
Population Dynamics and Habitat Enhancement for Two Vulnerable Small Mammals in the Okanagan Valley: Great Basin Pocket Mouse and Western Harvest Mouse

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Key Words: Great Basin pocket mouse, *Perognathus parvus*, western harvest mouse, *Reithrodontomys megalotis*, habitat use, population dynamics, British Columbia

Abstract: The Great Basin pocket mouse (*Perognathus parvus*) and western harvest mouse (*Reithrodontomys megalotis*) are two peripheral species that occur in the southern Okanagan Valley of British Columbia. Both species are listed as vulnerable to extirpation because of habitat loss, primarily due to the conversion of natural habitat to agriculture, overgrazing of pasture and grasslands, and suburban expansion. A 4-year study across seven habitat types (old field, sagebrush, dwarf apple orchard, conventional apple orchard, ponderosa pine forest, hedgerow, riparian) plus an organic orchard, in an agrarian mosaic, indicated that the pocket mouse occurred at densities ranging from 15–25/ha in sagebrush habitats to 2–8/ha in old fields and ponderosa pine forest. The western harvest mouse occurred at densities up to 10/ha in old fields and the organic orchard, and up to 5/ha in sagebrush habitats. Few animals of either species were captured in the other habitats.

The pocket mouse breeds from April to August and appears to produce two litters per year. The proportion of breeding males in the population was 61.2% in sagebrush habitats, 50.9% in old fields, and 42.9% in ponderosa pine forest. Mean number of successful pregnancies was 23.7 in sagebrush habitats, 7.7 in old fields, and 7.5 in ponderosa pine forest. Early juvenile survival ranged from 2.62 young per pregnant female in sagebrush habitats to 5.46 in old fields and 5.94 in ponderosa pine forest.

The western harvest mouse breeds from March to November and produces a variable number of litters per year. The proportion of breeding males in the population was 75% in old field and sagebrush habitats, 42.9% in the organic orchard, and 100% (sample size was small) in linear habitats (i.e., hedgerows and riparian areas). Early juvenile survival ranged from 3.27 young per pregnant female in old fields to 5.83 in sagebrush habitats, 5.00 in the organic orchard, and 1.00 in linear habitats.

Conservation of habitat features such as high biomass and structural diversity of grasses and forbs in hedgerows and organic orchards has the potential to maintain populations of the western harvest mouse. Maintenance of linear habitats such as hedgerows may be particularly important to this species; conversely, the Great Basin pocket mouse needs sagebrush and old field

(grassland) habitats which must be conserved as non-linear components in mosaics of natural and anthropogenic habitats. Both of these rodent species could act as ‘indicators’ of habitat integrity for a wide range of other vertebrate, invertebrate, and plant species in the Okanagan Valley.