

**Red bat, *Lasiurus blossevillii***  
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**Description:** *Lasiurus blossevillii* is a medium sized bat with a short rostrum, short rounded ears, and a heavily furred interfemoral membrane (Barbour and Davis 1969, Shump and Shump 1982). It can generally be distinguished by the brick-red color of its fur. The color, however, can vary from intense red to yellow-brown. It can, nevertheless, be distinguished from the other *Lasiurus* species with which it could be most readily confused based on size. *L. blossevillii* has a forearm of 35-45 mm. *Lasiurus xanthinus*, which generally has more yellow fur, is larger, with a forearm of 45-48 mm. *Lasiurus cinereus* is considerably larger, with a forearm of 46-58 mm. The pelage of *L. cinereus* is generally dark grey, with frosted white tips, a yellow face, and ears rimmed in black. Although *L. blossevillii* can appear somewhat frosted and have a yellowish tinge to its fur, it is never as dark, nor as frosted, as *L. cinereus*.

**Taxonomic Remarks:** The red bat is generally included in the genus *Lasiurus* (Family Vespertilionidae) as *L. borealis* (Koopman 1993). Hall (1981), who reverted to an earlier generic name, *Nycteris*, mapped the distribution of six subspecies, with all California animals referred to *N. borealis teliotis*. Genetic studies (Baker et al. 1988, Morales and Bickham 1995) support the separation of red bats into four separate species, with all animals in the western United States, Mexico, Central America, and South America referable to *L. blossevillii*.

**Distribution:** *L. blossevillii* has a very broad distribution reaching from southern British Columbia, through much of the western United States, through Mexico and Central America, reaching as far south in South America as Argentina and Chile (Hall 1981, Shump and Shump 1982).

In California, the majority of records are from the coastal areas from the San Francisco Bay area south, plus the Central Valley and surrounding foothills, with a limited number of records from southern California, extending as far east as western Riverside and central San Diego counties. Red bats have been captured or seen on three occasions on Santa Cruz Island (P. Brown pers. comm.). There are no records from the lower desert, from higher elevations in any of the mountain ranges, nor from the east side of the Sierra Nevada. Red bats have been captured in Nevada, however, just a mile east of California and the White Mountains (J. Szwczak pers. comm.). Currently, the most northern locality in California is from the upper Sacramento River near Dunsmuir, Siskiyou County (Rainey and Pierson 1996).

There are multiple records for red bats in the San Francisco Bay area in the spring, fall, and winter months, including records from Golden Gate Park in San Francisco (Grinnell 1918, Orr 1950, Constantine 1959). Although reproductive females and young do occur in coastal California in the summer (Constantine 1959, C. Scott and P. Winters pers. comm.), they are more likely to be located inland, particularly in the Central Valley, where they can find the desired summer temperatures of 80-95°F (Constantine 1959). Immature animals from several localities in eastern Contra Costa County have been turned in to rehabilitation facilities during June and July in recent years (C. Scott pers. comm.).

**Life History:** Reproductive patterns in red bats are summarized by Shump and Shump (1982). Whereas most vespertilionid bats have a single young per year, red bats have litters of up to five. No information is available on *L. blossevillii*, but *L. borealis* has a mean litter size of 3.2 young (Shump and Shump 1982). In the midwest, *L. borealis* are born around the middle of June. In California, two young about 2 weeks old were found in Contra Costa County on July 1 (C. Scott pers. comm.). Young are born at about 0.5 g. each, and can fly at 3-6 weeks of age. This species mates in the late

summer or early fall. Females become pregnant in spring and have a pregnancy of 80-90 days.

Red bats forage on a number of insect taxa, flying at both canopy height and low over the ground (Shump and Shump 1982). The limited dietary information has all come from *L. borealis* in the eastern U.S. No information is available on the diet of *L. blossevillii* in California. In a study conducted in Indiana, Whitaker (1972) found that red bats ate 26% moths. Other studies (summarized in Shump and Shump 1982) have also found Homoptera, Coleoptera, Hymenoptera, and Diptera in the diet.

Red bats are migratory, and there are records of them on the east coast being found a considerable distance out to sea (Norton 1921, Carter 1950). The most striking account of migration comes from Mearns (1898), who describes "great flights of them the whole day."

**Habitat:** *L. blossevillii* roosts in the foliage of trees and shrubs, predominantly in edge habitats adjacent to streams and open fields (Shump and Shump 1982). Constantine (1959) found the species roosting in fruit trees (apricot and orange) in the Central Valley of California. An analysis of these roost sites by Constantine (1959) suggested the bats selected trees that were well-pruned and 4.5-6.0 m in height, with roost sites typically located 2.6 m above the ground. The trees had rigid branches and short stems which resisted the wind, a spreading canopy, and lacked lower limbs that might provide perches for predatory birds. The roosting site was usually dark, well sheltered from above, with open exposure for free flight below. Dalquest (1945) noted daytime roosting sites for *L. blossevillii* in tamarisk windbreaks along irrigation ditches in California's Central Valley. Although *L. borealis* has been reported roosting in caves in Kentucky and Missouri (Quay and Miller 1955, Myers 1960), this behavior has never been seen in *L. blossevillii*.

Although they have been observed foraging around lights in urban areas (e.g., Shump and Shump 1982), Constantine (1959) found red bats primarily in areas distant from human habitation. In Canada, Furlonger et al. (1987) found they foraged around lights in towns and rural areas, more than in urban areas. The animals studied by Orr (1950) in Golden Gate Park in San Francisco were roosting in *Sparmannia africana*, a large-leafed, exotic, evergreen plant commonly planted in gardens in the Bay area. On Santa Cruz Island, red bats were observed foraging among native oaks and ironwood trees (Brown et al. 1994). Winter behavior of this species is not well understood. Saugey et al. (1994) recently documented, through a radiotracking study in Arkansas, that when temperatures dropped, some individuals moved from trees to hibernate in the leaf litter. Red bats apparently arouse from hibernation on warm days to feed (Shump and Shump 1982), and Orr's observations suggest that this species forages periodically during the winter in the San Francisco Bay area (Orr 1950).

**Status:** Class II. The status of this species in California is not currently known, although it occurs relatively rarely in net captures, in Department of Health Services records, and at rehabilitation facilities (D. Constantine pers. comm., C. Scott pers. comm., W. Rainey and E. Pierson unpubl. records)

Given what is known of the distribution and habitat needs of this species in California, it is possible to identify a number of threats, and hypothesize population declines and extirpations in certain areas, as follows:

**Predation:** Predation, other than human disturbance, is rarely an issue for bat species which seek cryptic and protected diurnal retreats (e.g., crevices). It can, however, be a factor for the foliage dwelling lasiurines. There are a number of reports in the literature of red bats being attacked and

killed by birds, particularly jays (Allan 1947, Downing and Baldwin 1961, Wilks and Laughlin 1961, Elwell 1962, Hoffmeister and Downes 1964, Horsley 1991). There is also a record of red bats being eaten by an opossum (*Didelphis virginiana*) (Sperry 1933). Since both jays and opossums thrive as commensals with humans, it is likely that predation from these species has increased for red bats. Additionally, a significant proportion of the red bats turned in to rehabilitation facilities has been retrieved from domestic cats.

**Agricultural Conversion of Riparian Zones:** Past records have shown a close association between red bats and riparian corridors. Particularly important are those associated with the major river systems that drain the Sierra Nevada. Agricultural conversion has led to significant loss of riparian corridors in the Central Valley, and thus has reduced both roosting and foraging habitat for *L. blossevillei*.

**Storage Reservoirs:** Storage reservoirs occur on most of the major rivers draining the Sierra Nevada, and are particularly prevalent at lower elevations, at ca. 200-600 m. A significant amount of riparian vegetation has been submerged by these reservoirs. Mist netting surveys in the Los Banos Creek drainage, at the site of a proposed reservoir, documented an association between *L. blossevillei* and the large stand of mature sycamores in that drainage. Additionally, the changes in downstream flooding regimes resulting from dam construction lead to altered riparian vegetation.

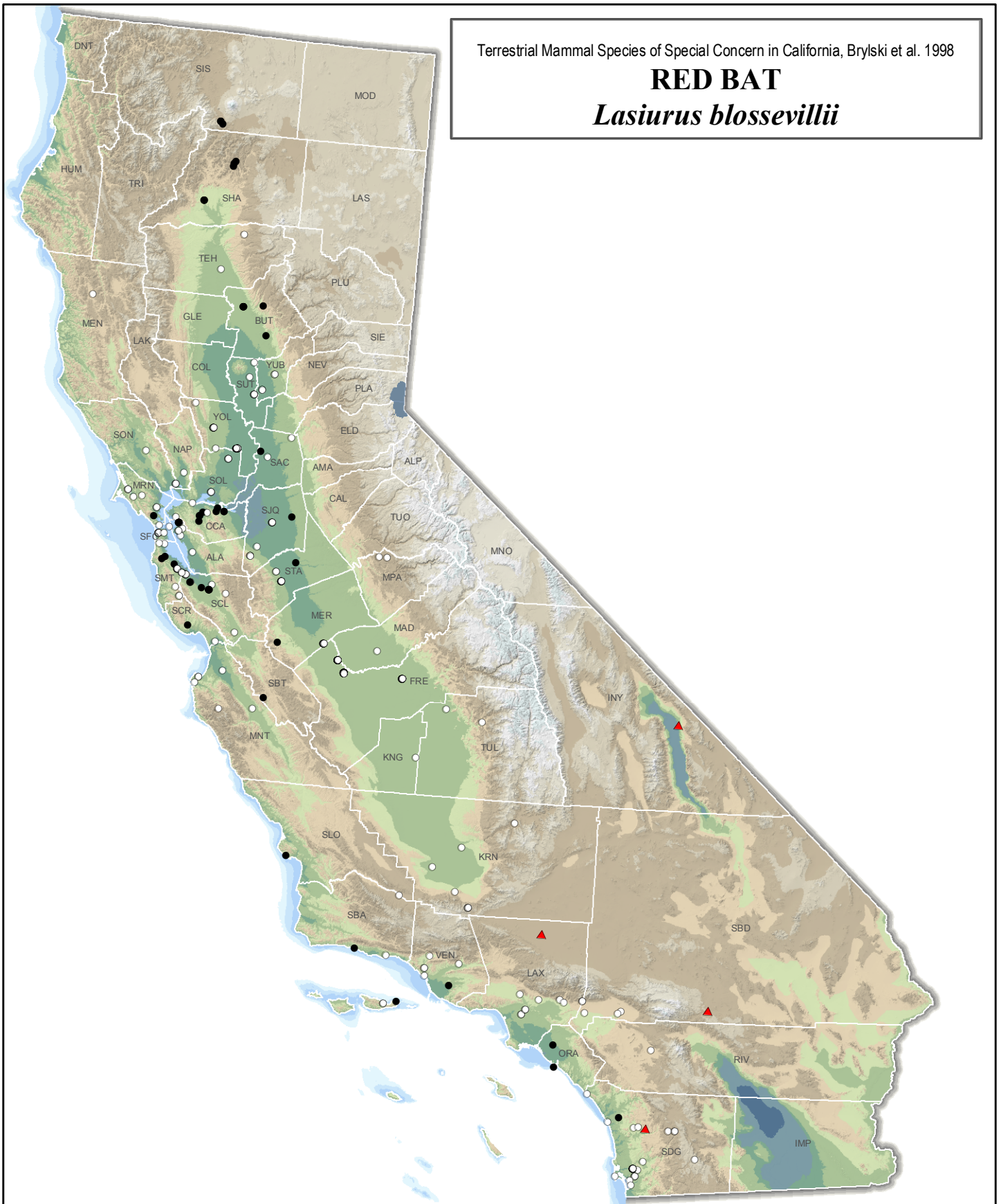
**Pesticides:** Constantine (1959) documented that *L. blossevillei* roosts in fruit trees in the Central Valley. Many fruit orchards are subjected to particularly intense pesticide treatments. Although the effects of aerially sprayed organophosphates on *L. blossevillei* have not been specifically examined, documentation of negative impacts on raptors (Wilson et al. 1991) suggests potential problems for bats.

**Fire:** The finding of Saugey et al. (1994) that red bats may move down to the leaf litter when temperatures drop raises questions regarding potential impacts from fire, particularly controlled burns which are conducted in either the spring or fall.

**Management Recommendations:** Given the high association of this species with agricultural and riparian areas, a status review, particularly in the Central Valley and surrounding foothills, is urgently needed. Radiotracking should be conducted to characterize roost sites and foraging habitat. It is likely that the species would benefit from any reduction in pesticide use, and restoration of riparian habitat.

# RED BAT

*Lasiurus blossevillii*



Locations verified by authors  
(captures, observations, museum records)

- Post - 1978
- 1978 and before

- ▲ Constantine 1998
- No CNDDDB records