MANAGING AMERICA'S ENDURING WILDERNESS RESOURCE

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MANAGING NATURAL POPULATIONS OF BLACK BEARS IN WILDERNESS

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ABSTRACT. Black bear-habitat relationships were studied by radio-tracking 103 bears in northeastern Minnesota (Rogers 1987), by analyzing > 1,000 fecal droppings from throughout the Great Lakes Region, and by closely observing 3 mature females in the Superior National Forest (unpublished data). This paper summarizes habitat data and survival data from those studies and lists recommendations for managing black bears in wilderness.

EXTENSIVE FORESTS

Of primary importance to black bear population survival is extensive forest land, with few people, where bears can avoid unregulated, human-caused mortality and where mothers can raise cubs without excessive disturbance. Over 95 percent of black bear deaths (except cubs) in Minnesota were from gunshot (Rogers 1987). Although well managed, sustained-yield hunting does not threaten bear populations (Rogers and Allen 1987), unregulated killing has extirpated bears from many areas (Cowan 1972, Servheen 1990). Bears' attraction to human foods (garbage, crops, livestock, and campers' food) is the primary factor leading to unregulated killing (Rogers and Allen 1987). Remote populations must be large enough to compensate for unregulated mortality in surrounding developed areas (Rogers and Allen 1987).

FOREST OPENINGS

Forest openings are major feeding sites in spring and summer (Rogers et al. 1988). The majority of the wild fruit and nut species (*Fragaria* spp., *Vaccinium* spp., *Prunus* spp., *Rubus* spp., *Amelanchier* spp., *Cornus* spp., *Viburnum* spp., *Crataegus* spp., *Sorbus* spp., and *Corylus* spp.) that are important to black bear reproductive success in the Great Lakes Region are produced primarily in forest openings and in timber stands with fewer than 300 trees per acre (Arimond 1979, Rogers and Alien 1987, Rogers, unpublished data). Important upland vegetative foods-peavine (*Lathyrus* spp), vetch (*Vicia* spp.), clover (*Trifolium* spp.), wild lettuce (*Lactuca* spp.), and dandelions (*Taraxacum* spp.)—are also plants of forest openings. Although upland plants are eaten mostly when berries are scarce (May, June, and September), they become important summer foods in years when fruit and nut crops fail. Forest openings, especially openings in overmature forest that are breaking up, are the most commonly used ant-feeding sites. Ant pupae from down and dead woody material comprise over half the June diet where ant colonies are abundant (Rogers, Wilker, and Scott, unpublished data).

MATURE OAK STANDS

Acorns (*Quercus* spp.) significantly influence black bear reproductive success because they are nutritious and are the only major food available after September in many parts of the northeastern

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United States (Rogers and Alien 1987, Rogers et al. 1988). Thus, acorns can extend bears' growing and fattening period for several weeks after most wild fruits disappear. Bears commonly travel more than 20 miles to mature oak stands where these stands are scarce (Rogers 1987). Beech (*Fagus grandifolia*) nuts and black cherries (*Prunus serotina*) also are important foods of mature forests in portions of the Lakes States and the northeastern States (Elowe 1987).

LOWLANDS AND WETLANDS

Lowland black ash (*Fraxinus nigra*) swamps and other riparian areas with grass understories are important feeding areas in April and May when lowland grasses such as the widespread bluejoint grass (*Calamagrostis canadensis*) form much of the diet. Wild calla (*Calla palustris*), a marsh plant, and jewelweed (*Impatiens capensis*), a lowland plant, are eaten in June through September. Where available, skunk cabbage (*Symplocarpus foetidus*) and (*Arisaema triphyllum*) are eaten in spring (Elowe 1984).

REFUGE TREES

Mothers with cubs spend more than 95 percent of their time in April and May within 200 yards of white pines (*Pinus strobus*) or hemlocks (*Tsuga canadensis*) larger than 20 inches dbh (Elowe 1984, Rogers et al. 1988). The bark of these trees is especially safe for climbing by small cubs. Preferred spring habitats have at least one of these refuge trees per six acres (Rogers et al. 1988).

DEN SITES

Black bears have few den requirements in remote northern forests where winter flooding is uncommon and people or domestic dogs seldom disturb natal dens (Rogers 1987). Mothers that overwinter and give birth in simple nests on the ground surface show survival rates and cub survival rates close to those of bears in more secure dens. Despite the potential for wolf predation (Rogers and Mech 1981), overwinter survival of adults is over 99 percent (Rogers 1981,1987).

HUMAN INFLUENCE IN WILDERNESS

A chronic problem is the deaths of black bears attracted to recreationists' food in wilderness. Food brought into wilderness is often highly attractive because of the low fertility of most wilderness land and the chronic, sometimes acute, scarcity of natural food that results (Much of the more fertile land has been converted to farmland.). Human densities at peak vacation periods are perhaps 50-100 times the primitive human densities that existed in many of these low fertility areas (Nute 1941, Ahlgren and Ahlgren 1984). Bears are most attracted to recreationists' food in years of natural food crop failures (Rogers 1976), and bears that become nuisances are commonly killed. Many of them are shot in nonvital organs to delay deaths and avoid problems of burying the carcasses and reporting the shootings.

MANAGEMENT RECOMMENDATIONS FOR WILDERNESS BLACK BEARS

1. Preserve adequate space. Establish wilderness areas large enough to support viable black bear populations (i.e., >50 adults [Allendorf and Servheen 1986]). The amount of land needed depends upon the abundance, reliability, and distribution of bear foods which, in turn, depend upon forest diversity and land fertility.

2. Maintain or establish forest corridors that will link populations.

3. Maintain a judicious fire management policy that provides a "natural" diversity of successional stages and openings for production of wild fruit and other foods.

4. Keep the bears wild (Schoenfeld and Hendee 1978). Minimize conflicts with recreationists by minimizing bear access to people's food. Bearproof food containers are currently the most effective means of achieving this (J. Keay, Biologist, Yosemite National Park, personal communication, 1989). Capsaicin spray repellent, when sprayed in bears eyes, has been found to repel marauding black bears without harming the bears and without provoking bear aggression (Rogers 1984).

5. Provide well documented educational material on clean camping practices, bear behavior, and methods for dealing with bear encounters. Provide nonexaggerated assessments of the danger from black bears.

6. Assign a high priority to managing wilderness for wide-ranging species, which include the largest herbivores and all the large carnivores, including bears. Designated wilderness areas will become increasingly important to the survival of these species as unprotected surrounding lands continue to be developed and fragmented.

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