

# The Smithsonian Book of North American Mammals

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## American black bear | *Ursus americanus*

Black bears are the bears people most often encounter. Numbering more than 600,000 across North America, they are 12 times more abundant than grizzly/brown bears. They are the only bears in eastern forests. Highly adaptable, they live in habitats as varied as Louisiana bayou, Pacific Northwest rain forest, and Labrador tundra. Where people are tolerant, they even live in urban housing developments. A housing development in Pennsylvania with more than a thousand people per square mile has a denser black bear population than is found in any national forest or national park.

The greatest threat to the black bear is its own exaggerated reputation for ferocity, which has led to many unnecessary shootings. Black bears almost always retreat from people unless lured with food. Unlike grizzly bear mothers, black bear mothers rarely attack people. When threatened, they send their cubs up trees and either bluff or retreat. The timid nature of the black bear probably stems from its having evolved with such powerful predators as short-faced bears and sabre-toothed cats (both now extinct), and more recently with grizzly/brown bears, gray wolves, and humans. Only about three dozen human deaths from black bears have occurred across North America in this century, despite millions of encounters. To put this figure in perspective, for each person killed by a black bear in the United States and Canada, more than 60 people are killed by domestic dogs, 180 are killed by bees, 350 are killed by lightning, and 90,000 are murdered, according to data from the National Center for Health Statistics.

Black bears come in more colors than any other carnivore. In dense forests in eastern and northern North America, most are black with a brown muzzle, and some individuals

have a white chest patch. In the more open forests of the West, most are brown, cinnamon, or blond. In coastal British Columbia and southern Alaska, a few are creamy white (Kermode bears) or bluish gray (Glacier bears).

Although black bears eat some meat and insects, most of their diet is fruit, nuts, and vegetation. Consequently, their annual behavioral and physiological cycle is tied to the annual cycle of plant growth and fruiting, and the abundance and distribution of this food determines social order. Where abundant food is clumped in a central location, bears congregate and form social hierarchies, and unrelated bears of the same sex frequently travel together to wrestle and play. In most areas, food is dispersed in patches too small to support groups and hierarchies, and the bears are solitary. If the dispersed food is abundant enough to warrant it, females defend territories (average 10 square km) that they share with their independent offspring. Mother bears recognize their offspring year after year and behave toward them in ways consistent with kinship theory. They allow their offspring to take over portions of their territories, but exclude strange bears and attempt to usurp adjacent territories from unrelated females. Only daughters remain in their mothers' territories until adulthood. Young males voluntarily disperse at 1-3 years of age and travel up to 219 km (average 61 km) or more before establishing adult ranges.

Males establish ranges large enough to secure mates as well as food. A male range averages 81 square km and typically encompasses 7-15 female territories. Male ranges are too large to defend, so they overlap, and the males compete. Females mate every other year after producing their

first cubs at 2-9 years of age, depending on food, so only about half the females are receptive each year. Old males carry many scars from mating season fights. Males reach sexual maturity at 3-4 years of age, but continue to grow until they are 10-12 years old, becoming large enough to dominate most younger males without fighting. Males take no direct role in raising cubs, but help indirectly by aggressively deterring immigrant males from settling, thereby reducing future competition among all resident bears. Old males are 2-3 times the size of immigrant males and approximately twice the size of adult females; females stop growing around 6 years of age. Maximum weights reported for wild males and females are 409 and 236 kg (902 and 520 pounds), respectively, but most adults weigh less than half that much.

Black bears communicate with vocalizations, body language, and scent. Sociability is expressed with grunts, fear with moans and huffs, pain with screams and bellows, anger with a pulsing voice, and pleasure with a motorlike hum. Both sexes drip urine to mark their ranges. "Bear trees" are rubbed and scent-marked by both sexes but especially by adult males before and during the mating season.

In spring, black bears eat newly sprouting plants, leaves, and flowers. They also raid ant colonies for pupae and find a few newborn mammals and birds. They usually ignore adult mammals and birds. Their ability to run at a speed of up to 50 km per hour (30 mph) is more useful for escape than predation. The black bear's blocky body is built more for strength, storing fat, and conserving heat than for agility. Fish and carrion are not available in significant quantities over most of the black bear's range.

Black bears accumulate most of their fat during summer and fall, eating fruit, nuts,

and (in many areas) acorns. Their short, curved claws make them expert tree climbers, and their powerful front legs enable them to bend food-laden branches to their nimble lips, or to turn over rocks and tear apart logs to reach ant colonies. They have color vision and feed mainly in daylight, but some become nocturnal around campgrounds and human residences. In late summer and fall, many forage up to 200 km (126 miles) outside their usual ranges before returning for hibernation. Cubs remember distant feeding locations their mothers showed them and return to the best of them as adults. The remarkable navigation ability of bears is poorly understood.

Mating occurs in early summer before most berries and nuts ripen. This timing minimizes interference with the feeding that is critical for overwinter survival and reproduction. Implantation of the fertilized eggs is delayed until November, which means that birth also occurs at a time that does not interfere with feeding. Well-fattened mothers give birth to 1-6 cubs (usually 2-3) in dens, in January.

Newborn cubs weigh only 200-450 grams each, which is approximately 1/250th of the mother's weight, compared to 1/20th for humans. No other placental mammal gives birth to relatively smaller young. Short gestation and small cub size are adaptations for reproducing during hibernation. Fasting involves a switch in energy base from glucose to fatty acids, which are difficult for fetuses to utilize in utero. The early birth enables the mother to nourish the (nonhibernating) cubs with milk in what is sometimes termed an external pregnancy. Even in hibernation the mother is alert to her cubs' needs, responding to vocal demands for warmth, comfort, and suckling. Linking reproduction with hibernation is adaptive in the north, where hibernation is necessary, but this linkage probably limits the southward expansion of the species into

areas where the mothers' obligate period of inactivity would put the bears at a competitive disadvantage against nonhibernating omnivore species.

When black bear families emerge from dens in spring, the cubs weigh 2-5 kg each. They remain with their mothers through the next winter, until they are about 17 months of age, when the mothers approach estrus and force them away. By that time, the yearlings can weigh as much as 49 kg (109 pounds) or as little as 7 kg (15 pounds), depending on food. This plasticity in growth rate is part of the adaptability that enables black bears to survive in high or low quality habitat.



*Ursus americanus*

In southern states where food is available year-round, only pregnant females hibernate. In the north, both sexes hibernate up to seven months. Where they hibernate longest, they also hibernate more deeply, to ration fat over the longer period. Black bears differ from smaller hibernators, which wake up every few days to eat, move around, and pass wastes. The bears hibernate continuously without eating, drinking, urinating, or exercising. They produce small amounts of feces from dead cells sloughed from the digestive tract, a phenomenon also

seen in starving humans. Weight loss is up to 40 percent in lactating females. In the north, their metabolic rate is reduced 50 percent. Heart rate drops from summer rates of 66 (sound sleep) to 140 (exertion) beats per minute to winter sleep rates of between 8 and 22 beats per minute. Body temperature drops 1 to 7° C but remains high enough to maintain mental function for tending cubs and reacting to danger, but reactions to danger are often slow, because circulation to the limbs is so reduced that the hibernating bears cannot immediately get up and run. Some become active only after several minutes of prodding and handling. Even so, fewer than one percent of bears die during hibernation, although some yearlings starve following emergence in spring.

Native Americans called bears "keepers of the medicine" and revered them for their ability to survive for months without eating. Researchers are studying the metabolic pathways bears use to cope with hibernation and are gaining insights into new ways to treat kidney failure, gallstones, severe burns, and other ailments.

Black bears can live more than 30 years, but they seldom live a third that long, mostly because of their encounters with humans. More than 90 percent of the deaths of black bears older than 18 months of age are from gunshots, trapping, motor vehicle accidents, or other human involvement. Bears also face a rising threat of habitat reduction: vacation homes and retirement homes are being built in bear country at an unprecedented rate. Landowners can reduce the threat to bears by adopting a more tolerant attitude based on a more realistic assessment of the danger, or lack of it, from black bears. *L. L. Rogers*

## Size

Length of head and body: 1,400-2,000 mm (males); 1,200-1,600 mm (females)

Length of tail: 80-140 mm

Weight: 47-409 (120) kg (males); 39-236 (80) kg (females)

## Identification

*Ursus americanus* is distinguished from *Ursus arctos*, which is sympatric in northwestern North America, by ears that are longer, more tapered, and less heavily furred; by a smaller shoulder hump; by a convex rather than concave profile; by shorter, more tightly curved front claws; by a furred rear instep; and by a contrasting pale muzzle on most dark-furred individuals.

## Recent Synonyms

*Euarctos americanus*

## Other Common Names

See subspecies

## Status

*Ursus americanus luteolus* is listed as threatened under the federal Endangered Species Act.

## Subspecies

Further study is needed to resolve the validity of these classifications:

*Ursus americanus altifrontalis* (Olympic black bear), coastal California, western Oregon, western Washington, and southern British Columbia

*Ursus americanus amblyceps* (New Mexico black bear), New Mexico, southern Arizona, and western Colorado

*Ursus americanus americanus* (American black bear), forested portions of the coast of southwestern and northwestern Alaska; and extensively forested regions in Canada and the eastern and central United States

*Ursus americanus californiensis* (California black bear), interior California

*Ursus americanus carlottae* (Queen Charlotte black bear), Queen Charlotte Islands of British Columbia

*Ursus americanus cinnamomum* (cinnamon bear), Wyoming, western Montana, Idaho, eastern Colorado; and in Canada, the vicinity of Waterton, Banff, and Jasper National Parks

*Ursus americanus emmonsii* (Glacier bear), coastal Alaska from Glacier Bay north to Prince William Sound

*Ursus americanus eremicus* (East Mexico black bear), mountains of northeastern Mexico and the Big Bend area of Texas

*Ursus americanus floridanus* (Florida black bear), small enclaves in Florida and southernmost Georgia and Alabama

*Ursus americanus hamiltoni* (Newfoundland black bear), Newfoundland

*Ursus americanus hunteri*, southeastern Yukon and a small portion of southwestern Northwest Territory

*Ursus americanus kermodei* (Kermode's bear), British Columbia

*Ursus americanus luteolus* (Louisiana black bear), small portions of Louisiana and southern Mississippi, with some populations mixed with introduced bears from Minnesota

*Ursus americanus machetes* (West Mexico black bear), mountains of western Mexico

*Ursus americanus perniger* (Kenai black bear), Kenai Peninsula of Alaska

*Ursus americanus pugnax* (Dall black bear), southeastern Alaska north to Chichagof Island

*Ursus americanus randi*, central Yukon Territory

*Ursus americanus vancouveri* (Vancouver black bear), Vancouver Island

## References

Bauer and Bauer, 1996; Pelton, 1982; Rogers, 1987