



United States Department of the Interior

NATIONAL PARK SERVICE

Craters of the Moon National Monument

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IN REPLY REFER TO:

N22

December 21, 1981

Memorandum

To: Superintendent, Craters of the Moon National Monument

From: Research Biologist

Subject: Effects of naturally occurring fires on mule deer and their habitat in the wilderness area of Craters of the Moon National Monument

The comments given below concern mule deer only and should not be considered to influence fire management decisions based on other resource concerns.

Naturally occurring fires may effect deer either directly or through alteration of habitat types which deer use. It is unlikely that any fire would kill a significant number of deer as they are sufficiently mobile to evade fire. Temporary displacement may occur, however.

Fire would indirectly effect deer by altering their habitat. The magnitude of the effect would depend on the type of habitat and the proportion of that type which burned.

From observations made in 1980 and 1981, it appears that deer use of wilderness shrublands dominated by mountain big sagebrush (Artemesia tridentata vaseyana) and bitterbrush (Purshia tridentata) is light, except in areas in close proximity to limber pine (Pinus flexilis) stands. Deer do travel through shrublands and most certainly forage there, but the extent of the community is great compared to the number of deer and use is dispersed. As a result, the extent of a fire in this type of deer habitat would be more important than fire effects on individual plant species within the community. A fire would have to burn a large (approximately 1000 acres) continuous block in the shrubland type before any significant impact on deer would be expected. Small (50-100 acres) patchy fires within the shrubland may be beneficial to deer by increasing the diversity of plant communities available.

Due to the interspersation of barren and semi-barren (Thompson, Plant Community maps, 1936) areas within the shrubland, it is unlikely that a fire could spread in a large continuous block. Natural firebreaks would favor small patchy burns. Since most vegetation in the wilderness lies along the great rift, which runs perpendicular to the prevailing winds, a fire which could run the length of the rift and consume a large continuous block of shrubland is unlikely.

Although hot fires under dry conditions may eliminate bitterbrush from a shrub community, the extent of bitterbrush in the wilderness is sufficient to accept fire without major impacts on deer habitat. It would appear that other management concerns would dictate fire suppression in the wilderness shrubland before deer habitat would become a concern.

Limber pine stands are the most important plant community for mule deer in the wilderness area. The stands evidently provide a moderated microclimate which deer find attractive. The areas are used for resting cover and as fawning areas. It is estimated that at least one-half of the Crater's herd fawn production occurs in wilderness limber pine areas. The most important fawning areas are in stands with gentle relief and greater than 50 percent total vegetative cover as depicted on the 1936 plant community maps. These prime areas total approximately 1300 acres. Since limber pine is often coexistent with a shrub understory with good bitterbrush representation, these areas probably contribute significantly to the forage base actually used by deer.

The potential for an extensive fire in limber pine stands classed as semi-barren (Thompson, 1936, Plant Community maps) seems low due to the discontinuous fine fuels and non-overlapping tree crowns characteristic of this type. As with the semi-barren shrubland, natural firebreaks would limit the extent of burned areas and create diversity within the type. As a result, fires in semi-barren limber pine stands should pose no threat to deer habitat quality.

In the remaining limber pine stands, with greater than 50 percent total vegetative cover, the possibility for fire spread is greater. Fire within these stands would temporarily reduce the quantity of prime fawning and resting areas available. The recovery time for such burned areas is difficult to estimate. An approximately 10 acre 25 year old burn of this type on Coyote Butte, however, shows excellent bitterbrush recovery and the presence of young limber pine. The recovery of the limber pine stand to the tree sizes present at the time of the burn will probably require a century but the site will eventually recover.

As with other habitat types, the interspersed of barren and semi-barren areas within the limber pine with greater than 50 percent total vegetative cover would reduce the probability that a fire would burn a significant portion of the type. At no time would fire threaten the bulk of the prime fawning and resting habitat. As a result, there would be no need to establish a policy of total suppression, even in the prime areas, as the burned sites will eventually recover.

To roughly maintain the quantity and quality of prime habitat, a fire management policy which contains fire in the limber pine stands with greater than 50 percent total vegetative cover to a maximum of 50 or 100 acres may be appropriate. This would limit individual fires to 4-8 percent each of the total in the type. If a decline in habitat quantity is acceptable then larger burn areas would also be acceptable.

It is important to remember that, historically, fires were probably the rule rather than the exception in Craters of the Moon. Active cinder cones caused many fires and the deer habitat conditions seen in 1980 are the result of at least 1000-2000 years of volcanic inactivity. Since deer are not an endangered species, there seems to be no compelling reason to adopt a natural fire suppression policy which artificially maintains their habitat in the current state.

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