

**Mojave River vole, *Microtus californicus mohavensis****Philip V. Brylski*

**Description:** No measurement data for this subspecies were found. The species is highly variable in size: TL from 157 to 211 mm and TAL from 39 to 68 mm. The Mojave River vole is the only vole found within the historic range indicated below.

**Taxonomic Remarks:** The Mojave River vole was described by Kellogg (1918) based on specimens collected from Victorville. The subspecies is recognized by Hall (1981) and Wilson and Reeder (1993). The Mojave River vole is one of two subspecies of *M. californicus* with highly restricted and disjunct distributions. The other is the Amargosa vole (*M. c. scirpensis*), an Endangered species that occurs in riparian habitat within the Amargosa River drainage.

**Distribution:** The Mojave River vole has been collected at only two localities along the Mojave River: at Victorville (elevation 900 m) and Oro Grande. The distributional limits of the subspecies are uncertain, but here are considered to be the Mojave River in the vicinity of the two known localities, an area of covering approximately 50 km<sup>2</sup> (V. Bleich, unpubl. data).

**Life History:** The Mojave River vole is relatively unstudied, and the following information is drawn from studies of other subspecies of *M. californicus*. Voles are active year-round and forage largely on grasses, forbs, and marsh vegetation. They make conspicuous runways through the vegetation (especially near their burrows), burrow extensively in non-flooded areas, and utilize downed wood, brush piles, and their burrows for cover. Voles are important for various predators, both mammalian and avian (Lidicker unpubl.). They typically show dramatic annual and multi-annual population cycles. Breeding activity may occur year-round but is concentrated in the wet season, from February through March for *mohavensis*. The gestation period is 21 days. Litter size averages 4 (range 1-9) and from two to five litters may be produced annually. Individuals may breed in their first year (reviewed in Zeiner et al. 1990). Because of their large population fluctuations (up to four orders of magnitude), their persistence in a habitat patch following periodic bottlenecks may show a strong positive correlation with patch size. Moreover, there is a strong negative interaction with house mice (*Mus musculus*) (Lidicker 1966), a non-native species that is typically numerous in suburban native habitats. The California vole is a good swimmer.

**Habitat:** As a species, the California vole occurs in a variety of habitats, including oak woodlands, grasslands, and freshwater and tidal marshes, at least where flooding does not occur regularly (Lidicker unpubl. data). Given the narrow juxtaposition of riparian and desert scrub habitat within its historic range, the Mojave River vole is restricted to the grassy or riparian habitats within the Mojave River corridor. In areas impacted by agricultural and suburban development, it may be confined to the more narrow riparian belt. The closely related Amargosa vole utilizes three elevations of marsh habitat: the lower elevations (within its range) marshes that are susceptible to annual flooding, the higher riparian-associated habitats that provide refuge during normal annual flooding, and the adjoining upland habitats that provide temporary habitat during unusually high flood events (Thelander et al. 1994).

**Status:** Class II. There are no recent records for the Mojave River vole. Riparian habitat along the Mojave River within its historic range has been heavily impacted by agricultural and urban land uses. Damage to residential developments along the Mojave River during recent flooding has resulted in pressures to control flooding through channelization. Bleich (in review) considered *mohavensis* vulnerable to extinction as a consequence of its restricted distribution, previous habitat loss, and the ongoing urbanization in lands adjoining its range. Populations are probably subject to

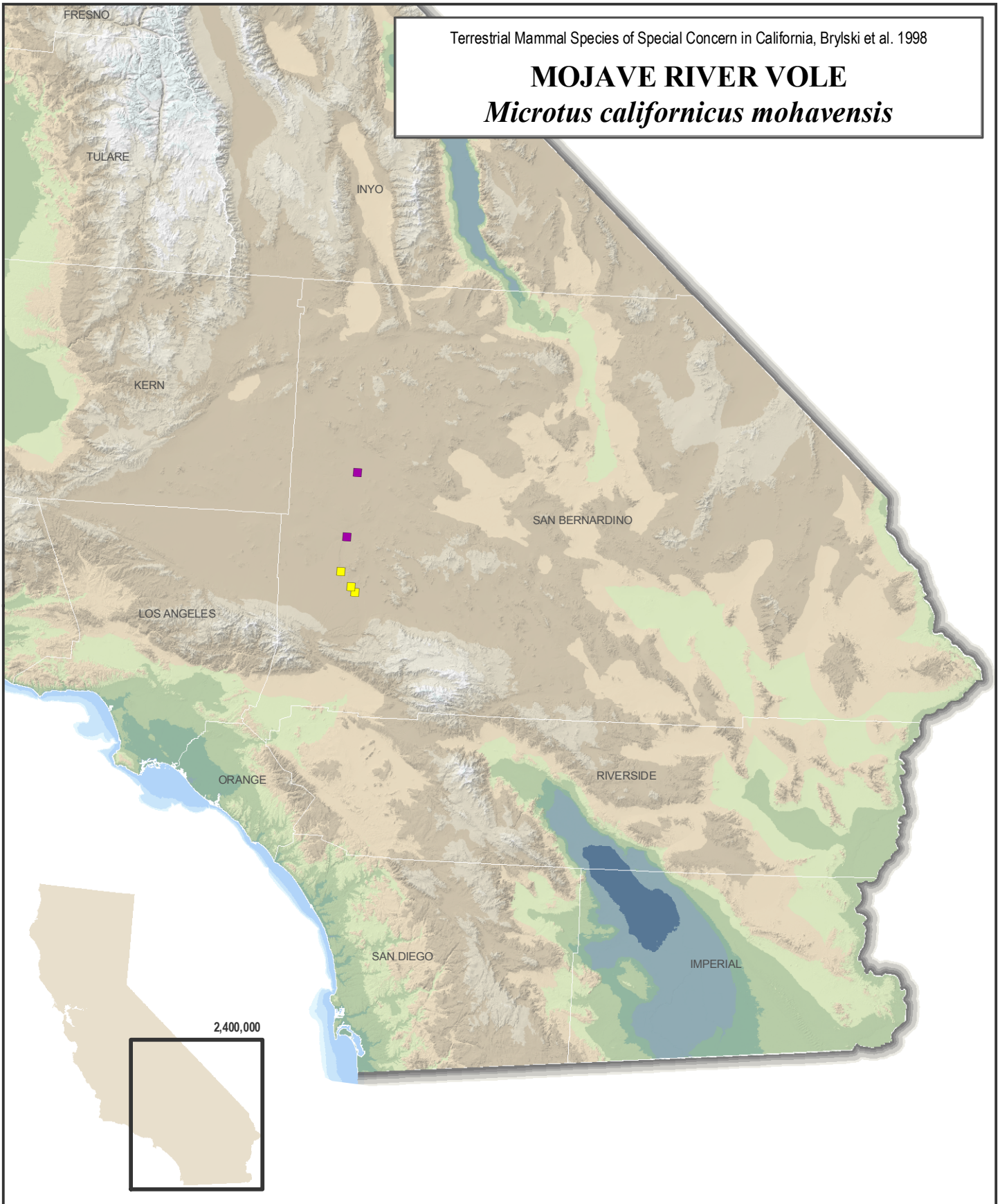
local extirpation following severe flooding events.

**Management Recommendations:** Basic data are needed on the population status of the Mojave River vole, as well as an analysis of minimum viable population size (Bleich in review). Bleich (in review) recommended the following management actions: *i*) undertake studies of populations of *mohavensis* at its historical localities in Victorville and Oro Grande to determine its status, collect data on its natural history, and determine minimum viable population size and the number of populations necessary for recovery. Field surveys should be designed to determine the species' distribution along the Mojave River; *ii*) undertake a hydrology study to determine the importance of spring subterranean water flows for maintaining its habitat; *iii*) analyze the natural and human impacts to yield further recommendations on how to maintain optimal densities and target habitats to receive high levels of protection; and *iv*) acquire privately-owned habitat considered critical to the continued viability of the species.

Terrestrial Mammal Species of Special Concern in California, Brylski et al. 1998

## MOJAVE RIVER VOLE

*Microtus californicus mohavensis*



- CNDDDB 1979 -1998
- CNDDDB 1978 and before