

CANDIDATE AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: Thomomys mazama (ssp. couchi, glacialis, louiei, melanops, pugetensis, tacomensis, tumuli, yelmensis)

COMMON NAME: Mazama Pocket Gopher; Western Pocket Gopher

(Note: “Western pocket gopher” is used by Washington Department of Fish and Wildlife (WDFW), and we have used this common name on our species of concern list. However, The Mammals of North America (Hall 1995), the Smithsonian Institution website, and recent literature on this species use “Mazama pocket gopher.” Mazama pocket gopher is probably the more accurate common name, at least for the western Washington species, and also distinguishes this complex of subspecies from the “western pocket gopher” subspecies in Oregon and California.)

Shelton pocket gopher ( T. m. couchi)

Roy Prairie pocket gopher ( T. m. glacialis)<sup>1</sup>

Cathlamet (or Louie’s) pocket gopher (T. m. louiei)<sup>2</sup>

Olympic pocket gopher ( T. m. melanops)

Olympia pocket gopher ( T. m. pugetensis)<sup>1</sup>

Tacoma pocket gopher ( T. m. tacomensis)<sup>1, 2</sup>

Tenino pocket gopher ( T. m. tumuli)<sup>1</sup>

Yelm pocket gopher ( T. m. yelmensis)<sup>1</sup>

<sup>1</sup> Five subspecies may eventually be renamed as one species.

<sup>2</sup> Two subspecies may be extinct. See discussion of taxonomy below.

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: February 2003

STATUS/ACTION (Check all that apply):

New candidate

Continuing candidate

Non-petitioned

Petitioned - Date petition received: \_\_\_\_

90-day positive - FR date: \_\_\_\_

12-month warranted but precluded - FR date: \_\_\_\_

Is the petition requesting a reclassification of a listed species?

Listing priority change

Former LP: \_\_\_\_

New LP: \_\_\_\_

Candidate removal: Former LP: \_\_\_\_ (Check only one reason)

A - Taxon more abundant or widespread than previously believed or not subject to a degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

F - Range is no longer a U.S. territory.

- \_\_\_ M - Taxon mistakenly included in past notice of review.
- \_\_\_ N - Taxon may not meet the Act's definition of "species."
- \_\_\_ X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Rodent; Geomyidae (pocket gophers)

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Washington  
(Other subspecies of Thomomys mazama also occur in Oregon and California.)

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CURRENT STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Washington

LEAD REGION CONTACT (Name, phone number): Scott McCarthy (503/231-6131)

LEAD FIELD OFFICE CONTACT (Office, name, phone number): Western Washington Fish and Wildlife Office; Dr. L. Karolee Owens (360/753-4369)

BIOLOGICAL INFORMATION (Describe habitat, historic vs. current range, historic vs. current population estimates (# populations, #individuals/population), etc.):

Adult Mazama pocket gophers are reddish brown to black above, and the underparts are lead colored, tipped with buffy. Lips, nose, and patches behind the ears are black; the wrists are white. Adults range from 175 to 273 millimeters (mm) (7 to 11 inches (in)) in total length, with tails that range from 45 to 85 mm (2 to 3 in) (Hall 1981).

Most of the following information is condensed from Steinberg (1995, 1996, 1999):

Mazama pocket gophers are morphologically similar to other species of pocket gophers that exploit a subterranean existence. They are stocky and tubular in shape, with short necks, powerful limbs, long claws, and tiny ears and eyes. Short, nearly hairless tails are highly sensitive and probably assist in navigation in tunnels. Pocket gophers tunnel and burrow with teeth and claws. Their "pockets" are external, fur-lined cheeks on either side of the mouth. These pockets are used to transport nesting material and carry plant cuttings to storage compartments.

Pocket gophers' diet includes a wide variety of plant material, including leafy vegetation, succulent roots, shoots, and tubers. Although as consumers of crop plants they are considered agricultural pests, in natural settings they play an ecological role by aerating soils and stimulating plant growth. In prairie ecosystems, pocket gopher activity is important in maintaining species richness and diversity.

Pocket gophers rarely surface completely from their burrows, although they do disperse above ground. They are highly asocial and intolerant of other gophers. Each maintains its own burrow system, and multiple occupancy occurs only for brief periods during mating seasons and prior to weaning young. The mating system is probably polygynous and most likely based on female choice. The adult sex ratio is biased toward females, often as much as 4:1.

Population density and spatial distribution is generally determined by the distribution of

appropriate habitat, patch sizes of suitable soil type, and the number of territories that can be supported by the food resources. One site having a deep soil layer that was much less rocky had a pocket gopher population density five times that of another site having rocky soil (Steinberg 1996). A study of the relationship of soil rockiness and the distribution of pocket gophers revealed the proportion of the weight of soil samples due to medium rocks correctly predicted presence or absence of pocket gophers in eight of nine prairies sampled (Steinberg 1996). In a study of the distribution of pocket gophers on Fort Lewis, pocket gophers did not occur in areas with high vegetation cover of Scot's Broom (*Cytisus scoparius*), a highly invasive and nearly indestructible nonnative plant, or where mole populations were particularly dense (Steinberg 1995).

Prior to 1960, the pocket gophers of western Washington were considered to be subspecies of *Thomomys talpoides*. Based on characteristics of the bacula (penis bone), Johnson and Benson (1960) found the western Washington complex of pocket gophers to be much more similar to *Thomomys mazama*, which occurs in western Oregon and northwestern California. Subsequently, the western Washington populations have been classified as subspecies of *Thomomys mazama*.

Eight subspecies of *Thomomys mazama* have been identified in western Washington (Hall 1981). Two of these subspecies, the Cathlamet (*louiei*) and Tacoma (*tacomensis*) pocket gophers, may be extinct. Recent genetic analyses indicate that the Puget Sound prairie pocket gopher subspecies (*glacialis*, *pugetensis*, and *yelmensis*) are not substantially genetically differentiated and may actually represent one subspecies (Steinberg 1999). This subspecies may also include the Tenino pocket gopher (*tumuli*) and the Tacoma pocket gopher (*tacomensis*), if these two subspecies still exist. No pocket gophers were found in the described range of *tumuli*, but its distribution suggests it belongs to this group (Steinberg 1995).

The Mazama pocket gopher is associated with glacial outwash prairies in western Washington, an ecosystem of conservation concern (Hartway and Steinberg 1997). Steinberg and Heller (1997) found that Mazama pocket gophers are even more patchily distributed than are prairies, as there are many seemingly high quality prairies within the species' range that lack pocket gophers. Pocket gopher distribution has probably always been highly patchy, partly due to the patchy distribution of the prairies, but also because of an even patchier distribution of soil rockiness within the prairie expanses (Steinberg and Heller 1997).

Steinberg (1995) assessed the current distribution of the Mazama pocket gopher and found that many of the historic populations have disappeared or diminished substantially enough in size that their presence was not obvious. The Cathlamet pocket gopher is known only from the type locality in Wahkiakum county, but no evidence of pocket gophers was found at that site. The Cathlamet pocket gopher was originally found in a large burn that subsequently regenerated to forest. The forest has recently been clearcut, but pocket gophers have not been found at this site since 1956, despite brief survey efforts in the 1970s, 1980s, and 1990s (D. Stinson, WDFW, pers. comm., 2003).

The Olympic pocket gopher is found in the Olympic National Park in Clallam County where it is restricted to subalpine habitat of the higher Olympic Mountains. No complete inventory has been done in the park.

One population of the Shelton pocket gopher was detected at the Shelton airport in Mason County, and mounds were found on penitentiary grounds near Shelton. The airport population was estimated to include 990 pocket gophers, and another population was estimated to include several hundred pocket gophers. The latter site was a regenerating clearcut that had been colonized by pocket gophers after 1992 (WDFW 2001b). Other patchy populations may occur nearby on private land (Steinberg 1995, 1996).

The Roy Prairie pocket gopher is known only from Roy Prairie in Pierce County. One sparse population of pocket gophers was found south of Roy, and populations were detected nearby on Fort Lewis. The Olympia, Tenino, and Yelm pocket gophers are known from Thurston County. Several populations of the Olympia pocket gopher were found south of Olympia. The Tacoma pocket gopher was known to occur in Pierce County. No evidence was found of either the Tacoma pocket gopher or the Tenino pocket gopher. Several relatively large populations of Yelm pocket gophers were detected on Johnson and Weir prairies on Fort Lewis near the town of Rainier. None were found in Tenino, Vail, or Rochester, but populations could still occur on private land.

In addition to surveying historical and currently known sites, Steinberg (1996) surveyed all sites listed by the Washington Department of Natural Resources (WDNR) as having Carstairs, Nisqually, or Spanaway gravelly or sandy loam soil, and which WDNR determined to have vegetation that was intact prairie or restorable to prairie. Two previously unidentified populations were found at Scatter Creek Wildlife Area and at Rock Prairie. The Rock Prairie site was degraded, but a small patch of pristine mounded prairie dominated by native plants supported a small population of pocket gophers. A number of sites surveyed had rocky and compacted soils, and no evidence of pocket gophers were found (Steinberg 1996).

Because populations tend to be small and isolated, and the geographic distribution appears to be shrinking, this entire complex of pocket gophers may be threatened with extinction (Steinberg 1995). Pocket gophers have limited dispersal capabilities, and the loss and/or degradation of additional patches of appropriate habitat could result in further isolation of populations, increasing their vulnerability to extinction.

**THREATS** (Describe threats in terms of the five factors in section 4 of the ESA providing specific, substantive information. If this is a removal of a species from candidate status or a change in listing priority, explain reasons for change):

A. The present or threatened destruction, modification, or curtailment of its habitat or range.

The prairies of South Puget Sound are one of the rarest habitats in the United States (Dunn and Ewing 1997). Drastic changes have occurred in the southern Puget Lowland landscape over the last 150 years, including a 90B95 percent reduction in prairie habitat. The acreage occupied by Puget prairies that resemble original grasslands may only be one percent of the distribution of prairie soil types, when viewed in terms of native species composition and dominance (Crawford and Hall 1997). The basic ecological processes that maintain prairies have disappeared from, or have been altered on, the few protected prairie sites. Fire regimes have been altered, and prairie habitat has been invaded by nonnative species (Dunn and Ewing 1997). Fire suppression allows Douglas-fir (*Psuedotsuga menziesii*) to encroach on and overwhelm prairie habitat (WDFW 2001b).

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Several fairly large populations of pocket gophers have been identified on Fort Lewis. However, their absence from some areas may be related to compaction of the soil due to years of heavy tank use that has compacted the soil, collapsed tunnel systems, and impeded burrowing activities of pocket gophers (Steinberg 1995).

Where pocket gophers occur on Fort Lewis, their distribution is extremely patchy. Their patchy distribution is related to local habitat conditions. In a study of the distribution of pocket gophers on Fort Lewis, pocket gophers did not occur in areas with thick Scot's broom or where mole populations were particularly dense (Steinberg 1995).

In addition to military activities on Fort Lewis, prairie habitat and Mazama pocket gophers are threatened by other proposed development on Fort Lewis. Projects in the planning stages include the Cross-Base Highway, proposed for construction by Pierce County, Washington Department of Transportation, and the Federal Highways Administration.

The glacial outwash gravels underlying the south Puget Sound prairies are deep and valuable for use in construction and road building. One of the historic Tacoma pocket gopher sites became a large gravel pit, and two gravel pits have been approved on part of the remaining pocket gopher habitat (WDFW 2001b).

The two populations located at airports (Port of Olympia and Port of Shelton) are threatened by development. The Port of Olympia is realigning the airport runway. The Port of Shelton hopes to develop the area now occupied by the Mazama pocket gopher and has hired a consultant to investigate moving the pocket gophers to a more convenient area (D. Stinson, pers. comm., 2003).

#### B. Overutilization for commercial, recreational, scientific, or educational purposes.

Although not currently known to be a factor, one population at Lost Lake Prairie in Mason County may have been extirpated as a result of collecting by Dalquest and Scheffer in 1944 (WDFW 2001b). The U.S. Department of Agriculture has collected Mazama pocket gophers for research purposes as

recently as 2001, and Mazama pocket gophers may be extirpated from one trapping site (D. Stinson, pers. comm., 2003).

#### C. Disease or predation.

House cat predation may be a threat to Mazama pocket gophers. Urbanization, particularly in the south Puget Sound area, has resulted in not only habitat loss, but the exposure of this species to domestic and feral house cats. Domestic cats are known to have serious impacts on small mammals and birds and have been implicated in the decline of several threatened and endangered mammals, including marsh rabbits and beach mice in Florida and the kangaroo rat in California (Kelly and Rotenberry 1993; Jurek 1994,). At least two of the Mazama pocket gopher locations were found as a result of house cats bringing home pocket gopher carcasses (WDFW 2001a).

#### D. The inadequacy of existing regulatory mechanisms.

Three of the Mazama pocket gopher subspecies (Roy Prairie, Louie's (Cathlamet), and Tacoma) were included as Category 2 species in the Federal Notice of Reviews until 1996 (61 FR 7596), when we discontinued the designation of Category 2 species as candidates. Subsequently, these subspecies have been retained on the Western Washington Fish and Wildlife Office species of concern list.

All subspecies of the western pocket gopher are now included on the WDFW candidate list, but receive no protection under State law. Prior to 1999, four subspecies (Cathlamet, Roy, Shelton, and Tenino) were on the WDFW candidate list. The 1999 revisions recognized that all subspecies of the Mazama pocket gopher in Washington, including those not previously on the monitor or candidate lists, merit review for listing as sensitive, threatened, or endangered as the populations are few and most are found in the prairies of south Puget Sound that are rapidly being developed (WDFW 2000). However, there is no State Endangered Species Act in Washington. The Washington Fish and Wildlife Commission has the authority to list species. State listed species are protected from direct take, but their habitat is not protected. As a Priority Species, Mazama pocket gophers may receive some protection of their habitat under environmental reviews of applications for county or municipal development permits (WDFW 2001b).

E. Other natural or manmade factors affecting its continued existence.

Most species' populations are cyclic in nature, responding to such natural factors as weather events, disease, and predation. These factors, however, have less impact on a species with a wide and continuous distribution. Populations that are small, fragmented, or isolated by habitat loss or modification of naturally patchy habitat, and other human-related factors, are more vulnerable to extirpation by natural randomly occurring events and cumulative effects.

As consumers of crop plants, pocket gophers are considered to be agricultural pests. The type locality for the Cathlamet pocket gopher was on a tree farm. Several site locations on the WDFW wildlife survey database were found as a result of trapping on Christmas tree farms, a nursery, and in a livestock pasture (WDFW 2001a).

One population on private land is in an area used by local residents to walk their dogs, and the dogs attempt to dig up and kill pocket gophers (D. Stinson, pers. comm., 2003).

FOR RECYCLED PETITIONS:

- a. Is listing still warranted? \_\_\_
- b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? \_\_\_
- c. Is a proposal to list the species as threatened or endangered in preparation? \_\_\_
- d. If the answer to c. above is no, provide an explanation of why the action is still precluded.

LAND OWNERSHIP (Estimate proportion Federal/state/local government/private, identify non-private owners):

Federal: one population occurs in Olympic National Park and several populations occur on Fort

Lewis; State: one population at Scatter Creek Wildlife Area;  
County: one population at the Port of Shelton and one population at the Port of Olympia.

The majority of the populations are on public land. Approximately 70 percent on public land and 30 percent on private land (D. Stinson, pers. comm., 2003). (All locations and exact numbers of populations and sizes of populations are not known. The purpose of recent surveys have been to determine current distribution.)

PRELISTING (Describe status of conservation agreements or other conservation activities):

Prairie restoration efforts to restore and maintain native prairie vegetation have been initiated at Ft. Lewis and McChord Air Force Base (in conjunction with The Nature Conservancy). The Nature Conservancy is also involved in habitat restoration with Thurston County on Black River-Mima Prairie Glacial Heritage Preserve. WDFW has initiated restoration work on Scatter Creek Wildlife Area, although the initial focus has been on Scot's broom control. Washington Department of Natural Resources conducted Douglas-fir removal and native prairie planting on Rocky Prairie Natural Area Preserve with a grant from the Service. They have also conducted prescribed burning on Mima Mounds Natural Area Preserve. WDFW recently added to the Scatter Creek Wildlife Area and is seeking funding to acquire land in the area informally known as "West Rocky Prairie," the largest and best remaining south Puget Sound prairie in private hands (WDFW 2001b).

REFERENCES (Identify primary sources of information (e.g., status reports, petitions, journal publications, unpublished data from species experts) using formal citation format):

Crawford, R. C., and H. Hall. 1997. Changes in the Puget Sound prairie landscape. Pages 11B15 in P. Dunn and K. Ewing, eds. South Puget Sound prairie landscapes. The Nature Conservancy of Washington, Seattle.

Dunn, P., and K. Ewing. 1997. South Puget Sound prairie landscapes. The Nature Conservancy of Washington, Seattle. 289 pp.

Hall, E.R. 1981. The mammals of North America. Vol. I. Second edition. John Wiley & Sons, New York

Hartway, C., and E.K. Steinberg. 1997. The influence of pocket gopher disturbance on the distribution and diversity of plants in western Washington prairies. Pages 131B139 in P. Dunn and K. Ewing, eds. South Puget Sound prairie landscapes. The Nature Conservancy of Washington, Seattle.

Johnson, M.L., and Benson, S.B. 1960. Relationships of the pocket gophers of the Thomomys mazama-talpoidea complex in the Pacific Northwest. The Murrelet 41(2).

- Jurek, R.M. 1994. A bibliography of feral, stray, and free-roaming domestic cats in relation to wildlife conservation. Calif. Dep. Fish and Game, Nongame Bird and Mammal Program Report 94B5. 24 pp.
- Kelly, P.A. and J.T. Rotenberry. 1993. Buffer zones for ecological reserves in California: replacing guesswork with science. In J.E. Keeley (ed.). Interface between ecology and land development in California. Southern California Academy of Sciences, Los Angeles.
- Steinberg, E.K. 1995. A study of genetic differentiation and variation in the Mazama pocket gopher (*Thomomys mazama*) with emphasis on Fort Lewis populations. Final report submitted to Fort Lewis and The Nature Conservancy. 46 pp. + appendices.
- \_\_\_\_\_. 1996. Population studies and management of the threatened Mazama pocket gopher, a regional perspective. Final report to The Nature Conservancy. 50 pp.
- \_\_\_\_\_. 1999. Diversification of genes, populations, and species: evolutionary genetics of real and virtual pocket gophers (*Thomomys*). Ph.D. dissertation, U. of Washington, Seattle. 157 pp.
- \_\_\_\_\_, and D. Heller. 1997. Using DNA and rocks to interpret the taxonomy and patchy distribution of pocket gophers in western Washington prairies. Pages 43B51 in P. Dunn and K. Ewing, eds. South Puget Sound prairie landscapes. The Nature Conservancy of Washington, Seattle.
- Washington Department of Fish and Wildlife. 1999. 1999 proposed revisions to the list of state candidate species. Unpublished report.
- \_\_\_\_\_. 2001a. Wildlife survey data management. Unpublished report.
- \_\_\_\_\_. 2001b. Draft Washington state status report for the Mazama pocket gopher. Unpublished report.

LISTING PRIORITY (place \* after number)

THREAT
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Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6*
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

**Rationale for listing priority number:**

*Magnitude:* The high magnitude of threat is due to small populations with patchy and isolated distributions on a rare prairie habitat type that is highly desirable for development; two subspecies may already be extinct.

*Imminence:* Specific threats are not known to be immediate in nature, and some conservation measures are being initiated for some populations, particularly on some public lands.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all additions of species to the candidate list, removal of candidates, and listing priority changes.

Approve: Rowan Gould March 6,  
2003 Acting Regional Director, Fish and Wildlife Service Date

Concur: \_\_\_\_\_  
Director, Fish and Wildlife Service Date

Do not concur: \_\_\_\_\_  
Director, Fish and Wildlife Service Date

Director's Remarks:

Date of annual review: February 2003

Conducted by: L.K. Owens

Comments:

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