

significant numbers of additional people and to need substantial numbers of added single-family housing units and multi-family units in the near future. As the habitat patches become smaller, fewer, and farther apart, the likelihood of each patch continuing to support grassland-dependent species declines as intervening habitat patches are lost. These trends generally affect gophers negatively.

The persistence of Mazama Pocket Gophers on roadsides, vacant lots, lightly grazed pastures, and within commercial timberland suggests that they are relatively resilient, and may be able to persist in rural and low density developed areas. However, recent extinction of the Tacoma pocket gopher indicates that life for gophers in high density residential and commercial areas is hazardous and recruitment and re-colonization is inadequate to maintain local populations. The last possible records of the Tacoma pocket gopher were animals that were killed by domestic cats (*Felis catus*) and identified as gophers by homeowners (Ramsey and Slipp 1974). It is not known if the mortalities from these sources have a significant effect on gopher populations, particularly in less densely settled areas. Domestic dogs (*Canis lupus familiaris*) also are known to kill pocket gophers, but are probably less often free-roaming in unfenced areas. Pocket gophers can damage young trees and, like moles, their diggings can be an untidy nuisance to landowners desiring attractive lawns. They can also be a problem in vegetable gardens and at Christmas tree, berry, and vegetable farms in the area. Mazama Pocket Gophers are currently protected from killing without a permit; the frequency that they might be trapped or poisoned is unknown. When larger populations are suppressed by these methods, they readily recover if habitat remains suitable, but for small and isolated populations, mortality from persecution added to other hazards may lead to extirpation.

*Livestock grazing.* Gophers may survive in pastures in rural residential areas, but studies in California indicate that gopher density tends to decrease in heavily grazed pastures (Eviner and Chapin 2003). *T. mazama* has persisted on well-managed ranches in Thurston County.

*Gravel mining.* South Puget Sound prairies are located on glacial outwash gravels. Some of these glacial gravel deposits are very deep and valuable for use in construction and road-building, and prairie sites of significant size may be destroyed by gravel mining. One of the historic sites where Tacoma pocket gophers were collected became a large gravel pit, and 2 gravel pits have been opened on occupied gopher habitat in Pierce County south of Roy, and on historical Rock and Rocky prairies in Thurston County. These sites may be restorable to suitable condition for gophers when gravel removal operations have ceased if adequate layers of friable well-drained subsoil and topsoil are restored.

*Airport Management and Development.* Pocket gophers occur in grasslands surrounding airport runways and adjoining lands at Olympia and Shelton. Airport safety considerations require that the vegetation be mowed to maintain visibility, eliminate cover for large animals that might pose a hazard for aircraft, and provide a safety margin should aircraft overshoot or land short of the runway. This management benefits gophers by keeping out woody vegetation and maintaining the grassland. Development of aviation facilities and the surrounding port lands at the Olympia Airports pose a potential threat of habitat loss for what may be the largest populations of Mazama Pocket Gophers. The Olympia Airport designated 8.6 ac (3.5 ha) as a Mazama Pocket Gopher habitat conservation area in an interlocal agreement with WDFW as part of the Airport Five Year Development Plan, and any additional development would be subject to Tumwater Critical Area Ordinances. The Port of Olympia is currently updating their master plan. The Plan projects significant future land developed for general aviation (~114 ac (46 ha)), aviation related/compatible industry (~245 ac (99 ha)), and additional area for parallel taxiways (Barnard Dunkelberg & Co. 2011).

