

Black Bears Are Known To Roam — But Their Den Is Always Home

By Lynn Rogers

In Minnesota, grass, buds, ants, catkins, and young leaves are staples in spring until berries ripen. Then fruits become mainstays until they are destroyed by autumn frosts. Many of the fruits that bears eat grow most abundantly in and around forest openings, and that's where bears can be found on cool, overcast, and rainy days. But on hot, clear days black bears spend much of their time in the shade and may even enter the water to cool off.

In fall, the hardwoods portion of the bear range of North America, acorns, beechnuts, hickory nuts, hazelnuts, apples, and other fruits are important foods. However, in the coniferous northern portion of the range, fruit and mast-producing trees are scarce, so black bears in the north turn to green vegetation after the berries are gone. However, bears are as poorly adapted as we are for digesting cellulose, and they often lose weight on a diet of greens; so bears that must subsist on vegetation usually retire to dens weeks earlier than bears that have good sources of food on which to fatten in the fall.

In the north, black bears are in dens from five to seven months each year, depending in part on local food supplies.

Black bears usually construct their dens and entrances just large enough for them to squeeze through. They then rake leaves, grass, and twigs into the dens for insulative beds and lie curled up with their thickly furred backs protecting them from subfreezing (often subzero) temperatures that penetrate the dens. Each bear sleeps alone except for mothers with cubs.

During hibernation, body temperatures of bears drop only a little (usually to between 88 and 98 degrees F. from a summer temperature of 100 to 101 degrees F.) but metabolic rate is cut nearly in half, respiration slows to only one breath every 45 seconds or so, kidney functions drop, and heart rate occasionally falls to as low as eight beats per minute. Some bears go the whole denning period without urinating, but this is more common in captivity than in the wild.

There are several misconceptions regarding the denning habits of bears. One is that bears eat a lot of roughage in the fall to purge the digestive tract and form a fecal plug that puts an end to feeding for the year. It is true that bears do ingest, perhaps accidentally, small amounts of material that they rake into their dens for beds, and it is true that bears have feces in their bowels during the winter. However, those feces form whether the bear eats roughage or nothing at all because it is formed primarily from products of the bear's own body. This is not a mysterious process. Bears apparently form feces during denning in the same way that people do during starvation. Such feces are formed from cells that slough off the inside of the digestive tract and from intestinal bacteria. Bears that den for several months usually defecate at least once during the denning period and

defecate large quantities upon leaving their dens in the spring.

The denning period is the time when bears give birth. Cubs usually are born in late January after a gestation period of seven months. They are conceived in June or July, but development of the embryos is limited almost entirely to the last three months of gestation. Before that time, the fertilized egg is not implanted in the uterus and is barely visible without a microscope. Consequently, it is difficult to determine whether females killed in fall hunting seasons are pregnant.

Litters usually are one to four cubs. At birth, cubs usually weigh less than a pound and are almost naked, but by the time they toddle out of their dens with their mothers at about three months of age, they weigh between four and seven pounds.

Even while cubs are in their dens they receive the best of care. Their mothers clean up (i.e., eat) the feces of their cubs and move into positions that make nursing easy, moving in a way that reminds one of a person doing something in his sleep. In Minnesota, mothers nurse their newborn cubs in dens for up to three months without venturing out for food or water. As a result, lactating mothers lose a third or more of their body weight during hibernation whereas other bears usually lose only 15 to 25 percent.

Black bear cubs suckle through the June-July mating season and prevent their mothers from coming into heat. Consequently, litters usually do not overlap, and mothers devote their energy to only one litter at a time.

Cubs den with their mothers their first winter and even help rake bedding material into the den. However, mothers may remove the bedding and rearrange it to their own liking. Cubs that are orphaned instinctively build dens by themselves and are able to survive to adulthood.

Cubs normally separate from their mothers in June of their second year. Young females usually then settle near their birthplaces and at three to eight years of age begin producing cubs. They continue to reproduce at two to four-year intervals past 20 years of age. There is no known menopause in the black bear. The age at which females begin to reproduce and the amount of time between litters depends upon food supply.

Males leave their birthplaces before mating and often travel more than 100 miles before settling, but once they have settled, they usually use the same general five to ten mile diameter area for mating each year.

Males are aggressive toward each other during the June-July

mating period, and encounters lead to threats, chasing, or savage battles. The scarred hides of old males are evidence of the violent contests that are fought near receptive females. (Both males and females are promiscuous.) Rival males broadcast their whereabouts to one another through the use of "bear trees" on which they scratch, bite, and rub their scent. (Female black bears seldom use "bear trees.") Messages probably reveal which males are in the area and how safe it might be to remain there. Messages tend to be ignored, however, by males on the trail of females in heat.

After the mating season, male hormone levels drop, and aggression declines. In Minnesota, mature males travel up to 125 miles outside their breeding ranges in late summer and fall and congregate at garbage dumps or other food sources. Some females also travel far outside their territories at that time, but are less apt to go to garbage dumps. Both sexes return to their mating areas to den.

Starvation deaths are uncommon among adults. However, 38 percent of 13 yearlings starved in Minnesota after drought and frost reduced natural foods several years in succession. Most mortality, among cubs and yearlings is from natural causes, but more than 90 percent of the deaths of adults is from human-related causes, mainly gunshot. As a result very few wild bears live the 30 or more years that bears sometimes do in captivity.

Except for the occasional oversized individual, adult male bears weigh between 150 and 550 pounds and adult females weigh between 90 and 300 pounds. The term "big old sow" arises because large males sometimes are mistaken for females in late fall when their testicles are retracted into their abdomens and their scrotums are shrunken and obscured in abdominal fur. Testicles become scrotal again in early spring.

Black bears presently are abundant and have a bright future for some time to come. In the best habitats, they are producing a surplus each year. But those habitats are steadily shrinking due to encroachment by an expanding human population. In Minnesota, bear habitat is protected in several state and national forests and the bear itself is protected as a game animal.

Lynn Rogers has directed extensive research on the black bear — mostly in the Superior National Forest. He is also a widely published wildlife photographer.