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Publication Brief for Resource Managers

Release:	Contacts:	Phone:	Email and web page:
February 2005	Dr. Gary M. Fellers	415-464-5185	gary_fellers@usgs.gov http://www.werc.usgs.gov/pt-reyes/fellers.asp

Point Reyes Field Station, USGS Western Ecological Research Center, Point Reyes National Seashore, Point Reyes, CA 94956–9799

Fire Effects on the Point Reyes Mountain Beaver

In October 1995, a 5,000-ha wildlands fire on the Point Reyes peninsula, California, burned 40% of the known range of the Point Reyes mountain beaver *(Aplodontia rufa phaea)*, including most of what was believed to be prime habitat. The fire burned through thickets and revealed thousands of mountain beaver burrow openings. This enabled researchers to assess the pre-fire distribution and population size of mountain beavers within the burn area and evaluate their survival and recovery. USGS scientist Dr. Gary M. Fellers and coauthors David Pratt (Point Reyes National Seashore) and Jennifer L. Griffin (consultant) present their findings in the *Journal of Wildlife Management.*

Management Implications:

- Intense fires have a strong, negative impact on mountain beavers and can cause local extirpations; small, isolated populations are especially vulnerable.
- Recovery can be slowed by unfavorable shifts in plant species composition, the physical structure of thickets, and low rate of immigration by mountain beavers.
- While periodic small fires allow for normal changes in mountain beaver habitat, large fires should not be allowed to burn substantial portions of areas known to be occupied by mountain beavers.

Mountain beavers are sedentary, primitive rodents with a 5-6 year lifespan, maturing in the second year, and then producing 2-3 young each spring. Their water requirements are unusually high because of their primitive kidney; they must drink 1/3 of their body weight daily. Mountain beavers feed on a variety of plants and live in underground burrows dug in forest openings or dense thickets. In California, 2 small, geographically isolated, distinct subspecies are found along the coast: the Point Reyes population and the endangered Point Arena population. More extensive populations live in the Sierra Nevada and in the Pacific Northwest.

Prior to the fire (1984–1994), systematic surveys of mountain beaver habitat at Point Reyes National Seashore were made and their presence was confirmed, but population size could not be determined.

In the first 6 months after the fire, researchers surveyed burned coastal scrub to count and map burrow openings. They estimated that 5,000 mountain beavers had occupied the areas before the fire. The presence of fresh dirt outside burrow openings and photographs from remote-triggered cameras documented 19 mountain beavers that survived the fire and immediate post-fire period. This represented < 2% of the original population. Activity was monitored for 5 years at 8 sites where mountain beavers survived the fire, and at 3 sites where there were no survivors. The researchers found recovery at some of the 8 sites and found migration into only one of the 3 sites where fire had eliminated the original population. They estimated that recovery may take 15–20 years.

The authors suggest the slow recovery may be caused by shifts in both plant species composition and the physical structure of thickets. Limited dispersal of mountain beavers between suitable sites may also retard recovery. As the vegetation becomes more suitable, an increase in mountain beavers likely will occur due to population growth and immigration from outside the burn area.

Fellers, Gary M., David Pratt, and Jennifer L. Griffin. 2004. Fire Effects on the Point Reyes Mountain Beaver (Aplodontia rufa phaea) at Point Reyes National Seashore. Journal of Wildlife Management 68(3):503–508.

View a mountain beaver video clip at <http://www.werc.usgs.gov/pt-reyes/movies/>.