Mammals

Marshall White, Reginald H. Barrett, Allan S. Boss, Thomas F. Newman, Thomas J. Rahn, and Daniel F. Williams

This chapter offers information on the status, distribution by habitat, and basic life history of 94 species of mammals inhabiting the western Sierra Nevada. These data were drawn primarily from the literature, much of which consists of reports of studies conducted in areas outside of the Sierra Nevada. Additional information was provided by the field experience of the professional mammalogists involved with the project.

Determinations made about habitat selection, food habits, breeding season, and distribution are generally based upon limited studies or even general impressions of the species elsewhere. For a few species, no life history data were available. For most others, there were few or no data on habitat selection by successional stage or canopy cover, or on microhabitat requirements within the more general habitats of the Sierra Nevada. Life history information on most of the species of bats is especially scanty, and the determinations made beyond are largely unsupported by field studies. Thus, in large part, this work should be viewed as the starting point. It presents a series of hypotheses about habitat requirements that must ultimately be tested by detailed field studies.

Few mammal species of the western Sierra Nevada have "official listed status" (the wolverine and mountain sheep are designated as Rare by the State of California). Some other species are, however, fully protected, and may not be killed or captured except under special permit from the California Department of Fish and Game. Several species are classified by the California Department of Fish and Game as game species or as furbearers, and their capture is regulated by license, season, bag limits, and locality. Finally, those species without special status (above), which include the majority of small, nongame mammals, may be captured only under authority of a special scientific collecting permit or a hunting license.

The scientific and common names for the mammals are those of Jones *et al.* (1975). Departures from that list represent taxonomic changes made since its publication. The species are arranged in phylogenetic order and numbered in sequence, with the prefix "M", for purposes of internal cross-referencing and computer access coding.

Species List

M001 Opossum
Didelphis virginiana
M002 Mount Lyell Shrew
Sorex lyelli
M003 Vagrant Shrew
Sorex vagrans
M004 Dusky Shrew
Sorex monticolus
M005 Ornate Shrew
Sorex ornatus
M006 Water Shrew
Sorex palustris
M007 Trowbridge's Shrew
Sorex trowbridgii
M008 Shrew-mole
Neurotrichus gibbsii
M009 Broad-footed Mole
Scapanus latimanus
M010 Little Brown Myotis
Myotis lucifugus
M011 Yuma Myotis
Myotis yumanensis
M012 Long-eared Myotis
Myotis evotis
M013 Fringed Myotis
Myotis thysanodes
M014 Long-legged Myotis
Myotis volans
M015 California Myotis
Myotis californicus
M016 Small-footed Myotis
Myotis leibii
M017 Silver-haired Bat
Lasionycteris noctivagans
M018 Western Pipistrelle
Pipistrellus hesperus
M019 Big Brown Bat
Eptesicus fuscus
M020 Red Bat
Lasiurus borealis
M021 Hoary Bat
Lasiurus cinereus
M022 Spotted Bat
Euderma maculatum
M023 Townsend's Big-eared Bat
Plecotus townsendii
M024 Pallid Bat
Antrozous pallidus
M025 Brazilian Free-tailed Bat
Tadarida brasiliensis
M026 Pika
Ochotona princeps
M027 Brush Rabbit
Sylvilagus bachmani
M028 Desert Cottontail
Sylvilagus audubonii
M029 Snowshoe Hare
Lepus americanus
M030 White-tailed Jackrabbit
Lepus townsendii
M031 Black-tailed Jackrabbit
Lepus californicus
M032 Mountain Beaver
Aplodontia rufa
M033 Alpine Chipmunk
Eutamias alpinus
M034 Least Chipmunk
Eutamias minimus
M035 Yellow Pine Chipmunk
Eutamias amoenus
M036 Allen's Chipmunk
Eutamias senex
M037 Sonoma Chipmunk
Eutamias sonomae
M038 Merriam's Chipmunk
Eutamias merriami
M039 Long-eared Chipmunk
Eutamias quadrimaculatus
M040 Lodgepole Chipmunk
Eutamias speciosus
M041 Yellow-bellied Marmot
Marmota flaviventris
M042 Belding's Ground Squirrel
Spermophilus beldingi
M043 California Ground Squirrel
Spermophilus beecheyi
M044 Golden-mantled Ground Squirrel
Spermophilus lateralis
M045 Western Gray Squirrel
Sciurus griseus
M046 Douglas' Squirrel
Tamiasciurus douglasii
M047 Northern Flying Squirrel
Glaucomys sabrinus
M048 Botta's Pocket Gopher
Thomomys bottae
M049 Mountain Pocket Gopher
Thomomys monticola
M050 Little Pocket Mouse
Perognathus longimembris
M051 Great Basin Pocket Mouse
Perognathus parvus
M052 Yellow-eared Pocket Mouse
Perognathus xanthonotus
M053 California Pocket Mouse
Perognathus californicus
M054 Heermann's Kangaroo Rat
Dipodomys heermanni
M055 California Kangaroo Rat
Dipodomys californicus
M056 Beaver
Castor canadensis
M057 Western Harvest Mouse
Reithrodontomys megalotis
M058 California Mouse
Peromyscus californicus
M059 Deer Mouse
Peromyscus maniculatus
M060 Brush Mouse
Peromyscus boylii
M061 Piñon Mouse
Peromyscus truei
M062 Dusky-footed Woodrat
Neotoma fuscipes
M063 Bushy-tailed Woodrat
Neotoma cinerea
M064 Western Red-backed Vole
Clethrionomys occidentalis
M065 Heather Vole
Phenacomys intermedius
M066 Montane Vole
Microtus montanus
M067 California Vole
Microtus californicus
M068 Long-tailed Vole
Microtus longicaudus
M069 Muskrat
Ondatra zibethicus
M070 Western Jumping Mouse
Zapus princeps
M071 Porcupine
Erethizon dorsatum
M072 Coyote
Canis latrans

M073 Red Fox
Vulpes vulpes
M074 Gray Fox
Urocyon cinereoargenteus
M075 Black Bear
Ursus americanus
M076 Ringtail
Bassariscus astutus
M077 Raccoon
Procyon lotor
M078 Marten
Martes americana
M079 Fisher
Martes pennanti
M080 Ermine
Mustela erminea
M081 Long-tailed Weasel
Mustela frenata
M082 Mink
Mustela vison
M083 Wolverine
Gulo gulo
M084 Badger
Taxidea taxus
M085 Western Spotted Skunk
Spilogale gracilis
M086 Striped Skunk
Mephitis mephitis
M087 River Otter
Lutra canadensis
M088 Mountain Lion
Felis concolor
M089 Bobcat
Felis rufus
M090 Wild Horse
Equus caballus
M091 Wild Pig
Sus scrofa
M092 Wapiti
Cervus elaphus
M093 Mule Deer
Odocoileus hemionus
M094 Mountain Sheep
Ovis canadensis

LEGEND
Optimum Habitat (1)
Suitable Habitat (2)
Marginal Habitat (3)
Spring
Summer
Fall
Winter

For key to this matrix, see *figure 2*.

Species occurrence and utilization, by habitat stages

Code	Species	Special Habitat Requirements	Page	Function	Annual Grasslands	Blue Oak Savannah	Digger Pine-Oak	Chaparral	Ponderosa Pine	Black Oak Woodland	Mountain Meadow	Riparian Deciduous	Mixed Conifer	Jeffrey Pine	Red Fir	Lodgepole Pine	Alpine Meadow
						1 2 3 3 4 4 4 A B A B	1 2 3 3 3 4 4 4 A B C A B C	1 2 3	1 2 3 3 3 4 4 4 A B C A B C	1 2 3 3 4 4 4 A B A B	WD	L M H	1 2 3 3 3 4 4 4 A B C A B C	1 2 3 3 3 4 4 4 A B C A B C	1 2 3 3 3 4 4 4 A B C A B C	1 2 3 3 3 4 4 4 A B C A B C	
M001	Virginia Opossum		331	B													
				F													
				R													
				S													
M002	Mt. Lyell Shrew	Moist soil	332	B													
				F													
				R													
				S													
M003	Vagrant Shrew	Moist soil; stumps, logs, or litter	333	B													
				F													
				R													
				S													
M004	Dusky Shrew	Moist soil; stumps, logs, or litter	334	B													
				F													
				R													
				S													
M005	Ornate Shrew	Moist soil; stumps, logs, or litter	335	B													
				F													
				R													
				S													
M006	Water Shrew	Clear, cold streams	336	B													
				F													
				R													
				S													
M007	Trowbridge's Shrew	Stumps, logs, or litter	337	B													
				F													
				R													
				S													
M008	Shrew-Mole	Friable soils; litter, rotting logs, or stumps	338	B													
				F													
				R													
				S													
M009	Broad-footed Mole	Forest openings; moist, friable soil	339	B													
				F													
				R													
				S													
M010	Little Brown Myotis	Snags; caves; permanent pools, ponds, or lakes	340	B													
				F													
				R													
				S													
M011	Yuma Myotis	Permanent pools, ponds or lakes; caves, crevices, or snags	341	B													
				F													
				R													
				S													
M012	Long-eared Myotis	Caves, snags, or trees; water	342	B													
				F													
				R													
				S													
M013	Fringed Myotis	Caves or rock crevices; water	343	B													
				F													
				R													
				S													
M014	Long-legged Myotis	Trees, snags, or crevices; water	344	B													
				F													
				R													
				S													
M015	California Myotis	Crevices; water	345	B													
				F													
				R													
				S													

LEGEND

- Optimum Habitat (1)
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- Spring
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For key to this matrix, see *figure 2*.

Species occurrence and utilization, by habitat stages

Code	Species	Special Habitat Requirements	Page
M016	Small-footed Myotis	Caves, mines, or crevices; water	346
M017	Silver-haired Bat	Trees or snags; water	347
M018	Western Pipistrelle	Crevices; water	348
M019	Big Brown Bat	Snags, caves, crevices, trees, or buildings; water	349
M020	Red Bat	Snags; trees; water	350
M021	Hoary Bat	Trees; water	351
M022	Spotted Bat	Caves or crevices; ponds, lakes, or large pools in streams or rivers	352
M023	Townsend's Big-eared Bat	Caves or crevices; low human disturbance	353
M024	Pallid Bat	Caves, crevices, or buildings; water	354
M025	Brazilian Free-tailed Bat	Crevices, buildings, or bridges; water	355
M026	Pika	Talus; forest openings	356
M027	Brush Rabbit	Shrubs/grass-forbs	357
M028	Desert Cottontail	Shrubs/grass-forbs	358
M029	Snowshoe Hare	Trees/shrubs; shrubs/grass-forbs; hollow logs	359
M030	White-tailed Jackrabbit	Shrubs/grass-forbs	360

Function: B, F, R, S

Habitat stages: Annual Grasslands; Blue Oak Savannah (1, 2, 3 A B, 3 A B, 4 A B, 4 A B); Digger Pine-Oak (1, 2, 3 A B, 3 C, 3 A B C, 4 A B C, 4 A B C); Chaparral (1, 2, 3); Ponderosa Pine (1, 2, 3 A B, 3 C, 3 A B C, 4 A B C, 4 A B C); Black Oak Woodland (1, 2, 3 A B, 3 A B, 4 A B, 4 A B); Mountain Meadow (WD); Riparian Deciduous (L, M, H); Mixed Conifer (1, 2, 3 A B, 3 C, 3 A B C, 4 A B C, 4 A B C); Jeffrey Pine (1, 2, 3 A B, 3 C, 3 A B C, 4 A B C, 4 A B C); Red Fir (1, 2, 3 A B, 3 C, 3 A B C, 4 A B C, 4 A B C); Lodgepole Pine (1, 2, 3 A B, 3 C, 3 A B C, 4 A B C, 4 A B C); Alpine Meadow

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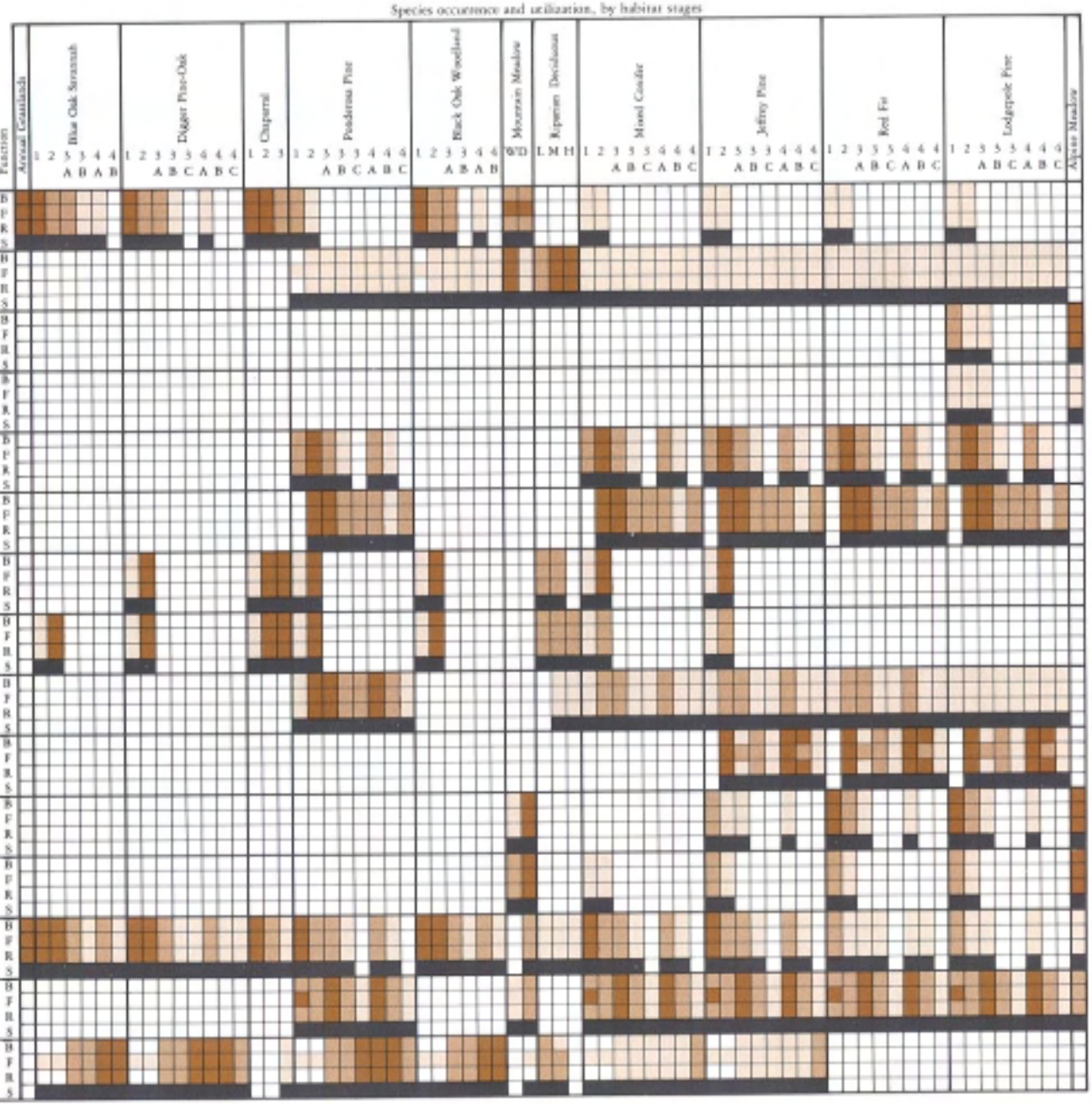
Species occurrence and utilization, by habitat stages

Code	Species	Special Habitat Requirements	Page
M031	Black-tailed Jackrabbit	Medium or large forest openings	361
M032	Mountain Beaver	Trees/grass-forbs; moist soil	362
M033	Alpine Chipmunk	Talus; logs	363
M034	Least Chipmunk	Large forest openings; stumps, logs, or rocks; shrubs	364
M035	Yellow Pine Chipmunk	Trees/shrubs	365
M036	Allen's Chipmunk	Trees/shrubs; logs, stumps, snags, rocks, or litter	366
M037	Sonoma Chipmunk	Trees/shrubs; logs, stumps, snags, rocks, or litter	367
M038	Merriam's Chipmunk	Trees/shrubs, logs, stumps, snags, rocks, or litter	368
M039	Long-eared Chipmunk	Logs, stumps, snags, rocks, or litter	369
M040	Lodgepole Chipmunk	Trees/shrubs; snags, logs, stumps, rocks, or litter	370
M041	Yellow-bellied Marmot	Talus or rock outcrops; forest openings	371
M042	Belding's Ground Squirrel	Forest openings; friable soils	372
M043	California Ground Squirrel	Forest openings; friable soils	373
M044	Golden-mantled Ground Squirrel	Logs, stumps, or rocks	374
M045	Western Gray Squirrel	Nest cavities in snags or trees; oaks	375



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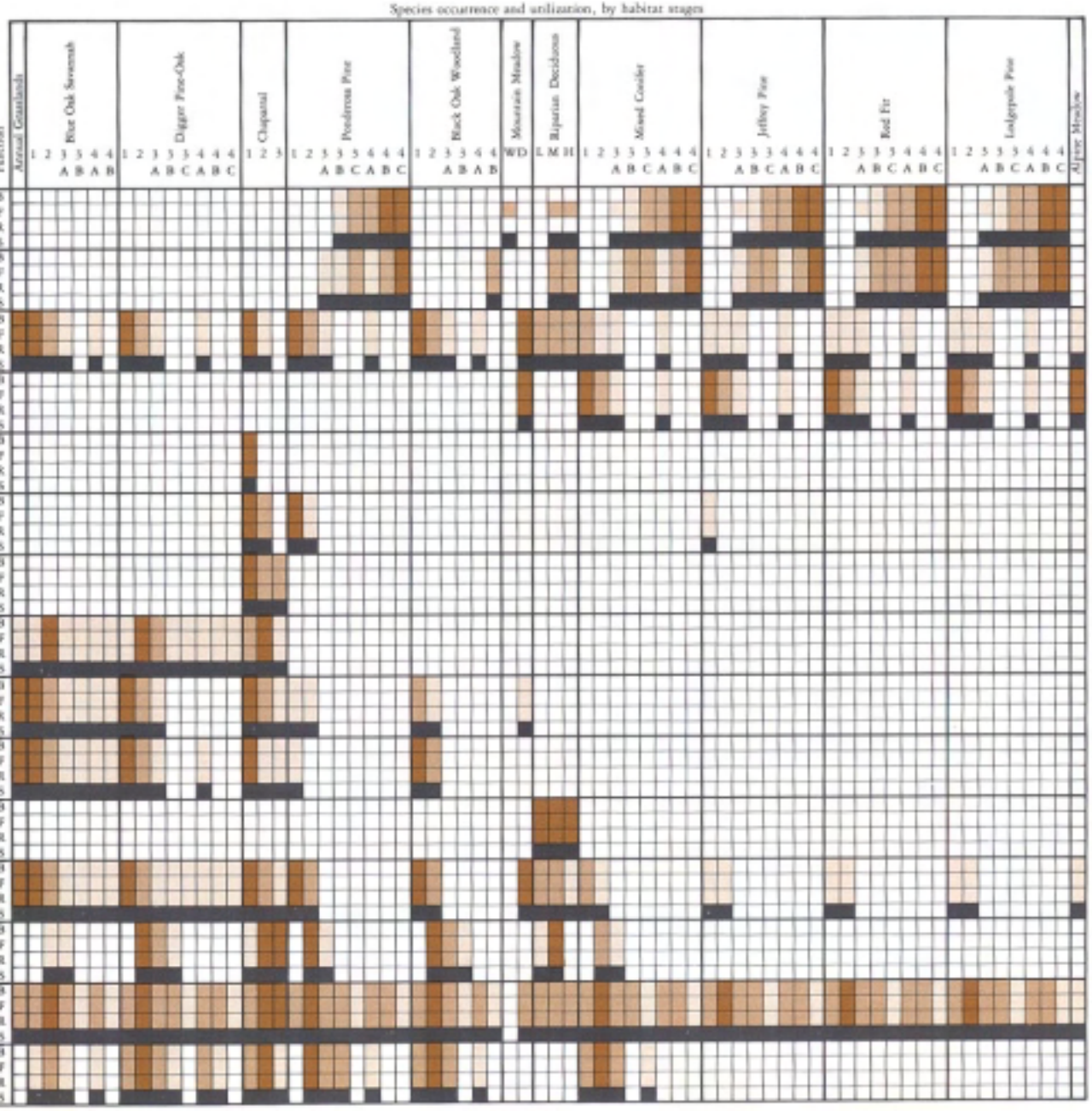
Code	Species	Special Habitat Requirements	Page
M046	Douglas' Squirrel	Trees or snags with nest cavities; conifer seeds	376
M047	Northern Flying Squirrel	Trees or snags with nest cavities	377
M048	Botta's Pocket Gopher	Friable soils; forest openings	378
M049	Mountain Pocket Gopher	Friable soils; forest openings	379
M050	Little Pocket Mouse	Medium or large forest openings	380
M051	Great Basin Pocket Mouse	Friable soils; large forest openings	381
M052	Yellow-eared Pocket Mouse	Friable soils; forest openings	382
M053	California Pocket Mouse	Friable soils; shrubs/grass-forbs	383
M054	Heermann's Kangaroo Rat	Friable soils; forest openings; sand	384
M055	California Kangaroo Rat	Friable soils; forest openings; sand	385
M056	Beaver	Permanent streams, ponds, or lakes; aspen, willow, alder or cottonwood thickets	386
M057	Western Harvest Mouse		387
M058	California Mouse	Trees/shrubs; logs, snags, stumps, or litter	388
M059	Deer Mouse		389
M060	Brush Mouse	Trees/shrubs; logs, rocks, or litter	390



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Optimum Habitat (1)
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					1	1 2 3 3 4 4 A B A B	1 2 3 3 3 4 4 4 A B C A B C	1 2 3	1 2 3 3 3 4 4 4 A B C A B C	1 2 3 3 4 4 A B A B	WD	L M H	1 2 3 3 3 4 4 4 A B C A B C	1 2 3 3 3 4 4 4 A B C A B C	1 2 3 3 3 4 4 4 A B C A B C	1 2 3 3 3 4 4 4 A B C A B C	
M061	Piñon Mouse	Trees/shrubs, small trees; rock outcrops or talus	391	B													
				F													
				R													
				S													
M062	Dusky-footed Woodrat	Trees/shrubs; litter	392	B													
				F													
				R													
				S													
M063	Bushy-tailed Woodrat	Talus or rock outcrops	393	B													
				F													
				R													
				S													
M064	Western Red-backed Vole	Logs, snags, stumps, or litter	394	B													
				F													
				R													
				S													
M065	Heather Vole		395	B													
				F													
				R													
				S													
M066	Montane Vole	Grasses and/or sedges	396	B													
				F													
				R													
				S													
M067	California Vole	Grasses and/or sedges	397	B													
				F													
				R													
				S													
M068	Long-tailed Vole	Grasses, sedges, and/or forbs	398	B													
				F													
				R													
				S													
M069	Muskrat	Permanent streams, ponds or lakes; grasses and/or sedges	399	B													
				F													
				R													
				S													
M070	Western Jumping Mouse	Moist soil	400	B													
				F													
				R													
				S													
M071	Porcupine	Trees/shrubs or trees/grass-forbs	401	B													
				F													
				R													
				S													
M072	Coyote	Caves, hollows, talus, rock outcrops, or friable soils	402	B													
				F													
				R													
				S													
M073	Red Fox	Caves, hollows, talus, rock outcrops, or friable soil; forest openings	403	B													
				F													
				R													
				S													
M074	Gray Fox	Caves, hollows, talus, rock outcrops, or friable soils	404	B													
				F													
				R													
				S													
M075	Black Bear	Caves, talus, hollows	405	B													
				F													
				R													
				S													

LEGEND

- Optimum Habitat (1)
- Suitable Habitat (2)
- Marginal Habitat (3)

Spring
Summer
Fall
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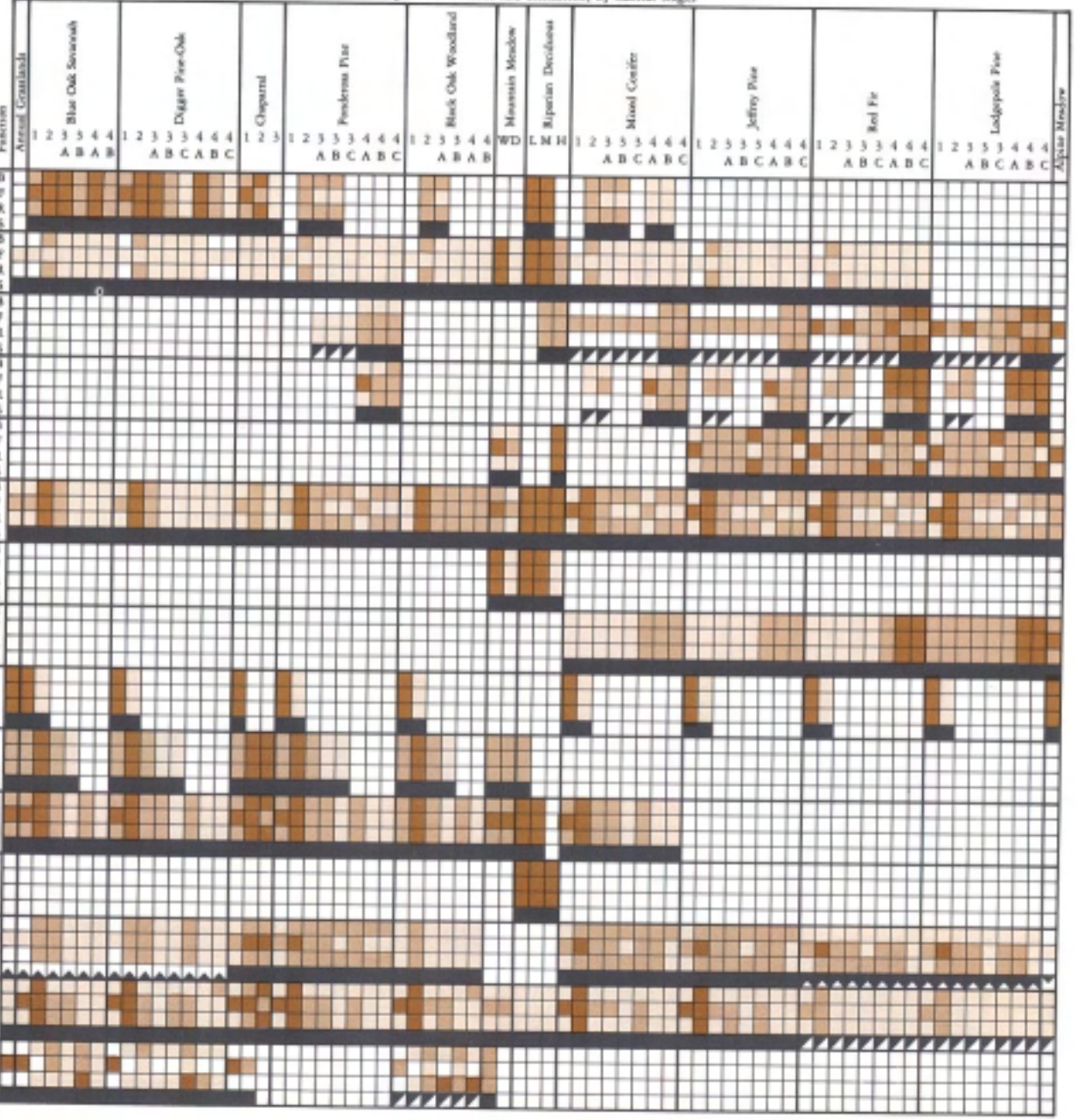
Species occurrence and utilization, by habitat stages

Code	Species	Special Habitat Requirements	Page
M076	Ringtail	Rock outcrops or hollows	406
M077	Raccoon	Snags or hollows; water	407
M078	Marten	Snags; talus	408
M079	Fisher	Snags or hollows	409
M080	Ermine	Litter, logs, stumps, or snags; forest openings	410
M081	Long-tailed Weasel	Forest openings; logs, stumps, or burrows	411
M082	Mink	Permanent streams, ponds or lakes; earthen banks	412
M083	Wolverine RARE	Low human disturbance, talus, rock outcrops, caves, logs, or snags	413
M084	Badger	Forest openings; friable soils	414
M085	Western Spotted Skunk	Logs, talus, rock outcrops, or snags	415
M086	Striped Skunk	Logs, talus, rock outcrops, or snags	416
M087	River Otter	Permanent streams, rivers, or lakes	417
M088	Mountain Lion	Deer for food; den sites in rock outcrops, talus, or caves	418
M089	Bobcat	Rock outcrops, talus, caves, or hollow logs	419
M090	Wild Horse	Grasses; water	420



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Optimum Habitat (1)
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Species occurrence and utilization, by habitat stages

Code	Species	Special Habitat Requirements	Page	Function	Annual Grassland	Blue Oak Savanah	Digger Pine-Oak	Chaparral	Ponderosa Pine	Black Oak Woodland	Meadow	Riparian Deciduous	Mixed Conifer	Jeffrey Pine	Red Fir	Lodgepole Pine	Alpine Meadow
						1 2 3 A B 4 A 4 B	1 2 3 A 3 B 3 C 4 A 4 B 4 C	1 2 3	1 2 3 A 3 B 3 C 4 A 4 B 4 C	1 2 3 A 3 B 4 A 4 B	WD	L M H	1 2 3 A 3 B 3 C 4 A 4 B 4 C	1 2 3 A 3 B 3 C 4 A 4 B 4 C	1 2 3 A 3 B 3 C 4 A 4 B 4 C	1 2 3 A 3 B 3 C 4 A 4 B 4 C	
M091	Wild Pig	Water; shrubs	421	B													
				F													
				R													
				S													
M092	Wapiti	Trees/shrubs; forest openings; grasses	422	B													
				F													
				R													
				S													
M093	Mule Deer	Trees/shrubs, especially for cover on winter range	423	B													
				F													
				R													
				S													
M094	Mountain Sheep	Low human disturbance; rock outcrops	424	B													
	RARE			F													
				R													
				S													

Opossum

M001 (*Didelphis virginiana*)

STATUS: No official listed status. Believed expanding its range northward.

DISTRIBUTION/HABITAT: Widespread in valleys and foothills of California. Frequents moist riparian areas in early successional stages of habitats containing oaks. Usually found around buildings, culverts, rock piles, and in trees and snags.

SPECIAL HABITAT REQUIREMENTS:

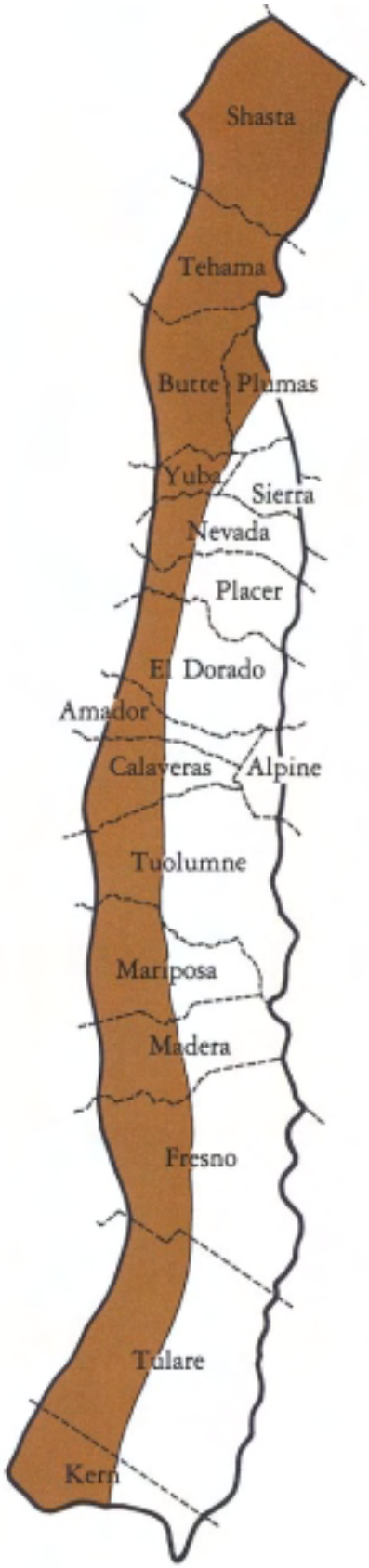
BREEDING: Breeds from January to October, with peaks in February and June; may have two or three litters per year. Nests in trees or snags, rock piles, under buildings, downed logs, or brush piles. Litter size from 5 to 14, (mean of 8). Gestation. period 14 days; young carried in pouch 2 months, later ride on mother's back.

TERRITORY/HOME RANGE: Little information on territory, but believed not to be territorial. Home ranges vary from less than 2.5 to 57 acres (1 to 23 ha) (mean 10 to 12 acres [4 to 5 ha]). Often follows water courses; may range widely in fall.

FOOD HABITS: Eats variety of foods including insects, carrion, small mammals, eggs, fruits, and grains. Feeds primarily at night, gleaning from ground and in bushes and trees. May also feed during day.

OTHER: Introduced into California in 1910; the only marsupial in the United States.

REFERENCES: Lay 1942, Petrides 1949, Ingles 1965, and McManus 1974.



Mount Lyell Shrew

M002 (*Sorex lyelli*)

STATUS: No official listed status. Some sources refer to as rare.

DISTRIBUTION/HABITAT: Limited to areas within or near Yosemite National Park, in vicinity of Mt. Lyell. Favors riparian areas and other wet sites.

SPECIAL HABITAT REQUIREMENTS: Moist Soil.

BREEDING: No information; probably breeding similar to that of dusky shrew.

TERRITORY/HOME RANGE: No information, but probably similar to dusky shrew.

FOOD HABITS: No information available, but probably eats insects and other invertebrates. Probably forages on ground and in rotted stumps and logs.

OTHER: Essentially no published information on biology of species. Closely related to the masked shrew (*Sorex cinereus*).

REFERENCES: Grinnell and Storer 1924, Ingles 1965.

Vagrant Shrew

M003 (*Sorex vagrans*)

STATUS: No official listed status. Most common shrew in mid-elevations of the western Sierra Nevada.

DISTRIBUTION/HABITAT: Found from middle to high elevations of the Sierra Nevada, in and around riparian areas.

SPECIAL HABITAT REQUIREMENTS: Moist soil; rotted logs, stumps, or litter.

BREEDING: Breeds from January to August, with peak from March to May. Litter size from 2 to 9 (mean of 6). Normally one litter per year, sometimes two. Nests in stumps and logs.

TERRITORY/HOME RANGE: Possibly territorial, but no information available. Home range small, varying from 0.007 to 0.2 acre (0.003 to 0.07 ha) (average 0.1 acre [0.04 ha]). Home range sizes vary with age of animal and season, and are probably shaped to follow riparian areas.

FOOD HABITS: Eats insects, spiders, earthworms, other invertebrates, and some plant material. Forages through ground litter, under vegetation, and beneath logs, stumps, and rocks. Consumes food equal to own weight each day.

OTHER: Solitary and secretive; active all year, and intermittently day and night.

REFERENCES: Clothier 1955; Ingles 1961, 1965; Hawes 1977; Terry 1978.

Dusky Shrew

M004 (*Sorex monticolus*)

STATUS: No official listed status. Common at high elevations in the western Sierra Nevada.

DISTRIBUTION/HABITAT: Closely associated with riparian habitats in Jeffrey pine, red fir, and lodgepole pine habitats. Rarely found more than a few meters from water in summer.

SPECIAL HABITAT REQUIREMENTS: Moist Soil; stumps, logs, or litter.

BREEDING: Breeds from February through October, with peak in late spring or early summer. Litter size from 4 to 7 (mean of 5). Usually two or more litters per year. Nests in logs, stumps, litter, or in holes in ground.

TERRITORY/HOME RANGE: No data on territory available. Home range varies with age of animal and season from 0.007 to 0.2 acre (0.003 to 0.07 ha) (mean of 0.1 acre [0.04 ha]).

FOOD HABITS: Eats insects, spiders, other invertebrates, and some plant matter. Feeds by searching wet areas, logs and stumps, and plant cover.

OTHER: Solitary and secretive, active throughout the year, and intermittently day and night.

REFERENCES: Ingles 1960, 1965; Hawes 1977.

Ornate Shrew

M005 (*Sorex ornatus*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Found at lower elevations, with optimum habitats in riparian areas and brushy hillsides of the digger pine-oak, chaparral, and yellow pine communities. Fairly widespread in the central Sierra Nevada, and found in a small area north of Kern Gap.

SPECIAL HABITAT REQUIREMENTS: Moist soil; stumps, logs, or litter.

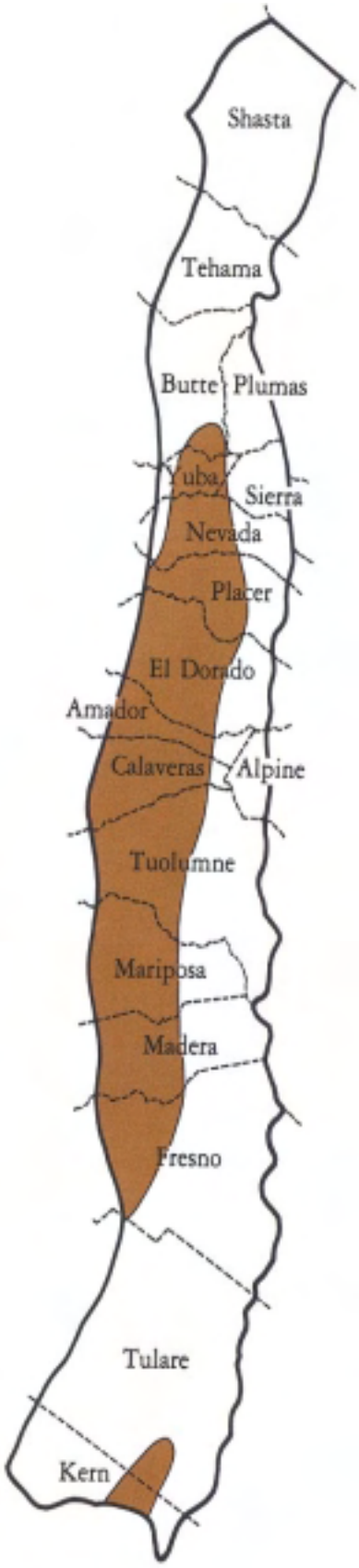
BREEDING: Breeds from spring to summer, but little information available. Nests in dead wood, brush, and burrows.

TERRITORY/HOME RANGE: Litter size thought to average about 6. More than one litter per year expected, but no data available.

FOOD HABITS: Feeds on insects and other invertebrates; searches in riparian areas under logs and rocks and in leaf litter.

OTHER: A solitary, secretive animal, active all year, and intermittently day and night.

REFERENCES: Ingles 1965.



Water Shrew

M006 (*Sorex palustris*)

STATUS: No official listed status. Common within its restricted habitat; adversely affected by stream silting and increased turbidity.

DISTRIBUTION/HABITAT: Found in riparian areas at middle and high elevations in the Sierra Nevada. Requires small, cold streams and wet areas with protected stream banks and ground cover.

SPECIAL HABITAT REQUIREMENTS: Clear, cold streams.

BREEDING: Breeds from January to July, with peak in April to June. May have more than one litter per year. Litter size from 5 to 8 (mean of 6). Nests in secluded, protected banks often constructed of moss and near water.

TERRITORY/HOME RANGE: Little information available, but not territorial in captivity. Home range small and closely associated with a stream or wet area.

FOOD HABITS: Forages along streambanks, water edges, and in water. Foods include insects, tadpoles, fish eggs, invertebrates, and fish.

OTHER: Active all year, intermittently day and night.

REFERENCES: Conaway 1952, Sorenson 1962, Ingles 1965.

Trowbridge's Shrew

M007 (*Sorex trowbridgii*)

STATUS: No official listed status. Common and widespread.

DISTRIBUTION/HABITAT: Found throughout the length of the Sierra Nevada in mid-elevation habitats in both dry and wet areas. Optimum habitats in the more mature tree stages of ponderosa pine and mixed-conifer forests.

SPECIAL HABITAT REQUIREMENTS: Stumps, logs, or litter required as nesting and foraging sites.

BREEDING: Breeds from February to June, with peak from March to May. Litter size from 1 to 6 (mean of 5). More than one litter per year. Nests in or under logs, or in shallow holes in the ground.

TERRITORY/HOME RANGE: No information available on territory or home range.

FOOD HABITS: Eats much plant material, especially seeds, as well as insects and other invertebrates. Searches for food on ground, primarily near wet areas; forages in upland sites with tree cover.

OTHER: Like other shrews, secretive and solitary. Individuals active intermittently day and night throughout year.

REFERENCES: Jameson 1955, Tevis 1956, Ingles 1965.

Shrew-mole

M008 (*Neurotrichus gibbsii*)

STATUS: No official listed status. A rare species of local distribution in northern part of the western Sierra Nevada.

DISTRIBUTION/HABITAT: Recorded from a single locality within the western Sierra Nevada (Hall and Kelson 1959). Also known from Mt. Shasta area. Found in damp to wet, shaded ravines with silty soil of high humus content and accumulation of litter on surface. Also found in litter on forest floor and along margins of protected marshes, swamps, and bogs.

SPECIAL HABITAT REQUIREMENTS: Friable soils of high humus content; damp, protected sites with cover of surface litter, rotting logs or stumps, or ravines with deciduous growth.

BREEDING: In western Washington, breeds from at least February to September, with peak between March and May. Number of litters not known. Litter size ranges from 1 to 4 (mean of 3). Gestation period and other aspects of reproduction unknown.

TERRITORY/HOME RANGE: Apparently not territorial; the size of home ranges unknown. Gregarious and apparently travel in loose bands of up to 11 or more individuals (Dalquest and Orcutt 1942). Under normal conditions in good habitat, population density averages about 5 or 6 individuals per acre (0.4 ha).

FOOD HABITS: Eats variety of small animals, including earthworms, isopods, various insects, slugs, spiders, and centipedes. Searches for food on ground, within decaying logs, and beneath and within surface litter. Captive individuals ate variety of seeds, including those of conifers and several herbs and shrubs, and several types of fungi. Captive individuals consumed up to 14 g of earthworms in 12 hours (average body weight about 10 g) (Terry 1978).

OTHER: Probably more widespread in the northern Sierra Nevada than indicated by extant records.

REFERENCES: Dalquest and Orcutt 1942, Williams 1975, Terry 1978.

Broad-footed Mole

M009 (*Scapanus latimanus*)

STATUS: No official listed status. Common in suitable habitats.

DISTRIBUTION/HABITAT: Widespread at all elevations throughout the Sierra Nevada. Favors moist areas, especially near streams, bogs, and meadows.

SPECIAL HABITAT REQUIREMENTS: Moist areas with friable soils for burrowing; forest openings.

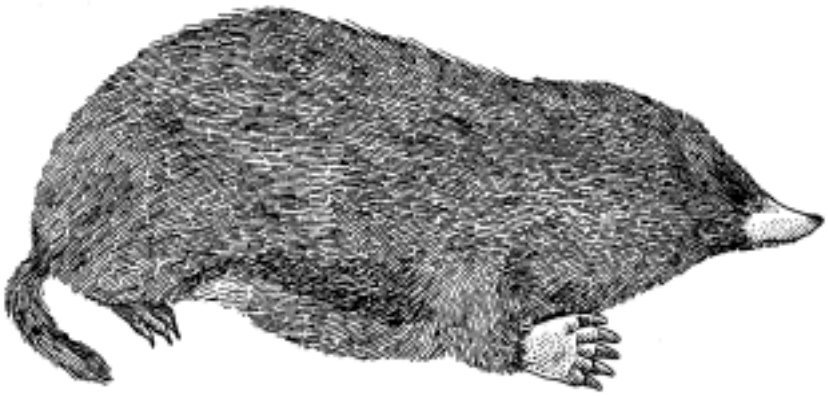
BREEDING: Breeds from March to May. Litter size from 2 to 5; one litter per year. Nests in portion of deep tunnel lined with grass and leaves.

TERRITORY/HOME RANGE: Highly territorial; home range and territory the same, size varying with food supply.

FOOD HABITS: Eats earthworms, insects (adults, larvae, and pupae) spiders, centipedes, and some plant matter. Tunnels beneath surface for food. Constantly patrols and expands these shallow tunnel systems.

OTHER: Provides a beneficial service by mixing and aerating the soil. Constructs two types of burrows: shallow burrows (which show as ridges on the surface) for feeding, and deeper tunnels. Solitary animal; active intermittently day and night throughout year.

REFERENCES: Scheffer 1923, Ingles 1965, Giger 1973.



Little Brown Myotis

M010 (*Myotis lucifugus*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Widely distributed and common from middle to high elevations; closely associated with water.

SPECIAL HABITAT REQUIREMENTS: Snags for roosting; caves for hibernation; permanent pools, ponds, or lakes for feeding and drinking.

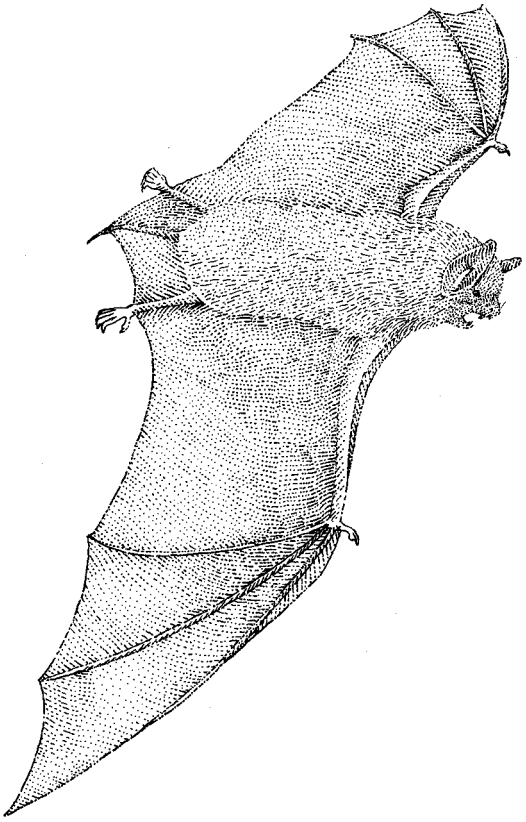
BREEDING: Young born from June to August, with peak in July. Litters of 1 or 2 (mean of 1); one litter per year. Buildings, snags, or other warm, dark retreats used as maternity colony sites. Maternity colonies of up to several hundred individuals usually located close to streams or lakes.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Captures flying insects on the wing. Food detected by echolocation; much foraging over water.

OTHER: Hibernates in winter; primarily a forest dwelling, mountain species.

REFERENCES: Grinnell 1918, Davis and Hitchcock 1956, Humphrey 1969, O'Farrell and Studier 1973.



Yuma Myotis

M011 (*Myotis yumanensis*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Widespread and locally common; closely associated with water. Most common in riparian habitats, from annual grasslands through ponderosa pine forests.

SPECIAL HABITAT REQUIREMENTS: Caves, crevices, snags, buildings, and mines used for resting and breeding colonies. Permanent water (ponds, lakes, pools) required as foraging sites.

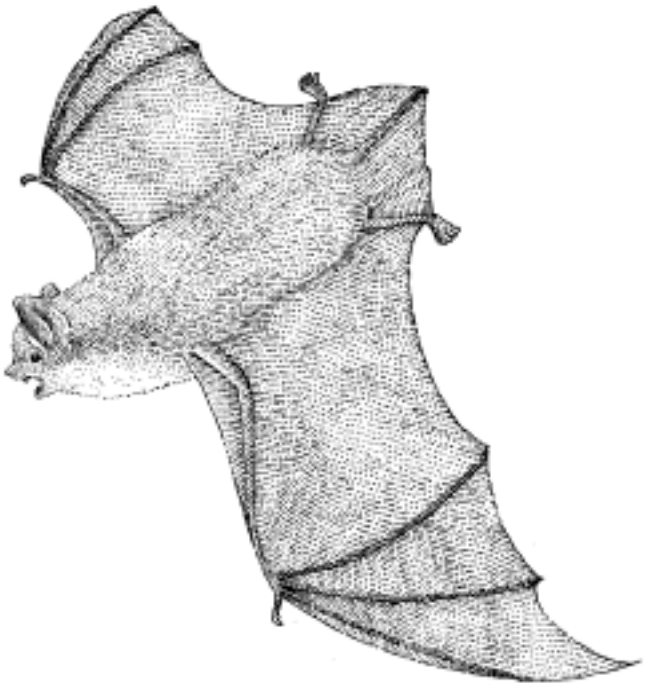
BREEDING: Young born in May and June, with peak in June. One litter per year; mean litter size 1. Buildings, bridges, caves, mines, or crevices used as maternity sites with colonies occasionally up to 1,000 individuals.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Insects taken in flight are major food. Most foraging over water; prey found through echolocation.

OTHER: Migrates from higher elevations in fall; forages low over water.

REFERENCES: Grinnell 1918, Sumner and Dixon 1953, Ingles 1965, Barbour and Davis 1969.



Long-eared Myotis

M012 (*Myotis evotis*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Uncommon; ranges throughout much of western slope of the Sierra Nevada.

SPECIAL HABITAT REQUIREMENTS: Caves, snags, and trees used for roosting and breeding colonies; water.

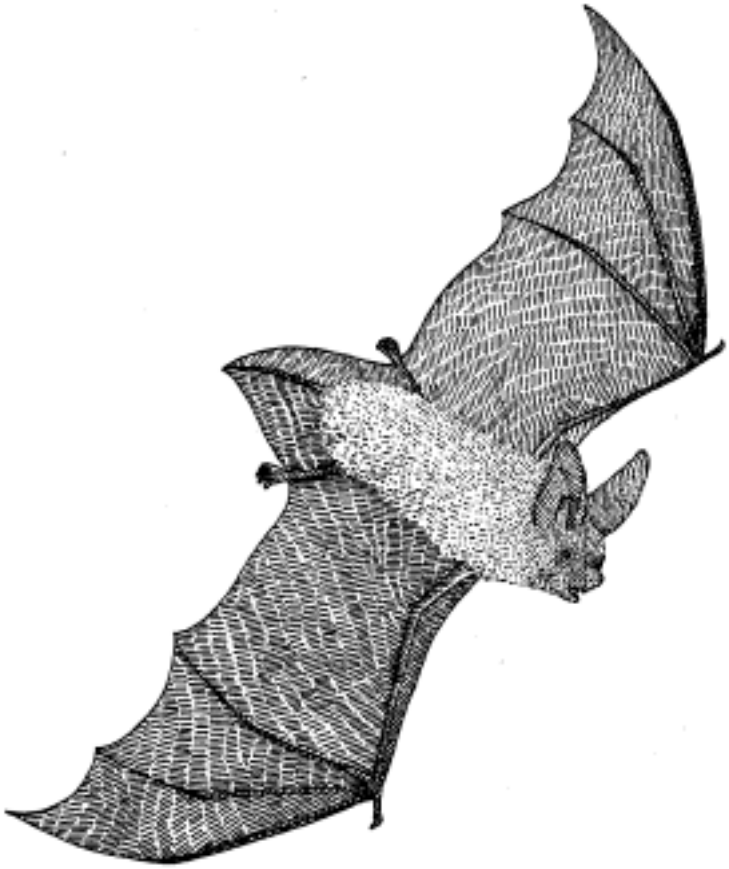
BREEDING: Young born from May to July, with peak in June. One litter per year; mean litter size 1. Maternity colonies of 12 to 30 females located in buildings, crevices in rocks, behind tree bark, or in snags.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Beetles, moths, and other insects taken in flight; prey located by echolocation; probably a foliage gleaner.

OTHER:

REFERENCES: Orr 1949, Sumner and Dixon 1953, Barbour and Davis 1969, Black 1974, Husar 1976.



Fringed Myotis

M013 (*Myotis thysanodes*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Irregularly distributed in the Sierra Nevada, with most known localities in digger pine-oak through black oak woodland habitats. Winter range unknown.

SPECIAL HABITAT REQUIREMENTS: Caves or rock crevices for roosting and breeding colonies; water.

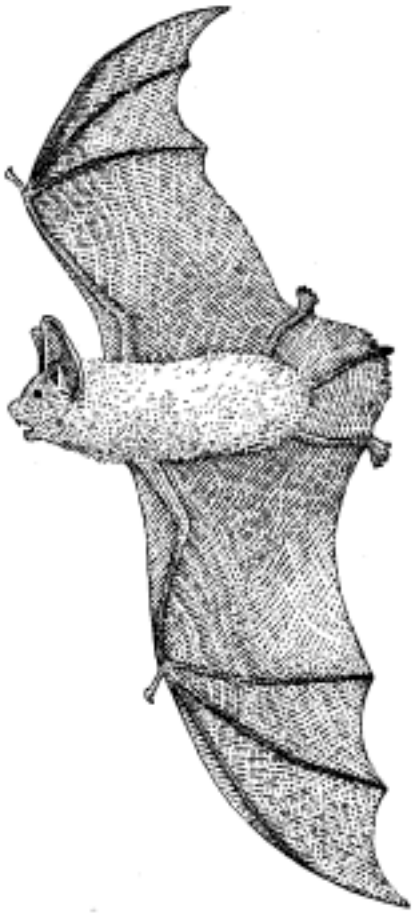
BREEDING: Young born from May to July, with peak in June. One litter per year (mean of 1). Maternity colonies of up to 200 individuals roost in caves, mines, rock crevices, or buildings.

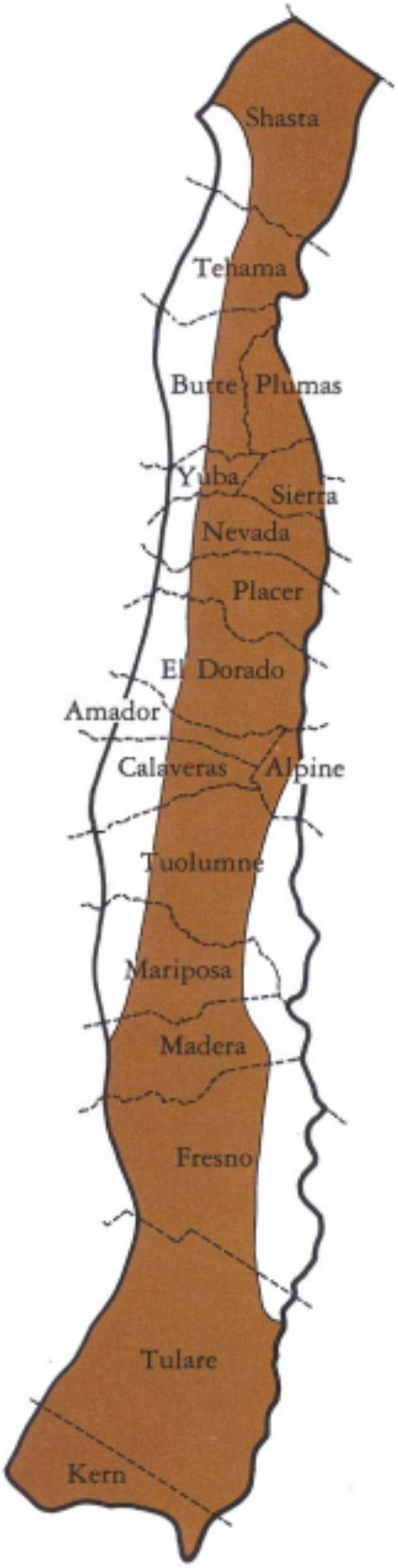
TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Beetles taken in flight are major food; prey found through echolocation; probably a foliage gleaner.

OTHER:

REFERENCES: Cockrum and Ordway 1959, Barbour and Davis 1969, O'Farrell and Studier 1973, Black 1974.





Long-legged Myotis

M014 (*Myotis volans*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Widespread and common as summer resident. Optimum to good habitat in open and moderately open stands of black oak woodland, riparian, and mixed-conifer habitats.

SPECIAL HABITAT REQUIREMENTS: Trees, snags, or crevices for roosting and breeding; water for feeding and drinking.

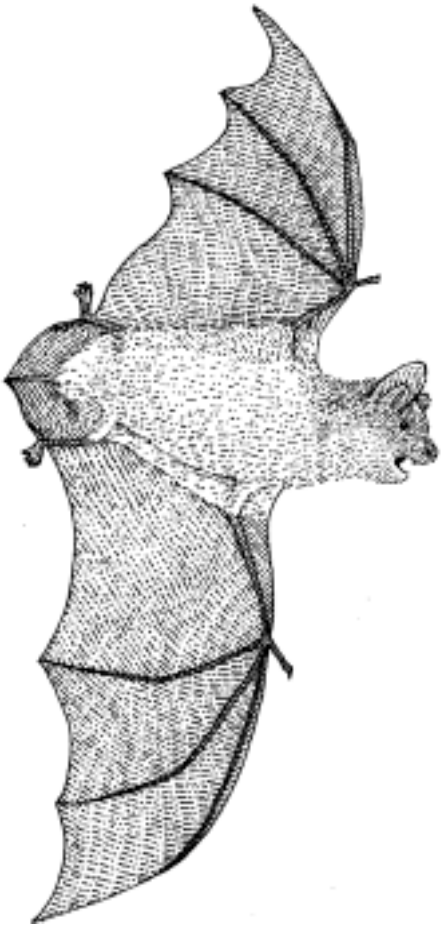
BREEDING: Young born during June and July. One litter per year (mean of 1). Maternity colonies of 100 individuals or more roost in tree crevices, snags, buildings, or rock crevices.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Eats insects, especially moths, captured in the air, over water and woodland openings. Prey found by echolocation.

OTHER: Probably migratory for short distances.

REFERENCES: Sumner and Dixon 1953, Ingles 1965, Barbour and Davis 1969, Black 1974.



California Myotis

M015 (*Myotis californicus*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Widespread throughout the western Sierra Nevada; usually found at elevations below 5000 ft (1500 m).

SPECIAL HABITAT REQUIREMENTS: Crevices in trees, snags, or rocks for roosting and breeding; water.

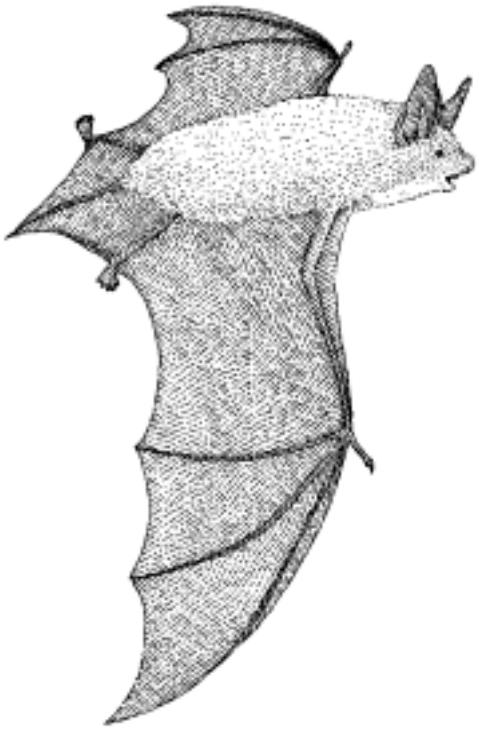
BREEDING: Young born in May and June; one litter per year (mean litter size 1). Roosts in buildings, bridges, holes in snags and trees, behind bark, and rock crevices.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Most food taken from air near ground; mainly flying insects, especially beetles and moths. Prey found by echolocation.

OTHER: Hibernates in winter; may be active on warm winter days at low elevations. Found singly or in small colonies; sexes found separately during warmer months. Flight slow and erratic, close to ground surface. Roosts during day in a variety of crevice-like places.

REFERENCES: Grinnell and Storer 1924, Krutzsch 1954a, Barbour and Davis 1969, Black 1974.



Small-footed Myotis

M016 (*Myotis leibii*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Widespread and locally common; generally most common in relatively arid upland habitats.

SPECIAL HABITAT REQUIREMENTS: Caves, mines, or rock crevices for roosting and breeding; water.

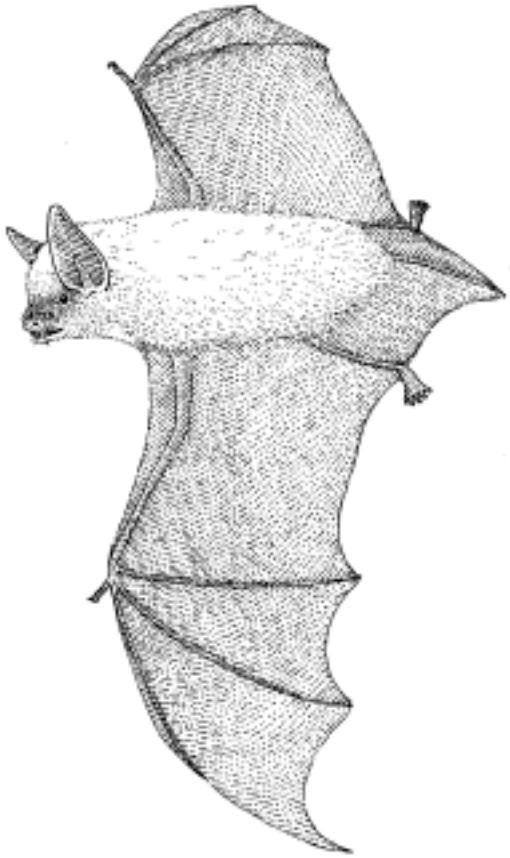
BREEDING: Young born from May to July, with peak in June. One litter per year; mean litter size 1. Buildings, caves, rock crevices, and mines used as maternity sites. Roosts in colonies or singly; maternity colonies of 12 to 20 adult females recorded.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Takes moths, beetles, flies, ants, and other insects in flight; prey found by echolocation.

OTHER: Hibernates in winter.

REFERENCES: Cockrum 1952, Ingles 1965, Barbour and Davis 1969, Black 1974.



Silver-haired Bat

M017 (*Lasionycteris noctivagans*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Widespread along western slope of the Sierra Nevada. Optimum feeding habitat found in forested areas.

SPECIAL HABITAT REQUIREMENTS: Trees and snags for roosting and breeding; water for drinking.

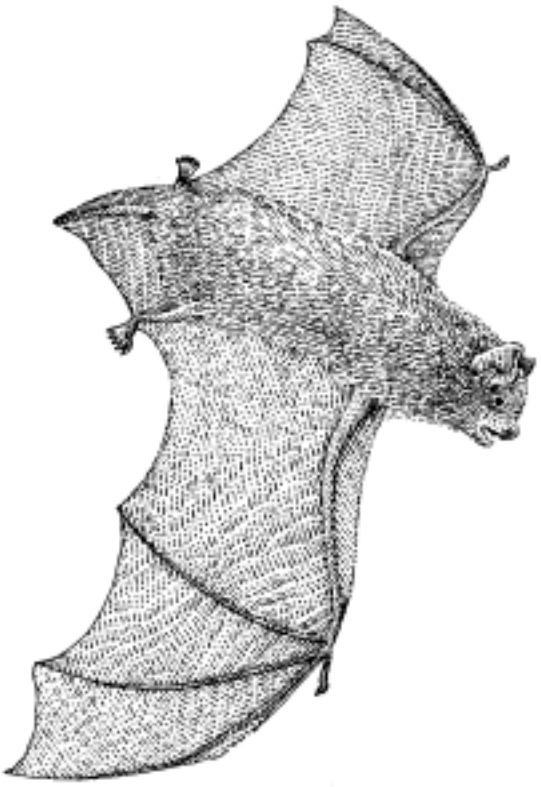
BREEDING: Young born in June and July. Litter size 1 or 2 (mean litter size 2); one litter per year. Usually roosts in solitude in snags, protected crevices in trees, and under bark. Females occasionally form small nursery colonies.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Finds insects, principally moths, through echolocation; prey captured in flight.

OTHER: A slow flier; usually flies close to the ground.

REFERENCES: Orr 1949, Barbour and Davis 1969.



Western Pipistrelle

M018 (*Pipistrellus hesperus*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Common, but irregularly distributed below ponderosa pine forests from Kern county north to southern Tehama County.

SPECIAL HABITAT REQUIREMENTS: Rock crevices for roosting and breeding; water.

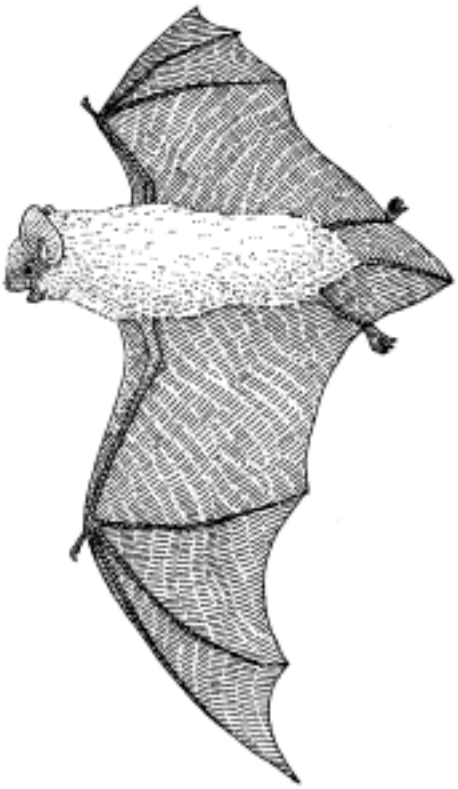
BREEDING: Young born in June and July. Litter size 1 or 2 (mean litter size 2); one litter per year. Roosts colonially in rock crevices. Maternity colonies of up to 12 individuals.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Insects, primarily moths, taken in flight; prey found by echolocation.

OTHER: Primarily found in arid habitats, but not far from water. Activity pattern crepuscular; flight begins early in evening. Active during warm spells in winter.

REFERENCES: Grinnell and Storer 1924, Sumner and Dixon 1953, Barbour and Davis 1969, Black 1974.



Big Brown Bat

M019 (*Eptesicus fuscus*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Widespread throughout western slope of the Sierra Nevada; forest openings and meadows (except alpine) optimum feeding habitats.

SPECIAL HABITAT REQUIREMENTS: Snags, trees, caves, crevices, or buildings for roosting and breeding colonies; water.

BREEDING: Young born from May to July, with peak in June. Litter size 1 or 2 (mean of 1). Buildings, caves, crevices, snags, or trees used for maternity sites.

TERRITORY/HOME RANGE: Unknown, but probably territorial.

FOOD HABITS: Feeds in flight, 13 to 66 ft (4 to 20 m) above the ground. Various insects, mainly beetles, for major food. Prey found by echolocation.

OTHER: Resident species; hibernates in winter. Individuals roost in colonies with other species. Can be found in large maternity colonies in summer and in small colonies (or solitary) in winter. Flies straight and steady.

REFERENCES: Krutzsch 1946, Dalquest 1948, Phillips 1966, Davis *et al.* 1968, Black 1972.

Red Bat

M020 (*Lasiurus borealis*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Found in wooded areas at lower elevations throughout the western Sierra Nevada. Prefers open to moderately dense stands of trees for roosting.

SPECIAL HABITAT REQUIREMENTS: Snags and trees for roosting and breeding; water.

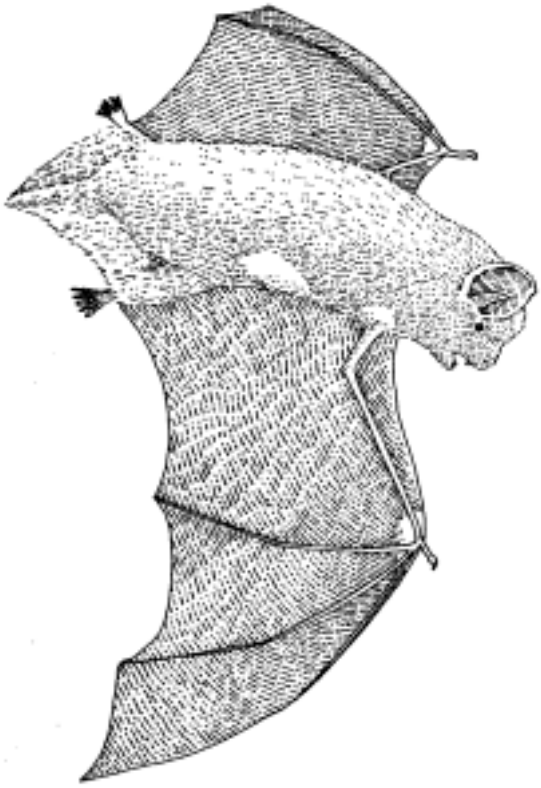
BREEDING: Young born in May and June, with peak in June. One litter per year; mean litter size 3 (range 1 to 4). Nursery sites located in trees.

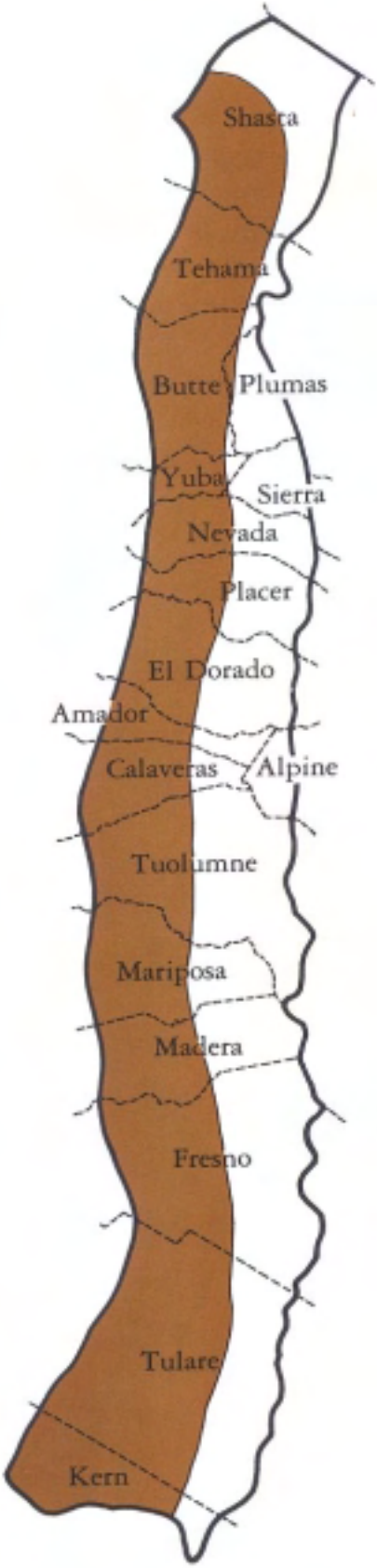
TERRITORY/HOME RANGE: Unknown. Density of 1/acre (2.5/ha) estimated in study in Midwest (McClure 1942).

FOOD HABITS: Crickets, moths, beetles, cicadas, and other insects taken in flight.

OTHER: Solitary in summer; more colonial in winter. Often roosts in foliage near the ground; winters in western lowlands of California.

REFERENCES: Grinnell 1918, McClure 1942, Hamilton 1943, Jackson 1961, Constantine 1966.





Hoary Bat

M021 (*Lasiurus cinereus*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Widespread throughout western Sierra Nevada region. Breeding habitat in medium and large tree stages of conifer forests. Found throughout the Sierra Nevada during migration.

SPECIAL HABITAT REQUIREMENTS: Trees with dense foliage for roosting and breeding; water.

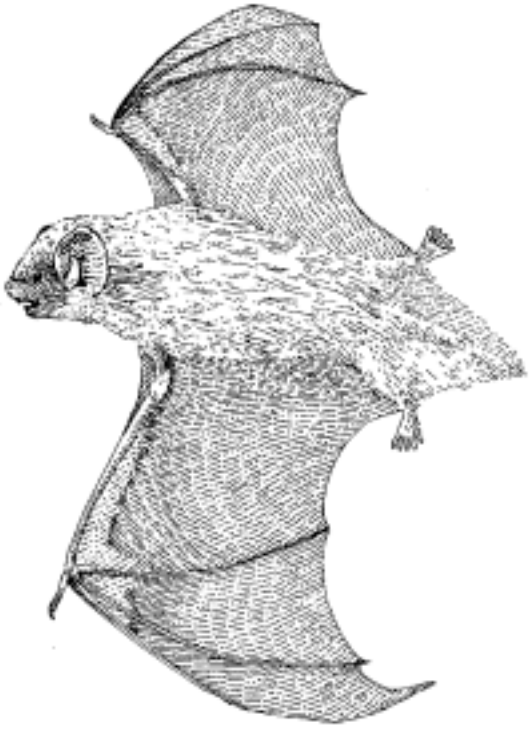
BREEDING: Litter size averages 2 (range from 1 to 4); one litter per year. Nests in tree foliage with well-developed canopy above, but open below.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Moths are main food, found through echolocation and taken in flight.

OTHER: Roosts singly in foliage of trees; migrates south in winter. Few females in the Sierra Nevada during reproductive season.

REFERENCES: Grinnell and Storer 1924; Provost and Kirpatrick 1952; Black 1972, 1974; Findley *et al.* 1975.



Spotted Bat

M022 (*Enderma maculatum*)

STATUS: Listed in the 1973 edition of *Threatened Wildlife of the United States*, but not officially listed as threatened or endangered.

DISTRIBUTION/HABITAT: Ranges from about Tuolumne to Kern Counties, from annual grasslands up to at least ponderosa pine zone.

SPECIAL HABITAT REQUIREMENTS: Little known, but probably secluded caves, crevices, or snags for roosting and breeding. Large placid pools, ponds, or lakes for drinking.

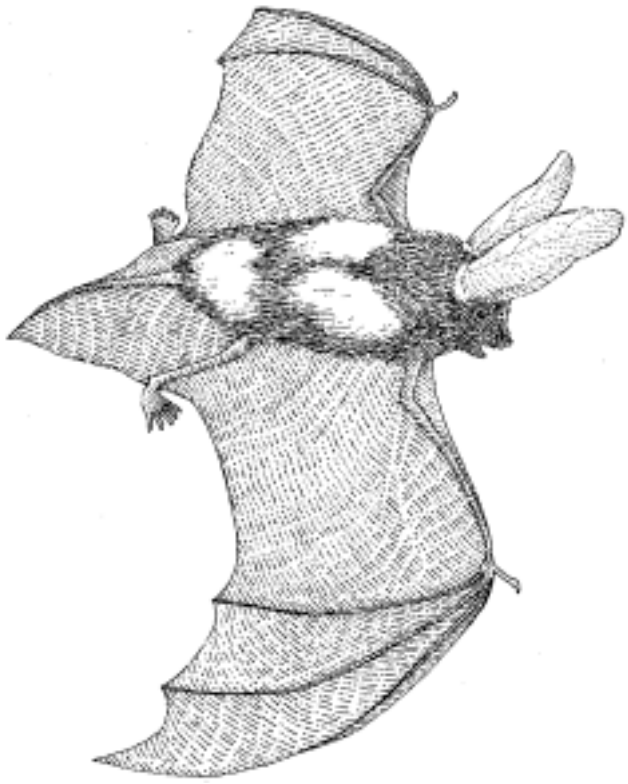
BREEDING: Young born in late spring and summer. Mean litter size 1. Roost site requirements largely unknown, but thought to be crevices in cliffs or secluded caves.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Moths and other insects found through echolocation and taken in flight.

OTHER: May occasionally enter buildings.

REFERENCES: Easterla 1965, Barbour and Davis 1969, Easterla and Easterla 1969, Findley *et al.* 1975, Watkins 1977.



Townsend's Big-eared Bat

M023 (*Plecotus townsendii*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Widespread in the western Sierra Nevada.

SPECIAL HABITAT REQUIREMENTS: Caves or crevices for roosting and breeding; water. Especially intolerant of disturbances of maternity colonies and hibernacula by humans.

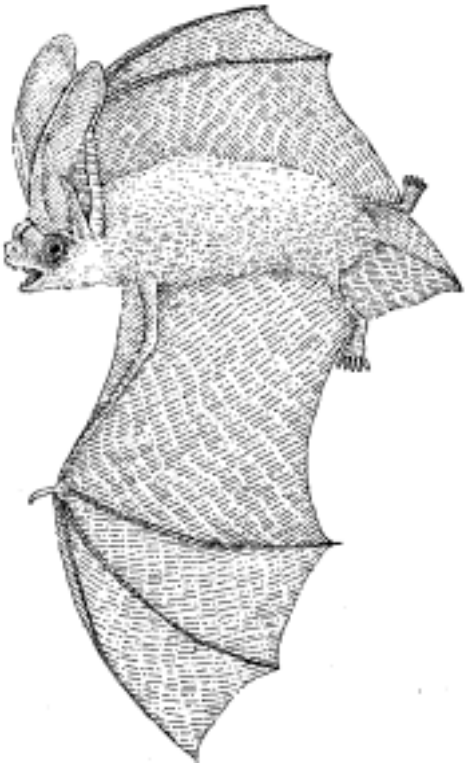
BREEDING: Young born from April to July, with peak in May. Mean litter size 1; one litter per year. Maternity colonies found in caves, mine tunnels, or occasionally in buildings.

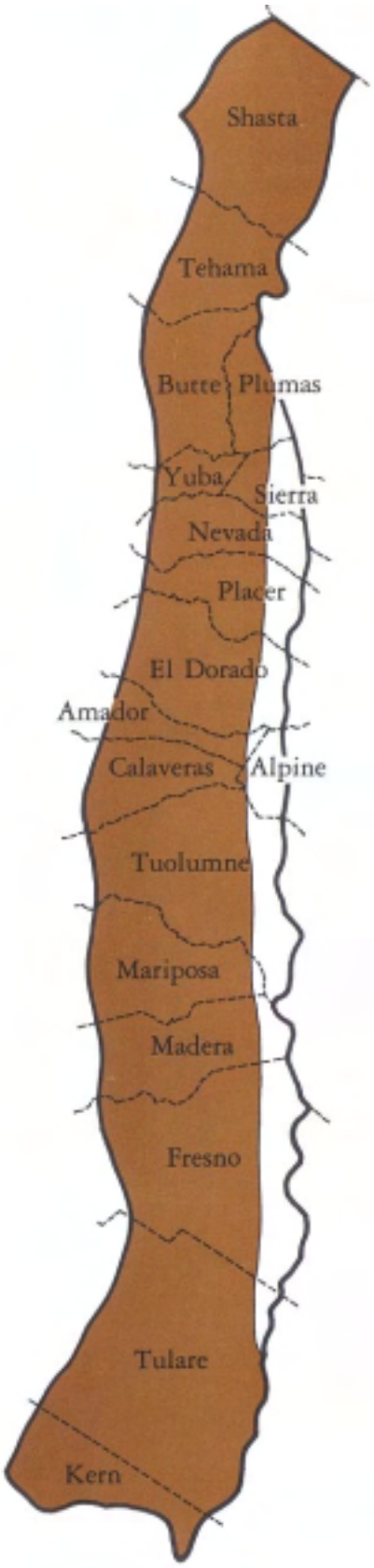
TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Captures insects, mostly moths, in flight at night by echolocation.

OTHER: Males usually solitary in spring and summer, but hibernate colonially in caves and mines. Residents and can be found throughout range during any season.

REFERENCES: Dalquest 1947, Pearson *et al.* 1952, Barbour and Davis 1969.





Pallid Bat

M024 (*Antrozous pallidus*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Common in arid and semiarid areas at relatively low elevations throughout the western Sierra Nevada. Found from annual grasslands through mixed-conifer forests.

SPECIAL HABITAT REQUIREMENTS: Caves, crevices, or buildings for roosting and breeding colonies; water.

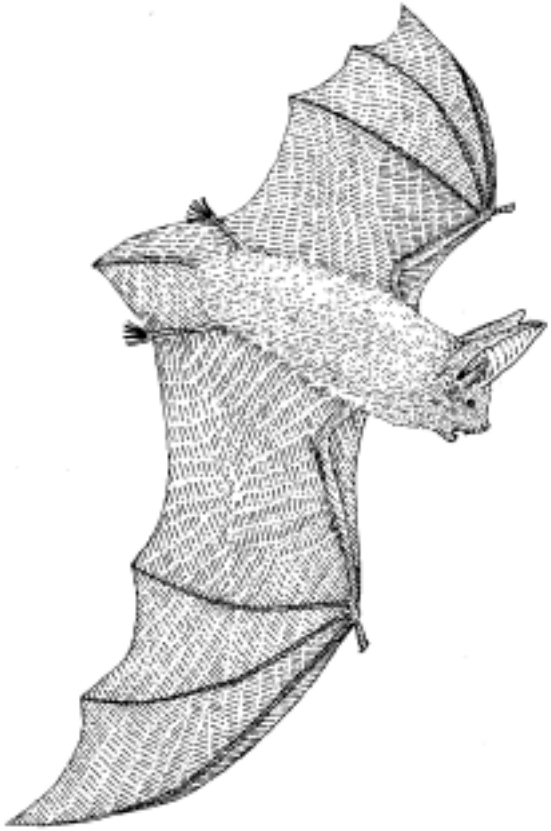
BREEDING: Young born from April to July. Litter size ranges from 1 to 3 (mean of 2); one litter per year. Pregnant females gather in maternity colony to give birth. Rock crevices, caves, buildings, and other areas of semidarkness with protection from above used as roost sites.

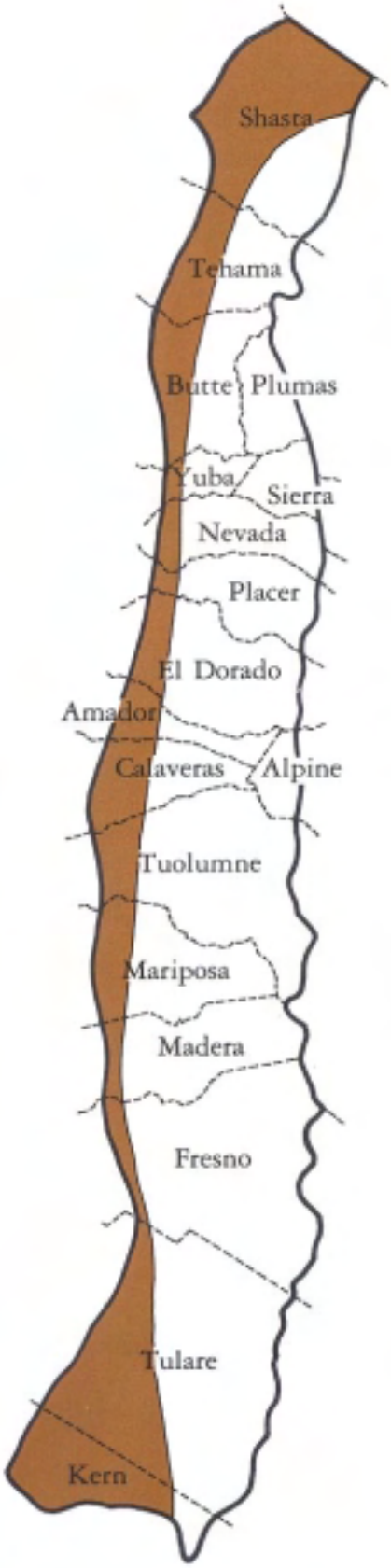
TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Beetles, moths, orthopterans, and other large insects, as well as scorpions and other invertebrates gleaned from surface of ground and from foliage. Echolocation used to find prey. Perches used when devouring prey.

OTHER: Females roost in colonies of usually less than 100, often associated in colonies with Brazilian free-tailed bats. May hibernate in winter. Separate day and night roosts often used.

REFERENCES: Sumner and Dixon 1953, Orr 1954, Ross 1967, O'Shea and Vaughan 1977.





Brazilian Free-tailed Bat

M025 (*Tadarida brasiliensis*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Widely distributed in California at low elevations. Optimum feeding habitats in annual grassland, chaparral, and meadows.

SPECIAL HABITAT REQUIREMENTS: Crevices, hollow trees, or man-made structures for roosting and breeding; water.

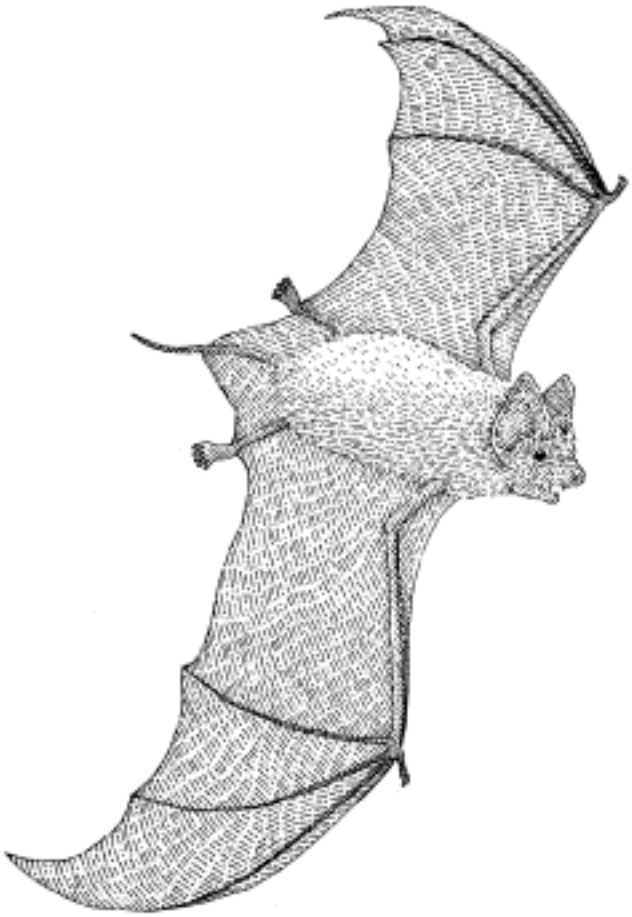
BREEDING: Young born from April to August, with peak in June. Litter size 1 or 2 (mean of 1). Maternity colonies located in cracks and crevices, buildings and other structures, such as bridges.

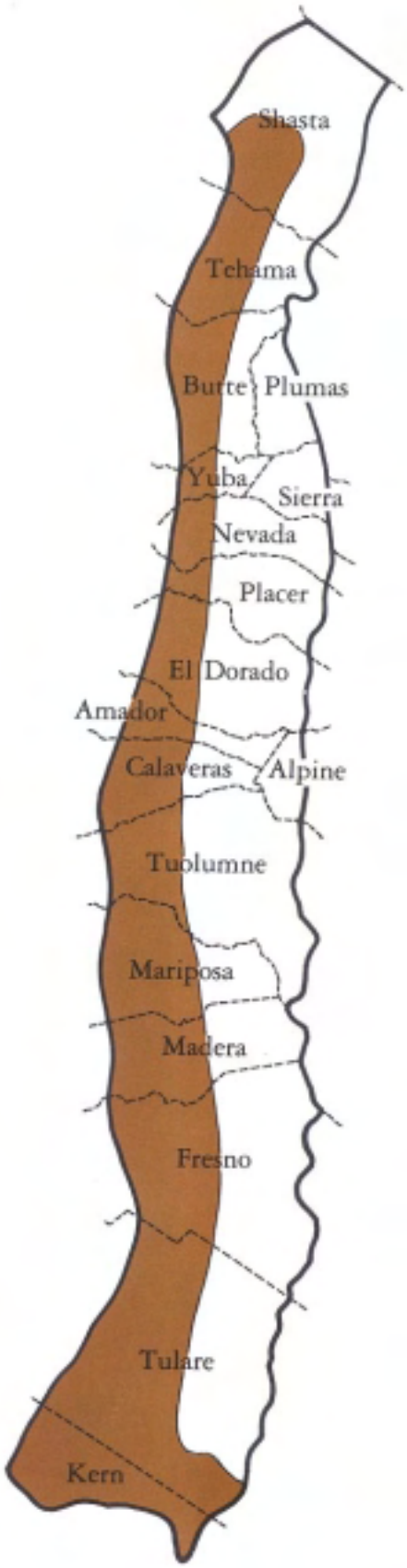
TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Small moths and other flying insects taken in flight. Prey found through echolocation. May sometimes travel long distances to feed; generally feeds at distances greater than 131 ft (40 m) above ground.

OTHER: Colonial and often found in large maternity colonies. Hibernates in winter.

REFERENCES: Krutzsch 1955, Davis *et al.* 1962, Barbour and Davis 1969.





Pika

M026 (*Ochotona princeps*)

STATUS: No official listed status. Fairly common in preferred habitat.

DISTRIBUTION/HABITAT: Found only in high mountains; confined to talus slopes with adjacent areas (especially alpine meadows) containing herbs and grasses.

SPECIAL HABITAT REQUIREMENTS: Talus slopes and forest openings.

BREEDING: Breeds from May through June or July, occasionally as late as September. Nests in deep crevices between rocks. Litter size from 1 to 5 (mean 2 or 3); one to three litters per year.

TERRITORY/HOME RANGE: Sedentary animal with small home range of 0.74 to 1.24 acre (0.3 to 0.5 ha) and territory of slightly smaller dimensions in Glacier National Park, Montana (Barash 1973).

FOOD HABITS: Eats variety of grasses and forbs, some shrubs. Forages among rocks and in alpine meadows. Dries food and stores it under rocks in small "hay piles" to eat in winter.

OTHER: Active all year, and intermittently day and night.

REFERENCES: Broadbooks 1965, Ingles 1965, Barash 1973.

Brush Rabbit

M027 (*Sylvilagus bachmani*)

STATUS: No official listed status. A game species; may be taken only during rabbit season.

DISTRIBUTION/HABITAT: Distrubuted along western edge of the Sierra Nevada, primarily in Chaparral. Also found in brushy areas of earlier successional stages of oak and pine woodlands.

SPECIAL HABITAT REQUIREMENTS: Large areas of dense cover, such as shrubs, thickets, or vines.

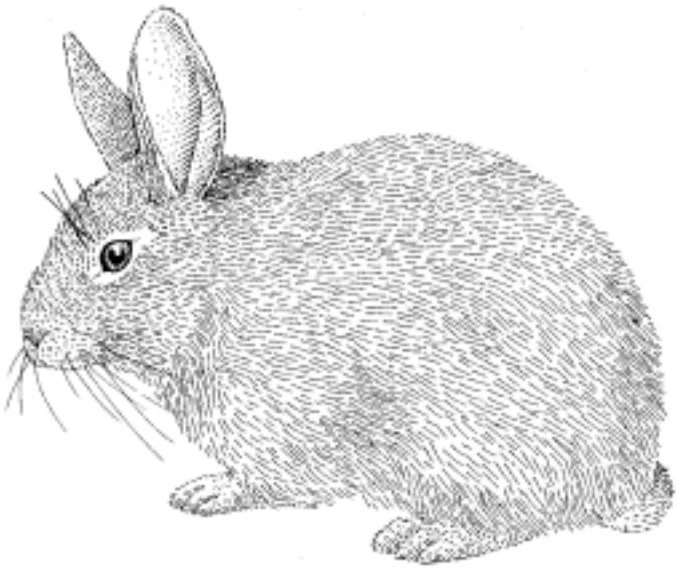
BREEDING: Two to four litters annually, averaging 3 or 4 young each, and ranging up to 6. Breeds from January to August, with peak from March to June. Gestation 28 to 30 days. Nests on ground (in cover) or in a burrow.

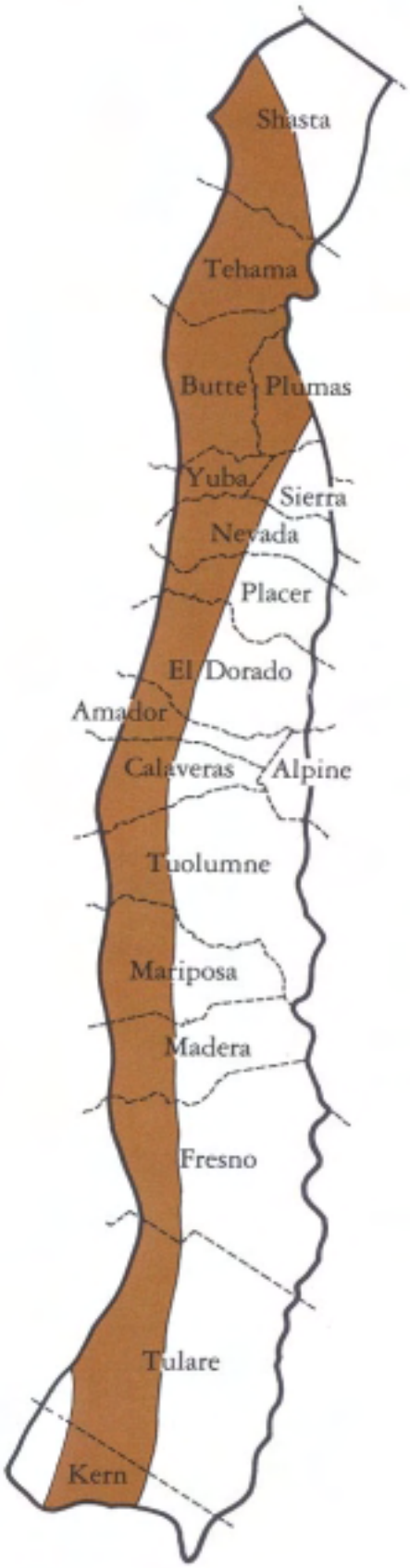
TERRITORY/HOME RANGE: Basically sedentary, with home range sizes of 0.1 to 8 acres (0.04 to 3.2 ha). Near Corvallis, Oregon, home range sizes varied from 0.5 to 2 acres (0.2 to 0.8 ha) (Chapman 1971).

FOOD HABITS: Eats grasses (foxtails, soft chess, oats, and others), forbs, and some browse (Ceanothus and others); often feeds in the open, but near brush cover.

OTHER: Crepuscular and active all year.

REFERENCES: Shields 1960, Chapman and Harman 1972, Chapman 1974.





Desert Cottontail

M028 (*Sylvilagus audubonii*)

STATUS: No official listed status. Widespread; common game species.

DISTRIBUTION/HABITAT: Found only along western and southern edges of the Sierra Nevada at lower elevations of grasslands, chaparral, oak savannah, and early successional stages of digger pine-oak. Avoids dense stands; prefers areas of mixed grass and brush.

SPECIAL HABITAT REQUIREMENTS: Dense cover in scattered patches.

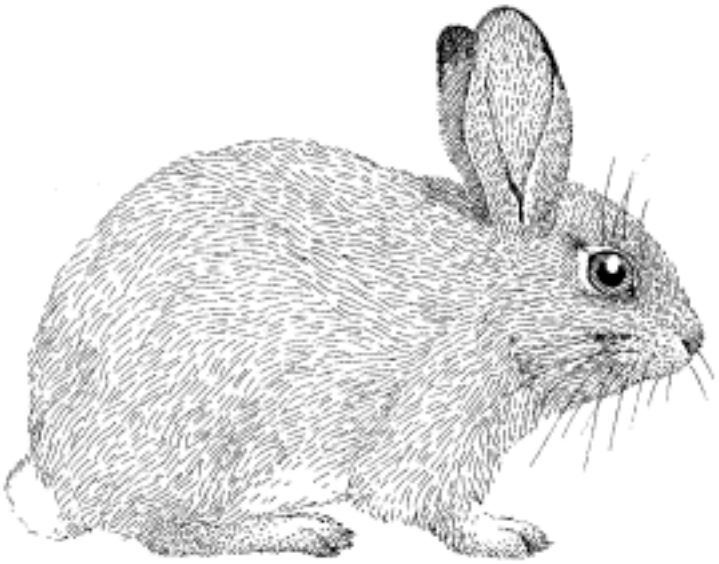
BREEDING: Two to four litters per year (average of 3 or 4 young in each; 6 not uncommon). Breeds from October through June, with peak activity from March to May. Nests in burrows or in cover on the ground.

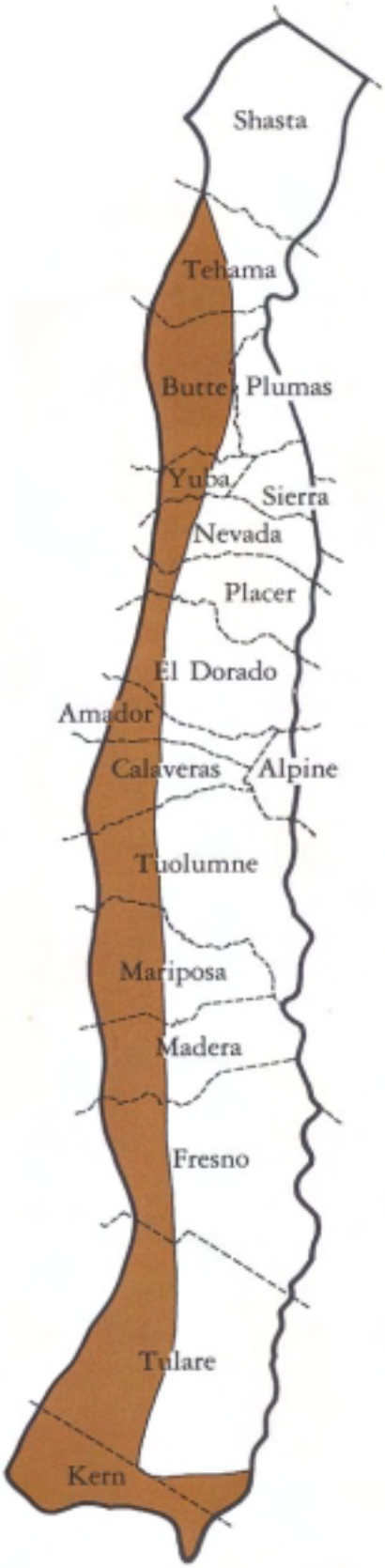
TERRITORY/HOME RANGE: Probably not territorial. Sedentary animals; home ranges average from 7.4 to 9.9 acres (3 to 4 ha). In Madera County, range seldom more than 14.8 acres (6 ha) (Fitch 1947).

FOOD HABITS: Eats grasses (brome, fescue) and forbs (filaree, clover, tarweed, turkey mullein) obtained by feeding on the ground, usually near cover.

OTHER: Crepuscular and active all year. Found in more open habitats than *S. bachmani*.

REFERENCES: Ingles 1941, 1965; Fitch 1947.





Snowshoe Hare

M029 (*Lepus americanus*)

STATUS: No official listed status. A game species, protected by closed season and bag limits. Varies from common to uncommon.

DISTRIBUTION/HABITAT: Found in higher elevational zones of the middle and northern Sierra Nevada in riparian deciduous, alpine meadows, and conifer forests. Prefers earlier successional stages in pine or fir stands.

SPECIAL HABITAT REQUIREMENTS: Thickets of alder, willow, young conifers, or ceanothus-manzanita chaparral, and hollow logs.

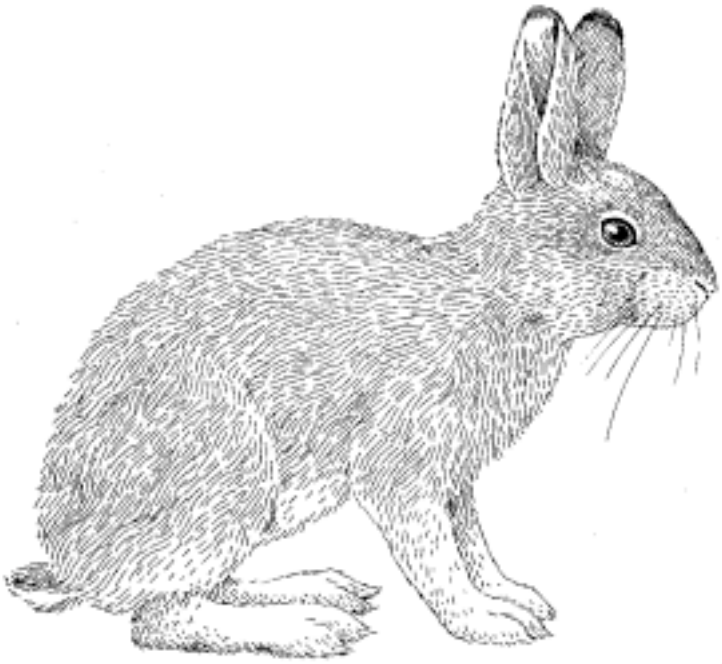
BREEDING: One to three litters per year; each litter contains 2 to 4 (as many as 8) young. Breeds from March to August, with peak in May and June. Gestation about 37 days. Open nests of grass and fur in depressions in ground.

TERRITORY/HOME RANGE: May be territorial during breeding season, but this not well established. In Alaska, home ranges varied from 9.9 to 24.7 acres (4.0 to 10.0 ha) with averages of 12.3 to 14.8 acres (5 to 6 ha) (O'Farrell 1965).

FOOD HABITS: Eats grasses, forbs, and shrubs; twigs and bark of shrubs and young trees eaten in winter. Feeds in meadows and other openings and at forest edges.

OTHER: Crepuscular and active all year. Most molt to a white coat in winter and a brown coat in summer.

REFERENCES: Adams 1959, O'Farrell 1965, Ingles 1965.



White-tailed Jackrabbit

M030 (*Lepus townsendii*)

STATUS: No official listed status. A game species not taken in large numbers by hunters. Uncommon in California; geographic range small.

DISTRIBUTION/HABITAT: Limited to the high Sierra Nevada (and the eastern slope). Found in all stages of red fir and lodgepole pine forests, but prefers early grass-forb successional stages. Alpine and mountain meadows important habitats.

SPECIAL HABITAT REQUIREMENTS: Scattered shrubs in open areas.

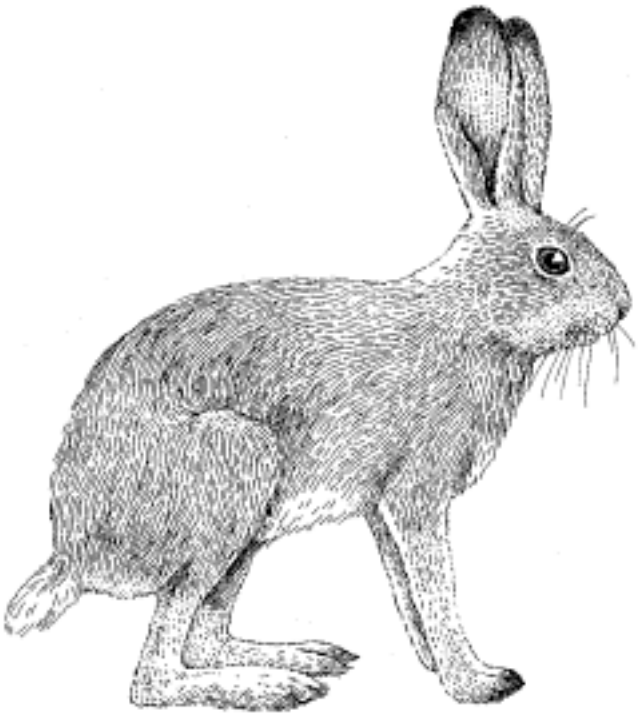
BREEDING: Usually one litter of 3 to 6 young (average of 4) per year. No burrows used; young concealed in vegetation. Gestation 43 days.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Eats mainly shrubs (cream bush, sagebrush, and others) in winter and spring, grasses and forbs in summer and fall.

OTHER: Mainly nocturnal; occasionally diurnal. Migrates to lower elevations in winter. More selective in food habits than black-tailed jackrabbits, thus giving the latter species a competitive advantage where both occur. Populations fluctuate in certain areas, but average densities of 21/mi^2 (8/km^2) recorded in Colorado (Flinders and Hansen 1972).

REFERENCES: Orr 1940, Bear and Hansen 1966, Flinders and Hansen 1972.



Black-tailed Jackrabbit

M031 (*Lepus californicus*)

STATUS: No official listed status. Common species with widespread range. Increasing in popularity as game species.

DISTRIBUTION/HABITAT: Found in all elevational zones of the Sierra Nevada. Not found in pine or fir forests, except in early successional stages of grasses, shrubs, and seedlings. Prefers open grasslands or early stages of chaparral.

SPECIAL HABITAT REQUIREMENTS: Scattered shrubs in open areas.

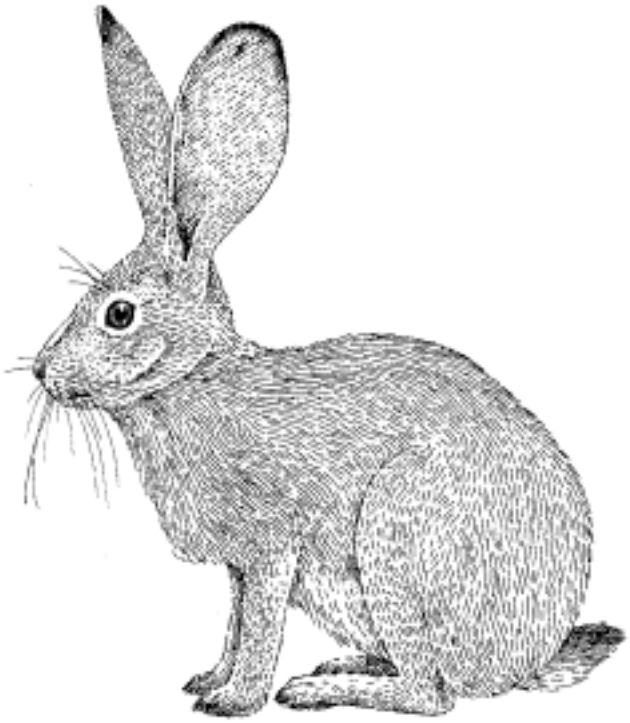
BREEDING: Breeds all year, but peak is from March to June. Usually more than one litter per year (3 or 4 young per litter). Nests placed under shrubs and in dense stands of grass; burrows not generally used. Gestation about 43 days.

TERRITORY/HOME RANGE: Home ranges probably 4.9 to 24.7 acres (2 to 10 ha), but not well documented. Not territorial.

FOOD HABITS: Eats many kinds of grasses, forbs, shrubs, and cultivated crops.

OTHER: Crepuscular, diurnal, and active all year. An important food source for coyotes and some raptors, as densities may reach 260/mi^2 (100/km^2), based on study in Utah (Flinders and Hansen 1972).

REFERENCES: Orr 1940, Lechleitner 1958, Flinders and Hansen 1972.



Mountain Beaver

M032 (*Aplodontia rufa*)

STATUS: No official listed status. Scattered distribution and uncommon in the Sierra Nevada.

DISTRIBUTION/HABITAT: Prefers riparian habitats with thick undergrowth. Also found in wooded areas, old burns, and logged areas with considerable herbaceous growth. Not aquatic.

SPECIAL HABITAT REQUIREMENTS: Thick vegetation near water.

BREEDING: Breeds in March and April (mean litter size 3 or 4). Only one litter per year. Gestation 28 to 30 days. Young born in nest in burrow, located 1 to 5 ft (0.3 to 1.5 m) below ground, in area heavily overgrown with vegetation and strewn with rocks, or fallen logs, or both.

TERRITORY/HOME RANGE: Home range small; varied from 0.1 to 0.5 acre (0.04 to 0.2 ha) (mean of 0.25 acre [0.1 ha]) near Montesano, Washington (Martin 1971). Territoriality not known.

FOOD HABITS: Cuts vegetation to take to burrows; some food stored in hay piles. Occasionally climbs trees and clips branches or strips bark, but main food items are shrubs and forbs-thimbleberry, blackberry, dogwood, ferns, and lupine. Main foraging in heavy undergrowth, in burrows, and on ground surface.

OTHER: Active all year.

REFERENCES: Godin 1964, Ingles 1965, Martin 1971.

Alpine Chipmunk

M033 (*Eutamias alpinus*)

STATUS: No official listed status. Restricted in range, but common.

DISTRIBUTION/HABITAT: Geographic range limited to the high Sierra Nevada, in lodgepole pine forests, but generally above timberline in alpine meadows. Prefers talus slopes, areas of stunted pines (krumholz), and downed logs.

SPECIAL HABITAT REQUIREMENTS: Talus and downed logs.

BREEDING: Little information available; most breeding probably in July. Litter size from 3 to 6; one litter per year.

TERRITORY/HOME RANGE: Little information available. Probably territorial, defending immediate area of nests. Usually nests within crevices of talus slopes and other rocky areas.

FOOD HABITS: Feeds on seeds of sedges, grasses, and pines; also eats fungi. Feeds on ground and among logs and rocks; caches food.

OTHER: Hibernates from November to April; may be active day and night in summer.

REFERENCES: Grinnell and Storer 1924, Johnson 1943, Heller 1971, Heller and Gates 1971, Heller and Poulson 1972.

Least Chipmunk

M034 (*Eutamias minimus*)

STATUS: No official listed status. Restricted distribution in the western Sierra Nevada, but common in the eastern Sierra Nevada and Great Basin.

DISTRIBUTION/HABITAT: Found in two small areas near the Sierra Nevada Crest in Fresno and Tulare Counties, in lodgepole pine forests and alpine meadows in dry, exposed habitats.

SPECIAL HABITAT REQUIREMENTS: Open areas with stumps, logs, or rocks, and with brush.

BREEDING: Breeds in June and July, little data available. Litter size from 3 to 8 (average 6). One litter per year. Nests found under stumps, logs, or rocks.

TERRITORY/HOME RANGE: Little information available; probably territorial, defending vicinity of nests. Home ranges varied from 0.5 to 3.7 acres (0.2 to 1.5 ha) in Montana (Martinsen 1968).

FOOD HABITS: Eats seeds, nuts, and fruits, and some insects. Searches for food on the ground, among rocks, logs, and stumps and in low shrubs. Caches food.

OTHER: Hibernates from November to April; may be active day and night.

REFERENCES: Ingles 1965, Forbes 1966, Martinsen 1968.

Yellow Pine Chipmunk

M035 (*Eutamias amoenus*)

STATUS: No official listed status. Common resident of the Sierra Nevada.

DISTRIBUTION/HABITAT: Widespread in all pine and fir forests from ponderosa pine to lodgepole pine. Prefers shrub-seedling-sapling stages of all timber types. Most abundant in open ponderosa pine forests.

SPECIAL HABITAT REQUIREMENTS: Shrubs, slash piles, or stumps in open forests.

BREEDING: Breeds from April to July, with peak activity in May and June. Litter size 4 to 8. One litter per year born in underground burrows. Gestation about 1 month.

TERRITORY/HOME RANGE: Home ranges in the Cascade Mountains averaged 1.0 to 3.8 acres (0.4 to 1.5 ha) (Broadbooks 1970b). Defends area immediately surrounding den.

FOOD HABITS: Feeds mainly on seeds of conifers, shrubs, forbs, and grasses. Some fungi, fruit, and insects also eaten. Forages primarily on ground, but occasionally climbs trees. Stores food in caches underground for use during winter. Cheek pouches used to carry food to storage sites.

OTHER: Often found associated with the golden-mantled ground squirrel.

REFERENCES: Johnson 1943; Broadbooks 1958, 1970a, 1970b; Heller 1971; States 1976.

Allen's Chipmunk

M036 (*Eutamias senex*)

STATUS: No official listed status. Uncommon to common in different areas of the Sierra Nevada.

DISTRIBUTION/HABITAT: Widespread in all coniferous forests. Prefers dense chaparral and forested areas with substantial shrub understories.

SPECIAL HABITAT REQUIREMENTS: Needs brush and logs, stumps, snags, rocks, or litter.

BREEDING: Unknown.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Unknown.

OTHER: Diurnal; probably hibernates from November to March. Specifically distinct from *E. townsendii* (Sutton and Nadler 1974). Little recorded on biology of species.

REFERENCES: Tevis 1956, Ingles 1965, Storer and Usinger 1971, Sutton and Nadler 1974.

Sonoma Chipmunk

M037 (*Eutamias sonomae*)

STATUS: No official listed status. Common within its range.

DISTRIBUTION/HABITAT: Range barely extends into the western Sierra Nevada in northern Shasta County. Prefers dense chaparral and shrub-seedling-sapling stages of digger pine-oak, black oak woodland, and ponderosa pine forests.

SPECIAL HABITAT REQUIREMENTS: Trees-shrubs; logs, stumps, snags, rocks, or litter.

BREEDING: Breeds from February to July. Individuals mature at 1 year. One litter of 3 to 7 per year. Nests in logs, stumps, and burrows. Gestation about 1 month.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Feeds on acorns, fungi, and seeds of shrubs-manzanita, ceanothus, and gooseberry. Searches for food on the ground; food cached in many different places (scatter hoarding). Seeds often buried.

OTHER: Diurnal when active, but den-up during cold spells in winter. Primarily found along coast where populations coevolved with coastal chaparral plant communities.

REFERENCES: Johnson 1943, Ingles 1965, Smith 1977.

Merriam's Chipmunk

M038 (*Eutamias merriami*)

STATUS: No official listed status. Locally common at lower elevations in the southern Sierra Nevada.

DISTRIBUTION/HABITAT: Widespread from Tuolumne to Kern Counties. Found in all plant communities with substantial shrub understory from blue oak savannah to Jeffrey pine. Prefers heavy brush with associated oaks and rock outcrops.

SPECIAL HABITAT REQUIREMENTS: Trees-shrubs; logs, stumps, snags, rocks, or litter.

BREEDING: Breeds from April to June. Individuals sexually mature at 1 year and produce one litter of 3 to 8 per year. Nests found in rotting logs, stumps, and in burrows. Gestation about 1 month.

TERRITORY/HOME RANGE: Solitary; probably defends the area in immediate vicinity of den. Home range size unknown.

FOOD HABITS: Feeds on acorns and seeds of manzanita and other chaparral species. Searches for and gathers food on the ground, in shrubs, and on stumps, logs, and dead trees. Caches for later use.

OTHER: Unlike other *Eutamias* species in the Sierra Nevada, competing species absent over most of range (Callahan 1977).

REFERENCES: Swarth 1919, Grinnell and Storer 1924, Johnson 1943.

Long-eared Chipmunk

M039 (Eutamias quadrimaculatus)

STATUS: No official listed status. Uncommon to common in different parts of range.

DISTRIBUTION/HABITAT: Widespread in higher chaparral areas, and in ponderosa pine and mixed-conifer forests. Usually associated with patches of brush with substantial canopy cover.

SPECIAL HABITAT REQUIREMENTS: Logs, stumps, snags, rocks, or litter.

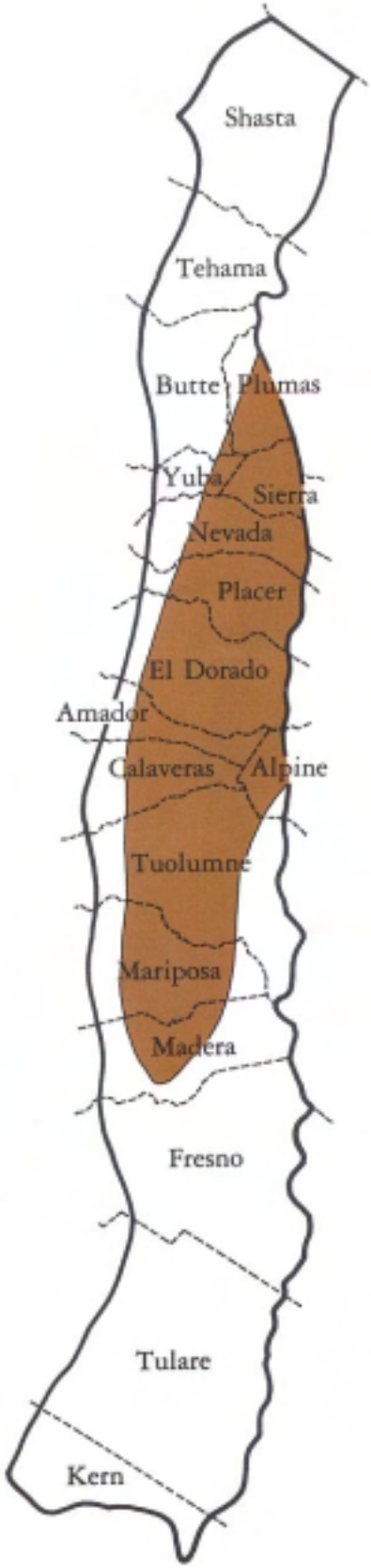
BREEDING: Breeds in May and June. Litter size averages 4 (range 3 to 8). Nests in trees, logs, stumps, and cavities of snags. Gestation about I month; one litter per year.

TERRITORY/HOME RANGE: Solitary and probably territorial in vicinity of nest. Home ranges in Madera County varied from 0.74 to 4.9 acres (0.3 to 2.0 ha) (Storer *et al.* 1944).

FOOD HABITS: Eats primarily seeds, fruits, and fungi. Searches for food on ground, in shrubs, and on logs, stumps, and snags. Caches food for later use.

OTHER: Diurnal when active; hibernates from November to March.

REFERENCES: Holdenreid 1940, Storer *et al*. 1944, Tevis 1955, Sutton and Dunford 1974.



Lodgepole Chipmunk

M040 (*Eutamias speciosus*)

STATUS: No official listed status. Common over range in the Sierra Nevada.

DISTRIBUTION/HABITAT: Widespread in mixed-conifer, Jeffrey pine, red fir, and lodgepole pine forests. Prefers pole-medium tree and large tree stages of coniferous forests.

SPECIAL HABITAT REQUIREMENTS: Trees-shrubs; logs, stumps, snags, rocks, or litter.

BREEDING: Breeds in June and July. Litter size averages 5 (range 3 to 7). Nests found in logs, stumps, and hollows in trees and snags. Gestation about 1 month; one litter per year.

TERRITORY/HOME RANGE: Probably territorial in immediate vicinity of nest. Home ranges in the Sierra Nevada varied form 2.5 to 4.9 acres (1.0 to 2.0 ha) (Roberts 1962).

FOOD HABITS: Eats fungi, flowers, and seeds of shrubs, forbs, grasses, and pines. Searches for food and harvests on ground, in shrubs and trees, and in logs and stumps. Caches food in trees or buries for later use.

OTHER: Diurnal when active; hibernates from November to March. Densities of up to 2/acre (5/ha) reported. Never far from trees; expert climbers. Burying seeds aids in reforestation.

REFERENCES: Orr 1949, Heller 1971, Heller and Gates 1971, Heller and Poulson 1972.

Yellow-bellied Marmot

M041 (*Marmota flaviventris*)

STATUS: No official listed status. Common and widespread in suitable habitats.

DISTRIBUTION/HABITAT: Found in the high Sierra Nevada, in Jeffrey pine, red fir, and lodgepole pine forests in association with rocky areas and meadows.

SPECIAL HABITAT REQUIREMENTS: Rocky outcrops or talus slopes; forest openings.

BREEDING: Breeds from March to July, with peak in May and June. Litter size from 3 to 8 (average of 4 to 6). One litter per year. Nests located in burrows among rocks or tree roots.

TERRITORY/HOME RANGE: Territory size ranges from 0.5 to 4.9 acres (0.2 to 2 ha) (mean of 1.2 to 1.7 acres [0.5 to 0.7 ha]). In Colorado, home range sizes varied from 4.9 to 24.7 acres (2 to 10 ha) (Armitage 1974).

FOOD HABITS: Forages in meadows and among rocks. Eats green grasses and forbs.

OTHER: Hibernates from October to April, living on accumulated fat deposits. Usually found in loose colonies; active day and night.

REFERENCES: Nee 1969, Armitage 1974, Barash 1974, Svendsen 1974..

Belding's Ground Squirrel

M042 (*Spermophilus beldingi*)

STATUS: No official listed status. Common throughout its high mountain range.

DISTRIBUTION/HABITAT: Restricted to high mountain habitats, primarily meadows and early successional stages of red fir and lodgepole pine forests.

SPECIAL HABITAT REQUIREMENTS: Forest openings with friable soils for burrowing.

BREEDING: Breeds from June to August, with peak in July. One litter per year averages 8 young (range 4 to 12). Young born in underground nest; burrows often dug between boulders.

TERRITORY/HOME RANGE; No data on territory. Home range size at Tioga Pass, Mono County, averaged 1.5 acres (0.6 ha) for males, and slightly smaller for females (Morton *et al.* 1974). Individuals usually found in colonies.

FOOD HABITS: Feeds on grasses, forbs, seeds, bulbs, and nuts. Forages on ground surface.

OTHER: Hibernates from September to April.

REFERENCES: Grinnell and Dixon 1919, Hall 1946, Morhardt and Gates 1974, Morton *et al.* 1974, Loehr and Risser 1977.

California Ground Squirrel

M043 (*Spermophilus beecheyi*)

STATUS: No official listed status. Common in the Sierra Nevada.

DISTRIBUTION/HABITAT: Widespread throughout almost all habitats and successional stages. Prefers openings and disturbed areas, particularly along roads and in grazed meadows.

SPECIAL HABITAT REQUIREMENTS: Forest openings and soil suitable for burrowing.

BREEDING: Breeds from April to July, with peak in May and June. One litter per year, with range of 3 to 15 young (mean of 6). Young remain underground for first 6 weeks of life.

TERRITORY/HOME RANGE: Probably not territorial. Home ranges vary from 1 to 4.9 acres (0.4 to 2.0 ha); individual home ranges may overlap considerably. Often lives in colonies; primarily active during day. Dens often found near rock outcrops.

FOOD HABITS: Varied diet. Feeds on fruits and seeds, twigs of shrubs and trees, stems and leaves of grasses and forbs, and some insects and carrion. Forages mainly on ground, but climbs bushes and small trees. Food stored for winter at high elevations, and for summer at low elevations.

OTHER: Hibernates at high elevations and estivates at lower elevations. Numbers increase with overgrazing or other disturbances that initiate secondary succession.

REFERENCES: Grinnell and Dixon 1919, Linsdale 1946, Fitch 19486.

Golden-mantled Ground Squirrel

M044 (*Spermophilus lateralis*)

STATUS: No official listed status. Common throughout middle and higher elevations.

DISTRIBUTION/HABITAT: Widespread from ponderosa pine forests to alpine meadows. Prefers more open areas, reaching its greatest abundance in open forests lacking a dense understory.

SPECIAL HABITAT REQUIREMENTS: Logs, stumps, or rocks for ground cover.

BREEDING: Breeds from May to August, with peak in June and July. One litter per year averages 4 or 5 young (range 2 to 8).

TERRITORY/HOME RANGE: Little information; probably territorial. Home ranges from 1 to 2.5 acres (0.5 to 1.0 ha). Locates burrow entrances under rocks, stumps, and logs. Densities of 0.4 to 1.2/acre (1 to 3/ha) recorded.

FOOD HABITS: Variable diet, including nuts, seeds and fruits, insects and carrion, and grasses and herbs. Forages on the ground, in and on logs and stumps, and in shrubby vegetation. Transports food in cheek pouches, and stores it in food caches.

OTHER:, Hibernates from October to April; may be active day and night during summer, although usually diurnal.

REFERENCES: Gordon 1943; Tevis 1955, 1956; McKeever 1946b; MacClintock 1970.

Western Gray Squirrel

M045 (*Sciurus griseus*)

STATUS: No official listed status. A game species locally common in the Sierra Nevada.

DISTRIBUTION/HABITAT: Found from the blue oak savannah up through Jeffrey pine forests along the entire length of the Sierra Nevada. Prefers mature stages of all plant communities.

SPECIAL HABITAT REQUIREMENTS: Mature trees and snags with nest cavities. Oak of some species required for permanent populations.

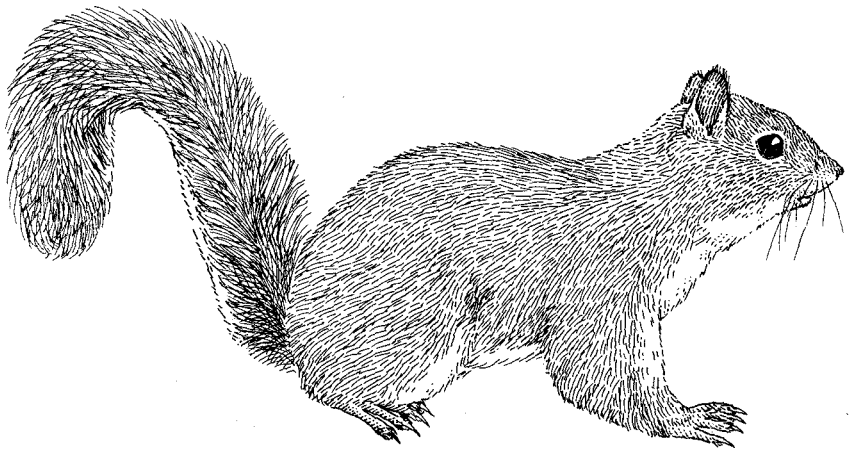
BREEDING: Breeds from February to June. Annual litter of 2 to 5 young born in late winter or early spring; gestation 44 days. Nests in holes in trees (winter) and outer branches of hardwoods (summer).

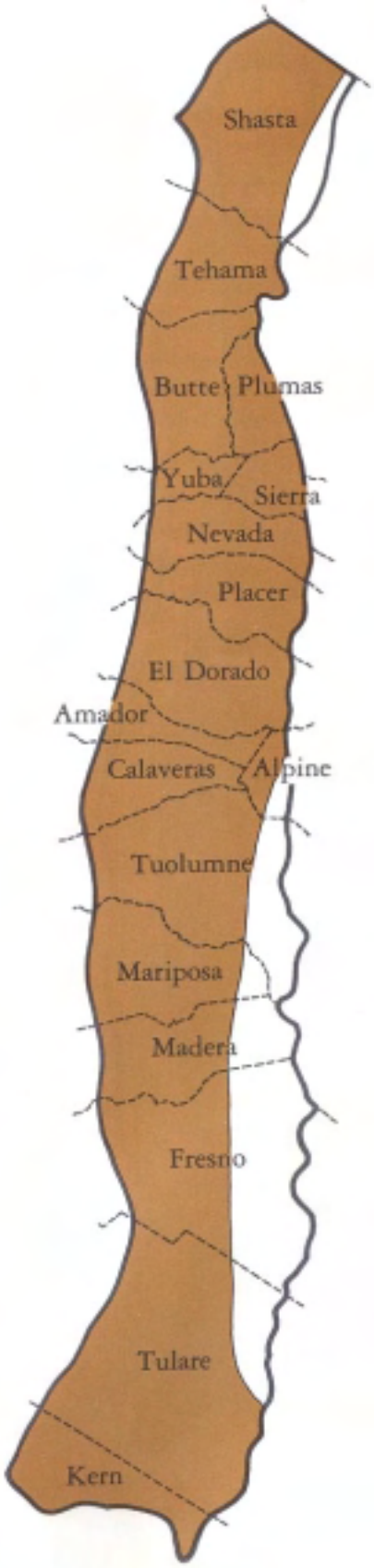
TERRITORY/HOME RANGE: Home ranges in the Sierra Nevada foothills varied from 0.5 to 1.8 acres (0.2 to 0.7 ha) for females, and from 1.3 to 2.5 acres (0.5 to 1.0 ha) for males (Ingles 1947). Lactating females incompatible, and defend territories of 0.3 to 0.8 acre (0.1 to 0.3 ha). Home ranges of males overlap considerably.

FOOD HABITS: Feeds mainly on acorns of California white oak and California black oak, and on pine seeds, green leaves, fungi, and mistletoe berries. Gathers food on ground and in trees. Stores some foods, especially acorns, for future use.

OTHER: Diurnal; does not hibernate. Densities of up to 1.6/acre (4/ha) recorded.

REFERENCES: Ingles 1947, Steinecker and Browning 1970, Asserson 1974.





Douglas' Squirrel

M046 (*Tamiasciurus douglasii*)

STATUS: No official listed status. A game species. Sparse to common in different areas of its range in the Sierra Nevada.

DISTRIBUTION/HABITAT: Widespread in all conifer forests from ponderosa pine up through lodgepole pine. Prefers large tree stages with substantial crown closure; avoids areas with considerable shrub understory.

SPECIAL HABITAT REQUIREMENTS: Snags or trees with nest holes; conifer seeds for food.

BREEDING: Breeds from May to October, with peak from April to July. Usually one litter per year (occasionally two); range from 3 to 8 young (average of 4 or 5). Nests in woodpecker holes or cavities in mature trees. Gestation 36 to 40 days.

TERRITORY/HOME RANGE: Territories in the central Sierra Nevada varied from 0.5 to 4.0 acres (0.2 to 1.6 ha) (Hartesveldt *et al.* 1970).

FOOD HABITS: Feeds mainly on conifer seeds, fungi, flowers, and leaf buds. Gathers food on ground and in trees, where cones are cut and dropped to ground. Defends food sources and places middens, for use during winter, in damp or wet sites. Conifer seeds the winter staple.

OTHER: Diurnal and active all year. Good habitat supports densities approaching 0.8/acre (2/ha).

REFERENCES: McKeever 1964a, Ingles 1965, Smith 1970.

Northern Flying Squirrel

M047 (*Glaucomys sabrinus*)

STATUS: No official listed status. Not a game species; may not be killed or captured, according to current regulations. Locally common in the Sierra Nevada.

DISTRIBUTION/HABITAT: Widespread from ponderosa pine through lodgepole pine forests. Prefers mature tree stages in all habitats.

SPECIAL HABITAT REQUIREMENTS: Snags and trees with nest holes.

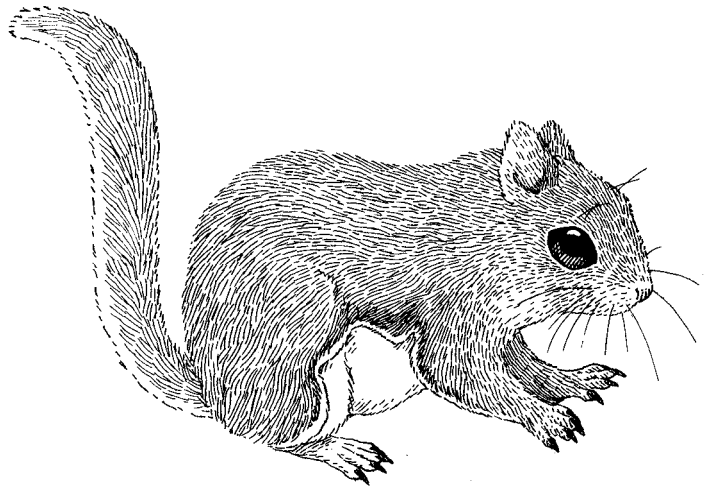
BREEDING: Breeds in May and June. Litter size from 1 to 6 (average of 4). Nests in holes in trees.

TERRITORY/HOME RANGE: Home range size of a mother-young group in the Sierra Nevada was 4.9 acres (2 ha) (MacClintock 1970).

FOOD HABITS: Eats seeds, nuts and fruits, fungi, insects, and baby birds and eggs in summer; lichens and mosses important staples in winter. Searches for and gathers food on ground and in trees. Does not store food.

OTHER: Nocturnal; gregarious during winter. Glides for distances up to 150 ft (46 m). Furry membranes extend from ankles to wrists. Large owls prey on flying squirrels as they glide from tree to tree.

REFERENCES: Cowan 1936, Cowan and Guiguet 1965, MacClintock 1970.



Botta's Pocket Gopher

M048 (*Thomomys bottae*)

STATUS: No official listed status. Abundant throughout length of the Sierra Nevada below about 5000 ft (1520 m).

DISTRIBUTION/HABITAT: Widespread; found wherever soils friable. Prefers grass-forb stages of all communities.

SPECIAL HABITAT REQUIREMENTS: Friable soils deep enough for burrowing
.

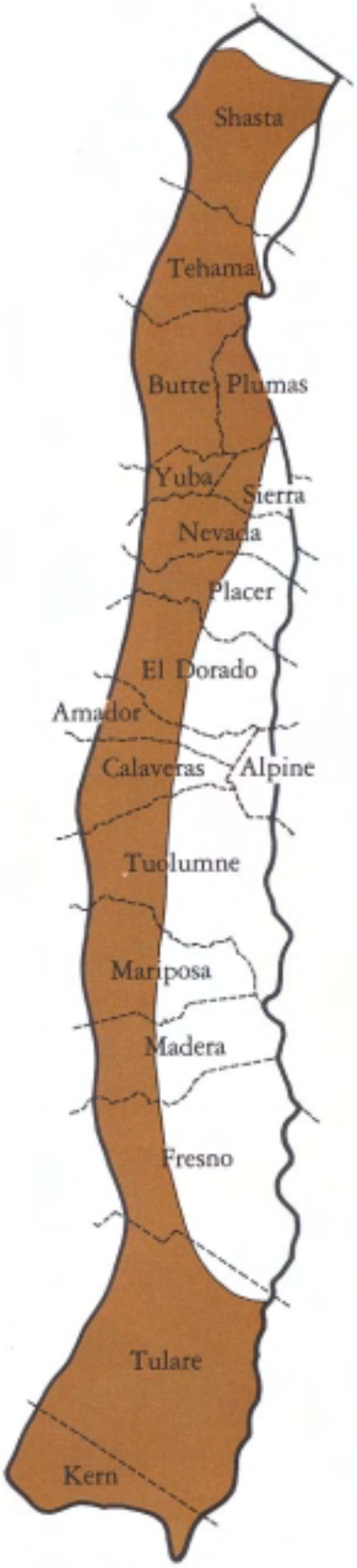
BREEDING: Breeds from October to June, with peak from March to May. Litter size 3 to 12 (average of 5). Up to three litters per year born in underground burrows; gestation 18 or 19 days.

TERRITORY/HOME RANGE: Territorial and solitary, except during breeding season.

FOOD HABITS: Herbivorous: feeds mainly on roots, tubers, bulbs, and stems and leaves of forbs and grasses. Shrubs and tree seedlings sometimes eaten, occasionally damaging to young conifer plantations.

OTHER: Active all year. Soil plugs, pushed into tunnels in snow, settle on surface during thaw and help retard runoff of snowmelt. Burrowing activities aid in mixing and building of forest and meadow soils. Densities may reach 1.6/acre (4/ha).

REFERENCES: Howard and Childs 1959, Ingles 1965, Barnes 1973, Capp 1976.



Mountain Pocket Gopher

M049 (*Thomomys monticola*)

STATUS: No official listed status. Abundant within its range in California.

DISTRIBUTION/HABITAT: Widespread at elevations above 5000 ft (1520 m). Inhabits meadows and open coniferous forests from the ponderosa pine zone to the Sierra Nevada Crest. Prefers grass-forb stages of all habitat types.

SPECIAL HABITAT REQUIREMENTS: Friable soil for burrowing; forest openings.

BREEDING: Mates from May to September, with peak from June to August. Litter size 2 to 8 (average of 3 or 4). Usually one litter per year.

TERRITORY/HOME RANGE: Pocket gophers in Fresno County had territories of up to 0.5 acre (0.2 ha) (Ingles 1952).

FOOD HABITS: Feeds underground on roots, tubers, and bulbs, and aboveground on stems and leaves of forbs and grasses. Shrubs and tree seedlings sometimes eaten, damaging young conifer plantations.

OTHER: Active all year. Soil pushed into tunnels in snow, exposed during spring thaw, helps retard runoff. Burrowing activities aid in mixing and building of soils, and percolation of water.

REFERENCES: Ingles 1949, 1952; Volland 1974.

Little Pocket Mouse

M050 (*Perognathus longimembris*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Limited to extreme southeastern portion of the Sierra Nevada in Kern and Tulare Counties. Found only in open grasslands bordering the Mojave Desert.

SPECIAL HABITAT REQUIREMENTS: Medium or large forest openings.

BREEDING: Breeds from April to September; one or two litters per year. Litter size 3 to 7 (average 4). Nests constructed in underground burrows.

TERRITORY/HOME RANGE: Territory unknown, but most species solitary. Home range averaged 0.8 acre (0.33 ha) in Nevada (O'Farrell 1978).

FOOD HABITS: Feeds primarily on the seeds of annual and perennial grasses and forbs; stores some for later use.

OTHER: Nocturnal. Plug burrow entrances during day. May hibernate in cold weather or when food is scarce.

REFERENCES: Hall 1946, Maza *et al.* 1973.

Great Basin Pocket Mouse

M051 (*Perognathus parvus*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Found only in extreme northeastern portion of Sierra Nevada. Primarily a Great Basin species, but found within ponderosa pine and Jeffrey pine forests in a small area of Shasta County. Prefers grass-forb stages of all plant communities.

SPECIAL HABITAT REQUIREMENTS: Friable soils and open areas.

BREEDING: Breeds from May to July, with peak of activity in June. Litter size 3 to 8 (average 5). Nests usually located in burrows under sagebrush or other shrubs.

TERRITORY/HOME RANGE: Unknown. Most species solitary.

FOOD HABITS: Feeds mostly on seeds of forbs, grasses, and shrubs. Insects eaten and may be principal food at times when abundant. Searches for and gathers food on ground; may store food in nest.

OTHER: Nocturnal; plugs entrances to burrows during day.

REFERENCES: Smith 1942, Hall 1946, Ingles 1965, O'Farrell 1975.

Yellow-eared Pocket Mouse

M052 (*Perognathus xanthonotus*)

STATUS: No official listed status. Common in limited area of Kern Gap.

DISTRIBUTION/HABITAT: Found only in extreme southeastern portion of the western Sierra Nevada, in vicinity of Walker Pass, Kern County. Undoubtedly more wide-ranging along eastern front of the southern Sierra Nevada, but no published records. Found on variety of soil types in open, grassy areas in piñon-juniper and Joshua tree associations. All known specimens collected between 4000 and 5300 ft (1220-1616 m) elevation.

SPECIAL HABITAT REQUIREMENTS: Open areas with friable soils for burrowing.

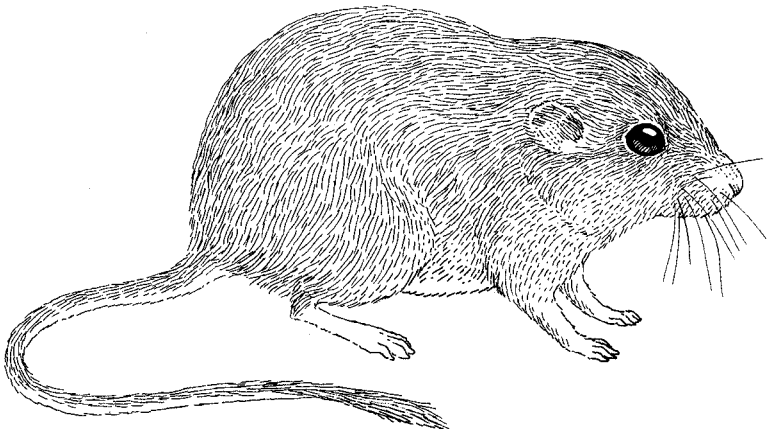
BREEDING: Unknown.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Unknown. In general, granivorous; but many pocket mice, including the closely related Great Basin pocket mouse, supplement diets with insects and young portions of grasses and forbs.

OTHER: Closely related to and possibly conspecific with populations of Great Basin pocket mouse, which ranges farther north along eastern front of the Sierra Nevada.

REFERENCES: Ingles 1965, Williams 1978.



California Pocket Mouse

M053 (*Perognathus californicus*)

STATUS: No official listed status. Common throughout its range in the Sierra Nevada.

DISTRIBUTION/HABITAT: Widespread at lower elevations from El Dorado to Kern Counties. Prefers brushy areas in digger pine-oak and chaparral communities.

SPECIAL HABITAT REQUIREMENTS: Friable soils; shrubs-grass-forbs.

BREEDING: Breeds from April to July. Litter size 2 to 7; born in nests in burrows dug in soft soil.

TERRITORY/HOME RANGE: Unknown. Most species of pocket mice solitary.

FOOD HABITS: Feeds mostly on seeds of annual grasses and forbs. Searches for and gathers food on ground. Some food stored.

OTHER: Nocturnal; becomes torpid during cold weather or when food is scarce.

REFERENCES: Ingles 1965, Tucker 1966, Burt and Grossenheider 1976.

Heermann's Kangaroo Rat

M054 (*Dipodomys heermanni*)

STATUS: No official listed status. Locally common in its range in the Sierra Nevada.

DISTRIBUTION/HABITAT: Widespread at lower elevations. Prefers grass-forb stages of chaparral and oak-savannah. Favors bare ground; populations enhanced by fire and grazing.

SPECIAL HABITAT REQUIREMENTS: Friable soil; forest openings. Loose, dry earth near burrows required for "dusting" to keep fur from becoming excessively oily.

BREEDING: Breeds from February to August, with peak in April. Litter size 2 to 5 (average 4). Two or three litters per year common; females of first litter may have two litters of their own before winter. Nests in burrows that may have up to six entrances.

TERRITORY/HOME RANGE: Unknown. Most kangaroo rats solitary and territorial.

FOOD HABITS: Feeds on seeds, forbs, and green grasses. Some stored. Herbage eaten primarily during winter and spring. Can survive without drinking water.

OTHER: Nocturnal. Populations fluctuate widely from year to year; reach densities up to 6/acre (15/ha).

REFERENCES: Tappe 1941, Fitch 1948a, Patton *et al.* 1976.

California Kangaroo Rat

M055 (*Dipodomys californicus*)

STATUS: No official listed status. Common in suitable habitat within range in the Sierra Nevada.

DISTRIBUTION/HABITAT: Open areas generally below 1310 ft (400 m) in elevation, but found as high as about 4270 ft (1300 m) in dry, open sites in Shasta County. Usually found in grassland habitats, but also in clearings among chaparral on the lower slopes of foothills.

SPECIAL HABITAT REQUIREMENTS: No published information available for the western Sierra Nevada; requires friable soils in open habitats in southern Oregon (Bailey 1936). Soft, fine sands or loose, dry silts required for dust bathing.

BREEDING: In southern Oregon, breeds from April to September (Bailey 1936), but breeding season probably indicated earlier in southern part of range. Two to 4 young per litter.

TERRITORY/HOME RANGE: Unknown. Most kangaroo rats solitary and territorial.

FOOD HABITS: Eats primarily seeds. New growth of grasses and forbs apparently eaten. Berries and seeds of manzanita, ceanothus, rabbit bush, lupine, bur-clover, wild oats, and small tubers (unidentified) recorded from cheek pouches of individuals from Oregon.

OTHER: Considered a race of Heermann's kangaroo rat before report of Patton *et al.* (1976). The two species apparently not closely related. Inferences on biology of California kangaroo rat, based on studies of *D. Heermanni*, may not be valid.

REFERENCES: Bailey 1936, Patton *et al.* 1976.

Beaver

M056 (*Castor canadensis*)

STATUS: No official listed status. May be trapped only during designated season. Common as introduced populations in the Sierra Nevada.

DISTRIBUTION/HABITAT: Scattered colonies found in the central to northern Sierra Nevada, primarily at lower elevations. Restricted to riparian deciduous habitats along streams, ponds, lakes, and wet meadows.

SPECIAL HABITAT REQUIREMENTS: Sufficient amounts of permanent water near food supplies of aspen, willow, alder, or cottonwood.

BREEDING: Breeds from April to July, with peak in May. Litter size 2 to 8 (average 3). Kits born in nests in holes in banks or in lodges built of sticks, twigs, and mud in ponds.

TERRITORY/HOME RANGE: In the MacKenzie Delta of Canada, home ranges as large as 494 acres (200 ha) (Aleksiuk 1968). Defended territories of 25 to 125 acres (10 to 50.5 ha).

FOOD HABITS: Eats cambial layers of aspen, cottonwood, alder, and willow in winter; leaves, grasses, roots, cattails, rules, and pond lillies in summer. Cuts trees and shrubs by gnawing. Stores food underwater for winter.

OTHER: Largest rodent in North America; active all year. Colonies often of family groups of paired adults, yearlings, and young of year. Deep water required where winter freezing occurs. Building of dams creates habitats for many species of wildlife. Dams not built where water deep.

REFERENCES: Tappe 1942, Hall 1960, Ingles 1965.

Western Harvest Mouse

M057 (*Reithrodontomys megalotis*)

STATUS: No official listed status. Rare to common in different areas of the Sierra Nevada.

DISTRIBUTION/HABITAT: Found at all elevations in grass-forb stages of all plant communities.

SPECIAL HABITAT REQUIREMENTS:

BREEDING: Breeds all year at lower elevations, and from early spring to late fall at higher elevations. Litter size 1 to 9 (average 4). Sexually mature at 2 months of age. Can produce five litters per year. Bird-like nests built in stands of grass or weeds and occasionally in woodpecker holes.

TERRITORY/HOME RANGE: Home range along California coast ranged from 0.5 to 1.7 acres (0.2 to 0.7 ha) and averaged 1.0 acre (0.4 ha) (Brant 1962).

FOOD HABITS: Searches for and gathers food on the ground and in bushes. Eats seeds and fruits of grasses, forbs, and shrubs.

OTHER: Nocturnal; often uses runways of meadow mice (voles) when foraging. Densities up to 13/acre (32/ha) recorded.

REFERENCES: Pearson 1960, Brant 1962, Ingles 1965.

California Mouse

M058 (*Peromyscus californicus*)

STATUS: No official listed status. Not common in the Sierra Nevada.

DISTRIBUTION/HABITAT: Found from southern Tuolumne County to Kern County, generally below 5000 ft (1520 m). Usually closely associated with distribution of California bay trees in mesic oak-woodland communities. Favors chaparral and other brushy communities.

SPECIAL HABITAT REQUIREMENTS: Trees-shrubs, rotten logs, litter, stumps, or snags.

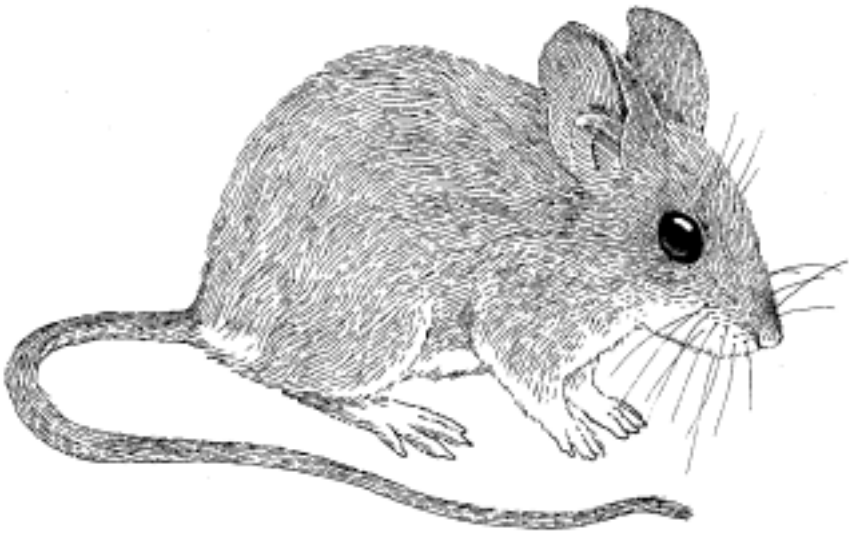
BREEDING: Breeds all year, with peak activity from April to October. Litter size 1 to 3 (average 2). Several litters per year. Gestation 22 to 25 days. Often constructs stick nests, similar to those of woodrats.

TERRITORY/HOME RANGE: California mice in the San Francisco Bay area showed aggressive behavior near the nest (McCabe and Blanchard 1950).

FOOD HABITS: Eats primarily seeds, especially those of California bay tree, toyon berries, acorns, fungi, and insects. Gathers food by searching on the ground and in bushes and trees.

OTHER: Most specialized of the four species of deer mice found in the Sierra Nevada. A good climber; inefficient burrower; may be limited by availability of adequate cover. Densities up to 50/acre (125/ha) recorded in oak-laurel woodlands.

REFERENCES: McCabe and Blanchard 1950; Ingles 1965; Merritt 1974, 1978.



Deer Mouse

M059 (*Peromyscus maniculatus*)

STATUS: No official listed status. Most numerous native mammal in North America; common to abundant in the Sierra Nevada.

DISTRIBUTION/HABITAT: Found throughout the Sierra Nevada in all plant communities and successional stages.

SPECIAL HABITAT REQUIREMENTS:

BREEDING: Breeds from March to December, with peak from May to September. Litters born in grass-lined nests in rotting logs, among rocks, and in burrows; range from 3 to 7 young (average 5). Gestation 22 to 25 days; three or four litters per year.

TERRITORY/HOME RANGE: Home ranges averaged 0.25 to 0.50 acre (0.1 to 0.2 ha) (Storer *et al.* 1944).

FOOD HABITS: Eats primarily seeds, fruits, leaves, insects, and fungi. Insects most important in spring. Gathers food primarily on ground; large caches stored for winter use.

OTHER: An integral part of the forest food chain-serves as prey for raptors, snakes, and predatory mammals. Nocturnal; active all year. Exerts important controls on populations of insect pests of forest trees. Densities can reach 25 to 62/acre (10 to 25/ha). Where reduction of natural predators leads to population buildups, can become serious pests.

REFERENCES: Storer *et al.* 1944, Jameson 1952, King 1968, Sadleir 1974.

Brush Mouse

M060 (*Peromyscus boylii*)

STATUS: No official listed status. Common to abundant in its range in the Sierra Nevada.

DISTRIBUTION/HABITAT: Found throughout the Sierra Nevada, from mixed-conifer belt down through blue oak savannah. Avoids open meadows, grasslands, and areas lacking a substantial shrub understory. Prefers shrub-seedling-sapling stage of all habitat types.

SPECIAL HABITAT REQUIREMENTS: Trees-shrubs; logs, litter, or rocks necessary for excape cover and nesting sites.

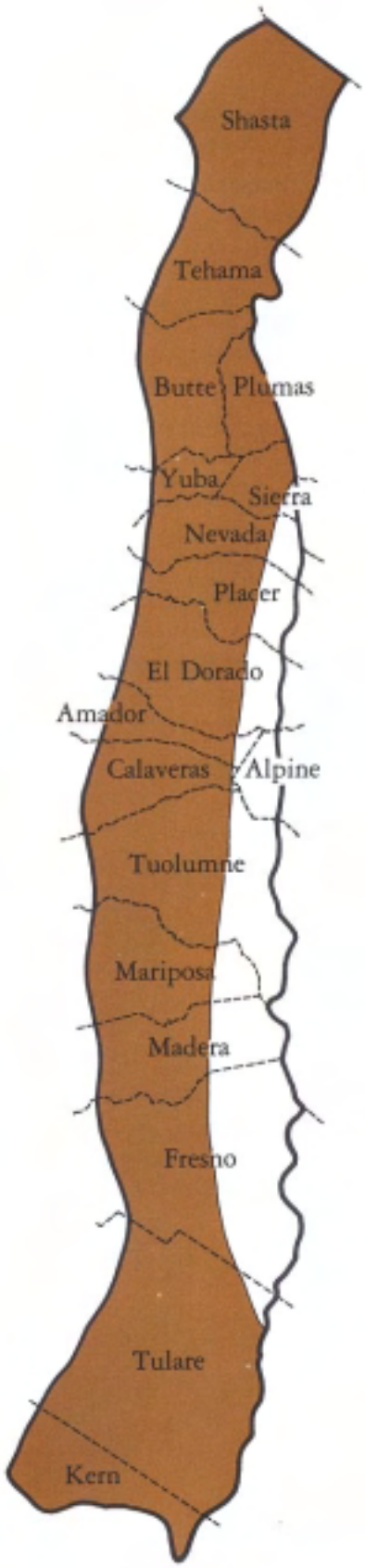
BREEDING: Mates from early April to mid-July, with peak during June. Gestation 22 to 25 days. Litters of 2 to 5 (average 3 or 4) born in grass-lined nests in rotting logs, burrows, or among rocks. One to three litters per year.

TERRITORY/HOME RANGE: Home ranges averaged 0.25 to 0.50 acre (0.1 to 0.2 ha) at Bass Lake, Madera County (Storer *et al.* 1944).

FOOD HABITS: Eats seeds, leaves, fungi, fruits, and insects; forages among ground litter.

OTHER: Nocturnal. Provides part of the diet of raptors, snakes, and many predatory mammals. Active all year; serves as important biological control of some insect pests of forest trees.

REFERENCES: Storer *et al.* 1944, Jameson 1951, Ingles 1965.



Piñon Mouse

M061 (*Peromyscus truei*)

STATUS: No official listed status. Widespread; common throughout range in California.

DISTRIBUTION/HABITAT: Abundant in woodland and brushland habitats below ponderosa pine forests. Generally limited to habitats containing some species of pygmy conifer.

SPECIAL HABITAT REQUIREMENTS: Thickets of brush, or small trees or rocks, or both.

BREEDING: Breeds from March to June. One litter per year; litter size 3 to 6 (average 4). Nests in trash or holes in trees, among brush, or in rock crevices.

TERRITORY/HOME RANGE: In Colorado, mean home range size 1.1 acres (0.45 ha) (Douglas 1969). Territory restricted to vicinity of nest (McCabe and Blanchard 1950).

FOOD HABITS: Forages on ground and in shrubs; sometimes caches food. Eats primarily seeds, insects, acorns, and leaves.

OTHER: Nocturnal; often climbs small trees to forage, nest, and escape from predators. Population densities from 1/acre (2.5/ha) in oak-bay woodlands to 35/acre (60/ha) in chaparral (Merritt 1974).

REFERENCES: McCabe and Blanchard 1950, Lawrence 1966, Douglas 1969, Merritt 1974.

Dusky-footed Woodrat

M062 (*Neotoma fuscipes*)

STATUS: No official listed status. Common throughout range in California.

DISTRIBUTION/HABITAT: Widespread along entire western slope of the Sierra Nevada, from digger pine-oak belt up through mixed-conifer forests. Avoids cultivated land, open grassland, and pure chaparral stands.

SPECIAL HABITAT REQUIREMENTS: Trees-shrubs; litter for building nest houses.

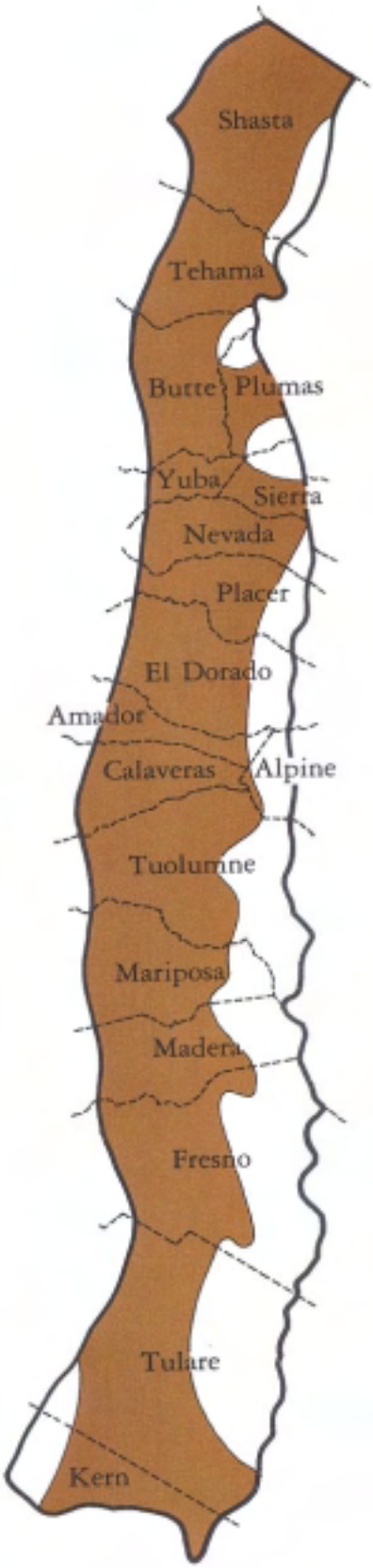
BREEDING: Breeds from March to September, with peak in May and June. Litter size 1 to 4 (average 2 or 3). Large stick nests located either on ground or in trees.

TERRITORY/HOME RANGE: Home ranges not larger than 1.25 acres (0.5 ha) at Hastings Reserve, Monterey County (Linsdale and Tevis 1951).

FOOD HABITATS: Searches ground for acorns, fruits, seeds, grasses, forbs, and fungi. Also eats stems and leaves of shrubs. Climbs trees in search of browse.

OTHER: Active all year. Stick-nest piles may be 6 ft (1.8 m) high and may provide shelter for many other species of animals.

REFERENCES: Vestal 1938, Linsdale and Tevis 1951, Hooven 1959, Cranford 1977.



Bushy-tailed Woodrat

M063 (*Neotoma cinerea*)

STATUS: No official listed status. Common within range in California.

DISTRIBUTION/HABITAT: Widespread in suitable rocky habitat in upper elevation coniferous forests. Prefers early successional stages of Jeffrey pine, red fir, and lodgepole pine forests.

SPECIAL HABITAT REQUIREMENTS: Talus slopes and other rocky areas for nest sites.

BREEDING: Breeds from April to September, with peak in June and July. Average 3 young per litter (range 2 to 4). Rock crevices usually selected as nest sites.

TERRITORY/HOME RANGE: Sedentary; remains close to den year-round.

FOOD HABITS: Gathers fruits, nuts, berries, and fungi; also eats stems and leaves of shrubs and herbs.

OTHER: Primarily nocturnal; active all year. Frequently prey of owls, snakes, and predatory mammals. Nests often constructed of huge piles of litter, dung, bones, and other objects.

REFERENCES: Dixon 1919, Ingles 1965.

Western Red-backed Vole

M064 (*Clethrionomys occidentalis*)

STATUS: No official listed status.

DISTRIBUTION/HABITAT: Restricted to altitudes between 3600 to 6235 ft (1100 to 1900 m). Associated with conifer forests having abundant ground cover and litter. Spotty distribution within this region.

SPECIAL HABITAT REQUIREMENTS: Logs, snags, stumps, or other litter.

BREEDING: Breeds from June to August. Litter size 2 to 4. Nests placed under logs, roots, or boulders.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Eats primarily green vegetation, twigs, seeds, fungi, and insects. Forages on ground and in low shrubs.

OTHER: Primarily nocturnal. Densities may reach 4/acre (10/ha).

REFERENCES: Tevis 1956, Gashwiler 1959, Ingles 1965.

Heather Vole

M065 (*Phenacomys intermedius*)

STATUS: No official listed status. Uncommon within its range.

DISTRIBUTION/HABITAT: Found in alpine and subalpine areas at elevations of 6562 to 9843 ft. (2000 to 3000 m). Associated plants include heathers and huckleberries.

BREEDING: Breeds from June to September. Mean litter size 5 (range 2 to 8). Females breed in first year; males do not breed until second year.

TERRITORY/HOME RANGE: Unknown.

FOOD HABITS: Forages on the ground; caches some food. Eats primarily bark and twigs of willow and other shrubs during winter; herbaceous plants, seeds, berries, and twigs in summer.

OTHER: Builds grass nests under snow in winter.

REFERENCES: Shaw 1924, Edwards 1955, Foster 1961.

Montane Vole

M066 (*Microtus montanus*)

STATUS: No official listed status. Widespread within the Sierra Nevada and common in some locations.

DISTRIBUTION/HABITAT: Ranges in altitude from 4900 to 12,500 ft. (1500 to 3800 m); found in wet areas and mountain meadows.

SPECIAL HABITAT REQUIREMENTS: Grasses or sedges, or both.

BREEDING: Breeds from March to November. More than one litter per year. Mean litter size 5 (range 1 to 9).

TERRITORY/HOME RANGE: Mean home range 0.25 acre (0.1 ha). Size of territory, if any, unknown.

OTHER: Constructs underground burrows and builds grass nests under snow in winter. Does not hibernate. Population size fluctuates from year to year.

REFERENCES: Jenkins 1948, Anderson 1959, Ingles 1965, Negus *et al*. 1977.

California Vole

M067 (*Microtus californicus*)

STATUS: No official listed status. Widespread and common.

DISTRIBUTION/HABITAT: Found throughout most of California, from the Pacific Coast to the Sierra Nevada to an elevation of about 3940 ft (1200 m) in grassy areas.

SPECIAL HABITAT REQUIREMENTS: Grasses or sedges, or both.

BREEDING: Breeds throughout year, reaching peaks whenever food and cover are abundant. Two to five litters each year. Mean litter size 4 (range of 1 to 9).

TERRITORY/HOME RANGE: Mean home range size in Monterey County is 0.37 acre (0.15 ha), ranging from 0.25 to 2.5 acres (0.1 to 1.0 ha) (Fisler 1962). Territorial behavior weak; size of defended area unknown.

FOOD HABITS: Eats primarily leafy portions of grasses, sedges, and herbs. Feeds on ground, clipping grasses and forbs to form network of runways leading from burrow.

OTHER: Presence of voles often may be confirmed by their runways. Runways constructed by clipping grass stems close to surface of ground. Populations cyclic for a period of 3 to 4 years, with peak population densities reaching 200/acre (500/ha). Does not hibernate.

REFERENCES: Fisler 1962, Batzli and Pitelka 1970, Krebs 1970, Gill 1977.

Long-tailed Vole

M068 (*Microtus longicaudus*)

STATUS: No official listed status. Widespread and common in suitable habitats.

DISTRIBUTION/HABITAT: Found throughout California at higher elevations in mixed-conifer, Jeffrey pine, red fir, and lodgepole pine forests.

SPECIAL HABITAT REQUIREMENTS: Grasses, sedges, or forbs.

BREEDING: Breeds from March to November; litter size 1 to 10 (mean of 5). Three or four litters per year. Nests usually in underground burrows.

TERRITORY/HOME RANGE: No information available on territorality. Home range size in El Dorado County varied from 0.25 to 9.9 acres (0.1 to 4 ha) (mean of 0.5 acre [0.2 ha]) (Jenkins 1948).

FOOD HABITS: Forages over ground (activities not confined to runways in summer.). Eats grasses, and grass-like plants, bulbs, and bark of small twigs. Constructs tunnels under snow.

OTHER: Does not hibernate. Populations relatively stable compared with those of other voles. Less restricted to runways and dense grasses than other *Microtus*.

REFERENCES: Jenkins 1948, Ingles 1965, Burt and Grossenheider 1976.

Muskrat

M069 (*Ondatra zibethicus*)

STATUS: No official listed status. Furbearer, protected by closed season during warmer months. Native to northeastern California, but introduced and range expanded in parts of the western Sierra Nevada.

DISTRIBUTION/HABITAT: Locally abundant along western edge of the Sierra Nevada, from Tulare County to Shasta County, with sparser populations at higher elevations. Riparian deciduous areas provide optimum habitat. Found in or near aquatic habitats.

SPECIAL HABITAT REQUIREMENTS: Permanent streams, ponds, or lakes; succulent grasses or sedges, or both.

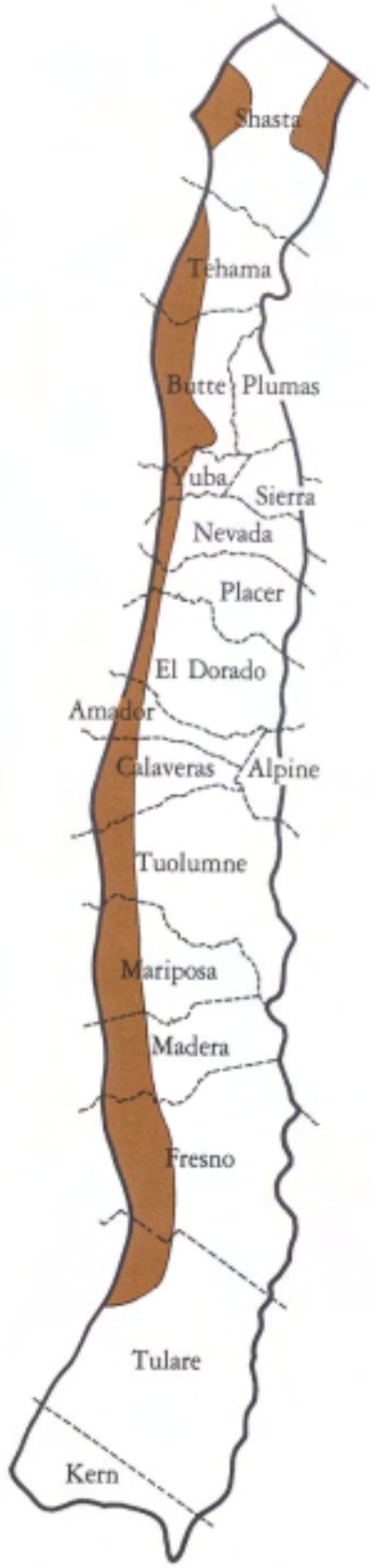
BREEDING: Breeds from March to August, with peak from April to June. Two or three litters per year. Young range from 1 to 11, with mean of 4 to 6. Burrows made in banks, and houses of cattails and rules, located in open water, used as nest sites.

TERRITORY/HOME RANGE: Usually sedentary; home ranges occasionally as large as 500 acres (200 ha). Defends nest area.

FOOD HABITS: Forages on banks of streams and in marshes for cattails and other aquatic plants.

OTHER: Active all year; nocturnal and diurnal.

REFERENCES: Grinnell *et al.* 1937, Errington 1963, Earhart 1969.



Western Jumping Mouse

M070 (*Zapus princeps*)

STATUS: No official listed status. Common locally.

DISTRIBUTION/HABITAT: Found throughout the Sierra Nevada from mixed-conifer zone upward in areas with herbaceous cover along edges of rivers, streams, lakes, meadows, and other wet areas. Found in all successional stages.

SPECIAL HABITAT REQUIREMENTS: Moist soil.

BREEDING: Breeds from June through July. Litter size from 2 to 7 (mean of 5). Nests placed in small depressions in ground and lined with grass; cover of grass or other vegetation placed over depression.

TERRITORY/HOME RANGE: Sedentary. Home range size averages 0.62 acre (0.25 ha) for females and 0.74 acre (0.3 ha) for males. Ranges may extend from 328 to 1300 ft. (100 to 400 m) along grassy banks and wet areas. Densities of 0.4/acre (1/ha) reported (Brown 1967, Myers 1969).

FOOD HABITS: Feeds on seeds of grasses and forbs. Harvests from ground.

OTHER: Hibernates from about September to May.

REFERENCES: Krutzsch 1954b; Brown 1967, 1970.

Porcupine

M071 (*Erethizon dorsatum*)

STATUS: No official listed status. Common over widespread range in the Sierra Nevada, although uncommon in some areas.

DISTRIBUTION/HABITAT: Found throughout the Sierra Nevada from digger pine-oak belt up to the lodgepole pine forests. Avoids chamise chaparrel and oak savannah areas; prefers medium- and old-age conifer stands of less than 70 percent crown closure

SPECIAL HABITAT REQUIREMENTS: Forests containing shrubs and grasses or herbs.

BREEDING: One litter per year born between March and June, with peak from April through May. One young (rarely 2) born among rocks, in caves, hollow logs, snags, or in the burrows of other animals.

TERRITORY/HOME RANGE: Ranges generally smallest in winter, averaging 12.4 acres (5.0 ha). Studies in New York and Minnesota, respectively, provide data on home range sizes (Shapiro 1949, Marshall et al. 1962).

FOOD HABITS: Feeds on herbs, shrubs, fruits, and buds when available in spring and summer, and twigs, leaves, and cambium layer of conifers, especially pines, throughout year. Forages on ground or in shrubs and trees. Clips leaves and twigs, and debarks trees.

OTHER: Known to be preyed upon by mountain lions, bobcats, fishers, and wolverines. Sometimes controlled because of damage to trees. Densities up to 26/mi^2 (10/km^2). Does not hibernate.

REFERENCES: Taylor 1935, Curtis 1941, Woods 1973.

Coyote

M072 (*Canis latrans*)

STATUS: No official listed status. Common resident of the Sierra Nevada.

DISTRIBUTION/HABITAT: Widespread throughout the Sierra Nevada; found in almost every plant community and successional stage. Prefers habitat of grass-forb and shrub-seedling-sapling stages of all plant communities.

SPECIAL HABITAT REQUIREMENTS: Rock outcrops, caves, hollow stumps or logs, or deep, loose soil for den sites.

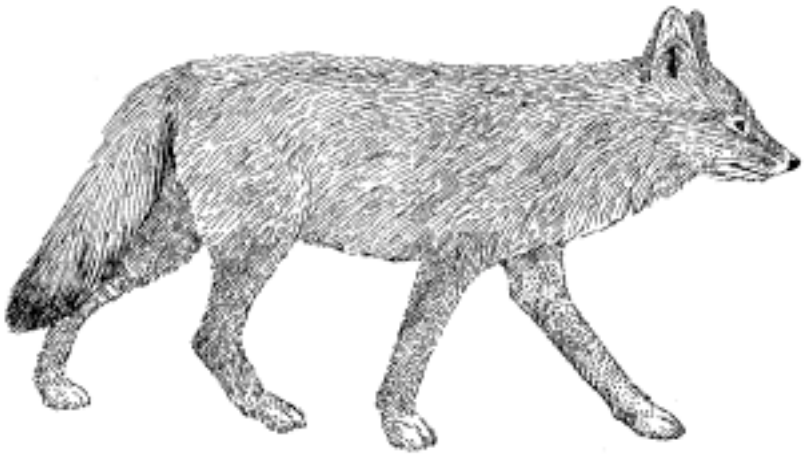
BREEDING: Females begin breeding during their second year and mate from February to May, with peak in April and May. Three to 15 young per litter (average 6 or 7); one litter per year. Gestation 63 days.

TERRITORY/HOME RANGE: In Sierra County, home ranges varied from 2470 to 24,700 acres (1000 to 10,000 ha) (Hawthorne 1972). Movements varied according to season.

FOOD HABITS: Eats mice, ground squirrels, gophers, rabbits, insects, carrion, fruits, and occasionally birds and deer fawns. Prey chased and captured in the open, or dug out of ground.

OTHER: May be active during day or night. Population densities know to vary from 0.02 to 1.2 individuals per 100 acres (40 ha). Two or more coyotes often cooperate while hunting.

REFERENCES: Gier 1968, Hawthorne 1972, Connolly and Longhurst 1975, Bekoff 1977.



Red Fox

M073 (*Vulpes vulpes*)

STATUS: No official listed status. Designated as fully protected furbearer by the California Department of Fish and Game. Populations highly vulnerable to disturbances, especially to overgrazing of alpine meadows.

DISTRIBUTION/HABITAT: Populations scattered in the Sierra Nevada; found primarily in upper elevation forests associated with the Sierra Nevada Crest. During summer, prefers mature Jeffrey pine, lodgepole pine, and red fir forests, interspersed with meadows. In winter, prefers mixed-conifer and ponderosa pine forests.

SPECIAL HABITAT REQUIREMENTS: Rock outcrops, hollow logs and stumps, or loose deep soil needed for den sites; forest openings.

BREEDING: Mates in late January and February; litters of 4 to 6 born in May and June. Dens found in rocky areas, talus, hollow stumps and logs and burrows.

TERRITORY/HOME RANGE: In the Midwest, home ranges were 321 to 5113 acres (130 to 2070 ha) (means of 494 to 1976 acres [200 to 800 ha]) (Ables 1975).

FOOD HABITS: Eats small rodents, squirrels, marmots, woodrats, pikas, rabbits, and insects. Also eats birds and berries. Hunts during day and night; stalks and pounces on prey.

OTHER: Separate population found in Sacramento Valley believed introduced from the East in 1880's. Four color phases recognized: black (rare), silver, red, and cross. *Vulpes* considered subgenus of *Canis* by some (Williams 1979).

REFERENCES: Grinnell *et al.* 1937, Ables 1975, Gray 1975, Schempf and White 1975.

Gray Fox

M074 (*Urocyon cinereoargenteus*)

STATUS: No official listed status. Furbearer, may be taken only during trapping season, with license. Rare to common in widespread range in the Sierra Nevada.

DISTRIBUTION/HABITAT: Found throughout lower foothill elevations; prefers chaparral and shrub-seedling-sapling stages of oak and digger pine woodlands; avoids dense and mature forests.

SPECIAL HABITAT REQUIREMENTS: Caves, hollow logs, snags, or rock crevices in talus for dens.

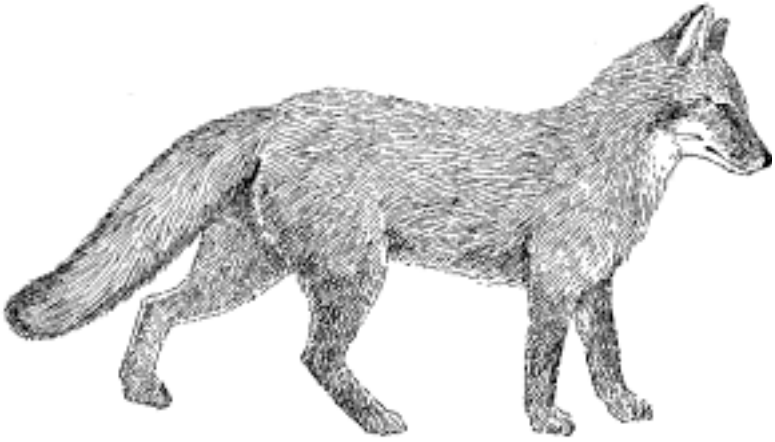
BREEDING: Breeds at 1 year of age and has one litter per year. Two to 7 young per litter are produced (average 3 or 4). Breeds from February to June, with peak from March to May. Dens found in rocky areas, crevices in cliffs, burrows, hollow logs, snags, and even buildings.

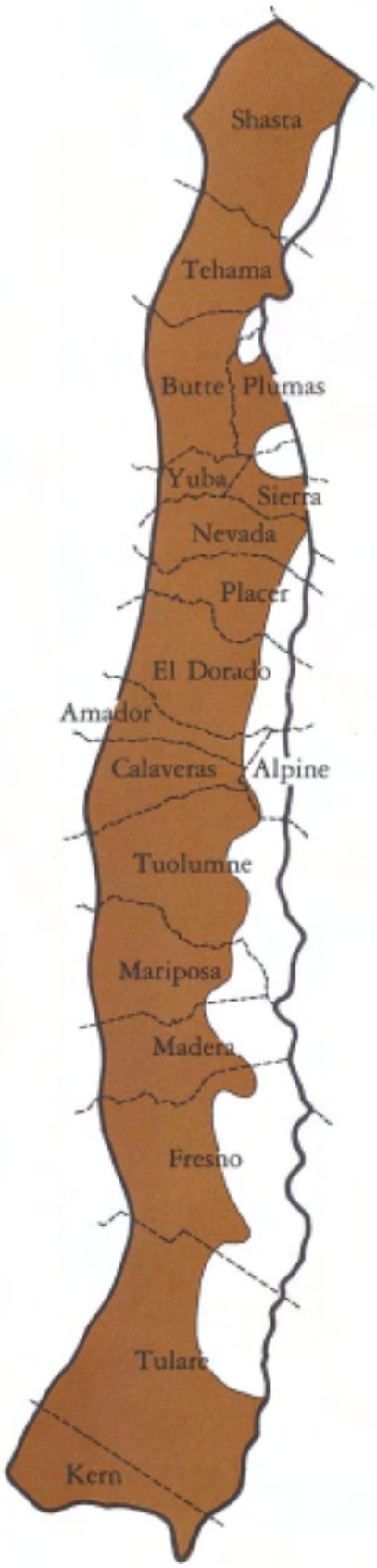
TERRITORY/HOME RANGE: Home ranges probably encompass up to 3.8 mi^2 (10 km^2), but average most likely between 0.2 to 1.2 mi^2 (0.5 to 3.0 km^2).

FOOD HABITS: Diet of mice, gophers, rabbits, woodrats, some birds, insects, fruits, and berries. Main hunting technique involves ambushing prey. Forages on ground and in shrubs; will climb trees.

OTHER: Crepuscular and nocturnal; active all year. Densities may reach 2.6 to 5 animals/mi^2 (1 or 2/km^2). In spring and summer, often associated in family aggregations. *Urocyon* considered conspecific with *Canis* by some (see Williams 1979).

REFERENCES: Grinnell *et at.* 1937, Lord 1961. Trapp and Hallberg 1975.





Black Bear

M075 (*Ursus americanus*)

STATUS: No official listed status. A big game species; common resident of the Sierra Nevada.

DISTRIBUTION/HABITAT: Widespread from digger pine-oak belt to alpine meadows. Prefers mature forests mixed with brushfields and meadows. Various habitats used, depending on availability of food (for example, mast crops and berries).

SPECIAL HABITAT REQUIREMENTS: Windfalls, excavated holes, or uprooted or hollow trees essential for den sites.

BREEDING: Mates in early summer; cubs born 7.5 months later in the winter den. Females first breed at 3 years of age and thereafter every second year. A 3-year-old female usually has 1 cub; twins and triplets common after that age.

TERRITORY/HOME RANGE: Home ranges of bears studied in Trinity County varied from 1235 to 6175 acres (500 to 2500 ha) (Piekielek and Burton 1975).

FOOD HABITS: Omnivorous and opportunistic. Diet of roots, fruits, nuts, grasses, insects, fish, small rodents, and carrion. Often tears apart rotting wood to locate insects and other animals; occasionally climbs trees in search of food.

OTHER: Den for much of winter; do not go into deep torpor. Can be aroused from dormancy at any time if sufficiently disturbed; may be active at any time of year. Suitable den sites may be a limiting factor affecting bear populations.

REFERENCES: Bray and Barnes 1967, Poelker and Hartwell 1973, Piekielek and Burton 1975.

Ringtail

M076 (*Bassariscus astutus*)

STATUS: No official listed status. A fully protected furbearer in California.

DISTRIBUTION/HABITAT: A permanent resident, widely distributed, varying in abundance from common to uncommon. Optimum habitats, provided crown closure less than 40 percent and special habitat requirements met: blue oak savannah, digger pine-oak, chaparral (with less than 50 percent shrub canopy cover), and riparian deciduous forests.

SPECIAL HABITAT REQUIREMENTS: Rock crevices or hollow trees or snags
.

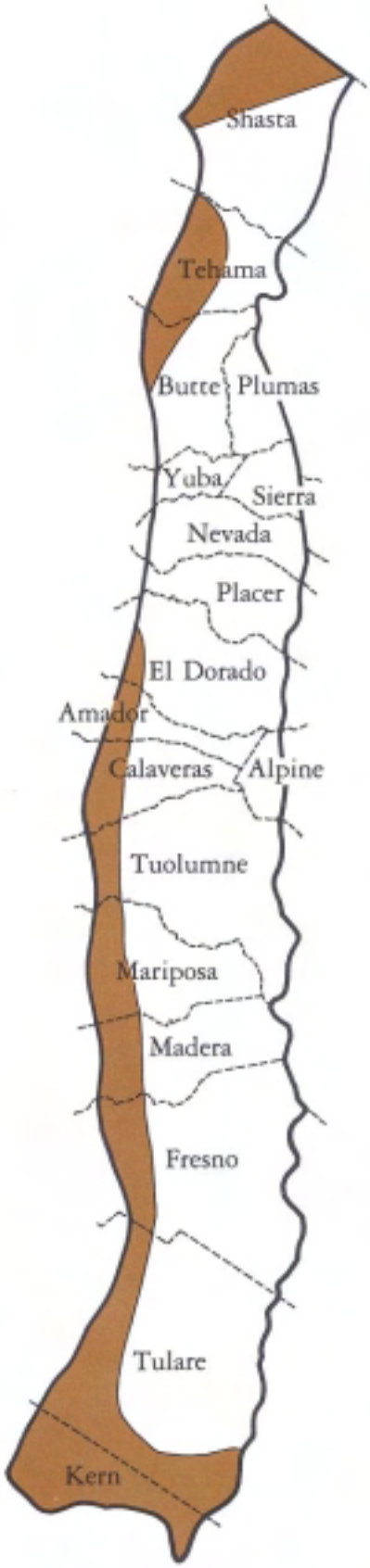
BREEDING: Young born in May and June (usual litter size 3 or 4). One litter per year. Rock piles, caves, abandoned burrows, holes in trees, woodrat nests, and occasionally human dwellings are den sites.

TERRITORY/HOME RANGE: Home ranges in Tuolumne County estimated to be 1250 to 1500 acres (500 to 600 ha) (Grinnell *et al.* 1937). A study in Texas found densities of 15.5/mi^2 (6/km^2) (Taylor 1954). May be colonial.

FOOD HABITS: Forages on ground, among rocks, and in trees. Rodents, especially mice and woodrats, are primary foods, but some birds, reptiles, insects, and fruits also eaten.

OTHER: Nocturnal; active all year. Usually not found more than 0.6 mile (1.0 km) from water.

REFERENCES: Grinnell *et al.* 1937, Taylor 1954, Ingles 1965.



Raccoon

M077 (*Procyon lotor*)

STATUS: No official listed status. Rare to common in different parts of widespread range. A trapping license required to take this forbearer.

DISTRIBUTION/HABITAT: Found in all types of habitats; generally associated with riparian or wetland areas in low to middle elevational zones.

SPECIAL HABITAT REQUIREMENTS: Suitable den sites (hollow trees, logs, snags) and water.

BREEDING: One litter per year; from 2 to 7 young (mean of 4). Young born between March and May. Gestation 63 days. Den sites in holes in trees, under rocks, in hollow logs, in ground burrows, or sometimes in thick vegetation.

TERRITORY/HOME RANGE: Does not seem to defend areas beyond immediate vicinity of den. Home ranges averaged about 250 acres (100 ha) in Ohio (Urban 1970).

FOOD HABITS: In spring, feeds mainly on animals, such as crayfish, fish, frogs, and small mammals; in summer and fall, also eats fruits, seeds, acorns, insects, and other invertebrates. Forages primarily on ground and in shallow water.

OTHER: Often common near human settlements, where densities can average 155 animals/mi^2 (60/km^2). Populations occasionally reach high densities and may need some control.

REFERENCES: Grinnell *et al.* 1937, Stuewer 1943, Ingles 1965.

Marten

M078 (*Marten americana*)

STATUS: No official listed status. A fully protected furbearer; listed as sensitive by the Forest Service's Region 5.

DISTRIBUTION/HABITAT: Widespread; common to rare in different areas. Optimum habitat provided by red fir and lodgepole pine forests with more than 40 percent crown closure and varying amounts of shrub understory. Good habitat in large tree stages of mixed-conifer and Jeffrey pine forests.

SPECIAL HABITAT REQUIREMENTS: Snags; talus.

BREEDING: Mates in summer; young born the next spring. Long gestation results from delayed implantation of embryos. One litter per year; mean litter size 3 (range 1 to 4). Tree or snag cavities, hollow stumps, or rocky slopes with caves are nest sites.

TERRITORY/HOME RANGE: Size of home ranges varied in Montana from 0.03 to 2 mi^2 (0.08 to 5.2 km^2), with a mean of 0.2 to 1. 5 mi^2 (0. 5 to 3:9 km^2) (Hawley and Newby 1957). Size of territory unknown.

FOOD HABITS: Searches for and captures tree squirrels, chipmunks , mice, rabbits, pikas, and occasionally birds. Also eats some fruits. Forages in trees, tree cavities, on rock slopes, and ground. Feeds in summer in meadows and forest openings.

OTHER: Active all year during day and night. May move to lower elevations in winter. Uses cavities in large trees or snags for shelter and nesting.

REFERENCES: Grinnell *et al*. 1937; de Vos 1952; Newberry 1973a; Schempf and White 1975, 1977.

Fisher

M079 (*Marten pennanti*)

STATUS: No official listed status. A fully protected forbearer in California; on the Forest Service's Region 5 sensitive list.

DISTRIBUTION/HABITAT: Uncommon to rare throughout range. Optimum habitat in large tree stages, regardless of crown closure, in red fir and lodgepole pine forests. Good habitat in large tree stages, with more than 70 percent crown closure, in ponderosa pine, mixed-conifer, and Jeffrey pine forests.

SPECIAL HABITAT REQUIREMENTS: Snags or hollow trees for nest sites.

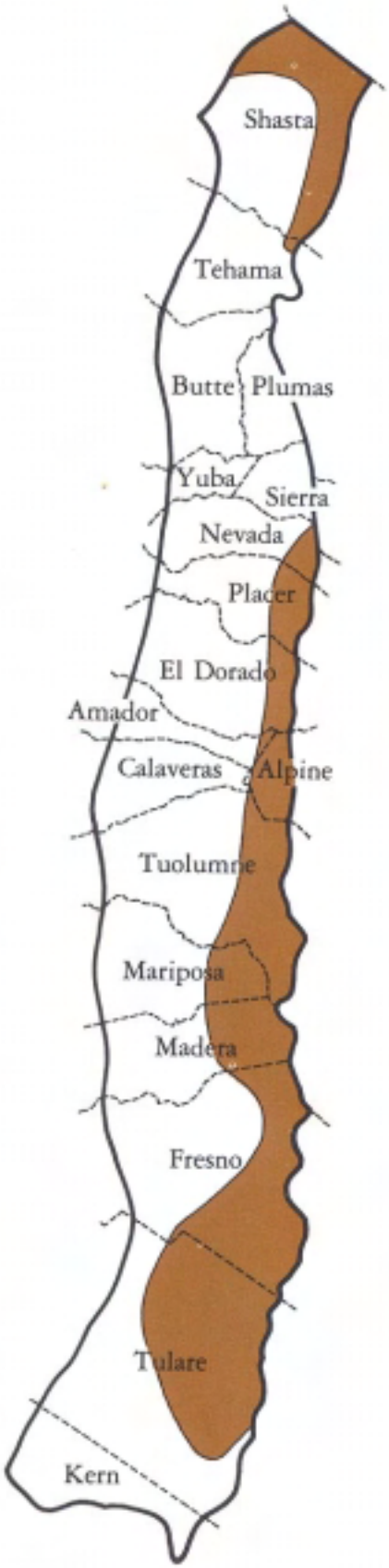
BREEDING: Mates in summer; young born the next spring. Long gestation because of delayed implantation of embryos. Mean litter size 2, range from 1 to 5. One litter per year. Nests in tree holes, rock slides, hollow logs, and snags.

TERRITORY/HOME RANGE: Home ranges in Ontario, Canada estimated to average 10 mi^2 (26 km^2) (de Vos 1952). Size of territory unknown.

FOOD HABITS: Eats squirrels, porcupines, woodrats, mice, marmots, mountain beavers, rabbits, and some birds, insects, and berries. Searches for and pursues prey on the ground, in burrows, and in trees.

OTHER: Active all year during day and night. Cavities in large trees and snags used for shelter and nesting.

REFERENCES: Grinnell *et al.* 1937; de Vos 1952; Schempfand White 1975, 1977.



Ermine

M080 (*Mustela erminea*)

STATUS: No official listed status. A furbearer; capture requires trapping license; limited trapping season. Locally common, but rare in southern part of range.

DISTRIBUTION/HABITAT: Found at higher elevations in the middle and northern Sierra Nevada, in pine and fir forests. Prefers mature, dense timber for breeding and resting; meadows or other open areas for hunting.

SPECIAL HABITAT REQUIREMENTS: Ground litter, logs, stumps, or snags for den sites; forest openings.

BREEDING: Young born in April or May; average 4 young (as many as 13 reported). Dens located among tree roots, under rocks, in hollow logs and snags, and burrows.

TERRITORY/HOME RANGE: Home ranges varied from 25 to 37 acres (10 to 15 ha) (Butt and Grossenheider 1976).

FOOD HABITS: Major food is voles (*Microtus*); also eats mice, shrews, and chipmunks. Small but agile predator, searches for and pursues prey in logs, stumps, dead wood, tunnels, and burrows.

OTHER: Diurnal and nocturnal; active all year. Pelage white in winter. Populations often cyclic, patterned after prey's population cycles. Densities may reach 21/mi^2 (8/km^2) at high point of cycles.

REFERENCES: Hall 1951, Ingles 1965.

Long-tailed Weasel

M081 (*Mustela frenata*)

STATUS: No official listed status. Fairly common over most of the western Sierra Nevada. A furbearer; protected by trapping season.

DISTRIBUTION/HABITAT: Found throughout all habitats from foothill grasslands to alpine meadows. Prefers meadows and other open areas, and young sapling stages of timber.

SPECIAL HABITAT REQUIREMENTS: Suitable den sites (ground cover, logs, stumps, snags, or burrows); forest openings.

BREEDING: Mates in July or August; gestation long (179 days), with young born in April or May. Four to 8 young (average 6) born in burrows under roots, rocks, logs, in hollow trunks of trees and snags, and sometimes in burrows of other animals.

TERRITORY/HOME RANGE: May range over areas from 25 to 125 acres (10 to 50 ha), but average size of home range is 25 to 49 acres (10 to 20 ha) (Quick 1951, Burt and Grossenheider 1976).

FOOD HABITS: Major predator of voles and other mice. Also eats chipmunks, woodrats, gophers, some birds and insects, and vegetation. Obtains prey by searching in logs, stumps, dead wood, tunnels, and burrows.

OTHER: Diurnal and nocturnal; active throughout year. Molts to a white pelage in winter at higher elevations. In good habitat, average densities may be 2.6/mi^2 (1/km^2), and may range as high as 18/mi^2 (7/km^2) in favorable habitats.

REFERENCES: Grinnell *et al.* 1937, Quick 1951, Ingles 1965.

Mink

M082 (*Mustela vison*)

STATUS: No official listed status. Rather uncommon, but widespread. A furbearer, may be taken only during trapping season.

DISTRIBUTION/HABITAT: A variety of habitats, but primarily riparian and wetland.

SPECIAL HABITAT REQUIREMENTS: Permanent source of water, and suitable burrowing sites.

BREEDING: Single litter of 2 to 10 (mean of 5) born between February and May. Most births in April. Gestation from 38 to 85 days, depending on time of mating. Age at first breeding usually 1 year. Den sites include burrows, hollow logs, tree stumps, and rock crevices.

TERRITORY/HOME RANGE: May range over areas up to 1240 acres (500 ha), but home range sizes in Montana varied between 49 and 185 acres (20 and 75 ha) (Mitchell 1961).

FOOD HABITS: Pursues fishes, frogs, crayfish, mice, muskrats, rabbits, and some birds in shallow water and on land, near water.

OTHER: Generally nocturnal; active all year. Relatively tolerant of human activities. Densities may reach 23/mi^2 (9/km^2).

REFERENCES: Grinnell *et al.* 1937, Mitchell 1961, Schempf and White 1974.

Wolverine

M083 (*Gulo gulo*)

STATUS: Listed as Rare by the State of California; a fully protected furbearer. Historically, never present in large numbers; numbers thought to be increasing in California.

DISTRIBUTION/HABITAT: Distribution scattered, mostly near timberline. Optimum habitat in large tree stages with moderate to dense canopy cover in red fir and lodgepole pine forests, and in alpine meadows.

SPECIAL HABITAT REQUIREMENTS: Low human disturbance; rocky areas, caves, logs, or snags as den sites.

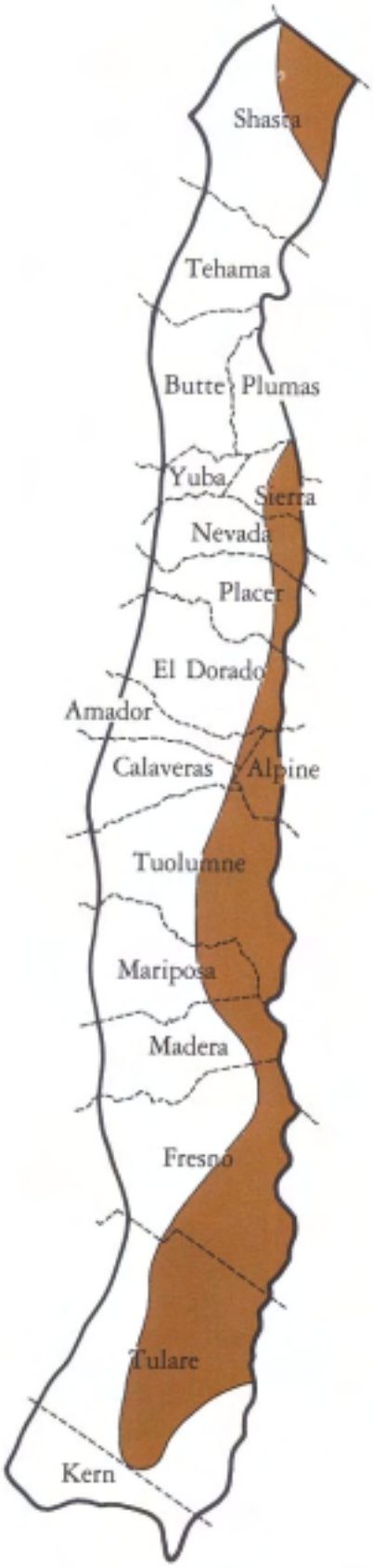
BREEDING: Mates in summer; 1 to 4 young (mean of 3) born the next spring. Long gestation because of delayed implantation of embryos. One litter per year. Excavates burrows under shelving rock or in logs, caves, or snags.

TERRITORY/HOME RANGE: In Montana, distances between locations of 3.1 to 8.1 miles (5 to 13 km) with daily movements of up to 20 miles (32 km) reported (Hornocker and Hash 1976).

FOOD HABITS: A solitary hunter; forages on ground, in trees, burrows, and rock piles for carrion or live prey. Captures prey by digging animal out of its burrow, by pursuit and capture, or by ambush. Prey include marmots, gophers, squirrels, rats, mice, birds, insects, and occasionally ungulates. Fruits also eaten.

OTHER: Active by day and night all year. Often found above timberline. Scant data on home range, movements, and habitat requirements.

REFERENCES: Grinnell *et al.* 1937; Hornocker and Hash 1976; Schempf and White 1975, 1977.



Badger

M084 (*Taxidea taxus*)

STATUS: No official listed status. A furbearer; protected by a closed season. Uncommon, but widely distributed throughout the western Sierra Nevada.

DISTRIBUTION/HABITAT: Grass-forb stages of all habitats except riparian deciduous are optimum.

SPECIAL HABITAT REQUIREMENTS: Open areas with friable soils.

BREEDING: From 1 to 5 young (mean litter size 2) born between February and May. One litter per year. Deep, friable soil for burrow excavation and a dependable supply of rodents.

TERRITORY/HOME RANGE: In Minnesota, home range sizes varied from 100 to 500 acres (40 to 200 ha) (Sargeant and Warner 1972). Territory size unknown; densities of 0.4 to 3.4/mi^2 (0.15 to 1.30/km^2) recorded in northeastern Colorado (Flinders and Hansen 1975).

FOOD HABITS: Digs out or chases ground squirrels, gophers, rats, mice, and chipmunks from burrows. Also eats ground nesting birds and their eggs, lizards, and snakes.

OTHER: Diurnal and nocturnal; spends much time underground.

REFERENCES: Grinnell *et al.* 1937, Sargeant and Warner 1972, Long 1973.

Western Spotted Skunk

M085 (*Spilogale gracilis*)

STATUS: No official listed status. Common locally, but not frequently seen.

DISTRIBUTION/HABITAT: Found in several habitats from annual grasslands through ponderosa pine zone. Prefers chaparral and shrub-seedling-sapling stage of pine-oak woodlands.

SPECIAL HABITAT REQUIREMENTS: Rock outcrops, ground burrows, hollow logs, stumps, snags, or brush piles for den sites.

BREEDING: One litter per year; 4 to 7 young (mean of 6), born in May and June. Dens in any sheltering cavity in rock outcrops, burrows, hollow logs, stumps and snags, and brush piles. Gestation as long as 120 days.

TERRITORY/HOME RANGE: Territoriality not known, but home ranges may vary from 25 to 160 acres (10 to 65 ha) (Burt and Grossenheider 1976).

FOOD HABITS: Eats mostly insects and small rodents, also some reptiles, amphibians, birds, eggs, and plant matter. Food obtained by searching, digging, and climbing. Areas searched include ground surface, stumps, snags, and logs.

OTHER: Usually nocturnal and crepuscular. Does not hibernate, but may den up for several days at a time in winter: den sites, therefore, a key component of habitat. Densities may reach 13/mi^2 (5/km^2).

REFERENCES: Grinnell *et al.* 1937, Crabb 1948, Haley 1975.

Striped Skunk

M086 (*Mephitis mephitis*)

STATUS: No official listed status. Usually common within its range.

DISTRIBUTION/HABITAT: Prefers shrubby areas in annual grasslands, chaparral, and pine-oak woodlands of the Sierra Nevada. Prefers younger successional stages in forests, but may be found in all stages and canopy covers.

SPECIAL HABITAT REQUIREMENTS: Suitable den sites (rock piles, logs, snags, and burrows).

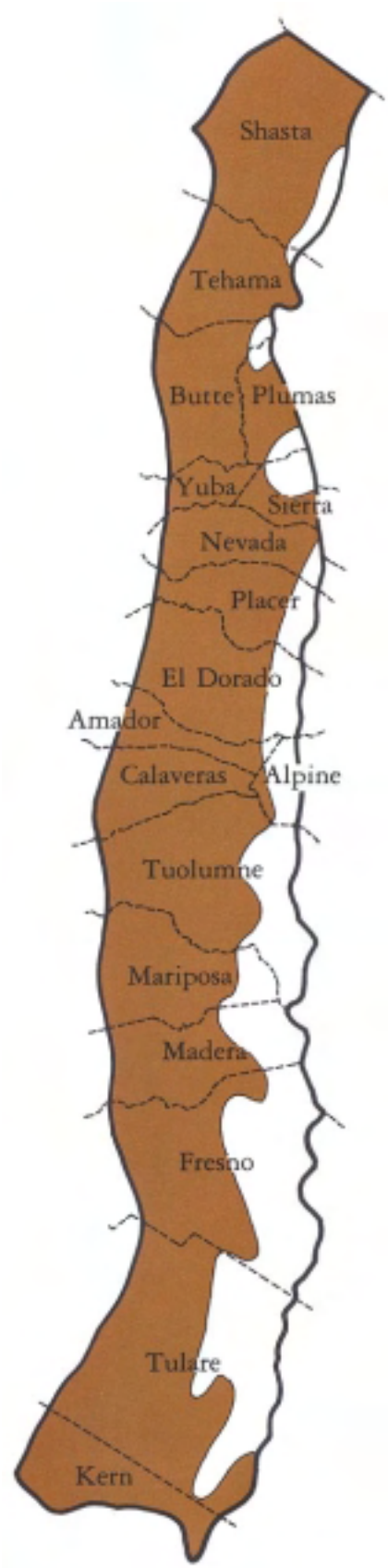
BREEDING: One litter per year; 2 to 10 young (mean of 6), born between April and June (peak in May). Dens located mostly in rock piles; old burrows, hollow logs, stumps, and snags also used.

TERRITORY/HOME RANGE: Home ranges from 74 to 2000 acres (30 to 800 ha), but in Illinois averaged 1000 acres (400 ha) (Storm 1972). Extent of territoriality unknown.

FOOD HABITS: Feeds mainly on large insects and small rodents, but eats some carrion, birds, eggs, and plant matter. Food obtained by digging in soil and searching on ground surface and in hollow stumps, snags, and logs.

OTHER: Chiefly nocturnal and crepuscular. Does not hibernate, but may den up for several days at a time, especially in winter. Densities may reach 259/mi^2 (100/km^2).

REFERENCES: Grinnell *et al.* 1937, Verts 1967, Storm 1972.



River Otter

M087 (*Lutra canadensis*)

STATUS: No official listed status. Usually fairly rare, but individuals may be locally common. Fully protected; may not be hunted.

DISTRIBUTION/HABITAT: Patchy distribution in the Sierra Nevada. Found only near permanent water. Foothill zones preferred to higher regions.

SPECIAL HABITAT REQUIREMENTS: Large streams, lakes, or rivers essential.

BREEDING: Sexually mature at 2 years; males reach peak at from 5 to 7 years. Gestation period as long as 1 year because of delayed implantation of embryos. Single litter of 1 to 5 cubs (mean of 2) born in April or May. Dens located in burrows dug by other animals, cavities among roots of trees, hollow logs, or thickets of vegetation.

TERRITORY/HOME RANGE: May travel up to 15 miles (25 km) following stream or lake edges. Deposits scent (sign posting) to mark territories.

FOOD HABITS: Fish, crayfish, amphibians, aquatic invertebrates, and some mammals. Some trout taken, but slower fishes (for example, sculpins and squawfish) preferred. Most food acquired by pursuit in the water and on nearby banks.

OTHER: Diurnal and nocturnal; active all year. Social animals; may remain in family groups for 8 months.

REFERENCES: Grinnell *et al.* 1937, Liers 1951, Newberry 19736, Haley 1975, Kirk 1975.

Mountain Lion

M088 (*Felis concolor*)

STATUS: No official listed status. Legislative moratorium on hunting this species in effect in California. Estimated population level in California between 1000 and 2500 individuals.

DISTRIBUTION/HABITAT: Widespread, with greatest densities in the central and southern Sierra Nevada. Found throughout all habitat types and successional stages.

SPECIAL HABITAT REQUIREMENTS: Suitable den sites in rock crevices or caves; deer for food.

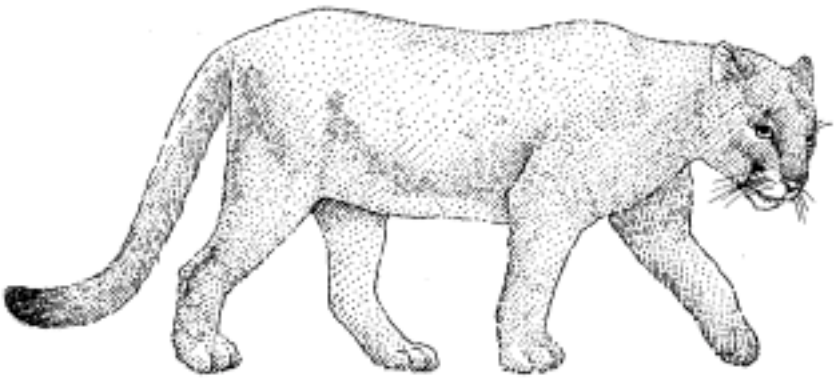
BREEDING: Breeds at any time of the year, with peak in April. Litter size from 1 to 5 (mean of 2). One litter every 2 years. A den required to raise young.

TERRITORY/HOME RANGE: Home ranges may overlap considerably; vary in size from 5 to 20 mi^2 (13 to 52 km^2) for females, and 25 to 96 mi^2 (65 to 250 km^2) for males in the Salmon River drainage, Idaho (Hornocker 1970).

FOOD HABITS: Deer are primary food; also porcupines, rabbits, and rodents. Captures prey by stalking or ambush in areas of rocky or brushy cover.

OTHER: Active all year during day and night. Usually closely associated with deer.

REFERENCES: Hornocker 1970, Sitton and Wallen 1976, Koford 1977.



Bobcat

M089 (*Fells rufus*)

STATUS: No official listed status. A furbearer, may be taken only in designated season.

DISTRIBUTION/HABITAT: Widespread with densities from locally common to uncommon. Found in nearly all habitats and successional stages. Shrub-seedling-sapling stages of woodlands and forests, and all stages of chaparral are optimum habitats.

SPECIAL HABITAT REQUIREMENTS: Rocky areas, caves, or logs.

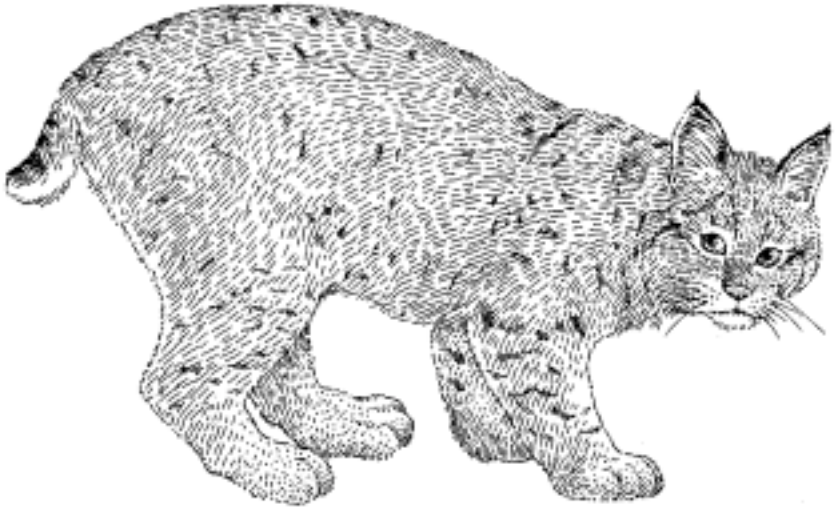
BREEDING: Breeds from January to June, with peak from February to May. Litter size from 1 to 6 (mean of 3); one litter per year. A den site in small caves, crevices, under logs, or dense brush required for raising young.

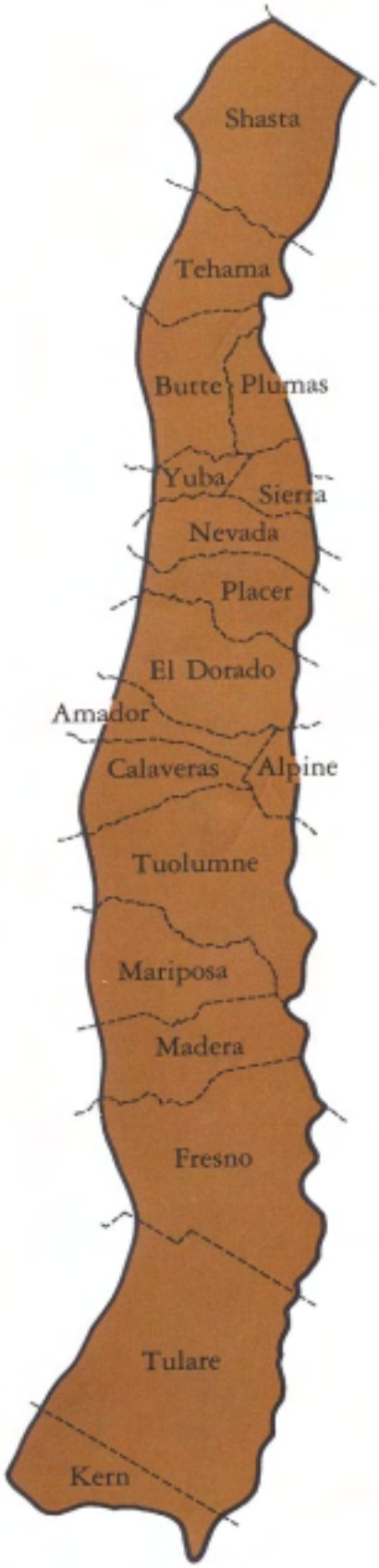
TERRITORY/HOME RANGE: Home range varies in size, depending on prey availability. In Idaho, home ranges were from 1 mi^2 (2.6 km^2) to 41 mi^2 (105 km^2) (Bailey 1974).

FOOD HABITS: Stalks or ambushes prey on ground in brushy and rocky areas. Feeds on rats, mice, squirrels, and other rodents, a few birds, reptiles, and invertebrates.

OTHER: Active all year, during both night and day.

REFERENCES: Young 1958, Provost *et al.* 1973, Bailey 1974.





Wild Horse

M090 (*Equus caballus*)

STATUS: No official listed status. Species fully protected. Only one small population in the Sierra Nevada.

DISTRIBUTION/HABITAT: Found in grassland, chaparral, and oak woodland habitats in Tehama County in the western Sierra Nevada.

SPECIAL HABITAT REQUIREMENTS: Needs grasses and water.

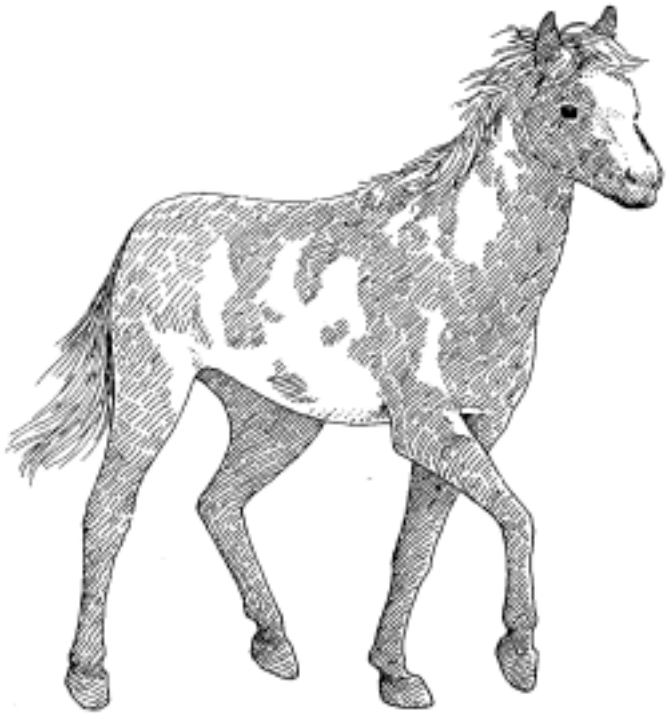
BREEDING: Groups composed of harems-1 dominant stallion, 1 or 2 immature stallions, 1 to 12 adult mares with yearlings and foals, and 1 to 3 immature mares. One foal born to a mare annually, between March and July; majority of births in May. Mares give birth in seclusion, usually during nighttime.

TERRITORY/HOME RANGE: Space not defended; but stallion defends harem. In Wyoming, home ranges varied from 740 to 7910 acres (300 to 3200 ha) (mean of 3710 acres [1500 ha]) (Feist and McCullough 1975).

FOOD HABITS: Grasses, forbs, and shrubs are major foods.

OTHER: Grouped in harems, or in bachelor herds of 1 to 8 or more stallions.

REFERENCES: Feist and McCullough 1975, 1976; Zarn *et al.* 1977.



Wild Pig

M091 (*Sus scrofa*)

STATUS: No official listed status. Introduced from Europe; a big game animal in California.

DISTRIBUTION/HABITAT: Distribution spotty in the Sierra Nevada. Found at lower elevations in annual grasslands and oak woodlands, but mostly in denser stands of chaparral and digger pine-oak forests with canopy closures of at least 50 percent.

SPECIAL HABITAT REQUIREMENTS: Water and shrubs.

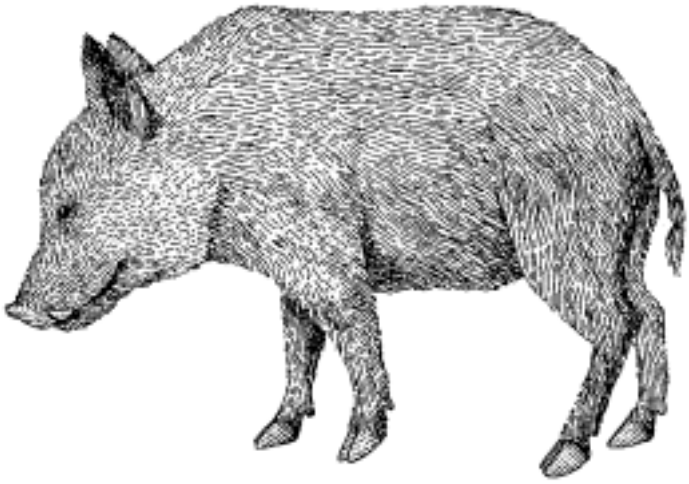
BREEDING: One or two litters per year, up to 11 per litter (mean of 4). Main breeding season from October through June; some may breed at any time of year. Gestation lasts 4 months.

TERRITORY/HOME RANGE: Sedentary; stays with food and water supplies until diminished. Travels from 0.6 to 3 miles (1 to 5 km), and occasionally up to 12 miles (20 km) over several months; not territorial (Pine and Gerdes 1973).

FOOD HABITS: Acorns, berries, fruit, forbs, grasses, cultivated grains, bulbs, roots, earthworms, snakes, lizards, and carrion. Obtains food by rooting in soil, in rotted logs, and by more conventional means.

OTHER: Because of food habits, can be agricultural pests. Densities vary from at least 1.3 to 4/mi^2 (0.5 to 1.5/km^2).

REFERENCES: California Department of Fish and Game 1970, Pine and Gerdes 1973, Nelson and Hooper 1976. Barrett 1978.



Wapiti

M092 (*Cervus elaphus*)

STATUS: No official listed status. Currently protected from hunting, except for occasional hunts by special permit.

DISTRIBUTION/HABITAT: Only population within the western Sierra Nevada introduced into Shasta County. Prefers meadows and grasslands with surrounding cover for shelter.

SPECIAL HABITAT REQUIREMENTS: Dense cover for shelter; grasses.

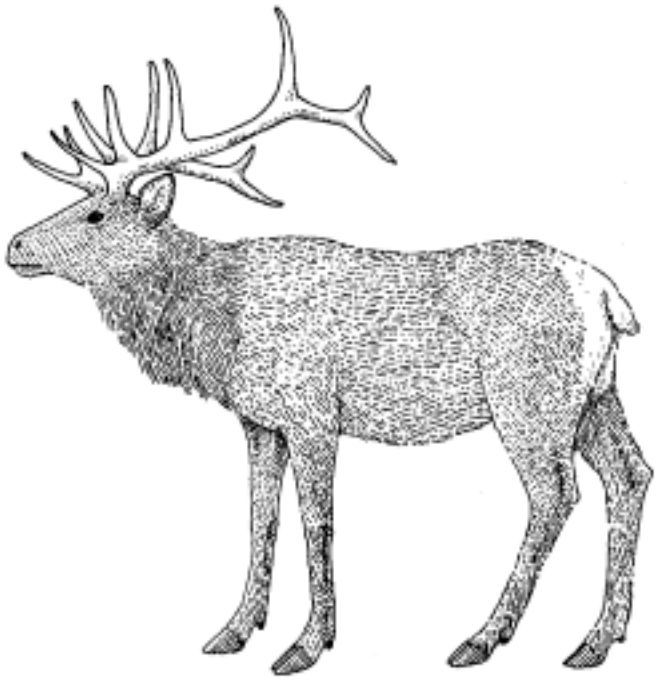
BREEDING: Breeds from April to June, with peak in May. Usually only 1 calf, but twins not uncommon. Cows must be at least 2 years old to give birth, usually in a secluded area with good cover. Gestation 255 days.

TERRITORY/HOME RANGE: Not territorial, but home range up to 20 mi^2 (50 km^2) in the Rocky Mountians (Hieb 1977).

FOOD HABITS: Diet primarily grasses, forbs, browse, and some mast.

OTHER: Population of 50 elk introduced into Shasta County in 1913; now numbers 350.

REFERENCES: Murie 1951, Mackie 1970, Hieb 1977.



Mule Deer

M093 (*Odocoileus hemionus*)

STATUS: No official listed status. A big game species.

DISTRIBUTION/HABITAT: Widespread and common; numbers may be declining. Shrub-seedling-sapling stages of most habitats best.

SPECIAL HABITAT REQUIREMENTS: Trees-shrubs for cover on winter range.

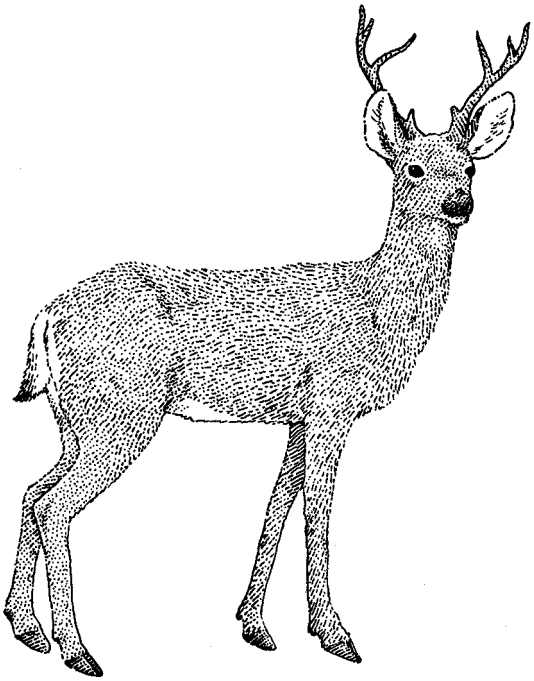
BREEDING: Mates from mid-September through December, with peak in October and November. Usually 1 or 2 (rarely 3) fawns born in May, June, or early July (average 1.5 fawns from each doe). Scattered areas of dense cover near meadows and glades, with nearby lush feed, as fawning sites.

TERRITORY/HOME RANGE: Typical home range covered 0.4 to 1.1 mi^2 (1 to 3 km^2), but varied from 0.2 to 1.9 mi^2 (0.5 to 5.0 km^2) in Lake County (Taber and Dasmann 1958). Statewide, densities of 18 to 60/mi^2 (7 to 23/km^2) typical, with range from 5 to 104/mi^2 (2 to 40/km^2) (Longhurst *et al.* 1952). Not territorial.

FOOD HABITS: Tender new growth of various shrubs-ceanothus, cherry, mountain mahogany, many forbs, and some grasses.

OTHER: Yearlings breed when habitat conditions excellent. Most herds migratory, follow definite routes between summer and winter ranges. May be active at any hour of day.

REFERENCES: Longhurst *et al.* 1952, Taylor 1956, Taber and Dasmann 1958.



Mountain Sheep

M094 (*Ovis canadensis*)

STATUS: Designated Rare by the California Department of Fish and Game. Few isolated populations in the Sierra Nevada; numbers may be decreasing.

DISTRIBUTION/HABITAT: Southern end of the Sierra Nevada in perennial range and alpine meadows in summer; east side of the Sierra Nevada in winter.

SPECIAL HABITAT REQUIREMENTS: Rocky areas adjacent to meadows to protect young lambs; minimal disturbance from humans.

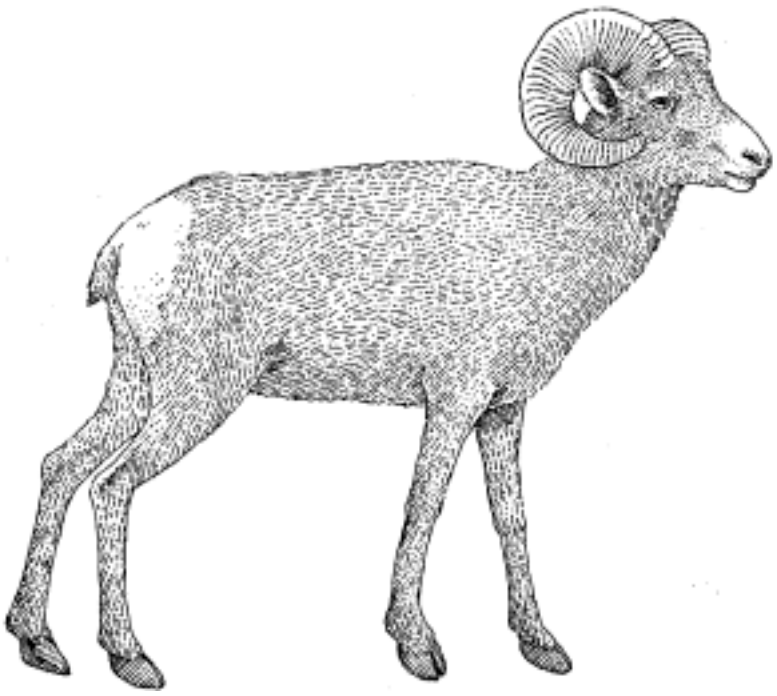
BREEDING: One or two lambs born in May or June in broken, rugged cliffs where protected from predators. Gestation 180 days.

TERRITORY/HOME RANGE: Not territorial; herds may range over 60 to 155 mi^2 (150 to 400 km^2) (Dunaway 1970).

FOOD HABITS: Eats alpine shrubs and forbs in summer; shrubs and perennial grasses in winter.

OTHER: Good quality range critical.

REFERENCES: Packard 1946, McCullough and Schneegas 1966, Dunaway 1970, Geist 1971, Hicks and Elder 1979.



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