

The Bear Facts – Courtesy of the American Zoo and Aquarium Association's Bear Taxon Advisory Group.

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Natural History

The bears we know today actually have as their ancestors bears that have been evolving for some 40 million years. Fossils of the earliest true bear, *Ursavus elemensis*, have been found from the Miocene Epoch in what was then sub-tropical Europe, and show a small dog-size animal with characteristics that show a blending of dog and bear traits. It is believed that all modern bears stem from *Ursavus elemensis*.

Two important primitive bears that should be mentioned are *Arctodus simus*, the giant short-faced bear, and *Ursus speleaus*, the European cave bear. The giant short-faced bear is the largest land carnivore that ever lived. It had extremely long legs, sharp claws and a reach of over 14 feet tall. It is believed that this ancient giant is related to today's small-sized Andean bear. The cave bear, while feared and worshipped by Neanderthal culture, was actually a herbivore by nature. Cave bears survived two ice ages but were eventually became extinct, leaving a wealth of fossils that helped excite the early paleontologists of the 19th Century.

From the ancient cave bears evolved the brown bear, *Ursus arctos*, the American black bear, *Ursus americanus* and the Asiatic black bear, *Selenarctos thibetanus*. And, from the brown bear evolved the newest species of bear (only 20,000 years old) the polar bear, *Ursus maritimus*.

The Great Panda Puzzle

The giant panda, *Ailuropoda melanoleuca*, has given scientists the hardest job of proper classification. When the giant panda was first seen outside of China, scientists thought it should be placed with the red panda, *Ailurus fulgens*, somewhere in the raccoon family. Both pandas feed on bamboo and have long wrist bones that work like human thumbs to grip the plant. The bones and teeth of the giant panda resemble those of red pandas far more closely than any bear relative. Today's methods of examining and comparing gene sequences between species place the giant panda firmly in the bear family, but certainly the earliest living species to evolve from *Ursavus elemensis*, the first true bear ancestor.

When Is a Bear Not a Bear?

Two animals are often confused as being part of the ursid or bear family but in fact are distinctly different creatures. The cuddly koala, *Phascolarctos cinereus*, of Australia is actually a marsupial, complete with a pouch for carrying for its young and is related to kangaroos. Binturongs, *Arctictis binturong*, from Southeast Asia often carry the confusing nickname of "bearcat" but are members of a group of animals called Viverridae that includes linsangs, civets and genets.

Meet the Family

The following brief descriptions should help differentiate today's existing eight bear species, with their varied habitats, ranges, diets and characteristics.

The largest bear species existing today is either the polar bear or the brown bear, depending upon the criteria one chooses. The polar bear is the heaviest, weighing up to 1,500 pounds but its narrow silhouette, well adapted for swimming, make it appear smaller than the longer and more robust brown bear. Males of all bear species are usually larger than the female, sometimes as much as 50% larger.

Sun bears are the smallest of the eight bear species. They weigh between 60 - 145 pounds and are 48 - 60 inches in length.

Giant pandas are also small bears. They weigh up to 275 pounds with a body length of 64 to 76 inches.

Andean bears can weigh between 140 - 340 pounds and have a body length of 60 - 72 inches. The male Andean bear can be up to 40% larger than the female.

Asiatic Black Bears are medium sized bears with a body length of 50 - 74 inches and weigh between 220 - 440 pounds.

Sloth Bears are also medium sized bears. They weigh between 175 - 310 pounds and a body length of 60 - 75 inches.

American Black Bears are medium sized bears. They weigh between 130 - 660 pounds and are 50 - 75 inches in length.

Brown Bears are one of the largest species of bears. They weigh between 300 - 860 pounds and can be up to 9' 6" in total body length.

Polar Bears are considered to be the largest. They weigh between 440 - 1760 pounds and have a body length of about 8' 5". Note:
length - measured from the tip of the nose to the tip of the tail
height - measured from the bottom of its paw flat on the ground to the highest point of the shoulder

Habitat and Physical Adaptations

The eight existing bear species are found in varying habitats, in vastly different climates everywhere in the world except Australia and Antarctica. But wherever bears are found, they have adapted to their surroundings and the foods that they find there in unique and amazing ways.

With bodies wonderfully adapted to freezing temperatures, **polar bears** are found in the areas of annual ice that form around the shorelines of the continents and the archipelagoes at the circumpolar Arctic. This area has the highest concentration of food sources available, that food most often being in the form of ringed and sometimes bearded seals. The polar bear's heavy fur and thick fat layer let it retain its normal body temperature even when the thermometer outside reads -35°F. Their fur, which appears white, is actually clear and hollow and focuses solar heat down to the bear's black skin below. And while hunting its white appearance acts as excellent camouflage. The polar bear's body shape is well adapted to its semi-aquatic life, with a narrow head and wedge shaped body it moves quickly through the water. Its huge feet act like paddles in the water and its hind paws are even partially webbed for better swimming control. While on land, the polar bear's big feet act as snowshoes and even help distribute its weight when walking on delicate ice.

Brown bears, the direct ancestors of polar bears, don't mind cold temperatures either and inhabit dense forests, tundra and lower alpine mountain regions in Europe, Asia and North America.

The characteristic hump across the brown bear's shoulders indicates the animal's incredibly strong muscles most often used for digging, either vegetation to eat or a den in which to sleep. Their very long claws, usually indicative of a carnivore, aid the brown bear in digging for roots, honey, insect nests and other food items. The brown bear's huge size often makes people forget its basically herbivorous habits.

The **Andean bear** lives in a variety of forested Andes mountain habitats, ranging in elevation from 500 to 14,000 feet. This bear is an excellent tree climber and forages for its diet of fruit and bromeliads in the trees. It is believed to build platforms or nests from which to feed in the treetops by bending back branches to form a disorganized pile strong enough to support it. These branch piles are then covered with a soft layer of leaves for bedding material. The amount of bear fur and dropping found in and around the "nest" seem to indicate that a Andean bear probably uses it for an extended period of time.

Andean bears have short sturdy legs that give it easy access in the dense foliage most often found in the cloud forest, a lush, misty ecosystem of the Andes.

American black bears prefer thickly forested areas at altitudes from sea level to 6500 feet. Their choice habitat is always one that keeps them away from contact with brown bears, a much larger competitor species. Black bears are adept at climbing trees, much more so than brown bears and their shorter but sturdy claws give them a quick start in scaling a tree to safety.

Giant pandas are found southwestern China living in mountain forests with dense stands of bamboo at an altitude of 4,000 - 11,500 feet. Because their diet is almost entirely bamboo with very little nutritional value, giant pandas spend most of their time sitting on the ground and feeding. They can climb trees when threatened.

Sun bears can be found in Southeast Asia living in the lowland tropical rainforests. Although the smallest of all bears, sun bears are extremely muscular with short, bowed legs and inwardly set feet that make them excellent tree climbers. Their nails are long and sickle-shaped and the soles of their feet are naked, an adaptation believed to help make sun bears particularly adept in tree climbing. Being a small animal in the land of tigers and other predators makes this adaptation an important one.

The subcontinent of India is home to the **sloth bear** which prefers grasslands and forested areas at predominantly lower altitudes. It is often found in drier forests and areas with rock outcroppings, prime locations for its diet of ants and termites. Much of the sloth bear's adaptations are to aid in its insectivorous lifestyle. The extremely long, sharp claws help it to rip open concrete-hard termite mounds, its long muzzle, mobile lips and absence of two front teeth help it to form a perfect "vacuum" to sucking up its tiny prey. The shaggy fur may afford it protect from heat but definitely provide young sloth bears with a movable "nest" as young cubs are often seen riding their mother as she goes about looking for food.

Asiatic black bears were once plentiful throughout Southeast Asia and the scattered remaining population still prefers heavily forested areas, particularly in the hills and mountains and most tropical forests below alpine elevations. The front limbs of the Asiatic black bear are much more developed than their back limbs, making them excellent tree climbers. This adaptation is an aid in finding the nutritionally rich diet of fruits and nuts the black bears feed on. Like the Andean bear, the Asiatic black bear has been known to build feeding platforms on which it will also occasionally rest.

Anatomy and Behavior

What an animal does, as well as what it looks like, says a lot. These nuggets of information may help explain the variety of lifestyles within a family of just eight species.

And No Pockets for a Compass

Bears may travel incredible distances during their lives. Whether roaming the outer edges of their home ranges as food sources go in and out of season, finding a mate on seemingly endless ice floes, or traveling to salmon spawning grounds at just the right time, bears travel throughout their lives. How they do this has not been thoroughly investigated. One suggested method is simply by incredible memory. For example, cubs that follow their mother 20 miles to an oak stand to eat acorns one fall returned there to feed three and five years later. However this does not explain how bears, transported hundreds of miles from their home range because of "nuisance" behavior, find their way back to their original location. Polar bears have even more of a challenge, finding their way in an endlessly white world of snow and ice. And yet they do: researchers have tracked polar bears traveling in straight lines across an ever-changing, ever-moving

icepack, heading for some precise destination point. The polar bears even remain on course when the ice beneath them is moving.

One theory to explain this amazing ability suggests that bears may use the Earth's magnetic field and extrapolate its position from local magnetic gradients. Some believe the bear's sense of smell is what guides it. Whatever navigation methods bears do use, they have a distance limit. Bears released 198 miles away from their range, quickly returned home, but bears that were transported 870 miles away moved in random directions after release.

When Bears Sign In

Just as humans paint their houses different colors and put street numbers on their mailboxes, bears seem to need to proclaim their territory too. Black bears "sign in" by biting or clawing trees. These marks have been found along woodland trails, with the marks clearly visible from the trail some 5 - 7 feet high on tree trunks. Males tend to mark trees before and during breeding season and females tend to make mark at the end of summer and fall. No one is really sure why bears mark trees but different theories see it as a bear's way of staking out territorial boundaries, a way to communicate with other rarely-seen bears or as an aid in navigation. Other species of bears also use various marking techniques in their territories. Giant pandas have been known to claw trees, urinate and rub their anal regions on trees to leave scent marks for other pandas. Sun bears regularly leave obvious claw marks in trees along rainforest trees. Sloth bears make grooves in tree trunks and then rub vigorously against them, adding scent to the visual markings.

The exact reason for any of these marks is not clear, but they undoubtedly serve an important social function in the complex lives of these usually solitary animals.

Bear Sounds

Since bears are usually not found in social groups, their vocalizations are rare. The obvious exception would be a mother bear with cubs. Cubs need to communicate, often quite loudly, through cries, whines, and whimpers when distressed, hissing when frightened and a loud humming sound when contentedly nursing or drowsing. Mother bears also have a range of sounds from snorts that call her cubs to follow, scolding growls to correct youthful behavior and loud woofs that send cubs scrambling up the nearest tree to safety. In general, bears that live in thickly forested, visually restricted environments as do black bears, sun bears, sloth bears, Andean bears and giant pandas tend to be much more vocal than bears that live in open territory such as brown bears and polar bears. In open territory, visual signals send the message, not vocalizations.

In Bear Feet

One of the reasons people have always been fascinated by bears is that they can stand upright and even walk for short periods, just like we do. That's because bears are plantigrade, that is, they walk by pressing their heels against the ground. Their ankle joints are positioned just above the ground. Bears usually move about on all fours but often stand up on their hind legs to have a better look around. Bears can run incredibly fast despite their bulky appearance.

The bear's broad paws, massive limbs, plantigrade hind feet and short back provide strength and mobility of limb movement. The relatively short limbs of bears are capable of producing large forces over a great range of motion. The broad paws support the bear's body especially when balancing on their hind feet. Bear paws also have non-retractile claws.

Each of the eight bear species lives in different types of habitats and their feet all have special adaptations for their different environments. For instance:

— The giant panda has modified a wrist bone that forms a sixth digit, which looks a lot like our thumb, that is useful in holding onto the bamboo stalks the panda eats.

— The polar bear's front feet are webbed like a duck's, making it the most powerful swimming bear. Often found miles out to sea in the cold arctic waters, polar bears are considered marine mammals just like seals and walruses. The soles of a polar bear's feet also have small papillae and vacuoles like suction cups so they don't slip on the ice.

—The Andean, black and sun bears have curved hook-like claws for climbing trees.

—The brown bear has long, straight claws for digging up vegetation.

—The sloth bear has large, curved claws to open nests of insect prey.

Sharp Teeth, Sweet Tooth

Most bears are just like people, wanting a diet composed of many different types of food. That's called being omnivorous and American black bears, brown bears, Andean bears, Asian black bears and sun bears are all omnivores. They'll eat grubs, berries and herbaceous plants in huge quantities. These bears will also eat squirrels, mice, fish and a large bear may even kill a deer.

Some bears are more specialized feeders, like the polar bear, living on the cold arctic ice, is almost exclusively a meat eater or carnivore. But on those few rare occasions when a polar bear can find a berry patch in bloom, then every one of those berries will be eaten and enjoyed. The giant panda, on the other hand, is almost entirely herbivorous, living on a diet of 30 types of bamboo and only occasionally eating other plants and very little meat. The Sloth Bear lives almost exclusively on a diet of termites (as seen to left) and is therefore considered an insectivore. Its specially adapted muzzle molds to form a tube through which the bear sucks up insects from their nests, making a sound that can be heard over 300 feet away.

Everyone knows the childhood story of Winnie the Pooh and his honey jar and it's a story well based in fact. Real bears like honey so much they will break open bee-hives with their heavy paws, often being painfully stung on their muzzle many times over just to satisfy their sweet tooth.

Sniffing, Stalking and "Cache-ing" In

Different bear species use different strategies to find and catch their meals but all bears rely upon their powerful sense of smell to help them locate a tasty morsel. Whether its a ripe berry patch, a dripping honey comb or a seal sunning itself on the ice, bears rely on their noses first to tell them it's dinner time.

After a polar bear's nose indicates a nearby seal, the great animal insures its meal by stalking, that is, the bear follows its prey very carefully so that the seal does not sense its presence. Polar bears have to be very skillful to catch a seal lying a few feet from the

water. The bear's snow white coat acts as camouflage and the large animal can move in absolute silence as their feet are huge and padded. They are also capable of lying motionless for several hours, waiting for just the right moment to attack. The polar bear will then kill with a single powerful blow from a front paw or a swift bite to the neck. All hunting bears approach their prey from downwind, ensuring that their own scent is carried away from the unsuspecting animal. Some bears, such as the black bears, rely strongly on their sense of smell to find moose calves and white-tailed deer fawns. Much larger brown bears have been reported killing 3 or 4 adult moose per year. Polar bears and brown bears, the two most carnivorous species, have different feeding methods. Polar bears feed only once on a seal, getting the maximum amount of calories and then leaving the remains for scavengers to pick over. Brown bears prefer to revisit their food source over a period of a few days and so they hide their kill by covering it with dirt and leaves and return to feed on it later. This hidden food is called a cache and allows the bear time to get the maximum amount of benefit from a large kill.

When is a Black Bear Blue?

Black bears should be black, that just makes sense, and most of them are. But they can also be dark brown, cinnamon brown, light tan, steel-blue and even white. Some "black" bears may even change color during their life. Young bears born with brown fur have grown up to be black, and some born with black fur grew up to have rich brown fur. "Blue" black bears are found in Alaska and Canada and are often called the "Glacier Bear". Blue bears actually have silver tipped fur, with a rich blue-black undercoat. All of these black bears, whether black, brown or blue all have tan muzzles. The most unusual black bear is the white Kermode bear, found on a few islands off the coast of Canada and extremely rare. They are known as the "Spirit Bear" and were revered by the native peoples of the area as being a mystical creature. Interestingly, a Kermode female can give birth to black, brown or white cubs.

Who's Been Sleeping in My Bed?

Bears usually construct day beds during spring and summer. Tropical bears such as the Andean bear may use day beds all year round as well as for birthing beds. Day beds are found near food sources and they are sometimes elevated to get a good view of the surrounding area. A day bed can be used for a long or short period of resting and they are often used after a heavy meal. Different bear species prefer certain day beds: The polar bear digs 'dens' or pits in the snow ice or dirt lined with moss and lichens. Females and their cubs usually choose areas that are as high as possible so they can detect any possible dangers. The American black bear sleeps stretched out in trees, or if it sleeps on the ground it prefers grassy areas or areas covered with conifer needles. The brown bear, too large for most trees, sleeps on the ground; preferring areas covered with grass or conifer needles. Brown bears have also been known to dig shallow pits in the soil or snow and line them with leaves for extra insulation. The Andean bear creates a nest of broken branches in a tree. It rests sitting with its forelegs in front of its chest. The giant panda prefers to sleep at the bottom of trees, under stumps, under overhanging rocks, in hollow trees, in rock caves or on a bed of bamboo sticks.

The Asiatic black bear likes to sleep in trees in a sitting position at least 15 ft above the ground. It may also sleep in a nest of branches on the ground.

The sloth bear makes its nest in a cave during the rainy season or in a tree during the dry season.

The sun bear sleeps in a nest of broken branches high up in a tree. It rests lying on its belly.

Getting Ready for Bed

Bears that live where the temperature drops every winter causing food to become scarce, pass the time away in a deep winter sleep. It's not real hibernation because their body temperature, respiration and metabolic rate barely fall - they awaken easily but can sleep for as long as a month in the same position if they are not disturbed. The bears' winter sleep and the preparation for it is an adaptation to life in places where winter conditions might otherwise threaten their survival. Most bears take their long winter nap in a cave, hollow tree, shelter of brush pile or they may even dig a den. They often line their sleeping place with dried leaves and grasses for added insulation against the harsh winter temperatures.

Once snuggled in their winter den a bear may remain inside for up to 2 - 7 months without eating, drinking, urinating or defecating. Their unique metabolic system allows them to live off their fat reserves and reprocess internal waste products so they can keep sleeping. Just prior to hibernation bears consume as much as possible, up to 20,000 calories (the equivalent of 42 hamburgers) per day to fatten up for their long fast. Female bears will give birth and nurse their cubs during this time of extended fasting, so building up fat reserves is extremely important. During hibernation a bear will burn up about 4,000 calories per day.

Tropical bears that can feed throughout the year, such sun bears, sloth bears and Andean bears and bears in zoos that are fed year-round, do not hibernate.

Family Life

Bears are not social creatures. But, it takes more than one bear to start a family; and growing up still takes a lot of help.

Sex and the Single Sow

Female bears are called sows, males are called boars and when the two come together to produce baby bears, called cubs, sparks can fly! Being solitary animals, the two sexes usually stay well away from each other most of the time, coming together only to mate, staying together for periods varying from a few days to a few weeks. The courtship and mating activities vary between species but all are often quite noisy and boisterous. A receptive female will play-wrestle with the male, often barking, biting, chasing, hugging, and roaring her acceptance of the suitable mate. Like many carnivores, the male will often hold the willing female in a "love-bite" grip to the back of the neck as he mates with her. The male of most bear species must mate with the female several times in order to stimulate her to ovulate. This "induced ovulation" makes sense for a solitary female, for it would be of little use to ovulate when no male might be within a 100 miles radius. It

is not known if this is true in all bear species. After mating, the males of all bear species wander off and have nothing to do with rearing the cubs.

Like most large mammals, the bears' breeding cycle is a slow one. Most females will only give birth to 8 to 10 cubs during their lifetime and they do not normally mate for the first time until they are around four years old. First sexual encounters for males usually come a few years later when they are able to compete successfully with other males for an available female.

Mother Knows Best

Once the successful male bear swaggers off into the sunset, the female is left on her own to raise the resulting cubs, which will often not be born for several months. Embryonic growth in all bears takes about two months but, due to a process called delayed implantation, the overall gestation period is much longer. Mating may take place in summer but the implantation of the fertilized egg into the uterus is delayed until a more suitable time for the female, usually at the end of an abundant feeding season. When implantation does finally take place, then the true gestation period begins. Bears are able to breed and give birth only when they are in their best condition. If there is a shortage of food and the female is thin and in poor condition, she aborts and the fertilized ovum is absorbed by her body. The female bear in good condition and healthy weight gives birth and begins nursing her cubs in a den, without food. All of her nutritional requirements must come from stored body reserves: the fat she was able to put on during the preceding season.

In spring, the mother and her young leave the den. She will teach them how to hunt or forage for their food, she will teach them to seek safety in trees if threatened, she will show them how to fish, how to navigate their territory and how to find suitable denning space. Mother bears are legendary for protecting their cubs from all perceived threats, whether it's a male bear that surely would harm an unprotected cub, a mountain lion or other big cat hungry for an easy meal, or an unsuspecting hiker that startled the bear family in the woods. The cubs learn by following and imitating their mothers during the long period they are with her. Orphaned cubs stand little chance of surviving even long past weaning. They need their mothers as tutors for the many skills they'll need in adulthood. It is only after two to three years of age that the young bears are able to fend for themselves.

My, How You've Grown

Bears are the largest of all land carnivores but, pound for pound, produce the smallest young of any mammal. Newborn cubs weigh about 1/420th as much as their mother compared to a newborn human which weighs about 1/20th as much as its mother. For example, a 440 pound polar bear will give birth to one or two cubs weighing a little over one pound each. This extremely small birth weight makes sense when the denning mother's own nutritional needs are taken into account. A pregnant mammal devotes extraordinary caloric energy to the developing fetus and for a denning bear that would be life-threatening coming at a time when no additional food is being eaten. Giving birth to tiny young conserves the mother bear's fat stores, both for her continued existence and to begin producing milk for the new cubs.

Bear milk is one of the richest known, having as high a fat content as 46 percent, compared to human milk at 4 percent. This rich milk allows the tiny, blind, and almost naked cubs to grow at a considerable rate. When old enough to leave the den, their eyes will be open, their fur will be thick and warm and they'll be large enough to meet the challenging world outside.

Tiny young make sense in bear species that den up during cold weather but does not easily explain the small birth weight of tropical bears. Perhaps denning ancestral bears, giving birth to tiny cubs, set the stage for all bear species that would come later.

Bears and People - in the Plus Column

A variety of interactions, good and bad, has been taking place between bears and humans for thousands of years. Here is a sample.

Being on Your Best Bear Behavior

Being able to view bears in the wild is an awesome experience but it can also be a dangerous one. It is difficult to predict exactly how a bear will react to you in an encounter but the most important thing is to stay calm and don't run away. Running only seems to incite a bear and bears can run much faster than you can. When in bear country, always travel in a group. There is safety in numbers and more noise too, thereby alerting bears to your presence.

Bears are naturally shy of people so they will usually leave if given the opportunity. Always choose open trails during the day so the bear sees you first and avoids the encounter. If you see a bear in the distance, turn back, make a wide detour around it or wait until the bear moves away.

Face to face confrontations may be impossible to avoid if the bear is attracted by human food or garbage or it is a surprise encounter. Remember that black bears tend to be bluffers, snorting, swatting the ground and acting aggressive but rarely charging. Stand your ground but try to avoid direct eye contact as a bear may interpret this as an aggressive signal.

If you come upon a bear in a very close encounter, back away slowly, talking calmly. Move toward safety (a car, a building, etc.) If the bear is still interested in you, drop some item (but not food) to distract its attention.

Beware of a bear growling or roaring with its ears laid back. This means that the bear is agitated and may be about to charge. When this happens your best hope is to drop to the ground on your stomach, cover your neck and head with your arms and lie as still as possible. If you are wearing a backpack, leave it on as it may afford you some protection. Remain as quiet as possible. The bear views you as a threat and "playing dead" can work. When the bear moves away, remain on the ground for an extended period of time, the bear may have just moved off to watch. Wait until you are sure the bear has moved on before getting up.

Be calm, be alert and enjoy the fact that we still do share many wild spaces with bears.

A View to a Bear

One of the best places to see bears and learn more about them is at your local zoo. Modern zoos are working very hard to help save endangered bear species, both with captive breeding programs and in habitat preservation projects around the world. Over the past decade zoos have been and are continuing to work very hard on creating naturalistic exhibits for their bears, exhibits that not only teach people on how bears fit in their environment but also to provide natural and stimulating enrichment for bears that live there.

For the adventurer, many opportunities exist in the United States to see bears in the wild, both as independent hikers and as part of naturalist tourist groups. Check with your state and national park authorities for areas known for bear sightings, check with your local zoo for organized trips or call a travel agent specializing in nature tours.

Some sites for brown bear watching include: Several U.S. national parks including: Glacier in Montana, Great Smoky Mountains in Tennessee and Yellowstone in Wyoming, and Katmai National Park in Alaska

Mc Neil River Sanctuary, Alaska (many naturalists and photographers rank this as one of the world's best wildlife viewing areas).

For polar bear watching visit join an organized tour to:
Denali National Park in Alaska or Churchill, Canada.

The Man Eaters

Bears have provoked many emotions in man throughout history, fear being the strongest. And as is usually the case, it is a fear based on misconceptions. Bears are not vicious man eaters; in fact, most bears eat little meat in their diet at any time so stalking and consuming humans makes little sense. And although most bears are strong enough to injure or even kill humans, they are usually timid and retreat at the first sound of human activity. They only attack if they feel threatened or are protecting cubs. Most bears will go out of their way to avoid human contact.

The noted exception to this would be a hungry polar bear, the most carnivorous of all bears, known to hunt humans when no other food source is available.

In contemporary news stories, reports of bear attacks almost always involve campers who have left food in or near their tent or back pack. One particular incident saw a man lose two fingers to a bear he was actually feeding out of his hand. The bear simply couldn't differentiate where the food item ended and the hand began. Other attacks have been precipitated by campers hand-feeding bears and then running out of food. When the tidbits stopped, the angry bear demanded more in the only way it knew how. The myth of the sly, ravenous bear stalking the unwitting human is precisely that, a myth.

Bears: The Sacred Symbol

To the Greeks and Romans the bear was the figure of motherly compassion, a belief they derived from observing the female bear's unique care given to her tiny cubs. Ancient writers believed that the mother bear continually licked her little cub until it took shape.

This was considered to be the very essence of creation, and as a result the Greeks and Romans referred to the bear only in the feminine gender. In the classical world of 40,000 years ago, the bear appeared as a goddess wearing a bear mask, the very symbol of the great mother of all creation.

Throughout history and around the world bears have figured in man's mythology. Their strength, their maternal care, their ability to stand human-like on two feet, their understanding of the passing seasons in their natural world, their amazing ability to hibernate, have all contributed to the bear mythos in cults and religions throughout human culture.

Native Americans have long respected the bear, considering it magically powerful spirit. The medicine man or shaman often impersonated the bear, wearing necklaces of teeth and claws, donning a cloak of bear skin and invoking the bear spirit for success in many of the tribe's endeavors.

One only has to look at today's sport section in the local newspaper to see that modern man still considers the bear a powerful spirit, worthy of invoking its magical characteristics for one's favorite team.

About Paddington, Pooh, Teddy and Friends

The nurturing side of bears, combined with their soft, furry appearance, their inquisitive, playful nature and their ability to stand on two legs have long made bears a favorite in children's literature. A brief list of personable bears known to children would certainly include

Winnie the Pooh, created by A.A. Milne

Paddington Bear, by Michael Bond

The Jungle Book's Baloo the Bear, written by Rudyard Kipling

Goldilocks and the Three Bears, by Robert Southey

The Berenstain Bears, by Jan and Stan Berenstain

Little Bear, created by Else Holmelund Minarik

Smokey Bear, a real black bear cub rescued from a forest fire and nursed back to health became an important "spokesperson" for the United States Forest Service.

One of the staples of every nursery is a teddy bear. This beloved symbol of childhood and innocence actually came to us in the early 1900's, when President Teddy Roosevelt, an ardent hunter and conservationist, refused to shoot and kill a black bear that was tied to a tree. The press loved this example of the President's compassion for nature, playing up the story and soon a New York toy manufacturer created a stuffed bear named Teddy with the President's permission. The teddy bear was sold as a Christmas novelty more than 90 years ago and today is probably the most popular stuffed animal in the world.

Of Bears and Beakers

Researchers studying hibernating bears have found that instead of disposing of their metabolic waste, bears recycle it. For example, denning bears normally turn potentially toxic nitrogen compounds into protein. Bears that cannot do this die from uremia, a condition in which nitrogenous wastes normally excreted by the kidneys remain in the blood. Once the mechanism by which bears are able to do this can be isolated it may have some very significant implications with regards to treatment of kidney failure in humans.

Data from studies on bears has already been instrumental in defining a diet program to reduce the frequency of dialysis for anephric humans awaiting kidney transplantation. This program has also been successful for people on hemodialysis who wish to dialyze less often.

Another human illness where bears may provide an answer is osteoporosis. Sufferers of osteoporosis slough off tissue faster than its made resulting in a build up of calcium in the bloodstream. If excess calcium in the bloodstream is not excreted it could be lethal.

Mammals, including humans, which maintain non-weight bearing positions for a long time, suffer from osteoporosis (a thinning and weakening of bone) except for bears! Black bears which lie in dens too small for weight-bearing positions should suffer from osteoporosis just like human astronauts and the elderly or bedridden because bones support almost no weight. If hibernating bears do lose bone, they would have to prevent the calcium in their blood rising too high. Researchers have found that the black bear's blood levels of calcium and phosphorous (both used to make bone) remain constant throughout summer and winter because the bear's bone metabolism operates like that of an active animal. Researchers are now trying to isolate a regulatory substance circulating in the blood which is responsible for maintaining bone mass. This may eventually enable physicians to prevent osteoporosis in humans.

Researchers believe that there is a hormone produced by part of a bear's brain which controls temperature as well as appetite. If this is true and the hormone can be isolated then potentially it could be administered to patients with kidney problems, obesity or anorexia nervosa.

If the bear's hibernation induction trigger can be isolated, it could be used to slow metabolism and reduce head swelling in severe trauma cases, slow and cool the body during surgery, extend the viability of organs waiting to be transplanted and prevent fibrillation (wild, uncontrolled contractions of the heart) in heart surgery as it appears to in hibernating bears.

Bears and People - the downside

A variety of interactions, good and bad, has been taking place between bears and humans for thousands of years. Here is a sample.

Bearing Up for the Future

Six of the eight bear species are decreasing in numbers and range while the human population as well as its resource demands are increasing. Bears and humans have similar habitat preferences, that is, valley floors, fertile soils and easy access.

The future of the world's bear population relies on better management of people (not bears) as it is the humans that are causing the decline of wild bears. There has to be a better balance between bear and human needs. Humans can no longer continue to take what they want at the expense of the bear populations around the world.

Incentives for change need to be provided for people who live with bears so that the economic value of bears is no longer based on slaughter. Compensation payments should be provided for damage caused by bears, such as, the loss of livestock, bee hives and fruit crops. Bears are often killed by farmers to protect their livestock and crops.

The unnecessary degradation of bear habitats must be stopped. This can be achieved by controlling human access into important bear areas, limiting or eliminating human activities in some areas and re-aligning roads so they avoid bear habitats. The number of bear reserves should be increased. Research on the co-existence of bears and humans should be encouraged. People need to be educated so they have a better understanding of bears and their importance in the world as wild animals. Hunting must be carefully managed and be compatible with bear populations and habitat. Baiting should be eliminated. Regulations and laws must be strictly enforced.

Bears in a Bottle

An Asiatic black bear shot in South Korea in 1982 was sold for \$18,500. It was shot for its gallbladder! A gallbladder was sold for \$55,000 in South Korea. Why? The bile salts found within the gallbladder are a prized medicine. Dried bear gallbladders (which resemble large figs) can be seen displayed in Taipei, Hong Kong, and Singapore medicine districts. Black market vendors in the open air markets of China sell bear gallbladders by the kilo. Some wholesalers travel to North America to purchase their bear gallbladders fresh from bears killed while they watch. The use of bear gallbladders for medicinal purposes dates back around 3,000 years. They are used to treat conditions such as cirrhosis of the liver, jaundice, high blood pressure, diabetes, severe burns, heart disease, hemorrhoids, eye infections, swellings from sprains and tooth decay. The active ingredient in bear bile is ursodeoxycholic acid (ADCA). Although this ingredient is found in gallbladders of other mammals, it occurs in fairly large quantities in the gallbladders of bears. Scientists in Japan have found a way to synthesize a substitute from cow bile and this is used by Western physicians today. This seems to be the answer to saving bears in the wild but the trade in gallbladders still threatens the survival of Asia's bear population.

Down on the Bear Farm

China, North Korea and South Korea are now farming bears for their bile in order to meet the needs of its traditional medicine industry. The bears on the farms are milked for their bile by placing a surgically implanted catheter into their gallbladders. As many as 8,000 bears live on these farms in China alone. Although the milking process is not painful to the bears it is stressful due to the fact that the bears spend their entire lives in small cramped cages. Chinese scientists are now spending time and money on researching how to increase productivity on these bear farms and have forgotten the needs of wild bears. The demand for gallbladders from wild bears is still strong as some people believe the farmed bile to be inferior to that found in nature. Better laws, more effective law enforcement and education are required to reduce the demand for bear gallbladders and save the Asian bear population.

Bear Soup

Bear paw is a delicacy on menus in China. Some Imperial Chinese cookbooks include recipes for stewed bear's paw and bear spare-rib casserole. These items on a menu are extremely expensive and therefore poachers can make money from killing bears and selling the various parts. In China bear paws sell for \$10 - \$80 each. Unless better laws are enforced to protect the Asian bear population they may lose their fight for survival. Bear meat is sometimes eaten and it is believed to prevent colds, strengthen the body, provide relief from rheumatism and beri-beri. Paws, like the meat, are also considered to have medicinal properties.

Bears in Law Books

The Lacey Act

The Lacey Act is a federal law prohibiting transportation in interstate or foreign commerce of fish, wildlife or plants taken, possessed, sold or transported in violation of any state or foreign law, international treaty, U.S. regulation or Indian tribal law. This act contains criminal penalty provisions of maximum fines of \$20,000 and not more than 5 years imprisonment or both for person's who knowingly violate the act.

The Endangered Species Act

The Endangered Species Act is a federal law that was enacted in 1973 to prevent the extinction of wild animals and plants. This act establishes 2 levels of protection for wildlife - species in danger of extinction: endangered- species likely to become endangered: threatened.

This act mandates that the federal government develop and carry out plans for the recovery of listed species. A species is only listed if the best scientific and commercial information available concludes that protection is necessary.

CITES - The Convention on International Trade in Endangered Species of Wild Fauna and Flora

CITES provides an international mechanism for the maintenance of biodiversity by protecting endangered species of wildlife and plants from over exploitation through international trade. The U.S has been a leader in international efforts to protect biodiversity since 1973.

CITES is the world's main way of protecting threatened and endangered wildlife from the disastrous effects of international trade. The CITES treaty involves trade restrictions for species listed in different Appendices, that is, Appendix I includes species in danger of extinction which are or may be affected by international trade. Commercial trade of such species is strictly prohibited. Appendix II includes species that may become endangered if their trade is not controlled. Commercial trade in these species is subject to regulation and is only allowed if permits are obtained stating that trade will not harm the species. Differences in state laws makes the implementation of the CITES treaty difficult, for example, 25 states have legal black bear hunting, 10 states have no bear hunting and no sale of parts, 7 do not have legal hunting but allow the sale of parts which originate elsewhere and 8 have nor regulations specific to the trade of bear parts.

An interstate ban on commerce in bear viscera and a bear viscera import/export ban would close existing enforcement loopholes created by inconsistent state laws while also making sure that the U.S.A. no longer takes part in the disastrous international trade in bear parts.