Supplemental:

1. ***Systematic Paleontology:***

Institutional Abbreviations: **UCMP**, University of California Museum of Paleontology, Berkeley, USA; **MVZ**, Museum of Vertebrate Zoology, University of California, Berkeley, USA.

CLASS: MAMMALIA

ORDER: CARNIVORA Bowdich 1821

FAMILY: PROCYONIDAE Gray 1825

GENUS: *BASSARISCUS* Coues 1887

*Bassariscus astutus* Lichtenstein 1830

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 196325 left dentary with m1, p3, p2, and alveoli m2, p4,p1; UCMP 196488, left p4; UCMP 77141, left femur; UCMP 196468 left tibia; UCMP 196469, left distal tibia.

**Remarks**—The referred specimens do not differ appreciably from comparative material of *Bassariscus astutus*, the only species of this genus present in North America, and are markedly smaller than comparable elements from other North American procyonids. The left dentary, UCMP 196325, is distinguished from other North American procyonids by morphology of the m1: the m1 protoconid in *Bassariscus* is higher and more pronounced that in *Procyon* or *Nasua*, which have teeth indicative of a more omnivorous diet. Similarly, in UCMP 196488, the left p4, is not morphologically distinguishable from *Bassariscus astutus*: unlike the p4 of *Mustela* and *Martes,* which are similar in size in shape, the p4 of *Bassariscus* has a distinctive metacone. The distal epiphysis of the tibiae, UCMP 196468 and 196469, like *Bassariscus,* has a shorter and smoother medial malleolus than in other carnivorans of similar body size.

FAMILY: FELIDAE Gray 1821

GENUS: *LYNX* Kerr 1792

*Lynx rufus* Schreber 1777

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 292572, right third metacarpal.

**Remarks**—Among Carnivorans, the morphology of proximal articular surface of this specimen is seen only in the genus *Lynx*. This 3rd metacarpal is indistinguishable in size and shape from modern specimens of *Lynx rufus*.

FAMILY: CANIDAE Fischer 1817

GENUS: *CANIS* Linnaeus 1758

*Canis sp.*

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 196743, right distal tibia; UCMP 196744-196745, right calcanei; UCMP 221831-221837 phalanges.

**Remarks**—These specimens match *C. latrans* in both size and morphology; they are too small to be *C. lupus*.

GENUS: *UROCYON* Baird 1857

*Urocyon cinereoargenteus* Schreber 1775

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 196324, left radius; UCMP 196323, left dentary with alveoli m3-p1; UCMP 291749, m2.

**Remarks**—The dentary, UCMP 196323, preserves the distinct postero-vental notch that distinguishes genus *Urocyon* from other North American caninae. The sister species to *U. cinereoargenteus*, *U. littoralis,* is 1) known only from islands off the coast of California and 2) is about 20% smaller than *U. cinereoargeneus* overall (Fritzell and Haroldson, 1982). The molar UCMP 291749, though broken in several places, preserves two roots, portions of the hypoconid, protoconid, talonid basin, and trigonid basin, morphology that identifies it as *U. cinereoargenteus*.

FAMILY: MEPHITIDAE Bonaparte 1845

GENUS: *SPILOGALE* Gray 1865

*Spilogale c.f. S. gracilis*

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 196322, cranium with left m1, p4, p2, and right m1-p2; UCMP 196321 right distal humerus; UCMP 77152 right dentary with m2 and alveoli m2, p4-c; UCMP 77151 right dentary fragment with m2 and partial p3, and alveoli m2, p4, p1; UCMP 77150 right dentary fragment with alveoli m2-c; UCMP 197568, left dentary fragment with partial m1, p4 and alveoli p3; UCMP 291738, right M1; UCMP 292574, right radius.

**Remarks**—As compared to other mesocarnivores, the cranium UCMP 196322 is too small to be *Mephitis* and, though it overlaps *Mustela* and *Martes* in size, the maxillary dentition clearly exclude this specimen from either genus: the M1 is much wider, with a high buccal cusp. The referred mandibles vary in extent of preservation, but are all assigned to *Spilogale* based on a suite of characters: the straight posterior margin of the coronoid process in UCMP 77151 and 77150 (in contrast to *Mephitis* and *Martes* which have curved posterior margins); the relatively shallow dentary, seen in all specimens, accompanied by a reduced and rounded angular process in UCMP 77151 (in contrast to *Mustela* of similar size, which have deeper and more strongly curved dentaries and elongated angular processes); the morphology of the m1 in UCMP 77151, 77152, and 197568, which is shorter and wider than in *Martes* or *Mustela*; and the straight ventral margin from dentary to angular in UCMP 77151 (in *Mephitis* there is a shallow step formed by the angular). The humerus, UCMP 196321, has no entepicondylar foramen, distinguishing it from *Martes* and *Mustela*, and is too small to be *Mephitis* or *Conepatus*.

These specimens are too large to belong to *Spilogale pygmaeus*. Skeletal morphological characteristics distinguishing *S. putorius* and *S. gracilis* pertain only to bacula, none of which were recovered in this locality. Based on biogeographic distribution, I assign all elements diagnosed as *Spilogale* to *S. c.f. gracilis*, the western spotted skunk.

ORDER: RODENTIA Bowditch 1821

FAMILY: HETEROMYIDAE Gray 1868

GENUS: *CHAETODIPUS* Merriam 1889

*Chaetodipus sp.*

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 197389-197399, 291660, right dentaries, some with teeth; UCMP 196362-196365, 291659, 292724-292725, left dentaries, some with teeth.

**Remarks**—These craniodental elements are too small to be categorized as *Dipodomys* or *Liomys*, and the morphology of the coronoid process (reduced, pointy, strongly recurved) and masseter muscle attachment (the bony ridge does not project into the diastema) exclude them from *Microdipodops.*

Specimens assigned to *Chaetodipus* were identified by comparison to lower tooth row measurements from 10 *Perognathus* and 15 *Chaetodipus* species present in western North America using Mann-Whitney U tests and Holm p-value adjustments (Figure 2; Supplemental Table 1). The fossil specimens were significantly different from all species except *C. baylei*, *C. californicus*, and *C. hispidus,* and so are designated as *Chaetodipus sp*. While none of these species is currently present at Mescal Cave, *C. baileyi* occurs in southern California and Baja, and *C. californicus* occurs along the California coast. *C. hispidus* is found in the Midwest, and is an unlikely to have been present in the Mojave in the past. Measurements for *C. eremicus* and *C. rudinoris* were included in *C. penicillarius* and *C. baylei*, respectively, because they represent recent taxonomic splits.

*c.f. Chaetodipus sp.*

**Referred specimens**— UCMP locality V3864 (Mescal Cave): UCMP 196366-196377, 196379-196381, complete and fragmentary femora and tibiae.

**Remarks**—The referred femora are characterized by a prominent third trochanter (though more rounded than in *Dipodomys*) and a deep trochanteric fossa, characteristics which distinguish them from *Microdipodops*, *Zapus*, and similar-sized Arvicoline or Sigmodontine rodents (e.g. *Microtus, Onychomys* and *Peromyscus*). Small size excludes these specimens from *Dipodomys* and *Liomys*.

The distal epiphyses of the referred tibiae are mediolaterally wide but cranio-caudally compressed and, more generally, rectangular. Furthermore, UCMP 196381 has an enlarged, laterally curving tibial crest.

GENUS: *DIPODOMYS* Gray 1841

*Dipodomys sp.*

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 197371, right dentary; UCMP 197372, 197375, 197377-197388, 221881, 291727, 292573, tibiae, innominates and fragmentary femora.

**Remarks**—The dentary, UCMP 197371, though incomplete, is assigned to *Dipodomys sp.* principally because it has un-rooted teeth, unlike other North American Heteromyid genera. Additionally, as compared to *Microdipodops,* it lacks the distinctive ridge of bone where the massester muscle attaches, which projects above the diastema; and the margins of the condyloid process are more parallel along its length in this specimens, whereas in *Liomys* the condyloid process is wide at the base and tapers posteriorly.

Post-cranial elements are assigned to *Dipodomys sp.* based on the following criteria: the femora have a prominent triangular, third trochanter, unlike *Thomomys*, and a well-developed trochanteric fossa; the inominates have two distinct inflection points along the ventral border of the pubis, which is also wider and thinner than in other rodents of similar size; the tibiae are straight (in contrast to *Thomomys* or *Microtis*, for example, which have more loop-shaped tibiofibulae) and the tibial crest has a strong “step” in it (unlike similarly-sized *Ammospermophilus*).

FAMILY: CRICETIDAE Fischer 1817

SUBFAMILY: ARVICOLINAE Gray 1821

Arvicolinae indet.

**Referred specimens**— UCMP locality V3864 (Mescal Cave): UCMP 196382-196394, 291208-291211, complete and fragmentary humeri, tibiae, a femur, and an ulna.

**Remarks**—These specimens likely represent either *Lemmiscus curtatus* or *Microtus*, but lack diagnostic characters.

GENUS: *LEMMISCUS* Thomas 1912

*Lemmiscus curtatus* Cope 1868

**Referred specimens**— UCMP locality V3864 (Mescal Cave): UCMP 291190-291191 fragmentary left dentaries with m1-m2; UCMP 291192 fragmentary right dentary with m1-m2; UCMP 291204, 291228-291231 right m1s; UCMP 291221-291227, left m1s; UCMP 291205-291207, m1 fragments.

**Remarks:** In m1s of *Lemmiscus curtatus*, triangle 2 is equal in length or longer than triangle 1 (Bell et al., 2004)*.*

GENUS: *MICROTUS* Schrank 1978

*Microtus sp.*

**Referred specimens**— UCMP locality V3864 (Mescal Cave): UCMP 291189, left dentary with m1-2; UCMP 291220, 292707, Lm1.

**Remarks:** In m1s of *Microtus,* triangle 2 is distinctly smaller than triangle 1 (Bell et al., 2004)*.*

Arvicoliniindet. (aff. *Microtus* or *Lemmiscus*)

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 77142, skull fragment (maxilla and premaxilla); UCMP 291203, maxilla fragment; UCMP 291201-291193, fragmentary right dentaries; UCMP 291188-291179, 291689, fragmentary left dentaries.

SUBFAMILY: NEOTOMINAE Merriam 1894

Neotominae indet.

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 196433-196436, 196439, 196442-196443, 291655-291657, right dentaries; UCMP 196470-196475, 291658, left dentaries; UCMP 196482, partial skull; UCMP 196395-196419, 196427-196432, 196483, femora and tibiae.

**Remarks**—These specimens lack morphological characters that identify them to a finer taxonomic level. Among species that occur near Mescal Cave and the Mojave today, *Peromyscus*, *Reithrodontomys*, *Baiomys*, and *Onychomys* are all morphologically similar to the specimens reported here.

GENUS: *NEOTOMA* Say and Ord 1825

*Neotoma* indet.

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 291232-291262, right m1s; UCMP 291291- 291332, left m1s; UCMP 291263-291290, 291437-291447, right M1s; UCMP 291333-291374, 291425-291436, left M1s; UCMP 291379-291382, 291410-291423, 291729-291730, right m2s; UCMP 291383-291409, 291731-291732, left m2s; UCMP 291424, 292726, left m3s; UCMP 291375-291377, 291728, right m1m2; UCMP 291378, left m1m2; UCMP 291448-291465, 291734-291736, left M2/3s; UCMP 291466-291465, right M2/3s; UCMP 291733, left m1/2; UCMP 291693-291709, fragmentary cheek teeth; UCMP 291493, m3.

**Remarks**—*Neotoma* are the most abundant genus in Mescal Cave, represented by over a thousand specimens. *Neotoma* are semihypsodont and have no cementum in their reentrants; their teeth and cranial elements are easily morphologically distinguished from other cricetids using criteria detailed by Repenning (2004), who provides a discussion of *Neotoma* tooth morphology).

*Neotoma* spp.

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 196753-196762, 221838-221872, 291549-291562, fragmentary left dentaries, some with teeth; UCMP 196354-196359, 196763-196772, 197362-197370, 221873-221894, 291563-291581, 291647, 291649, 292727, fragmentary right dentaries, some with teeth; UCMP 291482-291487, 291495-291522, 291525-291529, 291531, 291540-291548, 291648, 291691-291692, 291710, 291717, complete and fragmentary maxillae and palates; UCMP 221895-221970, 222715-222749, 290995-291160, 291166-291171, 292562-292571, 292716-292720, complete and fragmentary: radii, femora, ulnae, inominates, tibiae, humeri, astragali, calcanei.

**Remarks:** I did not find any notable morphological differences among specimens classified as *Neotoma* spp.*,* but because species of *Neotoma*, with the exception of *N. cinerea*, are extremely similar in size and morphology, specimens referred to *N.* spp*.* may represent more than one species.

*Neotoma cinerea* Ord 1815

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 196347-196353, 196706-196724, left dentaries, some with cheek teeth; UCMP 196355, 196357-19658, 196360-196361, 196725-196741, right dentaries, some with cheek teeth; UCMP 291481, 291483, 291488-291492, 291494, 291505-291506, 291523-291524, 291530 maxillary fragments with cheek teeth; UCMP 196491-196705, 291161-291165, fragmentary and complete: humeri, femora, radii, ulnae, tibiae.

**Remarks**—Dentaries of *N. cinerea* were identified morphologically based on robusticity—they are much thicker (dorsal-ventral) along the ramus than in other species of *Neotoma*—and the shape of the masseter muscle attachment along the ramus. I took mandibular alveolar tooth row measurements on all dentaries (Supp. 2) in which this feature was preserved, and found a marked size difference between specimens referred to *N. cinerea* and those referred to *N.* spp. (Shapiro-Wilks test to confirm normality for each group; T test p value < 1.0xe-15). Post-cranial elements were identified as *N.* spp. or *N. cinerea* based on size (smaller and larger specimens respectively). As with the mandibular tooth row measurements, there was no appreciable overlap in size between these two groups.

GENUS: *BAIOMYS* True 1894

*Baiomys sp.*

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 196444-196445, 291653-291654, right dentaries with cheek teeth; UCMP 196476-196481, left dentaries with cheek teeth.

**Remarks**— Although these dentaries are somewhat larger than is typical for *Baiomys*, dental morphology clearly places them with this genus. *Baiomys* has a simplified m3 like *Reithrodontomys* and *Onychomys*, but the morphology of the anterior dentine pool of this tooth in *Baiomys* is intermediate between *Onychomys* and *Reithrodontomys*. Namely, in *Onychomys* the dentine pool is round and open; in *Reithrodontomys*, the pool is fully bisected, forming two closed loops; and in *Baiomys*, the pool is laterally pinched but not fully closed. The anterior edge of m2s in these specimens is flat, unlike in *Onychomys* but similar to *Reithrodontomys* and *Baiomys*—however, in *Baiomys* the anterior-most cusp extends across almost the entire breadth of the tooth. *Peromyscus* and *Ochrotomys* have additional cusps on the m1 that are not present in these specimens, but m1s from these specimens are similar to both *Reithrodontomys* and *Baiomys*. As such, specimens that retain only the m1 are attributed to *c.f. Baiomys.*

FAMILY: GEOMYIDAE Bonaparte 1845

GENUS: *THOMOMYS* Wied-Neuwied 1839

*Thomomys (subgenus Megascapheus) sp.* Elliot 1903

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 196453-196455, 291646, left dentaries; UCMP 196449-196452, UCMP 196733, right dentaries; UCMP 196456-196458, maxillary fragments.

*Thomomys sp.*

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 291745, right p4; UCMP 291744, left P4; UCMP 196459, right innominate; UCMP 196460, complete pelvis; UCMP 196461, left tibia; UCMP 196462-196465, humeri with proximal epiphyses missing; UCMP 196466-196467, left femora; UCMP 292702-292702, cheek teeth.

**Summary remarks for *Thomomys***—All skeletal elements other than craniodental material are referred to *Thomomys sp.* The cranial elements assigned to *Thomomys* subgenus *Megascapheus* are distinguished from species of the subgenus *Thomomys* by the following characteristics of the maxilla: the base of P4 is anterior to the base of I1, P4 is anteriorly angled, the infraorbital foramina are anterior to incisive foramina, and the angular process is continuous with the well-developed flange on the ventral surface of the jaw.

Among species of subgenus *Megascaphus*, lower tooth row measurements of *Thomomys* specimens from Mescal Cave are significantly smaller than measurements of modern specimens from both *T. bulbivorous* (which is unlikely to have ever been present at Mescal Cave based on biogeography) and *T. townsendii*, but not significantly different in size from *T. umbrinus* or *T. bottae* (Table 3; Supp. 3).

FAMILY: SCIURIDAE Fischer 1817

Sciuridae indet.

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 292508 left mandible; UCMP 292517, left maxilla fragment; UCMP 292509 right mandible fragment; UCMP 292516 left mandible; UCMP 292517 left maxilla fragment; UCMP 292523-292534, femora; UCMP 292535-292536, innominate fragments; UCMP 292521, 292575-292581, scapulae.

**Remarks**—These elements lack characters that would define them more finely, but are all too small to be *Cynomys* or *Marmota*.

GENUS: *MARMOTA* Frisch 1775

*Marmota flaviventris* Audubon and Bachman 1841

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 77157 right maxilla with alveoli M3-P3; UCMP 77158, left maxilla with alveoli M3-P3; UCMP 77135 left rostrum, orbit, and maxilla with alveoli M2-P3;

*Marmota c.f. M. flaviventris* Audubon and Bachman 1841

**Referred specimens**—UCMP 77138-77140, 77159 right dentaries with alveoli m3-p4; UCMP 196329, partial right dentary with alveoli m2-p4; UCMP 77136-77137, 196328 , 77135 left dentary with alveoli m3-p4; 1 UCMP 96326-196327, left lower tooth row (dentary fragment) with alveoli m3-p4; UCMP 77156 left dentary with m1 and I, and alveoli m3, m1-p4; UCMP 196332-196333, partial left innominate (acetabulum); UCMP 196334, left innominate fragment; UCMP 196331, left proximal radius; UCMP 196337, left calcaneus; UCMP 196335-196336, right calcaneus; UCMP 196742 right femur, un-fused distal epiphysis; UCMP 196330 left ulna; 196346, LM1/2; UCMP 196354 RM1/2/3; UCMP 196344, 196338 RM3; UCMP 196341, 196343 RM1/2; UCMP 196342 LM1/2; UCMP 196340 Rm1/2; UCMP 196339 Rm3; UCMP 291737 LP3.

**Summary remarks for *Marmota***—All non-maxillary elements of genus *Marmota* are assigned to *M. c.f. flaviventris*.

Marmots are easily distinguished from other Sciurids by their large size. Within the genus, identification based on morphology is more difficult, however. According to Howell (1915), members of the *Marmota monax* group can be distinguished from other marmots by the angle of their upper tooth rows, which are parallel along their length. In the Mescal Cave specimens, the upper tooth rows diverge anteriorly. *M. caligata*-group species (*M. caligata, M. vancouverensis, M. broweri, M. olympus*) are unlikely to have existed around Mescal Cave. Furthermore, *M. flaviventris* it is found less than 160 km north and west of Mescal Cave today (IUCN 2014, Reid 2006, VertNet 2014).

GENUS: *SCIURUS* Linnaeus 1758

*Sciurus sp.*

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 196446, left radius

**Remarks**—This radius, though similar in overall size to *Urocitellus* and *Otospermophilus*, is too long to belong to either of these genera. It is indistinguishable from *Sciurus.*

GENUS: *SPERMOPHILUS SENSU LATO* Cuvier 1825

*Spermophilus sensu lato sp. A*

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 292510, 196448 right maxillae; 292511, left mandible with m1; 196477, left clavicle.

**Remarks**—The maxillae are assigned to *Spermophilus sensu lato* because they have a bony projection just anterior and lateral to the tooth row. This projection, where it is present in other Sciurids, is generally more anterior along the maxilla and further from the tooth row. Although part of the M2 of UCMP 196448 is missing, it overlaps *Spermophilus sensu lato* morphologically. The m1 of the mandible, though heavily worn, clearly lacks the lower molar characteristics of tree squirrels (conspicuous entoconid notch, swollen ectolophid, typically distinct mesostylid), and the jaw is too large overall to be *Tamias* or *Ammospermophilus.*

*Spermophilus sensu lato sp. B*

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 292512 right mandible; UCMP 292513 right mandible fragment with p3-m1

**Remarks**—The mandible is attributed to *Spermophilus sensu lato*: the coronoid is curved posteriorly, while the condyloid process is fairly triangular. The notch between the coronoid and condyloid processes is not as narrow as in *Ammospermophilus*, and deeper than in *Sciurus* or *Tamiasciurus*. The teeth of UCMP 292513 are characteristically *Spermophilus sensu lato*, though in size they overlap *Tamias* and *Ammospermophilus* as well, unlike in *Spermophilus sensu lato* *sp.* A, above. This m1 has no notch mesobuccal to the protoconid, as in *Tamias*.

*Otospermophilus sp.* Brandt 1844

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 292518-292519, right humeri.

**Remarks**—These humeri are similar to both Sciurus and Otospermophilus in size, but are proportionately shorter than Sciurus. Additionally, the morphology of the entipicondylar foramen differs between these genera—in *Sciurus* this opening is oriented more horizontally than in *Otospermophilus*.

Subtribe: Spermophilina

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 292514-292515, left upper cheek teeth; UCMP 292522, left humerus; UCMP 292520 lower right cheek tooth (molariform)

**Remarks**—Upper cheek teeth UCMP 292514 and 292515 have incomplete metalophs, and lack prominent mesostyles, distinguishing them from *Sciurus* and *Tamiasciurus*. The left humerus UCMP 292522 is identified as Spermophilina (affinity to *Ammospermophilus* or *Callospermophilus*) based on the following: the distal end of the left humerus is proportionately too wide to be *Glaucomys*, and too narrow to be *Urocitellus* or *Xerospermophilus*; the humerus is too large overall to be *Tamias*; and the smaller size and morphology of the entipicondylar foramen distinguished this specimen from *Tamiasciurus.* Lower cheektooth UCMP 292520 is distinguished from *Tamias* in that it lacks a notch mesobuccal to the protoconid; it is unlike tree squirrels (*Sciurus* and *Tamiasciurus*) in that it lacks a conspicuous entoconid notch, swollen ectolophid, and distinct mesostylid (Goodwin, 2004).

ORDER: LAGOMORPHA Brandt 1855

FAMILY: LEPORIDAE Fischer 1817

Leporidae spp. A (aff. *Lepus* or *Sylvilagus*)

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 292973-292984, 293007, 293015, right dentary fragments; UCMP 292985-292995, 293014, 293021-293024, left dentary fragments; UCMP 292418-292425, 293012, left maxillary fragment; UCMP 292433-292440, right maxillary fragment; UCMP 291677-291684, dentary fragments; UCMP 291742, Rp3; UCMP 292426-292432, palates; UCMP 292460-292484, 292495-292501, 292962-292966, incisors; UCMP 292786-292842, upper cheek teeth; UCMP 292868-292871, RP3; UCMP 292873-292875, LP3; UCMP 293026-293028, M3s; UCMP 292876-292884, Rp3; UCMP 292885-292897, Lp3; 292907-292924, 292929-292958, 293020, lower cheek teeth; UCMP 293009, m3; 222379-222382, 222392-222396, 291753-291798, 291855-292015, 292051-292113, 292152-292172, 292186-292218, 292244-292292, 292310-292359, 293019, complete and fragmentary atlases, axes, scapulae, humeri, ulnae, radii, inominates, femora, tibiae, astragali, and calcanei.

Leporidae sp. B (aff. *Lepus* or *Sylvilagus*)

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 292968, 292970, right dentaries; UCMP 292969, 293016, 293018, left dentaries; UCMP 292389-292401, right maxillary fragments; UCMP 292402-292416, 293017, left maxillary fragments; UCMP 291741, LP2; UCMP 292872, LP3; UCMP 292843-292867, upper cheek teeth; UCMP 292898-292901, Lp3; UCMP 292902, Rp3; UCMP 293023, 292903-292906, 292925-292928, lower cheek teeth; UCMP 292959-292961, 292485-292507, incisors; UCMP 222373-222378, 291799-291832, 291835-291853, 292016-292050, 292114-292151, 292173-292185, 292219-292241, 292293-292309, 292360-292388, 292449-292459, 293013, 293025; complete and fragmentary premaxillae, scapulae, humeri, radii, ulnae, inominates, femora, tibiae, astragali, calcanei.

**Summary remarks for Leporidae—**Leporids from Mescal Cave fall into two non-overlapping size categories (e.g., measurements of the greatest length of the right calcaneus: Leporidae sp. B, 22.75-27.2 mm; Leporidae sp. A, 15.86-19.44 mm). Although these specimens undoubtedly belong to either *Lepus* or *Sylvilagus* (they are too large to be *Brachylagus*, the only other Leporid genus present in the American West), there are no dental characteristics that reliably distinguish these genera. Other morphological differences between *Lepus* and *Sylvilagus* are few, and none pertain to the available fossil material.

GENUS: *LEPUS* Linnaeus 1758

*Lepus californicus* Gray 1837

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 196746 (GenBank #KM203359)-196747 (GenBank #KM203357, KM203358), left mandibles.

**Remarks**—Ancient DNA analyses were successfully conducted on two specimens by Cheng (Lily) Li in the Hadly lab ancient DNA facility at Stanford University, rendering DNA from *Lepus californicus.* aDNA was extracted, amplified, and sequenced according to protocols described by Hadly et al (2003, 2004). These specimens fall into the size category for Leporid sp. A, but there is a range of variation among these small Leporid specimens and it is possible that multiple species are represented therein. As such, only specimens with direct aDNA data are assigned to *L. californicus*. aDNA was most similar to *L. californicus* and *L. insularis*—*L. insularis* is endemic to Espiritu Santo Island in the Gulf of California, and is therefore excluded as a possibility in this locality (Thomas and Best, 1994).

FAMILY: OCHOTONIDAE Thomas 1897

GENUS: *OCHOTONA* Link 1795

*Ochotona sp.*

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 77143 Left dentary with m1; 77144-77145, 77149, 291651, 293011 left dentary fragments; 77146-77148, 292441, 293010 right dentary fragments; 292996, 293008, 291650 maxilla fragment; UCMP 291747-291748, lower cheek teeth; UCMP 292442, right tibia; UCMP 292443-292447, left humeri; UCMP 292448, right humerus.

**Remarks**—Mandibles of *Ochotona* are easily distinguished from other lagomorphs: the ramus is proportionately longer, with a longer diastema, and the dorsal and ventral outlines are more parallel. The angular process in other lagomorphs is more rounded and projects ventrally, and begins at the posterior margin of the cheek teeth, whereas in *Ochotona* there is a distinctive gap. Unlike in *Sylvilagus* and *Lepus*, *Ochotona* has no P2, and the P3 is peg-like. Furthermore, the maxillary teeth are more strongly posteriorly angled than in other lagomorphs. The lower molars in *Ochotona* are anterio-posteriorly compressed, and the lingual infolding is deep, rendering a tooth outline that is more symmetrical than in other lagomorphs.

Tibiae and humeri of *Ochotona* are similar in morphology to, but considerably smaller than, other lagomorphs. A notch on the tibial crest is located lower (more distal) in *Ochotona* than in *Sylvilagus* or *Lepus.* The humerus of *Ochotona* is more S-shaped and the humeral head curves more medially than in *Sylvilagus* or *Lepus.*

ORDER: ARTIODACTYLA Owen 1848

FAMILY: BOVIDAE Gray 1821

GENUS: *OVIS* Linnaeus 1758

*Ovis canadensis* Shaw 1804

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 196484, frontal bone, orbit, horn core, and horn sheath; UCMP 291685, left m3; UCMP 292711, Rp3.

**Remarks**—This specimen has an un-branched, medio-laterally compressed horn sheath and a short, blunt, bony horn core that projects posteriorly: morphologies that match *Ovis* but not *Bison* (which has round horns that project laterally from the skull), *Oreamnos* (round, pointy horns), *Antilocapra* (triangular horn core). No other artiodactyl genera in this region have keratinous horn sheaths and bony horn cores. This cranial material is attributed to *Ovis canadensis* rather than *O. dalli* based largely the the horn morphology, which is more consistent with *O. canadensis. O. canadensis* is also the more parsimonious assignment based on biogeography.

The m3 has three triangular lophs that are essentially perpendicular to the jaw, in contrast to *Oreamnos*, and a relatively flat labial surface, unlike *Odocoileus* or members of the subfamily *Bovinae*.

*c.f. Ovis* Shaw 1804

**Referred specimens**—UCMP locality V3864 (Mescal Cave): UCMP 196490, Left distal tibia; UCMP 221824, left humerus; UCMP 221825-221826 distal left humeri; UCMP 221827, R calcaneus; UCMP 196487, proximal right scapula; UCMP 221830, left maxillary fragment (socket of P2 and infraorbital foramen); UCMP 221828-221829, phalanx; UCMP 196489, Left dentary fragment; UCMP 291177-291177, metapodial shaft fragments; UCMP 196486, juvenile right metacarpal shaft; UCMP 196485, right metacarpus (cannon bone).

**Remarks**—All specimens reported here are consistent with *Ovis*, though not necessarily inconsistent with other artiodactyls present in this area. However, given the lack of craniodental remains from other genera, I assign the specimens listed above to *c.f. Ovis*.

1. Complete lower toothrow (CTRL) measurements for modern and fossil Perognathinae. Specimens are from the MVZ except where indicated. Sex of modern specimens was determined at collection using soft tissue.

|  |  |  |  |
| --- | --- | --- | --- |
| **Species** | **MVZ**  **Specimen #** | **CTRL**  **(mm)** | **Sex** |
| *Perognathus alticola* | 31836 | 3.07 | f |
| 31837 | 2.96 | f |
| 31832 | 3.19 | f |
| 47407 | 3.08 | f |
| 47410 | 2.99 | f |
| 47412 | 3.34 | f |
| 197330 | 3.44 | f |
| 31838 | 3.15 | m |
| 31831 | 3.22 | m |
| 31833 | 3.11 | m |
| 31834 | 3.08 | m |
| 31835 | 3.13 | m |
| 47415 | 3.15 | m |
| *Perognathus amplus* | 55775 | 2.94 | f |
| 58625 | 2.86 | f |
| 58628 | 2.98 | f |
| 58629 | 2.9 | f |
| 58630 | 2.84 | f |
| 55603 | 3.16 | f |
| 55777 | 2.98 | f |
| 55776 | 3.03 | m |
| 58626 | 2.84 | m |
| 33197 | 2.95 | m |
| 55795 | 2.8 | m |
| 55797 | 2.8 | m |
| 55798 | 2.98 | m |
| 55803 | 3.13 | m |
| *Perognathus apache* | 55704 | 2.82 | f |
| 55706 | 2.87 | f |
| 60832 | 2.93 | f |
| 60833 | 2.63 | f |
| 58633 | 2.84 | f |
| 55712 | 3.1 | f |
| 142047 | 2.86 | f |
| 55619 | 3.03 | m |
| 55700 | 2.7 | m |
| 55702 | 2.7 | m |
| 55703 | 2.87 | m |
| 55705 | 3.07 | m |
| 55707 | 2.87 | m |
| *Perognathus flavus* | 55660 | 2.67 | f |
| 55661 | 2.9 | f |
| 55664 | 2.83 | f |
| 55665 | 2.73 | f |
| 55663 | 2.83 | f |
| 66644 | 2.77 | f |
| 132783 | 2.79 | f |
| 55666 | 2.93 | m |
| 55667 | 2.56 | m |
| 55670 | 2.54 | m |
| 124181 | 2.59 | m |
| 66645 | 2.57 | m |
| 132784 | 2.76 | m |
| 132785 | 2.67 | m |
| *Perognathus inornatus* | 47388 | 2.89 | f |
| 47390 | 2.77 | f |
| 47391 | 2.93 | f |
| 47392 | 2.85 | f |
| 47393 | 3.04 | f |
| 47394 | 2.93 | f |
| 47396 | 2.97 | f |
| 47385 | 2.8 | m |
| 47386 | 2.95 | m |
| 47387 | 3.05 | m |
| 47389 | 3.15 | m |
| 47395 | 2.88 | m |
| 47397 | 2.73 | m |
| *Perognathus longimembris* | 16914 | 3.02 | f |
| 16915 | 2.96 | f |
| 16916 | 2.94 | f |
| 16917 | 2.8 | f |
| 16921 | 2.94 | f |
| 223667 | 2.84 | f |
| 223670 | 2.72 | f |
| 16911 | 2.92 | m |
| 16912 | 2.9 | m |
| 16913 | 2.9 | m |
| 16918 | 2.92 | m |
| 16919 | 2.89 | m |
| 16920 | 2.94 | m |
| 16922 | 3.04 | m |
| *Perognathus merriami* | 76361 | 2.53 | f |
| 75069 | 2.8 | f |
| 75070 | 2.68 | f |
| 75072 | 2.53 | f |
| 75073 | 2.74 | f |
| 75074 | 2.85 | f |
| 76362 | 2.5 | f |
| 76366 | 2.58 | f |
| 75064 | 2.52 | m |
| 75063 | 2.57 | m |
| 75065 | 2.61 | m |
| 76365 | 2.67 | m |
| 80366 | 2.56 | m |
| 80367 | 2.67 | m |
| 80369 | 2.58 | m |
| *Perognathus parvus* | 16982 | 3.33 | f |
| 16983 | 3.37 | f |
| 16987 | 3.28 | f |
| 26729 | 3.27 | f |
| 16989 | 3.35 | f |
| 16990 | 3.46 | f |
| 16981 | 3.25 | m |
| 16984 | 3.4 | m |
| 16986 | 3.31 | m |
| 16988 | 3.53 | m |
| 16991 | 3.25 | m |
| 16992 | 3.26 | m |
| 16993 | 3.34 | m |
| *Perognathus fasciatus* | 89106 | 3.09 | f |
| 190078 | 2.69 | f |
| 66882 | 3.13 | m |
| 89105 | 3 | m |
| *Perognathus flavescens* | 666883 | 2.93 | f |
| 66884 | 3.06 | f |
| 66885 | 3 | f |
| 66886 | 3.05 | f |
| 66887 | 2.93 | f |
| 40022 | 2.83 | f |
| 66888 | 3 | m |
| 66889 | 3.11 | m |
| 53906 | 2.93 | m |
| 53905 | 2.81 | m |
| 40021 | 2.86 | m |
| *Chaetodipus anthonyi* | 69724 | 3.27 | f |
| 49727 | 3.26 | f |
| 49730 | 3.27 | f |
| 49731 | 3.33 | f |
| 138287 | 3.32 | m |
| 49723 | 3.36 | m |
| 35992 | 3.3 | m |
| 49725 | 3.31 | m |
| 49766 | 3.3 | m |
| 49729 | 3.23 | m |
| *Chaetodipus arenarius* | 110965 | 2.79 | f |
| 137288 | 2.82 | f |
| 137289 | 2.87 | f |
| 137290 | 2.9 | f |
| 137291 | 2.82 | f |
| 124194 | 2.94 | f |
| 115259 | 2.75 | f |
| 110961 | 2.68 | m |
| 110963 | 2.73 | m |
| 110962 | 2.64 | m |
| 110964 | 2.85 | m |
| 110966 | 2.73 | m |
| 110967 | 2.81 | m |
| 377.21 | 2.88 | m |
| 37722 | 2.79 | m |
| *Chaetodipus artus* | 76526 | 3.25 | f |
| 75621 | 3.58 | f |
| 75622 | 3.18 | f |
| 75616 | 3.24 | f |
| 75617 | 3.26 | f |
| 153897 | 3.33 | f |
| 147112 | 3.18 | f |
| 75618 | 3.3 | m |
| 75619 | 3.37 | m |
| 75620 | 3.36 | m |
| 75613 | 3.35 | m |
| 75614 | 3.37 | m |
| 75615 | 3.13 | m |
| 139735 | 3.21 | m |
| 139734 | 3.39 | m |
| *Chaetodipus baileyi* | 50540 | 3.82 | f |
| 50541 | 3.94 | f |
| 50543 | 3.67 | f |
| 62169 | 3.81 | f |
| 139140 | 3.52 | f |
| 139142 | 3.65 | f |
| 141932 | 3.82 | f |
| 50538 | 3.87 | m |
| 50539 | 3.68 | m |
| 50542 | 4.16 | m |
| 62167 | 3.61 | m |
| 62168 | 3.91 | m |
| 139138 | 3.58 | m |
| 139139 | 3.69 | m |
| *Chaetodipus californicus* | 198716 | 3.55 | f |
| 198721 | 3.75 | f |
| 198722 | 3.77 | f |
| 5254 | 3.41 | f |
| 5255 | 3.75 | f |
| 84367 | 3.6 | f |
| 132520 | 3.46 | f |
| 89685 | 3.52 | f |
| 198715 | 3.45 | m |
| 156525 | 3.5 | m |
| 156526 | 3.39 | m |
| 198719 | 3.74 | m |
| 198720 | 3.66 | m |
| 85071 | 3.58 | m |
| 1652 | 3.67 | m |
| *Chaetodipus fallax* | 216869 | 3.61 | f |
| 2370 | 3.46 | f |
| 2372 | 3.43 | f |
| 2371 | 3.39 | f |
| 2374 | 3.51 | f |
| 2375 | 3.47 | f |
| 198437 | 3.34 | f |
| 2373 | 3.62 | m |
| 2376 | 3.6 | m |
| 2377 | 3.51 | m |
| 198430 | 3.26 | m |
| 198431 | 3.41 | m |
| 198428 | 3.32 | m |
| 198429 | 3.56 | m |
| *Chaetodipus formosus* | 28389 | 3.47 | f |
| 31484 | 3.7 | f |
| 31485 | 3.44 | f |
| 31487 | 3.52 | f |
| 31488 | 3.67 | f |
| 31489 | 3.45 | f |
| 6061 | 3.35 | f |
| 28388 | 3.62 | m |
| 28390 | 3.26 | m |
| 28391 | 3.54 | m |
| 31486 | 3.5 | m |
| 5961 | 3.5 | m |
| 5962 | 3.4 | m |
| 5963 | 3.4 | m |
| *Chaetodipus goldmani* | 75585 | 3.47 | f |
| 147385 | 3.33 | f |
| 147388 | 3.44 | f |
| 139691 | 3.5 | f |
| 139692 | 3.48 | f |
| 139693 | 3.39 | f |
| 139694 | 3.29 | f |
| 75580 | 3.24 | m |
| 75581 | 3.14 | m |
| 75582 | 3.25 | m |
| 75583 | 3.36 | m |
| 75584 | 3.03 | m |
| 147386 | 3.3 | m |
| 147387 | 3.35 | m |
| *Chaetodipus hispidus* | 76535 | 2.85 | f |
| 76534 | 3.57 | f |
| 76535 | 3.35 | f |
| 91445 | 3.32 | f |
| 91440 | 3.63 | f |
| 51760 | 3.79 | f |
| 51759 | 3.75 | f |
| 91442 | 3.35 | m |
| 91443 | 3.61 | m |
| 91441 | 3.69 | m |
| 91444 | 3.41 | m |
| 91446 | 3.56 | m |
| 50535 | 3.46 | m |
| 50533 | 3.62 | m |
| *Chaetodipus intermedius* | 51031 | 3.13 | f |
| 51035 | 3.3 | f |
| 51038 | 3.21 | f |
| 50586 | 3.4 | f |
| 50588 | 3.34 | f |
| 50591 | 3.15 | f |
| 190032 | 3.13 | f |
| 51032 | 3.19 | m |
| 51034 | 3.18 | m |
| 51036 | 3.16 | m |
| 50584 | 3.23 | m |
| 50585 | 3.07 | m |
| 50587 | 3.07 | m |
| 50589 | 3.34 | m |
| *Chaetodipus nelsoni* | 91522 | 3.3 | f |
| 91523 | 3.38 | f |
| 91524 | 3.53 | f |
| 91525 | 3.42 | f |
| 139845 | 3.5 | f |
| 139842 | 3.43 | f |
| 139840 | 3.44 | f |
| 91512 | 3.37 | m |
| 91513 | 3.41 | m |
| 91516 | 3.37 | m |
| 91517 | 3.39 | m |
| 91518 | 3.08 | m |
| 91519 | 3.29 | m |
| 91520 | 3.34 | m |
| *Chaetodipus peninsularius* | 1047 | 3.33 | f |
| 1048 | 3.24 | f |
| 1049 | 3.08 | f |
| 1050 | 3.2 | f |
| 90112 | 3.25 | f |
| 84368 | 3.79 | f |
| 84369 | 3.39 | f |
| 1045 | 3.06 | m |
| 1046 | 3.12 | m |
| 1052 | 3.16 | m |
| 1053 | 3.19 | m |
| 1055 | 3.51 | m |
| 1054 | 3.05 | m |
| 1056 | 3.18 | m |
| 1057 | 3.35 | m |
| *Chaetodipus pernix* | 175882 | 2.98 | f |
| 175886 | 3.22 | f |
| 175889 | 2.92 | f |
| 175890 | 2.89 | f |
| 175893 | 3.12 | f |
| 147933 | 2.8 | f |
| 147934 | 2.95 | f |
| 175883 | 3.4 | m |
| 175884 | 3.11 | m |
| 175885 | 3.05 | m |
| 175887 | 3.08 | m |
| 175888 | 3.19 | m |
| 175891 | 2.94 | m |
| 175892 | 2.94 | m |
| *Chaetodipus spinatus* | 9620 | 3.38 | f |
| 9621 | 3.15 | f |
| 9622 | 3.08 | f |
| 9626 | 3.28 | f |
| 9629 | 3.2 | f |
| 9630 | 3.15 | f |
| 9631 | 3.33 | f |
| 9623 | 3.18 | m |
| 9624 | 3.06 | m |
| 9625 | 3.14 | m |
| 9627 | 3.51 | m |
| 9628 | 3.15 | m |
| 195187 | 3.2 | m |
| 195189 | 3.13 | m |
| *Chaetodipus penicillatus* | 7291 | 3.41 | f |
| 7290 | 3.52 | f |
| 125721 | 3.57 | f |
| 125718 | 3.26 | f |
| 84369 | 3.57 | f |
| 90112 | 3.45 | f |
| 120365 | 3.3 | f |
| 120366 | 3.33 | f |
| 7292 | 3.27 | m |
| 7293 | 3.28 | m |
| 125720 | 3.5 | m |
| 125719 | 3.45 | m |
| 84371 | 3.41 | m |
| 1404 | 3.29 | m |
| 144123 | 3.21 | m |
| 144129 | 3.5 | m |
| Mescal Cave fossil Pergonathinae | UCMP 196363 | 3.48 | unknown |
| UCMP 196364 | 3.78 | unknown |
| UCMP 196362 | 3.57 | unknown |
| UCMP 196365 | 3.46 | unknown |
| UCMP 197389 | 4.24 | unknown |
| UCMP 197390 | 3.91 | unknown |
| UCMP 197396 | 3.78 | unknown |
| UCMP 197395 | 3.5 | unknown |
| UCMP 197393 | 3.63 | unknown |
| UCMP 197392 | 3.72 | unknown |
| UCMP 197391 | 3.98 | unknown |
| UCMP 197394 | 3.81 | unknown |

1. Complete lower alveolar toothrow (CTRL) measurements for Mescal Cave *Neotoma*.

|  |  |  |  |
| --- | --- | --- | --- |
| **Species** | **UCMP**  **specimen #** | **CTRL**  **(mm)** | **Side** |
| Mescal Cave fossil *Neotoma cinerea* | 196361 | 10.52 | R |
| 196730 | 11.27 | R |
| 196734 | 10.31 | R |
| 196360 | 10.89 | R |
| 196732 | 11.11 | R |
| 196726 | 10.56 | R |
| 196357 | 10.08 | R |
| 196355 | 10.68 | R |
| 196731 | 10.98 | R |
| 196735 | 10.55 | R |
| 196736 | 10.61 | R |
| 196727 | 10.79 | R |
| 196729 | 10.18 | R |
| 196740 | 9.96 | R |
| 196739 | 9.78 | R |
| 196737 | 11.22 | R |
| 196738 | 10.48 | R |
| 221874 | 10.76 | R |
| 291649 | 10.14 | R |
| 221878 | 10 | R |
| 196349 | 10.86 | L |
| 196348 | 10.45 | L |
| 196347 | 10.51 | L |
| 196351 | 10.01 | L |
| 196723 | 10.57 | L |
| 196717 | 9.99 | L |
| 196350 | 10.92 | L |
| 196712 | 10.69 | L |
| 196724 | 10.82 | L |
| 196352 | 11.26 | L |
| 196353 | 10.86 | L |
| 196718 | 11.01 | L |
| 196720 | 10.65 | L |
| 196713 | 11.04 | L |
| 196709 | 10.52 | L |
| 196710 | 11.13 | L |
| 196714 | 10.69 | L |
| 196716 | 10.52 | L |
| 196719 | 10.3 | L |
| 196722 | 10.23 | L |
| 221844 | 10.02 | L |
| 196721 |  | L |
| Mescal Cave fossil *Neotoma sp.* | 221885 | 9.07 | R |
| 221894 | 8.92 | R |
| 221875 | 8.18 | R |
| 221879 | 8.88 | R |
| 221876 | 9.14 | R |
| 221884 | 8.66 | R |
| 221880 | 8.23 | R |
| 221883 | 8.19 | R |
| 221877 | 9.34 | R |
| 221882 | 8.5 | R |
| 196767 | 8.39 | R |
| 221873 | 8.76 | R |
| 196766 | 8.09 | R |
| 196764 | 8.25 | R |
| 196763 | 8.2 | R |
| 196765 | 9.73 | R |
| 196770 | 8.51 | R |
| 196771 | 8.86 | R |
| 291581 | 8.19 | R |
| 291580 | 8.79 | R |
| 197363 | 8.76 | R |
| 291573 | 9.32 | R |
| 196772 | 8.13 | R |
| 196768 | 8.56 | R |
| 196769 | 8.88 | R |
| 197370 | 8.5 | R |
| 197364 | 8.34 | R |
| 197362 | 8.57 | R |
| 197367 | 8.73 | R |
| 196356 | 8.27 | R |
| 197366 | 8.86 | R |
| 196354 | 8.87 | R |
| 197368 | 8.76 | R |
| 196359 | 9.51 | R |
| 197369 | 9.11 | R |
| 197365 | 8.47 | R |
| 291579 | 8.51 | L |
| 291578 | 9.05 | L |
| 221854 | 9.09 | L |
| 221855 | 8.6 | L |
| 196762 | 8.98 | L |
| 221849 | 8.29 | L |
| 196759 | 8.71 | L |
| 221841 | 8.43 | L |
| 221845 | 8.13 | L |
| 221838 | 8.51 | L |
| 196756 | 8.02 | L |
| 221847 | 8.53 | L |
| 221848 | 7.74 | L |
| 221859 | 8.07 | L |
| 221842 | 8.05 | L |
| 221843 | 8.74 | L |
| 221840 | 8.14 | L |
| 196758 | 8.16 | L |
| 221839 | 8.52 | L |
| 221857 | 8.67 | L |
| 221858 | 9.01 | L |
| 221866 | 8.82 | L |
| 221861 | 8.17 | L |
| 221870 | 8.49 | L |
| 221850 | 8.3 | L |
| 221853 | 8.1 | L |
| 221869 | 8.85 | L |
| 221852 | 8.69 | L |
| 221860 | 9.34 | L |
| 221846 | 8.2 | L |
| 221851 | 8.7 | L |
| 291559 | 8.74 | L |
| 291560 | 8.22 | L |
| 291558 | 8.72 | L |
| 196755 | 8.12 | L |
| 196760 | 9.2 | L |

4. Complete lower toothrow (CTRL) measurements for modern and fossil *Thomomys*. Specimens are from the MVZ except where indicated. Sex of modern specimens was determined at collection using soft tissue.

|  |  |  |  |
| --- | --- | --- | --- |
| **Species** | **MVZ**  **Specimen #** | **CTRL**  **(mm)** | **Sex** |
| *Thomomys bulbivorous* | 25346 | 12.58 | m |
| 150832 | 12.02 | m |
| 150833 | 12.38 | f |
| 150837 | 11.24 | f |
| 63491 | 11.05 | f |
| 122294 | 11.96 | m |
| 108165 | 11.79 | f |
| 38992 | 10.36 | m |
| 63476 | 11.78 | m |
| 150835 | 10.85 | f |
| 63477 | 11.38 | m |
| 63479 | 11.92 | m |
| 150836 | 11.03 | f |
| 63480 | 11.46 | f |
| *Thomomys townsendii* | 126027 | 9.89 | m |
| 124165 | 9.4 | m |
| 124166 | 10.03 | f |
| 15008 | 10.03 | f |
| 44442 | 9.97 | m |
| 67828 | 11.07 | f |
| 163510 | 9.98 | f |
| 163512 | 10.68 | m |
| 163537 | 10.08 | m |
| 163538 | 9.85 | f |
| 163539 | 10.54 | f |
| 163541 | 11.03 | m |
| 7868 | 10.32 | f |
| 67923 | 9.72 | m |
| 67924 | 10.09 | f |
| 67935 | 10.02 | m |
| 163560 | 10.41 | m |
| 163562 | 10.6 | m |
| 163563 | 10.34 | f |
| 163549 | 9.72 | f |
| 163080 | 9.69 | f |
| 163081 | 9.87 | m |
| 150017 | 9.37 | f |
| 150014 | 9.35 | f |
| 78652 | 10.07 | m |
| 78651 | 10.13 | m |
| 16350 | 10.42 | f |
| 51904 | 10 | m |
| 163655 | 9.86 | f |
| 163642 | 9.59 | f |
| 163639 | 10.03 | m |
| 72003 | 10.25 | m |
| 72004 | 9.85 | f |
| 7200 | 10.34 | f |
| 163680 | 11.06 | m |
| 67489 | 9.64 | m |
| 67492 | 9.87 | f |
| 163576 | 9.94 | m |
| 163568 | 10.26 | f |
| *Thomomys umbrinus* | 76353 | 7.55 | m |
| 137865 | 8.64 | m |
| 76341 | 8.3 | f |
| 76342 | 8.18 | f |
| 139748 | 8.06 | f |
| 139749 | 7.75 | f |
| 139752 | 7.6 | m |
| 147063 | 7.41 | m |
| 137861 | 7.34 | f |
| 137862 | 7.06 | f |
| 91234 | 7.82 | m |
| 137270 | 7.8 | m |
| 128301 | 8.12 | f |
| 128302 | 8.52 | m |
| 128303 | 8.48 | m |
| 128304 | 7.78 | f |
| 153812 | 7.71 | m |
| 153813 | 6.76 | m |
| 153814 | 6.93 | f |
| 153816 | 7.1 | f |
| *Thomomys bottae* | 60542 | 8.69 | f |
| 150348 | 7.55 | f |
| 60556 | 8.32 | m |
| 60557 | 8.5 | m |
| 150266 | 8.44 | f |
| 150267 | 8.59 | m |
| 150268 | 8.36 | f |
| 150271 | 8.27 | m |
| 62155 | 7.88 | m |
| 62156 | 7.57 | m |
| 62148 | 7.91 | f |
| 62149 | 8.19 | f |
| 93116 | 8.06 | f |
| 93117 | 7.52 | m |
| 93118 | 6.94 | f |
| 93119 | 7.08 | m |
| 154221 | 7.52 | m |
| 154224 | 8.08 | f |
| 154258 | 8.52 | f |
| 61979 | 7.97 | m |
| Mescal Cave fossil *Thomomys* | UCMP 196455 | 7.93 | unknown |
| UCMP 196451 | 8.05 | unknown |
| UCMP 196452 | 7.91 | unknown |

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