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GEOGRAPHIC RELATIONSHIPS OF POCKET GOPHERS IN SOUTHEASTERN COLORADO

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ABSTRACT

Distributional patterns of the four species of pocket gophers in southeastern Colorado are variously parapatric, allopatric, or sympatric. More specifically, *Geomys bursarius* is parapatric with *Thomomys talpoides*, *Thomomys bottae*, and *Cratogeomys castanops*; *T. bottae* is both sympatric and parapatric with *C. castanops*; and both *C. castanops* and *T. bottae* are allopatric with *T. talpoides*. *Geomys bursarius* is restricted to sandy soils and soils of cultivated or otherwise disturbed habitats. *Cratogeomys castanops* and *T. bottae* occupy a wide variety of soils but are found most commonly in compacted rangeland soils. *Thomomys talpoides* is found in well-drained upland soils. The distribution of *C. castanops* in southeastern Colorado is much more extensive than previously believed. Our new data support the competitive exclusion model with respect to these species but suggest that the geographic relationships among them are more complex than previously supposed.

† † †

Four species of three genera of pocket gophers (Geomyidae) reach limits of their geographic distributions in southeastern Colorado (Fitzgerald et al. 1994). Botta's pocket gopher (*Thomomys bottae*) is a southwestern species that ranges eastward across southern Colorado. The northern pocket gopher (*Thomomys talpoides*) is a montane species that is widely distributed in mountainous areas of Colorado and ranges eastward onto the plains only on the divide between the Platte and Arkansas rivers. The plains pocket gopher (*Geomys bursarius*) is a Great Plains species that ranges westward into eastern Colorado. Finally, the yellow-faced pocket gopher (*Cratogeomys castanops*) is a species of the Mexican Plateau that ranges northward into southeastern Colorado (Armstrong 1972). The geographic distributions of the four species come together in a complex fashion in southeastern Colorado.

It has been assumed that pocket gophers have similar niches and that their distributions tend to be allopatric (Best 1973, Blair and Miller 1949, Hansen 1960, Miller 1964, Thornton and Creel 1975, Turner et al. 1977, Vaughan 1967, Vaughan and Hansen 1964). One of these studies (Miller 1964) often is cited as evidence for the competitive exclusion principle (Hardin 1960). Miller (1964) studied the four species of pocket gopher

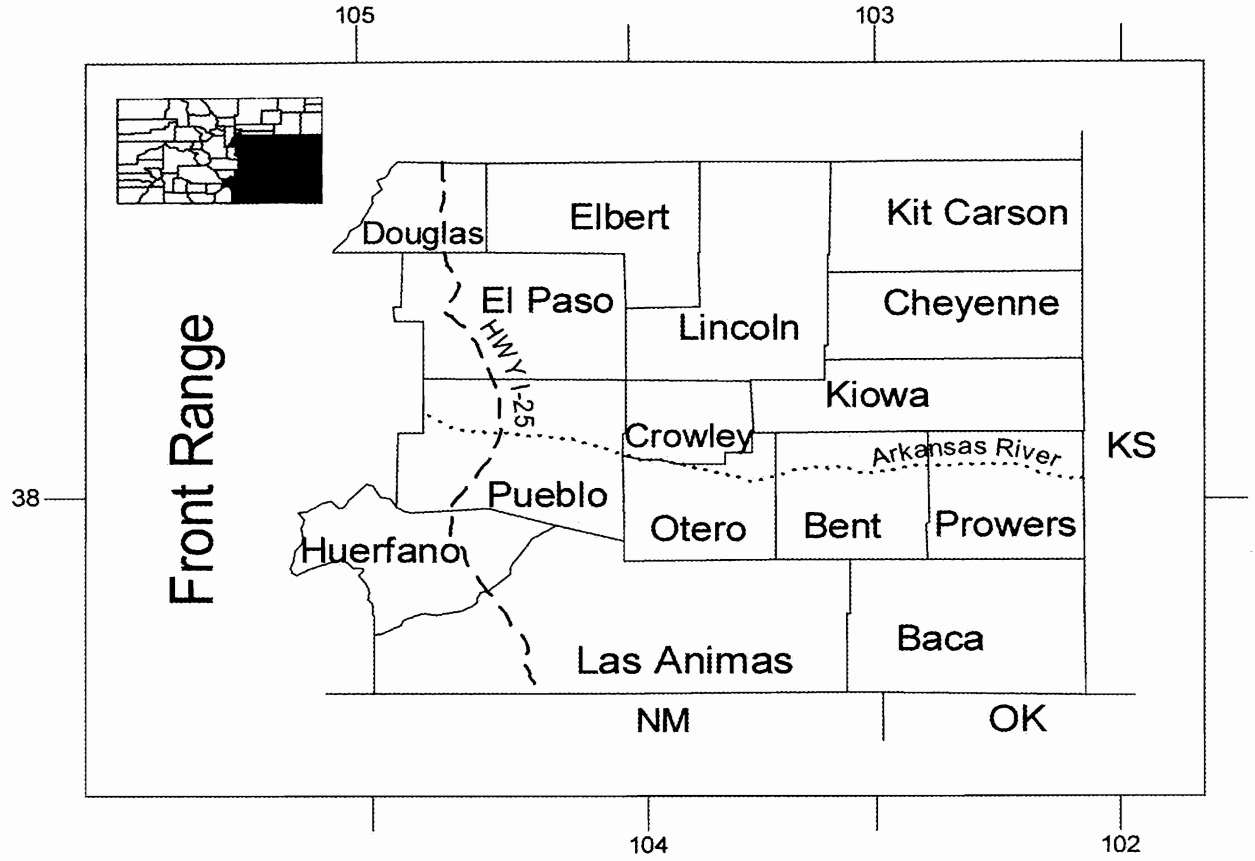

Figure 1. Map of the study area in southeastern Colorado showing locations of counties, the Arkansas River, Interstate Highway 25, and the Front Range of the Rocky Mountains.

in southeastern Colorado and concluded that optimal conditions for all four were deep, friable (usually sandy) soils. When the four species competed for optimal habitat, they could be arranged in a series (*G. bursarius, C. castanops, T. bottae,* and *T. talpoides)* with the first species tending to displace all others and the last species displacing none. Sizes of their fundamental niches, however, were inversely related to competitive ability in optimal habitat. Thus, *G. bursarius* lives in the best habitat because it can displace all species there, but it cannot invade less suitable habitats. In contrast, *T. talpoides*, although it potentially has the largest fundamental niche, usually exists in marginally poor habitats that are unsuitable for the other species (Hutchinson 1965). Miller (1964) concluded that the distributions of pocket gophers in southeastern Colorado were the result of past or present competition.

Miller (1964) evidently was unaware that an earlier investigator had noted that *G. bursarius* and *C. castanops* occurred together over much of southeastern Colorado, *G. bursarius* being restricted to sandy soils and *C. castanops* occurring in less friable rangeland soils (Cary 1911). Moulton et al. (1983) substantiated Cary's (1911) findings by documenting the presence of *G. bursarius* in sandy roadside ditches immediately adjacent to hardpan rangeland in which *C. castanops* occurred. Miller (1964: 256) believed that "Two species may exist in close proximity and their ranges may even interdigitate, but they maintain a relationship of contiguous allopatry and do not form mixed-species populations." Today, "contiguous allopatry," in which otherwise sympatric species are separated ecologically, is known as parapatry (e.g. Vaughan 1967).

Armstrong (1972) and Fitzgerald et al. (1994) summarized known distributional data for pocket gophers in Colorado. They agreed with Miller (1964) that distributional patterns of pocket gophers were parapatric, and they supported the competitive exclusion explanation. However, Moulton et al. (1979, 1983) discovered a narrow zone of sympatry of *T. bottae* and *C. castanops* atop Mesa de Maya in southeastern Colorado (Las Animas Co.) and suggested that competitive exclusion might not adequately explain these distributions. They noted that three additional instances of sympatric populations of pocket gophers had been documented elsewhere (Hall and Villa-R. 1949, Reichman and Baker 1972, Russell 1968), but that no attempt had been made to determine whether those sympatric populations exhibited differentiation in realized niches.

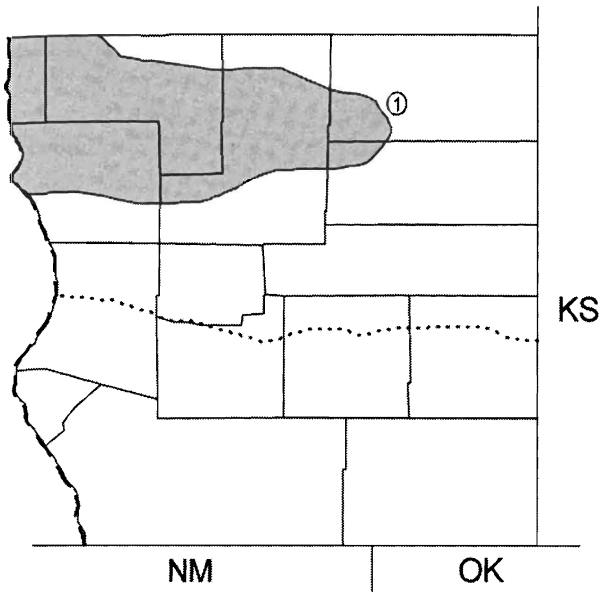

Figure 2. Distribution of *Thomomys talpoides* in the study area in southeastern Colorado. The number 1 indicates the location of Seibert (a community mentioned in text).

We believed that the actual distributions of pocket gophers in southeastern Colorado were not sufficiently understood to address those issues. The purposes of our study, therefore, were to delineate those distributions more clearly and to assess the validity of Miller's (1964) conclusions.

METHODS AND MATERIALS

Our study area (Fig. 1) included parts of the High Plains, Colorado Piedmont, and Raton Sections of the Great Plains Physiographic Province in southeastern Colorado (Fenneman 1931). The area was defined on the west by Interstate Highway 25, on the south by the state boundaries of New Mexico and Oklahoma, on the east by the Kansas state line, and on the north by the First Standard Parallel South. The study area encompassed about 50,000 km^2.

All known localities of capture for pocket gophers from southeastern Colorado were compiled and mapped. Additional pocket gophers were collected using Victor and Macabee traps in spring and summer from 1980 through 1985. All specimens were preserved and deposited at the Denver Museum of Nature and Science or the Sternberg Museum of Natural History. A soil sample was taken from each pocket gopher's mound, and vegetation and land use in the surrounding area were recorded. Burrow depth was measured from the surface to the bottom of the tunnel where it became horizontal. If the burrow branched, depths of both branches were measured and the average was recorded. Soil samples were analyzed using the hydrometer method (Kilmer and Alexander 1949). Descriptive statistics for burrow depth and soil texture were determined for each species using the UNIVARIATE procedure of Statistical Analysis System (SAS) 84.2 (SAS Institute Inc. 1982). Means were compared using Tukey's Studentized Range Test (HSD) of the TUKEY option (GLM procedure) of SAS.

RESULTS

All known distributional records for pocket gophers in southeastern Colorado, including > 400 specimens that we collected, are listed in Appendix 1. Geographic patterns shown by those distributional records are described below.

Northern pocket gopher

Specimens of *Thomomys talpoides* were collected on the plains that separate the South Platte drainage to the north from the Arkansas drainage to the south and extending from the Front Range of the Rocky Mountains eastward to a place 2.4 km west of Seibert, Kit Carson Co. (Fig. 2). Hall (1951) reported that this species occurred even farther east, at a place 8 mi. south of Seibert (Hall 1981). Although we observed activity of pocket gophers at that location, we were unable to capture any individuals. We documented the existence of the species for the first time in Cheyenne Co. (Fitzgerald et al. 1994).

Plains pocket gopher

The distribution of *Geomys busarius* (Fig. 3) does not differ appreciably from that described by Armstrong (1972) except that we documented the species in barrow pits in Lincoln Co. along Colorado highway 94 from

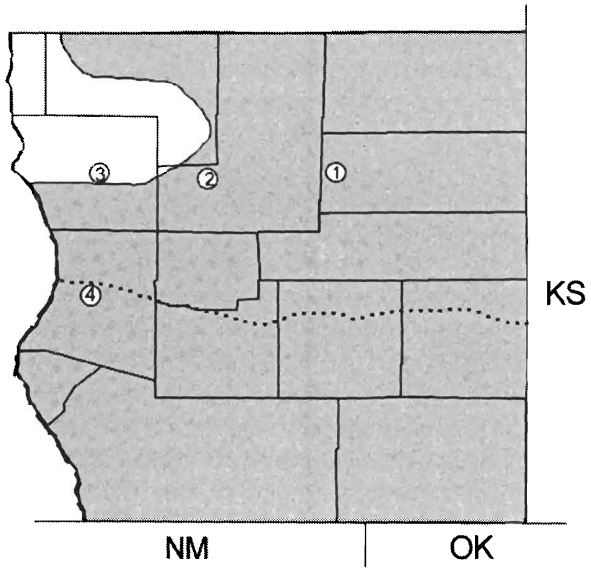

Figure 3. Distribution of *Geomys bursarius* in the study area in southeastern Colorado. Locations of communities mentioned in text are indicated as follows: 1 = Aroya; 2 = Punkin Center; 3 = Ellicott; 4 = Avondale.

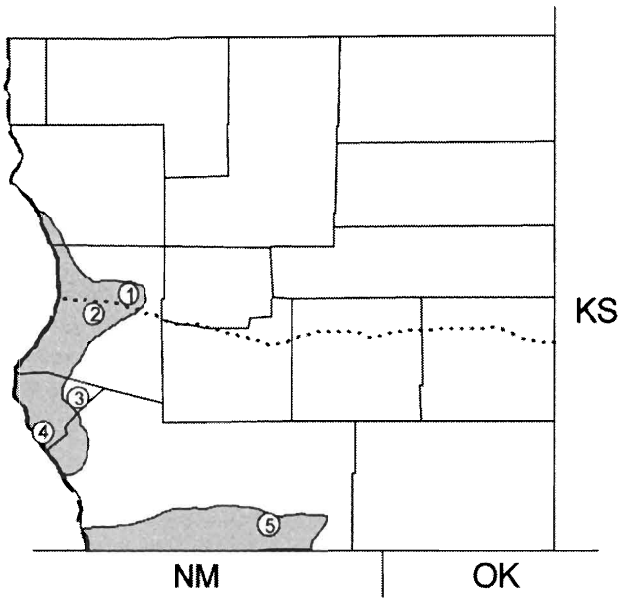

Figure 4. Distribution of *Thomomys bottae* in the study area in southeastern Colorado. Locations of communities and topographic features mentioned in text are indicated as follows: 1 = Boone; 2 = Avondale; 3 = Huerfano Canyon; 4 = Walsenberg; 5 = Mesa de Maya.

Aroya to Punkin Center (Fitzgerald et al. 1994). We also discovered it occurring parapatrically with *C. castanops* southwest of Ellicott and just east of interstate highway 25 in El Paso Co. At those locations, *G. bursarius* was restricted to sandy, disturbed soils in the barrow pit adjacent to the road, whereas *C. castanops* occurred in adjacent rangeland soils.

Botta's pocket gopher

The distribution of *Thomomys bottae* (Fig. 4) extends farther eastward onto the plains of southeastern Colorado than previously thought (Armstrong 1972). This is especially evident in the area east and southeast of Walsenburg in Huerfano and Las Animas counties (Fitzgerald et al. 1994).

Yellow-faced pocket gopher

The range of *Cratogeomys castanops* in southeastern Colorado (Fig. 5) is much more extensive than previously was assumed (Armstrong 1972, but see Fitzgerald et al. 1994). We documented the species north of the Arkansas River in El Paso and Pueblo counties for the first time since Warren (1910) and Cary (1911) reported it there, and our specimens from Lincoln Co. constitute the first records of occurrence for the species in that county. We also documented the existence of the species in all counties of southeastern Colorado south of the Arkansas River.

Zones of sympatry

Two zones of sympatry between *T. bottae* and *C. castanops* are now known in southeastern Colorado. The first, approximately 5 km wide, was documented by Moulton et al. (1979) on the west end of Mesa de Maya in Las Animas Co. Vegetation on the mesa consists of shortgrass and midgrass prairie with piñon pine (*Pinus edulis*) and one-seeded juniper (*Juniperus monosperma*) on breaks (Rogers 1953). We discovered a second zone of sympatry, southeast of Walsenburg in Huerfano and Las Animas counties, that is approximately 40 km long and 25 km wide and encompasses an area of 1000 km^2. Predominant vegetation in that area of shortgrass prairie includes buffalo grass (*Buchloë dactyloides*), blue grama (*Bouteloua gracilis*), yucca (*Yucca glauca*), and prickly pear (*Opuntia* sp.). In both instances of sympatry, the soil was compact. East of Walsenburg, on the north side of highway 10, Huerfano Canyon appeared to be a geographic barrier preventing interaction between *T. bottae* and *C. castanops* as far north as the Arkansas River. *T. bottae* was captured only on the west side of the canyon, and *C. castanops* was taken only on the east side. No attempt was made to trap pocket gophers in the canyon or farther north, where the canyon fans out into a broad alluvial plain.

We also discovered another possible zone of sympatry between *C. castanops* and *T. bottae* in the vicinity of Boone and Avondale along the south side of the Arkansas River east of Pueblo in Pueblo Co. However, in that area *T. bottae* was trapped in cultivated fields adjacent to the river, whereas *C. castanops* occupied rangeland sites adjacent to the cultivated fields. Therefore, this relationship was parapatric.

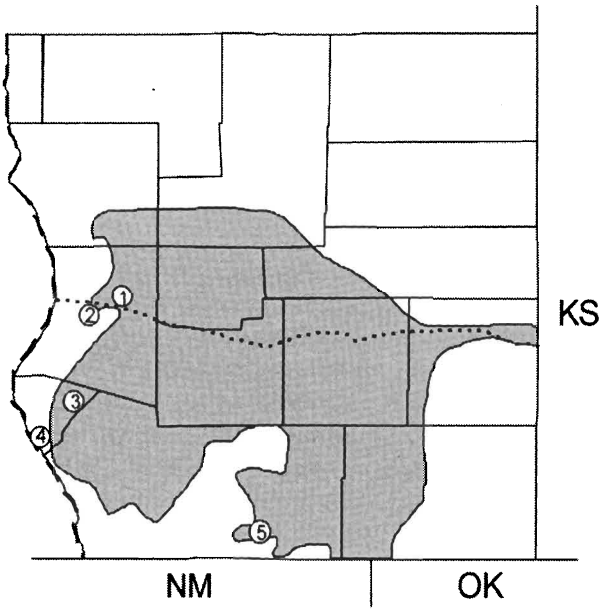

Figure 5. Distribution of *Cratogeomys castanops* in the study area in southeastern Colorado. Locations of communities and topographic features mentioned in text are indicated as follows: 1 = Boone; 2 = Avondale; 3 = Huerfano Canyon; 4 = Walsenberg; 5 = Mesa de Maya.

Table 1. Textural components of soils inhabited by pocket gophers in southeastern Colorado. Vertical lines indicate groups that were not significantly different at the 5% level.

		Textural component analysis					
		% sand		% silt		% clay	
Species	***n***	**mean**	**range**	**mean**	**range**	**mean**	**range**
Geomys bursarius	128	71.5	16.5–97.0	17.1	2.1–58.0	11.3	0.0–28.0
Thomomys talpoides	99	55.4	16.0–88.0	28.8	5.7–71.3	15.9	2.0–35.9
Thomomys bottae	45	44.3	21.0–76.0	29.8	10.0–47.9	25.8	11.4–40.0
Cratogeomys castanops	51	39.1	10.5–82.0	36.1	9.1–79.5	24.2	8.9–41.7

Textural components of soil

Soils utilized by the four species of pocket gophers overlapped in texture (Table 1). *T. talpoides* occupied soils that were highly variable for sand and silt and contained from little to moderate amounts of clay. *G. bursarius* generally was found in soils containing a high percentage of sand, little or moderate amounts of silt, and little or no clay. It occurred in soils containing less sand only when those soils were made friable by agricultural activities. *T. bottae* occupied soils containing moderate amounts of silt and clay and variable amounts of sand. *C. castanops* occupied soils with variable (but typically low) amounts of sand, a highly variable amount of silt, and moderate amounts of clay (Table 1). No significant difference was found between *C. castanops* and *T. bottae* for two of the three soil components—sand and clay (Table 1). Although means of soil components at capture sites differed significantly between other pairs of species, there was such extensive overlap in soils utilized that no real indication of resource partitioning was evident.

Depth of burrows

Analysis of burrow depths revealed no significant differences between *T. bottae* and *T. talpoides* or between *T. bottae* and *C. castanops* (Table 2). Mean burrow depths of other combinations of the four species differed significantly. However, extensive overlap between all combinations of species indicated that burrow depths were ineffective resource partitions (see ranges, Table 2). Based on smaller samples, Moulton et al. (1983) found a significant difference in depths of burrows of sympatric *C. castanops* and *T. bottae* and thought this might be the result of resource partitioning to avoid interspecific contact. However, they doubted that competition was avoided because feeding tunnels periodically intersected.

DISCUSSION

Geomys bursarius

Geomys bursarius is strongly associated with sandy soils and with soils that originally were compact but were made more friable by cultivation. The latter soils frequently have been invaded by disturbance vegetation. Other investigators have documented the affinity of *G. bursarius* for sandy, disturbed areas (Best 1973, Davis et al. 1938, Hansen 1960, Miller 1964, Moulton et al. 1983, Russell 1953). Conversely, clay soils act as a barrier to *G. bursarius* (Downhower and Hall 1966, Russell 1968). In southeastern Colorado, *G. bursarius* was conspicuously absent in native rangeland with compacted soils. In the area around Mesa de Maya in Baca and Las Animas counties, Moulton et al. (1983) found *G. bursarius* restricted to sandy roadside ditches (the sand having been trucked in for road maintenance), cultivated fields, and other disturbed habitats.

Table 2. Depths of burrows (cm) of pocket gophers in southeastern Colorado. Vertical lines indicate groups that were not significantly different at the 5% level.

		Burrow depth	
Species	***n***	**mean**	**range**
Geomys bursarius	141	30.5	10.0–72.0
Cratogeomys castanops	51	24.3	12.0–50.0
Thomomys bottae	45	21.7	14.0–40.0
Thomomys talpoides	101	20.1	10.0–44.0

North of Avondale in Pueblo and El Paso counties, *G. bursarius* was restricted to an area of aeolian sand extending north from the Arkansas River and surrounded by compacted rangeland soils. Miller (1964) thus was correct in his assertion that *G. bursarius* prefers sandy soils. Also, it is possible that *G. bursarius*, which has the narrowest niche requirements of the four species in southeastern Colorado in terms of soil texture, is the superior competitor in this soil type and excludes the other species.

The overall distribution of *G. bursarius* also has been influenced by the environmental history of the region. Most sandy soil in southeastern Colorado is associated with the Cimarron and Arkansas rivers and their tributaries. Before development of agriculture and the onslaught of the Dust Bowl in this region, *G. bursarius* likely was restricted to these areas. Moulton et al. (1983) believed that intensive cultivation in certain areas of southeastern Colorado in the early 1900s established corridors of friable soils that supported disturbance vegetation. Subsequent construction of elevated, sandy roads increased the number of favorable routes for dispersal of this species into areas previously occupied by *C. castanops* and possibly *T. bottae*. Additionally, wind blown sand and silt from the Dust Bowl was deposited throughout southeastern Colorado, further enabling *G. bursarius* to expand its range. We predict that the range of *G. bursarius* will continue to expand along roadside ditches and creek margins and in areas where native prairie is converted into cropland.

Thomomys talpoides

The range of *T. talpoides* in southeastern Colorado is parapatric with that of *G. bursarius* and allopatric with those of *C. castanops* and *T. bottae*. *T. talpoides* is present in habitats characterized by short and midgrass prairie and scattered ponderosa pine (*Pinus ponderosa*), one-seeded juniper, and scrub oak (*Quercus*). The soil is well drained, and the topography (except on the divide between the South Platte and Arkansas river drainages) generally is unsuited for cultivation. The distribution of *T. talpoides* may not be limited to a great extent by soil texture or friability (Miller 1964).

These observations suggest that *T. talpoides* is able to avoid competition with *G. bursarius* by occupying habitats that are not suitable for that species. However, the habitat refugium occupied by *T. talpoides* on the land separating the South Platte and Arkansas river drainages is being negatively impacted by intensive agricultural development that has taken place in the past 20 years, and these agricultural perturbations have enabled *G. bursarius* to encroach upon that habitat. On the western end of the divide between the South Platte and Arkansas rivers, *T. talpoides* also is being impacted by urban and suburban development. We predict that the range of *T. talpoides* in southeastern Colorado will become increasingly restricted due to changes in land use.

Thomomys bottae

The range of *T. bottae* in southeastern Colorado appears dendritic in that it is associated with the Fountain, Arkansas, Cucharas, and Huerfano drainages. We documented *T. bottae* predominantly in areas characterized by compacted soils and shortgrass prairie, although it also was captured in irrigated fields southeast of Colorado Springs, south of the Arkansas River in the vicinity of Boone and Avondale (Pueblo Co.), and east of Walsenburg (Huerfano Co.). Soils occupied by *T. bottae* tend to contain much less sand and more clay than those occupied by *G. bursarius*, but *T. bottae* also was found in sandy soils in areas not yet reached by *G. bursarius*. Previous authors (e.g., Fitzgerald et al. 1994) assumed that this species preferred sandy soils and avoided soils high in clay.

Cratogeomys castanops

Cratogeomys castanops was found almost exclusively in compacted rangeland soils. These soils sometimes contain more clay than soils occupied by *G. bursarius*. In southeastern Colorado, *C. castanops* seldom was found in sandy soils and disrupted habitats. In contrast, Fitzgerald et al. (1994), like Miller (1964), assumed that sandy soils were the preferred habitat of *C. castanops*. In fact, Miller (1964) based his assertion that *C. castanops* was an inferior competitor to *G. bursarius*, the latter having displaced *C. castanops* over much of its range in southeastern Colorado, on that assumption. We found no evidence of this in our study, but we assumed this was the result of competitive exclusion from those habitats. Our results suggest that *C. castanops* is as much at home in compacted soils as in sandy or otherwise friable soils.

Sympatric *T. bottae* and *C. castanops*

Thomomys bottae and *C. castanops* are sympatric in at least two areas of southeastern Colorado. Soils and vegetation do not appear different between areas of sympatry and other areas where only one or the other of these species occur. Moulton et al. (1979) hypothesized that differences in burrow depth might reduce the frequency of interspecific encounters, but we found no significant differences in our study. Moreover, burrow depths may not effectively reduce the frequency of interspecific encounters because pocket gophers periodically burrow to the surface to feed or expel soil, and interactions could occur when feeding tunnels inter-

sect. In fact, Moulton et al. (1983) found a mummified *T. bottae* inside a burrow of *C. castanops*, suggesting that burrow systems used by the two species occasionally intersect. Thus, *T. bottae* and *C. castanops* seem to have similar ecological requirements, and it is reasonable to assume, as Miller (1964) and Moulton et al. (1983) did, that they may compete under certain circumstances. If competition is occurring, then their zones of sympatry may be areas in which one species is displacing the other (Moulton et al. 1983; Reichman and Baker 1972).

Our discovery of *C. castanops* and *T. bottae* occurring parapatrically in the Boone/Avondale area along the Arkansas River in Pueblo Co. was especially noteworthy because *T. bottae* occurred in cultivated fields along the river whereas *C. castanops* was restricted to adjacent compacted rangeland soils. This observation, and a similar observation by Reichman and Baker (1972), are contrary to Miller's (1964) assumption that *C. castanops* is the better competitor of the two species and should exclude *T. bottae* from the sandier, more friable soil in cultivated fields. In this regard, *C. castanops* is a species of the Mexican Plateau that reaches the northern limits of its range in southeastern Colorado, whereas *T. bottae* is a southwestern species that reaches the northeastern limits of its range in southeastern Colorado. These two species thus are variously sympatric and parapatric near the limits of their ranges in habitats that might be marginal for both. If so, then their distributions in southeastern Colorado might be influenced nearly as much by chance as by competition.

CONCLUSIONS

Distributional patterns of pocket gophers in southeastern Colorado are variously parapatric, allopatric, or sympatric. More specifically, *Geomys bursarius* is parapatric with *Thomomys talpoides*, *Thomomys bottae*, and *Cratogeomys castanops*; *T. bottae* is both sympatric and parapatric with *C. castanops*; and both *C. castanops* and *T. bottae* are allopatric with *T. talpoides*. Competition to the extreme, resulting in competitive exclusion, cannot be ruled out as the initial cause of environmental preferences and specialization exhibited today by the four species of pocket gophers. Accordingly, Miller's (1964) investigation of the four species remains an extraordinary example of the competitive exclusion model. However, we have shown that Miller's (1964) assertion that the ranges of the four species of pocket gophers in southeastern Colorado are all allopatric or parapatric is incorrect. Moreover, his assumptions that sandy soil is the preferred habitat of all four species and that *C. castanops* is competitively superior to *T. bottae* are suspect. Obviously, more work remains to be done to fully understand the biogeography of these species.

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APPENDIX 1

The following list includes all museum specimens of *C. castanops, G. bursarius, T. bottae*, and *T. talpoides* known to us from southeastern Colorado, including those we collected during the course of our study. Specimens listed are housed in institutions identified by the following abbreviations: AMNH, American Museum of Natural History; CSU, Colorado State University; DMNS, Denver Museum of Nature and Science; KU, University of Kansas Natural History Museum; MCZ, Museum of Comparative Zoology, Harvard University; MHP, Sternberg Museum of Natural History, Fort Hays State University; NMNH, National Museum of Natural History; NMSU, New Mexico State University; SC, Southern Colorado State College; TTU, The Museum of Texas Tech University; UCM, University of Colorado Museum; UMMZ, Museum of Zoology, University of Michigan; USACERL, United States Army Construction Engineering Research Laboratory Biological Inventory Collection, Champaign, Illinois; USGS, U. S. Geological Survey, Biological Survey Collections; WC, Western College of Colorado (now housed in the University of Colorado Museum). Localities are arranged alphabetically by reference location, north to south with respect to reference locations, and west to east at a particular latitude.

Cratogeomys castanops

BACA COUNTY: 6 mi S, 10 mi W Camp, Picture Canyon, 1 (UCM); Furnace (Furnish) Canyon, 9 (DMNS); Gaume's Ranch, 4600 ft., 2 (WC); Monon, 2 (WC); 17 mi S, 4 mi W Pritchett (T34S, R49W, Sec. 5), 3 (MHP); 18 mi S, 4.25 mi W Pritchett (T34S, R49W, Sec. 8), 1 (MHP); Regnier, 1 (DMNS); Bear Creek, N of Springfield, 6 (WC). **BENT COUNTY**: prairie road to Bent's Fort, 1 (NMNH); 2.2 mi S, 1.5 mi W John Martin Dam (T23S, R50W, Sec. 25), 2 (MHP); 3 mi S, 1.5 mi W John Martin Dam (T23S, R50W, Sec. 36), 1 (MHP); 5.5 mi S, 1.5 mi W John Martin Dam (T24S, R50W, Sec. 12), 1 (MHP); Las Animas, 6 (NMNH); 12 mi E La Junta, 1 (KU); 14 mi E La Junta, 1 (KU). **EL PASO COUNTY**: 18.5 mi N, 9 mi W Boone, Pueblo Co. (T17S, R36W, SE ¼ Sec. 33), 1 (DMNS); 14 mi W Ellicott (T16S, R36W, Sec. 29), 1 (MHP); 16 mi S, 2 mi W Ellicott (T17S, R63W, Sec. 4), 1(MHP); 17 mi S, 4 mi W Ellicott (T17S, R63W, Sec. 8), 1 (MHP). **HUERFANO COUNTY**: 3.5 mi E jct of I-25 and hwy 10, 1 (MHP); 2.5 mi S, 7.5 mi E jct of I-25 and hwy 10 (T27S, R65W, NW ¼ Sec. 25), 1 (DMNS); 5 mi S, 7.5 mi E jct of I-25 and hwy 10 (T27S, R64W, SW ¼ Sec. 31), 1 (DMNS); 5.5 mi S, 7.5 mi E jct of I-25 and hwy 10, 1 (MHP); 6.5 mi S, 7.5 mi E jct of I-25 and hwy 10 (T28S, R64W, SW ¼ Sec. 7), 1 (DMNS); 7 mi S, 13.5 mi E jct of I-25 and hwy 10, 1 (MHP); 8.6 mi S, 7.5 mi E jct of I-25 and hwy 10 (T28S, R64W, NE ¼ Sec. 20), 1 (DMNS); 9.6 mi S, 7.5 mi E jct of I-25 and hwy 10 (T28S, R64W, NE ¼ Sec. 20), 1 (DMNS); 9.6 mi S, 7.5 mi E jct of I-25 and hwy 10 (T28S, R64W, NE ¼ Sec. 21), 1 (DMNS); 9.6 mi S, 7.5 mi E jct of I-25 and hwy 10 (T28S, R64W, SW ¼ Sec. 21), 1 (DMNS); 15 mi N, 19 mi E Walsenberg (T25S, R63W, NE ¼ Sec. 27), 1 (DMNS); 14.5 mi N, 14 mi E Walsenberg (T25S, R63W, SW ¼ Sec. 26), 1 (DMNS); 13.5 mi N, 14 mi E Walsenberg (T25S, R63W, SW ¼ Sec. 35), 1 (DMNS); 12.5 mi N, 14 mi E Walsenberg (T26S, R64W, NW ¼ Sec. 2), 1 (DMNS); 12 mi N, 14 mi. E Walsenburg (T26S, R64W, SW ¼ Sec. 2), 2 (DMNS); 12 mi N, 18.5 mi E Walsenburg (T26S, R63W, SW ¼ Sec. 4), 1 (DMNS); 10.5 mi N, 19 mi E Walsenburg (T26S, R63W, SE ¼ Sec. 16), 4 (DMNS). **LAS ANIMAS COUNTY**: 9 mi N, 11.5 mi

E Branson (T33S, R56W, Sec. 26), 1 (MHP); 15.4 mi E jct of I-25 and hwy 10, 1 (MHP); 15.5 mi S, 7.5 mi E jct of I-25 and hwy 10 (T28S, R64W, SW ¼ Sec. 14), 1 (DMNS); Irwin's Ranch, 5000 ft. (T29S, R52W), 7 (WC); 1 mi S, 5.5 mi E Kim (T32S, R52W, Sec. 28), 1 (MHP); 1 mi S, 6.5 mi E Kim (T32S, R52W, Sec. 27), 1 (MHP); 4 mi S, 2 mi E Kim, Tecolote Mesa (T33S, R53W, Sec. 11), 1 (MHP); 7.5 mi S, 14 mi W Kim, 1 (UCM); 7.5 mi S, 10 mi W Kim, 1 (UCM); 8 mi S, 13 mi W Kim, 4 (UCM); 8.5 mi S, 10.5 mi W Kim (T33S, R55W, Sec. 35), 1 (MHP); 8.5 mi S, 9 mi W Kim (T33S, R55W, Sec. 34), 1 (MHP); 8.5 mi S, 9 mi W Kim (T33S, R55W, Sec. 36), 9 (MHP); 11.5 mi S, 7.25 mi E Kim (T34S, R52W, Sec. 14), 1 (MHP); 12.25 mi S, 0.5 mi E Kim (T34S, R53W, Sec. 21), 1 (MHP); 12.5 mi S, 7.5 mi E Kim (T34S, R52W, Sec. 23), 1 (MHP); 14 mi S, 5.5 mi E Kim (T34S, R52W, Sec. 33), 2 (MHP); 1.5 mi W Lone Butte (T33S, R55W, Sec. 30), 1 (MHP); 0.3 mi NNE Model, 1 (USA-CERL); 14.9 mi ESE Model (adjacent to Purgatorie River), 1 (USA-CERL); W end of Mesa de Maya (T33S, R56W), 6 (MHP); Mesa de Maya, by Lone Butte (T33S, R55W), 5 (MHP); Piñon Canyon Maneuver Site (PCMS) (38°27′00″N, 104°48′34″W), 1 (MHP); PCMS (38°26′38″N, 104°54′22″W), 1 (MHP); PCMS (38°26′27″N, 104°54′36″W), 3 (MHP); PCMS (37°39′26″N, 103°37′41″W), 2 (MHP); PCMS (37°36′42″N, 103°42′58″W), 2 (MHP); PCMS (37°35′19″N, 103°41′46″W), 1 (MHP); PCMS (37°34′44″N, 103°40′44″W), 1 (MHP); PCMS (37°33′48″N, 103°41′08″W), 1 (MHP); PCMS (37°33′28″N, 103°42′41″W), 1 (MHP); PCMS (37°33′18″N, 103°41′46″W), 1 (MHP); PCMS (37°32′28″N, 103°49′36″W), 1 (MHP); PCMS (37°32′25″N, 103°57′20″W), 1 (MHP); PCMS (37°32′08″N, 103°51′44″W), 3 (MHP); PCMS (37°31′45″N, 103°54′49″W), 1 (MHP); PCMS (37°30′29″N, 104°03′46″W), 1 (MHP); PCMS (37°30′06″N, 103°59′41″W), 1 (MHP); PCMS (37°29′52″N, 103°57′54″W), 1 (MHP); PCMS (37°29′22″N, 104°01′33″W), 1 (MHP); PCMS (37°27′05″N, 103°05′17″W), 1 (MHP); PCMS (37°26′30″N, 103°51′47″W), 1 (MHP); PCMS (37°26′29″N, 103°58′53″W), 3 (MHP); PCMS (37°25′53″N, 103°54′04″W), 1 (MHP); PCMS (37°23′50″N, 103°53′20″W), 1 (MHP); PCMS (37°23′03″N, 103°59′49″W), 1 (MHP); PCMS (37°22′51″N, 103°53′32″W), 1 (MHP); PCMS (37°22′50″N, 103°58′53″W), 2 (MHP); PCMS (37°22′04″N, 104°00′09″W), 1 (MHP); PCMS (37°21′53″N, 103°54′52″W), 1 (MHP); PCMS (37°21′25″N, 103°56′07″W), 1 (MHP); PCMS (37°21′18″N, 103°55′18″W), 1 (MHP); 5 mi E Thatcher, 1 (USA-CERL); 10 mi WNW Thatcher, 1 (USA-CERL). **LINCOLN COUNTY**: 10 mi S, 3 mi W Karval (T17S, R55W, Sec. 4), 1 (MHP); 12 mi S, 3 mi W Karval (T17S, R55W, Sec. 16), 1 (MHP); 13 mi S, 4 mi W Karval (T17S, R55W, Sec. 20), 1 (MHP); 11 mi S, 9 mi W Punkin Center (T16S, R58, Sec. 3), 1 (MHP); 8 mi S, 3 mi E Rush (T15S, R59W, Sec. 19), 1 (MHP). **OTERO COUNTY**: Colorado State University Agricultural Experiment Station, Arkansas Valley Branch, 1 (CSU); Colorado State University Experiment Station, Arkansas Valley Road, 1 (NMSU); jct of hwy 167 and hwy 10, 1 (MHP); 1 mi S jct of hwy 50 and hwy 167, 1 (MHP); La Junta, 3 (TTU); JJ Ranch, Higbee, 18 mi S La Junta, 2 (NMNH); 4 mi W Rocky Ford, 5 (2 CSU, 3 KU); 1.5 mi E Rocky Ford, 8 (NMSU); 4 mi N, 6 mi W Timpas (T25S, R58W, Sec. 10), 1 (MHP); 2 mi N Timpas (T25S, R57W, NE ¼ Sec. 27), 1 MHP). **PROWERS COUNTY**: Lamar, 1 (TTU); 0.5 mi S Lamar, 1 (WC); 2 mi S, 1 mi E Lamar, 1 (TTU). **PUEBLO COUNTY**: 11 mi N, 3 mi W Avondale (T14S, R63W, NW ¼ Sec. 13), 1 (DMNS); 2.7 mi S, 0.75 mi E Avondale, 4 (MHP); 17 mi N, 9 mi W Boone (T18S, R63W, SE ¼ Sec. 10), 3 (DMNS); 16 mi N, 8 mi W Boone (T18S, R63W, NE ¼ Sec. 14), 2 (DMNS); 16 mi N, 8 mi W Boone (T18S, R63W, SE ¼ Sec. 14), 1 (DMNS); 16 mi N, 7 mi W Boone (T18S, R63W, NE ¼ Sec. 13), 1 (DMNS); Arkansas River, 26 mi below Canyon City (Russell 1968); Fort Carson Military Reservation (38°27′00″N, 104°48′34″W), 1 (MHP); Fort Carson Military Reservation (38°26′38″N, 104°54′22″W), 1 (MHP); Fort Carson Military Reservation (38°26′27″N, 104°54′36″W), 3 (MHP); 1 mi N, 8.25 mi W Goodnight, 1 (MHP); 14.8 mi W jct of hwy 167 and hwy 10, 1 (MHP); 13.5 mi W jct of hwy 167 and hwy 10, 1 (MHP); 3 mi W Pueblo on Buela Road, 1 (WC).

Geomys bursarius

BACA COUNTY: 9.8 mi N Campo, 1 (KU); 15.3 mi W Campo, 2 (KU); 3.6 mi W Campo, 2 (KU); 8 mi S Campo, 1 (KU); 8 mi S, 1.6 mi E Campo, 1 (KU); 8 mi S, 12.7 mi E Campo, 1 (KU); Craugh Ranch, Cimarron River, 1 (DMNS); Monon, 3 (WC); 8 mi S Pritchett, 1 (KU); 13.5 mi S, 2 mi W Pritchett (T33S, R49W, Sec. 15), 1 (MHP); 15 mi S, 6.5 mi W Pritchett (T33S, R50W, Sec. 25), 1 (MHP); 17.25 mi S, 7.25 mi W Pritchett (T34S, R50W, Sec. 2), 1 (MHP); 18.25 mi S, 8.25 mi W Pritchett (T34S, R50W, Sec. 10), 1 (MHP); 20 mi S, 4.5 mi W Pritchett (T34S, R49W, Sec. 17), 3 (MHP); Regnier, 2 (DMNS); 14 mi E Springfield (in owl pellet, KU uncataloged). **BENT COUNTY**: Las Animas, 11 (1 USGS, 3 SC, 7 NMNH). **CHEYENNE COUNTY**: 6 mi N Cheyenne Wells, 1 (WC); 5 mi W Kit Carson, 2 (NMNH); Kit Carson, 2 (NMNH); near Twin Buttes, 4800 ft., 1 (NMNH); 16 mi N Wild Horse, 5 (MHP); 12 mi N, 5 mi E Wild Horse (T12S, R49W, Sec. 22), 1 (MHP); 11 mi N Wild Horse (T12S, R50W, Sec. 21), 1 (MHP); 10 mi N Wild Horse (T12S, R50W, Sec. 28), 1 (MHP); 8 mi N, 5 mi E Wild Horse (T13S, R49W, Sec. 9), 1 (MHP); 4 mi N, 6 mi E Wild Horse (T13S, R49W, Sec. 32), 1 (MHP); 3 mi. N Wild Horse (T13S, R50W, Sec. 33), 1 (MHP); 11.6 mi W (by hwy 94) Wild Horse, 3 (MHP); 4.4 mi W (by hwy 287) Wild Horse, 1 (MHP); 3.5 mi S Wild Horse (T15S, R50W, Sec. 5), 1 (MHP). **DOUGLAS COUNTY**: Rose (D'Arcy) Ranch, 2 mi N Parker, 5 (KU). **ELBERT COUNTY**: 8 mi NE Agate, 3 (DMNS); 8 mi N, 5 mi E Kiowa (T7S, R62W, Sec. 8), 2 (MHP); 5 mi N, 6 mi E Kiowa (T7S, R62W, Sec. 9), 2 (MHP); Kiowa, 2 (DMNS); 8 mi W Limon (T9S, R57W, Sec. 6), 2 (MHP); 7 mi N, 5 mi W Punkin Center (T13S, R57W, Sec. 3), 1 (MHP); 9 mi N Simla (T9S, R60W, Sec. 11), 1 (MHP); 8 mi N, 3 mi W Simla (T9S, R60W, Sec. 8), 2 (MHP); 7.5 mi N Simla (T9S, R60W, Sec. 22), 1 (MHP). **EL PASO COUNTY**: 1.5 mi N, 9 mi E Colorado Springs, 4 (CSU); Colorado Springs, 2 (WC); 1 mi E Colorado Springs Airport (T14S, R65W, Sec. 34), 2 (MHP); 3 mi E Colorado Springs (T13S, R65W, Sec. 4), 1 (MHP); 6 mi E Colorado Springs (T13S, R65W, Sec. 23), 2 (MHP); 3.5 mi SW Colorado Springs, 2 (KU); 4 mi SE Colorado Springs, 1 (KU); 9 mi S, 4 mi W Ellicott (T15S, R63W, Sec. 32), 1 (MHP); 10 mi S, 4 mi W Ellicott (T16S, R63W, Sec. 4), 1 (MHP); 10 mi S, 3 mi W Ellicott (T16S, R63W, Sec. 3), 1 (MHP); 13 mi S, 4 mi W Ellicott (T16S, R63W, Sec. 17), 1 (MHP); 13 mi S, 4 mi W Ellicott (T16S, R63W, Sec. 20), 1 (MHP); 13 mi S Ellicott (T16S, R63W, Sec. 20), 1 (MHP); 14 mi S, 4 mi W Ellicott (T16S, R63W, Sec. 28), 2 (MHP); 15.5 mi S, 4 mi W Ellicott (T16S, R63W, Sec. 33), 3 (MHP); 16 mi S, 2 mi W Ellicott (T17S, R63W, Sec. 3), 2 (MHP); 16 mi S, 2 mi W Ellicott (T17S, R63W, Sec. 4), 1 (MHP); 16 mi S, 2 mi E Ellicott (T17S, R62W, Sec. 5), 1 (MHP); 17 mi S, 4 mi W Ellicott (T17S, R63W, Sec. 8), 3 (MHP); 17 mi S, 3.5 mi W Ellicott (T17S, R63W, Sec. 4), 1 (MH.); 0.5 mi E Fountain (T16S, R65W, Sec. 8), 1 (MHP); 8 mi E Security (T15S, R64W, Sec. 6), 1 (MHP); 13 mi S, 9 mi W Yoder (T16S, R62W, Sec. 18), 1 (MHP); 14 mi S, 8 mi W Yoder (T16S, R62W, Sec. 21), 1 (MHP);

16 mi S, 4 mi W Yoder (T17S, R61W, Sec. 6), 1 (MHP); 17 mi S, 1.5 mi W Yoder (T17S, R63W, Sec. 8), 2 (MHP). **KIOWA COUNTY**: 3 mi E Eads, 1 (KU); Chivington, 6 (NMNH). **KIT CARSON COUNTY**: Burlington, 1 (NMNH); 15 mi N Flagler (T6S, R51W, Sec. 23), 1 (MHP); 15 mi N Flagler (T6S, R51W, Sec. 24), 1 (MHP); 7 mi N, 4 mi E Flagler (T8S, R51W, Sec. 23), 1 (MHP); 6 mi N, 4 mi E Flagler (T8S, R50W, Sec. 3), 1 (MHP); 4 mi N, 1 mi W Flagler (T8S, R51W, Sec. 11), 1 (MHP); 3 mi N, 4 mi E Flagler (T8S, R50W, Sec. 21), 2 (MHP); 3.5 mi E Flagler Wildlife Area (T9S, R50W, Sec. 3), 1 (MHP); 4 mi E Flagler (T9S, R50W, Sec. 2), 1 (MHP); 3 mi S, 3 mi E Flagler (T9S, R51W, Sec. 20), 1 (MHP); 3.5 mi S, 0.5 mi E Flagler (T9S, R50W, Sec. 30), 1 (MHP); 6 mi S Flagler (T10S, R51W, Sec. 1), 1 (MHP); 6 mi S, 4 mi E Flagler (T10S, R50W, Sec. 3), 1 (MHP); 11 mi S, 5 mi E Flagler (T10S, R50W, Sec. 34), 1 (MHP); 16 mi S, 5 mi E Flagler (T11S, R50W, Sec. 26), 2 (MHP); 17 mi S Flagler (T11S, R50W, Sec. 31), 1 (MHP); 17 mi S, 3 mi E Flagler (T11S, R50W, Sec. 33), 1 (MHP); 17 mi S, 4 mi E Flagler (T11S, R50W, Sec. 34), 2 (MHP); 4 mi N Seibert (T8S, R49W, Sec. 9), 2 (MHP); 3 mi N Seibert (T8S, R49W, Sec. 15), 1 (MHP); Seibert, 1 (NMNH); 4 mi S, 2.5 mi W Seibert (T9S, R49W, Sec. 19), 1 (MHP); 4 mi S, 3 mi E Seibert (T9S, R49W, Sec. 25), 1 (MHP); 5 mi S, 3 mi W Seibert (T9S, R49W, Sec. 30), 1 (MHP); 5 mi S, 3 mi E Seibert (T10S, R49W, Sec. 36), 2 (MHP); 6 mi S, 3 mi E Seibert (T10S, R49W, Sec. 1), 1 (MHP); 7 mi S, 0.5 mi E Seibert (T10S, R49W, Sec. 10), 1 (MHP); 9 mi S, 5 mi W Seibert (T10S, R50W, Sec. 23), 1 (MHP); 9 mi S, 3 mi E Seibert (T10S, R48W, Sec. 19), 1 (MHP); 11 mi S, 4 mi W Seibert (T10S, R50W, Sec. 35), 1 (MHP); 11 mi S, 3 mi W Seibert (T11S, R49W, Sec. 6), 1 (MHP); 12 mi S, 3 mi W Seibert (T11S, R49W, Sec. 6), 1 (MHP); 13 mi S, 4.5 mi W Seibert (T11S, R50W, Sec. 11), 1 (MHP); 13 mi S Seibert (T11S, R49W, Sec. 11), 1 (MHP); 14 mi S Seibert (T11S, R49W, Sec. 15), 1 (MHP); 16 mi S Seibert (T11S, R49W, Sec. 26), 1 (MHP); 18 mi S, 6 mi W Seibert (T11S, R50W, Sec. 34), 1 (MHP); 4 mi S, 2 mi W Vona (T9S, R48W, Sec. 21), 4 (MHP); 12 mi S, 4 mi W Vona (T10S, R48W, Sec. 31), 1 (MHP); 12 mi S, 2 mi W Vona (T10S, R48W, Sec. 33), 1 (MHP). **LAS ANIMAS COUNTY**: 1 mi S, 3.5 mi E Kim (T32S, R52W, Sec. 19), 1 (MHP); 1 mi S, 12.5 mi E Kim (T32S, R51W, Sec. 27), 1 (MHP); 1 mi S, 13.5 mi E Kim (T32S, R51W, Sec. 26), 1 (MHP); 2 mi S, 4.5 mi W Kim (T32S, R54W, Sec. 35), 1 (MHP); 2 mi S, 2.5 mi W Kim (T32S, R53W, Sec. 31), 2 (MHP); 2 mi S, 1.75 mi W Kim (T32S, R53W, Sec. 32), 3 (MHP); 2 mi S Kim (T32S, R53W, Sec. 34), 1 (MHP); 2. mi S Kim (T32S, R53W, Sec. 34), 1 (MHP); 3. mi S Kim (T33S, R53W, Sec. 3), 1 (MHP); 6 mi S, 1 mi W Kim (T33S, R53W, Sec. 17), 1 (MHP); 6 mi S, 1 mi W Kim (T33S, R53W, Sec. 20), 1 (MHP); 2. mi S, 12 mi W Pritchett, Baca Co. (T31S, R51W, Sec. 24), 1 (MHP). **LINCOLN COUNTY**: 4 mi N Boyero (T12S, R53W, Sec. 24), 1 (MHP); 2 mi W Boyero (T13S, R53W, Sec. 2), 1 (MHP); 2 mi S Boyero (T13S, R52W, Sec. 18), 1 (MHP); 6 mi S, 6 mi W Boyero (T14S, R53W, Sec. 7), 1 (MHP); 6 mi S Boyero (T14S, R52W, Sec. 6), 1 (MHP); 6 mi S, 3 mi E Boyero (T14S, R52W, Sec. 4), 2 (MHP); 6 mi S, 4 mi E Boyero, 3 (MHP); 9 mi S Boyero (T14S, R53W, Sec. 24), 1 (MHP); 14 mi S, 1 mi W Boyero (T15S, R53W, Sec. 13), 2 (MHP); 4 mi N, 4 mi W Hugo (T10S, R55W, Sec. 7), 1 (MHP); 3 mi N, 4 mi W Hugo (T10S, R55W, Sec. 18), 2 (MHP); Hugo, 1 (NMNH); 1 mi S, 2 mi W Hugo (T11S, R55W, Sec. 2), 1 (MHP); 4 mi S Hugo (T11S, R54W, Sec. 20), 1 (MHP); 9 mi S Hugo (T12S, R54W, Sec. 17), 1 (MHP); 10.5 mi S, 1 mi E Hugo, 1 (MHP); 13 mi S, 3 mi E Hugo (T13S, R54W, Sec. 3), 1 (MHP); 2 mi N, 9 mi E Karval (T15S, R53W, Sec. 6), 1 (MHP); 3 mi S, 2 mi E Karval (T15S, R54W, Sec. 31), 1 (MHP); 5 mi S Karval (T16S, R55W, Sec. 14), 1 (MHP); Limon, 3 (NMNH); 3 mi S Limon (T9S, R56W, Sec. 31), 1 (MHP); Punkin Center (T14S, R56W, Sec. 5), 1 (MHP); Punkin Center (T14S, R56W, Sec. 6), 1 (MHP); 3 mi E Punkin Center (T14S, R56W, Sec. 10), 1 (MHP); 4 mi E Punkin Center (T14S, R56W, Sec. 2), 1 (MHP); 9 mi E Punkin Center (T14S, R56W, Sec. 3), 2 (MHP); 12 mi E Punkin Center (T14S, R55W, Sec. 1), 1 (MHP); 3 mi S, 9 mi E Punkin Center (T14S, R55W, Sec. 23), 1 (MHP); 4 mi S, 4 mi E Punkin Center (T14S, R56W, Sec. 26), 1 (MHP). **PROWERS COUNTY**: Lamar, 4 (2 USGS, 1 UMMZ, 1WC); 1 mi S Lamar, 4 (KU); 2.5 mi S Lamar, 1 (KU); 3.5 mi S Lamar, 1 (KU). **PUEBLO COUNTY**: 1 mi N, 4.5 mi E Boone, 2 (MHP); 31 mi S, 2 mi E Yoder, El Paso Co., 1 (MHP); 31.6 mi S, 2 mi E Yoder, El Paso Co., 1 (MHP).

Thomomys bottae

EL PASO COUNTY: Colorado Springs Wildlife Area (Hanna Ranch), 4 (MHP); 1.25 mi S Colorado Springs, 2 (KU); 1.5 mi S Colorado Springs, 2 (KU); 17 mi S Colorado Springs, 1 (KU); Fort Carson Military Reservation (38°41′57″ N, 104°49′21″ W, 1 (MHP); Fort Carson Military Reservation (38°35′51″ N, 104°49′33″ W, 2 (MHP); Fort Carson Military Reservation (38°35′46″ N, 104°51′56″ W), 3 (MHP); 4 mi S Fountain (T16S, R65W, Sec. 33), 1 (MHP); 5.5 mi S, 2.5 mi E Fountain (T17S, R65W, Sec. 3), 1 (MHP). **HUERFANO COUNTY**: 3.5 mi E jct of I-25 and hwy 10, 1 (MHP); 6.2 mi E jct of I-25 and hwy 10, 2 (MHP); 8 mi E jct of I-25 and hwy 10, 1 (MHP); 8.3 mi E jct of I-25 and hwy 10, 1 (MHP); 1 mi S, 7.5 mi E jct of I-25 and hwy 10, 1 (MHP); 1.8 mi S, 7.5 mi E jct of I-25 and hwy 10, 1 (MHP); 2.5 mi S, 7.5 mi E jct of I-25 and hwy 10 (T27S, R65W, NW ¼ Sec. 25), 2 (DMNS); 3.6 mi S, 7.5 mi E jct of I-25 and hwy 10, 1 (MHP); 4.7 mi S, 7.5 mi E jct of I-25 and hwy 10, 1 (MHP); 5.2 mi S, 7.5 mi E jct of I-25 and hwy 10, 1 (MHP); 5.7 mi S, 7.5 mi E jct of I-25 and hwy 10, 1 (MHP); 6.5 mi S, 7.5 mi E jct of I-25 and hwy 10 (T28S, R64W, NE ¼ Sec. 7), 1 (DMNS); 6.6 mi S, 7.5 mi E jct of I-25 and hwy 10, 1 (MHP); 8.1 mi S, 7.5 mi E jct of I-25 and hwy 10, 1 (MHP); 8.6 mi S, 7.5 mi E jct of I-25 and hwy 10, 1 (MHP); 11.3 mi S, 7.5 mi E jct of I-25 and hwy 10 (T28S, R64W, NE ¼ Sec. 33), 1 (DMNS); 15 mi N, 10.5 mi E Walsenberg (T25S, R64W, NE ¼ Sec. 30), 1 (DMNS); 15 mi N, 11 mi E Walsenberg (T25S, R64W, SE ¼ Sec. 19), 5 (DMNS); 12 mi N, 9.5 mi E Walsenberg (T26S, R65W, NE ¼ Sec. 12), 2 (DMNS); 11 mi N, 7.5 mi E Walsenberg (T26S, R65W, SW ¼ Sec. 10), 1 (DMNS); Bear Creek, near Walsenberg, 6187 ft., 2 (CSU). **LAS ANIMAS COUNTY**: 15 mi N, 2.5 mi E jct of I-25 and county rd. 60, 1 (MHP); 8.8 mi N, 2.5 mi E jct of I-25 and county rd. 60, 1 (MHP); Fisher Peak, 1 (NMNH); 14.1 mi S, 7.5 mi E jct of I-25 and hwy 10 (T28S, R64W, SE ¼ Sec. 10), 1 (DMNS); 1.5 mi SW Model along U.S. hwy 350, 1 (USA-CERL); 3 mi SW Model along U.S. hwy 350, 1 (USA-CERL); 2.5 mi S Trinidad, 2 (KU). **PUEBLO COUNTY**: 0.5 mi. N Avondale, 1 (MHP); 1.7 mi S, 2 mi W Avondale, 4 (MHP).

Thomomys talpoides

CHEYENNE COUNTY: 11 mi N Aroya (T12S, R51W, Sec. 6), 3 (MHP); 11 mi N, 1 mi E Aroya (T12S, R51W, Sec. 4), 1 (MHP); 4 mi N, 1 mi E Aroya (T13S, R51W, Sec. 16), 1 (MHP); 8 mi N, 1 mi W Wild Horse (T13S, R50W, Sec. 5), 1 (MHP). **DOUGLAS COUNTY**: 4 mi N, 4 mi E Castle Rock (T7S, R66W, Sec. 8), 1 (MHP); 2 mi N Castle Rock (T7S, R67W, Sec. 25), 1 (MHP); 3 mi S, 8 mi W Elbert, Elbert Co. (T10S, R65W, Sec. 16), 1 (MHP); 3 mi N, 1.5 mi E Franktown (T7S, R66W,

Sec. 24), 1 (MHP); 10 mi (by hwy 83) S Franktown (T9S, R65W, Sec. 18), 1 (MHP); 6 mi N Monument, El Paso Co. (T10S, R67W, Sec. 24), 2 (MHP); 6 mi N, 4 mi E Monument, El Paso Co. (T10S, R66W, Sec. 4), 1 (MHP). **ELBERT COUNTY**: near head of Beaver Creek, 8 mi N Agate, 1 (DMNS); 1 mi S, 5 mi W Agate (T17S, R59W, Sec. 7), 1 (MHP); Bijou Creek, near El Paso Co. line, 3 (DMNS); 0.5 mi E Elbert (T9S, R64W, Sec. 35), 1 (MHP); 3 mi S, 2 mi W Elbert (T10S, R64W, Sec. 17), 1 (MHP); 4 mi N, 3 mi E Elizabeth (T7S, R64W, Sec. 23), 1 (MHP); 5 mi S Elizabeth (T9S, R64W, Sec. 9), 1 (MHP); 2 mi N Kiowa (T8S, R63W, Sec. 3), 1 (MHP); 2 mi N, 4 mi E Kiowa (T8S, R62W, Sec. 19), 1 (MHP); 12 mi E (by hwy 86) Kiowa (T9S, R61W, Sec. 8), 1 (MHP); 0.5 mi S Kiowa (T8S, R63W, Sec. 20), 1 (MHP); 5 mi SW Kiowa (T9S, R64W, Sec. 12), 1 (MHP); 7 mi N, 5 mi W Limon, Lincoln Co. (T8S, R57W, Sec. 28), 1 (MHP); 12 mi S, 2 mi W Limon, Lincoln Co. (T11S, R57W, Sec. 23), 2 (MHP); 8 mi N Matheson (T9S, R59W, Sec. 2), 1 (MHP); 6.5 mi N Matheson (T11S, R59W, Sec. 14), 1 (MHP); 9 mi S, 7 mi E Matheson (T11S, R58W, Sec. 35), 2 (MHP); 10 mi S, 3 mi E Matheson (T12S, R58W, Sec. 6), 1 (MHP); 7 mi N, 5 mi W Punkin Center (T13S, R57W, Sec. 3), 3 (MHP); 3 mi N, 5 mi W Punkin Center (T13S, R57W, Sec. 27), 2 (MHP); 6 mi N, 4 mi W Ramah, El Paso Co. (T10S, R61W, Sec. 5), 2 (MHP); 5 mi N, 4 mi W Ramah, El Paso Co. (T10S, R61W, Sec. 8), 1 (MHP); 4 mi N, 4.5 mi W Ramah, El Paso Co. (T10S, R61W, Sec. 19), 3 (MHP); 12 mi N Simla (T8S, R60W, Sec. 35), 1 (MHP); 9 mi N Simla (T9S, R60W, Sec. 11), 1 (MHP); 3 mi N, 3 mi W Simla (T10S, R60W, Sec. 17), 1 (MHP); 0.5 mi E Simla (T10S, R60W, Sec. 36), 2 (MHP). **EL PASO COUNTY**: 1 mi N, 4 mi W Calhan (T11S, R63W, Sec. 36), 1 (MHP); 2 mi S, 9 mi W Calhan (T12S, R63W, Sec. 21), 1 (MHP); 5 mi S, 2 mi W Calhan (T12S, R62W, Sec. 34), 1 (MHP); 5 mi S, 4 mi E Calhan (T13S, R64W, Sec. 4), 2 (MHP); 9 mi S, 9 mi W Calhan (T13S, R63W, Sec. 21), 2 (MHP); 13 mi N Colorado Springs, 1 (UMMZ); 6.3 mi N Colorado Springs, 5 (KU); 3 mi N Colorado Springs, 2 (WC); 2 mi N Colorado Springs, 4 (WC); Colorado Springs, 8 (3 AMNH, 2 CSU, 2 MCZ, 1WC); near Colorado Springs, 2 (WC); E of Colorado Springs, 1 (WC); 20 mi E Colorado Springs, 2 (UMMZ); 3 mi E Falcon (T13S, R64W, Sec. 10), 1 (MHP); 5 mi S, 2 mi E Falcon (T14S, R64W, Sec. 4), 2 (MHP); 1.5 mi N, 2.5 mi E Monument, 1 (MHP); Monument (Warren, 1937); 6 mi E Monument (T11S, R66W, Sec. 10), 1 (MHP); 14 mi E Monument (T11S, R64W, Sec. 18), 1 (MHP); 2 mi N, 1 mi W Peyton (T11S, R63W, Sec. 31), 1 (MHP); 5 mi E Payton, 2 (KU); 2 mi W Ramah, 1 (KU); 2 mi W Ramah State Recreation Area (T11S, R61W, Sec. 18), 1 (MHP); 4 mi S, 1 mi E Ramah (T11S, R60W, Sec. 30), 1 (MHP); 7 mi N Rush (T13S, R60W, Sec. 11), 1 (MHP); 2 mi S Rush (T14S, R60W, Sec. 26), 1 (MHP); 1 mi E United States Air Force Academy (T12S, R66W, Sec. 20), 2 (MHP); 5 mi E United States Air Force Academy (T12S, R65W, Sec. 32), 1 (MHP). **KIT CARSON COUNTY**: Flagler, 1 (NMNH); 1 mi S Flagler (T9S, R51W, Sec. 11), 2 (MHP); 3 mi S, 4 mi E Flagler (T9S, R50W, Sec. 23), 1 (MHP); 5 mi S, 3 mi W Flagler (T9S, R51W, Sec. 33), 1 (MHP); 6 mi S, 5 mi W Flagler (T10S, R51W, Sec. 5), 1 (MHP); 6 mi S, 3 mi W Flagler (T10S, R51W, Sec. 4), 1 (MHP); 9 mi S Flagler (T10S, R51W, Sec. 24), 1 (MHP); 9 mi S, 1 mi E Flagler (T10S, R51W, Sec. 25), 1 (MHP); 9 mi S, 2 mi E Flagler (T10S, R50W, Sec. 19), 1 (MHP); 9 mi S, 3 mi E Flagler (T10S, R50W, Sec. 21), 1 (MHP); 12 mi S Flagler (T11S, R51W, Sec. 1), 1 (MHP); 16 mi S, 5 mi E Flagler (T11S, R50W, Sec. 26), 1 (MHP); 8 mi S Seibert (Hall, 1981); 12 mi S, 4 mi W Seibert (T11S, R50W, Sec. 1), 1 (MHP); 13 mi S, 4 mi W Seibert (T11S, R50W, Sec. 2), 1 (MHP); 13.5 mi S, 4 mi W Seibert (T11S, R50W, Sec. 11), 1 (MHP); 14 mi S, 4 mi W Seibert (T11S, R50W, Sec. 13), 1 (MHP); 17 mi S, 4.5 mi W Seibert (T11S, R50W, Sec. 26), 1 (MHP). **LINCOLN COUNTY**: 11 mi N, 2 mi W Bovina (T7S, R54W, Sec. 22), 1 (MHP); 11 mi N, 1 mi E Genoa, 1 (MHP); 10 mi N, 4 mi E Genoa, 1 (MHP); 4.5 mi N, 3 mi E Genoa (T8S, R54W, Sec. 16), 1 (MHP); 7 mi N, 3 mi E Limon (T8S, R56W, Sec. 28), 3 (MHP); Limon (Cary, 1911); 8 mi E Rush, El Paso Co., 1 (MHP); 11 mi E Rush, El Paso Co., 1 (MHP).