

*Few animals evoke more human interest than the black bear. A symbol of deep woods, it is feared by many, loved by others, and even venerated by some Indians.*



*From an Illustrated Lecture on  
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## **Black Bears Of the Lake Superior Region**

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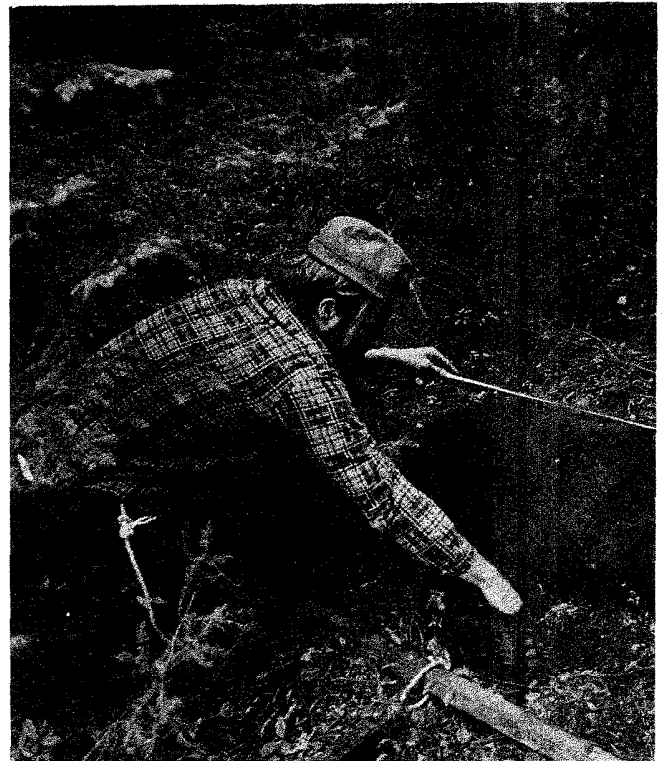
*It is omnivorous, just as we are, and there is a human quality to its voice. Its droppings and hind tracks crudely resemble ours; and when standing on its hind legs, it looks man-like enough that Indians commonly called it cousin, brother, grandmother, or uncle-of-the-forest. Primitive hunters killed bears for fur and meat, and the same is true of hunters today. The meat of the black bear is delicious if the fat is stripped away before cooking. The fat, too, can be used, after rendering, for high quality cooking oil and boot grease. In some states, modern hunters pay nearly \$1,000 in travel and equipment expenses for each black bear they kill.*



*The food preferences lead to trouble when they conflict with the interests of man. Bears that seek food in campgrounds can be destructive nuisances, leaving behind a trail of smashed ice chests and tooth-punctured canteens — articles which campers often keep as reminders of exciting wilderness adventures.*



*In agricultural areas, the black bear occasionally destroys livestock, beehives, and crops; and in the Pacific Northwest it damages conifers by eating cambium. However, over most of its range its main food is berries, which it distributes widely in its droppings, possibly improving the habitat for itself and other berry-eating species of wildlife.*



*As a first step in the study, bears are captured unharmed in baited with meat scraps.*



*In spite of its economic and aesthetic importance, the biology and habitat requirements of the black bear are known only in a very general way; and many myths about the black bear are accepted as fact. To separate fact from myth and to obtain information necessary for the proper management of the black bear and its habitat, a study, which is still in progress, was initiated in northern Minnesota, in 1969.*



*In addition, blood samples are sent to Dr. U.S. Seal of the Veterans Administration Hospital in Minneapolis for analysis. The composition of the blood reveals the nutritional status, health, and hormonal levels of each bear; and such data are being interpreted in light of individual feeding habits, age, social status, and seasonal and annual changes in food abundance. Possible causes of natural mortality will be revealed through blood analyses. Changes in physiology between summer and the winter denning period, as revealed by blood analyses, are providing new insight into the mystery of "hibernation." Information concerning metabolic changes that occur in denning bears is leading to a better understanding of metabolic changes that occur in starving humans. Knowledge of mechanisms by which bears reduce renal activity during denning is proving helpful in the study of chronic kidney ailments in man.*



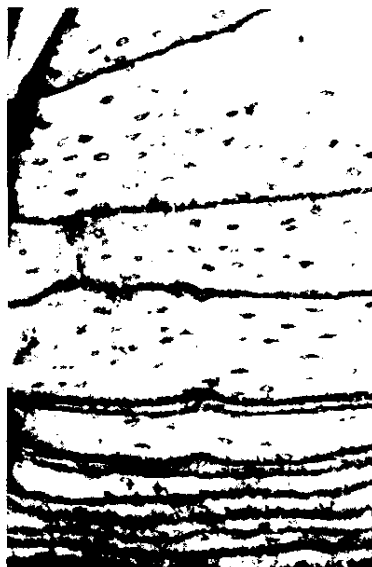
*Bears are immobilized with drugs and then given ear-tags bearing identification numbers and an address where they should be sent if the bear is killed. Tag returns reveal the minimum percentage of the population that is killed each year.*



*Bears are captured at different times of the year to determine growth, over-winter weight loss, parasite loads, reproductive status, and injuries from fights or gunshot. This bear weighed 499 pounds on November 11, 185 pounds more than it weighed on July 6.*

Photo by Craig Burck

*A first premolar, which is smaller than any human tooth, is extracted from each bear to determine age. This tooth often is missing naturally, and its loss does not hamper feeding even on the same day of the extraction.*



*There are annual rings in the roots of bear teeth just as there are rings in a tree. This photomicrograph shows a portion of a cross section of a first premolar from an old female. Thirteen annuli are visible. By knowing the age of all captured bears, it is possible to determine minimum and maximum ages of breeding, age-related behavior patterns, and the age at which death occurs most commonly. In some females, the distance between annual rings is shorter in years when they raised cubs. The drain of calcium during lactation in such years may lead to less calcium being used for building teeth. Black bears usually raise cubs every other year after maturity is reached at three to seven years of age.*



*Most of the residents (excluding cubs) of a 150 square mile area are wearing light-weight collars that contain transmitters. Like dogs, bears appear to pay little or no attention to their collars after the first day or two. Each transmitter broadcasts on a different frequency to facilitate recognition of individual bears.*

*Instrumented bears can be located at any time with directional receiving equipment carried on foot, in a vehicle, or in an airplane. Radio-tracking reveals habitat preferences, activity schedules, patterns of travel, and interactions between instrumented bears. It also permits locating bears for making visual determinations of behavior, reproductive success, and deaths.*



**Continued on  
Back Panel**

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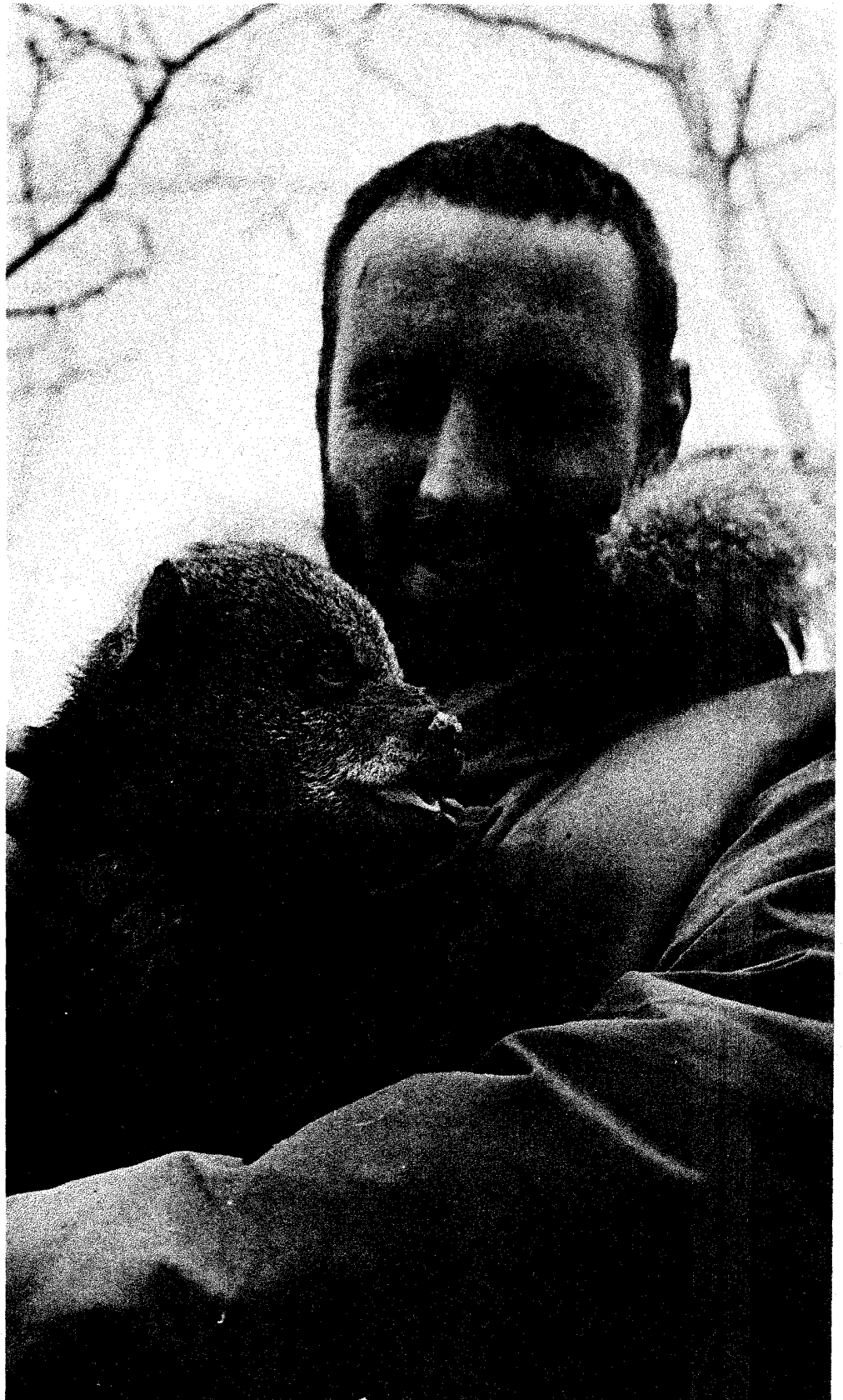


Photo by Craig Bore

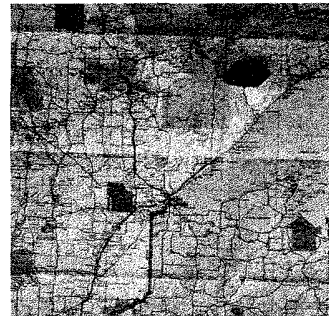




Photo by Craig Borck

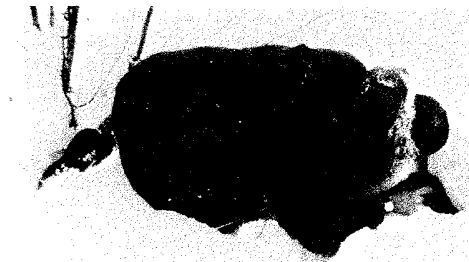
*This picture was taken when this two-month-old female was ear-tagged on March 26, 1970. The next year she was instrumented and has been radio-tracked ever since as have her mother and sister. In January of 1974, she produced cubs of her own. In the meantime, her mother has produced another litter which also is being monitored. Data obtained to date from these bears and others show that they have a social system that can readily be understood when family ties are known. Behavior differs between the sexes, between ages, and between different seasons.*

*Transmitters last more than a year which permits bears to be radio-tracked to winter dens where transmitters are replaced each year. As a result, instrumented bears can be monitored year after year. Cubs of collared females are ear-tagged while they are still in the natal den and family relationships are certain. But they are not given collars until one year of age when they again den with their mothers.*



*For instance, a widespread myth among Indians and woodsmen is that bears sustain themselves during denning by licking their paws. Bears, in fact, do lick their feet during winter. However, such licking is associated not with nourishment but with the shedding of old foot pads each winter, a process that leaves the paws quite tender until the new pads become keratinized during March and April. In this picture (left) which was taken in late March, dark areas are portions of old pads; and light areas are newly exposed tender pads.*

*The Superior National Forest study area is almost ideal for studies of bear habitat. It is predominantly of the aspen-birch-conifer type that is typical of the bear range of much of the northern United States and southern Canada. It also is being logged as is the case with an ever-increasing amount of the black bear's range. Records of past timber management practices have been kept by the United States Forest Service, so it will be possible to determine which timber management practices have led to good bear habitats today.*



*As bears retire to dens in autumn, some of them can be watched with binoculars or a night-vision scope from distant vantage points as they construct their hibernacula. They also can be observed periodically during winter and as they emerge in spring. Facts learned in this way can replace the mythical explanations of phenomena associated with winter dormancy.*



*In the southern part of the study area there are two campgrounds, a residential area, and several small dumps. Studies there are revealing factors that lead to bear-man interactions and how such interactions may be reduced.*



*Studies currently are being expanded to the north into a large virgin tract where there are few human visitors. Our objective is to obtain data on bear behavior, growth, reproductive success, longevity, territory size, and habitat use in the virgin habitat and to compare this data with that obtained to date in the area where canopy cover has been reduced by logging and herbiciding, where bears are killed as nuisances or by hunters, and where some bears supplement their natural diets with garbage. Such comparisons may indicate how modern man influences black bear populations.*

*As studies continue, more and more of the behavioral and physical adaptations of black bears to life in north temperate forests are revealed. At the same time, the environmental requirements of the black bear also are revealed and such information can be used by game managers and land managers to assure the future of the black bear.*