relate these needs to the habitat and resources upon which they depend.

As we enter the next millennium, it is to be hoped that conservationists, anthropologists, sociologists, rural, and indigenous peoples will continue to cooperate even more closely to understand the significance and special place

that bears hold in our lives as a means of livelihood, as symbols in our homes and spiritual sites, and as essential parts of the last wild places where they struggle to survive.

*TRAFFIC (Trade Records Analysis of Flora and Fauna in Commerce) is the wildlife trade monitoring programme of WWF and IUCN

1999 WWF Species Status Report

Bears in History and Culture

Johan Reinhard

In Peru the symbolic power of the bear still transports young men from adolescence to adulthood.

Bears and their images in the form of cave drawings, carvings, masks, jewellery, toys and sweets treasured by children, may well be the most universally known - if not the most loved-animal symbol in the world. Bears are magical creatures with strikingly anthropomorphic characteristics. They can walk on two feet for short periods, nurse their young, are playful, and eat fish, nuts, and berries as we do.

In Japan, Asiatic black bears "make seats, which resemble bird nests... where they may rest and eat" (Hazumi 1999). However, as wild animals they are also feared, particularly polar bears in the Arctic, sun bears in Asia, and grizzly bears in North America. But mostly they have been venerated objects of worship for thousands of years.

Historically, and even today, the bear symbolizes rebirth and renewal, healing power and strength, protection and kinship. Wherever bears live, rituals have been observed in close association with these animals. They wander between death (months of hibernation) and life (waking in the springtime), giving rise among some cultures to the idea of virgin births.

Cities have been named after them including Bern and Berlin, and they are common in the coats-of-arms of many European administrative units. The grizzly bear was emblazoned on the state flag of California in the US. Among Scandinavians it is said that the bear has "ten men's strength and twelve men's cunning" (Swenson et al. 1999). But the bear is also maternal and nurturing. Throughout the ages, the "Bear Mother" has reared human infants. The Greek goddess, Artemis, was nursed by a bear in her infancy. Many terracotta sculptures from the 6th and 7th century BC found in Europe depict women with bear heads seated on thrones adorned with crescents. These bear Madonnas are sometimes holding a nursing breast or nursing a bear cub (Ward and Kynaston 1995).

In the entrance to many North American ceremonial houses in the Pacific Northwest and on totem poles bears are carved to illustrate stories of the bear mother. According to an Ondondaga legend, told by a native North American group, Oo-kwa-e, a (mother) bear, raised a young boy who had wandered away from his hunting camp. The origin of bear songs and dances among the Seneca people was taught to them by a child or "boy cub" who was raised by a family of bears. The bears eventually returned him to his human family so he could pass on their

teachings to them (Campbell 1989). Millions of children around the world are tucked into the comfort of their beds each night clutching the symbol of security and warmth, the "teddy bear". Parents read them stories about Winnie the Pooh, or Baloo, the bear from Kipling's Jungle Book. They nod off to sleep listening to variations of fairy tales including "Goldilocks and the Three Bears". One version describes Goldilocks's (Golding 1919) escape from their forest house:

"On and on she ran, through the forests...
thinking every moment that
she heard brutes sniffing behind her.
But if she could only have heard what the Bears said
she would not have been frightened".

Perhaps the most famous story which gave rise to the creation of the "teddy bear" was inspired by the 26th president of the United States, Theodore ("Teddy") Roosevelt. In 1902, while on a trip in the southern United States he was invited to kill a brown bear cub that had been tied to a tree by his hunting scouts. Roosevelt turned to the group of fellow sportsmen and said that if he killed that small bear he could never look a child in the eyes again. The story was made legendary through a cartoon in the Washington Post; the teddy bear was born.

Years later, President Roosevelt and his brother, Kermit, would meet with another group of people, the Lolo of Yunnan and Szechuan provinces of China, who revered the beishung or white bear. The brothers were two of the first foreigners to explore the region. Aiding them were members of the Lolo tribe, who regarded the giant panda as a "supernatural being, a sort of demi-god" (Roosevelt and Roosevelt 1929). They would not kill beishung, locally, except in defence of their property, and built strong fences around their apiaries to prevent giant pandas from raiding them for honey. When the Roosevelt brothers finally tracked a giant panda and killed it in order to take it back to the US for scientific examination, as was common among early scientific expeditions, they found that, "not an omnivorous Lolo of the lot would touch a morsel of the flesh" (ibid).

The giant panda specimen was acquired in April 1929 in eastern Szechuan with a description of its already shrunken habitat. "To the best of our judgement he (the giant panda) had a fairly wide area of distribution but is to be found only in pockets, and is never abundant, even in these pockets.

He lives in the bamboo jungles in altitudes between six and fourteen thousand feet. We came to the conclusion that it could be safely assumed that where there were no bamboo jungles, there were no beishung" (ibid).

The Roosevelts also described the pandas as having "spectacles", reminiscent of those of its distant cousin that lives in South America, commonly known as the spectacled bear, or oso de anteojos. This species was, of course, around long before the invention of eye glasses and is also known in the five countries where it survives by various indigenous names: Ucumari, ucucucu, uco cua (bear with mystical powers), yanapuma (black puma), and manaba. In pre-Colombian times, the spectacled bear was perceived as a "grand mediator" and a "vehicle for change", with the power of the bear transporting people form sickness to health, from the darkness of the underworld into heavenly lightness, from adolescence to adulthood. After capturing bears as part of predator roundups to protect their domestic animals, the Incas often set the bears free. Sometimes they used bear fat as a salve for tumours (Peyton 1999b).

The Ainu people of Japan's northernmost island, Hokkaido, honoured their brown bears as gods as did the Gyliak of eastern Asia. With colonization of their island in the mid-19th century, the Ainu people began to sell bear gall to the Japanese who came to the island from the south (Mano and Moll 1999).

In the Arctic, the Inuit people say polar bears take their coats off when they enter homes and become human, and when they leave they replace them and become animals again. Bears are also believed to be healers, and among some groups of people are "spirit helpers" to shamans. Just as bears had taught tribes to dance and to sing, they also taught them how to find plants that could be used as medicine. Bear berry, bear clover, bear grass, bear huckleberry, and bearwood were believed to have been discovered by these animals, and their knowledge of the healing powers passed on to humans (Ward and Kynaston 1995).

Bear parts are used in traditional medicine or as amulets or food. Through eating, ingesting, or wearing bear parts, whether claws, paws, or bladder, it is believed today that the power and spirit of the animal will be passed on to its possessor. Bear parts have probably been used in traditional Chinese medicine for over 5,000 years, and bile, more specifically, for some 2,000 years. According to TRAFFIC, the first prescription of bear gall-bladder was in the 7th century (Mills, Chan and Ishihara 1995). Today all species of bear except the giant panda are affected by the demand for their gall-bladders.

Traditional exploitation of bears in the Himalayas has been an important source of livelihood for gypsies; bear cubs are taken from their mothers and trained for dancing and fighting with dogs, often at bear baiting fairs. This practice has been going on for centuries but the population of bears has dropped to critically low numbers not only from capture for this "entertainment" but also from habitat loss and persecution by farmers. The latter two problems have increased practically wherever bears still exist.

The numbers of bears is waning except among polar bears in the Arctic and brown bears in Russia, Canada, and Alaska which has the world's largest bear population.

But affection for bears has not wavered, especially in the West. Auctions of antique teddy bears still fetch thousands of dollars, and in Missoula, Montana, a town with some 30,000 inhabitants, there are around 30 different establishments, teams, and clubs named after the bear, ranging from the Grizzly Grocery to the Grizzly Auto and Silvertip lounge. The Chicago Cubs have been playing baseball for decades all over North America, while Smokey the Bear encourages campers and visitors to wild areas to prevent forest fires. Young men in the Andes still wear bear costumes as part of their rite of passage from boyhood to manhood. Whether at sea or in the wilderness, explorers consult the stars to obtain their bearings. Ursus major and Ursus minor, the Great Bear and Little Bear, are two constellations that guide us in our journeys in the northern hemisphere.

To many people of the North, especially the Inuit, the polar bear still holds a special place. Monte Hummel, Director of WWF-Canada, and Sherry Pettigrew, co-authors of Wild Hunters: Predators In Peril, describe the cultural and economic significance of the polar bear:

"To the Inuit, polar bears were given, not taken. After a polar bear was killed, sufficient time had to go by before another one was killed to allow the soul of the first bear to return to its family. The bear's soul warranted respect, and

it was capable of being offended if proper rituals weren't followed. It would not give itself up to undeserving individuals. Bear hides were used for clothing and sleeping robes, the meat was used for human and dog food, and its teeth were carved into ornaments and amulets.

Today, this magnificent animal continues to play an important role in Inuit life. Native artists strive to represent the white bear's spirit in paintings, prints, and sculptures. The hides and hunts provide an important cash income for Arctic hunters who also make their traditional knowledge and skills available to help scientists learn more about these bears." (Hummel and Pettigrew 1991).

In the 21st century it is to be hoped that conservationists and rural people will cooperate closely to help maintain the special place that bears hold in our lives as a means of livelihood, as symbols in our homes and spiritual sites, and as essential parts of the last wild places where they struggle to survive.

Bears in History and Culture

Taxonomy and evolution

Bears belong to the order Carnivora, a group of terrestrial mammals which shares certain dental characteristics that evolved in response to a predatory lifestyle. A typical member of the order possesses a pair of large blade-like carnassial teeth in each jaw (those in the upper jaw are modified last premolars and in the lower jaw are modified first molars) which have developed for shearing and tearing meat. The 240 or so members of the Carnivora are grouped into eight families, one of which is the bears (Ursidae). Because bears have forsaken meat eating in favour of a more vegetarian diet they have lost their carnassial teeth, but they do retain large canine teeth.

The Carnivora evolved from small, arboreal predators called Miacids, some 57 million years ago (Herrero 1999). On the evolutionary tree of the order Carnivora, bears are close relatives of dogs, racoons, and weasels, from which the ancestor of bears split about 34 million years ago (Catton 1990). The first creature easily recognisable as a bear, however, appears in the fossil record only 20 million years ago. Today, the bear family comprises three genera containing eight living species:

There has been a lot of debate about the classification of the giant panda and its place within the Carnivora. Taxonomists have assigned it, at various times, to the racoon family (Procyonidae); the bear family (Ursidae), and even to a family of its own (Ailuropodidae). Molecular studies using DNA analysis and other techniques have now placed giant pandas more firmly within the Ursidae (Waits et al. 1999), but there is still some debate. Other genetic studies of bears have shown that while those in the genera Ursus, Melursus, and Helarctos are all closely related (brown bears and polar bears are particularly close) and of comparatively recent (5 to 10 million years) evolutionary origin, Tremarctos and Ailuropoda are survivors of more ancient linkages (Waits et al. 1999; Catton 1990). An ancestral giant panda is known from fossils dating back some 18 million years. According to geneticists in IUCN's Bear Specialist Group (BSG), molecular analyses show that the giant panda is the oldest bear species, followed by the spectacled bear (Waits et al. 1999).

All bears have large heads and heavily built bodies, short limbs and short, stumpy tails. Bears are plantigrades - like humans, they walk on the soles of their feet rather than on the tips of their toes like other Carnivora. All bears have five digits on each limb and each digit has a long curved claw which,

unlike those of cats, cannot be retracted into a sheath. (Pandas have an extra opposable 'thumb' on their forelimbs which is not a true digit but is a horny pad supported by an outgrowth of one of the wrist bones). Bears have poor eyesight and hearing and rely mainly on their sense of smell to find food.

Bear ecology

Bears and other dog-like carnivores originated in the New World (Ward and Kynaston 1995) but over millions of years spread to the Old World over land bridges. Today, bears are found in Asia and Europe as well as the Americas, but not in Africa, Antarctica, or Australia. Most bears live in the northern hemisphere; the spectacled bear of South America is the only species found exclusively south of the equator.

Bears live in a variety of habitats, from the high Arctic to tropical forests. They also live in grasslands and in Peru in coastal deserts. In temperate and Arctic regions most bears hibernate through the winter months when food is scarce. During hibernation, which might last for several months, bodily functions, such as eating, drinking, and excreting cease altogether, while heart rate and breathing slow down. The body temperature of the polar bear does not drop and it would be aware, as would other bears, if any person or animal were outside its den. Unlike some other mammals, hibernating bears do not go into a deep torpor and are easily aroused from their sleep. The panda does not hibernate even in the high mountainous terrain of China, much of which may be snow-covered in winter.

The bear family is unique among the Carnivora in that all bears are omnivores. While the polar bear is almost entirely carnivorous, most members of the family are primarily plant-eaters, eating fruits, nuts, roots, and leaves. Their diet is supplemented by insects, fish, mammals, and carrion. Notwithstanding their largely vegetarian diet, bears, like other carnivores, have a short, unspecialized digestive tract which lacks the complex structure and enzymes needed to digest plant material. Because they cannot assimilate plant material very efficiently, bears seek out foods which have high nutrient and energy levels, such as soft and hard fruits (tree "masts" such as acorns, beechnuts, and chestnuts), and nuts, and they eat meat whenever they get the chance. Giant pandas, by contrast, very rarely eat meat and feed almost exclusively on bamboos that have low nutrient levels. Giant pandas have to select the most nutritious parts of the bamboo and eat large quantities of it to survive.

Bears give birth to only one or two cubs, rarely up to four, in each litter. Although the embryos take only a few months to develop within the bear's womb, the actual gestation period extends for much longer because implantation of the fertilized ovum can be delayed for up to several months. The phenomenon of delayed implantation is seen in many other mammal species and is a device ensuring that the young are born at a convenient time of year. For example, when food is plentiful or when the mother is safely denned up for the winter, implantation is slowed down. The cubs are born small and helpless and remain in the den for several months, suckling their mother's energy-rich milk. Even when they are old enough to leave the den, the mother bear cares for her young for a long time, teaching them which plants to seek and how to hunt prey animals.

Bears are relatively solitary animals. They do not hunt in packs or prides like some other carnivores, nor are lasting bonds maintained between the sexes. However, mother bears spend long periods (in the case of the brown bear, from 1 to 4 years) with their cubs. Aggregations of brown bears do occur from time to time when food is abundant, such as when salmon are migrating up rivers to spawn. Migrating polar bears aggregate on the western shores of Hudson Bay at

the end of summer waiting for the bay to freeze over. More than 1,000 have been counted in a relatively small area around this time. Most bears, however, avoid contact with other individuals; they have a "living area" or home range which varies in size depending on the availability of food, denning sites, and other bear necessities. The annual home range of a polar bear may be several hundreds of thousands of square kilometres; that of a brown bear living in the North American tundra 50-200km2, while a North American black bear living in hardwood forests may only need a few tens of square kilometres to survive. Bears designate their presence in their home ranges by scent-marking and visual clues like clawing trees. An individual's home range generally overlaps with that of another individual, but encounters are usually not aggressive and are rare outside the mating season.

Natural histories of bear species

1. Brown Bear (Ursus arctos)

The most widely distributed bear species, the brown bear, occurs in the northern hemisphere in Europe, Eurasia, and North America, although they are thought to have evolved in Asia (Ward and Kynaston 1995). There are a number of subspecies of brown bear that are known by a variety of local names, including Grizzly, Gobi, Siberian, Kodiak, and Manchurian bears. Males weigh 140-320kg and females 100-200kg. Large males weigh more than 400kg, are about 2.8m long and stand about 1.5m at the shoulder. Brown bears on Alaska's Kodiak Island are said to be the largest; Alaskan and Siberian brown bears, which have seasonal access to spawning salmon, reach the largest body size, close to the size of the largest male polar bear.

Brown bears occupy a wide variety of habitats: arctic tundra, coniferous and deciduous forests and woodlands, seashores, and dry deserts. They have very generalized food habits and while their diet varies from region to region, berries, nuts and other fruits, and a variety of other plant parts usually make up over two-thirds of their daily intake. Fish, invertebrates (insects and, on coastlines, molluscs such as clams), and both small and large mammals make up the remaining 20 per cent of their diet. Brown bears are capable of killing mammals as large as moose and caribou (reindeer) but do so only occasionally, generally when they find a very young or sick individual.

Wild brown bears may live up to 35 years. Mating takes place between May and June and the cubs, weighing only about half a kilogram, are born from January to March.

2. Polar bear (Ursus maritimus)

The largest of the bears, the big male polar bear, weighs up to 700kg and measures more than 2.5m at the shoulder. Female polar bears are half the size of males, weighing between 200kg and 400kg. Mating takes place in spring, but implantation is delayed until September or October, and the cubs emerge in the spring. Gestation is only 60 days and the cubs weigh an average of 500 grams at birth. They stay with their mothers for about two and a half years. The polar bear's unmistakable white fur hides a black skin. Polar bears are found in the oceans surrounding the North Pole - the Arctic, North Atlantic, and Bering Sea. They can swim long distances in icy waters and have been known to hunt walrus or narwhal if available.

Seals, particularly ringed seals (Phoca hispida), are the main item of a polar bear's diet, with fish and crabs as supplements. Polar bears rarely hunt seals in the water; in summer the bears lie in wait on ice floes for seals to surface and then ambush them. In winter, when ice covers large areas of the sea, a more

successful strategy is to lie in wait near the seal's breathing hole, or just outside the entrance to a seal's birthing den. Polar bears have been observed hunting young walrus and small whales, and will scavenge meat from whale carcasses washed up on shore. In summer, polar bears vary their diet by eating grass, berries, and seaweed.

3. American Black Bear (Ursus americanus)
These medium-sized bears (males weigh 60-140kg; females 40-70kg) are found across much of the forested areas of North America, from the chaparral and pinyon-pine woodlands of the south-western US to the coniferous forests of the north-eastern US and Canada, but are absent from the plains of southern Canada and the mid-western US. Within historical times, the range of the black bear has shrunk: it is now very scarce in Mexico and absent from much of the south-eastern United States (Pelton et al. 1999). American black bears may be reddish, brown, or black; rare variants found in British Columbia have white fur and are known to the local native Americans as "spirit bears".

Black bears prefer areas where there is plenty of undergrowth. They feed on a wide variety of plant foods and supplement their diet with meat when they can. Bears living in the tundra regions of northern Canada eat small mammals, such as hares, lemmings, and voles.

4. Asiatic Black Bear (Ursus thibetanus)
Closely related to the American black bear, the Asiatic black bear is a medium-sized bear easily distinguishable by the crescent-shaped white patch on its chest. They are found in forested areas from sea level to well above 3,000m (Servheen et al. 1999). They favour a wide variety of broad-leaved forests and can be found in tropical rainforests as well as in deciduous oak forests at higher altitudes and further north. "When the oak flowers in Dachigam" says one guidebook to India's wildlife (Van Gruisen 1992) "they are literally all over the place - sometimes a two-three mile walk yields almost a dozen animals". Asiatic black bears are good climbers, getting fruits from trees as well as a wide variety of other plant material, honey, and insects. Occasionally, Asiatic black bears will attack goats or other livestock and their propensity for crop raiding - particularly maize - often brings them into conflict with farmers, leading to injuries and deaths on both sides.

5. Sloth Bear (Melursus ursinus)
With its long, shaggy black fur and rather pointed muzzle, the sloth bear has little resemblance to Baloo in the Disney version of The Jungle Book, but it was no doubt the inspiration for the character in Rudyard Kipling's original tale. It is the only bear with long hair on its ears. Like sun and Asiatic black bears it may have a white blaze on its chest, but unlike the others, its muzzle is usually pale or whitish in colour (Garshelis et al. 1999). Its long curved claws enable it to hang upside down from branches like a South American sloth - hence the name.

Adult males weigh 80kg to 145kg and adult females around 55kg to 95kg, depending on where they live.

Sloth bears breed during June and July, and cubs are born between November and January. In Sri Lanka, other patterns have been observed, suggesting birth could be in mid-summer. Excavated holes or natural hollows provide dens for sloth bears, and a litter size of two is most common.

The sloth bear specializes in eating insects and will break into a termite mound or bee nest with its strong claws. The bear's flexible lips and pointed snout

poke deep into the nest. After blowing down this tube to clear the dirt away, the bear sucks the insects up, aided by its long tongue. Sloth bears do not have any upper incisors and can vacuum insects up even with their mouths closed. A recent study of the diet of sloth bears in Tamil Nadu, southern India (Baskaran et al. 1997) found that more than 80 per cent of their diet consisted of fruits, but they also eat other plant parts, honey, termites, and ants.

6. Sun Bear (Helarctos malayanus)
The smallest of the bears, sun bears are only 70cm shoulder height and weigh 27-65kg (the females are slightly smaller than the males). They have short black coats with a more-or-less crescent-shaped white or yellowish patch on the chest, which may be absent in some individuals. Variations from circles to spots on the chests of sun bears have been recorded, and their hair is the shortest of all the bear species. Their heads are smaller and more dog-like than those of the Asiatic black bears.

Sun bears are expert climbers and may rest during the day in platforms fashioned by bending branches up in a tree. Although they specialize in eating insects and other invertebrates they are omnivores, eating a variety of fruits and leaves and will also prey on rodents, birds, and lizards. They also relish the growing tips of palm trees (Meijaard 1997) and can wreak havoc in palm oil plantations.

However, insects are a major item on the sun bear's menu and their long tongues are ideal for extracting these insects, and honey, from crevices in trees. Sun bears can be aggressive when surprised and encounters with them are recognized as potentially dangerous (Meijaard 1997).

Amazingly, practically no scientific studies of sun bears have ever been undertaken in the wild, so most of what we know about them comes from studies of captive individuals or from casual observation. The lack of knowledge of sun-bear biology is a serious limitation to conservation efforts.

7. Spectacled Bear (Tremarctos ornatus)
Found mainly in montane forests in Bolivia, Colombia, Venezuela, Peru, and Ecuador, the spectacled or Andean bear is sometimes found in the mountain grasslands above 3,200m and in low-lying scrub deserts. It is the only bear species found in South America. At an adult weight of 100-175kg, a little smaller than the black bear, it has a shorter muzzle than other species of bears. The fur is dark brown to black, with a paler colour around the eyes and across the bridge of the nose, which gives rise to the bear's common name. Sometimes the pale markings extend down to the chest and up to the forehead (Peyton 1999).

Spectacled bears have been little studied in the wild. They are believed to be mostly nocturnal. They eat a variety of fruits and other plant parts, but prefer plants belonging to the bromeliad (pineapple) family, of which many varieties are found as epiphytes growing on rainforest trees. Like other bears, spectacled bears eat meat when available and have been seen taking mice, rabbits, and small deer; because the bears occasionally take calves they are persecuted by farmers.

8. Giant Panda (Ailuropoda melanoleuca)
The name Ailuropoda melanoleuca refers to the giant panda's distinctive black and white colouration. They have proportionately larger heads and shorter limbs than other bears. Giant pandas often sit human-like, and use their forelimbs with their opposable "thumbs" to manipulate bamboo fronds.

Males weigh 85-125kg and females 70-100kg. At birth, giant panda cubs weigh only 85-140gm, (about the same as a small rat) and are blind, helpless, and covered in sparse white hair (Catton 1990). In the wild, females give birth in a rock shelter or hollow tree base to one or two young but rarely attempt to raise more than one. Some four to six weeks later the young giant panda is big enough to leave the den and be carried by the mother on her feeding expeditions. It will be five or six months old before the cub can travel independently, but it will stay close to its mother until it is about 18 months old. It is not known how long giant pandas live in the wild, but in captivity they can live for 25 years or more.

Giant pandas are one of the few species - and possibly the only mammal - to feed exclusively on bamboos and they face little competition for food with other herbivores. On the other hand, bamboos are not the most digestible of plants, having a high proportion of indigestible cellulose. Like other bears, giant pandas have a carnivore's simple digestive system which cannot cope with cellulose at all. As they can digest less than 18 per cent of the bamboo they eat, they must eat up to 10-18kg daily in order to gain enough nutrients. Bamboos over wide areas grow, flower, and die together simultaneously, which means that giant pan-das must periodically face food shortages. In the mid-1970s, nearly 140 giant pandas died, mainly of starvation, in the Min Mountains, and in the mid-1980s, 62 died (Reid and Gong 1999).

Natural History of Bears

Living bear species

Genus	Species	Common Name
Ursus	Arctos	Brown (Grizzly) Bear
Ursus	Maritimus	Polar Bear
Ursus	Americanus	American Black Bear
Ursus	Thibetanus	Asiatic Black Bear
Melursus	Ursinus	Sloth Bear
Helarctos	Malayanus	Sun (Honey) Bear
Tremarctos	Ornatus	Spectacled Bear
Ailuropoda	Melanoleuca	Giant Panda*

Table I

*N.B. Some authorities place the lesser or red panda Ailurus fulgens in the bear family; others place it with the racoons.

Distribution and Status

Bears inhabit every continent except Africa, Antarctica, and Australia. Two species occur in Europe, three in North America, one in South America, and six in Asia. Around 62 countries have bears: the most widespread is the brown bear, which survives in some 38 countries. All bear species, with the exception of brown bears in Alaska, western Canada, and north Eurasia, the American black bear, and the polar bear, have undergone dramatic population declines in recent decades. The sloth bear and sun bear of Southeast Asia, the Asiatic black bear, and perhaps the spectacled bear, have probably suffered the most significant declines. Hard biological data is very difficult to come by as very few censuses and practically no field studies have ever been undertaken of these animals. The

least studied is the sun bear, the smallest of the species whose tropical rainforest habitat in Southeast Asia is shrinking rapidly. Bear numbers are notoriously difficult to determine, but we do know some brown bear populations in Europe and North America have responded well to management. Other species such as the Asiatic black bear and sun bear have had virtually no management at all. Loss of habitat and increased human-caused mortality pressure are having devastating effects on bears in Asia and they are now absent from large parts of their former range; remaining populations are becoming increasingly fragmented. As Asian bear populations continue to decline, pressure is rising on North American bear populations to meet demands for trade in their body parts.

South America

A single species of bear - the spectacled bear - is found in South America. Spectacled bears live in a wide variety of habitats, but are most secure in the mountain cloud forests of Ecuador, and parts of Peru and northern Bolivia. These versatile animals, whose altitudinal range stretches from 240m in the coastal deserts of Peru to 4,750m just below a permanent snowline, also live in steppe lands, paramos, and puno grasslands (Peyton 1999).

There are no accurate estimates of the numbers of spectacled bears remaining in the wild, but members of the IUCN/SSC Bear Specialist Group (BSG) are confident that there are at least 18,250 wild bears in all three ranges of the Andes, from the Cordillera Merida in Venezuela to the Argentine/Bolivian border. The numbers could be several times that, according to the group, who estimate that spectacled bears occupy some 50 habitat fragments, totalling approximately 260,000km2 (Peyton 1999). The bear's current range is mainly in Peru, Bolivia, Colombia, Ecuador, and Venezuela. It was also recorded in 1984 in the Darien region of Panama and in 1989 some isolated individuals were reported in north-western Argentina. Over two-thirds of the bears' range is located in habitat fragments in Peru and Bolivia. Habitat threats are a serious problems for spectacled bears. Less than 10 per cent of Colombia's original montane forest remains, while less than four per cent is left on the western Andean slopes in Ecuador, and practically none in that country's central valley between the Andean ranges (Peyton 1999).

The montane and submontane forests of the northern Andes may be the richest tropical montane ecosystems in the world; they harbour many species, including the spectacled bear. But throughout the region they are under intense pressure from logging, conversion to agriculture, cattle ranching, and mining. Even high in the mountains, fragile cloud forests are under threat, cleared to make way for poppy and coca fields that feed the lucrative drug trade. Not only has the bears' range shrunk considerably during the last 50 years, but the animals are also persecuted by local farmers who regard them as pests. Local hunters prize them for their meat and skins, and there is evidence that spectacled bears, like bears elsewhere, are also being hunted for their bile and other parts (Saurez 1999) (Rumiz and Salazar 1999). The surviving forest along the spine of Ecuador, Colombia, Venezuela, Bolivia, and Peru - still largely untouched - is where spectacled bears and other forest creatures have a last, imperilled refuge.

Because of their declining habitat and numbers, the species is listed as "Vulnerable" in the 1996 IUCN Red List of Threatened Animals. The BSG has expressed concern over legislation in Bolivia and Peru, enacted in the early 1990s, that allows the capture of spectacled bears for captive breed-ing programmes without sufficient monitoring. The spec-tacled bear is listed on Appendix I of CITES.

Europe and the Middle East

Three thousand years ago, brown bears occurred throughout Europe except on the largest islands, such as Ireland, Iceland, Gotland, Corsica, and Sardinia. Today, the total number of brown bears in Europe, including Russia west of the Urals, is about 49,000 to 50,000 (13,000 outside Russia). More than 125,000 brown bears occur in the Russian Federation as a whole. Brown bears also live in Turkey with an estimated population of more than 500 individuals.

The "Fenno-Baltic-Russian" or north-eastern European brown bear population, perhaps 37,000 strong, stretches from the Urals in the east to the west coast of Finland (Swenson et al. 1999). (See map, page 14).

There are only six small, fragmented populations in western Europe. These are located in the Pyrenees Mountains on the border of France and Spain (two populations); the Cantabrian Mountains of Spain (two populations); the Trentino Alps and Apennines in Italy; and Austria, where they have been reintroduced.

France's "doomed" bears? The brown bear populations of France, Austria, Spain, Italy, and Greece are very small. The populations in Greece and Spain are decreasing, while in Italy and Austria they appear to be increasing. France's bear populations are "doomed to extinction unless drastic measures are taken soon", according to the authors of WWF's Brown Bear Action Plan for Europe (Swenson et al. 1999). This prediction is shared by the compilers of IUCN/SSC's 1999 Bear Status Survey and Conservation Action Plan (Servheen et al. 1999). Without strict protection and programmes to strengthen these populations, bears are unlikely to survive in these countries. The bear populations in the Carpathian Mountains of Romania, Slovakia, Poland, and the Ukraine are the second most numerous with an estimate of about 8,300 to 8,400 animals, 6,600 of which are in Romania.

The Dinaric-Eastern Alpine population is the third largest in Europe with 2,700 to 2,800 bears living in the forests extending from the eastern Alps in Austria and north-eastern Italy to the Pindus Mountains in Greece. In northern Europe brown bears are found in Norway, Sweden, Finland, Estonia, and Latvia. The Scandinavian population numbers around 1,000 bears with most of these in Sweden and around 20 to 30 in Norway. These populations are thought to be increasing.

Bear populations in the Rila-Rhodope Mountains in south-western Bulgaria (about 520 animals), and north-eastern Greece, (where only a fraction of the bears live), are not expected to increase because of poaching. The same can be said for the Stara Palnina Mountain bear population in Bulgaria where around 200 bears survive (Swenson et al. 1999).

At the global level the brown bear is not threatened, and according to the IUCN Status Category, it has not been evaluated. It is listed on Appendix II of CITES. In Europe, the brown bear has been categorized as "Endangered-Vulnerable" and in need of strict protection within the boundaries of the European Union. The European population of brown bears are listed on Appendix II.

The Arctic

Polar bears, found in the Arctic seas and oceans, occur in coastal habitats in Russia, western and northern Alaska, the Canadian Arctic, Norway, and Greenland. It is the only species of bear that still occurs throughout most of its original range, according to IUCN's Polar Bear Specialist Group. (See map on page 15). Scientists think there may be as many as 27,000 polar bears, or as few as 22,000, but nobody is sure (IUCN/SSC PBSG 1999). Canada is home to more than 50

per cent of them and within Canada they occur from Labrador to the Alaskan border and from James Bay to northern Ellesmere Island.

Polar bear skins were popular in Victorian times and quick profits were made by whalers and sealers especially who supplemented their income by killing the bears.

In Russia, for example, whalers and trappers who arrived in increasing numbers in the 18th century began killing polar bears, and by the mid-1950s - when the then Soviet Union banned all hunting of polar bears - it was estimated that around 150,000 bears had been killed or caught in Soviet Eurasia since the unregulated slaughter began. Global polar bear populations are thought to have reached a low in the 1950s, when numbers plummeted to a possible 5,000.
By the mid-1960s when bear scientists estimated some 1,000 polar bears were being killed annually, an emergency meeting was convened by the five Arctic nations. The group agreed that an international body was needed to coordinate research and management of the species. In 1965 IUCN formed the Polar Bear Specialist Group (PBSG) and through a series of meetings, the draft of an international polar bear treaty was drawn up. Through the efforts of IUCN and the support of WWF, the five Arctic nations signed the International Polar Bear Convention in 1973, an agreement which is still in effect today. By the early 1980s the Norwegian population of polar bears had doubled and Canadian and US scientists reported substantial increases in their polar bear populations. The polar bear is classified by IUCN as "Lower Risk: Conservation Dependent", and is on Appendix II of CITES.

Asia

Brown bears
Japan The northern Eurasian population of brown bears extends across Russia as far east as Japan, where a subspecies, Ursus arctos yesoensis, occurs on the northernmost island, Hokkaido, and the neighbouring islands, Kunashiti and Etorofu which are controlled by Russia. Distributed throughout Hokkaido until the latter half of the 19th century, brown bears were targeted for extermination when colonization of the island began. Since then the bear's habitat has shrunk to no more than 50 per cent of its original size. The current population estimate is approximately 2,600 bears on the island. Before 1970, more than 500 bears were killed annually, but it dropped to 247 bears per year in the early 1990s. The yearly bear kill has no limit to the number that can be taken by a licensed hunter, and according to Japanese members of the BSG the harvest has probably declined simply because there are fewer bears. Vehicle collisions are also a cause of bear death. Damage-control kills are allowed throughout the year, and some public awareness programmes are beginning to help people minimize human-bear interactions or conflicts. The Hokkaido government is re-examining its long-standing policy of proactively decreasing bear numbers and forbade the use of traps and snares during the 1985 and 1992 sport hunting seasons. In 1990 the government eliminated den hunting during the heavy snow winter season, but there are still no restrictions on age or reproductive status of bears taken as game. Hunting is allowed outside protected areas. A national hunters' association has imposed its own limit on bear harvests and has distributed information on the island to help humans and brown bears to coexist (Mano and Moll 1999).

China Brown bears are distributed through three major areas in China and there are about 14,790 individuals (Fan and Song 1997), but exact numbers are not known. It is estimated that 500 to 1,500 brown bears still live in the forested areas of north-west China's Heilongjiang Province. Up until the 1970s bears were

considered a destructive pest species and numbers declined dramatically. Habitat destruction is also a major factor in bear declines: in one mountain district in Heilongjiang the human population has increased by 16 times in the past 30 years, and the woodland has decreased by 40 to 60 per cent since the 1950s. The brown bear has been classified as a "Vulnerable Species" in Heilongjiang and as a Class 2 protected species under China's Protective Law of Wildlife. These classifications have not prevented further declines in numbers or habitat (Jizhen 1999).

Mongolia, Himalayas, Russian Far East The small Gobi bear, or mazaalai, as people in south-west Mongolia call the distinct local subspecies, may be the rarest mammal in Mongolia with a population of 30 or so. It is found only in isolated mountains of Great Gobi National Park in the Altai-Gobi, although other subspecies of Ursus arctos occur in northern Mongolia (McCarthy 1999). Because of their small populations, all brown bears in Mongolia and China, and the Himalayan subspecies, are listed in Appendix 1 of CITES.

A few brown bears still occur in Tibet and Bhutan. The Tibetan brown bear (Ursus arctos pruinosus) is the rarest large mammal on the Tibetan plateau. It lives in open alpine areas where it is quite vulnerable and has been relentlessly hunted. The rare Himalayan brown bear (Ursus a. isabellinus) occurs in very low densities in middle Asia including parts of India, Pakistan, Afghanistan, China, Kazakhstan, and Uzbekistan. In India, its last stronghold is the western and north-western Himalayan ranges in Jammu, Kashmir, Himachal Pradesh, Uttar Pradesh, and Sikkim. U.a. pruinosus may also occur in Sikkim and Arunachal Pradesh. Extremely little is known about detailed distribution or numbers (Sathyakumar 1999b).

Brown bear populations in the Russian Far East are increasingly impacted by growing forest exploitation and hunting for sale of bear parts. Populations currently exist in high densities in coastal areas and the Kamchatka Peninsula. Brown bears overlap the range of the Asiatic brown bear in many areas of the Russian Far East and in north-west China (Chestin 1999).

Asiatic black bear
Found in a wide area of Southeast and eastern Asia from Afghanistan to Indochina, China, Japan, and Taiwan, the range of the Asiatic black bear has diminished and fragmented considerably this century. In the westernmost part of its range, a subspecies of black bear, the Baluchistan bear (Ursus thibetanus gedrosianus), is almost extinct (Shah 1996).

A small, often reddish, bear, the Baluchistan bear is adapted for surviving in an arid, treeless environment and is found in Afghanistan, south-west Pakistan and south-east Iran. It is listed as "Critically Endangered" in the 1996 Red List.

China In China, the Asiatic black bear (Ursus thibetanus) is widely distributed chiefly in four large regions, but most are found in the south-west. An estimated 15,000 to 20,000 individuals survive, but these estimates are questionable. Some 1,000 to 1,200 Asiatic black bears are found in central-southern China, 450 to 550 in the southern part of the Quinling Mountains and 2,300 to 2,850 in the north-east. Eleven to 14,000 are found in the south-west: of these, the largest concentrations occur in Tibet, Sichuan, and Yunnan. They have disappeared from much of the north due to human population growth and deforestation. Capture of black bears from the wild to supply bear farms has also been a factor in their decline. The black bear is listed as a "protected animal" under the National Protection Wildlife Law. This law stipulates that

anyone who catches or hunts bears without a licence from the national wildlife authorities will face serious punishment. Despite the law and the creation of hundreds of protected areas, bears and their habitat continue to decline in China, and according to Chinese members of the BSG, the animals are "endangered", and must be protected "urgently" (Ma and Li 1999).

Japan In Japan, deforestation and poor management leading to uncontrolled harvesting, have led to extinction of some populations while others have declined sharply, although, perhaps, 10,000 to 15,000 survive in the southern islands of Honshu, Kyushu, and Shikoku. According to the BSG, the Japanese black bear is "facing a crisis" due to killing. Some 2,000 bears are killed annually as "nuisance bears", and the group's Toshihiro Hazumi says that some local populations of black bear will become extinct before 2050. Bears are considered endangered on Kyushu and Shikoku islands, some are threatened in the Chugoku and Kii regions of Honshu island, while small isolated populations in the Tanzawa and Shimokita areas of mainland Honshu were listed as "endangered" in 1995. Bears are also shot in their dens but Hazumi hopes that this practice will "disappear with the retirement of elder hunters". Excessive use of box traps in coniferous plantations is also posing a serious threat to the bear populations. Such conifer plantations now occupy 40 to 60 per cent of original bear habitat (Hazumi 1999).

Taiwan The Formosan black bear, (Ursus thibetanus formosus) a subspecies endemic to the island of Taiwan, is still found in the mountain forests usually above 1,000m. In 1989, the Formosan black bear was listed as an endangered species under the Natural and Cultural Heritage Act, and later listed as a "Conserved Species Category I" (similar to CITES Appendix I species) under Taiwan's Wildlife Conservation Law (Wang 1999).

Asiatic black bears were almost extinct in South Korea in 1990 (Oli 1990). It is likely that few, if any, Asiatic black bears have survived in South Korea as of 1998. The situation in North Korea is unknown, but human population pressures and habitat loss, combined with unregulated killing, have probably also driven the North Korean population to extinction.

Himalayas In India, Asiatic black bears are found in the foothills of the Himalayas. The western and north-western Himalayan ranges are home to bears in the states of Jammu and Kashmir, Himachal Pradesh, and Uttar Pradesh.

The eastern Himalayan range is represented in Arunachal Pradesh, while a small population of bears is believed to survive in Sikkim and West Bengal. It also occurs in Assam, Mizoram, Meghalaya and Tripura. Its range extends into other states but there are no confirmed reports in some of these areas. Fifty-six protected areas in India have black bear populations but only 5 per cent of potential bear habitat range in India, about 14,474km2, is under some form of conservation management. There are no reliable estimates for the black bear population in India. Its range overlaps with that of the sloth bear, below 1,200m, and the Himalayan brown bear, above 3,000m (Sathyakumar 1999a).

Russia The Asiatic black bear in Russia occurs over parts of Primorye and Priamurye krays (counties) in the Russian Far East, which forms the extreme north of the species' range. The habitat is shrinking and it is estimated that the number of bears has declined from an estimated 25,000 to 35,000 individuals at the beginning of the 19th century to around 4,000 to 5,000 today. The bear lives mainly in Korean pine and broadleaf forests, both of which have been cut extensively for the logging industry and agricultural clearance. In 1991 the government enacted a law forbidding the cutting of Korean pine throughout the

bear's range, but the enforcement of this law is questionable. Fragmentation of the bear's habitat could lead to the complete isolation and eventual loss of bears in several places.

Up until 1983, around 300 to 400 bears were shot every year. It is now illegal to hunt bears except in self-defence, but "many cases of illegal shooting occur" fuelled by the demand for bear parts (Chestin and Yudin 1999).

South and Southeast Asia Asiatic black bears also occur in Southeast Asia in Vietnam, Laos, Thailand, Burma, Bangladesh, and peninsular Malaysia. The protection of the species and conservation of its habitat in these countries is minimal. Bear numbers have declined dramatically due to habitat loss, and intense killing for sale of parts, pets, and to protect agricultural crops. The opening of borders between formerly closed countries, such as Laos and Vietnam, has increased trade in bears and bear parts as more markets are available for these items at border crossings.

Sloth bears
Sloth bears (Melursus ursinus) are found in India, Nepal, and Sri Lanka. Their range may still extend to remnant, mixed evergreen forests of the Chittagong and Sylhet regions of eastern Bangladesh and through southern Bhutan, bordering the Indian states of Assam, Manipur, and Arunachal Pradesh. In Sri Lanka they are found in the northern and eastern lowlands. Sloth bears have a patchy distribution in India which corresponds with remaining forest cover. They are the most widespread species of bear in India, and in the north overlap with the range of the Asiatic black bear.

In Nepal, the sloth bear range is mainly limited to the Terai, the southern strip of lowland forest and grasslands bordering India, but they have been found in the Siwalik Hills, which rise to 750-1,500m. In Sri Lanka, they have been observed at an elevation of 1,200m, and in the Western Ghats of India, up to 2,000m. The world population is estimated at between 10,000 and 25,000 sloth bears, but according to the BSG, "good estimates even for small areas are lacking, so an overall estimate for the species, given present information, is virtually meaningless". The group adds that most sloth bears outside protected areas are likely declining because within the last 50 years the forest cover of this huge region has decreased dramatically. Together with increased poaching and other forms of human interference it is highly likely that the sloth bear population has declined significantly (Garshelis et al. 1999).

The sloth bear is classified as "Vulnerable" in the 1996 IUCN Red List of Threatened Animals, and is listed on Appendix I of CITES. All trade and export of sloth bears is illegal in India, and the bears are completely protected under Schedule I of the Indian Wildlife Protection Act of 1972 (as amended in 1986). They may be hunted in self-defence or in special circumstances where they have caused damage. In Nepal, sloth bears can be legally killed to protect people or property and hunting is legal with a licence. Few are issued. The situation in Sri Lanka is unclear.

Sun bears
Sun bears - the smallest of the bear species and the only tropical bear species inhabiting lowland tropical rainforests throughout much of Southeast Asia - survives in Myanmar, and eastward through Laos , Thailand, Cambodia, and Vietnam. It also occurs on the islands of Sumatra and Borneo in Indonesia, Malaysia, and Brunei. Recent reports also indicate that sun bears may still live in southern Yunnan Province, China. It is possible that sun bears are extinct in India, and confirmation of their presence in Bangladesh is also doubtful. As

with other Asian bears, we have very little idea of their conservation status, but all the signs are that their populations must be shrinking along with their forest habitat (Servheen 1999b).

The 1997/98 fires in Southeast Asia, most notably on the islands of Borneo and Sumatra, led to critical forest loss and bear deaths. Logging in Malaysia and Indonesia and other countries where bears live have also contributed to habitat loss, but the full effects of this loss are unknown. If we look at historical records of the bear which give us an idea of habitat loss alone, it is possible that sun bear numbers are less than 25 per cent of the historic levels of 100 years ago. Because we know so little about their numbers, sun bears are listed as "Data Deficient" in the Red List. There is very little information regarding sun bear range, food habits, movement patterns, habitat use, reproductive habitats, or the impact of timber harvest on the species.

The sun bear is listed under CITES Appendix I, but illegal international trade has been documented. Live sun bears and their body parts are widely available for sale in most of the countries where they live.

Giant panda

There are thought to be around 1,000 giant pandas remaining in the wild, but the exact number is unknown (S. Mainka, pers. comm.). Surely one of the world's most loved species, giant pandas are the rarest of the bear family and one of the world's most endangered mammals. They live in the temperate mountain forests of western China at the edge of the Tibetan plateau, where bamboo is the dominant understory forest plant. The giant panda's range is now restricted to half a dozen separate mountain ranges in Sichuan, Gansu, and Shaanxi provinces. The main threat to giant pandas, therefore, is the fact that their habitat is now fragmented into around 25 isolated forest remnants (Zhi 1997). On present evidence the greatest number, perhaps 900, giant pandas occur in the Minshan Mountains in Sichuan. The Quinling Mountains, with 220-240 individuals have the highest population density. Since their forest strongholds are not connected to each other, some conservationists feel that each of them may be too small to be viable in the long term. Inbreeding in small populations is a potential problem. The remaining area of suitable panda habitat totals about 13,000km2 (Reid and Gong 1999).

Fossil evidence suggests that in the early Pleistocene, some 2-3 million years ago, the giant panda was widely distributed over much of eastern and southern China as far north as Beijing. Panda fossils have also been found in northern Myanmar and northern Vietnam (Schaller 1993).

It seems that their range has probably always been relatively restricted and has diminished considerably in recent times. There are probably several reasons, but shrinkage of their habitat due to climatic changes, and more recently, expansion of human populations, have caused further loss and fragmentation of their habitat. The giant pandas' reliance on one main source of food means that they cannot adapt easily to change, or disperse far outside the mountain forests where their food plants grow.

North America

American black bear

Historically, the American black bear occurred in all the forested regions of North America. The current range covers only 62 per cent of the historic range, according to the BSG (Pelton et al. 1999). Black bears still live in much of their original range in Canada and Alaska, with the exception of intensively

settled and farmed areas. In the continental US, black bears are found in the north-west, the Rockies, the north-east, and, patchily, in the Midwest and south. The majority of habitat loss has occurred in the eastern and midwestern parts of North America. Black bears still occur in 39 US states and all 11 Canadian provinces. Scientists estimate that around 500,000 bears survive within that area, with most populations being stable or increasing. Surveys in 1993, based on questionnaires to state and provincial wildlife management departments in the US and Canada, indicate that between 186,881 and 206,751 bears existed in the US and 327,200 and 341,200 in Canada (Pelton et al. 1999). In 1997, at an international symposium on the trade in bear parts, the population of American black bears in Canada was reported to be 402,000 (Williamson and Gaski 1997).

It is not considered a threatened species, with the exception of the Louisiana black bear (Ursus americanus luteolus), a subspecies which lives in the lower Mississippi Valley, which is listed as "threatened" under the Endangered Species Act, and the Florida black bear (U.a. floridanus). The historic range of the American black bear has shrunk to 20 per cent of its original area in the south-eastern US due to extensive land clearing for agriculture and other human developments. In Mexico, the current range of black bears is unknown but has diminished considerably since the turn of the century: it is believed that black bears exist in only four areas and they are considered "endangered" by Mexican wildlife agencies. Mexico closed its black bear hunting season in 1985, but poaching is "uncontrolled" according to the BSG (Pelton et al. 1999). American black bears are listed on Appendix II of CITES.

Brown bear

The range of the brown, or grizzly, bear (Ursus arctos horribilis) in the lower 48 United States has contracted considerably since the first white pioneers pushed west in the 18th century. It now occupies less than 2 per cent of its original range and is found only in parts of Idaho, Montana, Wyoming, and Washington State. These five small subpopulations, four of which are contiguous with larger populations across the border in Canada, total between 700 and 900. They were declared a threatened species in the contiguous US in 1975. Conservation efforts in some areas are ongoing to augment small grizzly bear populations or reintroduce populations in remote areas where the species is now extinct (Servheen 1999). Grizzlies are now extinct in Mexico. Alaska and Canada still have healthy populations of grizzly bears in most suitable habitat. Thanks to the "salmon runs" - seasonal migrations of spawning fish up coastal rivers - and to the gentler maritime environment, grizzlies are found in particularly high densities on the Alaskan and British Columbia coast and offshore islands (where the Kodiak bear, Ursus arctos middendorfi, occurs on Kodiak, Shuyak, and Afognak Islands). Alaska's grizzly bear population is estimated at between 25,000 and 39,000 (Miller and Schoen 1999).

Grizzlies in Canada have been extirpated from the non-mountainous boreal plains and the glaciated prairies, and are listed as "Vulnerable" elsewhere by Canada's Committee on the Status of Endangered Wildlife. In Canada, from 25,000 to 39,100 survive (McLellan and Banci 1999).

Alaska classifies brown bears as "big game" and the bears may be killed by resident, non-resident, and subsistence hunters with licences and tags during specified seasons. Alaskan brown bears are listed on Appendix II of CITES. The sale of bear parts is illegal in Alaska, but it is believed that the overseas market has resulted in an increase in kills for their parts for use in traditional Chinese medicine. The status of the grizzly bear in 1999 is much better than it was in 1975, when the species was first listed as threatened and came under the protection of the Endangered Species Act.

In Canada, the brown bear is classified as indigenous wildlife and hunted wherever population sizes and productivity are sufficient. Hunting regulations vary from province to province. Noteworthy is that 95 per cent of Canada's brown bears occur outside national parks.

Distribution and Status

More than 125,000 brown bears occur in the Russian Federation as a whole. In western Europe there are only six small fragmented populations.

Habitat loss and fragmentation

Habitat loss, especially in the tropics, is a major cause of bear population declines. Of course, bear habitat in western Europe has been severely impacted by human activities: wild areas large enough to support bears disappeared hundreds of years ago in countries such as the United Kingdom. In other areas, such as Norway and Switzerland, livestock and agriculture have encroached on brown bear habitat within the last couple of centuries. Only six small populations of brown bears survive in continental western Europe. Today, the most challenging questions for bear conservationists in crowded and developed Europe are: to what extent can bears and humans live together? What can we do to minimize human aggression towards bears? And how can we ensure that bears do not become a nuisance to humans?

In Asia and South America the impact of mankind is more recent: agricultural clearance, ranching, commercial exploitation, timber harvesting, oil and gas exploration, mining, road and dam construction have all led to the fragmentation or disappearance of bear habitat within the last 50 years. For example, according to GIS analyses and surveys completed in China in 1974/75 and 1985/88, the area of habitat occupied by giant pandas has been reduced by more than half, from over 29,500 km2 to only about 13,000 km2 (Reid and Gong 1999). In India, sloth bears now have a patchy distribution corresponding to remaining forest cover, while in Sri Lanka - due to wide-scale conversion of upland forests to coffee and tea plantations - they are confined to northern and eastern lowlands (Garshelis et al. 1999). In Nepal, much of the remaining forest in the Terai, the southern strip of lowland forest and grasslands bordering India, is degraded because of overgrazing and cutting. In Japan, brown bear habitat on the island of Hokkaido has shrunk by 50 per cent since 1871 (Mano and Moll 1999).

The home of the spectacled bear in South America is also disappearing rapidly. Less than 10 per cent of Colombia's original montane forest remains, and in neighbouring Ecuador, less than 4 per cent is still standing (Peyton 1999).

In 1997 and 1998, massive and widespread fires broke out in Indonesia and Malaysia. The forests were tinder dry, due to the El Ni-o weather phenomenon. Forest fires are part of nature's cycle, and given time, the ecosystem will recover. But in this case, most of the fires were set deliberately by unscrupulous landowners and timber barons who took advantage of the drought to clear large areas for plantations. In Borneo, more than three million hectares were burned in 1998, according to the University of Singapore's Remote Sensing Centre. The fires also spread to protected areas. Substantial areas of sun bear habitat were destroyed and dead sun bears were reported. In the autumn of 1998, forest fires also seriously affected brown bear habitat in Russia; at the time of publication the extent of damage was not yet known. Between 1984 and 1986, in three districts of the Irkutsk oblast near Lake Baikal, nearly 70,000 km2 of forest were destroyed by fire (Chestin 1999).

Other habitat concerns

Although the polar bear is not endangered as a species, its Arctic environment is widely contaminated by a number of persistent organic pollutants (POPs) such as polychlorinated biphenyls (PCBs) and chlordanes. Because polar bears are at the top of the food chain, these chemicals can and do accumulate in their tissues, but it is not yet known what long-term effect, if any, these contaminants are having on bear populations. High levels of PCBs can damage hormone and reproductive systems in animals and humans. In 1997, Norwegian scientists found several hermaphrodite polar bear cubs with high levels of PCBs in their systems (Pearce 1998).

Radioactive contamination is of potential concern in the Russian Arctic (PBSG 1999); reactors discarded from nuclear submarines, as well as dumping of nuclear waste (which has also occurred in Alaska), is "a time bomb", according to some experts.

Global warming may also have an impact on polar bears. According to the IUCN/SSC Polar Bear Specialist Group (1999), rain during the late winter seasons, induced by climate change, could cause bear maternity dens to collapse, causing the death of the occupants. If the Arctic warms up, the time available for polar bears to feed on seals - which depends on the extent and persistence of ice in the springtime - could be shortened. Should the ice thaw just one week earlier, according to seasoned Canadian polar bear biologist, Ian Stirling (Pearce 1998), bears would catch fewer seals. A mother bear's weight could drop by as much as 10kg in the spring, and she would be up to 34kg lighter at the end of the summer. Polar bears further north would be less affected but those at the southern limit of distribution could produce fewer cubs and enter human settlements more frequently in search of food.

The trade in bears and bear parts

Medicinal uses of bears

The body organs and other parts of bears have been used in traditional Chinese medicine (TCM) for thousands of years in Asia. TCM originated in China around 3,500 BC and was later adopted by users in Korea and Japan. With the diaspora of ethnic Chinese and other Asian peoples this century, TCM has spread to Asian communities around the world including North America, Europe, Australia, and New Zealand.

Bear bile from the bear gall-bladder is one of the most treasured of TCM and is the main bear product found in the ancient Chinese Materia Medica today (Mills et al. 1995). The bile is valued for ursodeoxycholic acid, or UDCA, used to treat serious liver diseases, heart disease, haemorrhoids, fever, digestive disorders, and conjunctivitis. Used in both its natural form or synthesized, it has been effective in treating hepatitis and gallstones. Bear bile is also used in shampoos, herbal teas, and cosmetics (Knights 1996). Other bear parts used include the paws, eaten as a delicacy in many countries but also believed by practitioners of TCM to have health-giving properties.

A post-World War II resurgence in the use of TCM accompanied rapid growth in the economies of Taiwan, Hong Kong, South Korea and, more latterly China, with its 1.2 billion people (Mills and Servheen 1991). Affluent Japanese have been using it for some time in large quantities. Historically, South Korea was one of the world's largest consumers of bear gall. A TRAFFIC survey in 1995 found that the availability of such products had decreased in South Korea but the prices had

risen significantly, with bear gall at up to US$167 per gram (Mills et al. 1997).

The full extent of the current trade in bear parts is unknown (Servheen 1999), so it is difficult to assess the impact it is having on bear populations. However its historic impact is evident; the trade has been largely responsible for the depletion of populations, particularly of Asiatic black bears, in east and Southeast Asia, which are near to traditional markets for bear bile and other parts. Asiatic black bears were the origin of most bear bile used in medicine for thousands of years, and this species continues to be the species of preference for many users (Servheen 1999). Since the provenance of bile sold in pharmacies is unrecognizable, the demand has turned to other species of bears. There is also considerable counterfeiting: the galls of goats, pigs, and cows have been sold as "bear galls", or combined with small bear galls to give the appearance of having come from larger bears, and to fetch a higher price. It is interesting to note that herbal alternatives to bear bile are available, according to a 1994 report by the Association of Chinese Medicine and Philosophy and Earth Care Society (Hong Kong). At least 54 herbal alternatives exist including "a type of gardenia, rhubarb, peony root, and the Madagascar periwinkle" (Mills et al. 1997).

The illegal trade continues and expands

Five species of bear are listed on Appendix I of CITES, prohibiting all international trade. They are the Asiatic black bear, sun bear, sloth bear, giant panda, and spectacled bear. Three species - the American black bear, brown bear, and polar bear - are on Appendix II, allowing trade only if permits are issued stating that such trade will not threaten their existence in the wild. (See Table I of Bear Species and CITES listings). Brown bear populations in Bhutan, China, Tibet, Mongolia, and Mexico are also on Appendix I.
Notwithstanding the fact that the countries concerned are all now signatories to CITES, the centre for world demand for bear gall-bladders and bile remains in east Asia. In 1997, TRAFFIC reported that "demand for gall-bladders and bile remained strong" and the price was "significantly higher than was recorded in a 1991 TRAFFIC study in the region which found the trade to be pervasive" (Mills et al. 1997). Bile from wild Asian bears is difficult to obtain today and as Craig Bennett of the Environmental Investigation Agency says, "The chains of supply and demand have crossed regional and even continental boundaries, north and westward across the Asian continent [e.g. to the Russian Far East] and, more recently, into Europe into the range of the brown bear" (Bennett 1997). In the early 1990s, Russia, with the largest brown bear population in the world, suffered a dramatic increase in poaching for bear galls, and, to a lesser extent, for hides. Before then, North Koreans working for the timber industry purchased gall-bladders from local hunters and sold them to South Korea or China. By 1994 the market was saturated, prices declined, and there was evidence of a decrease in bear trade as well as poaching (Chestin and Yudin 1999).

With the decline in wild Asian bear populations, users and manufacturers of TCM are turning to galls from non-Asian species. These include the spectacled bear of South America, the American black bear, the American grizzly, and the polar bear. It should be pointed out here that most of the gall from North American bears derives from animals hunted legally under licence, not from poached animals. The legal situation in North America as regards trading in bear parts is complex, (and for the determined trader, riddled with loopholes). In Canada, most provinces allow the sale of bear parts, but ban the sale of gall-bladders except for Quebec, Nova Scotia, and the Northwest Territories. In the United States, TRAFFIC USA has carried out a survey of US state laws that shows a "patchwork" of jurisdiction. (See Table II) Members of the BSG have expressed

concern about the effects of the illegal trade on bear populations in widely disparate parts of the world where management of wild bear populations is nonexistent or ineffective; spectacled bears in Ecuador, sloth bears in India, Asiatic black bears and sloth bears in Nepal, and even polar bears in the Russian Arctic (fortunately for the giant panda, its gall-bladder does not produce UDCA). South Korea, a rich country before the collapse of its currency in 1998, has been one of the principal markets for gall-bladders, as has Japan. The effects of the trade on sun bears is of great concern. In the 1970s, Indonesia legally exported a total of 206kg of bear bile, representing some 7,000 sun bears, to South Korea. Between 1980 and 1990, this dropped to 1kg, according to TRAFFIC East Asia (Mills et al. 1995). However, Eric Meijaard, an expert on the sun bear in Borneo, says that in Sarawak and Sabah (east Malaysia) trade in gall-bladders still seems to continue at a high level. A short survey carried out by Meijaard in 1997 indicated that the majority of TCM shops sold or could obtain bear gall-bladders. In Vietnam, both the sun-bear and the Asiatic black bear are prized for their bile, bone, fat for medicine, meat for food, and paws; the latter are sold as a delicacy in restaurants (Sam Do 1999). Bears are sometimes killed before traders to prove the authenticity of the bear gall. In many areas of sun bear range, such as Myanmar, Laos, Cambodia and Vietnam, the capture of bears for sale or for food is unregulated and increasing (Servheen 1999a). More than 40 bear gall-bladders were seen recently for sale at the border between Myanmar and Thailand (Davidson 1998).

CITES has taken a number of steps recently to increase controls on the international trade in bear parts. At the 1997 meeting of the Parties in Harare, a draft resolution sponsored by Japan, South Korea, Russia, the US, and China was adopted, noting the concern of the Parties over the trade in bear parts. It asked Parties "demonstrably to reduce the illegal trade by the next CITES meeting" (in 2000). However, this will not happen until countries involved in the trade strengthen controls within their borders and put in place extensive public awareness and education programmes which inform them about CITES regulations. They also need to work with the practitioners and consumers of TCM to lessen the demand for bear bile and other bear parts. There has been some effort in this direction on the part of both consumer and producer states. For example, in 1996, South Korea withdrew its reservation on Appendix II bears and its customs officials confiscated 122kg of supposed bear gall-bladder from the luggage of travellers entering the country. Nepal has taken some of the sternest measures in Asia regarding the illegal wildlife trade. In 1998, the Department of National Parks and Wildlife Conservation (DNPWC) ordered the destruction of huge stockpiles of seized wildlife (EnviroNews 1998).

Apprehending bile smugglers

Notwithstanding these efforts, customs seizures of bears and bear parts and prosecutions resulting from them are on the rise. Despite their government's efforts to put controls in place, South Koreans remain obdurate consumers of bear bile for medicine. In July 1996, five South Korean tourists and their guides were arrested by Thai authorities and convicted on charges of illegally killing six bears near the Myanmar border (Mills et al. 1997). Consumers of TCM in the West are also buying TCM products. In 1998, TRAFFIC North America released a report entitled While Supplies Last (Gaski 1998), revealing nearly half of 110 shops surveyed in North American Chinatowns in seven cities sold illegal animal products containing bear, tiger, rhino, leopard, and musk deer. Shops in New York City and Seattle sold a higher proportion of medicines containing bear parts. There are approximately 1.7 million Chinese living in the US and around 587,000 ethnic Chinese in Canada. In September 1998, a man was arrested in the state of Oregon and accused of being part of a bear poaching ring that has been operating for at least two years. In May 1998, 100 law

enforcement officers from city, county, state, and federal agencies, who had been engaged in a two-year investigation, seized 28 gall-bladders, four complete bear hides and heads, and other wildlife (Oregon Dept. of State Police 1998). But the problem is not confined to AmericanChinese communities. In the UK, a Vietnamese shopowner pleaded guilty to four charges of the illegal sale of TCM containing bear, tiger, and other wildlife listed on Appendix I of CITES (Anon. 1997).

Bear Farming

A controversial method of obtaining bear bile is bear farming. First developed in North Korea, the practice quickly spread to China where it began in 1984. China now has the most bear farms; by 1991, the number had risen to 601 holding about 6,600 bears, but no new bear farms have been approved since 1993 and the number of farms dropped to 481 (holding 7,370 Asiatic black bears, 263 brown bears, and 9 sun bears) in 1996 (Fan and Song 1997). Between 1984 and 1989, an average of 1,000 bears per year were taken from the wild to supply the farms, but no legal collection for bear farms has been permitted since 1990. However, some bears are taken into captivity for illegal bear farms which the Chinese government is working to shut down.

There is continuing debate about the value of bear farming to conservation. It is fair to say that there are pros and cons. Farmed bear bile does replace some bile from wild bears in the market, but wild bear bile is the most desirable as it is thought to be more potent and effective in traditional medicine. Bile from wild bears fetches the highest prices. Some conservationists argue that by making farmed bear bile available in the marketplace the demand for wild bear bile is accelerated (Servheen 1999a).

Production of bile from captive bears involves surgically placing a tube in the bile duct of the living bear and periodically or continuously draining its bile into a container or plastic sac. The donor bear is restrained to prevent dislodgment of the tube. The animal is held in a squeeze cage so that it cannot stand, move, or turn around for the months that the tube is in place and the bile is being extracted. Another method of restraint involves fitting the bear with a "jacket" to prevent it from reaching the area where the tube exits the abdomen. In 1996 the Chinese Ministry of Forestry "stipulated that the technique of opening fistula and draining bile without tubes in the belly must be used in all bear farms and that unqualified bear farms must improve their conditions and techniques and avoid the maltreatment of bears" (Fan and Song 1997).

TRAFFIC researchers report that bile milking in South Korea was stopped after a public outcry against the practice; as of 1995 some 1,325 bears remained on farms in South Korea, but milking them would incur a US$1,250 fine and six months in prison; and gall-bladders could be used only when the bears died. In his summary of the 2nd International Symposium on Trade in Bear Parts (Williamson and Gaski 1997), Servheen points out that, at the present rate of use in South Korea, an estimated 50kg of bear bile is needed per year for scientific and medicinal use. At an average of 100 grams of dried bile per bear gall this equals the bile from 500 bears. Clearly, natural mortality in the South Korean captive bear population is not meeting all this demand.

Some Vietnamese scientists have proposed bear farming as a means to take pressure off the killing of bears in the wild (Sam Do 1999). A licence for a bear farm was granted for Sakhalin Island in the Russian Far East but construction has not taken place (I. Chestin, pers. comm.). Establishment of

such a farm could "create a problem in the region" according to Igor Chestin, a Russian bear biologist and author of the chapter on Russia in the IUCN/SSC Bears:

Status Survey and Conservation Action Plan.

Trophy and subsistence hunting

Management plans covering most bear populations in North America and Europe have been developed by the relevant authorities in the countries concerned. Where conditions permit, trophy and/or subsistence hunting is allowed.

North America

In North America some 40,000 black and brown bears are killed annually under legally licensed systems. In Canada, brown bears are classified as "indigenous wildlife" and hunted wherever population size and productivity are sufficient. Between 1991 and 1993 an average of 433 brown bears were killed legally each year. In all provinces with jurisdiction over the brown bear - Alberta, British Colombia, the Northwest Territories, and the Yukon - females with cubs and yearlings are all protected, reporting of kills is compulsory, baiting and trade in bear parts is banned, and no hunting is allowed in national parks and some other protected areas, depending on the province (McLellan and Banci 1999). In Alaska, an average of 1,090 grizzly bears per year were legally hunted in the last decade (Miller and Schoen 1999). The legal harvest has increased over the past 30 years, but sport hunters may not kill more than one bear every four years. According to the BSG, an unknown number of additional bears are killed annually and not reported.

Details of the numbers of black and brown bears shot annually under licence in Alaska and Canada can be found in the IUCN/SSC Bears: Status Survey and Conservation Action Plan (Servheen et al. 1999). In Canada, the annual black bear mortality is around 23,000 bears due to hunting, trapping, road kills, and depredation kills. In the US, black bears are classified as a game species in 33 states, but five of these do not have an open hunting season. Around 451,500 black bear hunting licences are sold each year in the US, and around 18,845 bears were killed each year by hunters between 1988 and 1992. Mean annual harvests in states that allow hunting ranged from 6 bears in South Carolina to 2,232 in Maine.

Polar bears

Today, the hunting of polar bears is still prohibited in Norway and Russia, while in Alaska only aboriginal peoples may hunt bears for subsistence purposes. In Canada the polar bear hunt is worth about Can$1 million a year (Pearce 1998), but only Inuit or native peoples may hunt under a quota system. In the Northwest Territories of Canada, non-native hunters may kill bears on Inuit-guided polar bear hunts. However, Quebec and Ontario do not have a quota system in place. In Greenland only hunters whose full-time occupation is fishing or hunting may kill polar bears through traditional means. Greenland forbids the use of motorized vehicles (aircraft, helicopters, snowmobiles, and large vessels) during hunting of bears or for transport to and from hunting grounds, except boats with less than 40 BRT, permits are required, but no quota system exists. Hunters must be citizens of Greenland and hunt or fish full time and females with cubs less than 12 months old are fully protected (PBSG 1999).

Europe

In Europe, 24 countries have bears and hunting regulations vary among the nations. In Russia, which has the largest brown bear population in the world, a system of prepaid licensing for hunters was established in 1981. An average of 4,000 to 5,000 brown bears are killed legally in Russia every year (I. Chestin, pers. comm. 1998). Historically, Russia has had a long tradition of managing and hunting bears. There are many skilled game managers, and regulations are well established, but because of deteriorating economic conditions they are more difficult to enforce, owing to "changing social conditions". "The increased demand for bear parts (especially the bile) in Asian countries, such as South Korea and China, has led to a tremendous increase in poaching," according to Igor Chestin. Chestin says that poaching decreased in the mid-1990s and has remained at the same level for the past two to three years.

According to the WWF Action Plan for the Brown Bear in Europe (Swenson et al. 1999), compiled largely from contributions by members of the BSG and the Large Carnivore Initiative for Europe, "There is no evidence that legal hunting is reducing the size of the bear population in Europe, except in Romania, where population reduction is a management goal". However, poaching is a threat to many, but not all populations, including those in Bulgaria, Croatia, Bosnia and Herzegovina, the Yugoslav Federation, and Macedonia.

Other countries

In Asia the situation varies from country to country. For example, sun bears and Asiatic black bears are not protected from hunting in Vietnam, while in Sabah and Sarawak in Malaysia the sun bear is listed as a game species, and may be hunted with a licence (Servheen 1999b). It is forbidden to hunt the animals in Indonesia and Laos, but laws are not strictly enforced, and in many areas hunting and killing of bears for crop depredations is open and ongoing. In Kalimantan and Sumatra sun bears may be kept as pets if a permit is issued. Many are kept illegally in all three nations of the island of Borneo (Indonesia, Malaysia, and Brunei Darussalaam) (Meijaard 1997). As adults, they often become aggressive and unmanageable, and are offered to already overstocked zoos.

Traditional hunting

Bears are killed by hunters from many cultures, not only for food, but also for jewellery, medicines, protective charms, or for their hides for clothing. In Borneo, the skin is used to make decorative seating pads and the hollow canines of bears are used as whistles to ward off evil spirits during ceremonies.

In pre-Columbian Latin America, bears were attributed with spiritual powers but traditional beliefs in many cultures are changing. "In Peru," says the BSG's Bernard Peyton, "the presence of the Spanish has supplanted these (traditional) beliefs with a machismo symbolism" (Peyton 1999). Today local farmers drink the blood of bears to become more bear-like, while bear scats are fed to cattle and spread on newborns to make them strong. In Colombia the bear is still an important cultural symbol among indigenous groups. The ritual killing of bears is followed by the spreading of fat tissue over a newborn baby. "Great care is taken, however, not to offend the spirits of the dead bear or overexploit the living bears" (Orejuela and Jorgensen 1999).

Conservation Threats and Issues

Table III

Bear species and their listing under CITES

Scientific Name	Common Name	CITES Appendix Listing

Ursus americanus	North American black bear	II
Ursus arctos (all North American populations except U.a. nelsoni.)	Brown bear; grizzly bear	II
Ursus arctos nelsoni[1] (Mexican grizzly bear)	Mexican grizzly bear	I
Ursus arctos (all European populations)	European brown bear	II
Ursus arctos (all Asian populations including in Iran, Iraq, Syria, Turkey, and former USSR areas except those listed specifically as Appendix I)	Brown bear	II
Ursus arctos (Bhutan, Chinese, and Mongolian populations)	Asian brown bear	I
Ursus arctos pruinosus[2]	Tibetan blue bear	I
Ursus arctos isabellinus	Tibetan blue bear	I
Ursus maritimus	Polar bear	I
Ailuripoda melanoleuca	Giant panda	I
Helarctos malayanus	Sun bear; honey bear	I
Melursus ursinus	Sloth bear	I
Ursus thibetanus	Asiatic black bear	I
Tremarctos ornatus	Spectacled bear	I

WWF/CYRIL RUOSO/BIOS

SOURCE: IUCN/SSC BearS: STATUS SURVEY AND Conservation Action Plan 1999

1 Extinct.
2 The Bear Specialist Group is on record against the subspecific designation for U.a. pruinosus and U.a. isbellinus
and instead believes these brown bears should be identified on the basis of geographic distribution.

Bear control in defence of life and property
While traditional beliefs are still upheld in many areas and passed down from one generation to the next, it must be noted that most farmers, whether indigenous or not, kill bears for the purpose of protecting themselves, their crops and livestock. Virtually all countries with bears allow people to kill "nuisance bears" for self-defence, protection of livestock and other property including beehives and crops. Attacks on humans by bears are rare. Around two people are killed every year in North America by grizzly or black bears, but these bears usually attack in defence of cubs, food, or themselves. Bears that become habituated to being near people or food are more likely to kill and eat people (Derr 1998). But as human populations and encounters with bears increase, it is likely bears will be killed more frequently. As stated in the section, "What Needs to be Done", public education programmes are needed in many places to prevent both human and bear mortality.

Panda Loans
Giant pandas (Ailuropoda melanoleuca) are in demand from zoos all over the world. They are, however, listed on Appendix I of CITES, so international trade is only permitted when the import is for purposes which are not primarily commercial and are not detrimental to the survival of the species. This can be a difficult judgment to make. There may be circumstances when an import is for

breeding or research purposes which will make a genuine contribution to panda conservation and will generate revenue for in situ panda conservation initiatives in China. Equally, there may be instances when a panda loan for breeding or research purposes is actually mainly for commercial reasons.

Many of the institutions seeking giant panda loans are doing so for breeding or research. Such purposes may, in the right circumstances, be beneficial to panda conservation, and non-Chinese zoos have the potential to play a useful role in maximizing research and breeding opportunities. However, the best record for captive breeding giant pandas is in China itself, and it is important that international loans serve to complement, and not detract from, China's captive breeding efforts. Therefore, any proposed panda loan must not have a negative impact on China's own captive breeding programme.

Institutions that want to receive pandas usually offer to contribute large sums of money to panda conservation. Provided this money is directed towards the conservation of pandas in the wild in accordance with China's Panda Management Plan and associated activities such as capacity building in reserves and population monitoring, such arrangements may be very beneficial to panda conservation and should be encouraged. Equally, care needs to be taken that the monies offered reflect the real value of the pandas to the institution concerned and are not a token gesture, with the bulk of the monies being retained by the institution itself for its own benefit. The latter would be incompatible with the requirement that imports of CITES Appendix I species be for purposes that are not primarily commercial.

WWF considers that given the highly endangered status of the species in the wild, it is important to maintain a self-sustaining captive population of giant pandas. However, the achievement of this goal must not be to the detriment of the primary objective - the conservation of the wild population. All potential breeding animals in captivity should be included in a breeding programme, with the ultimate objective of providing animals for reintroduction into the wild. China's captive breeding programme has enjoyed an unparalleled degree of success in recent years with an average of five young surviving annually during 1993 and 1994, a substantial increase from an average of two young surviving annually between 1986 and 1991. Outside China, breeding loans have had limited success.

WWF urges all zoos that hold pandas, both inside and outside China, to contribute fully to this breeding programme.

Bears as entertainers

Bears are used as entertainers, usually as dancers and sometimes in bear baiting (fights between a bear and one or more dogs) in countries in western and eastern Europe, Turkey, south, Southeast and east Asia. Bears are also commonly used in circuses and the limited but consistent circus trade in wild-caught brown bears is a conservation and enforcement issue often overlooked by wildlife trade enforcement authorities (E. Flemming, pers. comm.). In Russia, bear cubs are used by photographers who take photos of them, mainly with tourists. This practice is against national legislation (I. Chestin, 1998. pers. comm.). In 1993, Bulgaria's Ministry of the Environment required registration of all dancing bears and 24 were recorded (Spassov and Spiridonov 1999).

The British introduced bear-baiting to the Indian sub-continent, and although it was banned in Britain more than 150 years ago, it still occurs in Pakistan. A 1993-94 survey in Pakistan revealed that there were around 1,800 Himalayan and Asiatic brown bears kept in captivity by gypsies, who have used them as a traditional source of income for many years. Around 300 of these animals were

trained as fighting bears. Most of the cubs are taken from the wild and this is having an increasing negative impact on wild bear populations. "Bear baiting fairs are arranged and a majority of rural dwellers attend these shows with enhanced enthusiasm. It brings prestige, satisfaction, and a source of income to very few people, while agony and humiliation for others," according to Allem Ahmed Khan and Inayat U Chaudry, (Khan and Chaudry 1997). Despite legislation in Pakistan banning bear baiting and dancing, it is still a popular form of entertainment in Baluchistan, northern Sindh, and parts of Punjab (R.Garstang, pers. comm. 1998). In the past two years, the government of Pakistan has stepped up enforcement of the ban on bear-dog fights, resulting in a substantial reduction in bear baiting at least in public (A. Habib, WWF- Pakistan, pers. comm. 1998).

In India, the Wildlife Protection Society reported in 1996 a "thriving business in captive street entertainment bears" in Uttar Pradesh, and others have reported that street shows are still a concern in Madhya Pradesh. The export of bears from India to Pakistan for bear baiting is also worrying.

A Brief History

WWF has been working to conserve the world's bears since its early days. WWF's first published report in 1965, The Launching of a New Ark, contained a preliminary list of rare mammals and birds that included the spectacled bear, polar bear, and giant panda. In the report, WWF also drew attention to the plight of the grizzly bear, noting that it "had been exterminated in almost its entire range throughout southern North America and was believed to be extinct south of Yellowstone Park until a remnant population of about 30 to 50 was discovered by Dr. Starker Leopold in Mexico in 1956". Today, the grizzly is extinct in Mexico, but some isolated and threatened populations of black bear still remain.

In 1965 the United States convened the First International Scientific Conference on the Polar Bear in Fairbanks, Alaska. Specialists from the five circumpolar nations where the polar bear lives - the former Soviet Union, Norway, Canada, Denmark, and the USA - expressed their serious concern over the polar bear's future. The polar bear was then listed in IUCN's Red Data Book as an endangered species. With support from WWF, experts from the five circumpolar nations met again in 1968 at the IUCN headquarters in Morges, Switzerland. WWF also funded the publication of proceedings of the Second International Conference on Bear Research and Management held in Canada. These meetings and the dedication of polar bear scientists led to the creation of the IUCN/SSC Polar Bear Specialist Group. In 1976 an International Agreement on the Conservation of Polar Bears, drafted by IUCN, was signed by all five Arctic nations. WWF continues to support enforcement of this agreement. Thanks to the efforts and vigilance of WWF, IUCN, and the governments where the polar bear lives, it is no longer classified as endangered.

WWF's support for field research on polar bears began in Norway in 1967 as part of a three-year Norwegian expedition. This "International Polar Bear Programme in Svalbard", led by marine biologist Dr Thor Larsen, was supported by WWF through the early 1970s. In 1973, WWF began funding a status survey of polar bears in Greenland that lasted several years and additional support has been given over the years to research in Alaska and Canada, described later. WWF has also funded polar bear conservation projects in Russia and the US over the years, with WWF National Organizations in the US and Norway providing most of the early support.

WWF's support to brown bear conservation in western Europe began in the late 1960s in Italy's Abruzzo National Park and the Trentino valley where work is ongoing today. A description by WWF-France of the decline of the brown bear in the French Pyrenees, published in WWF's 1982 Yearbook, revealed that the number had dropped from 300 after World War I to just 30 in 1970. A survey sponsored in part by WWF-France in 1982 showed that poisoning, habitat loss, and hunting had reduced their number to 15. WWF-funded conservation projects carried out in Greece and Spain in the 1980s also showed a decline in numbers of brown bears and habitat. Today, WWF's Large Carnivore Initiative for Europe is coordinating conservation efforts in over 20 countries where brown bears live. Work to protect spectacled bear habitat in South America began in the 1960s, with projects funded in Manu in Peru, and later in Ecuador's Cotachi-Cayapas National Park. In 1986, WWF funded a status survey of the spectacled bear in South America and "high level representations" helped in the protection of additional bear habitat, most notably in the Sangay National Park in Ecuador and the National Park of the Rio Abiseo in Peru.

Giant Panda

WWF was the first non-governmental organization to work in China, starting in 1980 when it began cooperation with the government to conserve the giant panda. Dr George Schaller, who initiated further field studies together with his Chinese colleagues in Wolong Reserve in the Qionglai Mountains of Sichuan, kept WWF supporters informed regularly. His fascinating Letters from Wuyipeng, published in the WWF News were a source of inspiration and a window into the world of the panda for people all over the globe. From this initial effort, WWF's activities have expanded to assist China's Ministry of Forests (MoF) with national surveys of pandas and their habitat. In 1989, WWF and the MoF jointly produced a management plan for the giant panda. This focused on setting up 14 new reserves, maintaining or re-establishing "bamboo corridors" to allow isolated groups of pandas to communicate and interbreed, and improving the management and protection of the 13 existing reserves. This plan was refined by the MoF and developed into the National Conservation Programme for the Giant Panda and its Habitat. The ten-year programme is budgeted to cost US$63.5 million, of which the Chinese government has approved US$35.7 million, one-fifth to be provided by the government itself and the remainder to be raised by the MoF from external sources. WWF has agreed to help the Ministry to raise the funds. Some of the programme's activities have already begun with the establishment of the new reserves and an office to oversee programme activities at the MoF in Beijing.

TRAFFIC in Action

The WWF and IUCN TRAFFIC office in Japan, set up in 1982, was the first in Asia and laid the cornerstone for the Network's ongoing monitoring of the trade in bears and their parts. WWF's 1983/84 Yearbook alerted WWF supporters around the world that, "TRAFFIC has discovered a significant trade in bears, the full extent of which remains unknown. Importation of bear gall-bladder for traditional medicines and paws for exotic Chinese cuisine, and a limited trade in skins were catalogued. In addition, an alarming export trade in the Appendix I Japanese black bear to South Korea was uncovered. The bears, ostensibly shipped live to South Korean zoos, are in fact subsequently killed for their gall-bladders". This early research published in the May 1985 issue of the TRAFFIC Bulletin, laid the foundation for TRAFFIC's continuing focus on the international bear trade.

Anecdotal reports from the field in the late 1980s on the increasing signs of expanding Asian markets in bear gall-bladders resulted in an 18-month TRAFFIC field investigation on the trade in bear parts in 11 Asian countries. The

results of this investigation were later published in the 1991 report, The Asian Trade in Bears and Bear Parts.

TRAFFIC investigators found the trade to be pervasive and commercial demand for bear gall-bladders probably already endangering Asian bear populations and affecting bear populations throughout the world. The groundbreaking TRAFFIC research also noted that bear parts from protected Asian species were being purposely labelled as "American black bear" to bypass trade controls and prevent detection by authorities. At that time, the American black bear was the only species not regulated in international trade under CITES. To close this loophole, TRAFFIC worked with CITES member countries and played a key role in their 1992 decision to list American black bear on Appendix II of CITES, thereby enacting controls on all international trade in this species.

After much follow-up and research, TRAFFIC conducted new surveys in some of the same markets - China, Hong Kong, Taiwan, Macau, Japan, and South Korea. The findings, published as The Bear Facts: The East Asian Market for Bear Gall-Bladders (Mills et al. 1995), indicated that the trade in bear gall-bladders seemed to be stable or even decreasing in some countries, but in most, prices were significantly higher than previously noted. In addition, there continued to be an international black market for both legally and illegally obtained bear gall-bladders and bile. Two key TRAFFIC recommendations of the report were: increasing governmental attention to controlling and monitoring the trade on domestic levels, and finding alternatives to bile from wild bears. The report also highlighted the need for more detailed information on the overall effects that illegal hunting for commercial trade might have on the American black bear and other North American species.

In 1992 and 1993, TRAFFIC began to address this need by assessing export data for American black bear and its derivatives from government and state trade records, reviewing poaching and investigation activities from enforcement cases and reports, and evaluating bear management and conservation programme activities. This information was derived primarily from the results of a survey that compiled, for the first time, information from state and provincial wildlife conservation agencies in the United States and Canada. The final results were published in a 1995 report, Status, Management and Commercialization of the American Black Bear (Ursus americanus) (McCracken et al. 1995). This report included a number of recommendations for increased law enforcement, management, and monitoring by federal, state, provincial officials, and regional discussions. TRAFFIC is currently updating the report and expanding it to include other species of North American bears.

International Trade in Bear Parts

In 1994, TRAFFIC, in cooperation with the IUCN/SSC Bear Specialist Group, convened an International Symposium on Trade of Bear Parts for Medicinal Use in order to reach larger audiences and more stakeholders, generate information on the impacts of the international trade on bear populations, and better understand conservation needs. The symposium was the first ever of its kind and was attended by participants from Canada, China, Hong Kong, Japan, Russia, Taiwan, South Korea, and the United States. Although the symposium was successful and progressive, the participants identified a critical need for further evaluation of issues relating to bear trade, management, and conservation. The Second Symposium on the International Trade of Bears, held in 1997, expanded upon the themes of the first. It included discussions on all bear species and their uses.

The two symposia served to motivate regional authorities and conservationists to strategically address trade and management, and legislative problems associated with the trade.

As a result, TRAFFIC plans to convene a third symposium in 1999 in east Asia, in order to mobilize officials and increase communication among all interested stakeholders, including the traditional medicine industry, on this ongoing conservation problem and trade issue.

TRAFFIC's work on the trade in bear gall-bladders was the basis for, and is now an integral part of, the TRAFFIC Network's long-term strategy to support conservation of wild plants and animals used for medicinal purposes. The work also resulted in focusing attention at CITES on the illegal and unsustainable trade, as well as placing it on local, national, and international agendas for conservation, law enforcement, and health. At the 10th meeting of the Conference of the Parties to CITES in Harare in 1997, deep concern was expressed over the effects of the illegal trade on wild populations of bears. The Parties adopted a resolution calling for better enforcement of existing CITES provisions on trade in bears.

Currently, four regional offices of the TRAFFIC Network - East Asia, Europe, North America, and Southeast Asia - as well as TRAFFIC India are working on various aspects of the bear trade, including monitoring of key markets, increasing communication on this issue among officials, encouraging better law enforcement or passage of stronger laws or penalties, and working with local health industries to seek alternatives or reduce demand.

Asia

As elsewhere, WWF is tackling the threats facing bears in Asia on two fronts: through the TRAFFIC Network (described above), and by helping to conserve remaining bear habitats. Few areas suitable for bears remain in the densely populated areas of south and Southeast Asia, and, throughout the region, bear habitat is rapidly being lost due to deforestation.

Almost all bear habitat in Asia (outside the sparsely-populated Russian Far East) is now mainly within national parks and other protected areas. Currently, WWF is actively involved in many protected areas in Asia where bears - including giant pandas - occur. For example, most of the "Project Tiger" Reserves in India, such as Ranthambore, Corbett, Kaziranga, Palamau, Kanha, and Bandipur, harbour sloth bears, India's most widespread bear species. WWF's long-term support to protected areas such as these is helping conserve not only bears but other flagship species, such as the tiger and the rhino.

In neighbouring Nepal, WWF funds conservation activities in Royal Bardia, Chitwan, Suklaphanta and Kossi Tappu National Parks, which indirectly benefit bears, as do WWF-supported projects in Bhutan's Manas, Black Mountain, Khaling, Sakten, and Jigme Dorji National Parks. WWF has supported conservation of sloth bears in Nepal through surveys ranging from the entire length of the Terai region from Suklaphanta in the west to Shishwani in the east. Work has focused mainly in Chitwan National Park. Support to anti-poaching units under the leadership of park wardens in Nepal, Bhutan, and India has helped protect a variety of species including tigers, rhinos, and bears. There are anti-poaching units active in three lowland parks including Para, Bardia, and Chitwan in Nepal, and similar units have been set up, or are being strengthened, in other protected areas in India and Bhutan where the Asiatic black bear and sloth bear survive. Essential equipment and training have been provided in all protected

areas mentioned. Workshops on CITES implementation have been held in all three countries in cooperation with the TRAFFIC Network.

Pakistan

WWF is helping to protect the Asiatic black bear and brown bear in Pakistan's northern areas in Azad Kashmir region and Baluchistan. WWF's Bar Valley project - located in the cradle of an ancient civilization famed for its ibex population, rugged snow-covered peaks, and spectacular glaciers - began in 1990. It was aimed at protection of its unique wildlife including the Himalayan ibex, brown bear, and snow leopard. Large-scale hunting of ibex and poisoning of snow leopards that prey on livestock were causing serious declines in these species. At the suggestion of WWF and local community leaders, villagers agreed to stop hunting and poisoning wildlife if they were compensated for the loss of their food source. Improved methods of livestock management were also introduced and the community became a beneficiary of the National Rural Support Programme. These efforts proved successful and neighbouring communities have asked WWF-Pakistan to assist them in setting up similar sustainable development programmes in their areas. An Ecotourist's Guide has been published and 75 per cent of the proceeds from ibex trophy hunting, carried out on a sustainable basis, are given to the community. The bears, already legally protected, have an even better chance of survival with additional protection coming from the area's residents.

Not far south in the Desai Plains of northern Pakistan, WWF is cooperating with the Himalayan Wildlife Project and the World Society for the Protection of Animals (WSPA). Starting in 1993, with funds from WWF, Winrock, and WSPA, a census of the remaining brown bears was carried out in the plains. The Himalayan Wildlife Project executants spoke first to villagers to learn about their attitudes towards the bears and together developed a series of conservation measures. These included the creation of their recently declared Desai National Park, developing ecotourism instead of hunting, and zoning of the area taking into account the needs of local sheep and cattle herders. In 1993, there were around 20 brown bears in the plains; today numbers have increased to about 28. WWF has also been active in the Khunjerab National Park and in 1989 played a pivotal role in resolving a conflict between protected area managers and local communities.

In 1992, all concerned groups signed an agreement brokered by WWF-Pakistan and also developed a management plan for the park. Continued cooperation between WWF- Pakistan and the local communities is one of the key elements in conserving the Marco Polo sheep, snow leopard, and brown bear.

WWF-Pakistan is continuing support for bear conservation and hopes, as one of its top priorities, to survey protected areas in Azad Kashmir. WWF-Pakistan's 1996 investigation of the wildlife trade in Sindh Province and its exploratory survey of the Baluchistan black bear have led to a better understanding of where the last remnants of this nearly extinct subspecies occur. The survey was assisted by Mengal tribal leaders who have declared a ban on the killing of the black bear in their tribal territories. WWF has also been working to end the practice of bear baiting, now banned by the government.

WWF is assisting the government of Mongolia to implement its decision to set aside 30 per cent of the country as protected areas. This "Gift to the Earth" should ensure protection of the habitat of rare Gobi brown bears in the Great Gobi National Park and of brown bears in the Altai-Sayan.

Tropical Southeast Asia is home to elusive sun bear, and here also, WWF is working to conserve their rainforest habitat in a number of protected areas in

Malaysia, Vietnam, and Indonesia. Although hard evidence on the extent of the damage is difficult to come by, Borneo's recent extensive forest fires killed a number of sun bears, already under threat due to loss of their lowland rainforest habitats. WWF funds projects in Indonesia's protected areas, which harbour sun bears, including Kerinci Seblat and Kayan Menterang in Sumatra and the proposed Bintuang Kalimum Transfrontier Park in Kalimantan, Borneo.

China and the Giant Panda

Efforts by Chinese authorities to protect the panda's habitat began in 1957, and the first four panda reserves were established in 1963. By the late 1980s there were 13 panda reserves totalling 5,830km2. Today there are 27. Little was known about the habits of pandas until the 1940s when Chinese scientists began to make observations in the wild. In 1981, supported by WWF, American scientist Dr George Schaller initiated further field studies together with Chinese researchers in Wolong Reserve in the Qionglai Mountains of Sichuan. The team's findings still form the basis of much of our knowledge of giant panda ecology and behaviour. As mentioned earlier, WWF worked closely with China's Ministry of Forests to formulate a framework for the conservation of the giant panda. In 1997, WWF reached agreement with the MoF to carry out a new survey of the giant panda and its habitat in order to evaluate how successful conservation activities have been, as well as to monitor the impact of human population growth and development. It is expected to take three years.

WWF continues to support research into panda ecology and behaviour. In 1992, WWF and the Wolong Nature Reserve started a monthly panda population survey, continuing Schaller's surveys from the 1980s. The movements of individual pandas are monitored and field studies have been expanded to include adjacent areas, and also at higher altitudes to find out where pandas go in August and September. In other areas, WWF is supporting Beijing University's Professor Pan Wenshi, who is monitoring the social behaviour, population dynamics, and habitat requirements of giant pandas in the Qinling Mountains, Shaanxi Province.

Anti-poaching and capacity-building projects within panda reserves continue to receive priority funding. The Wanglang Nature Reserve in Sichuan Province is a vital part of a network of reserves in the Minshan Mountains which protect at least 230 pandas. Wanglang itself (332km2), a focus of WWF cooperation with the MoF since 1994, is estimated to contain 19 pandas, giving it one of the highest panda population densities in the Sichuan reserves. WWF has funded training, purchase of equipment, and building of infrastructure in the reserve. Panda population monitoring and anti-poaching patrols have also been initiated, educational outreach for local communities is planned, and a management plan for the reserve is being developed. In a related project, WWF is helping authorities combat illegal logging in Pingwu County, home of Wanglang Nature Reserve, and one of the major watersheds of the Yellow and Yangstze rivers. The county has the largest panda population in China and also supports a rich biodiversity including 128 rare and endangered animal species and many rare plants. A pilot Integrated Conservation and Development Project is being designed to promote alternative income generation in order to reduce dependence on timber collection. WWF is also providing funds to combat illegal logging and poaching in Wolong and in the newly established Changqing Nature Reserve and neighbouring communities.

Working closely with the Chinese government, WWF is looking to secure the future of the animal that inspired its famous logo. The WWF Action Plan for the Conservation of the Giant Panda was produced in 1996 to guide future activities to save the species in the wild. In a study of management and financing policies for the country's nature reserves, information from over 50 reserves is to be

collected and analysed to pinpoint problems and improve policies. The potential of ecotourism as a source of revenue for these and other panda reserves was explored in a recent workshop sponsored by WWF. Another workshop to discuss the feasibility of reintroducing pandas into areas where they have disappeared was held in 1997. The participants concluded, however, that the criteria for such a programme are not yet being met, and that the priority for the time being must be conservation of the existing wild populations.

Education and training of local conservationists continue to feature as vital components of a long-term strategy to save the panda. The Minshan Mountains of northern Sichuan contain 13 panda reserves and the largest panda population of all the six populations in China. A training course for 36 staff of the Minshan Reserve was held in 1997, which encompassed conservation biology of pandas, reserve management, community relations, and project design, as well as field courses. The training course was enthusiastically received and will be followed by a panda monitoring project in selected reserves in the Minshan Mountains. Elsewhere, a training base for reserve staff and key conservation players has been started up in the Sichuan Forestry College to improve the skills and knowledge needed for working in reserves and with local communities surrounding them.

South America

In order to save the remaining forest fragments which harbour spectacled bears, WWF is supporting the work of Fundacion Herencia Verde in Colombia, which is working with local communities in the Alto Quindio, on the edge of the Los Nevados National Park. Here, forests are home to spectacled bears and they also protect an invaluable watershed, which provides hydropower and drinking water for the cities below. WWF is also working with communities in the watershed of the Guamuez river and is helping local NGOs expand a network of private reserves, some of which are in spectacled bear habitat. Further south, on the border of Colombia and Ecuador, WWF is involved in ensuring long-term protection of virgin forests within the traditional territory of the Aw‡ Indians. Empowering local conservation groups and giving them institutional support is the key to WWF's work in the region.

The Manu Biosphere Reserve in eastern Peru, celebrated for its diversity of lowland Amazonian rainforest species, also encompasses the eastern slopes of the Andes which are home to spectacled bears. WWF has supported conservation efforts in Manu since 1969 and is currently working with local communities in the buffer zones of the biosphere reserve to improve their quality of life and so relieve pressure on the reserve. Elsewhere in the Peruvian Andes, WWF is working in the Rio Abiseo National Park which, like Manu, is a World Heritage Site. In Rio Abiseo, the spectacled bear inhabits a unique ecosystem where 50 per cent of the flowering plants are endemic.

A third Andean World Heritage Site - the Sangay National Park in Ecuador - encompasses a great range of altitudes, including high cloud forests. However, it too is threatened by cattle grazing and slash and burn agriculture, as well as by poaching. WWF is helping to strengthen the park infrastructure and to involve local communities in park management.

Europe

There has never been a better time to take action on conserving Western Europe's remaining brown bears. The human population explosion of the past few centuries has slowed and greater agricultural productivity has taken the pressure off remaining wilderness areas. In addition, forestry practices are becoming more enlightened; with fewer people in rural areas and more in the cities, public

attitudes towards wildlife in general, and large carnivores in particular, are changing for the better. Moreover, recent political developments in Europe, especially within the European Union, have created exciting new opportunities for successful management of large carnivores. WWF, together with partner organizations and experts in more than 25 European countries, has prepared a strategy called the Large Carnivore Initiative for Europe (LCIE) to maintain and restore viable populations of large carnivores - brown bear, wolf, lynx, and wolverine.

The LCIE's goal is to "maintain and restore, in coexistence with people, viable populations of large carnivores as an integral part of ecosystems and landscapes across Europe". The initiative is based on conservation and restoration of ecosystems in which large carnivore populations exist and also those which they can naturally repopulate, as well as on population augmentations and possibly reintroductions where appropriate. The initiative is taking a population and meta-population (i.e. a group of adjacent populations) approach to conservation and is therefore working to encourage international as well as national cooperation for conserving bears and other carnivores. As part of the initiative, WWF in collaboration with the Council of Europe, has developed pan-European Species Action Plans, including a Bear Action Plan (Swenson et al. 1999), which recommend conservation actions based on regional and national large carnivore populations. These Action Plans were discussed in the Bern Convention Standing Committee Meeting in December 1998, where it was agreed that a recommendation to the Contracting parties would be put forward in 1999. These Action Plans were discussed by the Habitats Directive Scientific Board in early 1999, and it is hoped they will be used by the European Commission as guidelines for large - carnivore funding by the European Community. WWF has also produced guidelines for developing large carnivore management plans aimed at European natural resources agencies, and work has been carried out on the identification of conservation areas (core areas, buffer zones and corridors) for large carnivores in the Alps. Work is also planned for the Carpathians and Balkans. In a related initiative, WWF is identifying those forest areas in Europe that are biodiversity 'hotspots', including those harbouring rare carnivores like wolves and bears.

Over much of their remaining European range, bears are still threatened by poaching and by persecution from livestock owners. Ironically, bears are most at risk in areas where they are very rare. In 1998, for example, one of the few re-introduced brown bears in the Pyrenees was shot by a farmer. WWF-France is working with local communities to try to lessen tensions and has a project aimed at promoting products from the bear's habitat. In many western European countries, government subsidies encourage farmers to use - sometimes overuse - marginal areas where bears might find refuge. Large carnivores have been rare or absent for generations over most of western Europe and most livestock owners are fiercely resistant to the idea of encouraging the recovery of predators like bears and wolves. In Norway, for example, bear predation on sheep has become a hot political issue, despite the fact that Norway is home to only 2 per cent of Scandinavia's estimated 800-1300 bears. For this reason, the government has decided to severely limit the numbers and range of bears in Norway. Although bears can be a big headache for individual farmers, less than 1 per cent of Norway's sheep owners have claimed compensation for bear kills (and only a tenth of one per cent of Norway's 2.5 million sheep have been killed by bears). In March 1999, WWF issued a statement condemning a decision by the Norwegian authorities to cull a pair of wild wolves in the southern part of the country and to seek other solutions to protecting the area's sheep. In Scandinavia the wolf is the most threatened large carnivore, and alternatives to culling animals, such as wolves and bears, must be found.

Part of the problem is that farmers have become used to the idea of extensive management, where livestock is left to roam unprotected. However, with advice on how best to guard against bear depredations and an efficient system of compensation and "problem animal control" if depredations do occur, there is no reason why livestock farmers and bears should not reach a modus vivendi. They have done this in parts of eastern Europe and the Balkans where bears and livestock have always lived side by side. WWF-Norway and WWF-Sweden are contributing to a wide-ranging brown bear research project which will investigate why bear predation on sheep is such a problem in certain parts of Norway and the measures that can be taken to prevent, or at least minimize, sheep losses to bears. WWF-Sweden is also supporting research into the genetic diversity of its 1,000-strong brown bear population. DNA analysis of over 400 bears showed that genetic diversity is high, relieving fears that the population might be inbred.

Reintroducing bears and other carnivores to parts of their former range is still an experimental process and can only succeed with full cooperation of the public, including farmers. WWF-Austria was instrumental in reintroducing three brown bears into Austria's eastern Alps between 1989 and 1993. By 1998, ten cubs had been born, but the increasingly bold behaviour of the bears, which had lost their shyness towards humans, began to cause problems. A new approach was needed, so WWF-Austria, in conjunction with the Munich Wildlife Society and the Institute of Game Management of the University of Agricultural Sciences, initiated a "Brown Bear Conservation Programme, Austria". This programme addresses development and implementation of a management plan, public awareness, a bear "action team" for bear problems, and improvement of international cooperation. There is evidence that bears from Slovenia are entering Austria and may now be resident there.

The Austrian experience shows that, given adequate protection and undisturbed habitat, bear populations will recover slowly, either from a small founder group of re-introduced individuals or through natural migration from core refuge areas. In eastern Europe, WWF is helping to establish networks of protected areas within the range of key brown bear populations in the Greater Caucasus mountains of Georgia and the Rhodope Mountains of Bulgaria. WWF is also working to protect prime bear habitat and improve public awareness in the Dinara Mountains of Slovenia and Croatia. These extensive forests hold sizeable populations of bears and other carnivores and are a major source of natural recolonization of the eastern Alps by brown bears, lynx and wolves. In the Romanian Carpathians, WWF is helping protect bears and other carnivores through implementing sustainable forest management and livestock grazing practices.

Some of WWF's bear-related projects concern the very small, isolated bear populations of southern and western Europe which are in imminent danger of extinction. WWF-Italy is working on an action plan for the brown bear in the Italian Alps and has conducted a number of public awareness activities, one in support of an initiative to reintroduce bears in the Adelmo Brenta Park. In Greece, WWF is working with the ARCTUROS Society, the Hellenic Society for the Protection of Nature, and the Greek Ministry of Agriculture to implement a strategy for the long-term management and conservation of brown bears.

Russia

The brown bear has been a symbol of Russia since time immemorial so it is fitting that many of WWF's recent projects in this vast land have benefited bears. The collapse of the rouble inevitably brought increased pressure on Russia to utilize its natural resources, including the great boreal taiga

forests which are the bears' stronghold. The future of Russia's large bear populations is looking bright, thanks to a number of initiatives undertaken by the Russian government with help from WWF. Since President Yeltsin's 1995 decree, which approved the programme for improving Russia's protected area system, new zapovedniks and other types of nature reserves have been proposed, created, and extended, to fill critical 'gaps' in Russia's protected area network; WWF has taken a leading role in assisting the government to implement this programme. In Siberia and the Russian Far East, for example, WWF is working with regional governments to establish a network of protected areas that covers key portions of the brown bear range. Among these are the proposed Amursky Reserve, close to the border with China, the Koryaksky Reserve in the northern Kamchatka Peninsula and the Tungussky Reserve in central Siberia. Another initiative in the Far East is taking place in the northern Arkhangelsky region on the coast of the White Sea, where unusually high numbers of brown bear occur.

In the Russian Arctic, WWF is assisting the government reach a target of 50 per cent of the territory under protection - an ambitious goal that will benefit both brown bears and polar bears.

Poaching of bears for their body parts has reached alarming proportions in parts of Russia's Far East. The brown bear population of Kamchatka has halved since the 1960s. Russian scientists, supported by WWF, have been monitoring Kamchatka's brown bear populations. They have developed a management plan that seeks to ensure that the species is used sustainably and that any revenues from trophy hunting will flow back to local communities. WWF is also working with the CITES secretariat and Russian authorities to try and control the illegal harvesting of bears and other species for the illegal international trade in body parts and trophies. Training of customs personnel, publication of identification manuals, and developing holding areas for confiscated live animals form part of this process.

WWF has the ambitious goal of completing a circumpolar network of protected areas in the Arctic and the vision is slowly being realized. WWF's Arctic Programme, established in 1992, supports and lobbies for environmental initiatives undertaken by the five-nation Arctic Council and other key players in the region. In Russia, large areas of the Arctic coast, home to polar bears, have been gazetted, such as the Great Arctic Reserve in the Kara Sea north of Taimyr, and including parts of Severnya Zemlya; the Taimyrsky Reserve on the Laptev Sea coast of Taimyr; and the New Siberian Islands in the Laptev Sea. WWF has also supported a management plan and the enlargement of the Wrangel Island Reserve, which supports 250 breeding dens of polar bears.

Canada is home to about 50 per cent of the world's polar bears, and WWF -Canada has been instrumental in the creation of three national parks in the Canadian Arctic and has helped reserve land for Churchill National Park in Manitoba. WWF has also funded research into the effects of environmental toxins in polar bears.

North America
1998 was a highly productive year for WWF's grizzly bear conservation project in the Gravelly Range of south-west Montana. Building on earlier habitat mapping and fieldwork, scientists began establishing a system for monitoring bear numbers, distribution, and genetic diversity. They are also cooperating with local people, land managers and other researchers to develop strategies to conserve grizzlies and their habitat. The Gravelly Range forms an important corridor area, a stepping stone, linking bears of Yellowstone National Park with populations further north. Not surprisingly, a key part of the project is to

gain the support of local landowners who are naturally suspicious of having grizzlies passing through their rangelands. WWF is also supporting an initiative to investigate the efficacy of Karelian shepherd dogs in protecting livestock from grizzlies and black bears.

WWF-Canada has been instrumental in the development of new protected areas for grizzlies and other large carnivores. Recent achievements in British Columbia were the formation of Canada's first grizzly sanctuary in the Khutzeymateen Valley encompassing 443 km2 of coastal watershed and the 68,000 km2 Tatshenshini-Alsek wilderness area, both of them prime grizzly habitat. WWF-Canada is pressing for stronger crackdowns on illegal trade of wildlife including the trade in bear parts. It is also seeking harmonization of provincial wildlife trade regulations - because different hunting and export laws between provinces provide loopholes for illegal traders and poachers - and pushing for stricter enforcement of legal hunting quotas. In May 1998 WWF-Canada's President, Monte Hummel, made a formal appeal to the Ontario government to end the spring bear hunt and ban the use of dogs and bait in the fall hunt.

What Needs to be Done

The future of bears depends on knowledge of their needs - and the will and ability to provide these needs in a world where human demand for resources pushes into the last undisturbed areas of bear habitat. Of the eight bear species, four - the sun bear, Asiatic black bear, sloth bear, and spectacled bear - are very poorly known. These four are also the bear species whose future is most in doubt because they live in areas of the world where human population pressures are most intense.

Humans, and the impacts of their activities, will determine the future of bears. A successful bear conservation effort must balance the needs of bears with the needs of people. The people in areas where bears live must be participants in conservation efforts. This means that we must understand the social, economic and cultural relationship of local people to bears and relate these needs to the habitat and resources that the bears depend upon.

Bears have large ranges and require large areas of contiguous habitat if they are to survive, so a conservation approach that limits bears and their habitat to reserves is doomed to failure. Such an approach will institutionalize habitat and population fragmentation. A successful conservation approach will integrate bear management into the matrix of human-use areas as well as into reserves and parks. This means that the needs of bears be considered not only in reserve design but also in the landscape matrix between the reserves. This will require integrating human needs with the needs of bears to the exclusion of neither in these matrix areas. The result will be more interconnected and therefore more healthy bear populations across a variety of landscapes.

Identification of the most isolated and threatened population units and applying conservation efforts to them has already taken place in:

- Western and southern Europe for most of the isolated
- brown bear populations;
- China for giant panda;
- North America for isolated North American black bear
- populations;
- North America for the remnant brown bear populations;

- Most areas of polar bear range.

But there has been little effort to identify and address the most threatened populations of Asian and South American bears. To maximize efficiency and use of scarce conservation resources, individual populations for these species should be prioritized for conservation action.

The future of bears will be built on a coordinated effort to deal with four factors that include social and political issues as well as biological data and a way to implement conservation action (Figure 1 on page 39). Success of any conservation programme will not rely on biological data alone. Unfortunately, our ability to address these four factors for each bear population is limited at best, and impossible at worst. Many bear populations are already isolated into small units by human activities. Saving these small populations requires organized conservation planning and implementation. We have a lot to do in a short time if we are to accomplish this for all eight bear species of the world. The pace of human development is accelerating in many areas and the least known bears live in the areas of highest impact and where support for conservation efforts are often minimal.

Many isolated populations of sun bears, Asiatic black bears, brown bears in Asia, and sloth bears remain unknown and will likely disappear before they are ever identified. The beginning of a solution to this problem lies in an organized survey effort to identify and prioritize the most isolated and threatened populations of sun bears, Asiatic black bears, sloth bears, and spectacled bears. Such prioritization is fundamental to addressing those populations and areas of greatest need first. It would be based on factors such as the available habitat in the area, human encroachment potential, habitat significance to other threatened species in the area, and uniqueness of the habitat or the species or subspecies.

Specific conservation needs for bears :

- Develop cooperative projects in selected countries in the ranges of sun bears, Asiatic black bears, spectacled bears, and Asian brown bears; train local managers and researchers with knowledge of, and experience with, bears; and develop management plans. This is particularly important in countries with little-known bear populations like Indonesia, Malaysia, Thailand, Laos, Vietnam, Myanmar, and Venezuela; and in countries with significant bear populations where more effort is needed, such as China, the Russian Far East, Ecuador, Bolivia, and Peru;
- Enhance cross-border management efforts. Many of the best remaining bear populations and habitats exist across international borders, such as Peru-Bolivia-Ecuador, Colombia-Venezuela, Laos-Vietnam, Greece-Bulgaria-Macedonia-Albania, United States-Canada, and France-Spain. As bears and other wildlife do not respect political boundaries and cross borders at will, management action in one country will affect bears in the adjoining country. Also, the integrity of these habitat areas is often based on their size and security. Close coordination between managers and researchers in such countries is necessary for protection and for assuring that bears can use these contiguous habitats unencumbered by border fences or other structural impediments.
- Document the impacts of illegal trade in bears in Asian countries. Select study areas to document these impacts on representative populations of Asiatic black bears in China and in places in Southeast Asia, such as in Laos or Vietnam. The illegal trade in bears and bear parts may be severely impacting Asian bear populations. However, no research project has documented

the impacts of such trade. Documentation of the mortality rate in a wild population and the sources of such mortality would help accurately judge the impacts of illegal trade if it was done on a long-term basis on one or more representative populations.

- Link bears to ecosystem health and human community prosperity in countries within the range of each species with projects that focus on the needs of bears, humans and their shared resources. This would contribute to better understanding of the roles of bears in intact ecosystems. It would also link conservation of bears to the maintenance of healthy human economies. To do this would require detailing the resource requirements (such as plant community diversity, contiguous and interconnected habitats, healthy riparian systems, and water resources) of a number of key species including bears in selected habitats. These resource requirements could then be linked to the health of local human communities. This would serve to link and strengthen conservation efforts for bears where other species, such as Asian tigers or rhinos, are the focus of most conservation efforts. By understanding the role of bears in the ecosystems where these flagship species exist, the conservation of both would benefit.
- Study the relationship of forest harvest (for consumption of forest products and for conversion to human settlement) to sun bear and spectacled bear habitat use in tropical forests where harvest pressure is high and where the impacts of harvesting are unknown. Forest conversion is by far the greatest threat to bears because converted forests can no longer support bears at all and are often population sinks where bears are attracted to developments and agriculture and are destroyed as pests. Timber harvest changes the structure and composition of the forest, with resulting changes in plant, animal, and insect foods important to bears. In some cases these changes may be detrimental, but such effects could be minimized with minor changes in season of harvest, harvest spacing, or harvest technique. Given the large areas currently subject to forest harvest, documentation of the impacts of harvesting on important foods is fundamental to successful conservation efforts for these two bear species.
- Improve reporting of trade in bears and bear parts through CITES and promote cooperation between law enforcement and customs officials in Pacific Rim countries where the bear trade is most prevalent. This will help to show the changes in levels of the bear trade and more clearly identify importing and exporting countries. Of particular importance is the role that bear bile from farmed bears plays in the trade. Currently there are conflicting opinions about whether farmed bile is helping to prevent the killing of wild bears to supply the bile trade, or whether it just adds to the demand. Further efforts are needed to document the types of bear parts in trade, their origins, and the fluctuations in prices related to supply and demand and the availability of farmed bile.
- Work to improve conservation education programmes that include bears at the school level. Teaching children about the needs of bears and how they can assist in bear conservation is especially important in South America and Asia. This will require development of organized educational materials in many languages. Messages about the conservation of bears could be part of the overall conservation message of the country of interest.
- Provide partnership opportunities for wildlife managers in countries where bear management improvements are possible. This would involve assistance in mortality management and monitoring systems, habitat mapping systems, and the development of habitat and hunting management plans. Many countries, including eastern European nations, have requested help in the development of such management plans. The use of these management plans would greatly increase conservation efforts. They would help to focus government efforts on

establishing sustainable harvest systems and maintaining the habitat necessary for sustainable harvests.

- Develop cooperative programmes to share knowledge on how to minimize bear-human conflicts, such as agricultural and livestock depredations. In many areas at the interface between forests and human settlement, there are ongoing problems with bear depredations. Efforts to minimize crop and livestock damage by use of electric fences and other means will increase tolerance of local people for bears with resulting reduction in bear mortalities. There is much experience with controlling such bear depredations in certain countries. Sharing knowledge through site visits and educational seminars for local people will assist in minimizing these conflicts.

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