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National Wildlife Research Center's Olympia Field Station

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Is it a Pocket Gopher or Mole?

BY WENDY M. ARJO

Depending on where you are, the term "gopher" is applied to a variety of mammal species including ground squirrels, prairie dogs and moles. The true pocket gopher is actually very distinguishable once you recognize their appearance and sign, or indicators of the animal. Pocket gophers are burrowing rodents named for their external fur-lined cheek pouches. Unlike mole mounds, which have been characterized as miniature volcanoes, gopher mounds are fan-shaped in appearance. Pocket gophers are distributed throughout the Pacific Northwest, but occur more frequently in the drier climates of eastern Washington and Oregon.

Pocket gophers prefer roots and stems of herbaceous annuals and perennial plants that are often associated with early successional forests. Because of this preference, seedlings

become a very tempting target to a foraging pocket gopher. Commonly, gophers will prune seedling roots and often pull the entire seedling into their burrow. Stem clipping at ground level and girdling are also common with seedlings less than half an inch in diameter the most vulnerable. In deep snow conditions, aboveground girdling of larger trees can occur. Although aboveground girdling is easy to detect, damage by pocket gophers to root systems may go unnoticed until seedlings become discolored or tip over. Several factors have been noted that predispose a stand to pocket gopher damage: 1) current pocket gopher density; 2) soil suitability for burrowing; 3) topography; 4) herbaceous understory; 5) amount of adjacent border with preferred forage; and 6) site preparation.

Management practices to reduce pocket gopher damage include silvicultural practices, such as minimizing disturbance of an area, habitat manipulation, trapping, repellents, fumigation and seedling barriers such as Vexar tubing. Strychnine baiting is the most widely used method to reduce pocket gopher populations prior to planting seedlings. Baits are applied belowground to minimize

negative impacts on aboveground non-target species; strychnine-baited pocket gophers, however, may still pose a threat to subterranean predators such as weasels. In addition, pocket gophers and other small mammals using pocket gopher burrows may consume the bait and die aboveground.

The Olympia Field Station has conducted several tests to determine primary, secondary and tertiary risks that may occur while strychnine-baiting pocket gophers. Population responses of non-target species—golden mantled ground squirrels and yellow pine chipmunks—were monitored on two reforested sites in Oregon. Immediately after baiting, ground squirrel numbers declined; however, the following spring the population recovered. Yellow pine chipmunk populations were not reduced by strychnine baiting, but in fact increased in the treated plots the following spring. This increase may reflect an invasion of chipmunks in the absence of ground squirrels.

Regardless of ground cover, pocket gophers usually die belowground in the nest or close to it. This supports the notion that fossorial (living belowground) rodents baited belowground are unlikely to become secondary hazards. However, this does not entirely eliminate the chance of an occasional aboveground death or the potential for underground predators like weasels to encounter carcasses. Predator-prey interactions are largely unknown since subterranean predator activity is difficult to observe.

Artificial burrow systems were established to investigate interactions of weasels and pocket gophers at the Olympia Field Station. Weasels (80



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Protecting seedlings from pocket gopher damage can be difficult since seedlings can be attacked from both belowground and aboveground.

percent of those tested) readily killed and consumed healthy pocket gophers. All weasels ate strychnine-baited gopher carcasses after 72 hours, but no weasels died from secondary poisoning. Although weasels killed and cached gophers, caches were composed of single animals only. Most of the weasels sampled, but not entirely consumed, both fresh-killed gophers and five-day-old carcasses. Although caching behavior of weasels may increase their exposure to secondary poisoning of strychnine, this in turn may be minimized by the fact that the majority of weasels only sampled carcasses. If strychnine-baited pocket gophers die aboveground, secondary hazards to scavengers and tertiary hazards to insectivores (species that eat insects that cause decay of carcasses), may occur.

The fate of small mammal carcasses was determined on a study site in the Rogue River National Forest. Carcasses disappeared equally from both scavengers and insects. In addition, several insect species were sampled to determine strychnine concentration levels and any potential risks to insectivore species. Fly larvae and ants were found to contain high levels of strychnine; however, little risk is posed to insectivores due to the quantity of insects that would have to be consumed to acquire a lethal dose. Studies by the Olympia Field Station have shown that controlling pocket gopher populations with strychnine baiting poses relatively little risk to non-target species. ♦

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