

EFFECTS OF FIRE ON RACCOON BEHAVIOR

This paper reports on the reactions of a family of raccoons (*Procyon lotor*) to a controlled fire on the Cedar Creek Natural History Area in east-central Minnesota, which burned 24 acres of savanna habitat common to their home ranges. Quantitative data on movements and behavior of these animals before and after the fire, which occurred on 25 April 1966, were obtained by an automatic radio tracking system (Cochran *et al.*, *BioScience* 15: 98-100, 1965).

The location of each radio-tagged raccoon utilizing the area that was burned was determined at 15-minute intervals for 4 days before the burn, the day of the burn, and the 4 days following. Four raccoons, an adult female and three of her yearling male offspring, were known to be in the vicinity of the burn. A combined total of 1800 locations of the four animals was obtained during the 9 days with a maximum triangulation error of 300 ft (Heezen and Tester, *J. Wildlife Mgt.*, 31: 124-141, 1967). The entire family traveled together about 1% of the time, three animals traveled together about 8% of the time, two animals traveled together about 23% of the time, and the four animals traveled alone about 68% of the time. Young animals usually made up the traveling groups of two and three. Each animal spent the diurnal resting period alone, except for 1 day when two young



FIG. 1.—Home ranges of the four raccoons and the relationship to the burn areas.

rested together. The four animals used a common area of approximately 110 acres in this 9-day period. Individual home ranges varied from 158 to 236 acres (Fig. 1). Home ranges were determined by plotting the movements of each animal for the nine days and connecting the exterior points.

Combined home ranges contained 124 acres of oak savanna, described in detail by Bray (Oikos, 10: 38-49, 1959). The fire, used as a management tool to maintain the savanna character of the habitat, burned in 24 acres of the savanna from 5 PM until midnight, with some trees still smoldering the following morning. Although the fire was hot and removed most litter and herbaceous ground cover, the hazel (*Corylus americana*) understory did not appear severely damaged. Some of the trees, the majority of which were burr oak (*Quercus macrocarpa*) and northern pin oak (*Q. ellipsoidalis*), also burned.

During the 4 days prior to the fire three of the four raccoons visited or traveled through the area to be burned seven times and spent approximately 2 hr 15 min (total time) in the area. During the 4 days after the fire all four raccoons visited or traveled through the burned area six times and spent approximately 2 hr 30 min (total time) in it. The raccoons did not enter the burn area on the day of the fire although they rested at different locations within a fourth to a half mile of it. On the basis of time spent in the area three of the seven trips before the burn were classified as hunting or meandering and four were classified as "passing through." One of the six trips into the area after the burn was classified as hunting or meandering and five as "passing through." This apparent reduction in hunting may have been due to destruction of food materials by the fire. Dramatic changes did not occur; the burn area was not heavily utilized before the fire and even less utilization occurred after. A total of 660 locations fell in the 124 acres of oak savanna habitat for the nine days. Of these, 2.4% fell in the burn area before the fire and 1.2% fell in the same area after the fire. It does appear to be significant that the raccoons continued to travel through the burned area.

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