## Twentieth Annual Report

## Covering: January 1-December 31, 1968

M.S. 10. The effects of the Northern Pocket Gopher on Reforestation Movement and Activity.

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The objectives are (1) to ascertain type and extent of pocket gopher damage to ponderosa pine and Douglas-fir seedlings.

Pocket gopher (Thomomys talpoides) damage was determined by establishing direct seeded and planted ponderosa pine (Pinus ponderosa) and Douglas-fir (Pseudotsuga menziesii) seedlings. These plantings were given three levels of protection: (1) no protection from mammals, (2) protection from surface mammals, and (3) protection from all mammals. Under the three levels of animal protection, the survival of ponderosa pine seedlings was consistently higher than that of Douglas-fir within the same treatment. When completely protected from mammal influence, nearly 90 percent of the pine seedlings survived at the end of two growing seasons. The survival rate for pine seedlings under partial and no protection was 39 and 55 percent respectively. No Douglas-fir seedlings survived without protection and only 15 and 17 percent survived under partial and total protection. Pocket gophers killed more pine seedlings than any other factor, but had no effect on Douglas-fir seedlings. Drought and frost heaving accounted for almost 80% of the seeded fir mortality.

The survival rate of planted pine was greater than for Douglas-fir under all three levels of animal protection. The seedlings receiving protection from all mammal influences sustained mortality only from planting losses and drought. In the two treatments in which pocket gophers were present, mortality to both species of trees increased substantially. Planting losses and pocket gophers appear to be the primary sources of mortality on planted seedling on the Washington Creek burn. Pocket gophers did not prefer one species of tree over the other.

Radioisotope labeling techniques were utilized to determine the movement and activity of pocket gophers. A leg band containing 200 micro curies of tantalum-182 was placed around the foreleg of the gopher. After release the marked gophers were located daily with a portable scintillation counter. Analysis of data from 42 marked gophers indicates that adult females and juveniles were more active and moved further than adult males throughout the summer. Summer activity patterns from June to August show that gopher activity reached a peak during the second week of July. Activity then gradually decreased until fall rains commenced during the third week of August. Data from five marked gophers tracked continuously for 24 hours shows that gophers are active throughout the day, but the most intensive period of activity occurred during midday and the least at midnight. The home ranges for adult pocket gophers exceeded 1100 sq. ft. while home ranges of juveniles was usually less than 900 sq. ft.

33