# Watch List Accounts

## Salinas ornate shrew, *Sorex ornatus salaries*

## Paul W. Collins

Museum records of *S. o. salarius* extend from the vicinity of the mouth of the Pajaro River (Watsonville Slough), Santa Cruz County (Rudd 1948), south along the immediate coast to Carmel (Von Bloeker 1939). This subspecies was originally described as inhabiting coastal salt-marshes and adjacent sandhill areas in the vicinity of Monterey and Carmel bays, Monterey County (Von Bloeker 1938, 1939). According to Williams (1986), it occupies riparian, wetland and upland terrestrial communities in the vicinity of the Salinas River Delta. The capture of 61 ornate shrews near the Salinas River mouth in July 1990 with 700 trap-nights of effort suggests that *S. o. salarius* may still be common in the area (J. Maldonado pers. comm.). More recent data than these on the distribution and status of this subspecies were not available during the preparation of this document. Although the Salinas ornate shrew has a restricted distribution in a region under pressure from urban and agricultural developments, it occupies a diversity of habitats, and much of the remaining coastal salt marshes within its geographic range are protected from development. Recent surveys indicate it is still common. Rudd (1948) and Junge and Hoffmann (1981) questioned the currently accepted taxonomy of ornate shrews from the vicinity of Monterey Bay. A more extensive range-wide genetic and morphologic evaluation of ornate shrews is currently under way (Maldonado pers. comm.). Results of that study should help to clarify whether ornate shrews from the vicinity of Monterey Bay warrant subspecific recognition.

## Monterey vagrant shrew, *Sorex vagrans paludivagus*

*Paul W. Collins*

The Monterey vagrant shrew inhabits riparian and tidal and freshwater wetlands of the San Francisco Peninsula, Salinas River Delta, and lowlands adjacent to Monterey Bay (Findley 1955, Hennings and Hoffmann 1977). Museum records are from the immediate coast of the San Francisco Peninsula from San Gregorio, San Mateo County, south to Seaside, Monterey County. Vagrant shrews collected from various localities in San Francisco County (Twin Peaks, Presidio, Lake Merced, Daly City and San Francisco) could be *S. v. paludivagus* or *S. v. halicoetes*. These specimens have yet to be evaluated in any of the recent taxonomic treatments of the *Sorex vagrans* complex (Findley 1955, Hennings and Hoffmann 1977, Junge and Hoffmann 1981, Carraway 1990). If these specimens are *paludivagus*, then its range would include the entire San Francisco Peninsula, excluding the salt marshes along its eastern border. No data are available on its current distribution and population status. This, in addition to the observation that a number of the coastal salt marshes and wetlands within its geographic range are protected from development, are the principal reasons why the Monterey vagrant shrew was not consider a Special Concern taxon. The highest priority for the Monterey vagrant shrew is to obtain data on its distribution and population status, and the taxonomic status of populations in the northern San Francisco peninsula.

## Angel Island mole, *Scapanus latimanus insularis*

*Paul W. Collins*

The Angel Island mole is confined to Angel Island, Marin County (Hall 1981), a 740 acre island situated about 1 mi south of the Tiburon peninsula in the northern portion of San Francisco Bay. Palmer (1937) described *S. l. insularis* as being somewhat larger and darker than *S. l. parvus* and *S. l. latimanus*, but similar in overall size and color to *S. l. caurinus* from the adjacent mainland. Palmer

(1937) reported that in 1935 and 1936 Angel Island supported a large population of moles. Mole mounds and surface ridges were common across the island, particularly on the north side of the island in moist soil under chaparral (Palmer 1937). We were unable to find any recent information regarding the present distribution or status of Angel Island moles. Apparently, there has been no further work on this subspecies since it was described in 1937. Although the native biological resources of Angel Island State Park are now under the jurisdiction of the California Department of Parks and Recreation (CDPR 1979), native plant communities on the island along with their associated fauna have been seriously impacted by past human activities, intensive overgrazing by an introduced mule deer (*Odocoileus hemionus*) herd, and by the introduction and expansion of nonnative trees and shrubs. Introduced conifers and eucalyptus cover more than 100 acres of the island (CDPR 1988). Mesic woodland habitats on Angel Island (e.g., mixed evergreen forest, northern coastal scrub and chaparral) which provide potentially suitable habitat for moles, have been and continue to be seriously degraded by these factors. While the CDPR has instituted a program to remove introduced eucalyptus from natural areas on Angel Island (CDPR 1988) and has a Department-approved program in place to cull the introduced deer herd (CDPR 1979) when the population gets too large, they have not developed any specific measures designed to protect or enhance habitat for the Angel Island mole. The CDPR has gathered no data on the current distribution and status of the Angel Island mole nor does it evaluate how its current or proposed management activities affect this species. Based on the lack of data on the distribution and status of this species, the ongoing threats to its preferred habitat, and the fact that CDPR does not manage for the mole, we recommend that the Angel Island mole be on the Watch List. Immediate priorities regarding this subspecies include determining its population status and habitat affinities, and identifying factors that impact the population.

### Alameda Island mole, *Scapanus latimanus parvus*

*Paul W. Collins*

*Scapanus latimanus parvus* is known only from Alameda Island, Alameda, Alameda County (Hall 1981). Since this subspecies was first described, a total of 18 specimens have been collected, two in 1916, 15 between 1932 and 1945, and one in 1958 (MVZ 123561). We were unable to locate any observational records that would confirm the existence of an extant population of *S. l. parvus* on Alameda Island. All of the specimens that have been collected are from residential neighborhoods in Alameda. Based on two specimens, Palmer (1937) described this subspecies as being smaller, shorter and having a broader skull than mainland *S. l. latimanus*. Palmer (1937) also suggested that *parvus* might occupy salt marsh areas around the eastern and southern margins of San Francisco Bay. However, despite intensive trapping programs for *Reithrodontomys raviventris* and *Sorex vagrans halicoetes*, no salt-marsh inhabiting mole populations have been reported from salt marshes around the margins of the San Francisco Bay. Alameda Island is intensively developed with Alameda Island Naval Air Station (Nimitz Field) occupying the northern half, and most of the remainder of the island occupied by commercial, industrial and residential developments. Besides the Robert W. Crown Memorial State Beach Park, there are twelve city parks on the island. Since most of Alameda Island has been converted to developed uses, and because there is no recent information on the current status of *S. l. parvus*, this subspecies should be kept on the Watch List. Immediate priorities regarding this subspecies include determining its present distribution and population status, and evaluating its taxonomic validity. This information is essential for deciding whether the Alameda Island mole is threatened with extinction and thus in need of special legal protection and more intensive management.

**Silver-haired bat, *Lasionycteris noctivagans***
*Elizabeth D. Pierson & William E. Rainey*

The silver-haired bat, *Lasionycteris noctivagans*, is broadly distributed across much of the United States and southern Canada. Nevertheless, its distribution in California is limited, and remains poorly understood. Breeding populations are relatively common in northern portions of the state, along the Sacramento River drainage in Shasta and Siskiyou counties (Rainey and Pierson 1996, Pierson et al. 1996). There are also a few records of reproductive populations in the Sierra Nevada foothills and at higher elevations in the Coast Range as far south as Ventura County. The only records for southern California are from the spring, fall or winter. Although it appears to be associated with forested mountain habitat, the extent of its distribution in both the Trinity Mountains and the Sierra Nevada are not well known.

*L. noctivagans* is a forest-dwelling species that shows a high association with old growth habitat in the Pacific Northwest (Perkins and Cross 1988). Maternity roosts, containing up to 70 animals, are found almost exclusively in trees, primarily in woodpecker hollows. Roosts have also been located occasionally under loose bark, and in one instance, in a building (B. Hogan pers. comm.). A number of studies on the roosting requirements of this species have shown that it prefers large diameter snags, with roosting sites at least 15 m above the ground (Rainey and Pierson 1996, Betts 1996, Campbell et al. 1996, Mattson et al. 1996, Vonhof 1996, Vonhof and Barclay 1996). In a study conducted in northern California, this species roosted preferentially in ponderosa/Jeffrey pine and black oak (Rainey et al. 1996). Hibernating sites in California are unknown, although elsewhere in its range *L. noctivagans* has been found hibernating in hollow trees, under sloughing bark, in rock crevices, and occasionally in buildings, mines and caves (Barbour and Davis 1969, Kunz 1982, van Zyll de Jong 1985). A few scattered museum records suggest that in California this species may migrate to the southern part of the state in the winter. *L. noctivagans* travels up to 17 km one way from its roost to its foraging area (Rainey and Pierson 1996), and feeds in or near coniferous or mixed deciduous forest, often following stream or river drainages (Kunz 1982, Rainey and Pierson 1996). In northern California it has been netted both over open water in and areas with considerable clutter, and shown to forage on a variety of taxa, with moths appearing to dominate the diet (Rainey et al. 1996). In other areas it has been shown to feed opportunistically on abundant prey, including chironomids (Barclay 1984, Barclay 1985, Barclay 1995-1996).

This species is being placed on the Watch List because of its high dependence on snags, and the coincidence of its distribution, as we understand it, with prime timber harvest areas. More information is needed on the distribution and habitat needs of this species in California. Potential impacts of current timber harvest practices, particularly the adequacy of snag retention standards, need to be investigated.



**Hoary bat, *Lasiurus cinereus***
*Elizabeth D. Pierson & William E. Rainey*

The hoary bat, *Lasiurus cinereus*, is the most widely distributed of all North American bat species, and occurs from sea-level to high elevation. In California, it occurs with greatest frequency in forested regions, both along the coast and in the mountains. Although the seasonal movement patterns of this migratory species within California are not completely understood, it appears that the primary summer distribution is in the northern part of the state, and winter distribution is along the coast from San Francisco Bay to the Mexican border (Grinnell 1918, Dalquest 1943, Vaughan and Krutzsch 1953, Constantine 1959, Tenaza 1966). Migration appears to occur both along the coast and in the Sierra Nevada. All mid-summer records are of males. Females appear to occur in California only in the fall, winter, and spring, making it unlikely that this species raises its young in California.

*L. cinereus* is a solitary species that roosts primarily in foliage, 3-12 m above the ground, in both coniferous and deciduous trees (Constantine 1959). Perkins and Cross (1988) found that in Oregon, hoary bats were associated with older age Douglas fir/western hemlock forests, and absent in younger stands. In California this species occurs in a wider variety of habitats, from lower elevation mixed coniferous/hardwood forest to higher elevation conifers. They also have been found roosting in fruit orchards (Constantine 1959). Some unusual roosting situations have been reported in caves, beneath a rock ledge, in a woodpecker hole, and in a squirrel's nest (Tenaza 1966, Shump and Shump 1982b, van Zyll de Jong 1985), but the species is generally found in trees. It forages over long distances, up to 40 km from its roost (Barclay 1984), feeding primarily on large moths, dragonflies and beetles (Barclay 1985, Barclay 1985-1986).

Despite its wide distribution almost nothing is known of the current status of this species in California. We included on the Watch List because of its high association with forested habitats, and its apparent dependence on trees for roosting, thus raising the possibility its populations could be impacted by current timber harvest practices. The fact that it is unlikely to raise young in California does, however, reduce the population risk. Surveys are needed to delineate seasonal movement patterns and habitat associations.

### Long-eared myotis, *Myotis evotis*

*Elizabeth D. Pierson & William E. Rainey*

The long-eared myotis, *Myotis evotis*, is distributed across the western third of the United States and southern Canada, and is highly associated with forest habitat (Cross 1976, Barbour and Davis 1969, K. Navo pers. comm.). In California, it is found in a number of habitats from lower-elevation oak woodlands to mid-elevation mixed conifer forest and higher elevation coniferous forest. It is generally absent from the Central Valley and desert. While it is typically rare, it appears to be one of the more common species in Giant Sequoia habitat (Pierson and Heady 1996).

This species roosts under loose bark, in hollow trees, in rock crevices, in fissures in clay banks, and sometimes in caves, mines and buildings (Manning and Jones 1989, Vonhof and Barclay 1996). It has been found in rimrock roosts in southern Oregon. A radiotracking study in northern California documented roost sites under loose bark of black oaks, and in rock crevices of highway riprap (Rainey and Pierson 1997). Also, a number of building roosts are known. Caves, mines and bridges are used frequently as night roosts. This species forages along the edge of forests, over open meadows near tall timber, and along water courses (Manning and Jones 1989). It appears to be flexible in its foraging strategy, catching insects both by substrate gleaning and aerial pursuit (Faure 1990). In one study in northern California, radiotagged animals fed predominantly over riparian vegetation, and within an upslope mixed deciduous/coniferous forest (Rainey and Pierson 1997). In some settings this species has been shown to feed primarily on beetles and moths (van Zyll de Jong 1985). Limited diet samples from northern California indicated animals were feeding on a variety of taxa, including primarily Lepidoptera, Coleoptera, Hymenoptera, and Tricoptera (Rainey and Pierson 1996).

It is being placed on the Watch List because of its rarity and its apparent association with forested habitat. The impacts of current timber practices on this species are unknown.

**Little brown bat, San Bernardino Mountains population, *Myotis lucifugus***
*Elizabeth D. Pierson & William E. Rainey*

*Myotis lucifugus* is one of the most widely distributed North American bat species (Fenton and Barclay 1980), yet in California it is limited primarily to the higher latitudes and/or altitudes. It is found along the coast north of the San Francisco Bay area, and in mountainous areas above about 5,000 ft. It is generally absent from southern California, with the exception of an isolated population in the San Bernardino Mountains. This population is known primarily from collecting that was done at Big Bear Lake in the 1940s (D. Constantine pers. comm.). When first located, animals were found under loose bark of a lightning-struck tree and in the attic of an adjacent house. This colony was revisited in the 1960s, at which time the tree roost was gone, and the owner expressed intention to have the bats in the attic exterminated. In the early 1990s about a half dozen *M. lucifugus* from this area were turned into the State Department of Health Services. The animals had been found dead on a lawn, suggesting they had been poisoned (D. Constantine pers. comm.). As tourist development intensifies around Big Bear Lake, natural habitat is being lost, and risks to the animals from pest control efforts increase.

This population is being placed on the Watch List because of its isolation and apparently very limited distribution. Only limited information is available on its historical status, and its current status is completely unknown (D. Constantine pers. comm.).

**Oregon snowshoe hare, *Lepus americanus klamathensis***
*Paul W. Collins*

*L. a. klamathensis* occurs in mid- to upper-elevations of the Cascade Mountains from the vicinity of Mount Hood, Oregon, southward to Mount Shasta and the Trinity Mountains of California (Bailey 1936, Orr 1940). An isolated population of this subspecies occurs in the Warner Mountains of Modoc County (Orr 1940). In California, Oregon snowshoe hares are generally found above the Yellow Pine Zone, in Canadian and Hudsonian associations (Orr 1940). They are usually associated with thickets of deciduous trees such as alders and willows along streams and around the margins of mountain meadows, dense thickets of young evergreen conifers and shrubs in forests, and occasionally in dense patches of *Ceanothus* and *Arctostaphylos* (Williams 1986). Jameson and Peeters (1988) report that in the northern Sierra Nevada, snowshoe hares are abundant in dense stands of manzanita that develop following a major forest fire. Based on the small number of available specimens in museums, scant confirmed sightings, and early accounts (e.g., Merriam 1899, Kellogg 1916), Oregon snowshoe hares were apparently not historically common in California. Although existing records suggest that California populations of this species are probably small and locally distributed, the lack of specimen and sighting records of *L. a. klamathensis* may reflect biased collecting and survey techniques as well as this species' concealing coloration, shy and secretive behavior, more nocturnal and crepuscular activity pattern, and tendency not to be flushed by predators. This species is rarely seen because it hides during the day in forms (daytime resting places) located in dense cover such as thickets and jumbled piles of fallen timber (Bailey 1936). *L. a. klamathensis* has a wider distribution in Oregon where it has been recorded as not numerous (Bailey 1936) to locally common (Dalquest 1942). Populations of this subspecies do not appear to undergo periodic extreme population fluctuations observed in other snowshoe hare species (Maser et al. 1981). There are no data to suggest that numbers of Oregon snowshoe hares have declined in California or elsewhere in its range. Even though this subspecies is not widespread in California, it is probably not jeopardized.

Williams (1986) considered the Oregon snowshoe hare to be a Special Concern species because of its apparent rare status, and because of the potential for habitat loss due to logging and conversion of riparian habitat. The species is included on the Watch List because of the peripheral nature of its distribution in California (most of its range occurs in Oregon), and because there are no reliable data on its status. Bittner and Rongstad (1982) noted that great abundances and population explosions of snowshoe hares elsewhere in North America tend to be associated with early successional forest stages following fires, whereas their populations are small and isolated to thickets of willow, alder and low-growing woody vegetation in forests where there have been no recent fires. In California, the snowshoe hare is listed as a game species which can be hunted from July 1 through January, with a bag limit of five per day. The overall effect of hunting on populations of *L. a. klamathensis* in California is unknown, but is not thought to contribute to its apparent rarity. Priorities for California populations of this subspecies include obtaining information on present distribution, current status, population abundance and habitat affinities to more accurately determine both its status and appropriate hunting quotas. Such data are especially needed for the Warner Mountains population of Oregon snowshoe hares to determine whether it should be added to the list of Special Concern species.

### Western white-tailed hare, *Lepus townsendii townsendii*

*Paul W. Collins*

*L. t. townsendii* is widely distributed from southern British Columbia southward east of the Cascade Crest to the southern Sierra Nevada in California, and eastward to extreme western Montana and western Colorado (Hall 1981). In California, this species occupies open forests and sagebrush-grassland associations in the higher parts of the northeastern Great Basin area of California (Orr 1940). It also occurs in moderate numbers at high elevations, generally at or above timberline, along the crest and upper eastern slope of the Sierra Nevada (Grinnell 1933, Orr 1940) and in the White Mountains (Howell 1924). The southernmost records of this species in the Sierra Nevada are from Tulare County in the Inyo National Forest at Monache (Sumner and Dixon 1953) and Kennedy Meadows (C. Hawkins pers. comm.). In the Sierra Nevada, there is evidence to suggest that white-tailed hares migrate to higher elevations in the summer and descend to lower areas in winter, especially along the sagebrush-covered eastern slopes of the Sierra Nevada (Merriam 1904b, Orr 1940). This species inhabits a variety of habitats, including sagebrush, perennial grasslands, alpine dwarf-shrub, and wet meadows to timberline and above, and early successional stages of a variety of conifer habitats including lodgepole pine, yellow pine, western juniper, dwarf juniper, red fir, and mixed conifers (Verner and Boss 1980, Williams 1986, Zeiner et al. 1990). In most of these habitats, *L. townsendii* prefers open or sparsely wooded areas with young or stunted conifers, or scattered shrubs which they use for protective cover during the day (Grinnell and Storer 1924, Verner and Boss 1980, Harris 1982). White-tailed hares are usually solitary and are primarily nocturnally active unless they are flushed from cover. Even though this is a large and conspicuous hare, its habit of remaining hidden during the day, along with its protective coloration, result in it rarely being seen, even in locations where its signs are abundant.

There is no current information available regarding the overall distribution, abundance and population status of this subspecies in California. According to Orr (1940), the white-tailed hare in California is one of the rarer members of the genus *Lepus*, and is not abundant anywhere. Specimen and sighting records of this subspecies suggest that it is uncommon but not rare, at least in the central and southern Sierra Nevada (C. Hawkins pers. comm.). Harris (1982) reports that this species is common in Mono County, while Airola (1980) suggests that it has declined throughout the Great Basin province area of California. This subspecies has declined in numbers and range especially at lower elevations in the sagebrush-grassland associations of the Great Basin province (Grayson 1977). Loss of habitat to cultivation and other developments, coupled with competition for available forage from domestic livestock, are probably the principal factors responsible for its decline in portions of the Great Basin province (Dalquest 1948, Mossman 1979). This hare is currently a Resident Small Game species in California with no closed season or daily bag limit. Hunting may be contributing to the decline of this species, at least in northeastern California, but it is probably less important than habitat loss.

Williams (1986) considered the western white-tailed hare to be a Special Concern species because of its apparent rare status, and because of population declines recorded in the sagebrush-grassland associations of the Great Basin province as a result of loss of habitat and competition from livestock grazing. We have decided to relegate this species to the Watch List because of its widespread distribution in western North America, and because its populations in most of the Sierra Nevada appear to be stable and not threatened by intensive grazing or habitat loss. In addition, there are no survey data available to support the claim that populations of this species have declined in northeastern California or elsewhere in California. Priorities for California populations of this species include obtaining information on present distribution, current status, population abundance and habitat needs. The effects of grazing and hunting on populations of this species in California need to be thoroughly evaluated.

**Marysville kangaroo rat, *Dipodomys californicus eximius***
*Philip W. Brylski*

The Marysville kangaroo rat is known only from the vicinity of Sutter Buttes in Sutter County, where it occurs in chaparral and scrub oak communities on well-drained soils. Museum records are known from specimens collected in 1912 at two localities: Moore Canyon, Marysville Buttes, 4 mi northwest of Sutter and Butte Slough (Sutter County). A single specimen was collected in 1930 from 1 mi northeast of West Butte. There are apparently no confirmed sightings since 1930. Recent and repeated attempts to live-trap individuals at one or more of the historical localities were unsuccessful (W. Anderson pers.comm., A. Bills pers. comm.). The Marysville kangaroo rat is included on the Watch List because of its highly restricted distribution and the failure of survey efforts to locate individuals at the historical localities. It is uncertain whether the population still exists. The majority of habitat is within private ownership, and cooperation with landowners should be sought to undertake a status review.

**Berkeley kangaroo rat, *Dipodomys heermanni berkeleyensis***
*Philip W. Brylski*

The historic range of the Berkeley kangaroo rat is from the hills and valleys east of San Francisco Bay, from the Berkeley Hills, eastward to Mount Diablo and Livermore Valley and southward to southern Alameda County. The museum records for the species are from the vicinities of Berkeley, Orinda, Brentwood, and Mount Diablo (Contra Costa County), and Livermore and Calaveras Reservoir (Alameda County). The species occurs in open, grassy hilltops and open spaces in chaparral and blue oak/digger pine woodlands. The habitat at most of these localities and surrounding areas, except Mount Diablo, has been converted to urban, suburban, and agricultural uses. There are no recent (e.g., less than 10-year old) records for the species, although populations may persist in regional and State parks within its historic range (Roest in review). The Berkeley kangaroo rat is included as a Watch List taxon because of habitat loss within it historic range and the absence of recent records in remaining suitable habitat. The recommendation by Williams (1986) that the geographic range of *h. berkleyensis* and *h. tularensis* (the Tulare kangaroo rat) be clarified is still valid. The closest museum specimen locality for *tularensis* is Tracy (east of the *berkeleyensis* distribution). It would also be useful to clarify the distributional boundaries with *h. goldmani*, the nearest museum specimen locality of which is San Jose (south of the *berkeleyensis* range).

### McKittrick pocket mouse, *Perognathus inornatus neglectus*

*Philip W. Brylski*

*Perognathus inornatus neglectus* occurs along the western edge of the San Joaquin Valley from near Suisun Bay (Contra Costa County) to the southern end of the valley, west into the Carrizo Plain and Upper Cuyama valleys of Santa Barbara and San Luis Obispo counties, and east to Tehachapi Pass. The closely related *P. i. psammophilus* occurs in the Salinas Valley southward at least to Hog Canyon, Monterey County. The taxonomy of *P. inornatus* in the Central Valley, and the boundaries of the distributions of the two other currently recognized subspecies *i. psammophilus* and *i. inornatus* await clarification. *P. inornatus* in the Central Valley occur in annual grassland, desert scrub (e.g., *Atriplex*, *Ephedra*, and *Haplopappus*), and oak savannah communities on sandy soils and other friable soils, from near sea level to about 1,500 ft (484 m) (Williams 1986, no date). Braun (1985) described the habitat for *P. i. neglectus* on the Carrizo Plain as sandy loam flats dominated by herbs (*Erodium*, *Amsinckia*, and *Astragalus*) and grasses (*Bromus*). The species is common in the Carrizo Plain and Upper Cuyama Valley, and probably also in the grasslands and oak woodland habitats above the valley floor. However, habitat over much of its historic range in the San Joaquin Valley has been converted to agricultural and residential uses, where it now apparently occurs in fragmented patches of suitable habitat and generally at low densities. The McKittrick pocket mouse is included on the Watch List because declines in its distribution and abundance since the turn of the century necessitate regular monitoring of its status.

### Yellow-eared pocket mouse, *Perognathus parvus xanthonotus*

*Philip W. Brylski*

The yellow-eared pocket mouse is known from four localities on the eastern slope of the Tehachapi Mountains, Kern County, at Horse, Sage, Freeman, and Indian Wells canyons, at elevations from 1400 to 1615 m. The majority of museum records are from the vicinity of Freeman Canyon, east of Walker Pass, at elevations from 4,900 to 5,300 ft (1,580-1710 m). The species has most often been captured in Great Basin sagebrush (*Artemisia tridentata*). Although it has been reported from Joshua tree woodland, it may occur there mainly in association with Great Basin sagebrush. At higher elevations, it is reported to occur at the ecotone of Joshua tree and pinyon-juniper woodlands (Sulentich 1983). No studies based on systematic live-trapping efforts are available to assess the status of this species. Individuals were captured in 1974 (Huckaby pers. comm.), and Sulentich (1983) captured several individuals in 1982 from the vicinity of Walker Pass and the head of Kelso Valley. No new information on the species or threats to its persistence have become available since Williams (1986) first designated it as a Species of Special Concern. The species has been difficult to locate by conventional live-trapping methods, which may indicate that it is uncommon or rare within its highly restricted range. Including it on the list of Watch List taxa is intended to ensure that impacts to the species are considered in land use decisions, including grazing practices, recreational activities, and development proposals. A biochemical and morphological study by Sulentich (1983) supported placement of *xanthonotus* as a subspecies of *P. parvus* rather than as a distinct species, a recommendation followed by Williams et al. (1993).

### South coast marsh vole, *Microtus californicus stephensi*

*Philip W. Brylski*

The south coast marsh vole occurs in a narrow band of wetland communities and associated grasslands in the immediate coastal zone from southern Ventura County to northern Orange County.

According to Hall (1981), *M. c. stephensi* occurs from the type locality at Point Mugu, Ventura County, south to Sunset Beach, Orange County. Museum records for intervening localities are known for Ballona Wetlands and adjacent Playa del Rey, Los Angeles County. Vole populations that occur south of Sunset Beach, such as in the tidal marshes of Anaheim Bay near Newport Beach, are referable to the more widespread *M. c. sanctidiegi*. Coastal development from Sunset Beach north to Pacific Palisades, Los Angeles County, has resulted in the loss or degradation of the once extensive tidal marshes, leaving a series of fragmented and isolated habitat patches. Within this zone, suitable habitat remains at the Seal Beach Naval Weapons Center north of Sunset Beach, and at Ballona wetlands. Populations of the south coast marsh vole still occur in these areas, although no data are available on their status. Much of the coastal habitat from Pacific Palisades west and north to Point Mugu is afforded some protection from State parkland and the regulatory restrictions of the Malibu Coastal Plan and the Significant Ecological Areas identified under the Plan. Although no data are available on the status of the species, the south coast marsh vole is included on the Watch List rather than as a Special Concern taxon. Bleich (in review) also acknowledged the likely impact of coastal development on the south coast marsh vole, but considered the data to be insufficient to assign a risk of extinction to the species. Bleich (in review) also recommended that because the distribution of *M. c. stephensi* is surrounded by *M. c. sanctidiegi*, which in turn is surrounded by *c. californicus*, follow-up taxonomic or experimental work should, at a minimum, include all three forms.

**Monterey Bay harvest mouse, *Reithrodontomys megalotis distichlis***
*Paul W. Collins*

*R. m. distichlis* inhabits coastal salt marshes, freshwater wetlands and probably sandhill grasslands near the seacoast in the vicinity of the Salinas River mouth (von Bloeker 1937). Based on available specimen records, this taxon inhabits coastal estuaries from Elkhorn Slough, Moss Landing south to Seaside Lagoon and sandhills inland to Castroville, Fort Ord and Strawberry Canyon (Von Bloeker 1938). There are apparently no current data on the distribution and status of *R. m. distichlis*. *R. m. distichlis* was described based on morphological differences (smaller size and darker dorsal coloration) observed in a small sample collected from sand dunes and salt marshes bordering Monterey Bay, Monterey County (von Bloeker 1937, 1938). However, a subsequent cytological and morphological evaluation of harvest mice in the lower Salinas River Valley concluded that *R. m. distichlis* was not morphologically distinct from interior (upriver) populations of *R. m. longicaudus*, and as such, did not warrant subspecific recognition (Blanks 1967). Although western harvest mouse populations from the lower Salinas Valley were found to represent a polymorphic form of *R. megalotis*, it was concluded that these polymorphic populations did not warrant separate subspecific recognition (Blanks 1967, Blanks and Shellhammer 1968). The Monterey Bay harvest mouse was initially considered for inclusion on the working list for this document because of its restricted distribution and because much of the area within its geographic range is under intense pressure from urban and agricultural developments. However, it was relegated to the Watch List because of its questionable subspecific status and because most of the salt marsh and freshwater wetlands within its range are presently protected from development. A study using currently accepted genetic and multivariate morphometric techniques is needed to properly evaluate the taxonomic validity of *R. m. distichlis*. If such a study finds that harvest mouse populations from coastal areas bordering Monterey Bay are not distinct from interior upland *R. m. longicaudus* populations, then this form could be removed from the Watch List.

**Harvest mouse, Santa Cruz Island population, *Reithrodontomys megalotis longicaudus***
*Paul W. Collins*

Harvest mice were discovered on Santa Cruz Island at the Prisoners' Harbor marsh in 1948 and were described as *R. m. santacruzae.* They were distinguished from mainland *R. m. longicaudus* by their larger size, and grayer, more lax pelage (Pearson 1951). In a recent genetic and morphologic study of western harvest mouse populations from island and coastal areas of southern California, Collins and George (1990) concluded that there were no substantive genic or cranial shape differences that distinguished the Santa Cruz Island population of harvest mice from adjacent mainland populations. As a result, *R. m. santacruzae* was considered synonymous with *R. m. longicaudus*. Collins and George (1990) found that harvest mice on Santa Cruz and Santa Catalina Islands were slightly larger in overall body size than harvest mice on the adjacent mainland.

Pearson (1951) reported that harvest mice on Santa Cruz Island were confined to a small, grassy area adjacent to a small, freshwater marsh at Prisoners' Harbor. He suggested that this habitat was rare and that harvest mice were probably limited to that one spot on the island. Williams (1986) first considered the Santa Cruz Island harvest mouse for inclusion on the draft Mammal Species of Special Concern list because of its apparent restricted habitat, Pearson's (1951) belief that the entire island population was very small, and because native plant communities on the island were being damaged by a variety of introduced ungulates. He removed the species from the final species of concern list because there were data to suggest that the species was more widely distributed on the island, and because 90% of the island had recently come under management of The Nature Conservancy. A subsequent status review of this island population determined that, although harvest mice were widely distributed on Santa Cruz Island, they were uncommon to locally rare (Collins 1987). Additional small mammal trapping programs conducted on Santa Cruz Island during the 1990s further confirmed the wide distribution but locally rare status of this species (G. Rohmer and R. Klinger pers. comm.). Collins (1987) concluded that alterations of native habitats, particularly mesic habitats, from feral pig rooting, and from grazing, trampling, and soil compaction by sheep and cattle, was the primary factor threatening the continued survival of harvest mice on Santa Cruz Island. During the 1980s, feral sheep and cattle were eliminated from the western 90% of the island (Schuyler 1993, Klinger et al. 1994, Junak et al. 1995). Despite the removal of these two feral herbivores from over 90% of the island, wild pigs remain widespread and abundant on the entire island and feral sheep continue to roam free on the eastern third of the island (Junak et al. 1995). Based on the results of this status review, results of small mammal trapping conducted on the island during the 1990s, and on the fact that feral sheep and wild pigs continue to degrade native plant communities on Santa Cruz Island, it was decided that this island population of the western harvest mouse should be kept on the Watch List.

Even though Santa Cruz Island is currently under the management of the National Park Service and The Nature Conservancy, feral herbivores will need to be permanently eliminated from the island and native plant communities restored, or harvest mice on the island will continue to be at risk. A more intensive island-wide trapping program should be undertaken to obtain current data on the distribution, abundance, and habitat associations of harvest mice on Santa Cruz Island. This type of information is needed to determine whether the removal of feral herbivores and the subsequent recovery of the native plant communities has had a beneficial affect on harvest mice, and to see if continued rooting and degradation of mesic habitats by feral pigs is threatening the long-term survival of this locally restricted population of harvest mice.

### Yuma hispid cotton rat, *Sigmodon hispidus eremicus*

*Paul W. Collins*

*S. h. eremicus* ranges along the southern end of the Colorado River from Palo Verde south to the Colorado River Delta, and in the irrigated portions of the Imperial Valley from the Mexican Border north to approximately Niland at the southern end of the Salton Sea (Clark 1972; Blood 1981, 1990). Yuma hispid cotton rats are believed to have immigrated to the Imperial Valley soon after completion of the canal from the Colorado River (Dixon 1922). Their range in California has increased in part due to the construction of canals and ditches for transporting water to irrigate agricultural developments throughout the Imperial and lower Colorado River valleys. Along the Colorado River, western cotton rats inhabit back-water sloughs and marshy areas adjacent to the river which are vegetated with seedling willows, sedges or tule, borders of wire grass or dense thickets of arrowweed (Grinnell 1914, Hoffmeister 1986). Western cotton rats in California also occur in association with drainage ditches, canals and seeps which have a weedy vegetative cover composed of arrowweed, saltgrass, common reed, screwbean mesquite, cattails, sedges, tamarisk, heliotrope and annual grasses (Clark 1972). Western cotton rats have invaded agricultural fields where they have caused crop damage to sugar beets and citrus (Clark 1972). *S. h. eremicus* is included on the Watch List, and not as a Species of Special Concern, because it has been found to be fairly common along canals and irrigation ditches in the Imperial Valley (B. Blood in review), where it inhabits weedy irrigation ditches, and because of its ability to exploit agricultural crops such as cotton, sugar beets and citrus. Although the subspecies is not widespread in California, it is probably not jeopardized. Priorities for this subspecies include determining its distribution, population status and habitat affinities along the Colorado River, and identifying the nature and extent of any immediate or anticipated threats to its continued survival.

### Pallid bobcat, *Lynx rufus pallescens*

*Thomas E. Kucera*

The pallid bobcat is widely distributed throughout the Great Basin. In California, it occurs only in Modoc, Lassen, Shasta, and Siskiyou counties (Hall 1981). Williams (1986) listed the pallid bobcat as a “Priority Four” species because of the high pelt prices and large take by fur trappers in the 1970s. Lee (1978) reported that average price paid for a bobcat pelt in 1976 was $133 in 1975-76; Gould (1977c) reported that a prime pelt of a pallid bobcat sold for $405 in 1977. Statewide, the reported annual take of bobcats by fur trappers in 1976-77 was 3618, a 15-fold increase in 10 years; the take of bobcats by hunters and predator control agents was approximately equal to that of trappers (Gould 1977c). This level of take remained through the 1980s, when average pelt prices declined to below $50 and reported annual trapper take declined to about 1000 through the present time (CDFG 1997). If pelt prices remain low, trapping is unlikely to affect the status of the pallid bobcat in California. However, in the event of a large increase in demand for bobcat pelts, the taxon could be at risk. In such an event, a rigorous monitoring program should be instituted.

### Sierra Nevada marten, *Martes americana sierrae*

*Thomas E. Kucera*

Data on the current distribution of the Sierra Nevada marten is more plentiful than that for other wide-ranging mammalian taxon in California (Kucera et al. 1995). Surveys since 1990 have demonstrated that martens occupy much of their historic range in the high-elevation coniferous forests in the southern Cascade Range and the Sierra Nevada. As top carnivores, American martens naturally occur in low densities, with home ranges of from 1 to >20 $km^2$ (Powell 1994). Their preference for forests with mature or old conifer trees with large-diameter standing and downed wood for maternal and winter dens, as well as a complex understory, make them vulnerable to habitat loss from timber production (Buskirk and Powell 1994, Thompson and Harestad 1994) or from catastrophic fire. The U.S. Forest Service lists the American marten as a “Sensitive” species in California (Macfarlane 1994).

**Badger, *Taxidea taxus***
*Thomas E. Kucera*

Williams (1986) listed the badger as a "Priority Three" species, noting that badger numbers have declined drastically in California in the 20th century. Agricultural and urban development, direct and secondary poisoning, and shooting and trapping for control all have had deleterious effects on badgers in California. Since 1991, fewer that 50 badgers annually have been reported taken by fur trappers, and pelt prices averaged below $5 apiece. There are no reliable data on the species' current distribution or status. Williams' (1986) recommendations for data on current badger populations, mandatory reporting of take, and assessing the effects of continuing habitat loss, rodent poisoning, and trapper mortality remain valid.