ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract **Element Code:** AMAFC0102G
Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Thomomys bottae mearnsi*
COMMON NAME: Graham Mountain Pocket Gopher; Pinaleno Pocket Gopher
SYNONYMS: *Thomomys bottae grahamensis; Thomomys fulvus grahamensis; Thomomys talpoides grahamensis*; *Thomomys umbrinus grahamensis*
FAMILY: Geomyidae

AUTHOR, PLACE OF PUBLICATION: Goldman, Oct 19, 1931. Jour. Wash. Acad. Sci. 21 (17): 420.

TYPE LOCALITY: Graham Mountains (=Pinaleno Mountains), Ash creek, Graham County AZ.; collected by Ernest G. Holt, June 7, 1914.

TYPE SPECIMEN: U.S. Biological Survey collections now in the U.S. National Museum of Natural History

TAXONOMIC UNIQUENESS: The taxonomy of both the species and the subspecies is somewhat controversial. *T. b. grahamensis* was originally described as one of 77 subspecies of the species *T. bottae* and one of 20 subspecies of this species found in Arizona (Goldman, 1935). Since then additional subspecies have been described for a total of 41 in Arizona. *T. bottae* is recognized as a separate species by Cockrum (1960), Hoffmeister (1969;1986), and Patton (1973), whereas *T. bottae* is considered synonymous with *T. umbrinus* by Hall and Kelson (1959) and Hall (1981). The controversy over the existence of the species *T. bottae* revolves around the interpretation of hybridization, identified by morphologic and genetic analysis, between a population of *T. umbrinus* and a population previously assigned to *T. bottae* in the Patagonia Mountains. Those that believe the two populations belong to one species interpret the hybridization as intergradation between the two populations, and, accordingly, reduce *T. bottae* to synonomy with *T. umbrinus* and assign the latter name as the species name because it has historical precedence. Those who would retain the two as separate species consider the hybridization to exist in a narrow zone and that intergradation of species characters does not extend outside this zone, and in fact is confined to a small percentage (16% - 39% using 4 morphologic and 1 genetic measure) of individuals. The subspecific designation was not questioned, however, until recently when Hoffmeister (1986) extensively revised *T. bottae* in Arizona and reduced the number of subspecies in the state to 14. He discarded color, formerly an important character, in differentiating subspecies because of its variability within populations and the similarity of color in populations at equivalent elevations in equivalent soils. Morphological characters were similar enough in six adjacent

subspecies in southeastern Arizona (including *T. b. grahamensis*) and southwestern New Mexico to be combined into one subspecies. This he called *T. b. mearnsi*, the oldest name of six.

DESCRIPTION: Pocket gophers are named for their large fur-lined cheek pouches that open to the outside. This gopher has small black eyes; short rounded ears that are not quite covered by short, fine fur that lies close to the body; and a nearly hairless and highly sensitive tail. It has a broad head; a short, thick, highly muscled neck, shoulders and forearms; and long claws. Females have four pairs of mammae, two pectoral and two inguinal. The incisors are enlarged, rootless and evergrowing. Males are generally larger than the females. Higher elevation populations are darker than lower elevation populations due to the many black hairs intermixed with the bright, cinnamon-buff colored hairs that are typical of the lower elevation animals. The body is five or 6 inches long and the tail is about 2 1/5 inches long.

AIDS TO IDENTIFICATION: This is the only pocket gopher that in known to inhabit the upper elevations of the Pinalenos. Its fossorial habits and combination of enlarged incisors, small eyes and ears, muscular forearms with large claws, and slightly haired tail distinguish it from all other rodents found at the same elevations. Its sign is also distinctive. Nothing else makes fan-shaped mounds of earth surrounding its burrows where they come to the surface or blocks its burrow entrances with distinctive plugs of dirt.

ILLUSTRATIONS: Slides by Richard Glinski and Tom Waddell in the slide collection of the Nongame Branch of the Arizona Game and Fish Department in Phoenix.
Color Photos: http://fireflyforest.net/firefly/2007/12/29/bottas-pocket-gopher/

TOTAL RANGE: This taxon is known only from the upper slopes of the Pinaleno Mountains in southeastern Arizona.

RANGE WITHIN ARIZONA: See "**Total Range**."

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: This pocket gopher burrows in soft soils where its activities may result in both positive and negative effects. While increasing vertical cycling, porosity, aeration, and fertility of the soil, their digging may also increase the rate of erosion and gully formation and may help maintain early successional stages on overgrazed ranges. It uses its sensitive tail to guide itself backward through tunnels. It is highly adapted for digging with its strong but compact body form. These gophers are active both day and night and throughout the winter. They are preyed upon by black bears, striped skunk, coyote, bobcat, and especially the long-tailed weasel. Avian predators include red-tailed hawk, spotted owl and the great horned owl. Despite the numerous predators, habitat factors and competition between individuals are probably a more important population limiting factor than predation.

REPRODUCTION: Little is known about the reproductive activity or biology of this subspecies. Of the specimens collected as of May, 1985, the male to female ratio is 100:160

(93 males to 149 females. Young are assumed to be born every month of the year except September. The highest percentage of pregnancies are from mid-February through May. 3-4 young are born per litter. The males are probably polygamous, mating with females in adjacent burrow systems.

FOOD HABITS: Grasses, forbs, roots, and tubers.

HABITAT: They are found in open areas of the forested upper slopes which rise steeply, island-like from the surrounding arid plains and valleys and then level off somewhat to form an irregular rolling central crest. The soils in which these gophers live are highly variable depending upon elevation and climatic differences. Ground cover ranges from bare to litter covered, to covered with mosses, forbs, grasses, and grass-like plants. This subspecies appears to live in these habitats as long as there is soil deep enough for them to burrow in. They may also be found in open vegetated areas along road sides

ELEVATION: 6000 - 10,715 feet (1830 - 3268 m).

PLANT COMMUNITY: The vegetation of the Pinaleno Mountains is generally distributed in a vertically zoned pattern similar to other isolated mountain ranges in the Southwest. The lowest elevations are semi-desert grasslands. At successively higher elevations, the biomes are oak woodland, ponderosa pine forests, and Douglas fir forests. The highest zone of the Pinalenos is the spruce-fir forest. Meadows and cienegas are scattered throughout the forests, with most occurring along the irregular rolling crest of the range. Preferred areas identified in a status survey were grown up with grasses (*Festuca, Bromus*), grass-like plants (*Carex, Eleocharis*) and forbs (*Erysimum, Helenium, Achillea, Erigeron*).

POPULATION TRENDS: Appear to be stable.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1996)
[3C USDI, FWS 1989]

STATE STATUS:

OTHER STATUS: None. USDA, FS Region 3, 2013
[Forest Service Sensitive (USDA, FS Region 3 1999)]
[Forest Service Sensitive USDA, FS Region 3 1988]

MANAGEMENT FACTORS: Limited distribution and limited amount of preferred habitat. Recreational activities in meadows and cienegas could threaten the habitat and drastically reduce the numbers of pocket gophers.

PROTECTIVE MEASURES TAKEN: These animals seem to have benefitted from the elimination of livestock grazing at upper elevations, from the control of motorized travel and camping in meadows, from the closure to camping of high elevation cienegas, and from enlarged or new openings resulting from various logging, fires, construction, or other events.

SUGGESTED PROJECTS: Monitoring of changes in area of open areas with ground cover and in extent and severity of erosion.

LAND MANAGEMENT/OWNERSHIP: Coronado National Forest.

SOURCES OF FURTHER INFORMATION

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ADDITIONAL INFORMATION:

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