

Pacific pocket mouse, *Perognathus longimembris pacificus**Philip V. Brylski*

Description: This is a small heteromyid rodent, averaging about 113 mm TL, and weighing from 8 to 10 g. Silky pocket mice, including the Pacific pocket mouse, are distinguished from species of *Chaetodipus* by the absence of spiny hairs in the dorsal pelage and the absence of a distinct crest on the tail. There is usually a small white spot at the anterior base of the ear, and an indistinct larger buff spot behind the ear. The pelage is buff above and white below. Many of the dorsal hairs are black-tipped, giving the pelage a "salt and pepper" appearance typical of the species. The Pacific pocket mouse is the darkest of the *Perognathus longimembris* subspecies. Pelage color shows substantial age-related and seasonal variation; the pelage is darkest in juveniles, and relatively dark in newly-molted adults. The pelage in all age groups lightens gradually between molts. Like all heteromyids, there is a buff-colored lateral line. The plantar surface of the hindfeet is naked or lightly haired, and the lateral hairs of the hind toes project anteriorly and laterally, resulting in a "fringed-toed" effect, which may enhance locomotor efficiency on sandy substrates (Brylski 1993).

Taxonomic Remarks: The Pacific pocket mouse is one of eight recognized subspecies of the little pocket mouse (*P. longimembris*) in California (Hall 1981; Williams et al. 1993). As a species, the little pocket mouse shows considerable geographic and non-geographic variation in pelage color. *P. pacificus* was described by Mearns (1898a) from specimens collected at the mouth of the Tijuana River (San Diego County) near the border with Mexico. Huey (1939) relegated *pacificus* to subspecies status based on its similarity to the Los Angeles pocket mouse (*P. l. brevinasus*).

Distribution: The Pacific pocket mouse historically occurred in coastal southern California, from Marina del Rey and El Segundo in Los Angeles County, south to the vicinity of the Mexican border in San Diego County (summarized in Erickson 1993). The majority of records are within 1 mi (1.6 km) of the coast, at less than 600 ft (180 m) in elevation. Currently, populations are known at three locations: the Dana Point Headlands (Orange County), San Mateo Creek (northern San Diego County), and near the Santa Margarita River in Camp Pendleton (southern San Diego County).

Life History: The Pacific pocket mouse hibernates from November to February (Meserve 1976a,b). In contrast to other hibernators that accumulate fat reserves for hibernation, little pocket mice feed on seed caches stored in their burrows. Emergence from hibernation has is correlated with availability of forb and grass seeds (Meserve 1976a,b). Individuals also become torpid when deprived of food for 24 to 36 hours.

Relatively little is known of the breeding biology of Pacific pocket mice. Meserve (1976b) noted pregnant and lactating females from April through June, and immatures from June through September. In a study of the Dana Point Headlands population, lactating females were observed in July, two juvenile age classes were observed in June/July and July/August, indicating multiple litters, and several female juveniles were lactating, indicating that they had borne young within 30 days of weaning (Brylski 1993; unpubl. data).

The food of the Pacific pocket mouse includes seeds and stems of grasses and some forbs, and occasionally arthropods and larva (von Bloeker 1931a,b; Meserve 1976a,b). Bailey (1939) recorded seeds of the following species from the pouches of collected specimens: "*Lotus prostratus*, two species of salt bush, heliotrope, mustard, *Monanthochloe*, *Franseria*, a rush." Von Bloeker (in Bailey 1939) recorded the seeds of *Heterotheca grandiflora*, *Chrysothamnus*, *Centaurea melitensis*, *Croton californicus*, *Pulchea sericea*, and *Hordeum murinum* from the pouches of collected specimens. *P. l. pacificus* was observed to drink water regularly in captivity (Bailey 1939).

Data on home range have not been obtained for this species, but high densities have been observed at the three known populations. At the Dana Point Headlands, the maximum known number of animals (MNAs) was approximately 40 individuals (juveniles and adults) on 3.75 acres of contiguous habitat (Brylski 1993), yielding 10.6 individuals/acre. However, adult densities were approximately 2.5 individuals/acre. At the San Mateo site, there were approximately 37 MNAs on approximately 2 acres (18.5 individuals/acre). At the Dana Point Headlands and San Mateo Creek populations, 61% and 75% of the captures, respectively, were young of the year (juveniles and subadults). Both studies were conducted during July and August. Despite a potential trap bias (juveniles may be more trappable than adults), the age structure of these populations after reproduction was dominated by juveniles in 1993 (at Dana Point) and 1995 (at San Mateo Creek). The Pacific pocket mouse, like other subspecies of *P. longimembris* that have been studied, may show dramatic annual variation in density.

Habitat: Pacific pocket mice occur on fine-grain, sandy or gravelly substrates in the immediate vicinity of the Pacific Ocean (Mearns 1898a; von Bloeker 1931a,b; Grinnell 1933). The Pacific pocket mouse is or was known to occur on coastal strand, coastal dunes, river alluvium, and coastal sage scrub habitats on marine terraces (Grinnell 1933, Meserve 1976a,b). The occupied habitats for the three known populations are coastal sage scrub dominated by sagebrush (*Artemisia californica*) (Dana Point Headlands); mixed sage scrub and maritime chaparral sagebrush dominated by sagebrush and white sage (*Salvia apiana*) (San Mateo Creek), and the ecotone of coastal sage scrub and nonnative grassland, white sage and slender buckwheat (*Eriogonum elongatum*) (Santa Margarita). On all three occupied sites, sandy soil comprises from 10 to 20% of the occupied habitat, and the understory includes the California croton (*Croton californicus*), an indicator species of sandy soils.

Status: Class I. The Pacific pocket mouse has a patchy distribution and, since its description by Mearns (1898a), has been considered rare. The historical distribution of the Pacific pocket mouse was much more extensive prior to the considerable development of the coastal lowlands of southern California. Between 1894 and 1972, the Pacific pocket mouse was recorded from eight general localities and 29 specific locales from Los Angeles County south through San Diego County to the Mexican border, and is now known from only three localities (Erickson 1993). Current occupied habitat for the Pacific pocket mouse is estimated to be less than 100 total acres at three sites. None of the eight historic locales is fully protected, and all have been damaged by or are threatened by development.

Based on the number and small sizes of the three known populations, the sedentary nature of the Pacific pocket mouse (Meserve 1976b), and the fragmentation of its habitat, the Pacific pocket mouse is highly susceptible to extinction as a result of environmental or demographic variability. The Pacific pocket mouse was listed as Federally Endangered in 1994, and appears to meet CESA criteria for listing as Endangered.

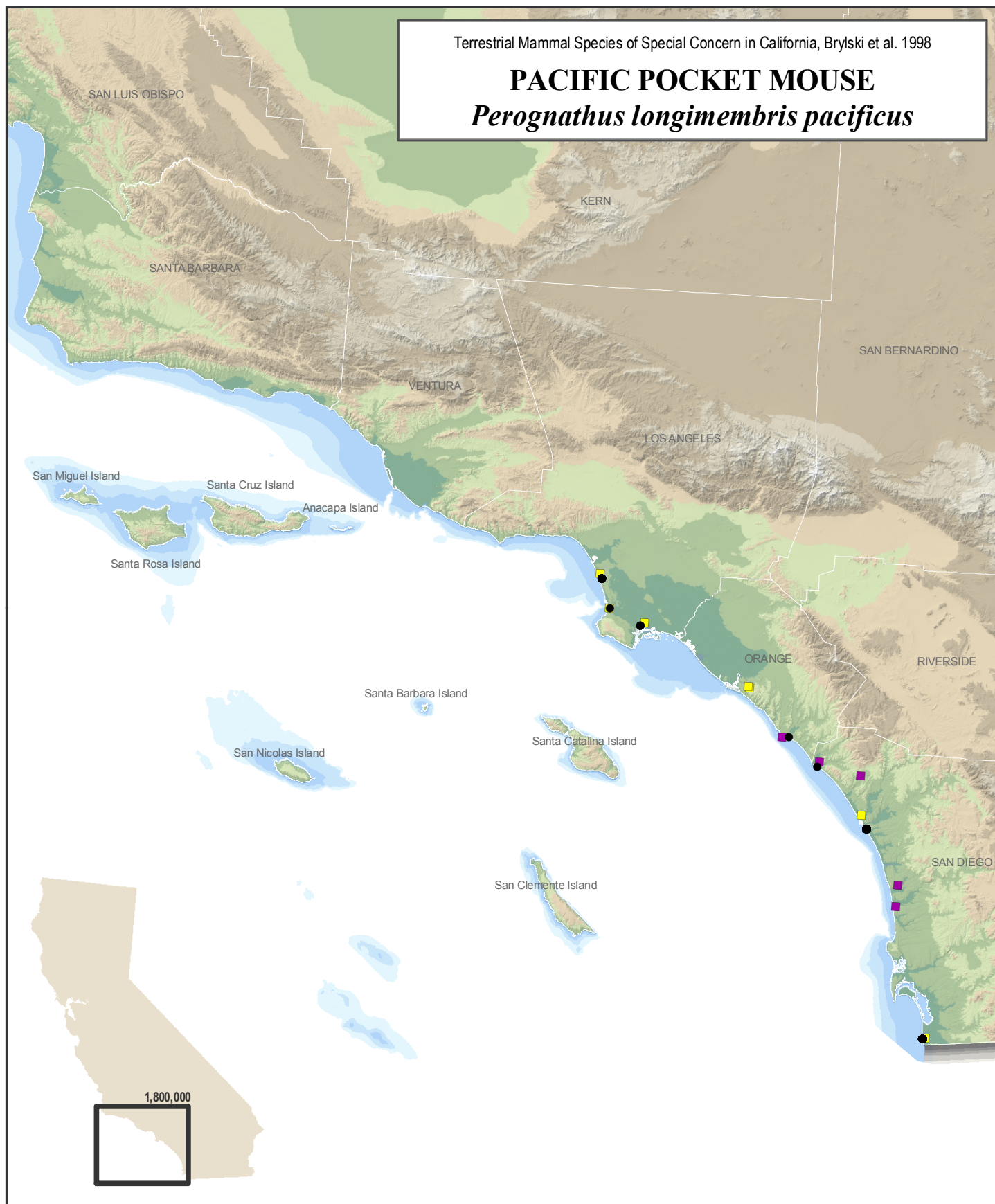
The most significant threat to the Pacific pocket mouse is habitat loss and fragmentation. In addition, predation by house and feral cats on the Dana Point Headlands could conceivably result in the extirpation of this population. The Dana Point site has been proposed for development, and through agreements with the landowner under the Natural Community Conservation Plan for central Orange County, the USFWS and Department are cooperating to transplant the Dana Point population of pocket mice to another site, the location of which is unknown at this time. The San Mateo population is expected to be directly or indirectly impacted by a proposed freeway. The Santa

Margarita population is within the Camp Pendleton Marine Corps (CPMC) base. The CPMC is expanding its base-wide conservation planning efforts, now underway, to include the Pacific pocket mouse.

Management Recommendations: There are a number of management recommendations for this taxon: *i*) collect basic natural history data. The Pacific pocket mouse is known from few populations and its natural history is not well understood; *ii*) control depredation by house and feral cats. Although the Pacific pocket mouse has many predators (e.g., owls, snakes, skunks, and weasels), the greatest risk appears to be house and feral cats. House and feral cats in urban and suburban areas, such as at the Dana Point Headlands and potentially at San Mateo Creek, occur in high densities. An ongoing program for removing house and feral cats from these locations is needed; *iii*) continue field surveys for populations and suitable but unoccupied habitat. Surveys are needed to identify potential habitat that is either occupied by the species or can serve as a host site for increasing the number of populations. Since two of the three existing populations occur on less than 5 acres, the Pacific pocket mouse may persist in unlikely places, and survey efforts should be maintained to determine whether additional populations exist. Also, populations of *P. longimembris* can show dramatic fluctuations in numbers. Survey results (with either negative or positive results) in one area should not be applied to other, even adjacent, areas; *iv*) prepare and implement habitat management plans. Plans should be prepared to manage habitat to maximize pocket mouse populations. Two of the three populations are surrounded by habitat that could be altered (e.g., by brush thinning and removal of exotic plants) to promote growth and expansion of Pacific pocket mouse populations; and *v*) integrate conservation of the Pacific pocket mouse with appropriate NCCP lead agencies. The historic range of the Pacific pocket mouse overlaps with three existing programs being implemented under the NCCP program: two multiple species and multiple habitat conservation plans in San Diego County and the coastal conservation plan of Orange County. Currently, no known populations of the Pacific pocket mouse are protected under any of these NCCP projects; however, there is potential habitat where populations may later be discovered or which may serve as host sites for translocation efforts. The USFWS and the Department should work with the appropriate agencies to optimize the opportunity for the NCCP to effect conservation of the Pacific pocket mouse.

PACIFIC POCKET MOUSE

Perognathus longimembris pacificus



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

- CNDDDB 1979 - 1998
- CNDDDB 1978 and before