



# CALIFORNIA'S WILDLIFE

VOLUME III  
MAMMALS

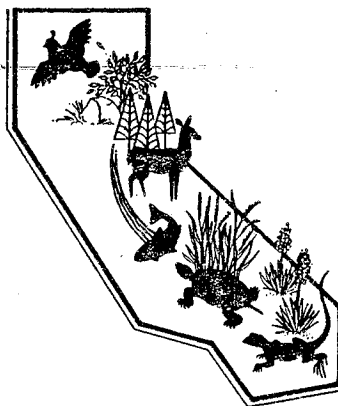
# CALIFORNIA'S WILDLIFE

## VOLUME III

## MAMMALS

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The Resources Agency  
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Sacramento, California

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# M033 Red Bat *Lasiurus borealis*

Family: Vespertilionidae Order: Chiroptera Class: Mammalia Date: November 16, 1984

## DISTRIBUTION, ABUNDANCE, AND SEASONALITY

The red bat is locally common in some areas of California, occurring from Shasta Co. to the Mexican border, west of the Sierra Nevada/Cascade crest and deserts. The winter range includes western lowlands and coastal regions south of San Francisco Bay. There is migration between summer and winter ranges, and migrants may be found outside the normal range. Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. Feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. Not found in desert areas. During warm months, sexes occupy different portions of the range (Williams and Findley 1979).

## SPECIFIC HABITAT REQUIREMENTS

**Feeding:** Feeds on a variety of insects. The most important prey are moths, crickets, beetles, and cicadas. Foraging flight is slow and erratic. Though capable of rapid, direct flight, it is maneuverable. Utilizing echolocation, captures insects in wing and tail membranes. Frequently seen foraging in large concentrations. Foraging may be from high above treetops to nearly ground level. The same foraging route may be followed on many occasions.

**Cover:** Roosts primarily in trees, less often in shrubs. Roost sites often are in edge habitats adjacent to streams, fields, or urban areas. Preferred roost sites are protected from above, open below, and located above dark ground-cover. Such sites minimize water loss. Roosts may be from 0.6–13 m (2–40 ft) above ground level. Females and young may roost in higher sites than males.

**Reproduction:** Young are born and roost in sites with the characteristics described under cover requirements. Family groups roost together. Nursery colonies are found with many females and their young.

**Water:** Requires water.

**Pattern:** Prefers edges or habitat mosaics that have trees for roosting and open areas for foraging.

## SPECIES LIFE HISTORY

**Activity Patterns:** Nocturnal. Hibernates. Begins foraging 1–2 hr after sunset; may forage throughout the night, with a second peak before sunrise. Has been seen at temperatures as low as 7°C (44°F), but generally active above 20°C (68°F). In cold climates spends the winter in hibernation, with arousals on warm winter days.

**Seasonal Movements/Migration:** Migratory. In California, most individuals probably make relatively short migrations between summer and winter ranges. Migrates in the spring (March–May) and autumn (September–October). They may be found in unusual habitats during migration.

**Home Range:** Foraged from 0.5–0.9 km (0.3–0.6 mi) from the day roost in Wisconsin (Jackson 1961). Densities of 2/ha (1/ac) are reported in Iowa (McClure 1942).

**Territory:** Usually solitary, although nursery colonies occasionally are found. Not territorial.

**Reproduction:** Mating occurs in August and September. After delayed fertilization there is an 80–90 day gestation. Births are from late May through early July. Most females bear 2 or 3 young, though the single litter may have 1–5. Lactation lasts 4–6 wk, and the young are capable of flight between 3–6 wk of age. Females may move the young between roost sites.

**Niche:** Found foraging or drinking with many other bat species, but usually does not roost with other species. Red and hoary bats are inversely related in abundance in Iowa (Kunz 1973). Rabies incidence in red bats is relatively high (Shump and Shump 1982). A variety of animals, including owls, hawks, opossums, cats, and jays preys on red bats.

## REFERENCES

Grinnell 1918, McClure 1942, Hamilton 1943, Orr 1950, Davis and Lidicker 1956, Constantine 1959, 1966, Davis 1960, Jackson 1961, Barbour and Davis 1969, Farney and Fleharty 1969, Kunz 1971, 1973, La Val and La Val 1979, Williams and Findley 1979, Brown 1980, Shump and Shump 1982.

# M036 Spotted Bat *Euderma maculatum*

Family: Vespertilionidae Order: Chiroptera Class: Mammalia Date: November 16, 1984

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## DISTRIBUTION, ABUNDANCE, AND SEASONALITY

The spotted bat, considered to be one of North America's rarest mammals (IUCN 1972-78), has been found at a small number of localities, mostly in foothills and mountains and desert regions of southern California (Watkins 1977). Occasionally occurs outside this range. Little is known about the species in California. Habitats occupied range from arid deserts and grasslands through mixed conifer forests. The highest recorded elevation, 3230 m (10,600 ft), is in New Mexico (Reynolds 1981).

## SPECIFIC HABITAT REQUIREMENTS

**Feeding:** Moths are the principal food. There is some evidence of beetle consumption. Feeds in flight, over water, and near the ground, using echolocation to find prey.

**Cover:** Apparently prefers to roost in rock crevices. Occasionally found in caves and buildings. Cliffs provide optimal roosting habitat.

**Reproduction:** Probably uses rock crevices.

**Water:** Drinks water, but has high ability to concentrate urine compared to bats of mesic habitats (Geluso 1978).

**Pattern:** Prefers sites with adequate roosting habitat, such as cliffs. Feeds over water and along washes. May move from forests to lowlands in autumn.

## SPECIES LIFE HISTORY

**Activity Patterns:** Nocturnal. This species is a late flyer; most captures are after midnight. Capable of torpor; hibernates in some areas.

**Seasonal Movements/Migration:** May make local movements in some areas, from high elevations in summer to lower elevations in autumn. Little is known about the California populations; may be yearlong residents, or migratory.

**Home Range:** No data found.

**Territory:** Apparently solitary. Four individuals were observed hibernating together.

**Reproduction:** Mates in autumn. Most births occur before mid-June. Lactating females reported from June to August. One young is produced per year.

**Niche:** May be found foraging with many other species. Appears to be a moth specialist. Rabies has been reported in California (Medeiros and Heckmann 1971).

**Comments:** Apparently rare in California. An increasing number of recent reports have occurred in British Columbia, Utah, and Texas. Solitary, crevice-roosting habits make this species difficult to find.

## REFERENCES

Stager 1957, Handley 1959, Constantine 1961, Easterla 1965, 1971, 1973, Ross 1961, Findley and Jones 1965, Medeiros and Heckmann 1971, Easterla and Whitaker 1972, IUCN 1972-78, Poche and Bailie 1974, Watkins 1977, Geluso 1978, Reynolds 1981.

# M038 Pallid Bat *Antrozous pallidus*

Family: Vespertilionidae Order: Chiroptera Class: Mammalia Date: November 16, 1984

## DISTRIBUTION, ABUNDANCE, AND SEASONALITY

The pallid bat is a locally common species of low elevations in California. It occurs throughout California except for the high Sierra Nevada from Shasta to Kern cos., and the northwestern corner of the state from Del Norte and western Siskiyou cos. to northern Mendocino Co. A wide variety of habitats is occupied, including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests. The species is most common in open, dry habitats with rocky areas for roosting. A yearlong resident in most of the range.

## SPECIFIC HABITAT REQUIREMENTS

**Feeding:** Takes a wide variety of insects and arachnids, including beetles, orthopterans, homopterans, moths, spiders, scorpions, solpugids, and Jerusalem crickets. The stout skull and dentition of this species allows it to take large, hard-shelled prey. Forages over open ground, usually 0.5–2.5 m (1.6–8 ft) above ground level. Foraging flight is slow and maneuverable with frequent dips, swoops, and short glides. Many prey are taken on the ground. Gleaning is frequently used, and a few prey are taken aerially. Can maneuver well on the ground. May carry large prey to a perch or night roost for consumption. Ingestion of fruit in one study (Howell 1980) was a result of feeding on frugivorous moths. Uses echolocation for obstacle avoidance; possibly utilizes prey-produced sounds while foraging.

**Cover:** Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings. Roost must protect bats from high temperatures. Bats move deeper into cover if temperatures rise. Night roosts may be in more open sites, such as porches and open buildings. Few hibernation sites are known, but probably uses rock crevices.

**Reproduction:** Maternity colonies form in early April, and may have a dozen to 100 individuals. Males may roost separately or in the nursery colony.

**Water:** Needs water, but has a good urine-concentrating ability (Geluso 1978).

**Pattern:** Prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging.

## SPECIES LIFE HISTORY

**Activity Patterns:** Nocturnal. Hibernates. Emerges late (30–60 min after sunset), with a major activity peak 90–190 min after sunset, and a second peak shortly before

dawn. Briefer foraging periods occur in autumn, and activity is infrequent below 2°C (35°F). Undergoes shallow torpor daily. Hibernates in winter near the summer day roost (Hermanson and O'Shea 1983).

**Seasonal Movements/Migration:** Makes local movements to hibernation sites. There is a post-breeding season dispersal.

**Home Range:** Forages 0.5–2.5 km (1–3 mi) from day roost. Capable of homing from distances of a few miles, but not further.

**Territory:** Social. Most pallid bats (95%) roost in groups of 20, or more, ranging to 162. Group size is important for metabolic economy and growth of young. Young animals occupy the center of clusters. Individuals out of clusters experience higher rates of weight loss (Trune and Slobodchikoff 1976, 1978).

**Reproduction:** Mates from late October–February. Fertilization is delayed, gestation is 53–71 days. Young are born from April–July, mostly from May–June. The average litter is 2, but females reproducing for the first time usually have 1 young. Litter size is 1–3. The altricial young are weaned in 7 wk, and are observed flying in July and August. Females nurse only their own young. Females and juveniles forage together after weaning. Females mate in first autumn, males in second. Maximum recorded longevity is 9 yr, 1 mo (Cockrum 1973).

**Niche:** This slow-flying, maneuverable species is adapted to feed on large, hard-shelled prey on the ground or in foliage. It is known to roost with a number of other bats, principally *Myotis spp.* and *Tadarida brasiliensis*. Owls and snakes are known predators.

**Comments:** Very sensitive to disturbance of roosting sites. Such sites are essential for metabolic economy, juvenile growth and as night roosts to consume prey.

## REFERENCES

Hatt 1923, Huey 1936, Engler 1943, Orr 1954, Beck and Rudd 1960, Ross 1961, 1967, Cockrum and Cross 1964, Davis 1966, 1969a, 1969b, Licht and Leitner 1967, O'Farrell *et al.* 1967, Barbour and Davis 1969, O'Farrell and Bradley 1970, Easterla and Whitaker 1972, Cockrum 1973, Dietz 1973, Black 1974, Findley *et al.* 1975, Brown 1976, Trune and Slobodchikoff 1976, 1978, Vaughan and O'Shea 1976, O'Shea and Vaughan 1977, Whitaker *et al.* 1977, Geluso 1978, Howell 1980, Freeman 1981, Hermanson and O'Shea 1983.

# M042 Western Mastiff Bat *Eumops perotis*

Family: Molossidae Order: Chiroptera Class: Mammalia

Management Status: California Species of Special Concern Date: March 4, 1982

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## DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Uncommon resident in southeastern San Joaquin Valley and Coastal Ranges from Monterey Co. southward through southern California, from the coast eastward to the Colorado Desert. Occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban.

## SPECIFIC HABITAT REQUIREMENTS

**Feeding:** Catches and feeds on insects in flight. In Arizona, Ross (1961) found that it fed primarily (58%) on night-flying hymenopterous insects. The insects consumed were relatively small, low-flying and weak-flying forms, and he concluded that the bats were feeding from ground to tree-level. However, over rugged terrain these bats typically forage at much greater heights (60 m, 195 ft) above the ground (Kruttsch 1955, Vaughan 1959, Cockrum 1960).

**Cover:** Crevices in cliff faces, high buildings, trees, and tunnels are required for roosting (Howell 1920, Dalquest 1946, Barbour and Davis 1969). When roosting in rock crevices, needs vertical faces to drop off to take flight.

**Reproduction:** Nursery roosts described as tight rock crevices at least 90 cm (35 in) deep and 5 cm (2 in) wide, or crevices in buildings (Howell and Little 1924).

**Water:** No data found.

**Pattern:** Suitable habitat consists of extensive open areas with abundant roost locations provided by crevices in rock outcrops and buildings.

## SPECIES LIFE HISTORY

**Activity Patterns:** Yearlong nocturnal activity. Generally goes into daily torpor from December through February, but usually resumes activity each night to feed, except when temperatures drop below 5°C (41°F), according to Leitner (1966). Nocturnal foraging range may exceed 24 km (15 mi) from roost sites (Vaughan 1959). This bat rarely uses night roosts as do other species (Cockrum 1960). Vaughan (1959) noted that this

bat has an exceptionally long foraging period, up to 6-7 hr night.

**Seasonal Movements/Migration:** Non-migratory. Apparently moves among alternate daytime roosts (Howell 1920, Kruttsch 1955).

**Home Range:** No data found.

**Territory:** No data found. Roosts alone, or in small colonies, usually of fewer than 100 bats (Barbour and Davis 1969).

**Reproduction:** Copulation probably occurs most frequently in early spring (March), when testes of adult males enlarge and descend (Cockrum 1960). Length of gestation period is unknown. In California, parturition may occur from early April through August or September (Kruttsch 1955, Barbour and Davis 1969). Parturition dates vary more for *E. perotis* than for any other bat in the U.S. (Barbour and Davis 1969). Apparently 1 young produced per female each yr. Except for tactile hairs on feet and face, young are born naked, probably with eyes closed (Barbour and Davis 1969). Adults of both sexes can be found together throughout the yr (Howell 1920, Kruttsch 1955). Both sexes of western mastiff bats possess a dermal gland on the throat that produces an odoriferous secretion. This gland, which is highly developed in males, especially during spring, probably is related to reproductive processes (Barbour and Davis 1969).

**Niche:** The largest native bat in the U.S. The wings, as in other members of the Family Molossidae, are distinctively long and narrow. Such morphology allows for rapid, sustained flight, but limits maneuverability (Vaughan 1966). This manner of flight is adaptive to flying in open habitats. Commonly shares roosts with other large bats, such as *Eptesicus fuscus*, *Antrozous pallidus*, and *Tadarida brasiliensis* (Barbour and Davis 1969).

**Comments:** A California Species of Special Concern (Williams 1986).

## REFERENCES

Grinnell 1918, Howell 1920, Howell and Little 1924, Dalquest 1946, Kruttsch 1955, Vaughan 1959, 1966, Cockrum 1960, Ross 1961, Leitner 1966, Barbour and Davis 1969, Williams 1986.

# M114 Salt-marsh Harvest Mouse *Reithrodontomys raviventris*

Family: Cricetidae Order: Rodentia Class: Mammalia

Management Status: Federal Endangered, California Endangered, California Fully Protected.

Date: August 12, 1983

## DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Found only in saline emergent wetlands of San Francisco Bay and its tributaries. The northern subspecies *R. r. halicoetes* is found on Marin Peninsula, through Petaluma, Napa, and Suisun Bay marshes, and in northern Contra Costa Co. The southern subspecies *R. r. raviventris* mostly is restricted to a band extending from San Mateo Co. and Alameda Co. south along both sides of San Francisco Bay to Santa Clara Co., but isolated populations occur in Marin and Contra Costa cos. Pickleweed saline emergent wetland is preferred habitat (Shellhammer 1977), where it may be locally common. Grasslands adjacent to pickleweed marsh are used, but only when new grass growth affords suitable cover in spring and summer months (Fisler 1965, Shellhammer 1982).

## SPECIFIC HABITAT REQUIREMENTS

**Feeding:** Little data, but probably subsists on leaves, seeds, and stems of plants found in the salt marsh. Much seasonal variation in stomach contents (Fisler 1965). In winter, fresh green grasses preferred. The rest of the year, pickleweed and saltgrass are main food sources. The herbivorous diet of *R. raviventris* in comparison with *R. megalotis* is reflected in a significantly greater intestine length (Fisler 1965).

**Cover:** Uses pickleweed as primary habitat. Value of pickleweed increases with depth, density, and degree of intermixing with fat hen and alkali heath (Shellhammer 1982).

**Reproduction:** Does not burrow. Nests of grass and sedge built on ground associated with *R. r. halicoetes*, and are similar to those constructed by *R. megalotis*. *R. r. raviventris* does little nest building, but may construct loosely organized structures of dry grasses (Fisler 1965, Shellhammer 1982).

**Water:** Free water is required, but both subspecies are capable of drinking salt water. *R. r. halicoetes* is capable of drinking pure sea water (Fisler 1963, Haines 1964), but *R. r. raviventris* selects water with salinities between fresh and sea water, leaning toward sea water (Fisler 1963, 1965). The differences probably relate to the normal salinity levels in the salt water available to natural populations.

**Pattern:** Pickleweed is the primary habitat, but non-submerged, salt-tolerant vegetation for escape during highest tides is essential (Shellhammer *et al.* 1982).

## SPECIES LIFE HISTORY

**Activity Patterns:** Primarily nocturnal, but 15–20% of daily activity recorded under laboratory conditions was be-

tween sunrise and sunset (Fisler 1965). Most of this daylight activity occurred in the afternoon. *R. r. raviventris* can become torpid, particularly in the early morning hours. Neither *R. r. halicoetes* nor the closely related *R. megalotis* shares this characteristic (Fisler 1965).

**Seasonal Movements/Migration:** Some movement of individuals from pickleweed marsh to higher grassland occurs in the spring and summer, or otherwise as plant cover affords escape from predators. These movements are likely to occur daily and do not represent complete shifts in habitats. The movement of individuals between marshes does not seem to occur (Shellhammer 1977).

**Home Range:** No data found.

**Territory:** No data found.

**Reproduction:** *R. r. raviventris* breeds mostly from March to November. *R. r. halicoetes* breeds from May to November (Fisler 1965). Litter size averages about 4 young for both forms. *R. r. raviventris* may produce 2 litters each year, though the shorter breeding season for *R. r. halicoetes* suggests this form has one litter per yr (Fisler 1965). No data on weaning or sexual maturity.

**Niche:** Distribution and abundance dependent on availability of dense pickleweed salt marsh. Both subspecies occur with the closely-related, ubiquitous and abundant western harvest mouse, at upper edges of marshes, and in marginal areas. Both may be found in pickleweed, though *R. raviventris* excludes or replaces *R. megalotis* in denser stands. The abundance of *R. megalotis* increases with increasing predominance of annual and perennial grassland. Predators include owls (Johnston 1956), hawks, gulls, weasels, and other mammalian predators.

**Comments:** The endangered status of *R. raviventris* largely results from commercial and residential development around San Francisco Bay, causing loss of pickleweed habitat. Marsh loss is attributed mainly to filling, diking, subsidence, and changes in salinity (Shellhammer 1982). *R. raviventris* has been especially affected by habitat loss. Vegetational changes over the last 3 decades, notably the increase of bulrush and saltgrass, and the decline in pickleweed, attributed to changes in salinity of the marshes, brought about by increasing volumes of sewage water, as well as subsidence-related causes (Wondolleck *et al.* 1976, Shellhammer 1977).

## REFERENCES

Johnston 1956, Fisler 1963, 1965, Haines 1964, Wondolleck *et al.* 1976, Shellhammer 1977, 1982, Zetterquist 1978, Shellhammer *et al.* 1982.

# M155 Fisher *Martes pennanti*

**Family:** Mustelidae **Order:** Carnivora **Class:** Mammalia

**Management Status:** California Species of Special Concern, Forest Service Sensitive

**Date:** March 4, 1982

## DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Uncommon permanent resident of the Sierra Nevada, Cascades, and Klamath Mts.; also found in a few areas in the North Coast Ranges (Grinnell *et al.* 1937). Occurs in intermediate to large-tree stages of coniferous forests and deciduous-riparian habitats with a high percent canopy closure (Schempf and White 1977).

## SPECIFIC HABITAT REQUIREMENTS

**Feeding:** Fishers are largely carnivorous. Eat rabbits and hares, especially snowshoe hares, and rodents (mice, porcupines, squirrels, mountain beavers), shrews, birds, fruits, and carrion. Prey on ground surface and in trees. Fishers are opportunistic; they search for small mammals, and pounce on, or chase prey. Also dig out prey. Grenfell (1979) reported that the most important food item in the stomachs of 8 fishers was false truffle, a subterranean fungus.

**Cover:** Fishers use cavities in large trees, snags, logs, rock areas, or shelters provided by slash or brush piles. Dense, mature stands of trees also provide cover, especially in winter.

**Reproduction:** Fishers den in a variety of protected cavities, brush piles, logs, or under an upturned tree. Hollow logs, trees, and snags are especially important.

**Water:** May require drinking water.

**Pattern:** Suitable habitat for fishers consists of large areas of mature, dense forest stands with snags and greater than 50% canopy closure.

## SPECIES LIFE HISTORY

**Activity Patterns:** Active yearlong. Mostly nocturnal and crepuscular, some diurnal activity.

**Seasonal Movements/Migration:** Non-migratory.

**Home Range:** In Ontario, Canada, home ranges were estimated at 38 km<sup>2</sup> (10 mi<sup>2</sup>) (deVos 1952). In Massachusetts, home ranges averaged 19.2 km<sup>2</sup> (7.4 mi<sup>2</sup>), and varied from 6.6 to 39.6 km<sup>2</sup> (2.5 to 15.3 mi<sup>2</sup>). Home ranges usually smaller in summer than in winter (Kelly 1977). The long axis of home range tends to parallel valleys. Home ranges of 3 adult males in Trinity Co. averaged 14 km<sup>2</sup> (5.4 mi<sup>2</sup>) (Buck *et al.* 1979). The fishers in Trinity Co. appeared to have regularly used travel routes within the home ranges (Buck *et al.* 1979).

**Territory:** Fishers appear to be territorial (Powell 1981b).

**Reproduction:** Females breed a few days after parturition; implantation of the embryo is delayed until the following winter. Post-implantation active growth lasts about 30 days (Powell 1981b). Young born February through May. Litter size averages 2.7, and ranges from 1-4, rarely 5. Young remain with female until late autumn. Males and females become sexually mature in the first or second yr (Powell 1982).

**Niche:** Few animals prey on fishers other than humans. Fishers are one of the few specialized predators on porcupines. Have been transplanted into Oregon, West Virginia, and other states for porcupine control (Hooven 1971, Powell 1981a, 1981b, 1982). Long-term studies suggest that fishers predominantly are terrestrial (Powell 1981b).

**Comments:** A California Species of Special Concern (Williams 1986).

## REFERENCES

Grinnell *et al.* 1937, deVos 1952, Coulter 1966, Hooven 1971, Kelly 1977, Clem 1975, Powell 1973, 1981a, 1981b, 1982, Schempf and White 1974, 1977, Buck *et al.* 1979, Grenfell 1979, Williams 1986.



# M160 Badger *Taxidea taxus*

Family: Mustelidae Order: Carnivora Class: Mammalia

Management Status: California Species of Special Concern, Harvest Species.

Date: February 10, 1982

## DISTRIBUTION, ABUNDANCE, AND SEASONALITY

Uncommon, permanent resident found throughout most of the state, except in the northern North Coast area (Grinnell *et al.* 1937). Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.

## SPECIFIC HABITAT REQUIREMENTS

**Feeding:** Badgers are carnivorous. They eat fossorial rodents: rats, mice, chipmunks, and especially ground squirrels and pocket gophers. Also eat some reptiles, insects, earthworms, eggs, birds, and carrion. Diet shifts seasonally and yearly in response to availability of prey.

**Cover:** Badgers dig burrows in friable soil for cover. Frequently reuse old burrows, although some may dig a new den each night, especially in summer (Messick and Hornocker 1981).

**Reproduction:** Young are born in burrows dug in relatively dry, often sandy, soil, usually in areas with sparse overstory cover.

**Water:** No data found.

**Pattern:** Suitable habitat for badgers is characterized by herbaceous, shrub, and open stages of most habitats with dry, friable soils.

## SPECIES LIFE HISTORY

**Activity Patterns:** Active yearlong. Nocturnal and diurnal. Variable periods of torpor in winter (Long 1973).

**Seasonal Movements/Migration:** Non-migratory. Area used during winter smaller than at other seasons.

**Home Range:** Home range estimates vary geographically and seasonally. In Utah, Lindzey (1978) found fall and winter home ranges of 5 females varied from 137-304 ha (338-751 ac). Those of 2 males varied from 537-627 ha (1327-1549 ac). In Idaho, Messick and Hornocker (1981) found that home ranges of 7 adult females and 3 males averaged 160 ha (400 ac) and 240 ha (600 ac), respectively.

**Territory:** Little information available. Family members may share the territory of a female (Seton 1929). However, males generally are solitary, except in the breeding season (Messick and Hornocker 1981).

**Reproduction:** Badgers mate in summer and early fall. Gestation period varies from 183-265 days, including delayed implantation. Embryo implants about 45 days prior to birth. An average litter of 2-3 (range = 2-5) born mostly in March and April (Long 1973). A few females may breed in first yr. Males not mature sexually until second yr. Badgers 11-15 yr. old have been reported (Flower 1931, Jackson 1961, Long 1973, Messick and Hornocker 1981).

**Niche:** Badgers are highly specialized fossorial mustelids that help control small mammal populations. Somewhat tolerant of human activities, however, predator control using indiscriminate trapping and persistent poisons causes extensive losses.

**Comments:** A California Species of Special Concern (Williams 1986).

## REFERENCES

Seton 1929, Flower 1931, Grinnell *et al.* 1937, Hall 1946, Jackson 1961, Seymour 1968, Long 1973, Newberry 1973a, Lindzey 1978, Messick and Hornocker 1981, Williams 1986.