

Otters, Fire, and the Ocean: An Unusual Relationship at Acadia

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Little was known until recently about the population status of river otter in Acadia National Park (ACAD) and the influence of trapping outside of the park's boundaries on this secretive species. In 1985, we began a study to determine the distribution, food habits, and habitat relationships of otters on Mount Desert Island (MDI), Maine. The purpose was to provide information for managing otters.

Otter sign (scats, latrines, tracks, and glides) was searched for during two summer and two winter field seasons on MDI's 39 watersheds. Otter scats were collected and analyzed for prey items. Data also were collected in each watershed on stream gradient and flow, riparian vegetation, wetland characteristics, and beaver activity.

Our results were somewhat unexpected! Many watersheds on MDI are short (<5km), have steep gradients with rapid runoff, and are relatively infertile. Few permanent, non-manipulated wetlands exist and otter habitat appears marginal. However, two factors offset this initial impression of habitat suitability. First, the ocean, a food rich habitat, is readily accessible via the many streams on the island. During summer, amphibians were the predominant food item (65% occurrence) of otters, but in winter, fish (85% occurrence) were present most often, and of the fish, marine species were most common. Snow tracking revealed otters using streams as small as 1.5 m in width to access the marine environment, and we often observed otter slides on cobble and sand beaches.

The other major factor influencing otter habitat on MDI was the 1947 fire that burned more than 6,000 ha, including much of the eastern portion of ACAD. Climax spruce-fir forests were replaced by aspen, birch, and other deciduous species. Beaver numbers increased rapidly and modified the watersheds in the burned area,

greatly increasing the number and area of wetlands. Beaver-created wetlands provided stable water levels year-round, thus improving habitat for important prey items such as fish and amphibians. Also, abandoned beaver lodges and dams provided excellent denning and resting sites for otters. When we mapped the distribution of otter on MDI and ACAD, there was a strong correlation with watersheds that contained beaver; the beavers' presence, in turn, was correlated with the distribution of aspen resulting from the fire (Fig. 1).

Prior to 1947, otter densities on MDI were probably low, approximating the present situation on the western side of the island where watersheds are dominated by spruce-fir and few wetlands occur. Easy access to the ocean, with its rich food supply, greatly enhances the ability of otters to remain in this region. Although the 1947 fire was catastrophic, it did increase habitat diversity on the eastern half of the island. Beaver responded to the aspen food supply and, through their modification of watersheds, have benefited not only otter but a variety of other wetland species. With the tremendous influx of people to ACAD each summer, otters apparently withdrew to more inaccessible wetlands. In winter they readily move between fresh water and marine environments and thus have the best of two "worlds."

The aspen-birch forest will slowly revert to spruce-fir, and eventually beaver and otter populations will decline. Only large scale habitat management can reverse this trend, but activities such as this are not appropriate in the park. Currently trapping on MDI does not seem to have a major effect on the otter population in ACAD. On average, four otter are harvested on MDI each year outside of the park, and most are taken incidental to beaver trapping. The research report to Supt. Jack Hauptman recommends that beaver and otter populations should be monitored every five years and that trapping should be restricted on MDI if the surveys show

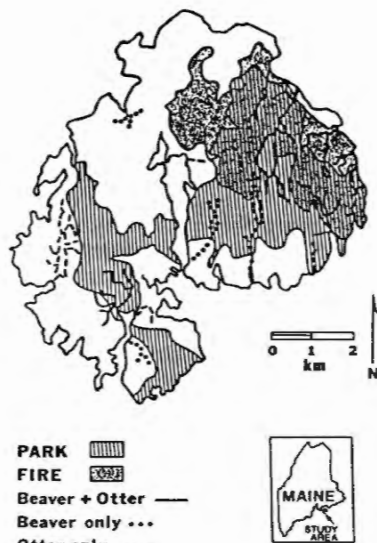


Figure 1. Location of Acadia NP, 1947 fire, and watersheds regularly used by otter and beaver on Mount Desert Island, Maine.

these populations to be seriously declining. Further, because of substantial development pressure being experienced on the island, riparian buffer zones should be established and maintained along streams used by otters for access to and from the ocean. Finally, public access to the fresh water wetlands used extensively by otter should remain limited.

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Wetlands such as the one shown here under Beehive Mountain at Acadia NP's Mount Desert Island are indicative of the complex interrelationship among fire, plant communities, beaver, and river otter. Fire creates the conditions for aspen growth, which attract beavers, which build dams, which create wetland conditions favorable to the otter.



Beaver dams such as this one at Mount Desert Island in Acadia NP are important factors in establishing habitat for a variety of wildlife including river otter. Beaver-created or modified wetlands support an abundance of fishes and frogs, major items in the otter's diet, as well as providing isolation and safe resting places.