

Chapter 4 – Potentially Vulnerable Species: Animals

The last word in ignorance is the man who says of an animal or plant: 'What good is it?' If the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of aeons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering.

—Aldo Leopold (1953)

Key Questions

- Which species are rare or at risk in the coastal mountains and foothills of southern California?
- What is known about the status and distribution of each?
- What factors threaten their continued persistence?
- What is the potential for conserving on existing public lands?
- To what extent are they vulnerable to current agents of change?

In chapters 4 and 5 we examine the current status and trends of species that, for a variety of reasons, may be vulnerable to extinction in the assessment area. Here in chapter 4 we address animals, and plants are considered in chapter 5. Taxa were selected using various “species of concern” lists that state and federal wildlife agencies and private conservation organizations have developed (fig. 4.1). Also identified were species that are considered common elsewhere but are rare or potentially at risk within the assessment area. Each identified species possesses one or more of the following traits: (1) occurs in only a few limited areas, (2) is particularly vulnerable to prevailing landscape changes, (3) has a small population size, (4) has large area re-

quirements, or (5) there is a great deal of uncertainty about its distribution and abundance.

Using the fine-filter screening criteria, we identified 181 animals occurring within or near the assessment area which warrant individual consideration (fig 4.2). Thirty-one of these species are officially listed as threatened or endangered (table 4.1), and thus legally protected under the federal Endangered Species Act. The remaining 150 species could become candidates for federal listing in the future if measures are not taken to assure their conservation. Our primary objective was to use the available data on these species to

Figure 4.1. The fine-filter criteria used to identify rare or at-risk species. These species are addressed individually in this chapter.

- Threatened, Endangered, and Proposed Species (federal and state lists)
 - A former USFWS Candidate (C1 and C2) Species
 - A Forest Service, Region 5 Sensitive Species
 - A California Species of Special Concern
 - A Riparian Obligate Species of Concern (as defined by California Partners in Flight)
 - A species determined to have viability concerns at a local level
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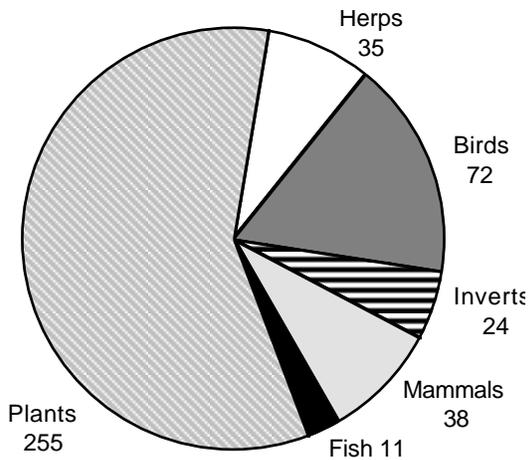


Figure 4.2. The breakdown of rare or at-risk species by taxonomic group.

assess their current status and vulnerability within the assessment area, and identify their conservation needs. This information can then be used when developing management priorities.

Several species that occurred within the assessment area as recently as 50 to 150 years ago are not addressed here because they are known to have been extirpated. These are the California grizzly bear (*Ursus arctos californicus*), gray wolf (*Canis lupus fuscus*), long-eared kit fox (*Vulpes macrotis macrotis*), and pronghorn antelope (*Antilocapra americana*) (Williams 1986).

Evaluating Status and Conservation Potential

The potential for conservation, and the actions needed to conserve, vary considerably depending on the individual characteristics of each species. To evaluate those characteristics, we compiled information on species-habitat associations and used GIS coverages to predict habitat suitability across the landscape. Databases of habitat and life history information were compiled for both animals and plants. In addition, the locations of current

and historic observations of these species were compiled and stored in a GIS database.

For vertebrate animals, we utilized information on distribution and habitat relationships from the CWHR database, but with modifications to tailor it more specifically to the habitats and geographic subregions in southern California. Following the ideas of Hansen and Urban (1992), we also collected available information on territory size, patch size requirements, resilience to stressors, feeding strategy, and nest height. This type of life history information was not available for many species.

There are some clear differences in the distribution of various taxa that have important ramifications for conservation and management. For example, many rare plants and invertebrates are narrowly endemic to a particular area (e.g., restricted to a single mountain range or watershed), while most rare vertebrates tend to be more widespread (fig. 4.3). Successful conservation strategies for more widespread species generally require a higher level of coordination and cooperation between landowners and jurisdictions.

Borrowing an approach developed by the Southern Orange County NCCP Scientific Advisory Committee (Atwood et al. 1996), we evaluated each species and placed it into a conservation category based on criteria that (1) consider its conservation needs, (2) assess the ability to meet those needs on public lands within the assessment area, and (3) evaluate the type of actions needed.

Determinations were made after analyzing available information on life history characteristics, degree of rarity or endemism, regional context, response to land use, extant population size and trend, and other variables as necessary. A matrix of species-specific characteristics was created to assist in this process. The categories and their associated criteria are described in table 4.2. A complete listing of all species by conservation category is located in appendix A. The findings from our species evaluations are summarized in the following sections.

Table 4.1. The thirty-one federally listed animal species occurring within or near the assessment area and their distribution by national forest (y = occurs, h = historically occurred, p = potential to occur, hyb = hybrid).

Common Name	Scientific Name	Federal Status	Year Listed	C N F	SB N F	A N F	LP N F
Invertebrates:							
Smith's blue butterfly	<i>Euphilotes enoptes smithi</i>	Endangered	1976				y
Quino checkerspot butterfly	<i>Euphydryas editha quino</i>	Endangered	1997	y	p	p	
Laguna Mountains skipper	<i>Pyrgus ruralis lagunae</i>	Endangered	1997	y			
Longhorn fairy shrimp	<i>Branchinecta longiantenna</i>	Endangered	1994				p
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	Threatened	1994	p			p
Fish:							
Southern steelhead	<i>Oncorhynchus mykiss</i>	Endangered	1998	h/p	h	h	y
Mojave tui chub	<i>Gila bicolor mohavensis</i>	Endangered	1970		y ^{hyb}		
Unarmored 3-spined stickleback	<i>Gasterosteus aculeatus williamsoni</i>	Endangered	1970		y	y	h
Tidewater goby	<i>Eucyclogobius newberryi</i>	Endangered	1994				p
Amphibians:							
Arroyo toad	<i>Bufo californicus</i>	Endangered	1994	y	y	y	y
California red-legged frog	<i>Rana aurora draytonii</i>	Threatened	1996	h/p	h/p	y	y
Reptiles:							
Desert tortoise	<i>Xerobates agassizii</i>	Threatened	1980		p	p	
Blunt-nosed leopard lizard	<i>Gambelia silus</i>	Endangered	1967				p
Birds:							
California brown pelican	<i>Pelecanus occidentalis californicus</i>	Endangered	1970				y
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	Threatened	1993				p
Marbled murrelet	<i>Brachyramphus marmoratus</i>	Threatened	1992				y
California condor	<i>Gymnogyps californianus</i>	Endangered	1967	h	h	h/p	y
Bald eagle	<i>Haliaeetus leucocephalus</i>	Threatened	1978	y	y	y	y
American peregrine falcon*	<i>Falco peregrinus anatum</i>	Endangered	1970	y	y	y	y
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered	1995	y	y	y	p
California gnatcatcher	<i>Polioptila californica californica</i>	Threatened	1993	y	p		
Least Bell's vireo	<i>Vireo bellii pusillus</i>	Endangered	1986	y	p	p	y
Mammals:							
Pacific pocket mouse	<i>Perognathus longimembris pacificus</i>	Endangered	1994	p			
Giant kangaroo rat	<i>Dipodomys ingens</i>	Endangered	1987				h/p
Stephens' kangaroo rat	<i>Dipodomys stephensi</i>	Endangered	1988	p	p		
San Bernardino kangaroo rat	<i>Dipodomys merriami parvus</i>	Endangered	1998		y	p	
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	Endangered	1967				y
Peninsular bighorn sheep	<i>Ovis canadensis "cremnobates"</i>	Endangered	1998		y		
Southern sea otter	<i>Enhydra lutris nereis</i>	Threatened	1977				y
Steller sea lion	<i>Eumetopias jubatus</i>	Threatened	1990				y

* delisted in 1999 (USFWS 1999)

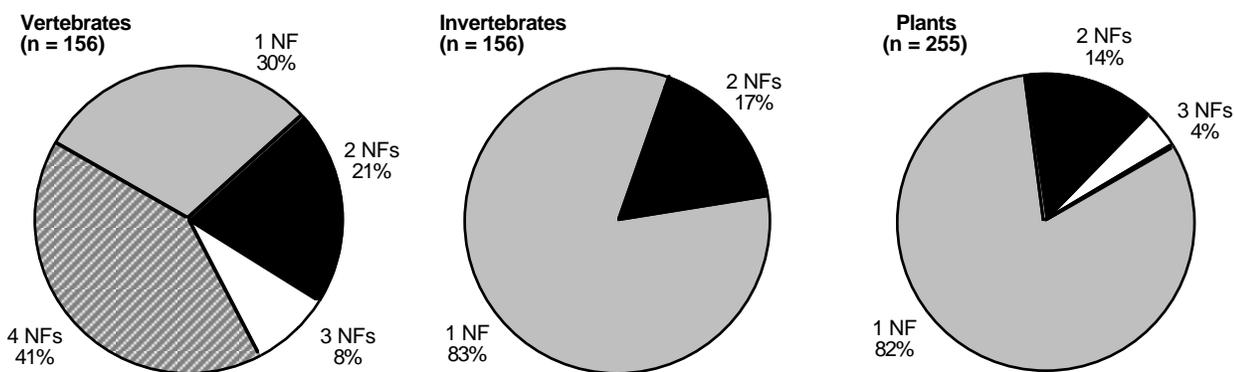


Figure 4.3. The distribution of rare species varies by type. Invertebrate and plant species tend to be much more localized, with over 80 percent occurring on only one national forest (NF) in the assessment area. Rare vertebrates are more widely distributed, with 41 percent occurring on all four national forests.

Table 4.2. The categories and criteria used to evaluate each species' conservation potential and needs on public lands within the assessment area.

Minimal Influence: Minimal ability to conserve on public lands within the assessment area

Species whose conservation is affected minimally by management of public lands in the mountains and foothills. Suitable habitat for these species occurs outside the assessment area (or at least outside of public lands within the assessment area), but they occur within the area only incidentally or in insignificant numbers.

Landscape Level: Species best conserved through habitat or landscape-level management

Species that can be conserved through management activities at the habitat or landscape scale. These species have relatively robust populations and/or have life history characteristics that respond to habitat-scale conservation. They tend to be predictable occupants of a broad habitat type or structural stage; thus, species-specific surveys are not crucial in order to conserve. Their persistence can be relatively accurately inferred in a well-managed, functioning landscape that is within the natural range of variability.

Site Specific: Species requires site-specific conservation attention

Organisms requiring species-level conservation action (including protection of individual locations) in order to ensure their persistence in the planning area. Species in this category have one or more of the following characteristics: extremely small populations, narrow endemism within the landscape, highly specialized life history requirements, high sensitivity to small changes in habitat, dependence on intensive conservation activities (e.g., exotic species control). The species in this category require one or more of the following conservation actions: (1) site-specific protections or habitat enhancements, (2) reintroductions, (3) additional data collection and research to determine basic needs.

To structure the evaluation process, we separated species into groups based on primary habitat associations. The groupings are clearly generalizations and few of the species fit perfectly within their assigned habitat group. Many species occupy additional habitats and others, particularly invertebrates, occur in only a small portion of the defined habitat association. Still, it is useful to organize species based on general factors that help predict their occurrence. The groups are defined primarily by associations with vegetation types, but soil, geology, moisture, and elevation were also used as habitat indicators.

Species Accounts

In the following sections, organized by habitat groups, we summarize what is known about the 165 potentially vulnerable animal species. We focus primarily on information that is specific to populations in or near the assessment area. The individual accounts vary considerably in length and specificity, reflecting the variability of available information. Some species have received a lot of research attention, while others have been almost entirely ignored. Because of the public interest and regulatory requirements associated with listed T&E species, there tends to be much more information about them. For many of the nonlisted species, the amount of information on specific occurrences or even habitat associations within the assessment area is remarkably small. Thus, we have tried to identify important information needs in the species accounts.

Tables in each section summarize the distribution of each species within the assessment area. Also provided are general estimates of (1) how much information exists documenting locations of the species in the southern California region, (2) what percentage of those locations are on national forest system lands, and (3) how vulnerable the species is to land uses and habitat changes occurring on national forest system lands in the assessment area. Population trend information is also shown if

available and the assigned conservation category, based on criteria in table 4.2, is provided.

The estimates of distributional knowledge, percent of occurrences on national forest system lands, and overall vulnerability should be regarded as educated guesses based on available information and consultations with local experts. There is a particularly high level of uncertainty associated with the estimated percentage of occurrences that fall on national forest system lands. The vulnerability categories were based on sensitivity to the prevailing agents of change described in chapter 3, such as current fire and stream flow regimes, non-native species, human land use activities, and pollution.

Habitat Generalists

Seventeen animal species that warrant individual consideration are best described as habitat generalists. Key habitat management issues identified for species in this group include (1) conservation of mesic microhabitats in arid upland plant communities, (2) protection of raptor cliff-nesting sites during the breeding season, and (3) protection of abandoned mine shafts that serve as important hibernacula and roosting habitat for several bat species. We conclude that only one of these species, the California condor, is highly vulnerable to existing agents of change on public lands within the assessment area (table 4.3).

California legless lizard (*Anniella pulchra*)

Status and Distribution: The legless lizard is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. Its geographic range overlaps extensively with the assessment area, although it is primarily found at low elevations. Its reported elevation range extends from sea level to approximately 5,700 feet in the Sierra Nevada foothills, but most historic localities along the central and southern California coast are below 3,500 feet (Jennings and Hayes 1994). Legless lizards are particularly well documented in coastal dune habitats, but the distribution map in Jennings and Hayes

Table 4.3. Habitat generalist animals that received individual consideration.

Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Habitat Generalist Animals of Concern <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulnerability on NFs	(4) Pop. Trend	(5) Conser- vation Category
		Cleveland NF		San Bern. NF		Angeles NF		Los Padres NF					
		San Diego Rngs	Snta Ana Mts	San Jac Mts	San Bern Mts	San Gab Mts	Cas- taic Rngs	So. LP Rngs	So. SL Rng	No. SL Rng			
Reptiles													
California legless lizard	Mod-Low (10-40%)	y	y	y	p	y	y	y	y	y	Low	Unkn	Landscape level
Coronado skink	Mod (10-50%)	y		y							Low	Unkn	Landscape level
San Bernardino ringneck snake	Mod-Low (10-40%)		y		y	y	p	p			Low	Unkn	Landscape level
San Diego ringneck snake	Mod-Low (10-30%)	y	p	y							Low	Unkn	Landscape level
Cliff-Nesting Birds													
California condor <i>endangered</i>	High (> 70%)	h	h	h	h	h	h/p	16	12	p	High	Incr	Site specific
Golden eagle	High (30-60%)	y	y	y	y	y	y	y	y	y	Mod	Decl ¹	Landscape level
Peregrine falcon <i>endangered*</i>	Mod (< 20%)	y	p	p	p	p	p	p	p	y	Mod	Incr ²	Site specific (nest sites)
Prairie falcon	Mod (30-60%)	y	p	y	y	y	y	y	y	y	Mod	Unkn	Landscape level
Mammals													
Yuma myotis bat	Mod (20-40%)	y	y	y	y	y	y	y	y	y	Low	Unkn	Landscape level
Western small-footed myotis bat	Mod (40-70%)	y	y	y	y	y	y	y	y	y	Low	Unkn	Landscape level
Spotted bat	Low (?)	y	p	y	y	y	y	p			Low	Unkn	Landscape level
Townsend's big-eared bat	Mod (30-60%)	y	y	y	y	y	y	y	y	y	Mod	Unkn	Site specific (mine roosts)
Pallid bat	Low (10-30%)	y	y	y	y	y	y	y	y	y	Low	Unkn	Landscape level
Western mastiff bat	Mod (10-50%)	y	y	y	y	y	y	y	p	p	Low	Unkn	Landscape level
California chipmunk	Mod (40-70%)			y	y						Low	Unkn	Landscape level
Western spotted skunk	Low (30-70%)	y	y	y	y	y	y	y	y	y	Low	Unkn	Landscape level
American badger	Low (< 20%)	y	y	y	y	y	y	y	y	y	Mod	Decl ³	Site specific

¹ Declining in San Diego County based on monitoring done by San Diego Golden Eagle Study Group

² Based on rangewide information from Cade et al. 1997

³ Williams 1986

* formally removed from the Endangered Species List in 1999 (USFWS 1999)

(1994) suggests they probably occur in the lower reaches of all our mountain subareas with the possible exception of the San Bernardino Mountains.

Habitat: The California legless lizard is a burrowing species associated with sandy or loose loamy soils under the sparse vegetation of beaches, chaparral, or pine-oak woodland, or under sycamores, cottonwoods, or oaks growing on stream terraces (Jennings and Hayes 1994). It also occurs in desert scrub along the western edge of the Mojave Desert near Lancaster and in western portions of Anza-Borrego Desert State Park. Legless lizards are often found under surface objects such as logs, rocks, and leaf litter. Soil moisture is essential for them and legless lizards die if they are unable to reach a moist substrate (Bury and Balgooyen 1976).

Fisher and Case (1997) describe finding legless lizards at several locations in the eastern Santa Ana Mountains (i.e. Indian Canyon, Ortega Highway, and upper Tenaja Truck Trail) under oak woodland, chaparral, and coastal scrub vegetation in decomposing granite soils. They suggest that the distribution of these lizards in foothill and lower montane areas may be closely tied to decomposing granite soils.

Conservation Considerations: Given the legless lizard's habitat requirements, life history characteristics, and relatively broad distribution, we believe it is not highly vulnerable to existing agents of change in the mountains and foothills. Thus, populations on public lands within the assessment area can be adequately conserved through landscape-scale, habitat-based management. However, given the limited amount of information on the distribution and abundance of this species in foothill and lower montane areas, we do wonder if these upper-elevation habitats are productive enough to support self-sustaining populations. Habitat connections to wildland reserves in the coastal and inland valleys may be important for this species. Also, Jennings and Hayes (1994) describe problems associated with invasive non-native plants in coastal dune habitats. Exotic plants could be

a problem for legless lizards in other habitats too, especially if they affect soil moisture.

Coronado skink

(*Eumeces skiltonianus interparietalis*)

Status and Distribution: A subspecies of western skink, the Coronado skink is a California Species of Special Concern. It reportedly inhabits the coastal plain and Peninsular Ranges west of the deserts from approximately San Geronio Pass southward into Baja California (Jennings and Hayes 1994). However, there are problems with the taxonomy of Pacific Coast skinks in general and with the morphological characteristics used to distinguish the Coronado skink in particular (Jennings and Hayes 1994).

Fisher and Case (1997) report that the characteristics used to identify the Coronado subspecies are ill defined and the main character (shape of the interparietal) is variable and never occurs in a large proportion of individuals, even at locations within the range of the purported subspecies. They found *Eumeces skiltonianus* at study sites near Big Bear in the San Bernardino Mountains; at the James Reserve in the San Jacinto Mountains; at Palomar Mountain, Otay Mountain, and Japatul in San Diego County; and at Starr Ranch in the Santa Ana Mountains. However, they could not reliably separate *E. s. interparietalis* from the more common *E. s. skiltonianus* based on morphological characteristics (Fisher and Case 1997).

Habitat: The Coronado skink reportedly occurs in a variety of plant associations including coastal sage scrub, chaparral, oak woodlands, pinyon-juniper woodlands, riparian woodlands, and coniferous forests. However, within these associations it is often restricted to more mesic microhabitats (Jennings and Hayes 1994).

Conservation Considerations: As suggested by Jennings and Hayes (1994) and Fisher and Case (1997), a review of the systematic status of the Coronado skink relative to other western skinks is needed to determine if it really warrants subspecies status and, if

so, to better describe identifying characteristics. The Coronado skink has a relatively broad distribution, and the work of Fisher and Case (1997) suggests it is fairly common in areas of suitable habitat. Thus, we believe it can be adequately conserved through landscape-scale, habitat-based management. Jennings and Hayes (1994) express concern about the drying up of mesic microhabitats due to human use of surface and underground water resources and the effect it may have on this species. Management consideration should be given to identifying and conserving these microhabitats. It appears that trends in skink abundance can be effectively monitored using pitfall trap arrays (Fisher and Case 1997).

**San Bernardino ringneck snake
(*Diadophis punctatus modestus*)**

Status and Distribution: The San Bernardino ringneck snake is a Forest Service Region 5 Sensitive Species. Information on its distribution within the assessment area is scant. Most museum specimens are from coastal basins and inland valleys. Blanchard (1942) documents occurrences in Miller Canyon in the San Gabriel Mountains, Mill Creek and the upper Santa Ana River (near Lost Creek) in the San Bernardino Mountains, and in Trabuco Canyon in Orange County (potentially within the Santa Ana Mountains). Fisher and Case (1997) found ringneck snakes on Starr Ranch at the foot of the Santa Ana Mountains but did not identify them to subspecies.

Habitat: Ringneck snakes are found in a wide variety of habitats from sea level to 6,400 feet (Blanchard 1942). Existing distributional information is spotty, but it appears that these snakes are more common at low elevation sites (i.e., below 3,000 feet). Ringneck snakes are not strongly associated with riparian habitats, but the apparent importance of tree frogs and slender salamanders in their diet (Blanchard 1942; Stebbins 1972) suggests they may seek out and require moist microclimates. This is also suggested by their reported absence from desert-side habitats (Blanchard 1942). Ring-

neck snakes are rarely seen on the surface but rather are found under rocks, logs, or leaf litter.

Conservation Considerations: The ringneck snake's secretive nature, relatively broad distribution, and generalized habitat associations suggest it can be conserved through landscape-scale, habitat-based management. It does not seem particularly vulnerable to existing change agents on public lands. Mesic microhabitats in otherwise arid, upland vegetation types appear to be important to this species. Management consideration should be given to identifying and conserving these microhabitats. It would be very difficult to monitor population trends of ringneck snakes across a broad region in a reliable manner.

**San Diego ringneck snake
(*Diadophis punctatus similis*)**

Status and Distribution: The San Diego ringneck snake is a Forest Service Region 5 Sensitive Species. Recent information on its distribution within the assessment area is scant. Fisher and Case (1997) found ringneck snakes in Hall Canyon in the San Jacinto Mountains, and on Otay Mountain in San Diego County and also report them as being widespread at low-elevation inland valley sites in Riverside and San Diego counties. Other recently reported localities in the San Jacinto Mountains include Apple Canyon, upper Hurkey Creek, Idyllwild, Dark Canyon, and Vista Grande Fire Station (D. Freeman, San Jacinto Ranger District, unpubl. notes). In San Diego County, they have recently been detected in Pamo Valley and Barona Creek (D. Mayer, Merkel & Associates, pers. comm.).

Blanchard (1942) documents occurrences in Strawberry Canyon in the San Jacinto Mountains and in Pine Valley, Santa Ysabel, Warner Springs, Witch Creek, and Wynola in the mountains of San Diego County. Unpublished maps based on Laurence Klauber's work from the 1920s through the 1940s show the San Diego localities reported by Blanchard and also additional ones within the assessment area at Pine Valley, Laguna Mountain, Cuyamaca Lake, Boulder Creek, Pine Hills, and the south side of Palomar Mountain.

Habitat: Similar to that described for the San Bernardino ringneck snake. The highest recorded elevation is 5,500 feet. Blanchard (1942) reports that most specimens of this subspecies came from coastal areas, with smaller numbers from inland valleys and foothills, and only a few from the mountains. This pattern is also reflected in the maps of Klauber's collections. Fisher and Case (1997) report that ringneck snakes were widespread in coastal sage scrub and oak woodland habitats at coastal sites in San Diego and Orange counties and at inland valley sites in Riverside County. Holland and Goodman (1998) found this snake on Camp Pendleton in coastal sage scrub, chaparral, oak woodland, grassland, and riparian areas.

Conservation Considerations: Same as those described for the San Bernardino ringneck snake.

California condor **(*Gymnogyps californianus*)**

Status and Distribution: The California condor was federally listed as an endangered species in 1967. In 1987, after years of steady population declines, the last nine wild condors were captured on the Los Padres National Forest and brought into captivity. Since that time successful captive breeding programs have been ongoing at the Los Angeles Zoo and San Diego Wild Animal Park (AZA 1995).

In January 1992, the first two California condors were reintroduced into the Los Padres National Forest's Sespe Condor Sanctuary, along with two Andean condors. A total of thirteen California condors were released at the Sespe Sanctuary from 1992 to 1994. Five of these died, four from collisions with power lines and one from ingesting ethylene glycol, a poisonous ingredient of antifreeze (AZA 1995). The remaining eight were recaptured in March 1995 because of their tendency to use powerlines poles for day perches and overnight roosts.

Since that time, negative conditioning has been used prior to release to train the condors to avoid powerlines. Alternative release sites, in more remote locations, have also been used.

Release sites on the Los Padres National Forest include the Sierra Madre Mountains and the Castle Crag area (Fig. 4.4) (AZA 1995). These actions have improved the success of subsequent releases. As of February 1999, there were reportedly 28 wild condors in the vicinity of the Los Padres National Forest release sites (CDFG 1999). Another 22 condors are in the wild on the Vermillion Cliffs of Arizona and 97 remain in captivity at three different breeding facilities, for a total population of 147 birds (CDFG 1999).

Habitat: Condors generally nest on cliffs, although they have been observed using cavities in large redwood trees (Jurek 1997). They are carrion feeders and often travel long distances in search of large dead animals such as deer, antelope, cattle, and sheep.

Conservation Considerations: Factors that led to the condor's century-long decline include illegal collection of adults and their eggs, poisoning from substances put out by ranchers to eradicate livestock predators, poisoning from ingesting lead fragments from bullets embedded in animal carcasses the condors feed on, and collisions with structures such as power lines. In addition, the roads, cities, housing tracts, and weekend mountain retreats of modern civilization have replaced much of the open country condors need to find food. Their slow rate of reproduction and years spent reaching breeding maturity undoubtedly make the condor population as a whole more vulnerable to these threats.

Keys to the success of the recovery program include successful breeding in the wild and maintenance of an ample food supply. The first nesting of released condors cannot be expected for at least three to five more years (sometime between 2000 and 2010) (Jurek 1997). Currently, supplemental food is hauled in for the wild birds. It remains to be seen if the natural supply of large carrion is sufficient to support a stable condor population.

Golden eagle (*Aquila chrysaetos*)

Status and Distribution: The golden eagle is a California Species of Special Concern. It

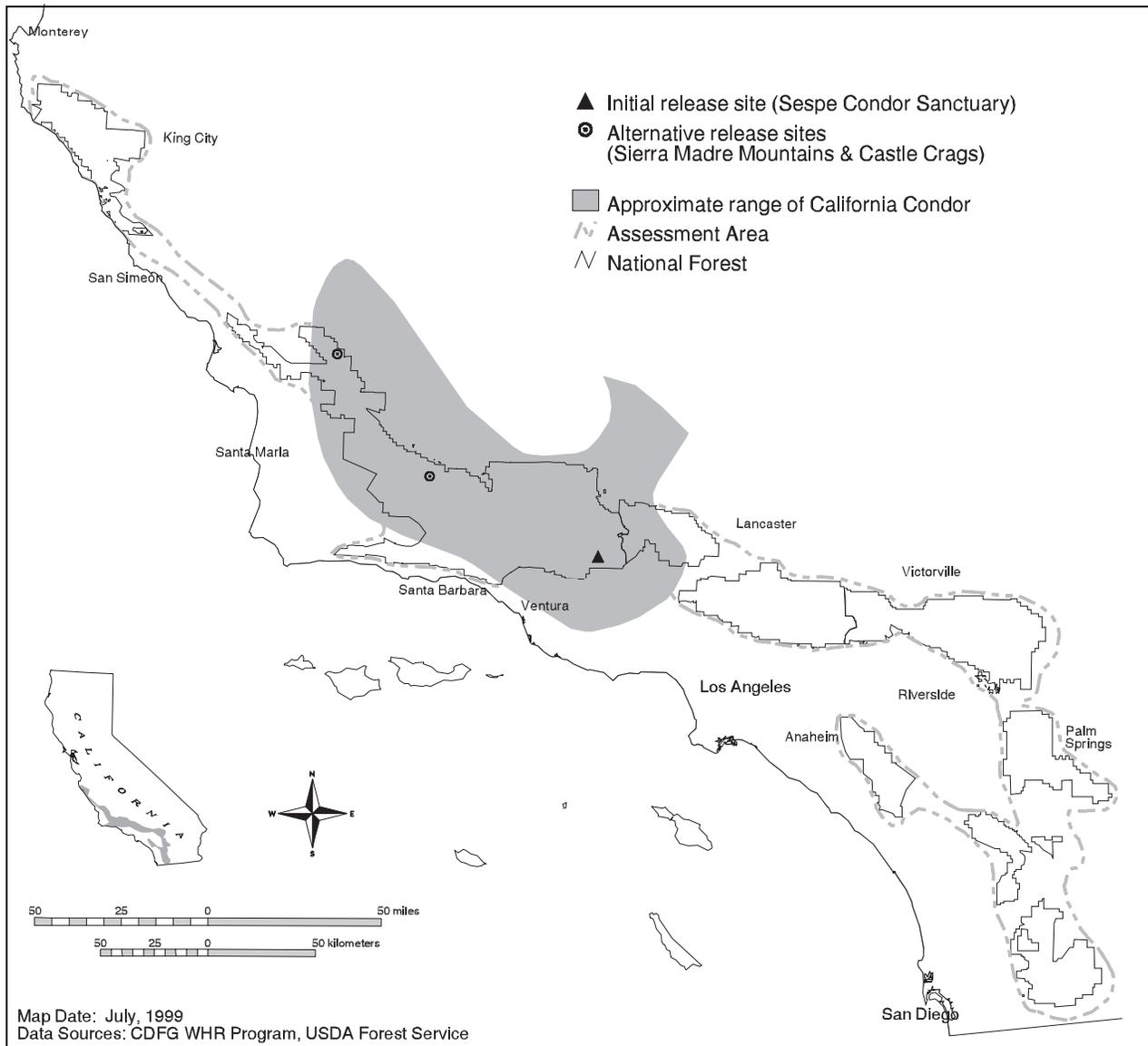


Figure 4.4. Areas currently occupied by California condors on the Los Padres National Forest.

is uncommon, but widely distributed throughout the assessment area, particularly in foothill, lower montane, and desert-montane habitats. Monitoring of historic territories by the San Diego Golden Eagle Study Group has documented a substantial decline in the San Diego County population (D. Bittner and J. Oakley, pers. comm.). Drops in territory occupancy are most apparent in the coastal foothills where there is rapid urban growth.

Habitat: Golden eagles nest primarily on cliffs and hunt for rabbits and other small mammals in nearby open habitats such as grasslands, oak savannas, and open shrublands.

Conservation Considerations: Developments on private lands that encroach on key

foraging areas are a problem for golden eagles, particularly in the southern half of the assessment area. There appears to be ample nesting habitat on public land, but in many places the highest quality foraging areas are on private land. Increased recreational activity in the vicinity of cliff nests, particularly rock climbing, is also a problem in some areas and can cause eagles to abandon a site. Management consideration should be given to identifying and protecting active nest sites during the breeding season.

American peregrine falcon
(*Falco peregrinus anatum*)

Status and Distribution: The peregrine falcon was removed from the Endangered Species List in August 1999. (USFWS 1999). It is rare but widely distributed across southern and central California, usually near the coast or in other areas where migrant waterfowl or shorebirds are concentrated (e.g., inland reservoirs) (Garrett and Dunn 1981). Peregrine falcons are more common in northern portions of the assessment area that are relatively close to coastal wetlands (i.e., the northern and southern Santa Lucia Ranges and the Santa Ynez Mountains).

Widespread and indiscriminate use of DDT in the middle of the century caused a drastic decline in U.S. peregrine populations. The pesticide, which accumulates in the aquatic food chain, causes a thinning of peregrine egg shells which lowers reproductive success. Bans on the use of DDT in the 1970s and a major reintroduction campaign led by the Peregrine Fund have resulted in an impressive increase in the distribution and abundance of this bird over the last twenty years (Cade et al. 1997). The population increase has been substantial enough to warrant the peregrine's delisting (Mesta et al. 1995; Cade et al. 1997), although this decision is controversial (Pagel et al. 1996; Pagel and Bell 1997).

In the 1980s, a number of peregrine reintroductions were attempted on the southern California national forests. Most of these birds did not remain in the vicinity of release sites.

Habitat: Peregrine falcons nest high on cliffs, usually near water. Much of the assessment area is not high-quality habitat for this species because of the lack of water bodies that concentrate its preferred prey.

Conservation Considerations: Protection of cliff nesting sites from human disturbance is an important conservation measure for peregrine falcons.

Prairie falcon (*Falco mexicanus*)

Status and Distribution: The prairie falcon is a California Species of Special Concern. It is uncommon but widely distributed in the assessment area. Like the golden eagle, it has

declined in the coastal foothills, probably due to the loss of foraging habitat (Garrett and Dunn 1981).

The prairie falcon's diet of nonaquatic birds helped it escape the widespread, DDT-induced declines experienced by the peregrine falcon. However, localized occurrences of egg thinning in prairie falcons have been reported.

Habitat: Prairie falcons nest on cliffs, generally in arid open areas. Desert scrub and grasslands are preferred foraging habitats (Garrett and Dunn 1981).

Conservation Considerations: Same as those described for the golden eagle and peregrine falcon.

Yuma myotis bat (*Myotis yumanensis*)

Status and Distribution: The Yuma myotis bat is currently a California Species of Special Concern, although it may soon be removed based on a recent status review (P. Collins, Santa Barbara Nat. History Museum, pers. comm.). In bat surveys conducted by the Forest Service from 1996 to 1998, Yuma myotis was detected at eighteen of seventy-six sites surveyed (Simons et al. in prep.). It was observed at three or more locations on each of the four national forests. Yuma myotis was found at elevations ranging from 1,400 to 7,700 feet, but was most commonly detected at sites below 5,000 feet (thirteen of the eighteen sites).

Habitat: Yuma myotis occurs in a variety of habitats including riparian, arid scrublands, deserts, and forests (Bogan et al. 1998a). It is usually associated with permanent sources of water, typically rivers and streams, where it does most of its foraging. Yuma myotis roosts in bridges, buildings, cliff crevices, caves, mines, and trees (Bogan et al. 1998a).

Conservation Considerations: The Yuma myotis bat appears to be well represented on public lands in the assessment area, particularly at elevations below 5,000 feet on both coastal and desert slopes. The ability of this species to utilize a wide range of roost types reduces its vulnerability. Identification and protection of maturity colony sites (e.g., in

caves, mines, or structures) is important to the conservation of this species.

Western small-footed myotis bat
(*Myotis ciliolabrum*)

Status and Distribution: The small-footed myotis bat is a former C2 candidate species. It was detected at twenty-four of seventy-six sites surveyed from 1996 to 1998, at elevations ranging from 3,800 to 7,800 feet (Simons et al. in prep.). It was the fourth most commonly detected bat species in that survey and was observed at four or more locations on each of the four national forests.

Habitat: The small-footed myotis is said to occur in deserts, chaparral, riparian zones, and coniferous forest, and, most commonly, in pinyon-juniper forests (Bogan et al. 1998b). Local surveys found this species most frequently in montane conifer forests and desert montane habitats (Simons et al. in prep.). This bat utilizes a variety of roost types.

Conservation Considerations: The western small-footed myotis bat appears to be well represented on public lands in the assessment area and its habitat requirements indicate relatively low vulnerability to existing agents of change. The ability of this species to use a variety of roost types reduces its vulnerability. Identification and protection of maturity colony sites (e.g., in caves, mines, or structures) is important to the conservation of this species.

Spotted bat (*Euderma maculatum*)

Status and Distribution: The spotted bat is a California Species of Special Concern. There is little current information on its distribution in the assessment area. It was detected at only two of seventy-six sites surveyed from 1996 to 1998 (on Palomar Mountain and in the Sierra Madre Mountains), but it is not a species that is often caught in mist nets (Simons et al. in prep.).

Habitat: Spotted bats forage in a wide variety of habitats but roost strictly in cliffs, which may limit their distribution (Luce 1998).

Conservation Considerations: More information is needed on the distribution and abundance of spotted bats within the assessment area. Their habit of roosting in cliffs reduces vulnerability to land use activities.

Townsend's big-eared bat
(*Corynorhinus townsendii*)

Status and Distribution: The Townsend's big-eared bat is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. It was detected at six of seventy-six sites surveyed from 1996 to 1998 in the mountains and foothills of southern California (one site on San Bernardino National Forest and five sites on Cleveland National Forest) (Simons et al. in prep.). More importantly, it was found at fourteen abandoned mine locations in the northeastern San Bernardino Mountains, with fifty-five individuals observed in one mine (Simons et al. in prep.). It has also been documented in several abandoned mines in the Laguna Mountains.

Habitat: The distribution of this species is strongly correlated with the availability of caves and cave-like roosting habitat, with population centers occurring in areas dominated by exposed, cavity forming rock and/or historic mining areas (Sherwin 1998a). Abandoned mines are particularly important in areas where there are not well developed caves.

Conservation Considerations: The Townsend's big-eared bat's dependence on abandoned mines for roosting makes it moderately vulnerable to ongoing activities. Mine vandalism and over-utilization of these sites are problems in a number of areas. Identification and protection of significant roost sites is key to the conservation of this species. Additional surveys are needed to identify roost sites. Several important roost sites have recently been identified and protected (by installing bat gates across mine entrances) in the San Bernardino Mountains (Lisa Underwood, Mountaintop District, pers. comm.).

Pallid bat (*Antrozous pallidus*)

Status and Distribution: The pallid bat is a Forest Service Region 5 Sensitive Species and

a California Species of Special Concern. It was detected at seven of seventy-six sites surveyed from 1996 to 1998 in the mountains and foothills of southern California (four sites on Los Padres National Forest, three sites on Angeles National Forest), at elevations ranging from 1,100 to 6,600 feet (Simons et al. in prep.). It was not detected in abandoned mine surveys in the northeastern San Bernardino Mountains (Simons et al. in prep.).

Habitat: Pallid bats roost in rock crevices, tree hollows, mines, caves, and a variety of man-made structures (Sherwin 1998b). Local data suggest that this species may be most common at elevations below 6,000 feet on both coastal and desert sides (Simons et al. in prep.).

Conservation Considerations: It is difficult to determine how widely distributed or abundant pallid bats are in the assessment area and more information is needed. Their ability to roost in a wide variety of sites may help reduce their vulnerability to human activities.

Western mastiff bat (*Eumops perotis*)

Status and Distribution: The western mastiff bat is a California Species of Special Concern. It was detected at twenty-five of seventy-six sites surveyed from 1996 to 1998 in the mountains and foothills of southern California (Simons et al. in prep.). It was the third most commonly detected bat species in that survey and was found on all four national forests, in a variety of habitats, and across a broad elevation range (1,100 to 7,600 feet).

Habitat: The mastiff bat is primarily a cliff-dwelling species, where maternity colonies of thirty to several hundred (typically fewer than one hundred) roost generally under exfoliating rock slabs (e.g., granite, sandstone, or columnar basalt) (Pierson 1998). It can also be found in similar crevices in large boulders and buildings. Mastiff bats are found in a wide variety of habitats, but the species' distribution may be geomorphically determined, occurring primarily where there are significant rock features offering suitable roosting habitat (Pierson and Rainey 1996; Pierson 1998).

Conservation Considerations: The western mastiff bat appears to be widespread in the assessment area, although its abundance is unknown. The habitat requirements of this species indicate relatively low vulnerability to existing agents of change on public lands. Management attention should be given to conserving cliff and rock habitats that provide important roost sites. More complete information is needed on the distribution and abundance of this species in the assessment area.

California chipmunk (*Tamias obscurus davisii*)

Status and Distribution: The California chipmunk is not considered to be rare, but we include it as a local species of concern because its distribution is small and largely within the assessment area (Callahan 1977; Zeiner et al. 1990). The subspecies *T. o. davisii* is known only from the San Bernardino, Little San Bernardino, Eagle, San Jacinto and Santa Rosa mountains of southern California (fig. 4.5) (Callahan 1977). It is reportedly common on desert-facing slopes of the eastern San Bernardino Mountains eastward through the desert ranges of Joshua Tree National Monument and in montane conifer habitats in the San Jacinto and Santa Rosa mountains.

Habitat: North of San Gorgonio Pass, *T. o. davisii* is largely restricted to rocky areas in pinyon-juniper woodland below about 6,700 feet. It is replaced at higher elevations by the closely related Merriam's chipmunk (*Tamias merriami*). South of San Gorgonio Pass, the species are distributed in an opposite pattern: The California chipmunk replaces the Merriam's chipmunk in plant communities higher than pinyon-juniper woodlands and occurs at elevations up to 8,700 feet (Callahan 1977).

Conservation Considerations: It would be helpful to have some current information on the status of this narrowly distributed species. However, most of the California chipmunk's range is on public land and its habitat requirements generally indicate low vulnerability to existing agents of change.

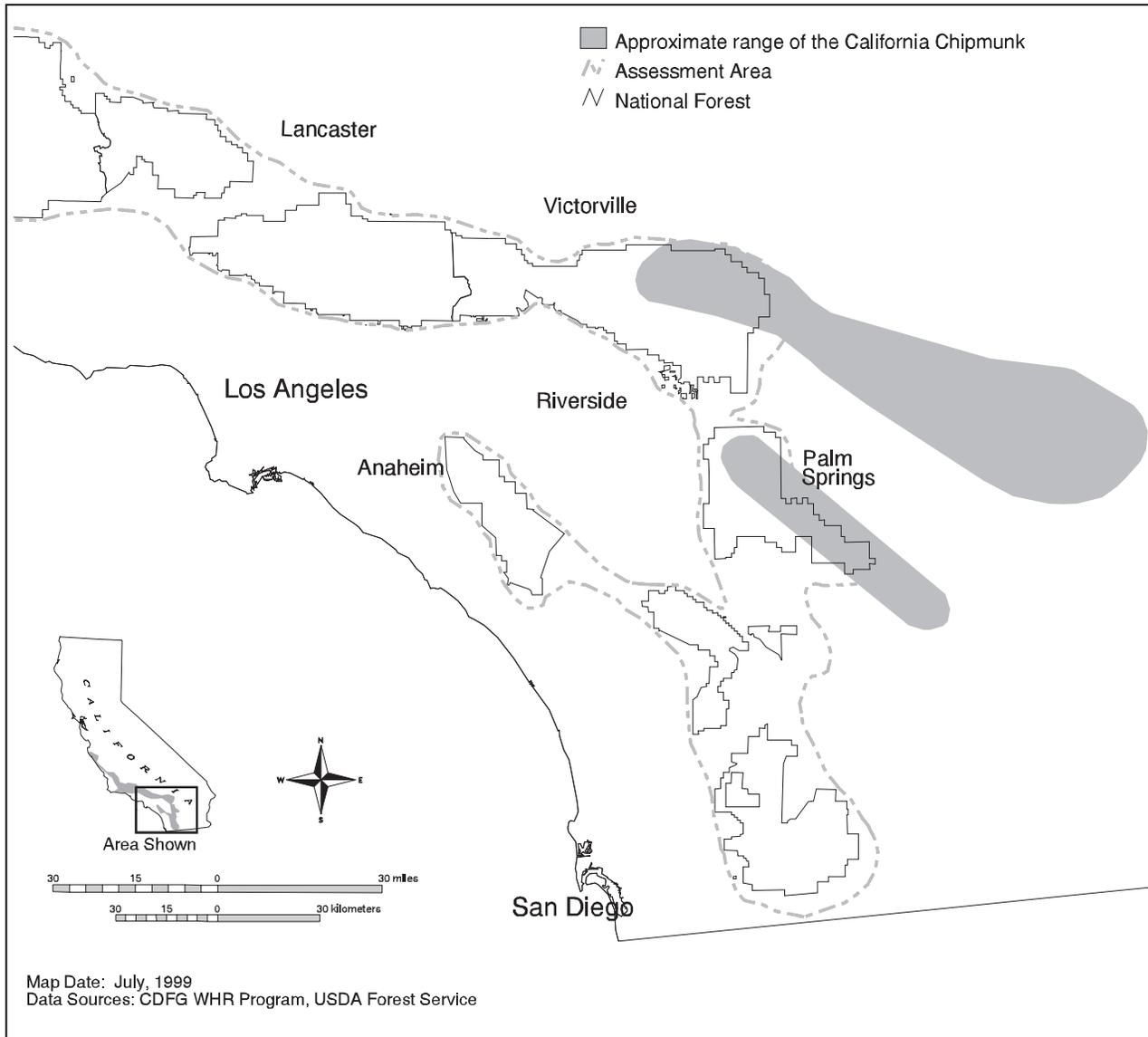


Figure 4.5. The known distribution of the California chipmunk.

Western spotted skunk (*Spilogale gracilis*)

Status and Distribution: The spotted skunk is not on any concern lists and it is believed to be relatively widespread (P. Collins, Santa Barbara Nat. Hist. Museum, pers. comm.). We include it as a local viability concern because there is essentially no recent, documented information on its distribution or status in the assessment area.

Habitat: Vaughan (1954) found spotted skunks in rocky canyons on the coastal side of the San Gabriel Mountains. He thought they also probably occurred in desert slope canyons. Grinnell et al. (1937) report an elevational range for spotted skunks in south-

ern California of near sea level to at least 4,500 feet.

Conservation Considerations: Some current information is needed on the distribution and abundance of this species on public lands within the assessment area.

American badger (*Taxidea taxus*)

Status and Distribution: The badger is a California Species of Special Concern. Its geographic range is large and takes in the entire assessment area, but its local distribution is spotty and not well documented. Badgers can occur at high elevations in meadows near timberline, but we could find little information documenting occurrences at high elevations

in the southern California mountains. Distributional records in Williams (1986) indicate the presence of badgers on Mount Pinos, but they are not reported from high meadows in the San Bernardino and San Jacinto mountains or the large mid-elevation meadows on Palomar and Laguna mountains.

Documented localities from the San Bernardino and San Jacinto mountains are largely from desert montane areas (e.g., Highway 243 south of Banning, Coxe Creek, Burnt Flats, Redonda Ridge, Lone Pine Canyon) and the Cajon Wash area (D. Freeman, San Bernardino NF, unpubl. notes). A similar pattern was reported by Vaughan (1954) for the San Gabriel Mountains, with badger sign being most common in Joshua tree woodlands and pinyon-juniper associations on the desert slope.

Localities in the San Diego County mountains are mainly from valleys in the coastal foothills (e.g., Ramona, Pamo Valley, Santa Ysabel, Witch Creek, and Sweetwater Reservoir) (Bond 1977). Most of these areas are on private land.

Habitat: Badgers can occur in a wide variety of arid open habitats but are most commonly associated with grasslands, savannas, mountain meadows, and openings in desert scrub. The principal requirements seem to be sufficient food (burrowing rodents), friable soils, and relatively open, uncultivated ground (Williams 1986). They seem to occur primarily in areas of low to moderate slope.

Conservation Considerations: Current information is needed on the distribution and abundance of this species on public lands within the assessment area, particularly in the mountain subareas where historic localities are mainly on private lands (e.g., San Diego ranges and Santa Lucia Ranges). The presence of this species can often be determined by sign of diggings and burrows.

Animals of Aquatic, Aquatic/ Upland, Riparian, and Lake Habitats

Aquatic and riparian habitats are important to a lot of species and they are of limited

extent in arid southern California. Therefore, it is not surprising that thirty-nine rare or potentially at risk animals are closely associated with these habitat types. To address all of these species, we have further subdivided this group into six categories: fish (fully aquatic), aquatic/upland amphibians and reptiles, riparian birds, mammals, invertebrates, and lake-associated species.

Fish

There are few native fish in southern California streams and essentially all of them are rare and at risk. Nine native fish species are considered individually below (table 4.4).

Pacific lamprey (*Lampetra tridentata*)

Status and Distribution: This anadromous lamprey is not on any official concern lists, but we include it as a local viability concern species because its habitat requirements are similar to the steelhead (Swift et al. 1993) and it faces many of the same threat factors. Lampreys still maintain runs in several creeks along the coast in Monterey and San Luis Obispo counties, in parts of the Santa Maria and Santa Ynez rivers, parts of the Ventura River, and the Sespe Creek portion of the Santa Clara River drainage (Swift et al. 1993).

Habitat: Similar to that described for the southern steelhead.

Conservation Considerations: See southern steelhead account.

Southern steelhead (*Oncorhynchus mykiss*)

Status and Distribution: West coast steelhead populations have been divided into fifteen evolutionarily significant units (ESUs) based on natural geographic boundaries that foster genetic isolation (NMFS 1997a). Each ESU is treated as a distinct population by the National Marine Fisheries Service (NMFS) for determinations on the need for listing as threatened or endangered. Our assessment area spans two ESUs: the south-central California coast ESU, which has been listed as threatened, and the southern California coast ESU,

Table 4.4. Rare or potentially at risk fish that are native to southern California.

Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Fish of Concern <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulnerability on NFs	(4) Pop. Trend	(5) Conser- vation Category
		Cleveland NF		San Bern. NF		Angeles NF		Los Padres NF					
		San Diego Rngs	Snta Ana Mts	San Jac Mts	San Bern Mts	San Gab Mts	Cas- taic Rngs	So. LP Rngs	So. SL Rng	No. SL Rng			
Pacific lamprey	Mod (< 20%)		h/p		h	h	h	3-4	1	5	Mod	Unkn	Landscape level
Southern steelhead <i>endangered/threatened</i>	High (25-50%)	h	h/p		h		h	7-10	~6	~11	High	Decl ¹	Site specific
Mojave tui chub <i>endangered</i>	High (50-75%)			1 ^{Hyb}							Mod	Unkn	Site specific
Arroyo chub	High (40-60%)	2	3	2	2	7-8	5 ^{Int}	9 ^{Int}	3 ^{Int}		Mod	Unkn	Landscape level
Santa Ana speckled dace	Mod (40-60%)		2	1-2	6-7	~9	h	2 ^{SL}	2 ^{SL}		Mod	Unkn	Landscape level
Santa Ana sucker	High (50-75%)		h	h	h/p	4-5	2 ^{Int}	2 ^{Int}			High	Decl ²	Site specific
Unarmored three- spine stickleback <i>endangered</i>	High (40-60%)			2 ^{Sh}	1	2					High		Site specific
Partially armored threespine stickleback	Mod (40-70%)	h/p	y	y	y ^{Int}	y ^{Int}	p	y	y	y	Mod	Unkn	Landscape level
Tidewater goby	High									p	None	Decl	Minimal Influence

¹ Source: NMFS (1997b).

² Source: Swift et al. (1993)

^{Hyb} Mojave tui chubs in San Bernardino Mountains (Deep Creek) have hybridized with arroyo chubs.

^{Int} Introduced populations, not part of historic range.

^{SL} San Luis Obispo speckled dace may be a distinct subspecies (Swift et al. 1993).

^{Sh} Unarmored 3-spine stickleback in San Bernardino Mountains is genetically distinct Shay Creek form (Haglund and Buth 1988).

which has been listed as endangered (NMFS 1997b).

The south-central coast ESU encompasses streams that drain the northern and southern Santa Lucia Ranges down to (but not including) the Santa Maria River in San Luis Obispo County. The primary rivers supporting steelhead runs in this ESU are the Pajaro, Salinas,

Carmel, Little Sur and Big Sur rivers. However, an additional fifteen to twenty smaller streams along the Monterey and San Luis Obispo coast also support steelhead. Streams specified in the final rule on this ESU that occur at least partially on national forest system lands (all within the Los Padres National Forest) include Little Sur River, Big Sur River,

Big Creek, Alder Creek, San Carpoforo Creek, and Morro Creek.

Maps of the southern California ESU in the west coast steelhead status review (NMFS 1997a) show it extending from the Santa Maria River south to the Mexican border. However, the final rule on listing (NMFS 1997b) defines the ESU as extending south to “the southern extent of the species’ range,” which is defined as Malibu Creek. This leaves some uncertainty as to whether a re-established population south of Malibu Creek would be considered part of this ESU and recognized as an endangered species. The primary streams supporting steelhead runs in this ESU are the Santa Ynez River, Gaviota Creek, Ventura River, Santa Clara River (including Sespe Creek) and Malibu Creek. Total run sizes in all of these streams were less than two hundred adults.

Historically, winter-run southern steelhead or coastal rainbow trout moved up most coastal streams in central and southern California (Behnke 1992), although spawning success south of the Los Angeles Basin may have been sporadic (Swift et al. 1993). Now Malibu Creek, Los Angeles County, is the southernmost stream recognized as supporting a persistent spawning steelhead population (NMFS 1997b)(fig. 4.6). However, in April 1999 trout believed to be southern steelhead were found in a tributary of San Mateo Creek in San Diego County (A. Vejar, CDFG pers. comm). Tissue samples of these fish were collected for DNA analysis to determine if they are indeed steelhead.

Habitat: The following synopsis is from Moyle et al. (1995). Major streams in southern California originate in the coastal mountains and many cross broad alluvial areas before flowing into the sea. These low-elevation alluvial flats present inhospitably warm and fluctuating temperatures and streamflows tend to be intermittent in these sections. The higher elevation headwaters, therefore, are the primary spawning and rearing areas for steelhead. It is likely that the largest steelhead populations historically occurred in major streams where the upstream

spawning and rearing habitats were closest to the ocean, such as in the Ventura, Santa Clara, and Santa Ynez rivers. Streams still supporting steelhead runs today are primarily in small drainages whose headwaters are in mountains very close to the coast (e.g., the Santa Lucia, Santa Ynez, and Santa Monica mountains). These streams tend to be the only ones that don’t have impassible barriers between spawning habitats and the ocean.

Conservation Considerations: The extensive decline of steelhead in central and southern California is due mostly to in-stream water developments that have resulted in inadequate flows, flow fluctuations, blockages, and dewatering of portions of rivers (NMFS 1997a). Suitable spawning and rearing habitats on national forest system lands are frequently located in upper elevation areas above currently impassible barriers. Efforts are ongoing to develop a strategy for restoring steelhead populations along the central coast and within the Los Padres National Forest. There has also been interest in trying to restore habitat conditions for steelhead on San Mateo Creek in San Diego County (A. Vejar, CDFG, pers. comm.).

Mojave tui chub (*Gila bicolor mohavensis*)

Status and Distribution: The Mojave tui chub was federally listed as endangered in 1970. The one remaining population within the assessment area is on lower Deep Creek on the San Bernardino National Forest. Unfortunately, this population has hybridized extensively with introduced arroyo chub (Swift et al. 1993).

Habitat: The Mojave tui chub’s native range is restricted to the Mojave River and its tributaries (Swift et al. 1993).

Conservation Considerations: Moyle (1976) believed that the arroyo chubs had eliminated the Mojave chubs in Deep Creek, but a hybrid collected in 1991 showed that the parental influence of both species still exists (Swift et al. 1993). It is important to prevent further introductions of arroyo chubs into Deep Creek.

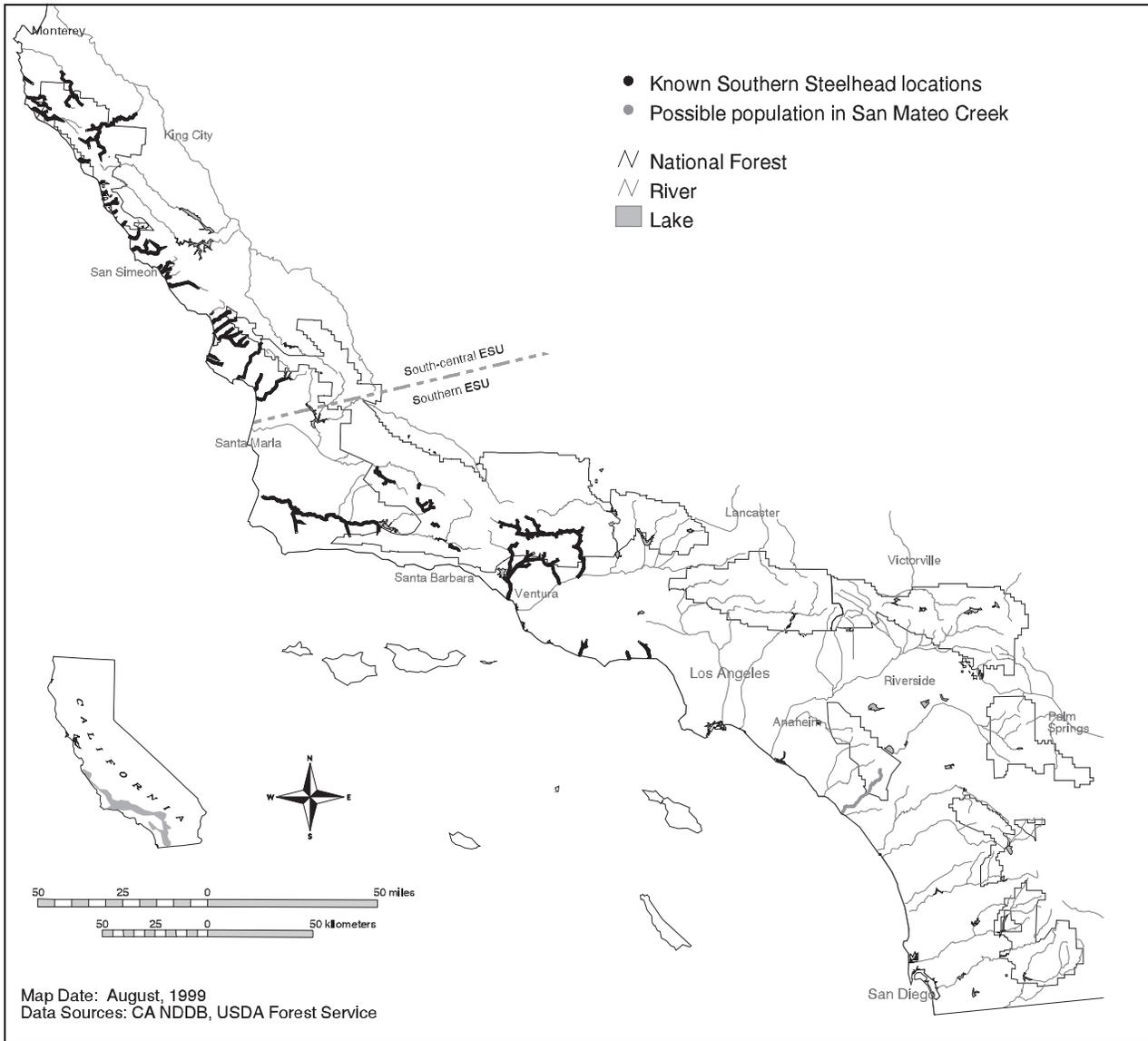


Figure 4.6. Current distribution of southern steelhead in the assessment area and the boundary between the south-central and southern California ESUs.

Arroyo chub (*Gila orcutti*)

Status and Distribution: The arroyo chub is a California Species of Special Concern. Its status is interesting in that it is now most abundant in areas outside of its native range (Swift et al. 1993). It was widely introduced in the 1930s and 1940s, as bait with trout plants or with mosquitofish, and now occurs in many reservoirs and in central-coast and desert-side streams that are outside its native range (Swift et al. 1993). Arroyo chubs are native to the Los Angeles, San Gabriel, Santa Ana, Santa Margarita, and San Luis Rey rivers and to Malibu and San Juan creeks (Moyle et al. 1995). They have been successfully introduced

into the Santa Clara, Santa Ynez, Santa Maria, Cuyama, and Mojave river systems and other smaller coastal streams (e.g., Arroyo Grande Creek) (Swift et al. 1993; Moyle et al. 1995).

A number of native arroyo chub populations occur in the assessment area. On the Angeles National Forest, it is in Pacoima Creek, Big Tujunga Creek, the west, east, and north forks of the San Gabriel River, Cattle Canyon and Bear Creek. On the Cleveland National Forest, it is in San Juan Creek, Trabuco Creek, the West Fork of the San Luis Rey River and Agua Caliente Creek (above Lake Henshaw). The largest population is

considered to be in the West Fork of the San Gabriel River (Wells et al. 1975).

Habitat: Arroyo chubs are found in slow-moving or backwater sections of low-elevation streams (Moyle et al. 1995). Wells et al. (1975) describe physical characteristics of stream sites where arroyo chub were collected.

Conservation Considerations: It is important to identify and maintain arroyo chub populations within the species' native range. This can be achieved by ensuring that there are adequate stream flows to maintain areas of permanent, year-round water in each of the occupied streams. Moyle et al. (1995) identify the West Fork of the San Gabriel River as a particularly important refugia for this species. A potential problem in some areas is introduced red shiners, which may competitively exclude chub in some areas (Moyle et al. 1989). Red shiners are known to occur in Big Tujunga Creek below Big Tujunga Reservoir.

Santa Ana speckled dace (*Rhinichthys osculus*)

Status and Distribution: The Santa Ana speckled dace is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. Its historic range is low-elevation streams in the Los Angeles, San Gabriel and Santa Ana river systems (Swift et al. 1993). The largest remaining population is within the Angeles National Forest on lower reaches of the east, north, and west forks of the San Gabriel River including Cattle Canyon, Bear Creek and Fish Canyon (Swift et al. 1993). Other reported occurrences on the Angeles include Pacoima Creek, Little Tujunga Creek and Big Tujunga Creek (Moyle et al. 1989), but more recent information indicates these populations may now be extinct (Moyle et al. 1995).

On the San Bernardino National Forest, small speckled dace populations are reported from the North Fork of Lytle Creek, Cajon Wash, Lone Pine Canyon, Strawberry Creek, Plunge Creek, City Creek, Mill Creek (this population is actually just downstream of the San Bernardino National Forest boundary),

and the South Fork of the San Jacinto River (Moyle et al. 1995; S. Loe, SBNF, pers. comm.). On the Cleveland National Forest, there is a small population on Santiago Creek (R. Fisher, USGS Biological Resource Division, pers. comm.) and potentially in Silverado Canyon (a historic population that may have been extirpated) (Moyle et al. 1995).

A genetically different form of speckled dace occurs in San Luis Obispo and northern Santa Barbara counties. The "San Luis Obispo speckled dace" occurs within the Los Padres National Forest on the Cuyama and Sisquoc rivers, and Manzana and San Luis Obispo creeks (Swift et al. 1993).

Habitat: The Santa Ana speckled dace requires permanent flowing streams with summer water temperatures of 17 to 20 degrees Centigrade. The dace inhabit shallow cobble and gravel riffles (Wells et al. 1975). Deinstadt et al. (1990) provide a detailed description of speckled dace habitat in the West Fork of the San Gabriel River.

Conservation Considerations: Surveys are needed to better determine the current distribution and abundance of speckled dace. The primary threat to most of the small populations is maintaining areas of permanent, year-round surface water. Some populations (e.g., Silverado Canyon) suffered severe losses or extirpation during the drought in the late 1980s because streams dried up. Habitat degradation and the establishment of red shiners in Big Tujunga Canyon are cited as a cause of speckled dace decline (Moyle et al. 1989). The west, north, and east forks of the San Gabriel River are identified as the best remaining habitat for Santa Ana speckled dace (Moyle et al. 1995).

Santa Ana sucker (*Catostomus santaanae*)

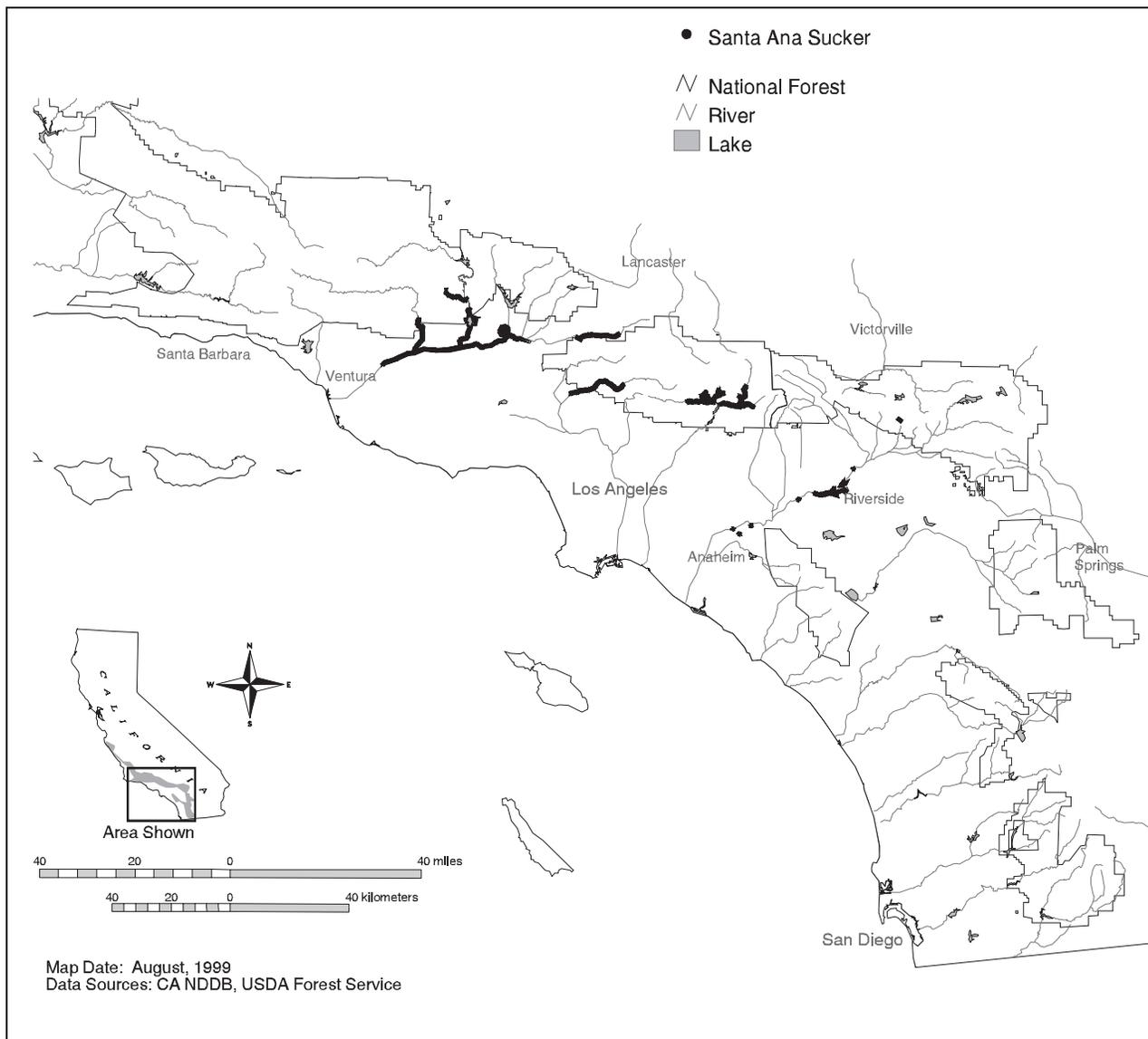
Status and Distribution: The U.S. Fish and Wildlife Service has made a determination that listing of the Santa Ana sucker as threatened or endangered is warranted but precluded at this time due to other pressing concerns (P. Barrett, USFWS, pers. comm.).

The historic range of this species is low-elevation streams in the Los Angeles, San Gabriel and Santa Ana river systems (Swift et al. 1993). Remaining native populations are concentrated within the Angeles National Forest in the east, north, and west forks of the San Gabriel River (including Cattle Canyon and Bear Creek), and Big Tujunga Creek (fig 4.7). The only other native population is in the lower Santa Ana River, outside the assessment area. Santa Ana suckers historically occurred in the upper Santa Ana River, on Cajon and City creeks in the foothills of the San Bernardino Mountains, and in Santiago Creek in the foothills of the Santa Ana Mountains (Moyle et al. 1995).

Introduced populations of the Santa Ana sucker are present in the Santa Clara River, Sespe Creek, Piru Creek and San Francisquito Creek. Some of these introduced populations are within the Los Padres and Angeles national forests. Hybridization with the non-native dusky sucker (*Catostomus fumeiventris*) is apparently a problem in the Sespe Creek and lower Santa Clara River populations, but the upper Santa Clara River (Soledad Canyon) population has not been affected (Greenfield et al. 1970, Swift et al. 1993).

Habitat: Santa Ana suckers are native to many of the same streams as the speckled dace and have similar habitat requirements. Preferred substrates are generally coarse gravel and

Figure 4.7. Current distribution of the Santa Ana sucker.



boulders, and suckers are often associated with algae, but not macrophytes (Moyle et al. 1995). Additional habitat and life history information for this species can be found in Greenfield et. al. (1970) and Moyle et al. (1995).

Conservation Considerations: The Angeles National Forest is the primary refugia for the Santa Ana sucker, and its few remaining populations require site-specific management attention. The primary threats to these populations are habitat degradation, streamflow alterations, and introduced species. Mining activities such as suction dredging are occurring in the upper San Gabriel River and have been implicated in the decline of suckers in Cattle Canyon (Moyle et al. 1995).

Variable and sometimes extreme releases of water from Big Tujunga and Cogswell reservoirs are constant threats to sucker populations on Big Tujunga Creek and the West Fork of the San Gabriel River (Moyle et al. 1995). Red shiners, which have been introduced into Big Tujunga Creek, are a potential egg predator, and green sunfish are likely to prey on juveniles. The elimination of Santa Ana suckers from the upper Santa Ana River in the San Bernardino Mountains is largely attributed to predation by introduced brown trout (Moyle et al. 1995). The west, north, and east forks of the San Gabriel River are identified as the best remaining habitat for Santa Ana suckers (Moyle et al. 1995).

Unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*)

Status and Distribution: The unarmored threespine stickleback was federally listed as endangered in 1970. Historically widespread and abundant in the Los Angeles Basin, it is now restricted to three areas in the upper Santa Clara River watershed: an 8-mile stretch of Soledad Canyon, a portion of upper San Francisquito Canyon and in Escondido Canyon (a tributary of Agua Dulce Canyon) (Swift et al. 1989). All of these populations are within or near the Angeles National Forest (fig. 4.8). A recovery plan exists for this species (USFWS

1985) and a recovery team is in place that coordinates conservation activities.

The Shay Creek threespine stickleback is a morphologically similar, yet genetically distinct population that occurs at elevations over 6,000 feet in Baldwin Lake and its main tributary, Shay Creek, in the eastern San Bernardino Mountains (Haglund and Buth 1988). This stickleback is highly imperiled. Baldwin Lake is ephemeral; thus, Shay Creek is the primary refugia for the fish. However, Shay Creek is predominantly on private land and extraction of surface and groundwater in this basin has reduced the availability of water in the creek. The one remaining population within Shay Creek exists in a small pool that must have water artificially pumped in to sustain it. A transplant population from Shay Creek has become established on the San Bernardino National Forest in an artificial pond in Sugarloaf Meadows (Malcolm 1992).

Habitat: Sticklebacks prefer quiet-water habitat like pools with abundant aquatic vegetation, backwater areas, and stream margins where water velocity is low (Moyle et al. 1995).

Conservation Considerations: Currently, arundo is being removed along San Francisquito Creek and Soledad Canyon to increase available surface water and improve habitat for the stickleback. These localized populations are vulnerable to a wide variety of threats and require site-specific attention.

The Shay Creek stickleback is highly vulnerable to extinction because of the tenuous nature of the water supply in Shay Creek. Efforts are ongoing to secure a dependable supply of water and to establish additional populations.

Partially armored threespine stickleback (*Gasterosteus aculeatus microcephalus*)

Status and Distribution: The partially armored threespine stickleback is a Forest Service Region 5 Sensitive Species. Swift et al. (1993) report that native populations of this subspecies are widespread north of Point Conception but declining rapidly to the south. Recent records (1991 onward) south of the Los

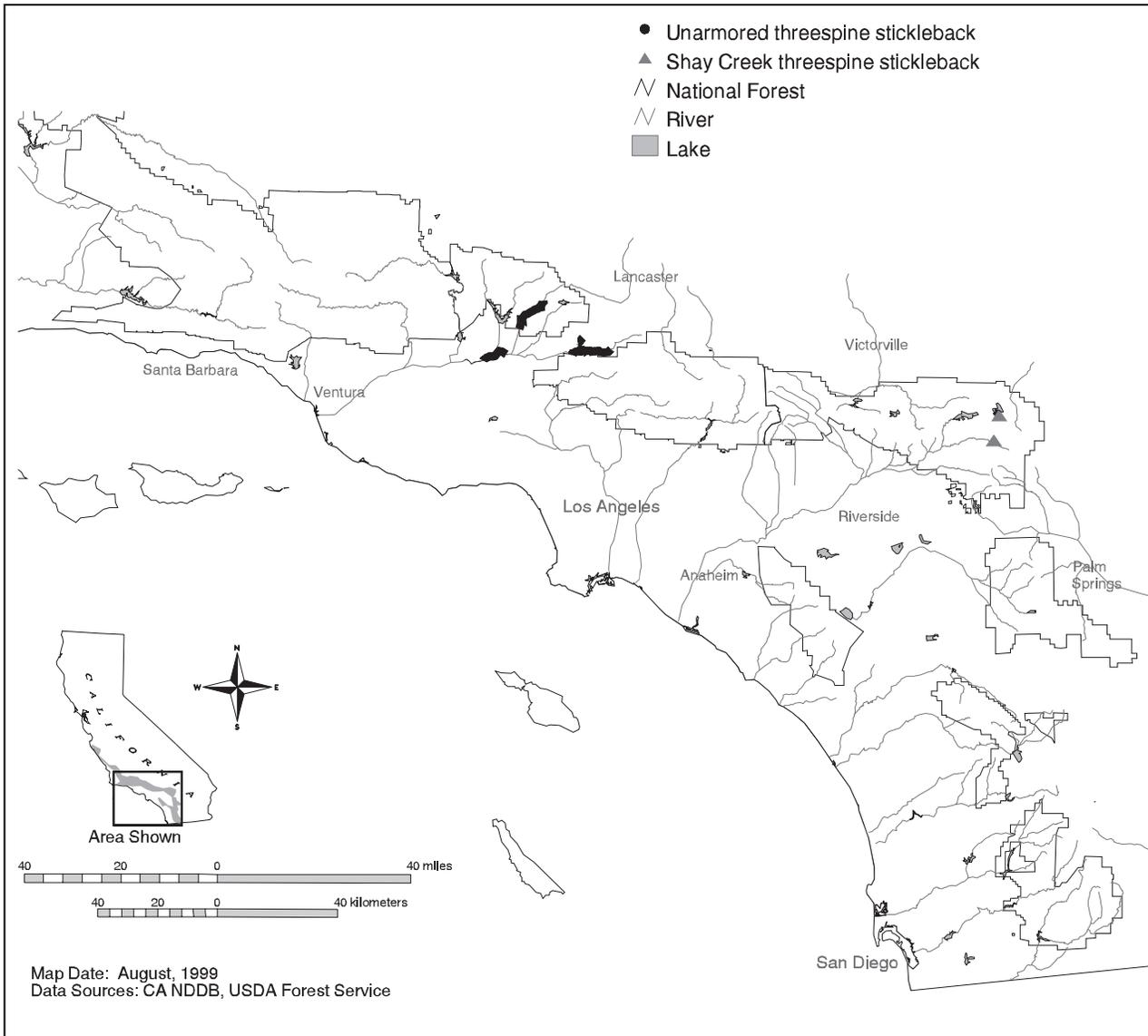


Figure 4.8. Current distribution of the unarmored threespine stickleback.

Angeles Basin are from the Santa Ana Mountains (Trabuco Creek in and below O’Neil Park, upper San Juan Creek near the mouths of Hot Spring and Cold Spring canyons, and upper reaches of Bell Canyon on Starr Ranch) and the South Fork of the San Jacinto River below Lake Hemet (Swift et al. 1993).

To the north, partially armored sticklebacks occur in the Santa Clara, Ventura, and Santa Ynez rivers as well as many coastal streams in Santa Barbara and San Luis Obispo counties. Other southern streams where native populations of partially armored sticklebacks historically occurred (and may still occur) include San Mateo Creek, Santa

Margarita River, and the San Luis Rey River (Swift et al. 1993). They were apparently absent from streams in the Los Angeles Basin inhabited by the unarmored threespine stickleback.

Partially armored sticklebacks have been widely introduced into streams in association with trout plants. Established populations that are believed to be the result of such introductions can be found in Big and Little Rock creeks (Angeles National Forest), Holcomb Creek, Lake Arrowhead, and Big Bear Lake (San Bernardino National Forest), and the Sweetwater River and Pine Creek (Cleveland National Forest) (Swift et al. 1993).

Habitat: They inhabit low-gradient, low-elevation streams with characteristics similar to those described for the unarmored threespine stickleback.

Conservation Considerations: Similar to those described for other native fish. Sticklebacks are hardy fish; the primary threat to native populations is maintaining areas of permanent, year-round surface water.

Tidewater goby (*Eucyclogobius newberryi*)

Status and Distribution: The tidewater goby was federally listed as endangered in 1994. The assessment area extends to the coast only for a small stretch in the northern Santa Lucia Range (Monterey District, Los Padres National Forest). None of the coastal streams in this area are known to support populations of the tidewater goby. The coastline is steep in this area and suitable lagoon habitats are absent (Swift et al. 1989).

Habitat: Tidewater gobies are restricted to coastal, brackish-water habitats (Swift et al. 1989).

Conservation Considerations: The tidewater goby is a species whose conservation can be minimally influenced by management of public lands within the assessment area.

Aquatic/Upland Amphibians and Reptiles

Six amphibian and three reptile species (table 4.5) are dependent, to varying degrees, on aquatic habitats for some part of their life cycle. These are collectively referred to as aquatic/upland species, because upland habitats in the vicinity of stream courses or water bodies are also very important to their survival.

Coast Range newt (*Taricha torosa torosa*)

Status and Distribution: The Coast Range newt is a California Species of Special Concern. It occurs along low-elevation streams mostly near the coast. Newts occupy a number of drainages along the southern Monterey coast, many within the Los Padres National Forest. These include the upper Carmel River, Big Sur River, Big Creek, Devil's Canyon,

Willow Creek, and San Carpoforo Creek. Many of the occupied streams in San Luis Obispo and Santa Barbara counties are along the immediate coast and off of National Forest System land. However, newts do occur on national forest system land in Lopez Canyon, East Fork of Morro Creek, Rincon Creek, and probably the upper end of several other streams dropping out of the Santa Ynez Mountains (Jennings and Hayes 1994).

South of the Santa Clara River, Coast Range newt populations are scarcer (Jennings and Hayes 1994). Outside the assessment area, they occur in at least eight small, coastal streams coming out of the Santa Monica Mountains (Gamradt and Kats 1996). In the San Gabriel Mountains, they are known to be present in the east and west forks of the San Gabriel River, Bear Creek, San Dimas Creek, Big Dalton and Little Dalton canyons. There are historic records from other streams on the coastal side of the San Gabriels, so they may still be present in additional drainages. Jennings and Hayes (1994) show one mapped newt location in the San Bernardino Mountains, but they do not describe it and we are not aware of any recent sightings in this range.

On the Cleveland National Forest, newts occur in a series of parallel drainages on the coastal side of the Santa Ana Mountains, including Black Star Canyon, Silverado Canyon, Trabuco Creek, San Juan Creek, San Mateo Creek, Devil's Canyon, and Tenaja Creek. Just off the forest in Camp Pendleton they also occur on San Onofre Creek, Santa Margarita River, and DeLuz Creek. In the San Diego ranges, there is a disjunct population of Coast Range newts in three adjacent streams coming out of the Cuyamaca Mountains—Cedar Creek, Boulder Creek, and Conejos Creek.

Habitat: Coast Range newts breed in streams and ponds but spend much of the year away from water. They generally prefer rocky canyons that contain streams with well-developed pools (Fisher and Case 1997).

Conservation Considerations: Better documentation on the full extent of Coast Range newts in the southern California

national forests is needed. They may be more widespread than is documented here, particularly on the Los Padres National Forest. Recent genetic studies by Dave Wake and others have shown that newt populations in Orange and San Diego counties (Cleveland National Forest) may represent a distinct species from those north of the Los Angeles Basin (Fisher and Case 1997).

Predatory non-native species, maintenance of adequate stream flows, water quality, and collecting appear to be the biggest factors affecting newt viability on public lands. Adult newts are known to be highly toxic to preda-

tors and thus not at risk to introduced predatory animals. However, a recent study found that newt egg masses and larvae in the Santa Monica Mountains were readily consumed by crayfish and mosquitofish (Gamradt and Kats 1996). They documented the disappearance of breeding newts in three drainages after crayfish, mosquitofish, or both were introduced. On one of these drainages, they even observed recovery of successful newt reproduction after crayfish had been washed out of the stream during heavy winter rains (Gamradt and Kats 1996).

Table 4.5. Amphibians and reptiles associated with aquatic and upland habitats that received individual consideration.

Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Aquatic/Upland Animals of Concern <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulnerability on NFs	(4) Pop. Trend	(5) Conser- vation Category
		Cleveland NF		San Bern. NF		Angeles NF		Los Padres NF					
		San Diego Rngs	Snta Ana Mts	San Jac Mts	San Bern Mts	San Gab Mts	Cas- taic Rngs	So. LP Rngs	So. SL Rng	No. SL Rng			
Amphibians													
Coast Range newt	High (20-50%)	3	6-8	p	p	5-10	p	4-8	2-5	5-10	Mod	Decl ¹	Site specific
Western spadefoot toad	Mod (< 5%)	y	y	p			p	p	y		Mod	Unkn	Landscape level
Arroyo SW toad <i>endangered</i>	High (30-50%)	~19	~8	1	3-5	3-6	3	~10	0	1-2	High	Decl ²	Site specific
CA red-legged frog <i>threatened</i>	Mod-High (20-40%)	h/p	1	h	h	h	1-2	~20	~12	~15	Mod	Decl ²	Site specific
Foothill yellow- legged frog	High (10-30%)					h	h	h	h/p	2-5	High	Decl ¹	Site specific
Mountain yellow- legged frog	Mod (> 80%)	h/p		4-5	1-3	4-5					High	Decl ¹	Site specific
Reptiles													
SW pond turtle	High (30-60%)	~8	~5	h/p	2	~5	h/p	~25	~15	~15	Mod	Decl ¹	Site specific
South coast red-sided garter snake	Low (< 10%)	1	1	0	0	0	0	1-2			Mod	Decl ¹	Site specific
Two-striped garter snake	Mod (40-70%)	>25	>10	5-10	5-10	>10	5-10	>25	>10	5-10	Mod	Decl ¹	Landscape level

¹Jennings and Hayes (1994)

²USFWS determination as described in listing decisions.

On Boulder Creek on the Cleveland National Forest, sudden large releases of water in mid-summer from an upstream reservoir occur occasionally and appear to be negatively affecting newt reproductive success by flushing eggs and larvae downstream. Collecting of newts for the pet trade has historically been a major problem and may continue to be in some areas. Boulder Creek Road has historically been a collecting spot (J. Copp, CA Academy of Sciences, pers. comm.), and today newts can be readily found a half-mile or more above and below the road crossing but are increasingly rare as you approach the road.

Western spadefoot toad
(*Spea [Scaphiopus] hammondi*)

Status and Distribution: The western spadefoot is a California Species of Special Concern. Known localities for this species are predominantly outside the assessment area, in low-elevation coastal and inland valleys. It is reportedly abundant on the Camp Pendleton Marine Corps Base along the northern San Diego County coast (Holland and Goodman 1998). Most known locations within or near the assessment area are in the coastal foothills of San Diego County (e.g., Japatul Valley, Otay Lakes, Santa Maria Valley, and Warner Springs) (Ed Ervin and Joe Copp, pers. comm.) and Santa Barbara and San Luis Obispo counties (e.g., Santa Maria Valley, and Cuyama Valley) (Jennings and Hayes 1994). The toads also have been observed in the foothills of the Santa Ana Mountains at Starr Ranch (Fisher and Case 1997) and the Santa Rosa Plateau (Jennings and Hayes 1994).

Habitat: Western spadefoots occur in coastal valley habitats, valley-foothill grasslands, coastal scrub, and chaparral communities up to approximately 3,000 feet in elevation (Ed Ervin, in litt.). Within this range, spadefoots are confined to areas with relatively flat or low-gradient topography that supports the shallow ephemeral-pool habitat they require for breeding. They are adapted for survival in dry, upland habitats. To avoid desiccation, spadefoot toads spend the drier months of the year inactive and hidden un-

derground. The toad uses its spadelike hind foot to excavate its own retreats in loose or sandy soils. In areas where friable soils are not available, small mammal burrows are often used. Following spring rains, western spadefoots congregate where there is pooled water. Breeding takes place in shallow ephemeral pools that form on valley floors, on ridge and mesa tops, or in quiet drainages on low-gradient slopes above first-order streams.

Conservation Considerations: More complete information is needed on the distribution of western spadefoots on public lands in the assessment area. Threats to the spadefoot toad include destruction of breeding pool habitat, obstructions to migratory routes between breeding sites and upland habitats, and high levels of mortality along roads. Changes to the length of time a breeding pool remains full can have significant negative effects on reproductive success. Pool “enhancements” that make them perennial water bodies create habitat for exotic species to invade and become established.

Arroyo southwestern toad
(*Bufo californicus*)

Status and Distribution: The arroyo southwestern toad was federally listed as endangered in 1994 (USFWS 1994). The entire range of the arroyo toad in the United States is within or near the assessment area. The species also extends down into Baja California, Mexico. Based on our GIS database, approximately 36 percent of occupied arroyo toad habitat is on national forest system lands (fig 4.9)—16 percent on the Los Padres National Forest, 12 percent on the Cleveland National Forest, 6 percent on the Angeles National Forest, and 2 percent on the San Bernardino National Forest.

On the Los Padres National Forest, arroyo toads are concentrated in a small number of locations. Substantial populations exist on Piru Creek including lower reaches of Agua Blanca Creek, Sespe Creek, and interconnected reaches of the upper Santa Ynez River, Mono Creek, and Indian Creek. A smaller population occurs along

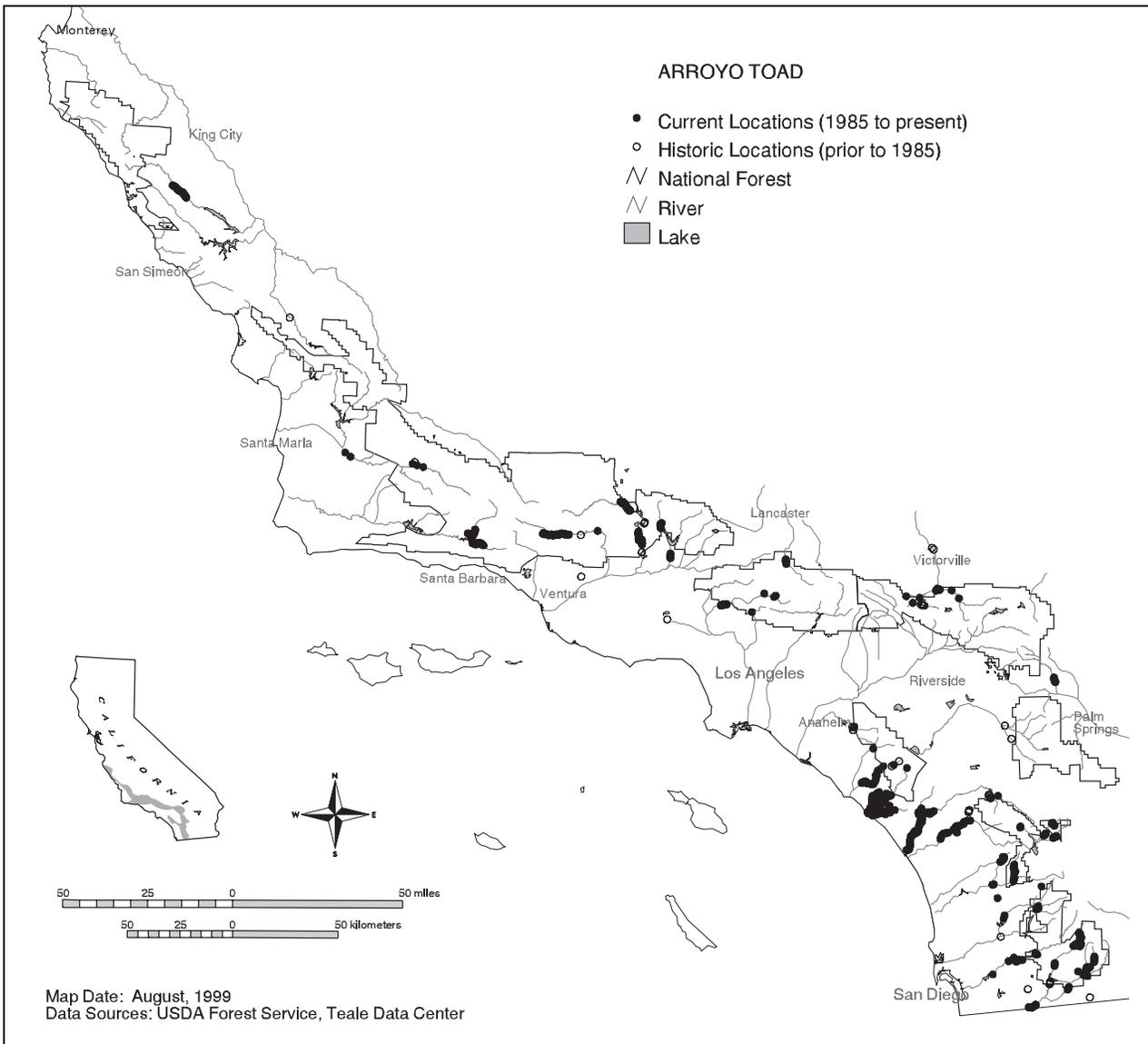
the Sisquoc River. All of these Los Padres populations are predominantly on national forest system land. The northernmost population of arroyo toads, on the San Antonio River in Monterey County, lies just off the forest on the Fort Hunter Liggett Military Reservation.

Arroyo toad populations on the Cleveland National Forest and surrounding lands are more numerous, but many appear to be small in size. Most of the populations occur right along the forest boundary with the bulk of prime breeding habitat often lying just off national forest system land. This is the case at Cottonwood Creek which includes lower

reaches of Kitchen and Morena creeks, Potrero Creek, the Sweetwater River, the upper San Diego River, Santa Ysabel Creek and associated lower reaches of Temescal Creek (Pamo Valley), the upper forks of the San Luis Rey River (above Lake Henshaw) including Agua Caliente Creek, Temecula Creek including lower reaches of Arroyo Seco Creek, San Mateo Creek, San Juan Creek, and Trabuco Creek. One population that is predominantly on national forest system land occurs along Pine Valley Creek and several of its tributaries.

On the Angeles National Forest, arroyo toad populations exist along Castaic Creek,

Figure 4.9. Current and historic locations of the arroyo toad within and adjacent to the assessment area. Approximately 36 percent of existing arroyo toad locations are on national forest system lands.



Big Tujunga Creek including associated lower reaches of Mill and Alder creeks, Arroyo Seco Creek, and on the desert side of the San Gabriel Mountains along Little Rock Creek. These populations lie near the forest boundary and, in some cases, extend beyond it.

On the San Bernardino National Forest, arroyo toad populations exist on tributaries of the Mojave River including lower Deep Creek, the West Fork of the Mojave River, the East Fork of the Mojave River (Miller Canyon), and Little Horsethief Creek. They also occur on lower portions of the Whitewater River and probably still occur on lower reaches of the San Jacinto River and adjacent Bautista Creek.

Habitat: Arroyo toads breed and deposit egg masses in shallow, sandy pools along low-gradient sections of streams. These streams are usually bordered by sand-gravel flood terraces (USFWS 1999a). The flood terraces and other upland streamside habitats are important for foraging and overwintering sites (fig 4.10). Arroyo toads have been detected up to one kilometer from a water course (Holland and Goodman 1998). Many arroyo toad populations occur along streams that do not normally flow year-round. The largest populations tend to occur in broad floodplains along wide, shallow streams. However, arroyo toads do exist in some small ephemeral drainages (e.g., Indian Flats area, Cleveland National Forest). It is a low-elevation species, with known locations extending from sea level to about 4,400 feet.

Conservation Considerations: Arroyo toad populations are localized and face a variety of threats. Many populations lie immediately below major dams. The manner in which water is released from upstream reservoirs can greatly influence arroyo toad reproductive success (Sweet 1992) (see “Effect of Dams” section, chapter 3). Recent coordination between various government agencies resulted in releases from Pyramid Dam that more closely mimic natural flows in lower Piru Creek (Sweet 1992). The modified releases have benefited arroyo toads in that drainage (USFWS 1999a).



Figure 4.10. An arroyo southwestern toad emerging from the sand on a streamside terrace. ROBERT GOODMAN, JR

Predatory, non-native species are a major threat to arroyo toads. Bullfrogs have been observed to eat juvenile and adult arroyo toads (Sweet 1993). A number of warm-water fishes (e.g., green sunfish, bluegill, largemouth bass, and black bullheads) and crayfish have been shown to feed on arroyo toad larvae and can cause high larval mortality in breeding pools (Sweet 1992). These species occur in many of the streams occupied by arroyo toads (see “Invasive, Non-Native Species” section, chapter 3). In areas close to human development, Argentine ants have spread into riparian areas and are reducing the native ant fauna (Ward 1987, Holway 1995). Native ants are a major food source for arroyo toads; thus, they may be negatively affected by the continued spread of Argentine ants.

Introduced plants are also a problem in some areas. Tamarisk and arundo colonize newly created flood terraces and can form dense masses of vegetation. These dense stands have higher rates of evapotranspiration than do native vegetation, thereby decreasing the amount of available surface water. They also stabilize stream terraces, which helps to deepen flood channels, resulting in habitat unsuitable for arroyo toads (USFWS 1999a).

Campgrounds and roads within or in close proximity to arroyo toad breeding pools have resulted in toads and their egg masses being inadvertently crushed by vehicle and foot traffic and disturbed by waterplay. There are a number of national forest campgrounds

located near arroyo toad breeding habitat—seven on the Los Padres National Forest, four on the Angeles National Forest, and four on the Cleveland National Forest (USFWS 1999a). Seasonal closures and/or restrictions on vehicle access have recently been instituted at some of these campgrounds to reduce impacts (e.g., Beaver, Lion, and Mono campgrounds on the Los Padres and Joshua Tree Campground on the Angeles). Road crossings in toad habitat are also being evaluated and several on the Los Padres and Cleveland have been relocated or rebuilt to reduce impacts to breeding pools.

Off-highway vehicle (OHV) activity in arroyo toad habitat is a problem in some areas, particularly on desert-side streams (e.g., Little Rock Creek, Mojave River, upper Piru Creek). Most of the OHV-related habitat damage, at least on national forest system lands, is the result of unauthorized travel off of designated routes into areas legally closed to such use; it is the actions of a few irresponsible individuals and represents a challenging law enforcement problem.

Livestock grazing in arroyo toad habitat can cause trampling of toads and their egg masses. It also can result in degradation to sand bars and terrace habitats that are important to arroyo toads (USFWS 1999a). Over the last ten years, most riparian habitat on the southern California national forests has been formally excluded from grazing. However, many areas are intermingled with private lands where riparian grazing still exists. Maintenance of fence lines to prevent cattle movement onto public portions of the riparian corridor is a management problem in some areas occupied by arroyo toads.

Suction dredge mining and streamside prospecting (see descriptions of these activities in “Mining” section, chapter 4) have the potential to cause impacts in several areas. Suction dredging has occurred on Piru Creek on the Los Padres National Forest and Pine Valley Creek on the Cleveland National Forest (USFWS 1999a). Prospecting activities, including the digging of pits in the stream bed

and banks, has occurred on Little Horsethief Creek on the San Bernardino National Forest (USFWS 1999a). Drawdown of surface water from wells is also a concern.

California red-legged frog (*Rana aurora draytonii*)

Status and Distribution: The California red-legged frog (fig. 4.11) has declined precipitously over the last thirty to forty years and became federally listed as threatened in 1996. Once widespread in low-elevation streams in southern California, the Central Valley, and the Sierra Nevada foothills, it has been extirpated from 70 percent of its former range (USFWS 1996a). Red-legged frogs historically occurred on all four national forests (fig. 4.12) but now appear to be extirpated from the Cleveland and San Bernardino. They also were thought to be extirpated from the Angeles, until a small population was discovered on San Francisquito Creek in 1999.

Red-legged frogs extend down into Baja California and there reportedly are still a number of populations in Mexico (Welsh 1988). However, within the United States, there are only three known populations remaining south and east of Ventura County. The southernmost locality is on the Santa Rosa Plateau on the southeastern flank of the Santa Ana Mountains in Riverside County. It is near the Cleveland National Forest but does not extend onto it. This population has been

Figure 4.11. An adult red-legged frog at Cole Creek on the Santa Rosa Plateau. ROBERT GOODMAN, JR.

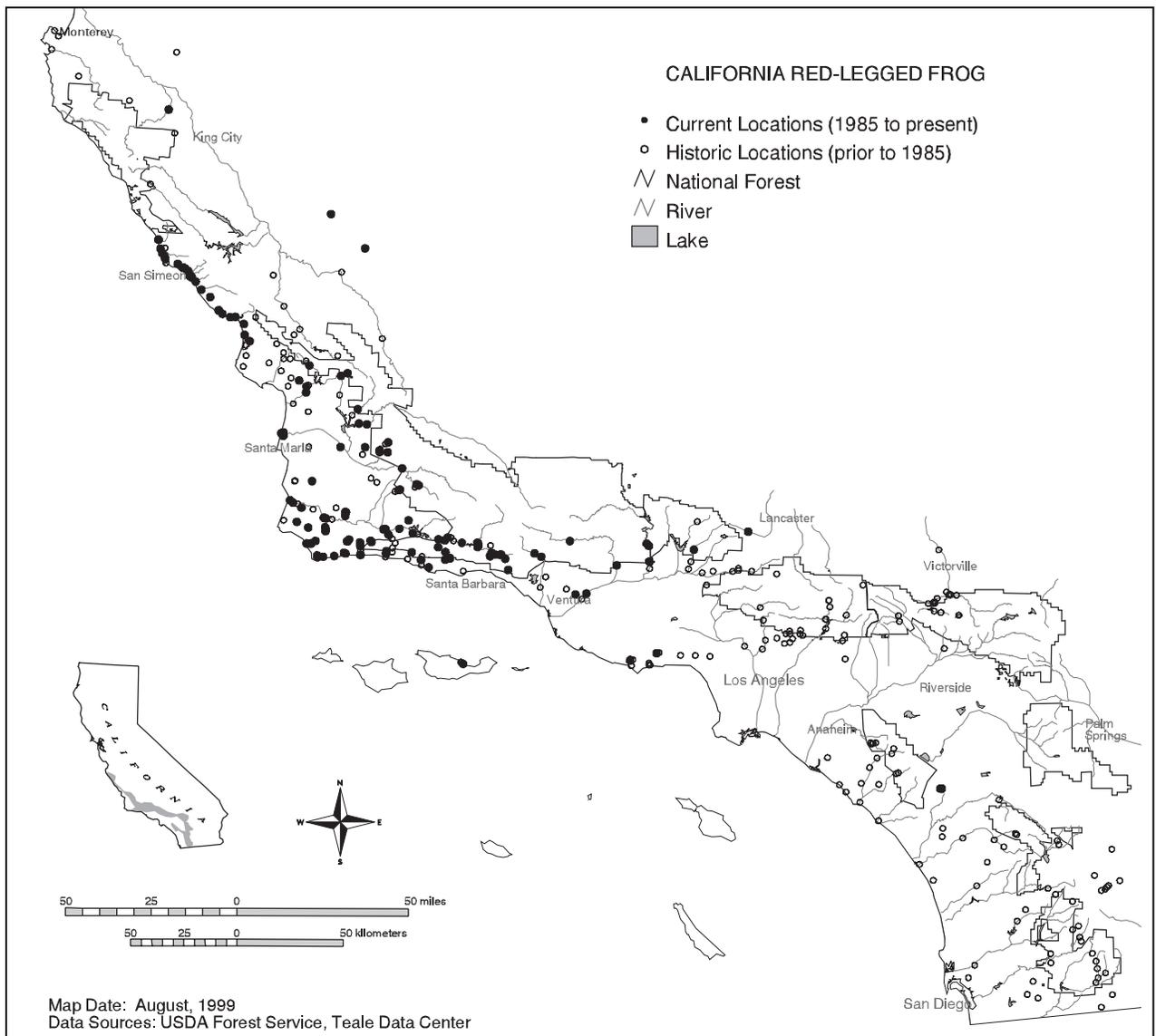


declining; recent surveys found fewer than four males and no females (D. Holland, pers. comm. 1998; R. Goodman, in litt. 1998). The other populations are both in western Los Angeles County in the Castaic Ranges region, on Amargosa and San Francisquito creeks. The Amargosa Creek population is on private land.

The greatest number of remaining red-legged frog populations are within Monterey (thirty-two occurrences), San Luis Obispo (thirty-six), and Santa Barbara (thirty-six) counties (USFWS 1996a). Approximately 20 to 30 percent of these populations occur on streams within the Los Padres National For-

est (fig. 4.12). The remaining are concentrated in small streams along the immediate coastline. Populations occurring within the Los Padres National Forest include Piru Creek, Sespe Creek, Ventura River, Matilija Creek, upper Santa Ynez River, Mono Creek, Indian Creek, Sisquoc River, Manzana Creek, La Brea Creek, Cuyama River, Alamo Creek, Branch Creek, Stone Creek, Trout Creek, Lopez Canyon, San Carpofo Creek, and the Little Sur and Big Sur rivers. A number of the streams along the Santa Barbara and San Luis Obispo coast contain red-legged frogs and the upper reaches

Figure 4.12. Current and historic locations of the California red-legged frog along California's southern coast. Approximately 30 to 40 percent of red-legged frog populations are on national forest lands, all on the Los Padres National forest.



of some these are within the Los Padres National Forest (e.g., Tajiguas Creek, Toro Creek).

Habitat: Habitat of California red-legged frogs is characterized by dense, shrubby riparian vegetation (e.g., arroyo willow, cattails, and bulrushes) associated with deep (greater than 3 feet), still or slow-moving water (Hayes and Jennings 1988). Red-legged frogs are highly aquatic and need surface water for most, if not all, of the year. They can occur in ephemeral streams, but probably only ones that contain some year-round surface water (Jennings and Hayes 1994). They have been found at elevations up to 5,000 feet (e.g., Doane Pond on Palomar Mountain) but historically were most abundant in low-elevation streams.

Conservation Considerations: The disappearance of red-legged frogs from so much of their former range heightens the importance of remaining populations on the Los Padres and Angeles national forests. Further surveys are needed to determine conclusively if there are any remaining populations on the other two national forests. Historically occupied habitat still exists on those forests and may provide suitable sites for reintroduction into the southern half of the assessment area.

Predatory, non-native fish and amphibians are particularly significant threats to red-legged frogs. With few exceptions, red-legged frogs have disappeared from virtually all sites where bullfrogs have become established (Hayes and Jennings 1988; Fisher and Shaffer 1996; Moyle 1973). The only areas where the two species have managed to coexist for prolonged periods is along the immediate coast, where cool “fogbelt” temperatures appear to provide red-legged frogs some competitive advantages (S. Sweet, UC Santa Barbara, pers. comm.).

Red-legged frogs appear more capable of persisting in the presence of non-native fish; however, there are still strong negative correlations between the abundance of such fish and these frogs (Hayes and Jennings 1988; Fisher and Shaffer 1996). Results of a recent study in artificial ponds showed that mosquitofish and bluegill were significant predators of red-legged frog larvae (Schmieder and Nauman 1994).

Impacts from campgrounds and roads are similar to those described for the arroyo toad, except that the more highly aquatic frogs are less likely to be affected by activities away from the streambed. Livestock grazing that results in a loss of riparian vegetation can be highly detrimental to red-legged frogs. However, such grazing in riparian habitats is not authorized at any of the occupied red-legged frog sites on national forest system lands.

Maintenance of adequate stream flows and high water quality is a key issue for red-legged frogs. Water diversions, groundwater extraction, and stock pond or small reservoir developments can cause degradation or elimination of habitat (USFWS 1996a).

Foothill yellow-legged frog (*Rana boylei*)

Status and Distribution: The foothill yellow-legged frog is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. While still present on many streams along the northern California coast, it has become extremely rare in the south (Jennings and Hayes 1994). Its range historically extended to the San Gabriel River (North and East forks), and included a number of locations in the Castaic and southern Los Padres ranges, including Elizabeth Lake Canyon, Piru Creek, Sespe Creek, Hopper Creek, Santa Paula Canyon, upper Santa Ynez River (at Juncal Campground), upper Indian Creek, and Santa Cruz Creek (near the Guard Station) (Zweifel 1955; J. Copp, CA Academy of Sciences, in litt.). However, foothill yellow-legged frogs have not been observed in or south of the southern Los Padres ranges since 1978. The last sighting was near Frenchman’s Flat along Piru Creek in 1977 (Jennings and Hayes 1994).

Foothill yellow-legged frogs do still occur in several coastal drainages in northern San Luis Obispo and Monterey counties (fig. 4.13). The only occupied drainages on national forest system lands are along the southern Monterey coast; they include the Big Sur River and Willow Creek. Further surveys are needed to determine the full extent of foothill yellow-legged populations in the northern Los Padres. They historically occurred in Lopez Canyon (Zweifel 1955).

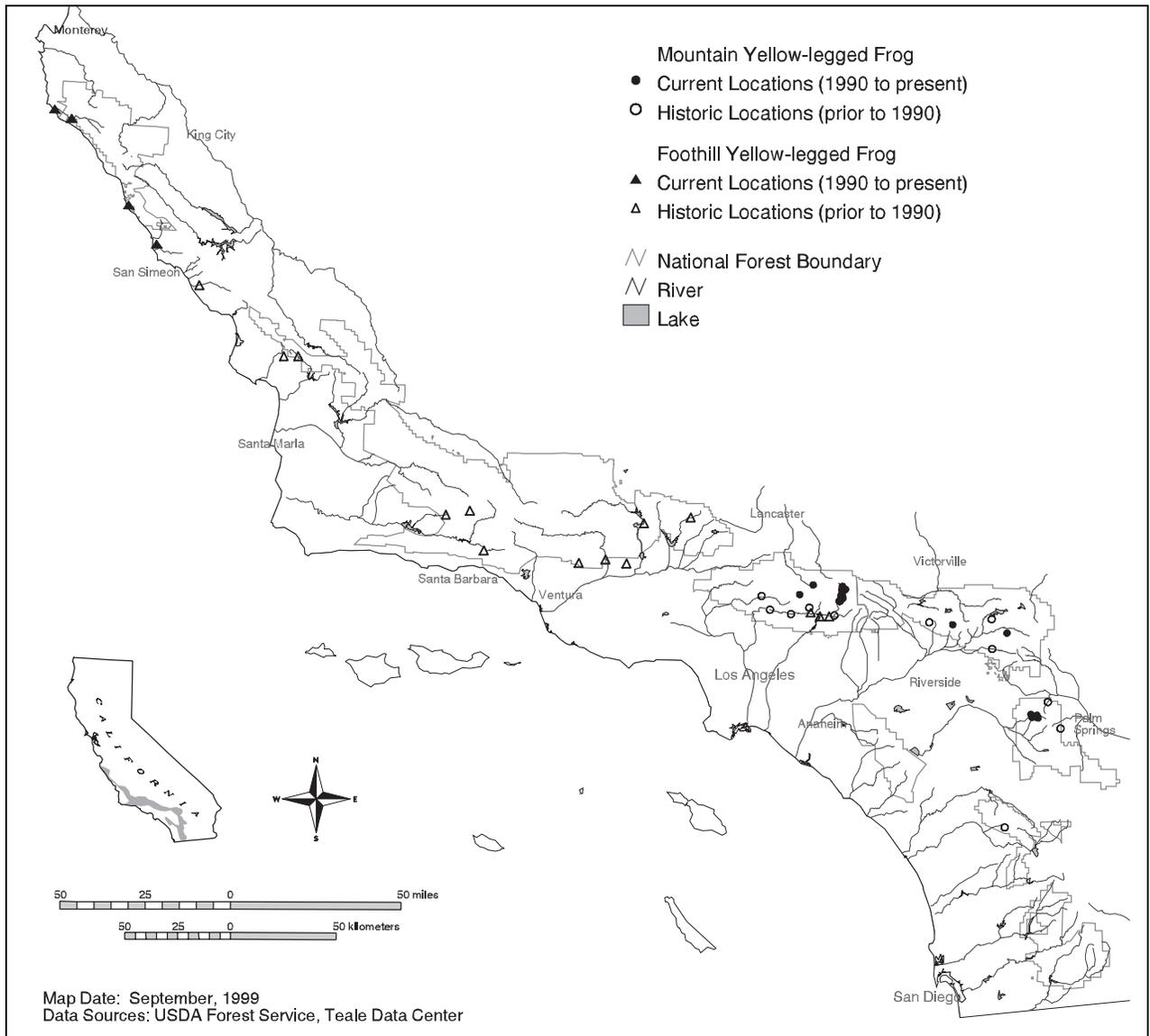


Figure 4.13. Current and historic locations of mountain and foothill yellow-legged frogs.

Habitat: Foothill yellow-legged frogs typically inhabit small- to moderate-sized, perennial streams with at least some cobble-sized substrate (Hayes and Jennings 1988). Most current and historic localities in the assessment area are at elevations below 4,000 feet. It is a highly aquatic frog and seldom found more than one or two leaps from a stream (Zweifel 1955).

Conservation Considerations: The foothill yellow-legged frog is extremely rare in the assessment area and should be given site-specific management attention. Threats to this species are similar to those described for the red-legged frog. Predatory non-native fish and bullfrogs are apparently not present in the

southern Monterey and northern San Luis Obispo coast streams still occupied by foothill yellow-legged frogs (D. Holland, pers. comm.). This may explain why the yellow-legged frogs are still there.

Mountain yellow-legged frog (*Rana muscosa*)

Status and Distribution: The mountain yellow-legged frog is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. Southern California populations are also under consideration for federal listing as endangered. In southern California, these frogs are found in the San Gabriel, San Bernardino and San Jacinto mountains and

at least historically on Palomar Mountain (fig. 4.13) (Jennings and Hayes 1994). Small populations of mountain yellow-legged frogs still exist in the San Gabriel Mountains on upper Little Rock Creek and along the upper San Gabriel River and several of its forks (Jennings 1995a, 1998). They also may still be present in Day Canyon (R. McKernan, San Bernardino Nat. History Museum, pers. comm.). In the San Jacinto Mountains, populations are still present in Hall Canyon, Dark Canyon, Fuller Mill Creek, and the North Fork of the San Jacinto River (Jennings 1998). They were historically collected on Snow Creek and reportedly were observed in Andreas Canyon (R. McKernan, pers. comm.), but 1997 surveys at both those locations failed to detect them (D. Holland, pers. comm.).

In the San Bernardino Mountains, mountain yellow-legged frogs were recently rediscovered in City Creek (B. Matibag, pers. comm. 1998). They were reportedly sighted in Barton Creek in the late 1980s (R. McKernan, pers. comm.), but 1997 surveys in this area failed to detect them (D. Holland, pers. comm.). Other historic locations in the San Bernardino Mountains include Siberia Creek, Mill Creek, Plunge Creek, and Waterman Canyon. Focused surveys in 1997 failed to detect mountain yellow-legged frogs on any of these drainages (D. Holland, pers. comm.), although there was an independent report of one such frog on Mill Creek (G. Cardiff, pers. comm.). At the one historic location on Palomar Mountain, a pond on Doane Creek, this species has not been seen since the 1970s and the pond is now overrun with bullfrogs and exotic fishes (Jennings and Hayes 1994).

Mountain yellow-legged frogs have declined precipitously in the southern California mountains; Jennings and Hayes (1994) suggest that they have been extirpated from 99 percent of their historic range in this region. All of the remaining populations appear to be very small, most with less than fifteen adults observed.

Habitat: Mountain yellow-legged frogs inhabit high-elevation streams usually above 4,000 feet. However, in the San Gabriel Mountains and perhaps other areas where the characteristics of mountain streams (i.e., steep, rocky canyons) extend to lower elevations, these frogs historically occurred at elevations down to 2,000 feet (e.g., Bear Creek and Evey Canyon) (G. Stewart, Cal. Poly Pomona, in litt.).

Conservation Considerations: Mountain yellow-legged frog populations within the assessment area are small, localized, and vulnerable to existing threats. They therefore warrant site-specific management attention.

The primary threats to this species are (1) the increasing spread of non-native predatory fish and amphibians (i.e., bullfrogs), (2) loss of breeding pools from siltation or declining surface water, and (3) disturbance of individuals and egg masses from recreation and land use activities. Jennings (1995a, 1998) found potentially impactful recreation activities (e.g., people walking in the creek, swimming, left behind trash, trail crossings) occurring at the mountain yellow-legged frog locations in Dark Canyon, Fuller Mill Creek, Little Rock Creek, and Vincent Gulch. He recommends rerouting trails and campsites to steer recreationists away from these key breeding areas. Jennings (1995) also observed placer mining activity on the upper San Gabriel River (East Fork) within the Sheep Mountain Wilderness Area. Associated with this unauthorized activity were trash and toxic materials such as mercury being dumped into the stream bed.

More survey work is needed to determine if additional populations exist and to better determine the size of known populations. Reintroductions of mountain yellow-legged frogs to historically occupied sites may be an option, particularly in the San Gabriel and San Bernardino mountains where suitable habitat is most widespread. However, the specific habitat conditions necessary for reintroductions first need to be defined. Research done in high mountain lakes in the Sierra Nevada has found mountain yellow-legged frogs to be largely intolerant of

introduced predatory fish (i.e. trout), since they rarely persist in lakes where such fishes have been introduced (Bradford 1989; Bradford et al., 1993). The fish apparently consume frog egg masses and larvae. There is uncertainty about whether the effect of introduced trout is as strong in southern California, since the frogs occupy stream habitats rather than lakes. In August 1997 surveys of known mountain yellow-legged frog locations, Jennings (1998) observed rainbow trout and no frogs in pools at two locations—Vincent Gulch (a fork of the upper San Gabriel River), and Fuller Mill Creek. The relationship between introduced trout and yellow-legged frogs in southern California streams needs to be better understood.

Southwestern pond turtle
(*Clemmys marmorata pallida*)

Status and Distribution: The southwestern pond turtle is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. Pond turtles are considerably more abundant in the northern half of the assessment area (i.e., northwest of the Santa Clara River). In the Los Padres National Forest there are forty to fifty streams that contain pond turtle populations (USFWS 1993a), with the largest occurring on Piru Creek, Sespe Creek, the Indian Creek/Mono Creek area, the Sisquoc River/Manzana Creek area, Alamo Creek, Nacimiento River and Arroyo Seco Creek (D. Holland pers. comm.; Brattstrom and Messer 1988). Populations also occur along most of the drainages along the immediate coast in Santa Barbara and San Luis Obispo counties.

South of the Santa Clara River, pond turtle populations have declined substantially both in size and number (Holland 1991; Brattstrom and Messer 1988). They still occur at over fifty sites, but most of these contain few turtles. Only six to eight sites contain populations of thirty or more individuals (Holland 1991). There is one large pond turtle population on the Angeles National Forest on the West Fork of the San Gabriel River below Cogswell Res-

ervoir. Small populations on the Angeles also occur on upper Castaic Creek, Aliso Canyon, Pacoima Creek, Little Tujunga Creek, Big Tujunga Creek, the East Fork of the San Gabriel River, and possibly Big Dalton Creek.

On the San Bernardino National Forest, there may still be small pond turtle populations in Cajon Wash, Deep Creek, and probably the West Fork of the Mojave River below Silverwood Lake. Pond turtles historically occurred in Andreas Canyon on the desert side of the San Jacinto Mountains (Jennings and Hayes 1994) and may still be present there.

Two large pond turtle populations occur on the Cleveland National Forest at San Mateo Creek and Pine Valley Creek. Just outside the forest there are also sizable populations on the Santa Margarita River/Temecula Creek (connected drainages), on Aliso Creek in Chino Hills State Park (Goodman 1994), and on Cole Creek within the Santa Rosa Plateau Preserve. Small populations also occur on Tenaja Creek, the upper San Luis Rey River, Santa Ysabel Creek, the upper San Diego River (including Cedar, Boulder and Conejos creeks), the upper Sweetwater River, and Cottonwood Creek above Barrett Lake.

Habitat: Pond turtles inhabit a wide variety of low-elevation aquatic habitats generally below 4,000 feet elevation. In the assessment area, pond turtles are found primarily in rivers and streams that have persistent deep pools (Holland 1991). The pond turtle is a highly aquatic turtle that moves onto land to reproduce and overwinter (Jennings and Hayes 1994). Along the central and southern coast of California, pond turtles may remain active year-round (Holland 1991).

Conservation Considerations: Pond turtle populations south of the Santa Clara River are sufficiently rare to warrant site-specific management attention. The few remaining large populations deserve particular attention and additional surveys are needed to determine the status of the others. Populations on the Los Padres are considerably more abundant and can likely be conserved through general riparian area management.

The primary reason for pond turtle declines has been loss of suitable habitat. This loss has been greatest in the lower foothills and valleys where pond turtles were historically most abundant (Holland 1991). Dams, diversions, and stream channelization have greatly reduced the availability of persistent, pooled water along low-elevation streams. Pond turtles do not do well in large reservoirs; they frequently inhabit stock ponds, but there are indications that reproductive success is poor in these habitats and they may constitute sink habitats (D. Holland, pers. comm.). The reduced availability of water makes pond turtles even more vulnerable to extended droughts. Monitored populations in San Mateo Creek and Pine Valley Creek declined dramatically in the early 1990s at the end of our last prolonged drought (D. Holland, pers. comm.). Some small populations on highly intermittent streams probably disappeared completely during the drought.

Other threats include introduced predatory fish, bullfrogs, and collecting. Predatory fish and bullfrogs impact reproductive success by consuming juvenile turtles. It can be difficult to determine the severity of this impact; pond turtles are long-lived animals and can persist in an area for many years even without successful reproduction. However, a number of pond turtle populations consist primarily of older adults and are considered to be at risk (Holland 1991). Collecting of pond turtles is a significant problem in some easily accessible areas.

South coast red-sided garter snake (*Thamnophis sirtalis* spp.)

Status and Distribution: The south coast red-sided garter snake is believed to be a distinct taxon from red-sided garter snakes north of the Tehachapi Mountains and Carpinteria (Santa Barbara County) (Jennings and Hayes 1994). It is known only from scattered localities along the southern California coastal plain, from the Santa Clara River Valley south to the vicinity of San Pasqual Valley in San Diego

County. Historic localities on Camp Pendleton (San Diego County) are dominated by tules, cattail, and willow (Holland and Goodman 1998).

The south coast garter snake has been sighted recently in only a few localities, some of which are near national forest system lands: the lower Santa Clara River, the lower Santa Margarita River, San Mateo Creek, the lower San Luis Rey River and above Lake Henshaw along the upper reaches of the same drainage (Jennings and Hayes 1994; Holland and Goodman 1998; R. Fisher pers. comm.). This species has not been extensively surveyed for and is regarded as difficult to detect. There is potential for it to occur at low elevations (below 3,000 feet) on any or all of the four national forests.

Habitat: The south coast garter snake occurs in marshy, permanent-water habitats along low-elevation streams (Jennings and Hayes 1994).

Conservation Considerations: Surveys need to be conducted for this species along the major low-elevation streams that extend onto national forest system lands. Given its rarity, any occurrences of this species should be given site-specific management attention.

Two-striped garter snake (*Thamnophis hammondi*)

Status and Distribution: The two-striped garter snake is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. In a reversal of the pattern exhibited by most aquatic species, the two-striped garter snake appears to have declined more in the northern portion of its range (Jennings and Hayes 1994). It is considered to be most common in eastern San Diego County, where it occurs in most foothill and mountain streams that have pools with persistent water (Jennings and Hayes 1994). It still occurs in all the mountain subareas within the assessment area but has disappeared from many historic locations in the coastal basins. The assessment area and the coastal region to the west make up almost the entire range of this species.

Habitat: Two-striped garter snakes inhabit perennial and intermittent streams from sea level to over 7,000 feet (e.g., Tahquitz Valley in the San Jacinto Mountains) (Jennings and Hayes 1994). They also occupy stock ponds and other artificially created aquatic habitats.

Conservation Considerations: Although it is thought to be declining, the two-striped garter snake is considerably more common than the other aquatic amphibians and reptiles described above. For that reason we believe it can be adequately conserved through appropriate landscape-scale management of riparian and aquatic habitats. However, given that national forest system lands are the primary refugia for this species, there is a need to better determine the specific drainages where it occurs. It is a relatively easy species to detect and, once inventoried, it would be easy to at least periodically monitor its presence or absence in specific drainages over time.

Riparian Birds

The importance of riparian habitats to birds has long been recognized and has led to an emphasis on research and monitoring of this group. In southern California, the endangered least Bell's vireo has been the marquee riparian bird over the last two decades. More recently the southwestern willow flycatcher has also become a focal species. To look more broadly at the avian riparian community, in 1988 the four southern California national forests initiated a broad-scale, coarse-filter approach to annually monitor the abundance of birds in riparian habitats. A standardized ten-minute point count technique with three independent observers has been used to sample about two hundred permanent stations each year during the breeding season. These point-count stations are spread across more than twenty drainages (fig 4.14).

Trends in the detection rates of specific bird species have recently been analyzed (Stephenson et al. 1998). Trends from the point-count data were compared with similar trend estimates from the North American Breeding Bird Survey (BBS) (Sauer et al. 1997).

For our comparisons we used BBS trends from 1980 to 1996 for all of California, the California foothills physiographic region, and the Los Angeles Ranges physiographic region. Statistically significant trends in abundance were observed for a number of species; however, few of our fine-filter species were detected often enough to reliably determine their trends (table 4.6).

Thirteen riparian bird species were identified as being rare or potentially at risk and received individual consideration (table 4.7). Most of them are associated with low-elevation riparian habitats.

Cooper's hawk (*Accipiter cooperi*)

Status and Distribution: The Cooper's hawk is a California Species of Special Concern. Cooper's hawks are found in all the mountain subareas, but they occur at low-densities and were not effectively monitored in the riparian point-count surveys (i.e., only about two per year were detected) (Stephenson et al. 1998). However, results from the BBS suggest that Cooper's hawks may be declining statewide (table 4.6) (Sauer et al. 1997).

Habitat: Cooper's hawks typically nest in riparian forests, mountain canyons (Garrett and Dunn 1981), and oak woodlands (Unitt 1984). They also utilize eucalyptus groves to some degree and have been observed successfully fledging young in residential areas.

Conservation Considerations: Cooper's hawk breeding habitat is declining on private lands at the lower elevations; thus, public lands in the assessment area are becoming increasingly important to this species. However, this hawk does not seem particularly vulnerable to prevailing agents of change on public lands. Its broad distribution and life history characteristics suggest it can be conserved through landscape-scale, habitat-based management.

Yellow-billed cuckoo (*Coccyzus americanus occidentalis*)

Status and Distribution: The yellow-billed cuckoo is state listed as endangered and

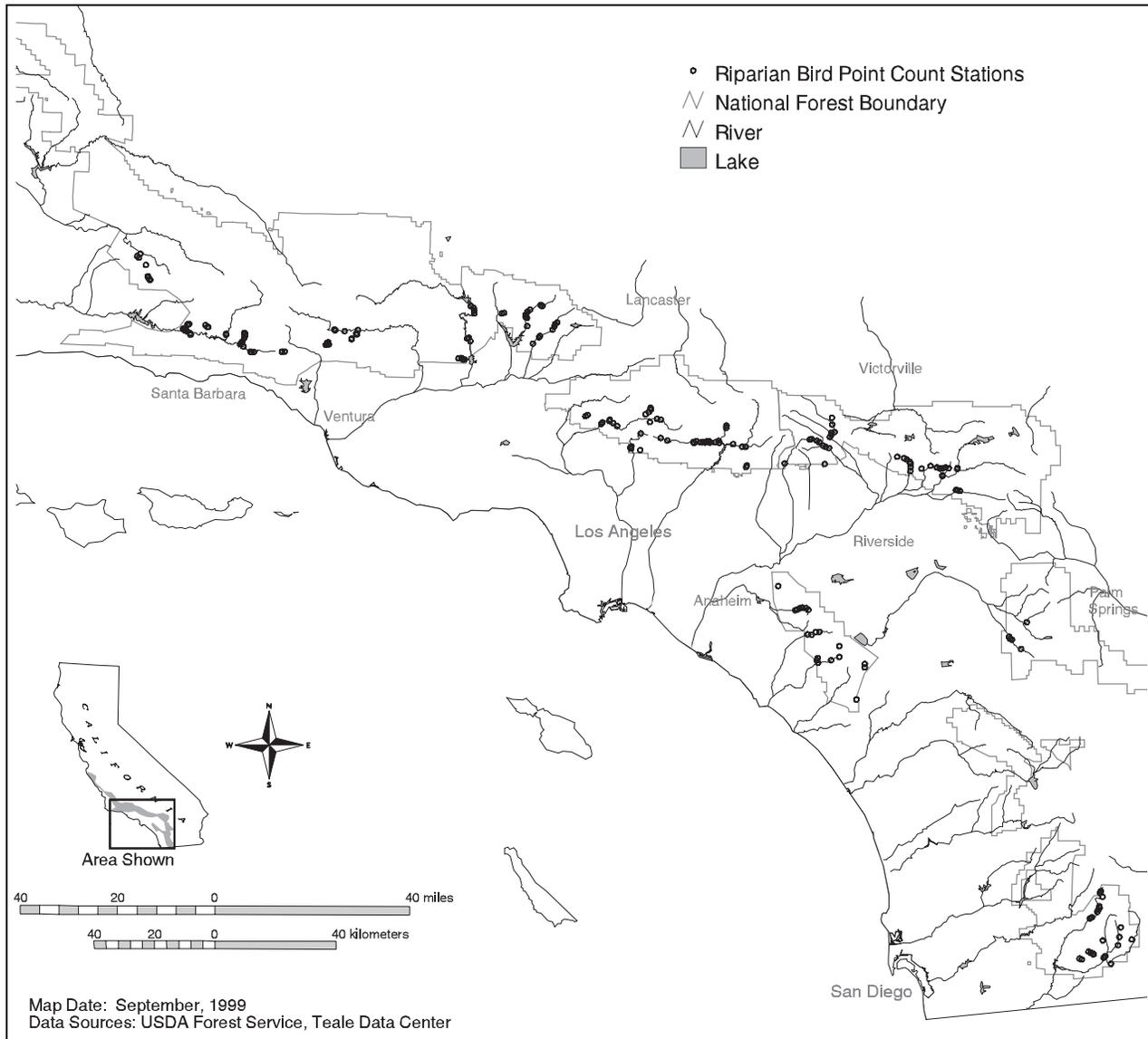


Figure 4.14. Riparian bird point-count monitoring stations across the four southern California national forests. Birds were monitored annually at about two hundred stations from 1988 to 1997.

is a Forest Service Region 5 Sensitive Species. Yellow-billed cuckoos have been observed in the breeding season at various locations along the central and southern California coast (e.g., Prado Basin, lower San Luis Rey River, lower Santa Ysabel Creek above Lake Hodges), but not within the assessment area (Garrett and Dunn 1981). There is very little potential habitat for this species on national forest system lands in southern California.

Habitat: Yellow-billed cuckoos breed in broad, well-developed, low-elevation riparian woodlands.

Conservation Considerations: The yellow-billed cuckoo is not known to occur

within the assessment area and the potential to support a population is believed to be very low. Therefore management activities on national forest system lands in the assessment area are believed to have little influence on the conservation of this species.

Black swift (*Cypseloides niger*)

Status and Distribution: The black swift is a local species of concern because (1) it has specialized nesting requirements that are found in very few locations in southern California and (2) most of its breeding localities are within the assessment area. Known nesting localities include Santa Anita Canyon and

Table 4.6. Detection rates and, where possible, trends in abundance for sixteen riparian birds from the national forest riparian point count study (1988 to 1996) and the Breeding Bird Survey (1980 to 1996). The trend value is the mean percent change per year in number of birds detected, based on the slope of a regression line. Statistically significant trend values ($P < 0.10$) are in bold. Detection rates were too low to produce meaningful trends for many of our fine-filter species.

Species	Avg. # observed each year	Point Counts		BBS Routes — 1980 to 1996					
		1988 to 1996		California		CA Foothills		LA Ranges	
		Trend	<i>P</i>	Trend	<i>P</i>	Trend	<i>P</i>	Trend	<i>P</i>
Song sparrow	163	-3.6%	0.04	0.3%	0.76	1.6%	0.55	-6.1%	0.37
Yellow warbler	104	-0.1%	0.91	-3.0%	0.04	-5.0%	0.00	31.5%	0.00
Warbling vireo	43	7.6%	0.09	-2.0%	0.03	-2.9%	0.02		
Lawrence's goldfinch	21	-9.6%	0.04	0.7%	0.78	0.1%	0.97	-11.6%	0.12
Black-chinned hummingbird	19	-7.1%	0.04	-7.0%	0.03	-9.5%	0.01		
Common yellowthroat	10	2.3%	0.66	5.1%	0.08				
Swainson's thrush	3	-6.0%	0.56						
Red-shouldered hawk	3	-2.5%	0.75						
Willow flycatcher**	2	Sample too small							
Yellow-breasted chat	2	Sample too small		1.3%	0.25	0.9%	0.62		
Cooper's hawk	2	Sample too small		-7.5%	0.02	-7.0%	0.03		
American dipper	1	Sample too small							
MacGillivray's warbler**	< 1	Sample too small							
Tree swallow	< 1	Sample too small							
Least Bell's vireo	< 1	Sample too small							
Black swift	< 1	Sample too small							

** Detections of these species were believed to be migrating birds based on time of year.

Wolfskill Canyon in the San Gabriel Mountains, Fallsvale in Mill Creek Canyon in the San Bernardino Mountains, and Tahquitz Creek in the San Jacinto Mountains (Garrett and Dunn 1981).

Habitat: Black swifts nest in rocky cliffs behind waterfalls. They occur in mountain and foothill canyons that contain waterfalls.

Conservation Considerations: Since waterfalls are also popular recreation sites, management attention is needed to ensure that black swift nest sites are not disturbed.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Status and Distribution: A precipitous decline in the abundance of the southwestern willow flycatcher led to its federal listing as endangered in 1995. Extensive loss of low-

elevation riparian habitat across its range and brood parasitism by the brown-headed cowbird were identified as the primary causes of its decline (USFWS 1995c). Its breeding range includes southern California, Arizona, New Mexico, southern portions of Utah and Nevada, and western Texas (USFWS 1995c).

In southern California, the southwestern willow flycatcher is considerably less abundant than the least Bell's vireo (fig. 4.15). It occurs at fewer locations and in smaller numbers. One of the largest remaining populations is on the upper San Luis Rey River, partially within the Cleveland National Forest (Unitt 1987). About eighteen to twenty-five pairs breed along a 3-mile stretch of this river below Lake Henshaw (Griffith and Griffith 1995). A similar size population exists on the Santa Margarita River within

Table 4.7. Riparian-associated birds that received individual consideration.

Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Riparian Birds Animals of Concern <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulnerability on NFs	(4) Pop. Trend	(5) Conser- vation Category
		Cleveland NF		San Bern. NF		Angeles NF		Los Padres NF					
		San Diego Rngs	Snta Ana Mts	San Jac Mts	San Bern Mts	San Gab Mts	Cas- taic Rngs	So. LP Rngs	So. SL Rng	No. SL Rng			
Birds													
Cooper's hawk	Mod (30-60%)	y	y	y	y	y	y	y	y	y	Low	Unkn	Landscape scale
Yellow-billed cuckoo	Mod (0%)							p			Low	Unkn	Minimal influence
Black swift	Mod (>75%)	p		2-3	3-5	3-5	p	p		p	Mod	Unkn	Site specific
SW willow flycatcher <i>endangered</i>	High (20-50%)	20+	0	0	1	0	1-2	p	0	0	High	Decl	Site specific
Tree swallow	Low (< 5%)	y	t	y	y	y	p	y	y	y	High	Unkn	Landscape scale
Swainson's thrush	Low (10-30%)	y	y	p/t	p/t	y	y	y	y	y	Mod	Unkn	Landscape scale
American dipper	Low (> 75%)	2-4	0-2	5-15	20-30	20-30	0-2	~15	5-10	5-15	Low	Unkn	Landscape scale
Least Bell's vireo <i>endangered</i>	High (< 3%)	15	1-2	0	0	0	1	25	0	0	High	Incr/ Decl ²	Site specific
Warbling vireo	Mod (30-60%)	y	y	y	y	y	y	y	y	y	Mod	Unkn	Landscape scale
Yellow warbler	Mod (30-60%)	y	y	y	y	y	y	y	y	y	Mod	Stab ¹	Landscape scale
Common yellowthroat	High (< 30%)	y	y	y	y	y	y	y	y	y	Mod	Unkn	Landscape scale
Yellow-breasted chat	Mod (< 20%)	y	y	y	y	y	y	y	y	y	Mod	Unkn	Landscape scale
Lawrence's goldfinch	Mod-Low (30-60%)	y	y	y	y	y	y	y	y	y	Mod	Decl ¹	Landscape scale

¹ based on USFS riparian point count results

² Bell's vireo is increasing regionwide, but decreasing on national forest service lands

Camp Pendleton. The only larger population in California occurs on the South Fork of the Kern River, where thirty-eight pairs were documented in 1997 (Whitfield et al. 1997).

One to three breeding pairs have been observed annually between 1996 and 1998 on Mill Creek near Mountain Home Village on the San Bernardino National Forest. A sizeable number of early-summer detections at

point-count stations on San Francisquito Creek in the Angeles National Forest suggest willow flycatchers may breed along that drainage. Also, a willow flycatcher was observed building a nest along the Santa Clara River in Soledad Canyon just north of national forest system lands (D. Cooper, UC Riverside, in litt.). There are currently no known breeding locations on the Los Padres, although several early-summer detections have been made at

point-count stations on several drainages. It is unknown if they were residents or migrants.

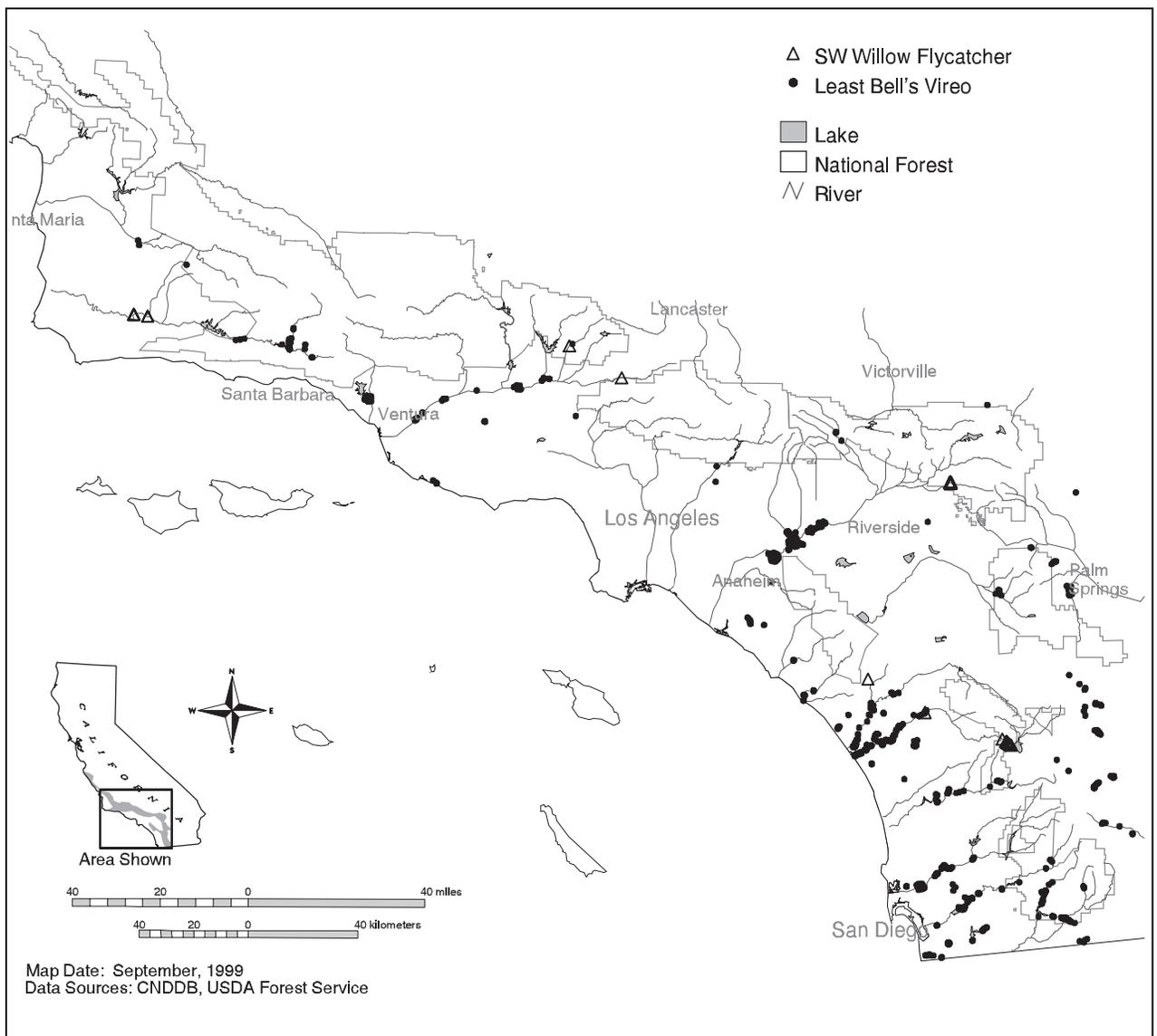
Recent monitoring of the upper San Luis Rey River population suggests that it is currently stable (B. Haas, Varanus Consulting, pers. comm.). Populations on the Santa Margarita River and Prado Basin also appear stable, but willow flycatchers have not responded to cowbird control with dramatic increases as did the least Bell's vireo at those same locations (L. Hays, USFWS, pers. comm.).

Habitat: The southwestern willow flycatcher is a neotropical migrant that breeds in low-elevation riparian habitats. Occupied sites

are highly localized and variable in vegetation structure, making it difficult to readily see what microhabitat features are being selected. One common denominator appears to be the presence of perennial or near-perennial water. Whitfield and Enos (1996) measured the vegetative characteristics of willow flycatcher breeding sites on the Kern River and found that all nesting territories had high vegetative volume in the lower strata and high canopy density.

Conservation Considerations: Southwestern willow flycatcher populations within the assessment area are few and vulnerable to existing threat factors. They therefore warrant

Figure 4.15. Known locations of the southwestern willow flycatcher and least Bell's vireo along the southern California coast.



site-specific management attention. The upper San Luis Rey River population is a particularly significant resource and should be managed accordingly. Threats are similar to those described for the least Bell's vireo, although factors controlling willow flycatcher population growth are not as well understood.

The South Fork, Kern River population is the best studied. In the years prior to cowbird control (1989 to 1992), nest parasitism rates averaged 62.5 percent. With cowbird removal (1994 to 1997), parasitism rates have averaged only 16.5 percent (Whitfield et al. 1997). However, this improvement has not, as of yet, resulted in a significant increase in the number of willow flycatchers (Whitfield et al. 1997). The Cleveland National Forest has trapped cowbirds annually along the upper San Luis Rey River since 1992. Nest parasitism rates prior to cowbird trapping are not known, but nest monitoring since the initiation of trapping has detected very low parasitism rates (less than 5 percent) (Griffith and Griffith 1995; B. Haas, pers. comm.).

More inventory work is needed to determine the full extent of breeding willow flycatcher populations. Determining if breeding is occurring along San Francisquito Creek is a particular priority. In addition, a better understanding is needed of the key factor limiting the growth and expansion of southwestern willow flycatcher populations.

Tree swallow (*Tachycineta bicolor*)

Status and Distribution: The tree swallow is a rare summer resident in southern California. We found no confirmed breeding locations on national forest system lands, although there likely are some. Most of the breeding locations identified by Garrett and Dunn (1981) are near the immediate coast (e.g. Morro Bay, Santa Maria River, and the lower San Luis Rey River). Two breeding locations, Lake Henshaw and Wynola, are within the assessment area and close to the boundaries of the Cleveland National Forest.

Habitat: Tree swallows typically breed in lowland and foothill riparian habitats in the

vicinity of slow-moving or standing water (Garrett and Dunn 1981).

Conservation Considerations: More complete information is needed on the distribution of tree swallows on public lands in the assessment area. Ongoing surveys associated with the development of breeding bird atlases in Los Angeles and San Diego counties should provide much needed information. The decline of this species as a breeder in the region is attributed to loss of low-elevation riparian habitat and competition with starlings for nest cavities (Garrett and Dunn 1981).

Swainson's thrush (*Catharus ustulatus*)

Status and Distribution: There seems to be broad consensus that Swainson's thrushes are declining throughout California and have disappeared from many areas (Garrett and Dunn 1981; Unitt 1984; Stefani 1998). Results from the BBS also show a downward trend, although it is not statistically significant. The status of Swainson's thrushes within the assessment area is difficult to determine given the paucity of data on its distribution and abundance.

The Swainson's thrush is a common spring transient and localized summer resident in low-elevation riparian habitats in southern California. Breeding populations are reportedly more abundant from Santa Barbara County north (Garrett and Dunn 1981). Knowledge of its distribution and abundance within the assessment area is poor. The Swainson's thrush's apparent affinity for coastal lowland habitats (Unitt 1984) reduces the amount of potential nesting habitat on national forest system lands. Still, Swainson's thrushes were detected repeatedly along several drainages during the annual riparian point counts conducted from 1988 to 1996 (table 4.8). Some of these were probably transient birds, but the locations provide a place to start when looking for nesting locations.

Habitat: The Swainson's thrush occupies low-elevation riparian habitats, typically in dense thickets of willow and other hardwoods along the primary stream channel (R. Stefani, UC Davis, pers. comm.).

Conservation Considerations: Major threats are loss of lowland riparian habitat and nest parasitism by brown-headed cowbirds (Garrett and Dunn 1981). Better information on the distribution and abundance of the Swainson's thrush within the assessment area is sorely needed. It is clearly not common and appears to be vulnerable to existing threat factors.

American dipper (*Cinclus mexicanus*)

Status and Distribution: The American dipper is a species of local concern because it is rare in southern California and most locations are within the assessment area. Dippers are most common in the San Gabriel and San Bernardino mountains, with scattered occurrences in some of the other mountain ranges. Known dipper nesting localities include Upper Sisquoc Falls, Santa Paula Canyon, Agua

Blanca Creek and Sespe Creek (Los Padres National Forest); Santa Anita Canyon and the upper forks of the San Gabriel River (Angeles National Forest); Upper Santa Ana River, Bear Creek and Mill Creek in the San Bernardino Mountains and Tahquitz Creek and the North Fork of the San Jacinto River in the San Jacinto Mountains (San Bernardino National Forest); and Pauma Creek on Palomar Mountain (Cleveland National Forest) (Garrett and Dunn 1981; Unitt 1984; Lane 1985; Lentz 1993).

Habitat: Dippers occupy fast-flowing, clear streams in mountain canyons (Garrett and Dunn 1981).

Conservation Considerations: Dipper habitat is typically in remote canyons and vulnerability to land use impacts is believed to be low. The biggest threat is further impoundment or diversion of streamflows.

Table 4.8. Locations where Swainson's thrushes were detected multiple times in riparian point count surveys from 1988 to 1996. These surveys did not extend north of the Sisquoc River. Most detections were made during the month of May. Further survey work is needed to determine if these represent breeding locations or just birds migrating through the area.

Swainson Thrush Locations		National Forest	# of Years Detected	# of points where detected
Specific Drainage	Primary Drainage			
Cachuma Creek	Santa Ynez River	Los Padres	2	1
Santa Ynez River	Santa Ynez River	Los Padres	1	3
Elizabeth Lake Canyon	Elizabeth Lake Canyon	Angeles	2	3
San Francisquito Canyon	San Francisquito Canyon	Angeles	2	2
Little Tujunga Canyon	Little Tujunga Canyon	Angeles	2	2
Lower Big Tujunga Canyon	Big Tujunga Canyon	Angeles	3	4
Upper Big Tujunga Canyon	Big Tujunga Canyon	Angeles	1	3
Mill Creek (Big Tujunga)	Big Tujunga Canyon	Angeles	2	2
Arroyo Seco Creek	Arroyo Seco Creek	Angeles	2	2
Cajon Creek (Lost Lake)	Cajon Creek	San Bern.	2	1
Bautista Canyon	San Jacinto River	San Bern.	4	2
Silverado Canyon	Silverado Canyon	Cleveland	3	4
San Juan Creek	San Juan Creek	Cleveland	3	2
Long Canyon	San Juan Creek	Cleveland	2	1
Pine Valley Creek	Pine Valley Creek	Cleveland	1	2
Kitchen Creek	Cottonwood Creek	Cleveland	1	2
La Posta Creek	Cottonwood Creek	Cleveland	2	2
Morena Creek	Cottonwood Creek	Cleveland	2	1

Least Bell's vireo (*Vireo bellii pusillus*)

Status and Distribution: The least Bell's vireo was federally listed as endangered in 1986. Its breeding range is restricted to southern California and northern Baja California, Mexico (USFWS 1998c). The low-elevation riparian habitats preferred by Bell's vireos are uncommon in the assessment area. Consequently, Bell's vireo numbers are low on national forest system lands and make up a small percentage (less than 3 percent) of the total regional population. The largest population on national forest system lands, currently twenty to thirty pairs, is located on the Los Padres along the upper Santa Ynez River and its tributaries, Mono and Indian Creeks, above Gibraltar Reservoir. This population has been monitored for many years by Jim Greaves and associates (Gray and Greaves 1984; Greaves 1989, 1993, 1997). It appears to be the only area on the Los Padres where Bell's vireos consistently breed (Greaves and Labinger 1997).

The other documented breeding locations within the assessment area are within or near the Cleveland National Forest. Bell's vireo locations on the Cleveland National Forest are along the upper reaches of drainages that have substantially larger populations further downstream. Small breeding populations (one to ten pairs) exist on national forest system lands along Cottonwood Creek (a tributary of the Tijuana River), Pine Valley Creek (a tributary of Cottonwood Creek), Santa Ysabel Creek, and the San Luis Rey River.

Within the Angeles National Forest there have been sporadic sightings of Bell's vireos during the breeding season on San Francisquito Creek, Big Tujunga Creek, and the upper Santa Clara River (USFWS 1998c). Two were also sighted on Cajon Creek within San Bernardino National Forest in 1990. However, breeding has not been documented at any of these locations. There is a need to determine if breeding populations exist in these drainages.

The decline of this species is attributed primarily to extensive loss of low elevation riparian habitat and brood parasitism by the

brown-headed cowbird. In recent years, least Bell's vireo numbers in southern California have increased dramatically, from an estimated 300 pairs in 1986 to an estimated 1,346 pairs in 1996 (USFWS 1998c).

Habitat: The least Bell's vireo is a neotropical migrant that breeds in low-elevation riparian habitats, particularly broad cottonwood-willow woodlands and mule fat scrub. A detailed description of habitat characteristics is provided in the draft recovery plan (USFWS 1998c).

Conservation Considerations: Within the assessment area, habitat degradation and nest parasitism by brown-headed cowbirds are the biggest threats to least Bell's vireos (USFWS 1998c). Habitat loss is occurring primarily in urbanizing areas and is not considered to be a major problem on public lands.

Cowbird nest parasitism, where it has not been effectively reduced through control programs, is probably the most chronic and debilitating threat to least Bell's vireo populations. It is considered to be a major problem for all of the Bell's vireo populations on national forest system lands (Greaves 1997; Wells and Turnbull 1998). Cowbird control efforts near vireo breeding areas are cited as being particularly instrumental in the recovery of this species.

On the Santa Margarita River within the Camp Pendleton Marine Corps Base, cowbird parasitism of least Bell's vireo nests was at 47 percent in 1983 when the base began an intensive cowbird trapping program. With annual trapping, by 1990 the brood parasitism rate had dropped to less than 1 percent (Griffith and Griffith, in press). The Santa Margarita River Bell's vireo population rose from 60 pairs in 1983 to 319 pairs in 1993 (Griffith and Griffith, 1995). Since the initiation of annual cowbird removal programs, similarly dramatic population increases have occurred on the Tijuana and San Luis Rey rivers and in the Prado Basin (Kus 1995; Kus 1996; Pike and Hays 1997).

Bell's vireo populations on national forest system lands have not been nearly as successful. The Santa Ynez River population has

dropped from fifty-five breeding pairs in 1980 to fewer than thirty pairs in 1994 (Greaves 1997). The population along Pine Valley Creek has dropped from five pairs in 1994 to zero in 1997 and 1998, although in neighboring Cottonwood Creek the population has stayed consistently around four to six pairs (Wells and Turnbull 1998).

Habitat degradation can occur when the structure or composition of riparian vegetation is altered. Dense shrub cover within 3 to 6 feet of the ground is important for Bell's vireos and this cover can be significantly reduced by overgrazing, off-road vehicle activity, concentrated recreation use, channel clearing, and large discharges of water from upstream reservoirs. Invasions of non-native plants, particularly arundo and tamarisk, are also crowding out native plants and degrading habitats for the Bell's vireo in a number of locations.

Warbling vireo (*Vireo gilvus*)

Status and Distribution: The warbling vireo is identified as a high-priority riparian obligate species by California Partners in Flight (Evans 1997). It is a summer resident at low- to mid-elevations across the assessment area, although there are few recent breeding records from the San Jacinto Mountains and the San Diego ranges (Garrett and Dunn 1981; Unitt 1984).

Warbling vireos were detected at 30 percent of the riparian point-count stations annually and they increased significantly in abundance between 1988 and 1996 (table 4.6) (Stephenson et al. 1998). However, the BBS results suggest that warbling vireos may be declining statewide. Garrett and Dunn (1981) indicate that this species has declined in the southern half of the assessment area, particularly at lower elevations.

Habitat: In the northern part of the assessment area, warbling vireos commonly nest in low-elevation riparian and mixed woodland habitats (Garrett and Dunn 1981). In the south they apparently now nest primarily in mixed conifer-oak woodlands in the mountains (Garrett and Dunn 1981; Unitt 1984).

Conservation Considerations: Nest parasitism by brown-headed cowbirds is strongly implicated in the decline of this species as a breeder in coastal lowland and foothill riparian areas (Garrett and Dunn 1981; Unitt 1984).

Yellow warbler

(*Dendroica petechia brewsteri*)

Status and Distribution: The yellow warbler is a California Species of Special Concern and is identified as a high-priority riparian obligate species by California Partners in Flight (Evans 1997). It is a summer resident at low-elevations across the assessment area.

Yellow warblers were detected at 51 percent of the riparian point-count stations annually and had a very stable trend. This was the only species for which it was possible to conclude, with high statistical power, that they are not declining at an annual rate of 3 percent or more (table 4.6) (Stephenson et al. 1998). However, results from the BBS suggest that the yellow warbler may be declining statewide and in the California foothills physiographic region (Sauer et al. 1997).

Habitat: Yellow warblers breed in riparian woodlands in the lowlands and foothill canyons (Garrett and Dunn 1981; Unitt 1984; Lehman 1994). They are typically found in riparian forests that contain cottonwoods, sycamores, willows, or alders.

Conservation Considerations: Nest parasitism by brown-headed cowbirds is strongly implicated in the decline of this species as a breeder in coastal lowland and foothill riparian areas (Garrett and Dunn 1981; Unitt 1984).

Common yellowthroat (*Geothlypis trichas*)

Status and Distribution: The common yellowthroat is identified as a high priority riparian obligate species by California Partners in Flight (Evans 1997). It is primarily a species of lowland habitats and occurs in the assessment area only in the low foothills. Common yellowthroats were detected at only 8 percent of the riparian point-count stations

annually and no clear trend in abundance could be ascertained (table 4.6). BBS results suggest that yellowthroats may be on the increase statewide (Sauer et al. 1997).

Habitat: Common yellowthroats typically breed in fresh water and brackish marshes of cattails, bulrushes, and other emergent vegetation and also occupy dense brush in damp areas (Garrett and Dunn 1981).

Conservation Considerations: The primary threat to this species is loss or degradation of riparian habitats, particularly areas that support dense emergent vegetation.

Yellow-breasted chat (*Icteria virens*)

Status and Distribution: The yellow-breasted chat is a California Species of Special Concern and is identified as a high-priority riparian obligate species by California Partners in Flight (Evans 1997). It is a localized summer resident in low-elevation foothill canyons across the assessment area and appears to be quite rare. Indications are that this species has declined dramatically in southern California (Garrett and Dunn 1981).

Chats were rarely detected in the riparian point-count survey. All of the stations at which they were detected in multiple years are located on the Los Padres National Forest. Known locations of the yellow-breasted chat include Mono Creek, Santa Ynez River, and Sespe Creek on the Los Padres National Forest; San Francisquito and Elizabeth Lake canyons on the Angeles National Forest; Bautista Canyon on the San Bernardino National Forest; and the upper San Luis Rey River on the Cleveland National Forest (Unitt 1984).

Habitat: Yellow-breasted chats breed in dense riparian thickets and brushy tangles in the vicinity of water courses (Garrett and Dunn 1981). They are found primarily in the coastal lowlands.

Conservation Considerations: Major threats to this species are loss of lowland riparian habitat and nest parasitism by brown-headed cowbirds (Garrett and Dunn 1981). More information is needed on the distribution and abundance of the yellow-breasted

chat within the assessment area. The rarity and apparent decline of this species warrants paying increased attention to sites where they still occur.

Lawrence's goldfinch (*Carduelis lawrencei*)

Status and Distribution: The Lawrence's goldfinch has been identified as a "extremely high priority" watch list species by Partners in Flight, although no reason is given for this designation (Carter 1998). It is probably because the breeding range of this species is restricted to California west of the Sierra Nevada and to northern Baja California. Lawrence's goldfinches are found at low- to mid-elevations on both coastal and desert sides of the assessment area, but it is described as an opportunistic, nomadic breeder (D. Cooper, UC Riverside, pers. comm.), and thus its distribution and abundance varies considerably from year to year (Garrett and Dunn 1981).

Lawrence's goldfinches were detected at 12 percent of the riparian point count stations annually and had a declining trend of 9.6 percent per year (table 4.6). However, this species is known for having large and erratic fluctuations in abundance (Garrett and Dunn 1981), so this trend may be misleading. A decline in Lawrence's goldfinches was not apparent in statewide BBS results, but was observed in BBS routes from the Los Angeles Ranges physiographic region (Sauer et al. 1997).

Habitat: Lawrence's goldfinches breed around riparian thickets within arid woodlands and shrublands (e.g., arid oak savanna, pinyon-juniper, chaparral, open coniferous forest) (Garrett and Dunn 1981).

Conservation Considerations: It is difficult to assess the conservation needs of the Lawrence's goldfinch. More information is needed on what areas or microhabitats may be particularly important to this species.

Riparian Invertebrates

Three riparian invertebrates were identified as being rare or potentially at risk and received individual consideration (table 4.9).

California diplectronan caddisfly
(*Diplectronan californica*)

Status and Distribution: The California diplectronan caddisfly is a former C2 candidate for federal listing. Information is scarce on the range of this species; the type locality is from Claremont and the only other identified location is on Mill Creek at Thurman Flats in the San Bernardino National Forest (Erman and Nagano 1992).

Habitat: Little is known about this particular species, but other species of this genus are known to occur in rapid portions of small, cool streams (Erman and Nagano 1992).

Conservation Considerations: More information is needed on the distribution, abundance, and habitat associations of this caddisfly before a meaningful conservation strategy can be developed.

Greenest tiger beetle
(*Cicindela tranquebarica virudissima*)

Status and Distribution: The greenest tiger beetle was formerly a C1 candidate species for federal listing. It is known from the upper Santa Ana River wash area at the base of the San Bernardino Mountains (Ballmer 1992) and was observed in Bautista Canyon in the 1970s (M. Nelson, USFWS, pers. comm.). It is unknown if these populations extend onto public lands within the assessment area.

In 1996, the U.S. Fish and Wildlife Service removed this subspecies from the candidate list based on taxonomic studies which indicate that *C. t. virudissima* is synonymous with the more widely distributed *C. t. vibex* (USFWS 1996b).

Habitat: The greenest tiger beetle is usually found near running water where there is fine sand. Larvae live in burrows in the sand at the margin of streams. Adults are active

Table 4.9. Riparian-associated invertebrates and mammals that received individual consideration.

Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Riparian Mammals and Invertebrates <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulnerability on NFs	(4) Pop. Trend	(5) Conservation Category
		Cleveland NF		San Bern. NF		Angeles NF		Los Padres NF					
		San Diego Rngs	Snta Ana Mts	San Jac Mts	San Bern Mts	San Gab Mts	Cas-taic Rngs	So. LP Rngs	So. SL Rng	No. SL Rng			
Invertebrates													
CA diplectronan caddisfly	Very Low (?)				y	p	p				Unkn	Unkn	Landscape level
Greenest tiger beetle	Very Low (?)			p	p						Unkn	Unkn	Minimal Influence
Harbison's dun skipper	Mod (< 20%)	y	y								Mod	Unkn	Landscape level
Mammals													
Western red bat	Low (?)	y	y	y	y	y	y	y	y	y	Mod	Unkn	Landscape level
San Bernardino dusky shrew	Low (> 75%)				y	y					Low	Unkn	Landscape level
Ringtail	Low (30-70%)	y	y	y	y	y	y	y	y	y	Low	Unkn	Landscape level

runners and fliers along stream shores (Ballmer 1992).

Conservation Considerations: Information is needed on the distribution of this beetle along portions of the Santa Ana River and Bautista Creek that lie within the assessment area. However, changes in the species' taxonomy suggest it is no longer a rare taxon.

Harbison's dun skipper (*Euphyes vestris harbisoni*)

Status and Distribution: The Harbison's dun skipper is a former C2 candidate for federal listing. This butterfly occurs in a series of scattered and disjunct colonies throughout western San Diego County, extending as far north as the Santa Ana Mountains in Orange County (Brown 1991). Localities in or near the assessment area include Silverado Canyon (Santa Ana Mountains), San Pasqual Valley, Ramona, Flinn Springs, Old Viejas Grade, Otay Mountain, and Tecate Peak (Murphy 1990; Brown 1991). Some historic populations have declined or been extirpated, primarily due to habitat loss resulting from development.

Habitat: The Harbison's dun skipper typically occurs in partially-shaded, riparian oak woodland habitats in a matrix of chamise chaparral or southern mixed chaparral, where seeps or springs provide adequate water to support the larval host plant, San Diego sedge (*Carex spissa*) (Brown 1991). The butterfly has never been found in the absence of San Diego sedge (Brown 1991).

Conservation Considerations: More information is needed on occurrences of this species on public lands in the Santa Ana Mountains and the San Diego ranges. The presence of San Diego sedge in considerable numbers is a strong indicator of potential habitat for this species (Brown 1991). Water sources associated with occupied or potential habitat should be protected.

Riparian Mammals

Three riparian-associated mammals were identified as being rare or potentially at risk and received individual consideration (table 4.9).

Western red bat (*Lasiurus blossevillii*)

Status and Distribution: The western red bat is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. There is little information on the distribution and relative abundance of western red bats in southern California. During surveys in the national forests, it was recently detected by mist net capture or Anabat detector in the following locations: upper Salinas River (Los Padres National Forest), Sugarloaf Meadows and Big Bear Dam (San Bernardino National Forest), and Laguna Meadow and Lost Valley (Cleveland National Forest) (Miner and Brown 1996; Simons et al. in prep.).

Habitat: The western red bat is primarily a solitary species that roosts in the foliage of trees and shrubs often, but not exclusively, in riparian habitats (Bolster 1998).

Conservation Considerations: More information is needed on the distribution and abundance of this species before its conservation needs can be adequately assessed. There is a concern about the effect of controlled burns on this species when roosting in leaf litter during cool weather (Bolster 1998).

San Bernardino dusky shrew (*Sorex monticolus parvidens*)

Status and Distribution: The San Bernardino dusky shrew was formerly a California Species of Special Concern. It is reported to occupy riparian habitats from about 4,200 to 7,500 feet elevation in the San Bernardino and San Gabriel mountains (Hennings and Hoffman 1977). However, Williams (1986) reports that these shrews are indistinguishable from ornate shrews captured in the same areas. He concludes that they are probably the same species and that these populations are not threatened.

Habitat: These shrews are solitary, secretive animals that occupy moist soil, stumps, and logs in montane riparian and wet meadow areas (Ingles 1965; Zeiner et al. 1990).

Conservation Considerations: The recommended change in the taxonomic status of the San Bernardino dusky shrew has caused it to be dropped from the California Species of Special Concern list. The ornate shrew is widespread and, given its habitat requirements and life history characteristics, it should not be particularly vulnerable to land use activities currently occurring on national forest system lands.

Ringtail (*Bassariscus astutus*)

Status and Distribution: The ringtail is not on any concern lists and it is believed to be relatively common (P. Collins, Santa Barbara Nat. Hist. Museum, pers. comm.). We include it as a local viability concern because there is little recent, documented information on its distribution or status in the assessment area. Vaughan's (1954) report on mammals in the San Gabriel Mountains says that ringtails were present in San Gabriel Canyon, Dalton Canyon, Palmer Canyon, and San Antonio Canyon. There are more recent reports of sightings in Lytle Creek Canyon (S. Loe, San Bernardino NF, pers. comm.).

Habitat: Ringtails are generally known to occupy brushy and wooded areas along water courses in foothill and lower montane canyons (Jameson and Peeters 1988). Its principal habitat requirements seem to be den sites among boulders or in hollows in trees and sufficient food in the form of rodents and other small animals (Williams 1986). Rocky habitats are apparently preferred. In the San Gabriel Mountains, Vaughan (1954) reports that ringtails occur in canyons in the chaparral belt. Unlike the raccoon, ringtails reportedly avoid urbanized areas (Jameson and Peeters 1988).

Conservation Considerations: Some current, baseline information is needed on the distribution of this species within the assessment area. However, the ringtail's habitat

requirements are not likely to make it highly vulnerable to land use activities occurring on national forest system lands.

Lake Species

Two species of concern, both birds, are strongly associated with lake or reservoir habitats (table 4.10). The distribution and abundance of these species has actually increased within the assessment area over the last eighty years as a result of reservoir development.

Bald Eagle (*Haliaeetus leucocephalus*)

Status and Distribution: Bald eagle populations in the continental United States were federally listed as threatened in 1978. However, steady population increases nationwide culminated in a formal proposal on July 4, 1999, to remove bald eagles from the threatened species list. Southern California is primarily wintering habitat for bald eagles. Breeding has been confirmed only in a few locations in the northern part of the assessment area (i.e., Nacimiento Lake, San Antonio Lake, and Cachuma Lake). However, a pair recently attempted to nest near Silverwood Lake in the San Bernardino Mountains.

The largest wintering population in southern California is at Big Bear Lake in the San Bernardino Mountains, where twenty to thirty eagles typically congregate from November to March. Most of the other large reservoirs in the assessment area also support anywhere from two to ten wintering eagles. In the San Bernardino Mountains, bald eagles have been observed moving between lakes during the winter (R. Butler, Mountaintop District, pers. comm.).

Habitat: In the assessment area, bald eagles are usually found close to lakes and reservoirs where they feed on fish, coots, and waterfowl (Garrett and Dunn 1981).

Conservation Considerations: There are high levels of human activity around many of the reservoirs in the assessment area where bald eagles spend the winter months. The eagles are affected by this activity and can alter their

Table 4.10. Rare or potentially at risk species associated primarily with lake habitats.

Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Lake Associated Animals of Concern <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulnerability on NFs	(4) Pop. Trend	(5) Conservation Category
		Cleveland NF		San Bern. NF		Angeles NF		Los Padres NF					
		San Diego Rngs	Snta Ana Mts	San Jac Mts	San Bern Mts	San Gab Mts	Cas- taic Rngs	So. LP Rngs	So. SL Rng	No. SL Rng			
Birds													
Bald eagle <i>threatened*</i>	High (30-60%)	w	t	w	w	w	w	y	y	y	Mod	Stable	Site Specific
Osprey	High (20-50%)	w	t	w	p/w	t	w	y	p/w	y	Mod	Unkn	Minimal Influence

* There is now a formal proposal to remove the bald eagle from the threatened species list.

habitat use patterns because of it (Steidl and Anthony 1996).

Osprey (*Pandion haliaetus*)

Status and Distribution: The osprey is a California Species of Special Concern. It primarily is an uncommon winter visitor in southern California, but nesting has been documented at Lake Casitas near Ventura and Lake San Antonio in Monterey County (Garrett and Dunn 1981) and may occur elsewhere.

Habitat: Ospreys eat fish and thus are found near large coastal estuaries and inland lakes.

Conservation Considerations: The habitat requirements of osprey in the assessment area center on lake resources. Typically, these resources are little affected by management activities occurring on national forest system lands.

Animals of Monterey Coast Habitats

As described in chapter 2, the Monterey coast has habitats that are found nowhere else in the assessment area. Ten animal species associated with these unique habitats are considered individually in this section (table 4.11).

Included in this group are two marine mammals and several bird species that are found only along the immediate coast. They require consideration because the Monterey District of the Los Padres National Forest encompasses almost twenty miles of ocean coastline in this area.

Smith's blue butterfly (*Euphilotes enoptes smithi*)

Status and Distribution: The Smith's blue butterfly was federally listed as endangered in 1976. At the time of listing it was thought to occur only in coastal dunes along Monterey Bay and from coastal scrub near Big Sur (Foster 1998). However, focused surveys have revealed additional populations and the Smith's blue is now known to occur along the coastal portions of Monterey, Santa Cruz, and San Mateo counties at about one hundred different locations (R.A. Arnold pers. comm., as cited in Foster 1998). Eleven of these sites are on or close to national forest system land (Foster 1998). Occupied areas include Big Sur Park, Burns Creek, along the Nacimiento-Ferguson Road, Kirk Creek, and Gorda Horse Pasture (fig. 4.16).

Habitat: The Smith's blue butterfly occurs in coastal prairie and coastal scrub habitats. Its distribution is limited to a portion of the

combined range of two host plants: seacliff buckwheat (*Eriogonum parvifolium*) and coast buckwheat (*Eriogonum latifolium*). Together these two plants function as the sole larval and primary adult food plants for the butterfly (Arnold 1983). Norman (1994) surveyed the west slope of the northern Santa Lucia Range and, based on the presence of seacliff buckwheat, estimated that there are several thousand acres of potentially suitable Smith's blue butterfly habitat on the Monterey Ranger District. The elevation range of seacliff buckwheat

is from sea level to approximately 2,600 feet (Foster 1998).

Conservation Considerations: The Smith's blue butterfly is a rare and highly localized species that warrants site-specific management attention. Foster (1998) provides a detailed evaluation of factors potentially affecting Smith's blue butterfly populations within the assessment area; the following synopsis is based on that report. Small amounts of suitable habitat may be affected by existing roads, trails, and developed recreation sites.

Table 4.11. Animals associated with Monterey Coast habitats that received individual consideration.

Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Monterey Coast Animals of Concern <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulnerability on NFs	(4) Pop. Trend	(5) Conser- vation Category	
		Cleveland NF		San Bern. NF		Angeles NF		Los Padres NF						
		San Diego Rngs	Snta Ana Mts	San Jac Mts	San Bern Mts	San Gab Mts	Cas- taic Rngs	So. LP Rngs	So. SL Rng	No. SL Rng				
Invertebrates														
Smith's blue butterfly <i>endangered</i>	High (10-50%)									y	Mod	Unkn	Site specific	
Doudoroff's elfin	Low (40-80%)									y	Low	Unkn	Landscape level	
Clemence's silverspot	Mod (40-80%)								y	y	Low	Unkn	Landscape level	
Amphibians														
Pacific giant salamander	Low (40-80%)									y	Low	Unkn	Landscape level	
Birds														
CA brown pelican <i>endangered</i>	High (<2%)									y	Low	Incr	Minimal Influence	
Western snowy plover <i>threatened</i>	Mod (< 2%)									p	Mod	Unkn	Site specific	
Marbled murrelet <i>endangered</i>	Mod (< 5%)									y	Low	Unkn	Site specific	
Mammals														
Monterey dusky-footed woodrat	Low (?)									y	Low	Unkn	Landscape level	
Southern sea otter <i>threatened</i>	High (< 1%)									y	Low	Stable	Minimal Influence	
Steller sea lion <i>threatened</i>	High (< 5%)									y	Low	Decl	Minimal Influence	

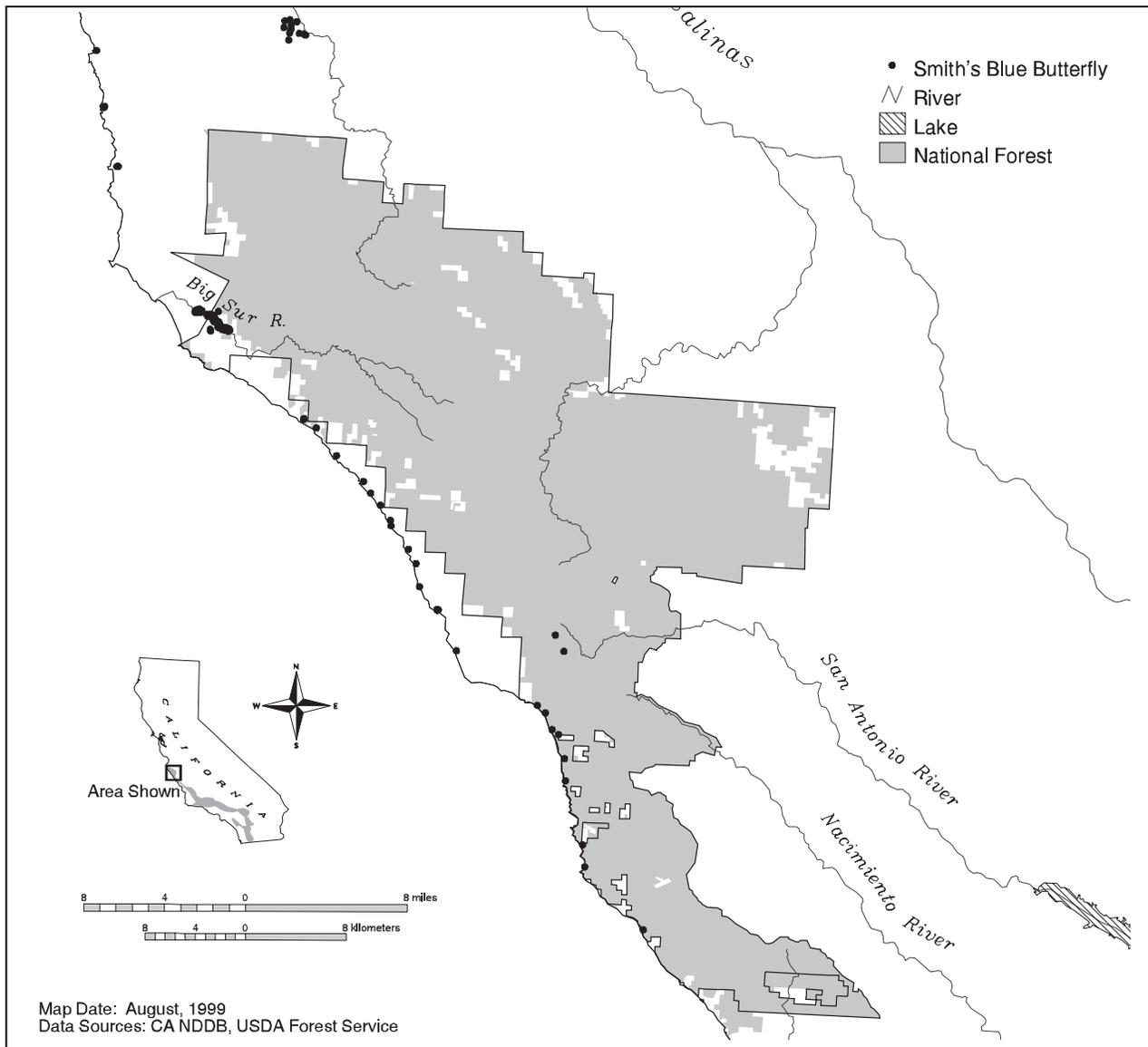


Figure 4.16. Documented locations of the Smith's blue butterfly along the Monterey coast (this map may not show all known localities).

Livestock grazing is permitted in areas of suitable and occupied Smith's blue habitat and may be causing habitat degradation. Invasive, non-native plants may be causing a reduction in the abundance of seacliff buckwheat. Particular problem species are kikuyu grass (*Pennisetum clandestinum*), Pampas grass, and French broom.

Doudoroff's elfin butterfly
(*Incisalia mossii doudoroffi*)

Status and Distribution: The Doudoroff's elfin butterfly is known primarily from Partington Canyon near Big Sur (Murphy

1990). Potential habitat occurs elsewhere along the southern Monterey coast, primarily on the Los Padres National Forest east of Highway 1 and largely within the Ventana Wilderness Area. The lack of observations of this species from other areas is attributed to the inaccessibility of its habitat and its short, early flight period (February to early March) (Murphy 1990).

Habitat: The host plant for Doudoroff's elfin is a *Sedum* species (Murphy 1990).

Conservation Considerations: Additional information is needed on the distribution and abundance of this species and its host plant. In Murphy's (1990) status review, the

Doudoroff's elfin is listed as a category C taxon, that is, a taxon for which specific protective measures are not presently necessary. However, it appears this determination is based upon very little specific information.

Clemence's silverspot butterfly
(*Speyeria adiaste clemencei*)

Status and Distribution: The Clemence's silverspot butterfly occurs in both the northern and southern Santa Lucia Ranges, from the vicinity of Carmel on the north, to the area of Pozo on the south (Murphy 1990). It is also found on the north end of Garcia Mountain. Much of its distribution is believed to be on the Los Padres National Forest (Murphy 1990).

Habitat: The suspected food plant of this butterfly is *Viola quercetorum* (Murphy 1990).

Conservation Considerations: Additional information is needed on the distribution and abundance of this species. Murphy (1990) considers the Clemence's silverspot to be a category D taxon, that is, a taxon that is neither in danger of extinction nor likely to be. However, it is unclear what specific information is being used to make this determination.

Pacific giant salamander
(*Dicamptodon ensatus*)

Status and Distribution: The northern Santa Lucia Range contains the southernmost populations of this salamander (Anderson 1969). This disjunct population is concentrated along the Little Sur River (J. Copp, CA Academy of Sciences, pers. comm.). We did not find any information on the abundance or status of the Pacific giant salamander in this area. It is not considered to be a sensitive species.

Habitat: The Pacific giant salamander is associated with streams and other mesic habitats in humid, coastal forests (particularly redwood).

Conservation Considerations: Water quality and the sustainability of mesic conditions appear to be important factors for the Pacific giant salamander. Along the Monterey

coast, much of the habitat for this species is within a designated wilderness area.

California brown pelican
(*Pelecanus occidentalis californicus*)

Status and Distribution: The federally endangered California brown pelican is found only near the ocean, along the entire central and southern California coast and in Baja California, Mexico (Garrett and Dunn 1981). It is addressed as a Monterey coast species because that is the only place where the assessment area reaches the ocean's edge. Approximately twenty miles of coastline are within the Monterey District of the Los Padres National Forest. Brown pelicans are not believed to breed along this stretch, but they can be found there during the summer months.

Habitat: The California brown pelican is almost exclusively a bird of marine habitats and thus is found only along the immediate coastline. Birds currently nest in several large colonies on the Channel Islands (Garrett and Dunn 1981).

Conservation Considerations: The primary threats to brown pelicans are (1) the continued, although dwindling, presence of organochlorine pesticides (e.g., DDT) in the marine food chain, and (2) depleted food resources due to commercial harvesting of fish such as anchovies (Garrett and Dunn 1981). However, brown pelican numbers have increased substantially in the last twenty years. This increase has largely been attributed to a decline in near-shore DDT levels.

Although the brown pelican does occur on public lands within the assessment area, the management of those lands has little effect on the conservation of this species. Brown pelicans are dependent on resources that come from the marine environment and on the key locations where they nest.

Western snowy plover
(*Charadrius alexandrinus nivosus*)

Status and Distribution: The western snowy plover is primarily an inhabitant of

sandy coastal beaches. It was federally listed as threatened in 1993 because of population declines and disturbance to coastal nesting sites (USFWS 1993d). The preference of snowy plovers for sandy beaches has led to its decline as a nesting bird along the coast; such areas suffer from much human disturbance during the nesting season (Garrett and Dunn 1981). Snowy plovers reportedly nest on the beach near Point Sur Lighthouse just north of the assessment area (California Coastal Commission 1987). Most of the coastline within the assessment area is steep and devoid of sandy beaches; however, there are several small beaches (e.g., Pfeiffer and Sand Dollar) that potentially could support this species.

Habitat: Snowy plovers nest, feed, and take cover on sandy or gravelly beaches along the coast, on estuarine salt ponds, and on alkali lakes (Zeiner et al. 1990a).

Conservation Considerations: More information is needed on the nesting status of snowy plovers in this area and the potential for beaches within the assessment area to support nesting.

Marbled murrelet (*Brachyramphus marmoratus*)

Status and Distribution: The marbled murrelet was federally listed as threatened in 1992 because of population declines and concerns that logging in coastal forests of the Pacific Northwest was eliminating its nesting habitat (USFWS 1992b). The Monterey coast is at the extreme southern periphery of the marbled murrelet's breeding range (Ralph et al. 1995).

Reported sightings of marbled murrelets along the central California coast have been concentrated within a 6-mile (10 kilometer) radius of Point Año Nuevo in Santa Cruz County (Ainley et al. 1995). It is unclear if they actually do nest as far south as the coastal forests in the northern Santa Lucia Range. The habitat appears suitable, but we could find no documentation of sightings in this area.

Habitat: Marbled murrelets spend most of their lives at sea but come onshore to nest in large, old trees. They are highly secretive

on land and it is difficult to locate their nest sites (Ralph et al. 1995).

Conservation Considerations: It is important to determine if marbled murrelets do nest in the northern Santa Lucia Range. However, even if they do, threats to suitable breeding habitats are likely to be low. No logging is done in this area and most of the forested area along the immediate coast is within state parks or Forest Service wilderness areas.

Monterey dusky-footed woodrat (*Neotoma fuscipes luciana*)

Status and Distribution: The Monterey dusky-footed woodrat is listed as a California Species of Concern although it was not discussed in Williams' (1986) report on mammalian species of concern in California. We could find very little information on this specific subspecies, other than it is reported to occur in a variety of areas on Fort Ord near Monterey. Woodrats are common in the northern Santa Lucia Range (e.g., the Hastings Reserve) (Williams et al. 1992), but it is unclear if they are this particular subspecies.

Habitat: Dusky-footed woodrats are generally found in dense chaparral, oak and riparian woodland, and in mixed conifer forest that has a well-developed understory. They seem to favor brushy habitat or woodland that has a live oak component. They are highly arboreal, and thick-leaved trees and shrubs are important habitat components for this species (Williams et al. 1992).

Conservation Considerations: Clarification is needed on whether woodrats occurring in the northern Santa Lucia Range are *N. f. luciana*. There is a large amount of suitable woodrat habitat in these mountains and it is not considered to be threatened by existing land uses or ecological changes.

Southern sea otter (*Enhydra lutris nereis*)

Status and Distribution: Coastal waters from the Carmel River south to Santa Rosa Creek have been designated as the California

Sea Otter State Game Refuge. Sea otters are common along this stretch of coastline.

Habitat: Sea otters spend essentially their entire life in shallow ocean waters, particularly in the vicinity of kelp beds. They occur near land in protected coves and shallow intertidal waters but rarely, if ever, venture onshore. Abalone and urchins are their preferred food.

Conservation Considerations: Activities occurring on the Los Padres National Forest and other public lands within the assessment area are unlikely to have any effect on sea otters. The primary threats to this species, as identified on the Friends of the Sea Otter web page, are offshore oil spills and competition from humans for abalone.

Steller sea lion (*Eumetopias jubatus*)

Status and Distribution: The central California coast is the southern limit of the Steller or northern sea lion's range. Historically there was a rookery on San Miguel Island, one of the Channel Islands, but the last pups were born there in 1982 (Marine Mammal Center 1997). The southernmost active rookery is on Año Nuevo Island in San Mateo County. Steller sea lions are declining precipitously and are now rare along the Monterey coast.

Habitat: The Steller sea lion is a marine mammal that forages near shore. It does haul out on mainland coastlines but more commonly utilizes offshore rocks (Marine Mammal Center 1997).

Conservation Considerations: Activities occurring on the Los Padres National Forest and other public lands within the assessment area are unlikely to have any significant effect on the status of this species.

Animals of Low-Elevation Valley Habitats

Sixteen of the animal species that received individual consideration are associated with low-elevation valley habitats (table 4.12). Six species are either restricted to or primarily found in the vicinity of the San Joaquin Valley, six are found strictly in valleys on the coastal side of the mountains, and four occur

on both sides of the mountains. Low-elevation valley habitats are primarily outside the assessment area and poorly represented on national forest system lands. Consequently, the ability to influence the conservation of these species through management of national forest system lands is often small. However, they have the potential to occur within the assessment area in a few localized areas so they need to be considered.

Western San Joaquin Valley Inhabitants

Longhorn fairy shrimp (*Branchinecta longiantenna*)

Status and Distribution: The longhorn fairy shrimp was federally listed as endangered in 1994. It occurs primarily along the west side of the San Joaquin Valley from Altamont Pass south to the Carrizo Plain (Eng et al. 1990). There are no known localities within the assessment area; the closest is at Soda Lake. There is some potential for the species to occur in potrero habitats in the Sierra Madre Mountains.

Habitat: These small crustaceans inhabit rain-filled, ephemeral pools (i.e., vernal pools) that form in depressions usually in grassland habitats (Eng et al. 1990). These pools must fill frequently enough and persist long enough for the fairy shrimp to complete their life cycle.

Conservation Considerations: Surveys are needed to determine if this species occurs on public lands within the assessment area.

Blunt-nosed leopard lizard (*Gambelia silus*)

Status and Distribution: The blunt-nosed leopard lizard was federally listed as endangered in 1967. It is endemic to the San Joaquin Valley and surrounding foothills. Its distribution overlaps the assessment area only in the upper Cuyama Valley, where it approaches the Los Padres National Forest. This region is significant from an evolutionary perspective because it is a contact zone between the blunt-nosed leopard lizard and the long-nosed leopard lizard (*Gambelia wislizenii*), a species common in the Mojave Desert (Montanucci

Table 4.12. Animals associated with low-elevation valley habitats that received individual consideration.

Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Low-Elevation Valley Animals of Concern <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulnerability on NFs	(4) Pop. Trend	(5) Conservation Category
		Cleveland NF		San Bern. NF		Angeles NF		Los Padres NF					
		San Diego Rngs	Santa Ana Mts	San Jac Mts	San Bern Mts	San Gab Mts	Castaic Rngs	So. LP Rngs	So. SL Rng	No. SL Rng			
West. San Joaquin Val.													
Longhorn fairy shrimp <i>endangered</i>	Mod (0%)								p		Unkn	Unkn	Minimal influence
Blunt-nosed leopard lizard <i>endangered</i>	High (< 1%)							h/p ^{hy}			Low	Decl ¹	Minimal influence
Mountain plover <i>C1 candidate</i>	Mod (0%)							w	w			Decl ²	Minimal influence
Giant kangaroo rat <i>endangered</i>	Mod (0%)							p	p		Low	Decl ¹	Minimal influence
San Joaquin antelope squirrel	High (< 1%)							p	p		Low	Unkn	Minimal influence
San Joaquin kit fox <i>endangered</i>	High (< 2%)							p	p		Low	Decl ¹	Minimal Influence
Coastal Valleys													
CA tiger salamander	Mod (< 5%)							p	p	y	Mod	Decl ³	Site Specific
L.A. pocket mouse	Low (< 2%)	p	p	h/p	p						Low		Minimal Influence
Pacific pocket mouse <i>endangered</i>	Mod (0%)	p	p								Low	Decl ¹	Minimal influence
San Bern. kangaroo rat <i>endangered</i>	Mod (< 3%)			y	p						Low	Decl ¹	Site specific
Stephens' kangaroo rat <i>endangered</i>	High (< 1%)	y	p	p							Low	Decl ¹	Landscape level
San Diego black-tailed jackrabbit	Mod (< 5%)	y	p	p	y	h/p					Low	Unkn	Landscape level
Both													
Vernal pool fairy shrimp <i>threatened</i>	High (< 5%)		y					y	p		Mod	Unkn	Landscape level
Burrowing owl	Mod (< 1%)	p	p	p				h/p	p		Mod	Decl ²	Minimal Influence
Swainson's hawk	Mod (< 5%)	t	t	t	t	t	p	p	p	t	Low	Decl ²	Minimal influence
Loggerhead shrike	Mod (< 5%)	y	y	y	y	p	y	y	y	p	Low	Unkn	Landscape level

^{hy} Hybrid population (*Gambelia silus* x *G. wislizenii*)

¹ USFWS determination as described in Final Rule to list as endangered.

² Garrett and Dunn (1981); Zeiner et al. (1990); Lehman (1994)

³ Jennings and Hayes (1994)

1978). Patterns of hybridization in this area are of scientific interest and have provided insights into the selective factors that maintain two distinct species (Montanucci 1970; Montanucci 1978). There are no known occurrences of the full species *G. silus* on the Los Padres; however, the narrow zone where *G. silus* x *G. wislizenii* hybrids have been found is partially on national forest system lands in the lower parts of Ballinger and Quatal canyons.

Habitat: The blunt-nosed leopard lizard inhabits semi-arid, sparsely vegetated grasslands and dry washes (Montanucci 1970).

Conservation Considerations: Jennings (1995) reports that habitat loss in the zone of hybridization may have eliminated the hybrid populations studied by Montanucci. Survey work is needed to conclusively determine if hybrid blunt-nosed leopard lizards still occur on the Los Padres. If they do still occur, efforts should be made to protect these populations because of their significance. However, conservation of the full species *G. silus* will be minimally influenced by management of public lands within the assessment area.

Mountain plover (*Charadrius montanus*)

Status and Distribution: The mountain plover is proposed for federal listing as threatened and is a California Species of Special Concern. It winters in sparsely vegetated fields and grasslands at low elevations in southern California. Mountain plovers have become very rare on the coastal side of the mountains, although small wintering populations may still occur just west of Santa Maria (Lehman 1994) and in the Tijuana River Valley (Unitt 1984). The primary wintering ground near the assessment area is on the Carrizo Plain in southeastern San Luis Obispo County (Knopf and Rupert 1995).

Habitat: Wintering mountain plovers apparently prefer alkaline flats, cultivated and plowed fields, and sparse grasslands.

Conservation Considerations: The study by Knopf and Rupert (1995) suggests that wintering mountain plovers do not utilize

habitats in the Los Padres National Forest to any significant extent. Thus, it appears there is little potential to influence the conservation of mountain plovers through management of national forest system lands within the assessment area.

Giant kangaroo rat (*Dipodomys ingens*)

Status and Distribution: The giant kangaroo rat was federally listed as endangered in 1987. It inhabits the arid southwestern edge of the San Joaquin Valley, the Carrizo and Elkhorn plains, and the Cuyama Valley (Williams 1992). It occurs at elevations ranging from approximately 280 to 2,800 feet but is rare above 2,400 feet (Williams 1996). The giant kangaroo rat's range approaches, and potentially extends onto, the Los Padres National Forest at the lower end of the Cuyama Valley (fig. 4.17). We did not find any documented sightings of this species on national forest system lands.

Habitat: Giant kangaroo rats mainly inhabit sandy-loam soils located on level and gently sloping ground vegetated with annual grasses and forbs and widely scattered desert shrubs. Long-term occupancy of a site by giant kangaroo rats results in a mima-mound topography, with burrow systems located on mounds a few to several centimeters above the intervening ground (Williams 1996).

Conservation Considerations: Additional survey work is needed to conclusively determine if the giant kangaroo rat extends onto the Los Padres. If found, those areas should receive site-specific management attention. However, it is likely that any occurrences on national forest system lands will be at the fringe of suitable habitat which is concentrated in the valley below. Thus management of public lands within the assessment area will likely have minimal influence on the conservation of giant kangaroo rats.

San Joaquin antelope squirrel (*Ammospermophilus nelsoni*)

Status and Distribution: The San Joaquin antelope squirrel is state listed as threatened.

It occurs in the San Joaquin Valley and on slopes and ridgetops in the foothills along the western edge of the valley, in the Cuyama and Panoche valleys, and on the Carrizo and Elkhorn plains (Best et al. 1990). The antelope squirrel's range approaches, and potentially extends onto, the Los Padres National Forest along the upper margins of the Cuyama Valley (fig. 4.17). We did not find any documented sightings of this species on national forest system lands.

Habitat: San Joaquin antelope squirrels inhabit arid grassland, shrubland, and alkali sink habitats and are often found in association with saltbush (*Atriplex*) and Mormon tea

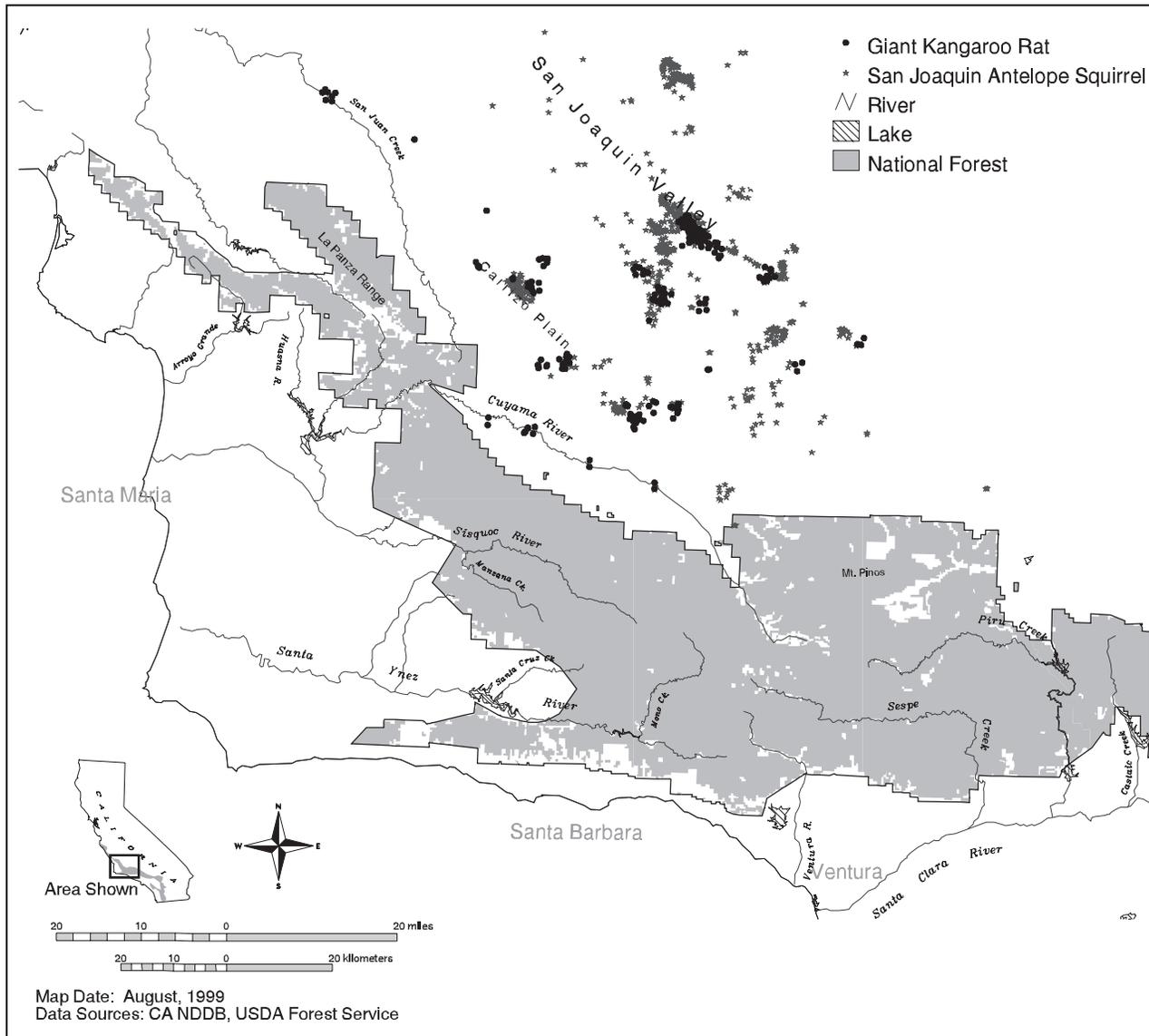
(*Ephedra*) (Best et al. 1990). Present populations range in elevation from approximately 100 feet to 3,600 feet (Brown and Williams 1996).

Conservation Considerations: Same as those described for the giant kangaroo rat.

San Joaquin kit fox (*Ammospermophilus nelsoni*)

Status and Distribution: The San Joaquin kit fox was federally listed as endangered in 1967. It formerly occupied most of the San Joaquin Valley as well as low-elevation basins and ranges along the eastern side of the central Coast Ranges (Brown et al. 1997). Kit

Figure 4.17. The documented locations of the giant kangaroo rat and San Joaquin antelope squirrel..



foxes potentially occur within the Los Padres National Forest in the upper Cuyama Valley watershed and along the eastern slope of the La Panza Range. The species is most likely a transitory visitor on national forest system lands, since there is little high-quality habitat.

Habitat: The San Joaquin kit fox primarily inhabits arid grasslands and open scrublands. It also will utilize oak savanna and alkali sink habitats (McGrew 1979).

Conservation Considerations: Additional survey work is needed to determine the extent to which kit foxes utilize areas within the Los Padres National Forest. Occupied areas should receive site-specific management attention. However, it seems apparent that national forest system lands are on the fringe of suitable habitat; thus, management of public lands within the assessment area will likely have minimal influence on the conservation of this species.

Coastal Valley Inhabitants

California tiger salamander (*Ambystoma californiense*)

Status and Distribution: The California tiger salamander is a California Species of Special Concern. The known range of this species extends into the assessment area from the northern Santa Lucia Range south to the Santa Ynez River. Based on the distribution map in Jennings and Hayes (1994), tiger salamanders occur in upper portions of the Carmel River and Little Sur River watersheds where they are either on or near the Los Padres National Forest.

No localities are shown in the southern Santa Lucia Mountains, but they do occur in the lower Sisquoc River and Santa Ynez River watersheds. These southernmost localities appear to correspond with the Solomon Hills and Santa Rita Hills, respectively, where Sam Sweet (pers. comm.) has found tiger salamanders. Both of these locations are west of the Los Padres National Forest by at least 5 miles. It is uncertain to what extent potential habitat is available on national forest system lands.

Habitat: The California tiger salamander is a lowland species restricted to grasslands and low foothill regions where its breeding habitat (long-lasting rain pools) occurs. Permanent aquatic sites are unlikely to be used for breeding unless they lack fish predators (Shaffer et al. 1993; Jennings and Hayes 1994). Tiger salamanders also appear to require dry-season refuge sites (typically small mammal burrows) in the vicinity of breeding sites (up to one mile away) (Jennings and Hayes 1994). The known elevational range of this species extends from near sea level to 3,400 feet (Shaffer et al. 1993).

Conservation Considerations: California tiger salamanders are dependent on the integrity of large rain pool complexes. Efforts should be made to identify such potential breeding sites on the Los Padres National Forest, beginning with the upper Carmel River and Little Sur River watersheds where this species is known to occur. Efforts should be made to keep tiger salamander breeding sites free of non-native predators (e.g., fish, bullfrogs, and crayfish). This may require coordination with agencies in charge of mosquito abatement to avoid the stocking of mosquitofish in these areas (Jennings and Hayes 1994).

Los Angeles pocket mouse (*Perognathus longimembris brevinasus*)

Status and Distribution: The Los Angeles pocket mouse is a Forest Service Region 5 Sensitive Species and a California Species of Concern. The known range of this subspecies extends from the cities of Burbank and San Fernando on the northwest, to the city of San Bernardino on the northeast, to the vicinity of Cabazon, Hemet, and Aguanga on the east and southeast. Its geographic limits on the southwest are unclear but probably lie somewhere near the Hollywood Hills (Williams 1986). Bond (1977) identifies specimens from Ranchita and Warner Pass in San Diego County as this subspecies, but Williams (1986) believes they are probably *P. l. internationalis*.

The geographic range just described is almost entirely outside our assessment area.

However, one historic Los Angeles pocket mouse locality listed in Williams (1986) is at Dos Palmas Spring at the base of the Santa Rosa Mountains, well to the east of the described range and within the San Jacinto District of the San Bernardino National Forest. Historic localities near Cabazon, Banning, Valle Vista, and Cajon Wash are close to national forest system lands, although the transition to steep, low-quality habitat occurs rapidly in these areas.

Habitat: The Los Angeles pocket mouse occupies areas with fine, sandy soils, typically in arid grassland or coastal sage scrub habitats (Genoways and Brown 1993). The upper elevation limit of distributional records listed in Williams (1986) is 3,500 feet (at Dos Palmas Spring), but most locations (all but two) are below 2,200 feet.

Conservation Considerations: Although the potential for major populations is low, surveys are needed to determine if the Los Angeles pocket mouse occurs on public lands within the assessment area. At a minimum the Dos Palmas Spring location should be resurveyed to see if this subspecies is present. National forest system lands in Cajon Wash may also contain potential habitat. However, given its known distribution and habitat requirements, this is a species whose conservation is not likely to be significantly influenced by management of national forest system lands within the assessment area.

Pacific pocket mouse **(*Perognathus longimembris pacificus*)**

Status and Distribution: The Pacific pocket mouse was federally listed as endangered in 1994. This taxon is endemic to the immediate coast of 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 (Williams 1986). All known locations have been within 2.5 miles of the coast and below 600 feet in elevation (USFWS 1994c). Given this geographic range, it is highly unlikely that the Pacific pocket mouse occurs within the assessment area.

Habitat: The habitat requirements of this species are not well understood, but it is known to occur in sparsely vegetated areas on fine-grain, sandy substrates in the immediate vicinity of the Pacific Ocean (USFWS 1994c).

Conservation Considerations: All indications are that the Pacific pocket mouse is a species whose conservation cannot be influenced by management of national forest system lands within the assessment area.

San Bernardino kangaroo rat **(*Dipodomys merriami parvus*)**

Status and Distribution: The San Bernardino kangaroo rat was federally listed as endangered in 1998. The historical range of this subspecies extends from the San Bernardino Valley in San Bernardino County to Menifee Valley in Riverside County (USFWS 1998e). Extant populations along lower Lytle Creek and Cajon Wash extend into the assessment area and may extend into the San Bernardino National Forest (fig. 4.18). A large population along the Santa Ana River extends upstream to Greenspot Road bridge (McKernan 1997), which is less than a mile below the San Bernardino National Forest boundary.

Habitat: San Bernardino kangaroo rats are found primarily on sandy loam substrates, characteristic of alluvial fans and flood plains, where they are able to dig simple, shallow burrows (McKernan 1997). Vegetation in these areas is typically alluvial sage scrub or chaparral.

Conservation Considerations: Additional information is needed on the distribution of San Bernardino kangaroo rats on public lands within the assessment area. Threats to its habitat include disruption of the natural hydrologic regime and habitat degradation due to a variety of factors (e.g., sand and gravel mining, stream channelization, and vehicular traffic).

Stephens' kangaroo rat **(*Dipodomys stephensi*)**

Status and Distribution: The Stephens' kangaroo rat was federally listed as endangered in 1988. It is known only from arid grassland

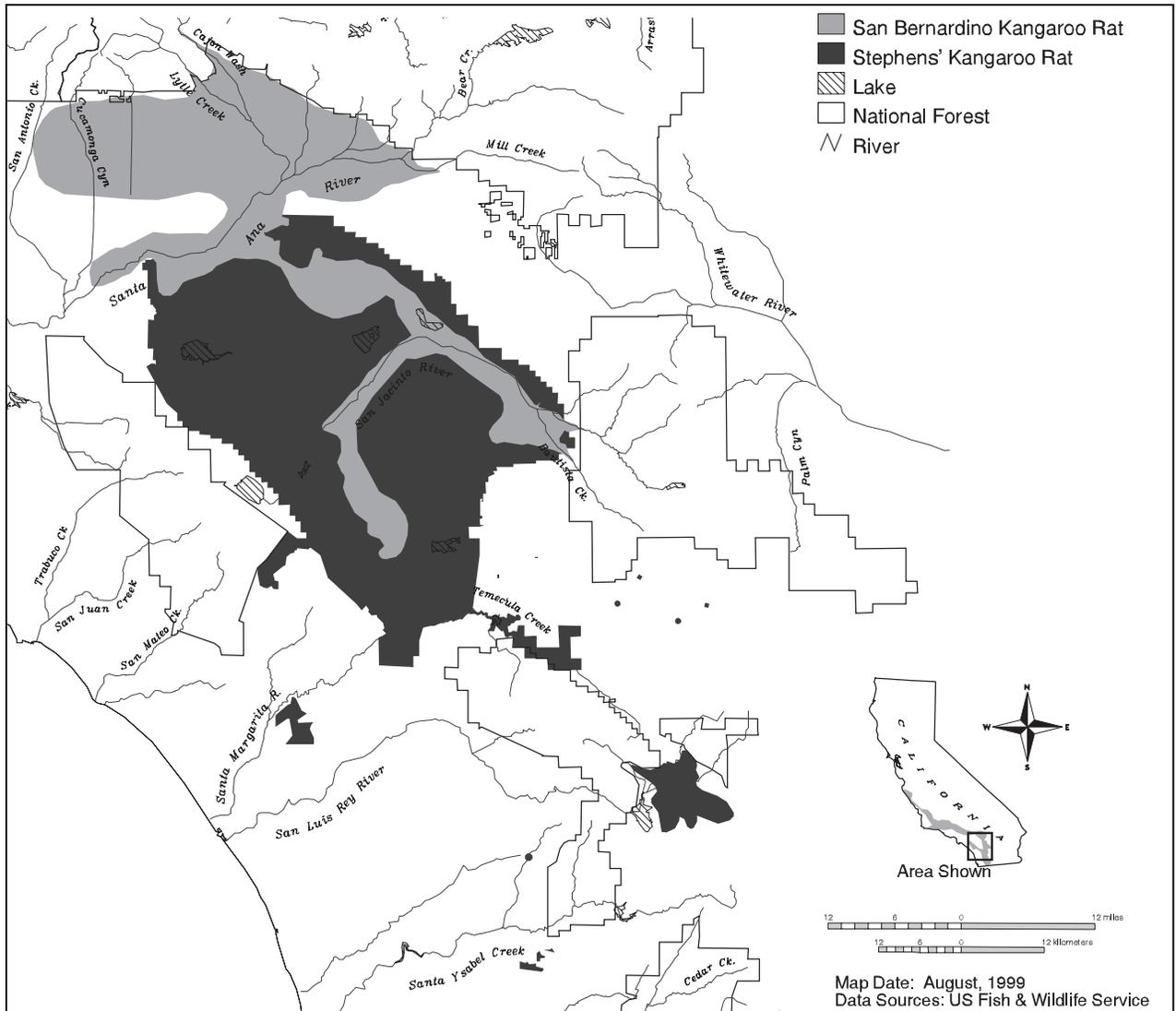


Figure 4.18. The approximate geographic ranges of the San Bernardino and Stephens kangaroo rats.

habitats in northern San Diego County, western Riverside County, and the southwestern edge of San Bernardino County (fig. 4.18) (Bleich 1977). Known locations within the assessment area are all in San Diego County and include the Warner Springs/Lake Henshaw area (O'Farrell 1986), the Guejito Valley, and Santa Maria Valley. The only location where the Stephens' kangaroo rat may actually occur on national forest system lands is along the northern edge of the Warner Springs/Lake Henshaw area, where suitable habitat extends onto the Cleveland National Forest.

Habitat: Stephens' kangaroo rats inhabit sparse grassland habitats, in areas with penetrable soils and flat to moderately sloping topography. These areas include the base of hillsides, flat areas along ridgetops, sandy

washes, and open fields (O'Farrell and Uptain 1989). In addition, Stephens' kangaroo rats almost always occupy habitats in which at least half of the soil is bare during the summer and fall.

Conservation Considerations: This is a species whose conservation is not significantly influenced by management of national forest system lands within the assessment area. The small amount of Stephens' kangaroo rat habitat that extends onto the Cleveland National Forest is not threatened by existing activities. The area is grazed by livestock, but this activity is widely believed to be conducive to maintaining suitable habitat for this species.

San Diego black-tailed jackrabbit
(*Lepus californicus bennettii*)

Status and Distribution: The San Diego or coastal black-tailed jackrabbit is a California Species of Special Concern. Black-tailed jackrabbits are abundant in the deserts, but *L. c. bennettii* occurs only on the coastal side of the southern California mountains where suitable jackrabbit habitat is less common. Most of the historic habitat for this subspecies has either been developed or converted to agriculture. Vaughan (1954) found black-tailed jackrabbits to be “plentiful” in the coastal sage belt along the base of the San Gabriel Mountains from Cajon Wash west to San Gabriel Canyon. However, the landscape in that area has changed dramatically since the early 1950s and the status of jackrabbit populations there today is unknown. In recent years, Steve Loe (San Bernardino NF, pers. comm.) has observed jackrabbits near the Del Rosa Fire Station at the base of the San Bernardino Mountains.

Bond (1977) provides locality information for a number of museum specimens collected in San Diego County. Specimens were collected at elevations ranging from sea level to 6,000 feet. Most San Diego County localities were west of the assessment area, but specimens were reported from Santa Ysabel and the Laguna and Cuyamaca mountains. The mountain localities are curious since they seem to be outside of traditional habitat and jackrabbits are not seen in these areas today.

Habitat: Black-tailed jackrabbits are found only in open or semi-open country, typically in grasslands or sparse coastal scrub (Bond 1977). They are not generally found in chaparral or woodland habitats. Vaughan (1954) found them in “thin stands” of coastal sage scrub and on the margins of citrus groves in the lower foothills of the San Gabriel Mountains.

Conservation Considerations: Information is needed on the current distribution of San Diego black-tailed jackrabbits on public lands along the coastal slopes of the San Gabriel, San Bernardino, and San Jacinto

mountains and the mountains of San Diego County. Activities currently occurring on public lands within the assessment area probably are not a substantial threat to jackrabbits, but it is not clear if viable populations exist in these areas which are on the edge of this species’ historic range.

Inhabitants of Both Coastal and San Joaquin Valleys

Vernal pool fairy shrimp
(*Branchinecta lynchi*)

Status and Distribution: The vernal pool fairy shrimp was federally listed as threatened in 1994. Most known locations are in the Sacramento and San Joaquin valleys, and along the eastern margin of the central Coast Ranges (e.g., Soda Lake). However, vernal pool fairy shrimp also occur inside the assessment area in two locations: (1) several small potreros in the mountains north of Santa Barbara and (2) on the Santa Rosa Plateau along the southeastern flank of the Santa Ana Mountains (Eng et al. 1990).

Habitat: These small crustaceans inhabit rain-filled, ephemeral pools (i.e., vernal pools) that form in depressions usually in grassland habitats (Eng et al. 1990). These pools must fill frequently enough and persist long enough for the fairy shrimp to complete their life cycle.

Conservation Considerations: Reported occurrences of vernal pool fairy shrimp in the mountains north of Santa Barbara appear to be within the Los Padres National Forest. The vernal pools which support these populations should be identified and managed to maintain their integrity and natural hydrologic regime. Pools on the Santa Rosa Plateau are protected within an ecological reserve that is managed by The Nature Conservancy and Riverside County. There is little potential habitat for fairy shrimp on national forest system lands in the Santa Ana Mountains.

Burrowing owl
(*Athene cunicularia hypogaeae*)

Status and Distribution: The burrowing owl is a California Species of Special Concern. Burrowing owl populations are declining

across much of their range (Haug et al. 1993) as habitat destruction and improper use of pesticides affect chick survivorship and dispersal (Winchell 1994). Once widespread, their distribution on the coastal side of the mountains is now highly localized and fragmented.

Although recorded at elevations up to 5,300 feet (Zeiner et al. 1990), burrowing owls are primarily found in low elevation valleys. On the Los Padres National Forest, these owls historically occurred in the Santa Ynez Mountains but now appear to be absent. They do still nest in the Carrizo Plain and possibly in the Cuyama Valley (Lehman 1994). A few burrowing owls may still occur along lower desert slopes and inland valleys in the other assessment area mountain ranges, but there are no documented populations in any of them.

Habitat: Burrowing owls inhabit dry, sparse grasslands, desert scrub, and agricultural areas. Rodent burrows, usually those of California ground squirrels, are utilized for roosting and nesting (Unitt 1984; Lehman 1994).

Conservation Considerations: Burrowing owls have been adversely affected by loss of lowland habitats and by the widespread use of pesticides to control ground squirrel populations. Given its distribution and habitat requirements, the burrowing owl is a species whose conservation cannot be significantly influenced by management of national forest system lands within the assessment area.

Swainson's hawk (*Buteo swainsoni*)

Status and Distribution: The Swainson's hawk is a Forest Service Region 5 Sensitive Species and is listed as threatened by the state of California. Historically (i.e., prior to the 1930s), this species commonly nested in the coastal lowlands of southern California in places like Santa Monica, Temecula, Corona, and Santee (Garrett and Dunn 1981; Unitt 1984). However, breeding populations in the coastal valleys have long been extirpated and Swainson's hawks are not likely to recolonize the area (SDNHM 1998).

The only localities close to the assessment area where Swainson's hawks may still nest are

in the Antelope Valley north of the Castaic Ranges and in eastern San Luis Obispo County (Garrett and Dunn 1981).

Habitat: During the breeding season, Swainson's hawks are closely associated with open grassland or agricultural lands (particularly alfalfa fields) that contain scattered trees which can be used for nesting. Migrants may be noted over any habitat, but spring concentrations are usually found over desert grasslands (Garrett and Dunn 1981).

Conservation Considerations: Given the known distribution and habitat requirements of Swainson's hawks, their conservation is not likely to be significantly influenced by management of national forest system lands within the assessment area.

Loggerhead shrike (*Lanius ludovicianus*)

Status and Distribution: The loggerhead shrike is a California Species of Special Concern. It is widely distributed at low elevations (below approximately 5,000 feet) across the assessment area but is limited by the availability of suitable open habitat. It has been found nesting at Garner Valley in the San Jacinto Mountains (D. Freeman, unpub. notes). Arid, open country on the eastern side of the southern Santa Lucia Range and southern Los Padres ranges are probably the largest areas of suitable habitat for this species.

Habitat: Loggerhead shrikes are typically found in dry, open habitats with sparse shrubs and trees (Zeiner et al. 1990b). They commonly utilize posts, fences, and utility lines as perches.

Conservation Considerations: Suitable shrike habitat occurs on public lands in the assessment area but is not extensive. The habitat requirements of this species generally indicate low vulnerability to existing land use activities on public lands.

Animals of Coastal Scrub and Chaparral Habitats

Thirteen of the animal species that received individual consideration are associated with scrub or chaparral habitats (table 4.13).

Table 4.13. Animals associated with coastal scrub or chaparral habitats that received individual consideration. Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Scrub and Chaparral Animals of Concern <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulnerability on NFs	(4) Pop. Trend	(5) Conservation Category	
		Cleveland NF San Diego Rngs	Santa Ana Mts	San Bern. NF San Jac Mts	San Bern. NF San Bern Mts	Angeles NF San Gab Mts	Castaic Rngs	Los Padres NF So. LP Rngs	So. SL Rng	No. SL Rng				
Primarily Coastal Sage Scrub or <3,000 ft														
Quino checkerspot <i>endangered</i>	Mod (< 5%)	h/p	p	p	p	p						Mod	Decl ¹	Site specific
Orange-throated whiptail	Mod (< 2%)	y	y	y								Low	Unkn	Landscape level
California gnatcatcher <i>threatened</i>	High (< 2%)	30-50 pairs	10-20 pairs	p	p	p						High	Decl ²	Site specific
Coastal cactus wren	High (< 1%)	y	y	p	p	y	p					Mod	Unkn	Landscape level
Rufous-crowned sparrow	Mod-High (< 10%)	y	y	y	y	y	y	y				Mod	Unkn	Landscape level
Primarily Cismontane Chaparral & Scrub														
Hermes copper butterfly	Mod (10-40%)	y										Low	Unkn	Landscape level
Coast patch-nosed snake	Low (30-50%)	y	y	y	y	y	y	y	p			Low	Unkn	Landscape level
Bell's sage sparrow	Mod (30-60%)	y	y	y	y	y	y	y	y	y		Mod	Unkn	Landscape level
In Both Cismontane & Desert Scrub/Chap.														
Pratt's blue butterfly	Low (?)			2-4 pops.								Unkn	Unkn	Landscape level
Coast horned lizard	High (> 50%)	y	y	y	y	y	y	y	y	y		Mod	Decl ³	Landscape level
Coastal rosy boa	Mod-Low (10-40%)	y	y	y	y	y						Mod	Decl ³	Landscape level
Red diamond rattlesnake	Mod (30-50%)	y	y	y								Low	Unkn	Landscape level
San Diego pocket mouse	Mod (20-60%)	y	p	y	y	y						Low	Unkn	Landscape level

¹ U.S. Fish and Wildlife Service (1997d)

² U.S. Fish and Wildlife Service (1993b)

³ Jennings and Hayes (1994)

This group is further subdivided into the following categories: (1) species restricted to coastal sage scrub and other habitats found only at elevations below 3,000 feet; (2) inhabitants of both coastal scrub and chaparral habitats, but only on the coastal (cismontane) side of the mountains; and (3) inhabitants of

shrublands on both coastal and desert sides of the mountains.

Inhabitants of Coastal Sage Scrub and Other Habitats Below 3,000 Feet

Five of the species that received individual consideration are associated with coastal sage

scrub or other predominately shrubland habitats that occur below 3,000 feet elevation on the coastal side of the mountains. These habitats are not well represented in the assessment area.

Quino checkerspot butterfly
(*Euphydryas editha quino*)

Status and Distribution: The quino checkerspot butterfly was federally listed as endangered in 1997. Once considered abundant in Orange, San Diego, and western Riverside counties, it has declined dramatically, due probably to the combined effects of habitat loss and population fragmentation (Murphy 1990; USFWS 1997d). The quino's historic range along the southern California coast and inland valleys includes northernmost occurrences in Los Angeles and San Bernardino counties and southernmost localities in the Sierra Juarez of Baja California, Mexico (Mattoni et al. 1997). Currently, it is documented only from several areas in southwestern Riverside County, southern San Diego County, and Baja (Mattoni et al. 1997).

Nearly all of the historic and current locations of this butterfly are outside the assessment area, in more coastal areas of San Diego and Orange counties and in the low elevation valleys of western Riverside County (fig. 4.19). However, there is a 1975 museum specimen from "Mount Palomar" and some of the remaining populations in Riverside County are near the north slope of Palomar (i.e., near Vail Lake and Aguanga) (Mattoni et al. 1997; Hawks, Ballmer, and Pratt, unpubl. notes 1997). The Oak Mountain colony near Vail Lake is considered to be a "source population"; thus, potential habitat along the north side of Palomar Mountain has an increased likelihood of being occupied. There is a confirmed sighting at Oak Grove just outside the Cleveland National Forest boundary and an unconfirmed sighting near Dripping Springs campground, which is on national forest system lands (G. Ballmer, pers. comm.).

Extant occurrences on the slopes of Otay Mountain, Tecate Peak, and several other lo-

cations in southern San Diego County suggest there may be remaining populations on the southern end of the Cleveland National Forest. Potential habitat exists in that area on the slopes of Lawson and Lyons peaks and Poser and Viejas mountains. Seemingly suitable habitat also remains on the west side of the Santa Ana Mountains (e.g., Black Star Canyon), but the fact that quino has not been located in Orange County since the 1960s (Mattoni et al. 1997) lowers the likelihood of populations in that area. There may be higher potential on the east side of the range (e.g., Elsinore Peak), which is relatively close to extant populations in the Murrieta area. Suitable habitat within the historic range of the quino may also be present along the base of the San Gabriel, San Bernardino, and San Jacinto mountains, but there are no known populations near those areas.

Habitat: The primary larval food plant for quino checkerspot is *Plantago erecta*, but it also utilizes other *Plantago* species as well as *Castilleja exserta* and *Keckiella antirrhinoides* (Mattoni et al. 1997). The primary food plant, and thus the butterfly, is not strongly associated with a single plant community; rather, it is found in sparsely vegetated openings embedded in a variety of vegetation types but most commonly within coastal sage scrub, chaparral, or oak woodlands.

Where *Plantago erecta* is present, optimum stand structure for quino reportedly consists of patchy shrub or small tree landscapes with openings of several meters between large plants (Mattoni et al. 1997). The butterfly typically does not occur in extensive open grasslands, even where *Plantago erecta* is abundant, although apparently there are exceptions (e.g., in the Murrieta area).

There are indications that the distribution of *Plantago erecta* and other native annuals may often be associated with the presence of cryptobiotic crusts on the soil surface (Mattoni et al. 1997). These crusts appear to inhibit invasions of non-native grasses and forbs, providing a competitive advantage for the native annuals. Other edaphic factors (e.g., high clay

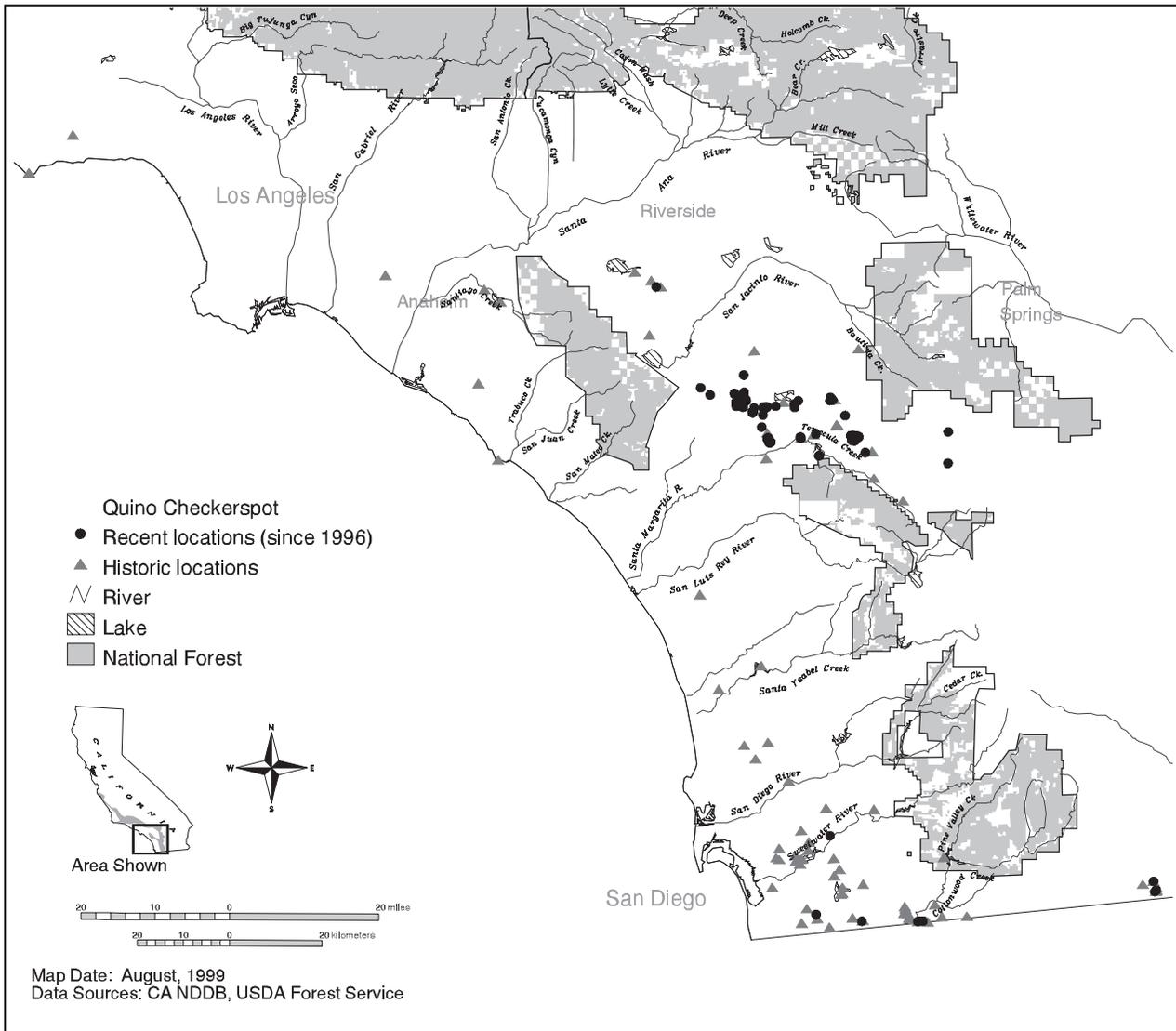


Figure 4.19. Current and historic locations of the quino checkerspot butterfly in relation to the assessment area and national forest system lands (this map may not show all known localities).

content) may similarly inhibit non-natives and might serve as indicators of potential habitat.

Topographic relief such as raised mounds, hills, slopes, or ridges may be an important habitat component (Mattoni et al. 1997). The phenomenon of hilltopping, where butterflies congregate on ridges or hilltops to mate, has been observed at a number of quino locations. All of the known extant quino populations are at elevations below 3,500 feet.

Conservation Considerations: Surveys are needed to determine the distribution of quino checkerspot butterflies on public lands within the assessment area. Particular emphasis should be given to potential habitat areas on

the Cleveland National Forest that are near extant populations.

If colonies are found, habitat management for quino will likely center on maintaining ample populations of the larval food plants. Although *Plantago erecta* still occurs in many areas, there are indications that it has become less abundant as non-native annual grasses and forbs have spread. Soil disturbance, particularly degradation of cryptobiotic crusts, can substantially hamper the ability of *Plantago* and other native annuals to hold their own on a site (J. Byers, Riverside Fire Lab, pers. comm.). Thus ground-disturbing activities, such as intensive livestock grazing or off-road

vehicle traffic, can contribute to the decline of quino food plants.

Plantago erecta and other native annuals often become abundant in coastal scrub and chaparral for several years immediately after a fire, until the canopy is closed by the regenerating shrub layer. Thus, a shifting age-class mosaic is desirable in these shrublands to maintain a steady supply of early successional patches for native annuals. However, this should not trigger calls for shorter fire-return intervals, particularly in coastal scrub, since frequent fires in these shrublands usually increases the abundance of non-native annual grasses (Zedler et al. 1983).

Orange-throated whiptail
(*Cnemidophorus hyperythrus beldingi*)

Status and Distribution: The orange-throated whiptail is a California Species of Special Concern. Its geographic range extends from Orange and the southern edge of San Bernardino counties south to around Loreto in Baja California, Mexico (Jennings and Hayes 1994). Its reported elevation range in California is from near sea level to about 3,400 feet (Jennings and Hayes 1994), but it is most commonly found at elevations below 2,300 feet (Fisher and Case 1997).

Orange-throated whiptails occur at low elevations on the coastal side of the San Diego Ranges, the Santa Ana Mountains, and San Jacinto Mountains. They are common on streamside terraces along the upper San Diego River in the Cleveland National Forest and also were found on Starr Ranch at the base of the Santa Ana Mountains (Fisher and Case 1997). They likely occur in Bautista Canyon in the San Jacinto Mountains.

Habitat: The orange-throated whiptail occurs in coastal sage scrub and, to a lesser extent, chaparral. It appears to reach peak densities on floodplains and streamside terraces (Jennings and Hayes 1994).

Conservation Considerations: Orange-throated whiptails occur in some of the lowest elevation areas within the southern part of the assessment area. The proximity to urbanizing areas increases the potential for whiptail popu-

lations to become fragmented and isolated. The food base of orange-throated whiptails (principally termites), may be adversely affected by invasions of Argentine ants from irrigated areas (Jennings and Hayes 1994).

California gnatcatcher
(*Polioptila californica*)

Status and Distribution: The California gnatcatcher was federally listed as threatened in 1993 (USFWS 1993b). The current known distribution of California gnatcatchers is concentrated along the coast in maritime-influenced areas of Orange and San Diego counties (Mock 1998). There are also sizable populations in the inland valleys of southwestern Riverside County and on the Palos Verdes Peninsula (Atwood 1993). Within the assessment area, the only known California gnatcatcher population on national forest system lands is on the Cleveland National Forest (fig 4.20). However, recent sightings at Sycamore Flat (near Lytle Creek), at the confluence of Lytle Creek and Cajon Wash, and on the Etiwanda Fan (Davis et al. 1998) indicate a possible population along the lower foothills of the eastern San Gabriel Mountains that may extend onto the San Bernardino and Angeles national forests. There is also a slight possibility that gnatcatchers may also occur on the lower western slopes of the San Jacinto Mountains.

On the Cleveland, the largest population (thirty-plus pairs) is along the upper San Diego River above El Capitan Reservoir. Small clusters have also been observed in the vicinity of Pamo Valley near Ramona and on the lower slopes of the Santa Ana Mountains on the east side near Lake Elsinore and on the west side near San Juan Creek.

Habitat: California gnatcatchers are nonmigratory and strongly associated with Diegan and Riversidian coastal sage scrub (Atwood 1993). These types of sage scrub occur in Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties at elevations below 3,000 feet on the coastal side of the mountains. However, gnatcatcher densities seem

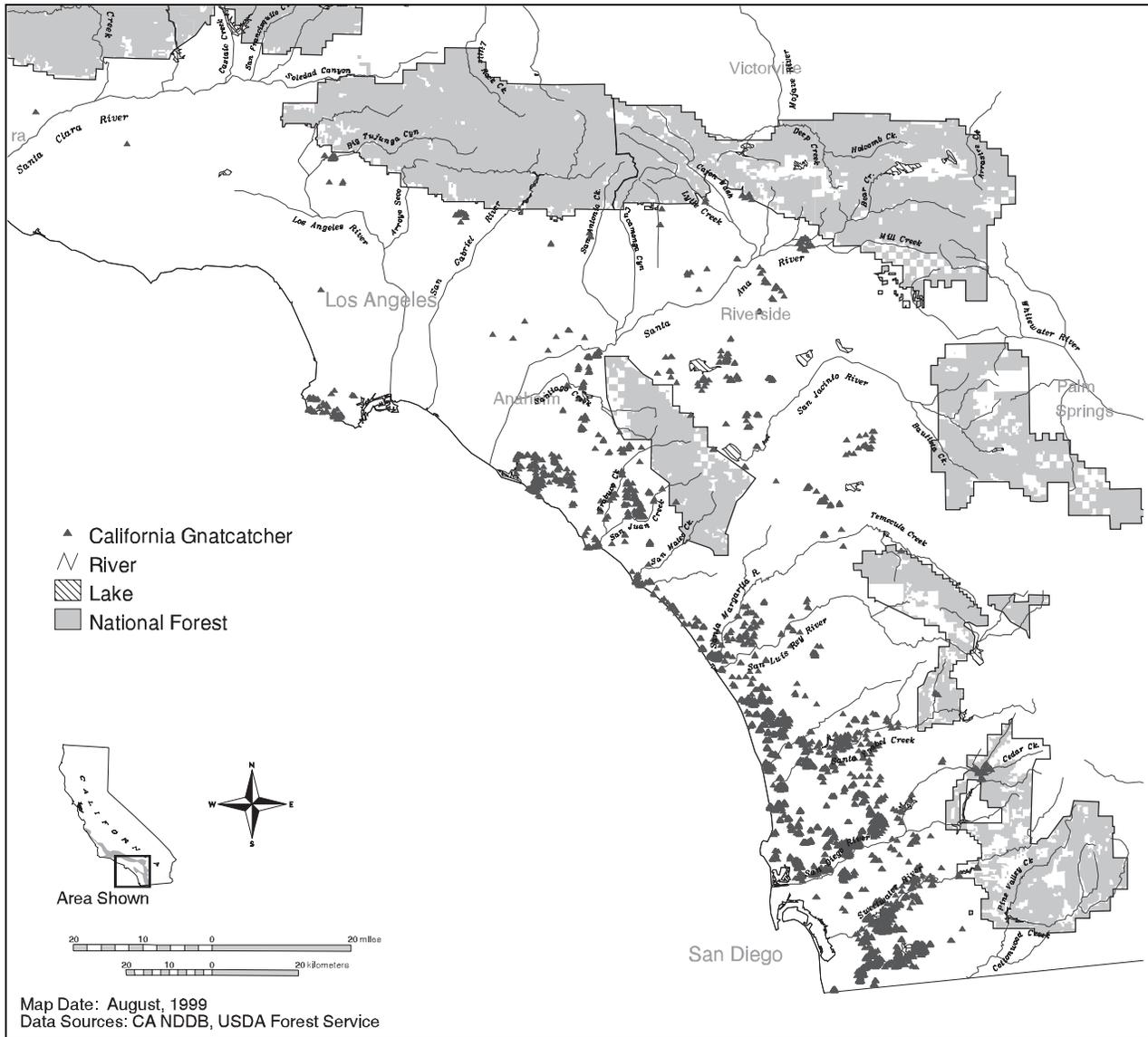


Figure 4.20. Known locations of the California gnatcatcher within or near the assessment area (this map does not show all known localities outside the assessment area).

to decline substantially at elevations above about 2,200 feet and at increasing distances from the coast (Mock 1998).

Total shrub cover appears to be more important than shrub height in determining habitat suitability (Beyers and Wirtz 1997). California gnatcatchers are most abundant in mature stands, where shrub canopy cover is typically greater than 50 percent and often exceeds 60 percent (Atwood 1993; Beyers and Wirtz 1997). However, they will forage in recently burned sites and pairs have been observed establishing territories in burned areas within three years postfire at coastal sites

(Wirtz et al. 1997). The rapidity of shrub regrowth appears to affect the rate at which gnatcatchers reoccupy burned areas, and inland sites (particularly Riversidian sage scrub) are slower to recover than coastal sites (Wirtz et al. 1997).

Conservation Considerations: Although the potential for major new populations is low, surveys are needed to more fully determine the distribution of California gnatcatchers in the Cleveland, San Bernardino, and Angeles national forests. Information on occurrences at low elevations in the eastern San Gabriel Mountains would be particularly useful.

Conservation of coastal sage scrub where it does occur within the assessment area is important for the gnatcatcher.

The gnatcatcher population on the upper San Diego River has been negatively affected by recurring fires in the early 1990s. High fire frequencies and invasions of exotic grasses are serious problems in gnatcatcher habitat (Minnich and Dezzani 1998). Coastal sage scrub is a highly flammable vegetation type and maintaining mature stands in fire-prone areas near the urban interface is a significant management challenge (Beyers and Wirtz 1997). Cowbird nest parasitism is also a problem for gnatcatchers in some areas (Braden et al. 1997) and has been documented in the upper San Diego River population.

Coastal cactus wren
(*Campylorhynchus brunneicapillus* ssp.)

Status and Distribution: The San Diego coastal cactus wren (*C. b. sandiegoense*) is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. Rea and Weaver (1990) define the range of this subspecies as coastal portions (i.e., west of the mountain crest) of San Diego and southern Orange counties (Trabuco Canyon is the northern boundary). There are no known locations of coastal cactus wrens within the Cleveland National Forest, although they have been observed close by. On the coastal slopes of the Santa Ana Mountains, they have been observed at Starr Ranch, Live Oak Canyon Park, and Caspers Wilderness Regional Park. In San Diego County, they have been found above El Capitan Reservoir on the San Diego River and in Pamo Valley.

Coastal-slope populations of cactus wrens in Riverside, San Bernardino, Los Angeles, Ventura, and northern Orange counties are classified as *C. b. anthonyi*, which is the same subspecies that occurs in the deserts of California and western Arizona (Rea and Weaver 1990). Given its abundance in the desert, this subspecies is not considered to be rare or sensitive. However, coastal-slope populations of cactus wrens are rare and we regard them as a

local viability concern. Cactus wrens are scattered across the lower slopes of the San Gabriel Mountains (e.g., Fish Canyon, Duarte, and Claremont) (D. Cooper, UC Riverside, pers. comm.) and may also extend into the foothills of the San Bernardino and San Jacinto mountains.

Habitat: Coastal cactus wrens are closely associated with coastal sage scrub vegetation that contains patches of cholla or prickly pear (*Opuntia* spp.) cactus (Rea and Weaver 1990). The wren's chief requisite is tall *Opuntia* cacti. The wrens construct their nests in these cacti and supplement their insect diet in fall and winter by feeding on cactus fruit (Rea and Weaver 1990).

Conservation Considerations: Although the potential for major populations is low, surveys are needed to more fully determine the distribution of cactus wrens in the low coastal foothills that lie within the Cleveland, San Bernardino, and Angeles national forests.

Rufous-crowned sparrow
(*Aimophila ruficeps canescens*)

Status and Distribution: The southern California rufous-crowned sparrow, *A. r. canescens*, is a California Species of Special Concern. It occurs from Santa Barbara County south to northwestern Baja California at low elevations on the coastal side of the mountains (Garrett and Dunn 1981; Unitt 1984). This sparrow is occasionally found on the desert side of the mountains, particularly on the northern end of the San Jacinto Mountains (e.g., near Cabazon) and in southern San Diego County. It is described as being rather scarce on the lower coastal slopes of the San Bernardino Mountains (Garrett and Dunn 1981).

Habitat: Preferred habitat for this sparrow consists of slopes, typically south facing, with sparse brush intermixed with bunch grasses and large rocks. These slopes are often quite steep and rocky (Garrett and Dunn 1981; Unitt 1984). The range of this subspecies is virtually coincident with extensive stands of coastal sage scrub, although it does

appear to be more adaptable than the California gnatcatcher and cactus wren in that it extends further up into the foothill scrub-chaparral transition zone (Unitt 1984). Rufous-crowned sparrows do not occupy dense chaparral but can be found in recently burned chaparral or along firebreaks as long as other key habitat elements (e.g., grasses and rocks) are present.

Conservation Considerations: Coastal sage scrub is a declining habitat type and one that is poorly represented on public lands in the assessment area. Conservation of this type where it does occur is important for the rufous-crowned sparrow. Additional information is needed on the distribution and abundance of this species in the foothill scrub-chaparral transition zone, since that type of habitat is much more extensive on public lands. Surveys associated with the development of breeding bird atlases in Los Angeles (LACBBA 1999) and San Diego (SDNHM 1999) counties should help in this regard.

Inhabitants of Coastal-side Chaparral and Scrub

Three of the species that received individual consideration can occur in either chaparral or scrub habitats. The ability of these species to occur in higher elevation chaparral habitats increases the potential to conserve them on public lands within the assessment area.

Hermes copper butterfly (*Lycaena hermes*)

Status and Distribution: The Hermes copper is a former federal C2 Candidate Species and now is on the federal special concern list. It is known only from western San Diego County and a small portion of adjacent northwestern Baja California, Mexico (Brown 1991). Initial collections of this species were all in the immediate vicinity of San Diego, but it has proven to be more widespread than originally thought, particularly across the broad chaparral belt east of San Diego. The Hermes copper is known to extend inland to

Viejas Grade, Guatay, and Pine Valley (Murphy 1990; Brown 1991). Thus, a significant amount of its known range is within the Cleveland National Forest.

Habitat: The Hermes copper is restricted to mixed chaparral and coastal sage scrub communities where its larval host plant, redberry (*Rhamnus crocea*), occurs (Brown 1991). Colonies are confined closely to the vicinity of the host plant, with adults frequently observed nectaring on flat-topped buckwheat (*Eriogonum fasciculatum*) (Thorne 1963).

Conservation Considerations: Redberry, the larval host plant, is a common component of chaparral and coastal scrub and is not believed to be vulnerable to existing land uses or fire regimes.

Coast patch-nosed snake (*Salvadora hexalepis virgultea*)

Status and Distribution: The coast patch-nosed snake is a California Species of Special Concern. Its range extends from near Creston in San Luis Obispo County southward primarily on the coastal side of the mountains into Baja California (Jennings and Hayes 1994). Its known elevation range is from near sea level to around 7,000 feet (Jennings and Hayes 1994), but it is typically found below 5,000 feet (Glaser 1970). The species appears to be widespread on national forest system lands, but not in high densities.

Habitat: Patch-nosed snakes seem to prefer coastal sage scrub and chaparral (Fisher and Case 1997). Their primary prey is whiptail lizards and this may be what determines the habitat preferences of this snake (Jennings and Hayes 1994).

Conservation Considerations: The abundance of coast patch-nosed snakes on public lands in the assessment area is not known. However, this species does not seem particularly vulnerable to existing change agents on public lands. Based on what we currently know of its distribution and life history characteristics, we believe it can be conserved through landscape-scale, habitat-based management. It would be a difficult species to monitor for trends in abundance.

Bell's sage sparrow (*Amphispiza belli belli*)

Status and Distribution: The Bell's sage sparrow is a California Species of Special Concern. Sage sparrows occur on both coastal and desert slopes, but the subspecies *A. b. belli* occurs only on the coastal side. Its geographic range extends from northern California into Baja California. This subspecies extends into lower montane chaparral habitats, which increases its representation in the assessment area. Portions of western Riverside and San Diego counties are identified as centers of abundance for this sparrow (Garrett and Dunn 1981).

Habitat: The Bell's sage sparrow is associated with dry chaparral in interior foothills; it also occurs in coastal sage scrub (Garrett and Dunn 1981). This sparrow is said to inhabit dense stands (Garrett and Dunn 1981; Unitt 1984), but a recent account suggests it is most common in semi-open chaparral and describes areas of bare ground unencumbered by heavy leaf litter as essential (SDNHM 1998). The latter description is consistent with recent data from the Cleveland National Forest, where sage sparrows were found to be significantly more abundant in open, young-age (recently burned) chaparral than they were in denser, older stands (Boyd and Stephenson 1997).

Conservation Considerations: This species appears to be well represented on public lands in coastal foothill and lower montane areas. One recent study suggests that a chaparral age-class mosaic interspersed with open, young stands is important to this sparrow (Boyd and Stephenson 1997).

Inhabitants of Coastal and Desert-side Shrublands

Five of the species that received individual consideration can occur in chaparral and scrub habitats on both coastal and desert sides of the mountains. In general, this wider geographic range increases the potential for these species to occur on public lands within the assessment area.

Pratt's blue butterfly**(*Euphilotes enoptes cryptorufes*)**

Status and Distribution: This is a recently described subspecies (Pratt and Emmel 1998) and is not on any special concern lists. It is considered here because much of its known range is within the assessment area. Known locations of this butterfly include the south-facing slope of Pyramid Peak in the southern part of the San Jacinto Mountains and on the road to Santa Rosa Mountain at elevations of 4,500 to 5,000 feet (Pratt and Emmel 1998). The range of this subspecies also extends into northern Baja California in the San Pedro Martir Mountains.

Habitat: The Pratt's blue is associated with the wild buckwheat species, *Eriogonum davidsonii*. Specifically it has only been found on the spring blooming, and not the summer blooming, variety of this buckwheat, which occurs predominantly on south-facing slopes (Pratt and Emmel 1998).

Conservation Considerations: More information is needed on the distribution and abundance of this species. There are no imminent threats to the two localities where this butterfly has been observed.

Coast horned lizard**(*Phrynosoma coronatum*)**

Status and Distribution: Two different subspecies of coast horned lizard occur in the assessment area. *P. c. blainvillii*, the San Diego horned lizard, is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. *P. c. frontale*, the California horned lizard, is a California Species of Special Concern. The two subspecies combined inhabit all of the mountain subareas in the assessment area.

The geographic range of *P. c. blainvillii* stretches from Ventura County south into Baja California, Mexico. The distribution map for this subspecies in Jennings and Hayes (1994) suggests its northwestern-most occurrence is in the upper Cuyama River watershed. It occurs on all four national forests and reaches almost 7,000 feet elevation in places (e.g.,

Tahquitz Meadow on Mount San Jacinto) (Jennings and Hayes 1994). Although most common on the coastal slope, San Diego horned lizards also occur on the desert side of the mountains.

P. c. frontale overlaps with *P. c. blainvillii* in northern Los Angeles and Ventura counties and there is evidence of hybridization in some areas (Jennings and Hayes 1994). The range of *P. c. frontale* continues north into Shasta County. It occurs on both the coastal side and the San Joaquin Valley side of the mountains.

Habitat: Horned lizards can be found in a variety of habitats but are most common in shrub-dominated communities. Key habitat elements are loose, fine soils with a high sand fraction; an abundance of native ants; open areas with limited overstory for basking; and areas with low, dense shrubs for refuge (Jennings and Hayes 1994). Fisher and Case (1997) found coast horned lizards primarily in association with either cryptogamic soils or sandy soils. The coast horned lizard's primary food is harvester ants (*Pogonomyrmex* spp.); the lizards do not appear to eat Argentine ants.

Conservation Considerations: Coast horned lizards are reported to be declining, primarily due to loss of habitat in low elevation coastal and inland valleys (Jennings and Hayes 1994). Thus, public lands within the assessment area are becoming increasingly important to the conservation of this species.

The most significant threat to horned lizards on public lands may be progressive elimination of its food base by exotic ants, particularly in areas near human developments (Jennings and Hayes 1994; Suarez et al. 1998). The elimination of native ant colonies from small habitat fragments by Argentine ants has already been documented in southern California (see chapter 3). The recent arrival of red imported fire ants could make this problem worse.

Coastal rosy boa **(*Lichanura trivirgata roseofusca*)**

Status and Distribution: The coastal rosy boa is a Forest Service Region 5 Sensitive Species. It occurs from the foothills of the San Gabriel and San Bernardino mountains, south through Orange, Riverside and San Diego counties, down to the Sierra San Pedro Martir in Baja California (Klauber 1931; Gorman 1965). There reportedly is a record of this species at an elevation of 8,000 feet in the San Gabriel Mountains (Fisher and Case 1997), but it typically is found much lower. It occurs on both coastal and desert sides of the mountains.

Habitat: The coastal rosy boa is primarily associated with rocky habitat in scrub and chaparral, and in the mountains is often found in canyons and washes (Klauber 1931; Fisher and Case 1997).

Conservation Considerations: The rosy boa is an attractive, docile snake that has considerable market value in the pet trade. Illegal collection of wild snakes is believed to be a significant problem in some areas (Holland and Goodman 1998; J. Copp, CA Academy of Sciences, pers. comm.).

Red diamond rattlesnake **(*Crotalus ruber ruber*)**

Status and Distribution: The red diamond rattlesnake is a California Species of Special Concern. It occurs on both coastal and desert slopes of the San Jacinto, Santa Rosa, and Santa Ana mountains, and the mountains of San Diego County (fig. 4.21). Its known elevation range is from near sea level to about 5,000 feet (Jennings and Hayes 1994), although it is typically found below 4,000 feet (Klauber 1972). Sighting records indicate this species is well represented on the Cleveland National Forest and the San Jacinto District of the San Bernardino National Forest (Glaser 1970).

Habitat: The red diamond rattlesnake typically occurs in brushy habitats that contain large rocks or boulders (Klauber 1972). It is frequently observed in chamise and red

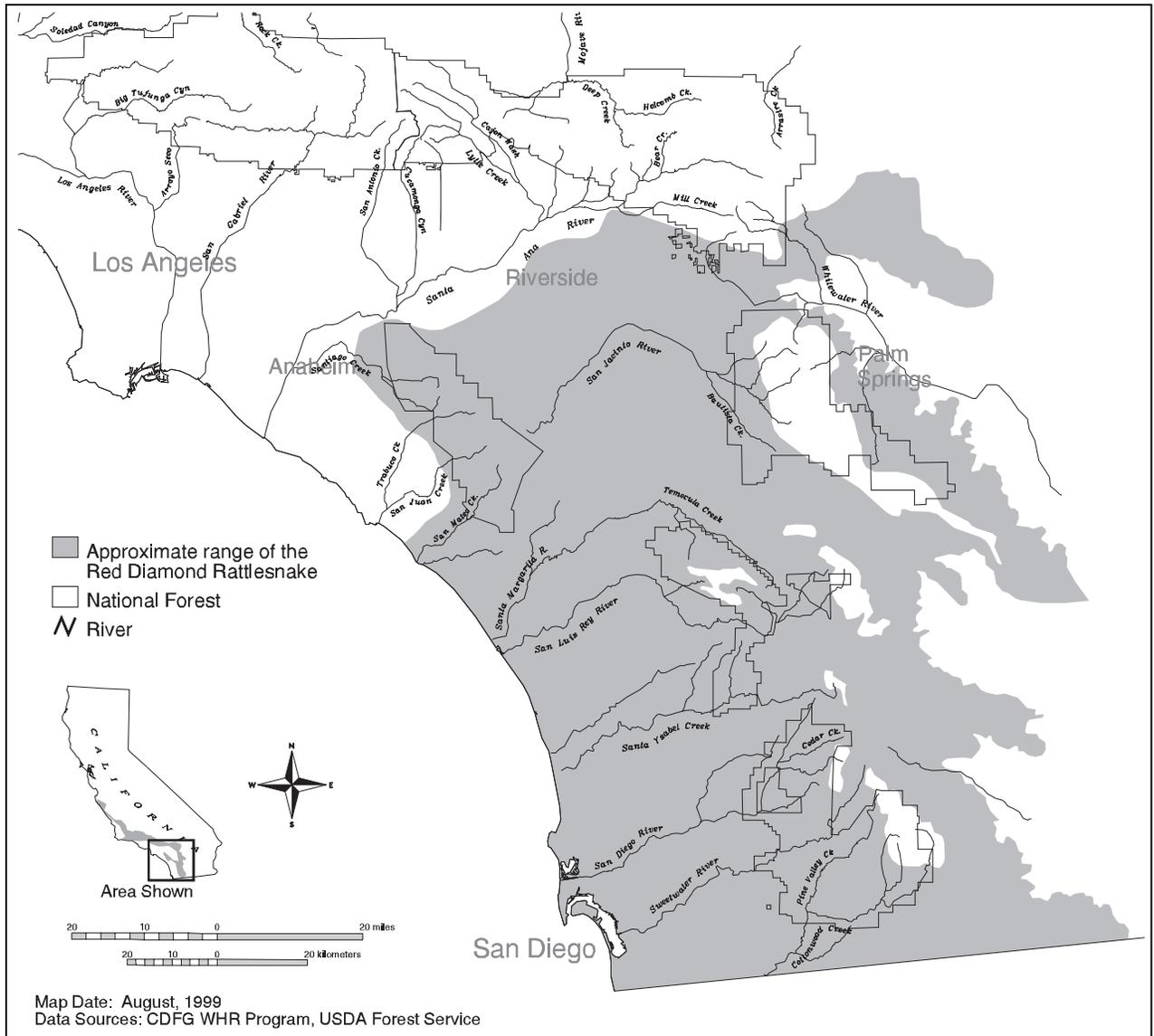


Figure 4.21. The approximate range of the red diamond rattlesnake.

shank chaparral as well as coastal sage scrub and desert scrub (Jennings and Hayes 1994).

Conservation Considerations: Urban development and irrigated agriculture, particularly avocado orchards, have significantly reduced the amount of suitable habitat for this species (Jennings and Hayes 1994). However, the red diamond rattlesnake does not seem particularly vulnerable to existing change agents on public lands. Its distribution and life history characteristics suggest it can be conserved through landscape-scale, habitat-based management. It would be a difficult species to monitor for trends in abundance.

San Diego pocket mouse (*Chaetodipus fallax*)

Status and Distribution: The San Diego pocket mouse is a California Species of Special Concern. The northern limits of this species' range extend from the eastern San Gabriel Mountains in the interior to near San Onofre along the coast (Lackey 1996). It occurs south of that line well into Baja California. Two different subspecies occur in the assessment area. *C. f. fallax* occurs on the coastal side of the mountains and the lighter colored *C. f. pallidus* is found on the desert side (Lackey 1996).

Suitable habitat for this mouse appears to extend well up into the mountains on desert-side

slopes. The species has been found at 4,500 feet in the Santa Rosa Mountains and at 6,000 feet at Cactus Flat on the north side of the San Bernardino Mountains (Zeiner et al. 1990b).

Habitat: On the coastal side of the mountains, San Diego pocket mice are found primarily in coastal sage scrub (Vaughan 1954; Lackey 1996), reaching peak abundance in rocky areas within that habitat (Price and Waser 1984). Vaughan (1954) reported that this mouse does not extend into even the lower edge of the chaparral belt on the coastal slopes of the San Gabriel Mountains.

A broader range of habitats appears to be occupied on the desert side of the mountains. It has been found in pinyon-juniper woodland, desert scrub, rocky slopes, and agave-ocotillo habitat (Lackey 1996). On desert slopes of the eastern San Gabriel Mountains, the San Diego pocket mouse's distribution was closely correlated with the presence of yucca, particularly on dry, rocky southern slopes (Vaughan 1954).

Conservation Considerations: The San Diego pocket mouse appears to be well represented on public lands on the desert side of the mountains. It does not seem particularly vulnerable to land use activities in those areas. However, if its coastal-side distribution is strictly limited to coastal sage scrub, it may be quite rare on that side of the assessment area. More information is needed on the distribution and abundance of this species in potential habitat on the coastal side of the assessment area.

Animals of Foothill Oak Woodland and Savanna Habitats

Five of the animal species that received individual consideration are associated with foothill woodland and savanna habitats (table 4.14). Although relatively few rare animal species are restricted to foothill oak woodlands, it should be recognized that species diversity and richness are very high in these habitats, since they provide high quality habitat for many species.

Monterey salamander (*Ensatina eschscholtzii eschscholtzii*)

Status and Distribution: The Monterey salamander is a local species of concern because it is relatively uncommon and much of its distribution is at low elevations on private lands. It occurs in the valleys, foothills, and lower montane slopes of every mountain range in the assessment area. No population trend information is reported for this species.

Three subspecies of *Ensatina eschscholtzii* (the other two are considered in the mixed hardwood-conifer forest group) occur in the mountains of southern California, and their evolutionary relationships and taxonomic status have received considerable scientific attention (Stebbins 1949; Brown 1974; Wake and Yanev 1986; Wake et al. 1986; Highton 1998; Wake and Schneider 1998). *E. e. eschscholtzii* is the most distinct of the three subspecies; it is a reddish-brown, unblotched salamander that is believed to have evolved from low-elevation coastal regions to the north. The other two subspecies are darker with prominent yellow or orange blotches. They are believed to have originated in the northern interior mountains and moved south through the Sierra Nevada and Tehachapi mountains (Wake and Yanev 1986).

Habitat: Monterey salamanders are most common in oak woodlands with extensive leaf litter and downed wood (Holland and Goodman 1998). However, they do occupy a wide variety of other habitats and extend to elevations above 6,100 feet in some areas (e.g., Sawmill Canyon north of Banning in the San Bernardino Mountains) (Wake et al. 1986). They are rarely seen on the ground surface except during and immediately after rains.

Conservation Considerations: These salamanders are impacted by habitat loss due to development on private lands but are not considered to be particularly vulnerable to prevailing land use activities on public lands. Over-collection of standing trees and downed logs in oak woodlands can be a problem near roads and undoubtedly reduces habitat quality for this species.

Table 4.14. Animals associated with foothill oak woodland and savanna habitats that received individual consideration. Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Foothill Oak Woodland & Savanna Animals <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulnerability on NFs	(4) Pop. Trend	(5) Conser- vation Category
		Cleveland NF		San Bern. NF		Angeles NF		Los Padres NF					
		San Diego Rngs	Snta Ana Mts	San Jac Mts	San Bern Mts	San Gab Mts	Cas-taic Rngs	So. LP Rngs	So. SL Rng	No. SL Rng			
Generalist Monterey salamander	Moderate (25-50%)	y	y	y	y	y	y	y	y	y	Low	Unkn	Landscape level
Oak Savanna Yellow-billed magpie	High (10-25%)							y	y	y	Low	Stable ¹	Landscape level
Mature Live Oak Groves Arboreal salamander	Mod-Low (25-50%)	y	y	y	y	y	y	y	y	y	Low	Unkn	Landscape level
Western screech owl	High (30-60%)	y	y	y	y	y	y	y	y	y	Mod	Unkn	Landscape level
Long-eared owl	Mod-Low (< 25%)	y	y	y	y	y	y	y	y	y	Mod	Unkn	Landscape level

¹ Based on BBS data for California (Sauer et al. 1997)

Arboreal salamander (*Aneides lugubris*)

Status and Distribution: The arboreal salamander is a local species of concern because it is relatively uncommon and much of its distribution is at low elevations on private lands. It reportedly occurs in the foothills and lower elevations of every mountain range in the assessment area (Stebbins 1951), although it is seldom seen. No population trend information is reported for this species.

Habitat: Arboreal salamanders are typically found in oak woodlands, particularly where coast live oak is a major component (Stebbins 1951; Holland and Goodman 1998). However, in southern California it has been observed in other habitats, including sycamore-dominated riparian (R. Fisher, USGS Biological Resources Division, pers. comm.) and chaparral (T. Scott, UC Riverside, pers. comm.). Leaf litter and downed logs are believed to be important habitat elements for this species.

Conservation Considerations: Same as those described for the Monterey salamander.

Yellow-billed magpie (*Pica nuttalli*)

Status and Distribution: The yellow-billed magpie is a local species of concern because it has a small geographic range (Sacramento and central coast valleys) and much of its distribution is at low elevations on private lands. Magpies occur from the upper Salinas Valley south to the Santa Ynez Valley, and east to the inland limit of oak savanna (fig. 4.22) (Garrett and Dunn 1981). They formerly occurred south to Conejo Valley on the Ventura/Los Angeles county line (Willet 1933) but apparently were absent from there by the 1930s (Garrett and Dunn 1981).

Although localized in distribution, magpies are often common where they occur. Breeding bird survey data from 1966 to 1996 for the California foothills and the entire state

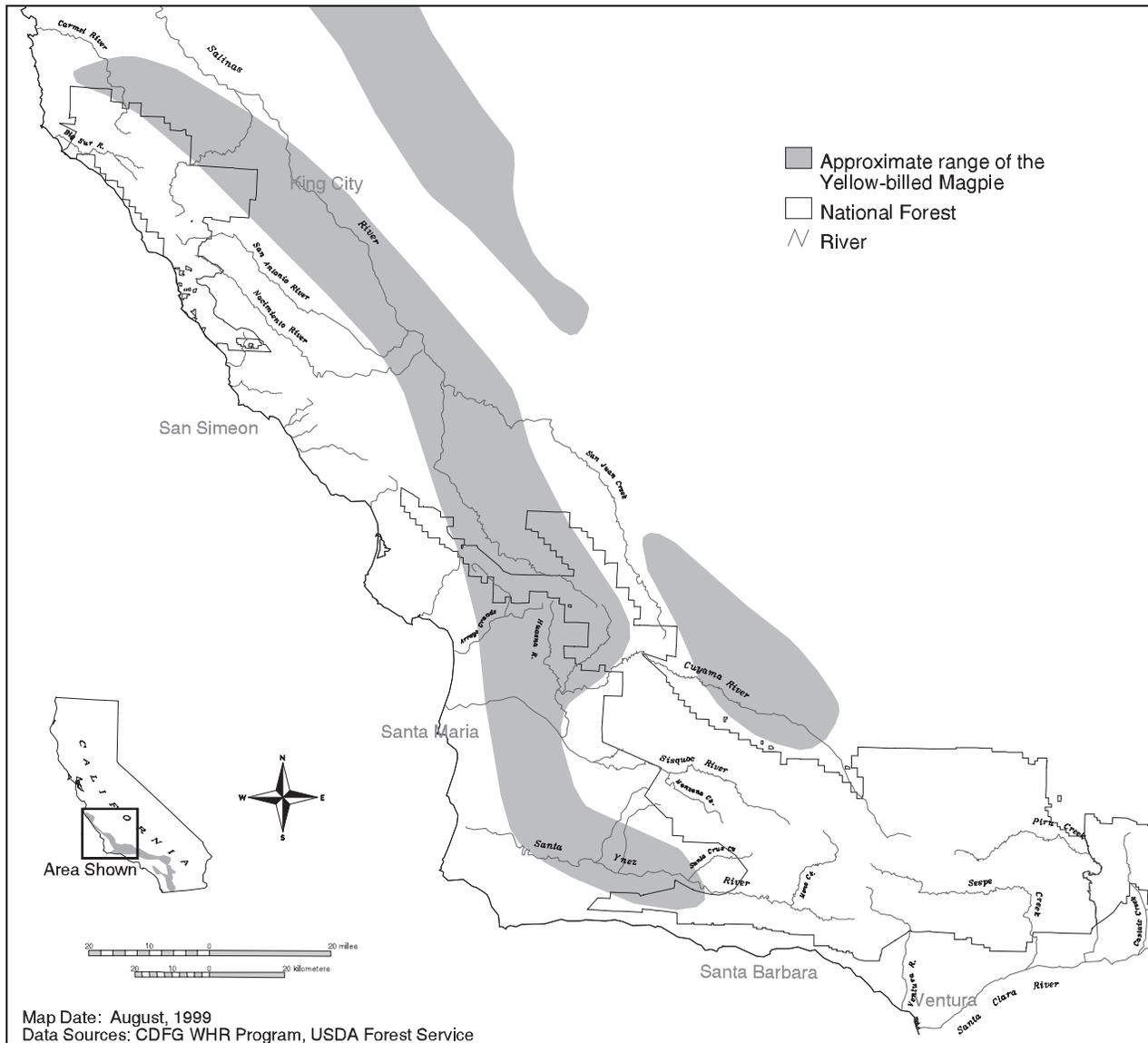


Figure 4.22. The approximate range of the yellow-billed magpie.

both show a very stable trend in the abundance of yellow-billed magpies (Sauer et al. 1997).

Habitat: Yellow-billed magpies occupy oak savanna, open oak-riparian woodland, and pastureland (Lehman 1994).

Conservation Considerations: Magpies are probably not particularly vulnerable to prevailing land use activities on public lands. However, only small portions of the yellow-billed magpie's occupied range lie on public land. The ability of this species to persist in increasingly developed areas is uncertain. Magpies do very well in ranchland situations and probably are okay in more developed ranchette environments, but it is unclear how they fare in suburban areas.

Western screech owl (*Otus kennicottii*)

Status and Distribution: The western screech owl is a local species of concern because it is relatively uncommon and much of its distribution is at low elevations on private lands. It occurs in the valleys, foothills, and lower montane slopes of every mountain range in the assessment area. No population trend information is reported for this species.

Habitat: The screech owl is most common in mature live-oak and oak-riparian woodlands in coastal and foothill areas but also occurs in oak-conifer forests on lower montane slopes up to at least 5,000 feet (Garrett and Dunn 1981; Unitt 1984).

Conservation Considerations: Screech owls nest in mature woodlands and, thus, are dependent on old stands that cannot easily be replaced. Mature oak woodland habitats are declining due to development on private lands, and stands on public lands are vulnerable to loss in stand-replacing fires.

Long-eared owl (*Asio otus*)

Status and Distribution: The long-eared owl is a California Species of Special Concern. Its geographic range extends across the assessment area, but recent observations in the region are rare. There are a few historical records of long-eared owls nesting at high elevations (above 7,000 feet) in the San Bernardino and San Jacinto mountains, but we found no recent observations in those areas. There are recent records from Crowder Canyon and Cajon Wash in the San Bernardino National Forest (D. Freeman, unpubl. notes), but those areas are below 5,000 feet. A pair of long-eared owls with young were observed at 7,500 feet on Mount Pinos in 1981 (Lentz 1993).

Bloom (1994) documented a number of active long-eared owl nest sites along the base of the Santa Ana Mountains in Orange County and within Camp Pendleton in northwestern San Diego County. He also reviewed historic nesting records elsewhere in San Diego County. The vast majority of these locations are west of the assessment area in the coastal valleys and low foothills.

In a map of long-eared owl distribution in California, Zeiner et al. (1990) indicate potential breeding areas on the desert side of the Castaic Ranges, in the upper Cuyama Valley region, and along the immediate coast in San Luis Obispo and southern Monterey counties.

Habitat: In coastal areas of southern California, long-eared owls typically nest in dense, closed-canopy stands of coast live oak or riparian woodland that are in close proximity to open habitats such as grassland, meadow, or desert scrub (Bloom 1994). The need for adjacent grassland foraging habitat may explain why this owl is not more common in

upper foothill and lower montane areas. In these areas, closed canopy woodlands are often surrounded by dense chaparral.

In desert-side areas, long-eared owls nest in wooded riparian habitats. They regularly nest in tamarisk groves in the Anza-Borrego Desert (SDNHM 1998) and in riparian woodland in Big Morongo Canyon, both in situations where there is a lot of adjacent open habitat.

Conservation Considerations: More information is needed on the distribution of this species on public lands within the assessment area, particularly in the foothills where long-eared owls are now rare and vulnerable to habitat loss on private lands. Efforts are needed to protect grassland and meadow habitats in the vicinity of long-eared owl nest sites.

Animals of Mixed Hardwood-Conifer Forest Habitats

Ten of the animal species that received individual consideration are associated with forest types that typically contain a mix of hardwoods (e.g., oaks) and conifers (e.g., pines and firs) (table 4.15). Many of these species are found in lower montane forest types such as bigcone Douglas-fir/canyon live oak and Coulter pine/canyon live oak stands. Some of the species in this group, like the spotted owl, also can occur in forests that contain only conifers or hardwoods.

San Gabriel Mountains elfin butterfly (*Incisalia mossii hidakupa*)

Status and Distribution: This is a recently described taxon (Emmel et al. 1998) that is recognized as a Species of Concern by the U.S. Fish and Wildlife Service. The San Gabriel Mountains elfin is known from only six locations in the San Gabriel and San Bernardino mountains (Murphy 1990). Reported locations from the San Gabriel Mountains are in the San Antonio Canyon watershed (i.e., Stoddard Canyon and 5 miles west of Mount Baldy) and the Big Tujunga watershed (i.e., near Hidden Springs) (Murphy 1990). The only reported locality in the San Bernardino

Table 4.15. Animals associated with mixed hardwood-conifer forest habitats that received individual consideration. Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Hardwood/Conifer Forest Animals of Concern <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulnerability on NFs	(4) Pop. Trend	(5) Conservation Category	
		Cleveland NF		San Bern. NF		Angeles NF		Los Padres NF						
		San Diego Rngs	Santa Ana Mts	San Jac Mts	San Bern Mts	San Gab Mts	Castaic Rngs	So. LP Rngs	So. SL Rng	No. SL Rng				
Invertebrates (butterflies)														
San Gabriel Mtns. elfin	Low (> 80%)				y	y						Unkn	Unkn	Site specific
Thorne's hairstreak	Low (0%)	p										Mod	Unkn	Site specific
Amphibians														
Large-blotched salamander	High (30-60%)	y		y	y ¹							Low	Unkn	Landscape level
Yellow-blotched salamander	Mod (30-60%)				y ¹		p	y				Low	Unkn	Landscape level
San Gabriel Mtn. slender salamander	Mod (> 80%)				p	y						Low	Unkn	Landscape level
Tehachapi slender salamander	Low (0%)						p	p				Unkn	Unkn	Minimal influence
Birds														
California spotted owl	High (50-75%)	~35	3	~20	~120	~60	12	~65	~12	~40		Mod	Decl ²	Site specific
Northern pygmy owl	Low (25-50%)	y	p	y	y	y	y	y	y	y		Low	Unkn	Landscape level
Purple martin	Mod (25-50%)	y	h	y	y	y	y	y	t	y		High	Decl ³	Site specific
Cassin's solitary vireo	High (< 25%)	y	y	y	y	y	y	y	y	y		Mod	Unkn	Landscape level

¹ *Ensatina* salamanders in the San Bernardino Mountains have color patterns more similar to the yellow-blotched subspecies, but are genetically closer to the large-blotched subspecies (Wake and Schneider 1998).

² LaHaye and Gutierrez 1997. (specific to the San Bernardino Mountains)

³ Garrett and Dunn 1981, Unitt 1984, Lehman 1994.

Mountains is near Angeles Oaks, in the Santa Ana River watershed.

Habitat: The San Gabriel Mountains elfin butterfly appears to be found primarily on steep, north-facing slopes. The larval host plant is a stonecrop, *Sedum spathulifolium*, that is concentrated and limited in extent (Murphy 1990; Emmel et al. 1998).

Conservation Considerations: All reported localities of this butterfly appear to be on national forest system lands. In Murphy's

(1990) status review, *Incisalia mossii hidakupa* is listed as a category A taxon, that is, a taxon in immediate need of protective measures. Two other species identified as category A taxa in this 1990 paper have subsequently been added to the endangered species list (i.e., quino checkerspot and Laguna Mountain skipper).

Ironically, the principal threat identified for this species is over collecting and destruction of host plants by butterfly collectors (Murphy 1990). The locations of these

populations should be identified by the Forest Service and protective measures instituted to reduce this threat. Additional surveys are also needed to better determine the distribution, abundance, and habitat requirements of this butterfly.

Thorne's hairstreak (*Mitoura thornei*)

Status and Distribution: The Thorne's hairstreak is a local species of concern. Murphy (1990) considered it a category B taxon, which he defined as one which warrants listing as endangered, but with a less pressing need than category A taxa. This butterfly is currently known only from the vicinity of Otay Mountain near the Mexican border in southwestern San Diego County (Brown 1991). Closely associated with Tecate cypress on Otay Mountain, the Thorne's hairstreak has not been found at other localities where the cypress tree occurs (Brown 1991).

Habitat: The larval host plant for this butterfly is the Tecate cypress. A detailed description of the habitat on Otay Mountain where the Thorne's hairstreak occurs is provided in Brown (1983).

Conservation Considerations: It appears that the Thorne's hairstreak does not occur at sites where Tecate cypress grows within the assessment area (Brown 1991), but additional surveys are needed to make a more conclusive determination. The biggest threat to this species is overly frequent fire that could drastically reduce the abundance of Tecate cypress (see "Tecate Cypress" section in chapter 2). A series of recent fires on Otay Mountain has negatively impacted the cypress.

Large-blotched salamander (*Ensatina eschscholtzii klauberi*)

Status and Distribution: The large-blotched salamander is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. It occurs from the mountains of San Diego County (i.e., Laguna, Cuyamaca, Volcan, Palomar, and Hot Springs) north to the San Jacinto Mountains (Jennings and Hayes 1994) primarily at elevations be-

tween 3,000 and 6,000 feet (fig. 4.23). Localized populations of blotched ensatina salamanders in the San Bernardino Mountains (i.e., Crystal Creek, near Lake Arrowhead, and Sawmill Canyon) appear to be genetically closer to *E. e. klauberi*, but have color patterns more similar to *E. e. croceater* (Wake and Schneider 1998).

Habitat: Large-blotched salamanders occur in a variety of habitats but are most common in mixed stands of oaks (coast live, canyon live, or black) and conifers (pine, fir, and incense cedar). Down logs, leaf litter, and woody debris appear to be important habitat elements (Jennings and Hayes 1994).

Conservation Considerations: These salamanders are impacted by habitat losses resulting from development on private lands but are not considered to be particularly vulnerable to prevailing land use activities on public lands. Over-collection of standing trees and downed logs in oak-conifer forests can be a problem near roads and likely reduces habitat quality for this species.

Yellow-blotched salamander (*Ensatina eschscholtzii croceater*)

Status and Distribution: The yellow-blotched salamander is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. It occurs in the Tehachapi Mountains and extends into the assessment area in the vicinity of Mount Pinos, Frazier Mountain, and Alamo Mountain (Jennings and Hayes 1994). Potential habitat close to the known range of this subspecies exists on Liebre and Sawmill mountains in the Castaic region. As previously mentioned, blotched ensatina salamanders found in the San Bernardino Mountains have color patterns similar to *E. e. croceater*.

The absence of blotched ensatina salamanders in the San Gabriel Mountains has long been an enigma, since there appears to be an extensive amount of suitable habitat there, and people continue to search for isolated, undiscovered populations (Wake and Schneider 1998).

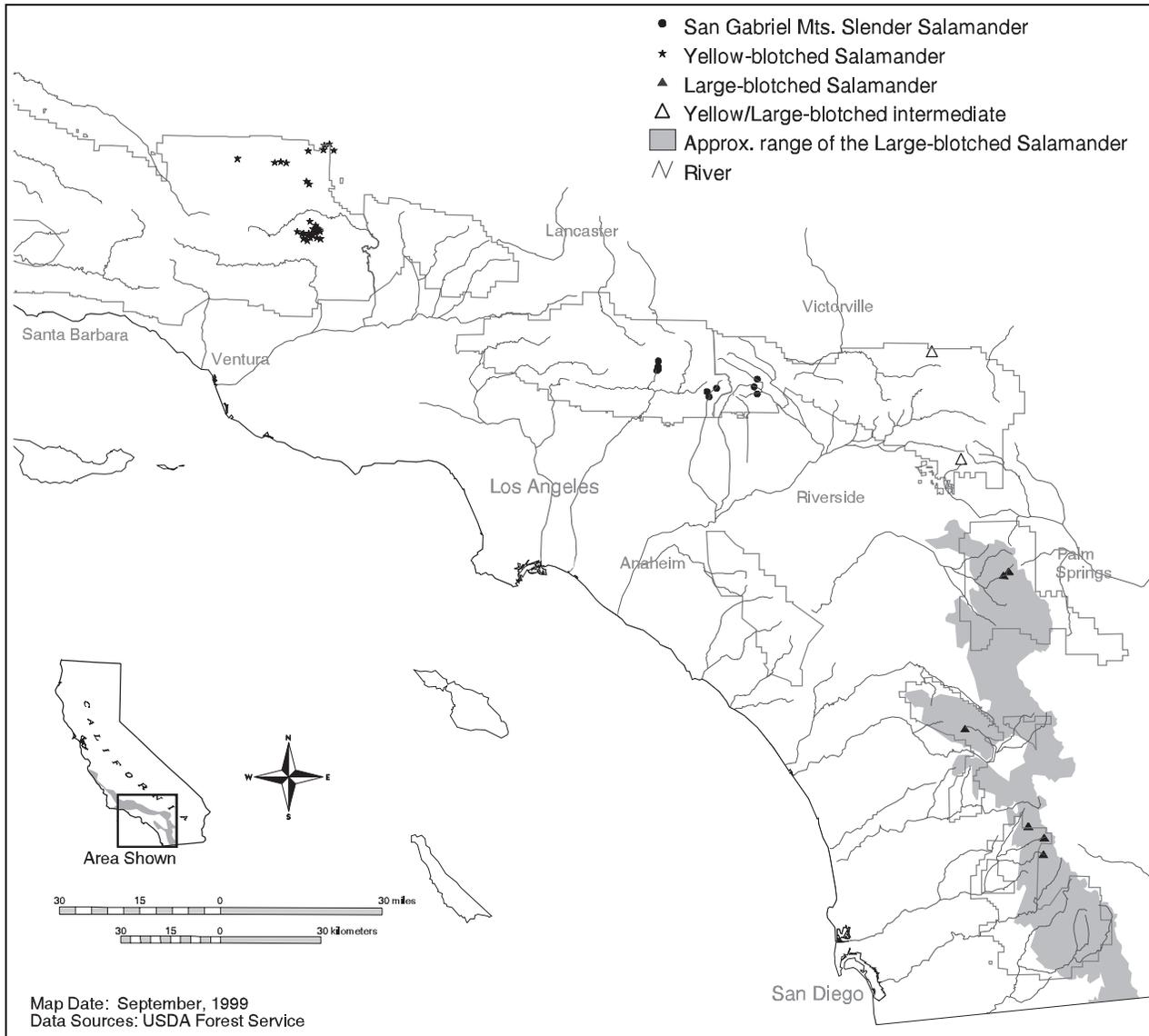


Figure 4.23. Approximate range of the large-blotched salamander and known locations of the yellow-blotched and San Gabriel Mountain salamanders.

Habitat: Yellow-blotched salamanders occur in a variety of habitats but are most common in mixed stands of oaks (black, blue, or canyon live) and conifers (pine or fir). Down logs, leaf litter, and woody debris appear to be important habitat elements (Jennings and Hayes 1994).

Conservation Considerations: Same as those described for the large-blotched salamander. Surveys are needed to determine if this species is present on Liebre or Sawmill mountains.

San Gabriel Mountain slender salamander (*Batrachoseps gabrieli*)

Status and Distribution: The San Gabriel Mountain slender salamander is a Forest Service Region 5 Sensitive Species. This recently described species is known from only a few localities, all in the eastern San Gabriel Mountains (fig. 4.23): at Pine Flats near Crystal Lake and Rockbound Canyon in the upper San Gabriel River watershed (Wake 1996), in San Antonio Canyon, and in the south, middle, and north forks of Lytle Creek (R. Goodman, pers. comm., 1998). A *Batrachoseps* salamander found in Waterman Canyon in the San Bernardino Mountains may also be this

species, although it has some different physical characteristics (R. Goodman, pers. comm., 1998).

The known elevation range of this salamander is from 3,800 feet to 7,800 feet (Wake 1996) and all localities are within either the Angeles or San Bernardino national forests.

Habitat: San Gabriel Mountain slender salamanders have been found in mixed hardwood-conifer forest habitats, usually near water and often associated with rocky talus slopes (Wake 1996). They typically occur under large rocks, rotting logs, downed tree limbs, and bark.

Conservation Considerations: This salamander is currently known from only a few locations, all of which are on national forest system lands in the eastern San Gabriel Mountains. Until more information is obtained on the distribution and abundance of this taxon, the few known localities warrant management attention. If it is found to be more broadly distributed, landscape-scale habitat management may suffice since its apparent niche under rocks, logs, and duff suggest it is not particularly vulnerable to existing agents of change. Mesic lower montane forests (e.g., bigcone Douglas-fir/canyon live oak) appear to be important to this species.

Tehachapi slender salamander
(Batrachoseps stebbinsi)

Status and Distribution: The Tehachapi slender salamander is a Forest Service Region 5 Sensitive Species and is state-listed as threatened. The narrow known range of this species is primarily restricted to the Piute and Tehachapi mountains of Kern County at elevations between 2,500 and 5,000 feet (Zeiner et al. 1988). There are no known locations of this species in the assessment area, but areas near the Tehachapi Mountains that contain potential habitat include the Mount Pinos/Frasier Mountain area and also the north sides of Liebre and Sawmill mountains.

Habitat: This salamander is found primarily in mixed pine-oak and riparian woodlands in moist canyons, ravines, and north-facing

slopes. It is often found in association with rocky talus slopes (Zeiner et al. 1988).

Conservation Considerations: Surveys are needed to determine if this species is present in areas of potential habitat within the assessment area that are near known populations.

California spotted owl
(Strix occidentalis occidentalis)

Status and Distribution: The California spotted owl is a Forest Service Region 5 Sensitive Species. Spotted owls occur in all of the major mountain ranges in the assessment area, although some ranges support very few pairs (fig. 4.24). They are found at elevations ranging from below 1,000 feet along the Monterey coast to approximately 8,500 feet (Stephenson 1991). A territorial species with large acreage requirements (at least 300 acres of mature forest per pair), spotted owls in southern California are clustered in disjunct mountain and foothill areas where suitable habitat exists. These clusters are surrounded by large areas of unsuitable habitat.

Habitat: Spotted owls are found in mature forests, typically where there is a dense, multi-layered canopy. Nest stands often have a well-developed hardwood understory (e.g., canyon live oak) and a conifer overstory. However, some high-elevation territories (above 6,500 feet) consist primarily or solely of conifers and some low-elevation territories (below 3,000 feet) are found in pure hardwood stands. Territory sizes vary widely depending on habitat type, with territories becoming larger in the high-elevation, conifer-dominated sites. Verner et al. (1992) and LaHaye et al. (1997) provide detailed quantitative information on the habitats occupied by spotted owls in southern California.

Conservation Considerations: Spotted owls in southern California are believed to function as a metapopulation, with separate subpopulations connected by infrequent but persistent interchange of individual owls (Noon and McKelvey 1992; LaHaye et al. 1994). The largest subpopulation is the 200-plus territories in the adjacent San Bernardino

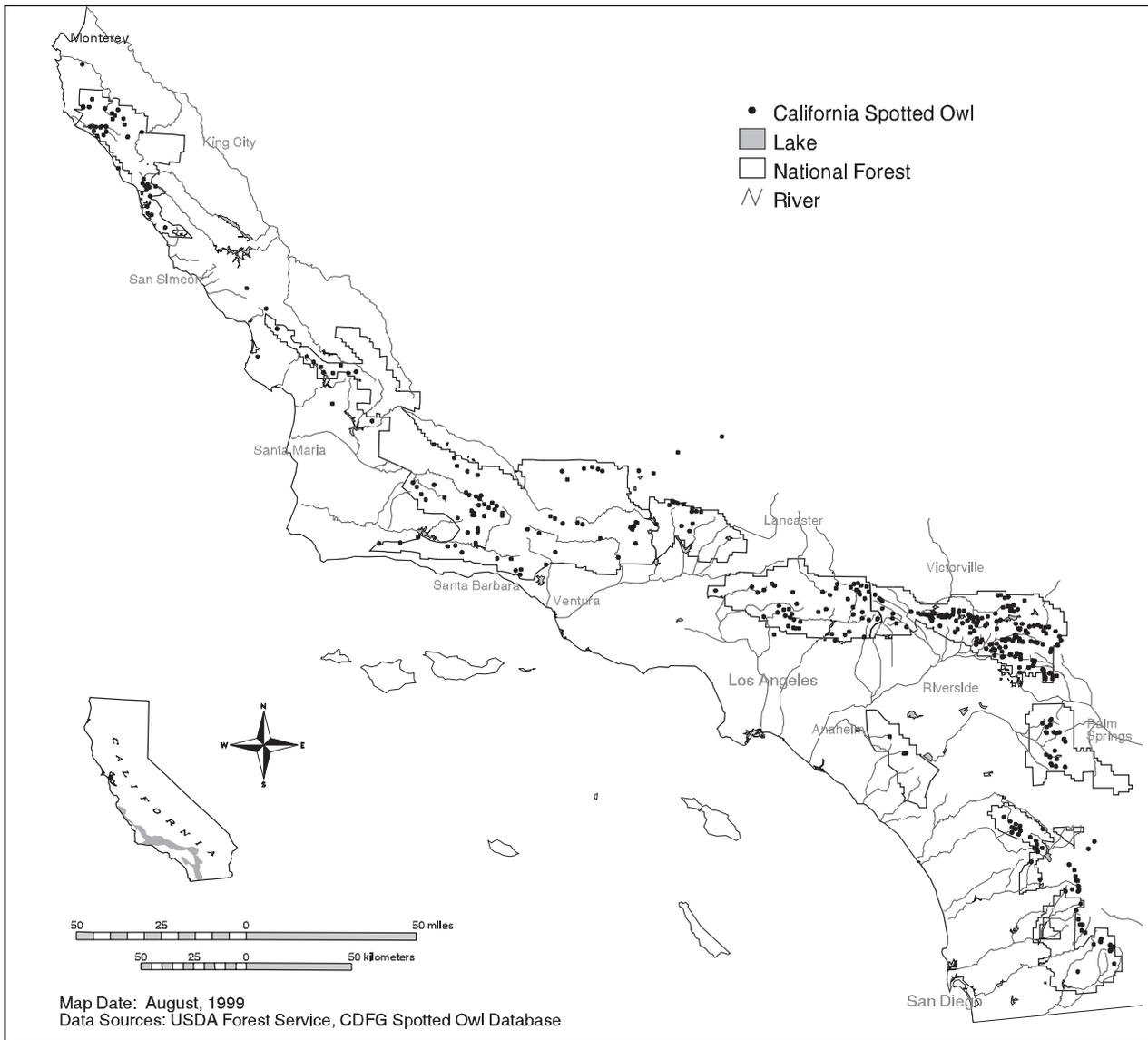


Figure 4.24. Known locations of the California spotted owl in the assessment area.

and San Gabriel mountains. Although Cajon Pass separates these two mountain ranges, there is not a major habitat discontinuity and only 6 miles separate the easternmost San Gabriel territory from the westernmost San Bernardino territory. Noon and McKelvey (1992) stress the importance of this large subpopulation as a likely source area that provides immigrants to sustain the surrounding smaller, isolated subpopulations. However, the simulation modeling results of LaHaye et al. (1994) found the southern California spotted owl metapopulation's stability to be insensitive to rates of dispersal between mountain ranges, suggesting that the subpopulations could be considered effectively isolated.

An important factor to consider is that spotted owls occupy a variety of different habitats across the assessment area. Reproductive success and survivorship rates for individual members of the population may differ, depending on which habitat type they inhabit (Pulliam et al. 1992). There is empirical evidence from the San Bernardino Mountains that spotted owl reproductive success is significantly higher in lower montane bigcone Douglas-fir/canyon live oak forests than it is in high-elevation montane conifer forests (table 4.16) (LaHaye et al. 1997). These lower elevation habitats are believed to be productive because of high woodrat densities (the owl's primary prey) in the surrounding chaparral.

They also tend to be below the snow line of most late winter/spring storms, which may reduce the impact of such weather events during the breeding season. Large, late-season storms have been shown to have a major effect on spotted owl reproductive success in northwestern California (Franklin et al. in press) and appear to have a similar effect in the Sierra Nevada (J. Verner, Pacific Southwest Research Station, pers. comm.).

The apparent high quality of low-elevation live oak and bigcone Douglas-fir dominated habitats may explain the continued persistence of small spotted owl populations in each southern California mountain range. Maintaining these restricted habitats, which are often narrow stringers of dense, mature forest on north-facing slopes and deep canyons, should be a high management priority. They are vulnerable to loss in stand-replacing fires that move in from the surrounding chaparral.

Northern pygmy owl (*Glaucidium gnoma*)

Status and Distribution: The northern pygmy owl is a local species of concern because it is rare in southern California and most known locations are within the assessment area. Garrett and Dunn (1981) report that pygmy owls frequently occur in foothill canyons and forested interior mountains of San Luis Obispo and Santa Barbara counties but become considerably rarer as you move south and east. Sighting records described by Lentz (1993) suggests pygmy owls are fairly com-

mon near Big Pine Mountain, less common around Figueroa and Pine mountains, and rare on Mount Pinos. They reportedly occur in the San Gabriel, San Bernardino, and San Jacinto mountains, although detailed information on their distribution and abundance is lacking. They occur rarely if at all in the Santa Ana Mountains, and they are described as “very rare if not now extirpated” from San Diego County (SDNHM 1998).

Habitat: Pygmy owls are found most commonly in oak-conifer and riparian-conifer woodlands, often in canyons (Garrett and Dunn 1981). They can occur from low-elevation foothill canyons up into montane conifer forests but reportedly become less common above 6,000 feet (Zeiner et al. 1990). Pygmy owls typically nest in abandoned woodpecker holes, especially those of the acorn woodpecker (Zeiner et al. 1990). They are often found near forest openings.

Conservation Considerations: Lower montane hardwood-conifer forests (e.g., bigcone Douglas-fir/Coulter pine/live oak associations) may be particularly important to this species. There are indications that these forests are declining due to an increase in stand-replacing fires (see “Fire” section in chapter 3).

Purple martin (*Progne subis*)

Status and Distribution: Purple martins occurred, at least historically, in all of the major mountain ranges in the assessment area. However, many historic localities are no longer

Table 4.16. Reproductive success of spotted owls in the San Bernardino Mountains by habitat type (from LaHaye et al. 1997).

Habitat Type	Number of nests (% successful)	Average fledglings per nest
Oak/bigcone Douglas-fir (low elevation)	42 (81%)	1.39
Conifer/hardwood (middle elevation)	21 (67%)	0.98
Mixed conifer (high elevation)	38 (76%)	0.95

occupied (Garrett and Dunn 1981; Unitt 1984). Three known nesting sites on Palomar Mountain were abandoned in the mid-1980s (R. Higson, pers. comm., 1997). They also have reportedly disappeared from most of the San Gabriel Mountains and may no longer breed there (D. Cooper, UC Riverside, in litt., 1998).

Within the Los Padres National Forest, Lentz (1993) and Lehman (1994) describe observations of purple martins on Big Pine Mountain and San Rafael Mountain in the 1980s, but it is unclear if these sites are still occupied. Nojoqui Falls County Park and the Alisal Ranch area in the Santa Ynez Valley are the most recently documented breeding sites (Lehman 1994).

In the San Jacinto Mountains, Lake Hemet and Garner Valley are historic breeding localities and there are indications that purple martins may still occur there (D. Freeman, unpubl. notes). In San Diego County, recent known sites include Palomar Observatory, Cuyamaca Peak, and Kitchen Creek Road (SDNHM 1998).

Habitat: Purple martins develop colonial nests in cavities of large trees in oak or riparian woodlands and low-elevation coniferous forests (Garrett and Dunn 1981). Nests are often located in a tall, old isolated tree or snag in open forest or woodland, frequently near a body of water (Zeiner et al. 1990).

Conservation Considerations: Competition for nest cavities from European starlings has taken a heavy toll on the purple martin (Garrett and Dunn 1981; Unitt 1984; Lehman 1994). It is also negatively affected by declines in snag densities. More information is needed on locations of active purple martin colonies in the assessment area. Occupied sites should be given site-specific attention as this species is highly vulnerable to extirpation from individual mountain ranges and the entire assessment area. Starling control in the vicinity of active nest sites is a potential habitat improvement action.

Cassin's solitary vireo **(*Vireo solitarius cassinii*)**

Status and Distribution: The Cassin's solitary vireo is a local species of concern because it is uncommon in southern California and most known breeding locations are within the assessment area. It is broadly distributed along the coastal slopes of the mountains in foothill and lower montane forests and woodlands, particularly in densely wooded canyons (Garrett and Dunn 1981). BBS results from 1980 to 1996 show solitary vireos increasing statewide at a statistically significant rate of 3.6 percent a year (Sauer et al. 1997). Results from the Forest Service riparian bird study also show an increasing trend of 10.3 percent a year in the southern California national forests.

Habitat: The Cassin's solitary vireo breeds in oak and mixed hardwood-conifer woodlands. Lentz (1993) says that this subspecies is encountered on the Los Padres National Forest in shaded areas where oaks and conifers form a canopy, often near riparian vegetation.

Conservation Considerations: Solitary vireos frequently have their nests parasitized by brown-headed cowbirds (Verner and Boss 1980; Erhlich et al. 1988). The taxonomy of solitary vireos needs to be clarified. Recent studies suggest that the Cassins and Plumbeus subspecies should be recognized as distinct species (Johnson 1995).

Animals of Montane Conifer Forest Habitats

Animals species associated with montane conifer forests that received individual consideration in this assessment include three invertebrates, six reptiles (table 4.17), nine birds, and seven mammals (table 4.18). None of these species is federally listed as threatened or endangered, which is a reflection of lower rates of habitat loss in montane areas that are predominately on public lands.

Table 4.17. Invertebrates and reptiles associated with montane conifer forests that received individual consideration. Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Montane Conifer Forest Animals of Concern <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized										(3) Vulnerability on NFs	(4) Pop. Trend	(5) Conser- vation Category
		Cleveland NF		San Bern. NF		Angeles NF		Los Padres NF						
		San Diego Rngs	Snta Ana Mts	San Jac Mts	San Bern Mts	San Gab Mts	Cas-taic Rngs	So. LP Rngs	So. SL Rng	No. SL Rng				
Invertebrates														
Bicolored rainbeetle	Low (0-30%)				y							Mod	Unkn	Landscape level
Andrew's marble butterfly	Mod (40-80%)				y							Unkn	Unkn	Landscape level
August checkerspot	Mod (> 70%)				y							Unkn	Unkn	Landscape level
Reptiles														
Sagebrush lizard	Mod (50-70%)	y		y	y	y	p	y		y		Low	Unkn	Landscape level
Southern rubber boa	Mod (30-70%)			y	y			y*				Mod	Unkn	Landscape level
Coastal mtn. kingsnake	Mod (40-70%)						y	y	p	y		Mod	Unkn	Landscape level
San Bernardino mtn. kingsnake	Mod (50-80%)			y	y	y						Mod	Unkn	Landscape level
San Diego mtn. kingsnake	Mod (40-70%)	y	y									High	Unkn	Landscape level
Mountain garter snake	Low (> 60%)				y							Low	Unkn	Landscape level

* Rubber boas near Mount Pinos are intergrades between southern and northern subspecies

Montane Conifer Invertebrates

Bicolored rainbeetle (*Pleocomma bicolor*)

Status and Distribution: The bicolored rainbeetle is a species of local concern because it is endemic to a small portion of the San Bernardino Mountains. The entire known range of this species is confined to an area extending from Rim of the World Drive (Highway 18) near the Crestline cutoff through Crestline, Bluejay, and Arrowhead City to the north shore of Lake Arrowhead (Hovore 1991). Most of this area is private land where there has been intensive recreational and housing development in the past two decades. This rainbeetle has declined and possibly has been extirpated from much of its historical range (Hovore 1991).

Habitat: We have no specific information on the habitat associations of this species. Most of the area within its small geographic range is either pine forest, mixed conifer forest, or black oak woodland.

Conservation Considerations: Information is needed on the current distribution of the species. It would be particularly useful to know the extent to which it occurs on public lands in the San Bernardino Mountains. If not well represented on existing public lands, areas known to still harbor this species should be considered for land exchanges and/or acquisitions.

Table 4.18. Birds and mammals associated with montane conifer forests that received individual consideration. Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Montane Conifer Birds & Mammals of Concern <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulnerability on NFs	(4) Pop. Trend	(5) Conser- vation Category
		Cleveland NF San Diego Rngs	Snta Ana Mts	San Bern. NF San Jac Mts	San Bern. NF San Bern Mts	Angeles NF San Gab Mts	Cas- taic Rngs	Los Padres NF So. LP Rngs	So. SL Rng	No. SL Rng			
Birds													
Sharp-shinned hawk	Low (> 60%)	w	w	y	y	y	w	p	w	y	Mod	Unkn	Landscape level
Northern goshawk	Low (60-80%)			y	y	p		y			Mod	Unkn	Site specific
Mt Pinos blue grouse	Low (> 90%)							h/p			Mod	Unkn	Site specific
Flammulated owl	Mod (40-60%)	p		y	y	y	p	y		y	High	Unkn	Landscape level
Northern saw-whet owl	Mod (> 60%)	y	p	y	y	y	p	y	p	y	Mod	Unkn	Landscape level
Williamson's sapsucker	Mod (> 60%)	w		y	y	y	w	y		w	Mod	Unkn	Landscape level
White-headed woodpecker	Mod (> 60%)	y		y	y	y	p	y	p	p	Mod	Unkn	Landscape level
Hermit thrush	Mod (> 50%)	p/w	w	p	y	y	w	y	w	y	Mod	Unkn	Landscape level
Virginia's warbler	Mod (> 60%)	t	t	t	y	y	t	t	t	t	Low	Unkn	Landscape level
Mammals													
Long-eared myotis	Mod (> 50%)	y		y	y	y	p	y		p	Unkn	Unkn	Landscape level
Fringed myotis	Mod (> 50%)	y		y	y	y	p	y		p	Unkn	Unkn	Landscape level
Long-legged myotis	Mod (> 50%)	y		y	y	y	p	y		p	Unkn	Unkn	Landscape level
Golden-mantled ground squirrel	Mod (> 70%)				y						Low	Unkn	Landscape level
San Bernardino flying squirrel	Mod (> 60%)			h/p	y	p					Mod	Unkn	Landscape level
San Bernardino white- eared pocket mouse	Low (> 60%)				h/p	p					Unkn	Unkn	Site specific
Porcupine	Low (> 60%)				y	h/p					Unkn	Unkn	Landscape level

¹ based on USFS riparian point count results

² Bell's vireo is increasing regionwide, but decreasing on national forest service lands

**Andrew's marble butterfly
(*Euchloe hyantis andrewsi*)**

Status and Distribution: The Andrew's marble is a former C2 Candidate for federal listing. Its geographic range is restricted to the

San Bernardino Mountains (Murphy 1990). It is found at elevations above 5,000 feet near Lake Arrowhead and Big Bear Lake, and in other locations across the crest and north slope. Recent records include Baldwin Lake,

Sugarloaf Mountain, and Wild Horse Meadow (Murphy 1990).

Habitat: The Andrew's marble is found primarily in pine and mixed conifer forests. The larval host plants for this subspecies are *Streptanthus bernardinus* and *Arabis holboellii* (Murphy 1990).

Conservation Considerations: No threats have been identified for this species. Murphy (1990) considered the Andrew's marble to be a category D taxon, which is defined as being neither in danger of extinction nor likely to be. It is not clear what this determination is based upon, other than that the Andrew's marble appears to be well distributed and largely on national forest system lands.

**August checkerspot butterfly
(*Euphydryas editha augustina*)**

Status and Distribution: This high-elevation relative of the quino checkerspot is a species of local concern because it is endemic to the San Bernardino Mountains. The August checkerspot has been found above 8,000 feet on Sugarloaf Peak and along forest roads and meadows from 5,000 to 7,000 feet near Running Springs, Moonridge, Cedarpines Park, Wild Horse Creek, and Fawnskin (Emmel and Emmel 1973).

Habitat: The August checkerspot occurs in pine and mixed conifer forests. *Collinsia childii* is a known host plant and it is reported that *Castilleja* species are also used (Emmel and Emmel 1973).

Conservation Considerations: No threats have been identified for this species. Similar in known range and habitat to the Andrew's marble, the August checkerspot probably would be similarly described as being neither in danger of extinction nor likely to be.

Montane Conifer Reptiles

Sagebrush lizard (*Sceloporus graciosus*)

Status and Distribution: The sagebrush lizard is considered a species of local concern because it is patchily distributed and restricted to high elevations (primarily above 4,000 feet). Two subspecies occur in the assessment area.

The southern sagebrush lizard, *S. g. vandenburgianus*, extends from near Mount Pinos south to the Sierra San Pedro Martir in Baja California. The western sagebrush lizard, *S. g. gracilis*, occurs in the Mount Pinos region and extends north into the Sierra Nevada and along the central and northern California coast (Censky 1986).

S. g. gracilis has a very patchy distribution in small islands of upper-elevation habitat that lie within the Los Padres National Forest. Occupied areas include Mount Pinos, Pine Mountain, Big Pine Mountain, Sierra Madre Mountains, and Cone Peak in the northern Santa Lucia Range (J. Copp, Cal. Academy of Sciences, in litt.). It appears to be absent from the low-elevation southern Santa Lucia Range (Censky 1986).

Fisher and Case (1997) report that *S. g. vandenburgianus* was the most frequently captured species in pitfall trap arrays in the vicinity of Big Bear Lake in the San Bernardino Mountains and the second most frequently captured species at the James Reserve in the San Jacinto Mountains. It also occurs in the San Gabriel Mountains and the higher-elevation mountains in San Diego County.

Habitat: Sagebrush lizards inhabit a variety of montane vegetation types including mixed conifer forest, black oak woodlands, montane chaparral, and pinyon-juniper woodlands (Zeiner et al. 1988). In general, they tend to be in open habitats that receive considerable sunlight.

Conservation Considerations: No threat factors have been specifically identified for sagebrush lizards, other than the fact that their distribution in southern California is limited and highly disjunct. They should be adequately conserved through landscape-scale habitat management.

**Southern rubber boa
(*Charina bottae umbratica*)**

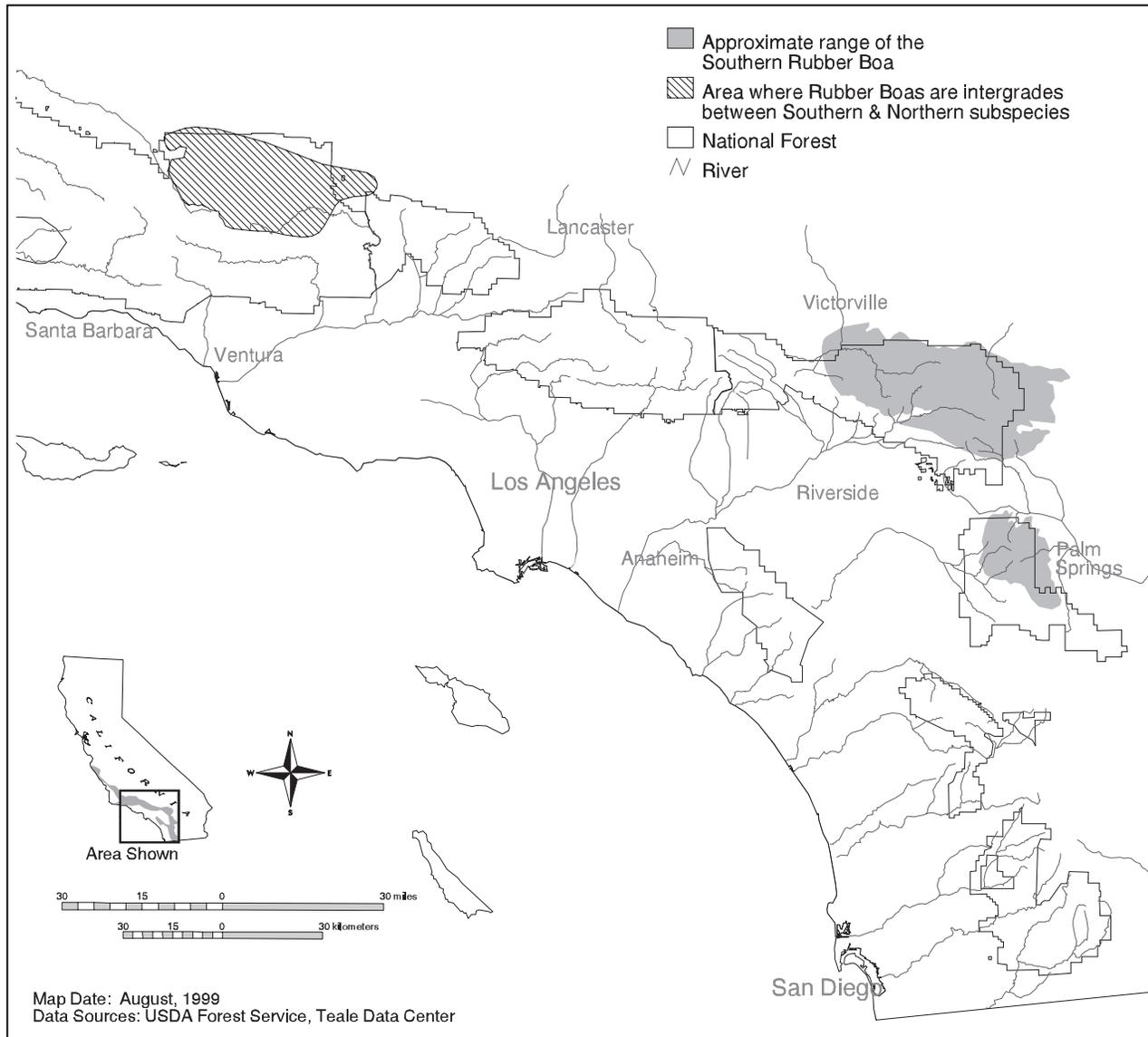
Status and Distribution: The southern rubber boa is state listed as threatened and is a Forest Service Region 5 Sensitive Species. It is found in the San Bernardino and San Jacinto

mountains, at elevations between 4,900 and 7,900 feet (fig. 4.25) (Stewart 1988). There are approximately eight known localities in the San Jacinto Mountains (including Fern Valley, Dark Canyon, Devil's Slide trail, and the North Fork, San Jacinto River near the Highway 243 crossing) and thirty-five to forty known locations in the San Bernardino Mountains (Keasler 1981; Loe 1985; Stewart 1988). Twenty-six of the localities in the San Bernardino Mountains are in a 10-mile-long strip between Twin Peaks on the west and Green Valley on the east (Stewart 1988). Other locations include Barton Flats and north-facing slopes immediately south of Big Bear Lake.

Isolated populations of rubber boas have also been found in the southern Los Padres ranges on Mount Pinos, Mount Abel, and Alamo Mountain (Alten and Keasler 1978). Morphological and electrophoretic analysis of specimens from these mountains show them to be intergrades between the southern rubber boa and the northern rubber boa (*C. b. bottae*) which occurs in the Sierra Nevada range (G. Stewart, Cal Poly Pomona, in litt.).

Habitat: The southern rubber boa usually occurs in moist woodlands and coniferous forests. It tends to be associated with vegetatively productive sites, usually with deep, well-developed soils (Loe 1985). It is a burrower

Figure 4.25. The approximate range of the southern rubber boa.



and also commonly makes use of rock outcrops as hibernacula. Large downed logs and a well-developed litter/duff layer are considered important for cover and for maintaining high soil moisture. Soil moisture may be a limiting factor for rubber boas, as they are usually found during summer months in damp draws near springs, seeps, and streams (Loe 1985).

Conservation Considerations: The rubber boa is vulnerable to habitat loss from development on private land, water diversion or extraction, and land use activities that destroy soil or surface cover. The majority of known rubber boa locations are on private lands. The lush, mesic forests that are prime habitat for this species tend to be highly interspersed with private lands (e.g., around Lake Arrowhead and Idyllwild). Where such forest conditions occur on public land, care should be taken to maintain mesic conditions, down logs, and leaf cover.

California mountain kingsnake (*Lampropeltis zonata*)

Status and Distribution: Three separate subspecies of mountain kingsnakes occur within the assessment area. The San Diego subspecies, *L. z. pulchra*, is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. It occurs in the mountains of San Diego County (Laguna, Cuyamaca, Volcan, Hot Springs, and Palomar), and the Santa Ana and Santa Monica mountains (Jennings and Hayes 1994). Although most common in montane forests, *L. z. pulchra* is also found at low elevations in foothill canyons (McGurty 1988). There are scattered historic reports of this subspecies near sea level along the coast, but it was not detected during recent reptile surveys on Camp Pendleton, the largest remaining stretch of undeveloped coastal habitat in southern California (Holland and Goodman 1998).

The San Bernardino subspecies, *L. z. parvirubra*, is also a Forest Service Sensitive Species and a California Species of Special Concern. It occurs in the San Jacinto, San Bernardino, and San Gabriel mountains. The documented elevation range for this subspe-

cies extends from 1,200 feet in Eaton Canyon (San Gabriel Mountains) to 8,100 feet on Mount San Jacinto (Jennings and Hayes 1994). Finally, the coastal mountain kingsnake, *L. z. multifasciata*, which is not identified as a sensitive species, is found in the southern Los Padres ranges and the northern Santa Lucia Range (Zweifel 1975).

Habitat: In southern California, mountain kingsnakes appear to be most common in relatively open stands of ponderosa pine, Jeffrey pine, Coulter pine, and/or black oak at elevations between 4,500 and 6,500 feet (McGurty 1988). They occur at higher elevations as well but are less common. Mountain kingsnakes also occur at lower elevations below the montane conifer belt, where they are found in riparian or mesic oak woodlands characterized by sycamore, cottonwood, and coast live oak. This is the type of habitat where mountain kingsnakes are primarily found in the Santa Ana and Santa Ynez mountains (McGurty 1988; Fisher and Case 1997). Well-illuminated canyons with rocky outcrops in association with bigcone Douglas-fir are also good habitat.

Partially shaded rock outcrops appear to be an important microhabitat element for refugia and basking sites (McGurty 1988). Large downed logs also may be important (Holland and Goodman 1998).

Conservation Considerations: The biggest threat to mountain kingsnakes is poaching by collectors and the destruction of microhabitat caused by this activity (e.g., dismantling rock outcrops and shredding down logs) (Jennings and Hayes 1994). There is a significant illegal commercial trade in this attractive snake that creates a demand for poaching. McGurty (1988) documents a decline in the abundance of mountain kingsnakes on Laguna Mountain in San Diego County that he attributes to illegal collecting.

Mountain garter snake (*Thamnophis elegans elegans*)

Status and Distribution: The mountain garter snake is a taxon of local concern because

it occurs only in the San Bernardino Mountains (Fitch 1983). It is found at elevations above 4,900 feet (Fisher and Case 1997b). Information is scarce on the status of this subspecies; we found no locality information for it.

Habitat: Although not as aquatic in habit as the two-striped garter snake, the mountain garter snake is typically found in the vicinity of permanent or semi-permanent sources of water in a variety of habitats (Zeiner et al. 1988).

Conservation Considerations: More information is needed on the distribution and abundance of this snake in the San Bernardino Mountains. The most mesic portion of this range is also where private land is concentrated (i.e., Crestline to Lake Arrowhead), so it is possible that the mountain garter snake is poorly represented on public lands.

Montane Conifer Birds

Sharp-shinned hawk (*Accipiter striatus*)

Status and Distribution: The sharp-shinned hawk is a California Species of Special Concern. It occurs regularly in winter and as a migrant throughout the assessment area, but nesting has been recorded only in the northern Santa Lucia, San Gabriel, San Bernardino, and San Jacinto mountains. It is not known if nesting occurs regularly in these mountains, although summer siting records in the San Bernardino and San Jacinto mountains are common enough to suggest it does (Garrett and Dunn 1981). Reported historic nesting localities include Icehouse Canyon in the San Gabriel Mountains and Lake Arrowhead and Big Bear Valley in the San Bernardino Mountains (Garrett and Dunn 1981).

Habitat: Sharp-shinned hawks nest in coniferous forests often within riparian areas or on north-facing slopes. Nest stands are typically dense patches of small-diameter trees which are cool, moist, well shaded, with little ground cover, and near water (Zeiner et al. 1990). These stands are often in close proximity to open areas.

Conservation Considerations: More information is needed on where sharp-shinned hawks nest, particularly in the San Bernardino and San Jacinto mountains. The breeding population in the southern California mountains is likely small and could easily be extirpated by cumulative disturbances near nesting sites. Large stand-replacing fires are a significant threat, but this hawk's preference for early-seral forest stands indicates it would probably benefit from small-scale disturbances that spur regeneration.

Northern goshawk (*Accipiter gentilis*)

Status and Distribution: The northern goshawk is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. Rare in southern California, goshawks have been observed during the breeding season only on Mount Abel, Mount Pinos, and in the San Bernardino and San Jacinto mountains (fig. 4.26) (Garrett and Dunn 1981; Lentz 1993). A pair with two young were observed in the vicinity of Mount Abel in June 1989 and an adult and one immature bird were observed at Mount Pinos in July 1991 (Lentz 1993). Mid-summer localities in the San Jacinto Mountains include Tahquitz Valley, Willow Creek, Skunk Cabbage, Humber Park, and Lake Fulmor (Garrett and Dunn 1981). Breeding has not been documented in the San Bernardino Mountains, although goshawks have been observed near Big Bear Lake, Arrowbear (Garrett and Dunn 1981), and on Fish Creek.

Habitat: Goshawks can occur in a variety of coniferous forest communities, including ponderosa and Jeffrey pine, mixed conifer, white fir, and lodgepole pine. Nest stands are typically composed of large, densely spaced trees, with higher canopy closure and more open understories than the surrounding landscape (Woodbridge and Detrich 1994). When foraging, goshawks are forest generalists, using a variety of forest types, structural conditions, and successional stages (Reynolds et al. 1992).

Large snags and downed logs are believed to be important habitat elements because they

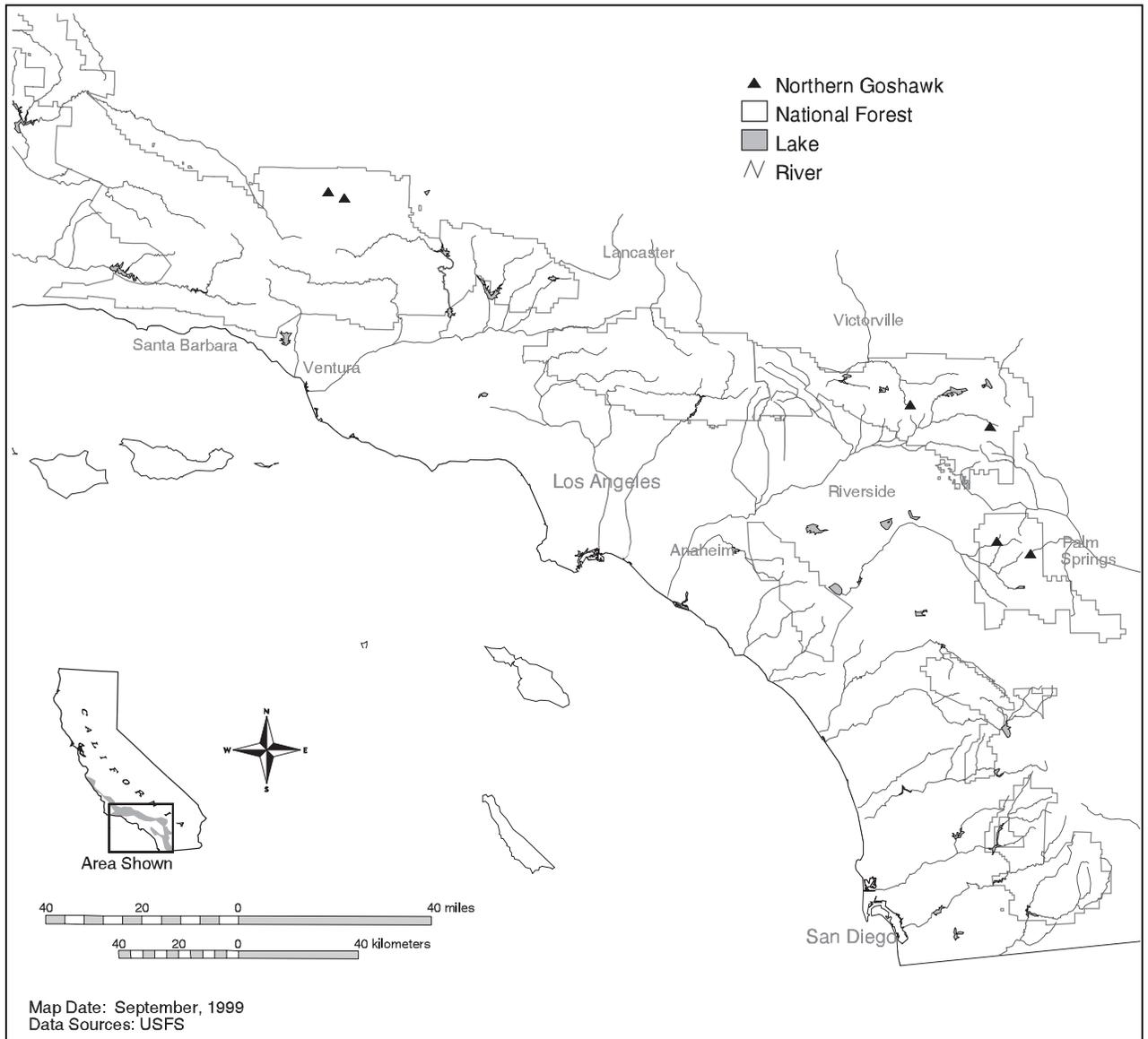


Figure 4.26. Documented locations of northern goshawk in the assessment area.

increase the abundance of small- to medium-sized birds and mammals that goshawks eat (Reynolds et al. 1992). Goshawks have large area requirements; in the southern Cascade Mountains of northern California, goshawk territories were spaced at intervals of one per 1,500 to 2,400 acres of conifer forest habitat (Woodbridge and Detrich 1994).

Conservation Considerations: More information is needed on where goshawks nest in the southern California mountains. The breeding population is clearly small, probably fewer than thirty pairs, and could easily be extirpated by impacts to nesting sites. Efforts to maintain the integrity of these sites cannot be made until we know where they are. Protec-

tion of mature conifer forest habitats from stand-replacing fire will be important to maintaining goshawks in this region.

Mount Pinos blue grouse (*Dendragapus obscurus*)

Status and Distribution: The Mount Pinos blue grouse is a species of local concern because of its extremely localized distribution that lies entirely within the assessment area. It is known only from areas above 6,500 feet in the Mount Pinos/Mount Abel area, with the exception of one outlying record of grouse chicks from Big Pine Mountain in the 1930s (Lentz 1993). Dicky and van Rossem (1923) described the grouse of the southern Sierra

Nevada and Mount Pinos as a distinct subspecies, *D. o. howardi*, citing eight specimens from the area.

It is unclear if blue grouse still occur in this region. Lentz (1993) describes several unconfirmed sightings near Sawmill Mountain (just west of Mount Pinos) in the early 1990s, but she says the last verified records are from 1976 and 1979. If they do still occur in the area, the population appears to be very small.

Habitat: Blue grouse inhabit high-elevation coniferous forests and especially favor dense stands of firs on north-facing slopes (Garrett and Dunn 1981).

Conservation Considerations: Surveys are needed to determine if blue grouse still occur in the Mount Pinos/Mount Abel area. The persistence of grouse in this area is probably most threatened by the limited amount of suitable habitat and the stochastic problems faced by small, isolated populations. Land use activities do not appear to be a threat. Most of the area is within the Chumash Wilderness Area and the type of dispersed recreational activity occurring there should not appreciably impact the grouse population.

Flammulated owl (*Otus flammeolus*)

Status and Distribution: The flammulated owl is a species of local concern because its breeding distribution in southern California is patchy and restricted to montane forests within the assessment area. It nests at elevations between 5,500 and 8,200 feet primarily in the San Gabriel, San Bernardino, and San Jacinto mountains (fig. 4.27) (Winter 1974; Garrett and Dunn 1981). A few nest in the Mount Pinos area and possibly on Big Pine Mountain (Lentz 1993). They also occur down to 4,000 feet in the northern Santa Lucia Range. In the San Diego ranges, flammulated owls are occasionally observed in summer in the Palomar, Cuyamaca, or Laguna mountains, but nesting has not been documented (Unitt 1984; SDNHM 1998).

Recent surveys have detected fifteen to twenty-five flammulated owl locations in the

San Bernardino Mountains and five to ten locations in the San Jacinto Mountains (R. McKernan, SBNHM, unpubl. data).

Habitat: Flammulated owl breeding habitat in southern California typically consists of open, mature Jeffrey or ponderosa pine forests intermixed with black oak (Garrett and Dunn 1981). The owls occur less frequently in white fir dominated stands (Zeiner et al. 1990) and probably only where at least some large pines are present (Hayward and Verner 1994). Flammulated owls are typically found in xeric mid-slope or ridgetop forests that have an open, park-like quality. They are secondary cavity nesters, and black oaks may be important sources of suitable cavities for them (Marcot and Hill 1980).

Conservation Considerations: Open, mature pine forests have declined in extent in the mountains of southern California due to historic logging practices, reduced fire frequencies, and the development associated with expanding mountain communities. The current lack of low- to moderate-intensity understory fires in montane conifer forests is causing a shift in species composition away from pines and black oak and towards white fir and incense cedar (see "Fire" section in chapter 3). The flammulated owl, perhaps more than any other species, is imperiled by this trend.

Northern saw-whet owl (*Aegolius acadicus*)

Status and Distribution: The northern saw-whet owl is a local species of concern because its breeding population in southern California is small and primarily restricted to montane conifer forests. However, it does have a fairly wide elevation range, extending from over 8,000 feet down to almost 3,000 feet (SDNHM 1998), which may explain why it's more widely distributed than the flammulated owl.

Saw-whet owls occur in the northern Santa Lucia Mountains and on Figueroa, Big Pine, Pine, and Pinos mountains in the southern Los Padres (Lentz 1993; Lehman 1994). They also nest in the San Gabriel, San Bernardino,

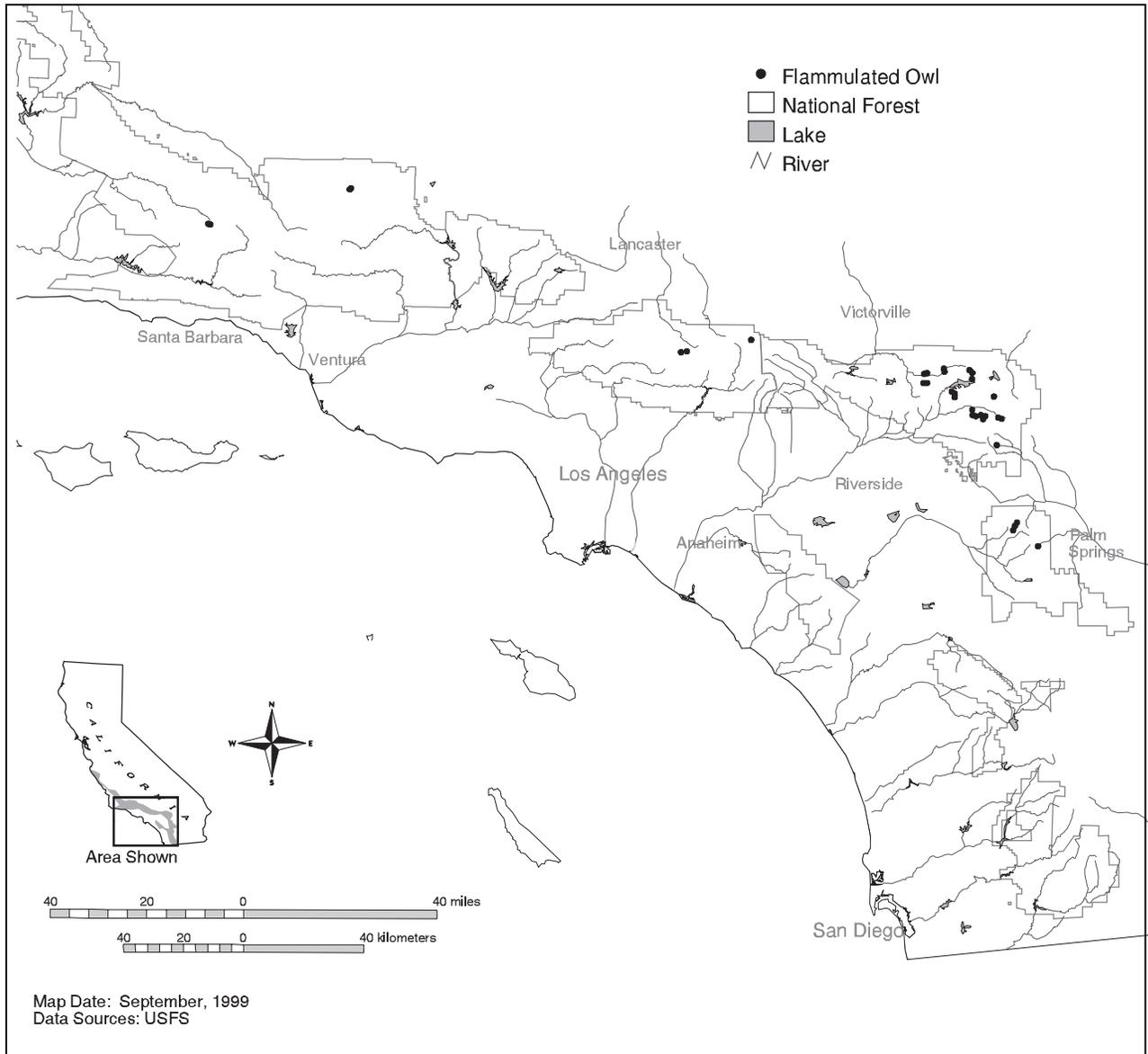


Figure 4.27. Documented locations of flammulated owls in the assessment area.

and San Jacinto mountains, and the higher mountains of San Diego County (Garrett and Dunn 1981; Unitt 1984).

Habitat: Saw-whet owls most commonly breed in dense pine and fir forests that have an oak understory (Garrett and Dunn 1981; Lehman 1994).

Conservation Considerations: Stand-replacing wildfire in dense montane conifer forests is probably the biggest threat to saw-whet owls.

Williamson's sapsucker
(*Sphyrapicus thyroideus*)

Status and Distribution: The Williamson's sapsucker is a local species of

concern because its breeding population in southern California is small, highly disjunct, and restricted to high elevation forests. On the Los Padres National Forest, Williamson's sapsuckers nest in small numbers on Mount Pinos and Mount Abel, and possibly on Pine Mountain (Lentz 1993). They also breed in the San Gabriel, San Bernardino, and San Jacinto mountains. The greatest concentration of breeding birds is in the San Bernardino Mountains on the north-facing slopes behind Big Bear Lake and in the vicinity of Mount San Gorgonio (Garrett and Dunn 1981). Williamson's sapsuckers are more widely distributed in montane conifer forests during the

winter. There is no local information on population trends for this species.

Habitat: Williamson's sapsuckers breed at high elevations in coniferous forests dominated by white fir or lodgepole pine (Garrett and Dunn 1981). In the southern California mountains, they are typically found on north-facing slopes.

Conservation Considerations: Breeding habitat for Williamson's sapsuckers is probably most threatened by the risk of large, stand-replacing fire. Habitat in each occupied mountain range is very limited in extent and vulnerable to loss in a single, large fire event.

White-headed woodpecker (*Picoides albolarvatus gravirostris*)

Status and Distribution: The white-headed woodpecker is a local species of concern because its breeding population in southern California is small and restricted to montane conifer forests. Southern California populations of this species are also considered to be a distinct, endemic subspecies (Kratzer 1992). The white-headed woodpecker occurs in all of the mountain ranges that contain montane conifer forests. There is no local information on population trends for this species.

Habitat: White-headed woodpeckers are found in mixed conifer forests dominated by large-coned pines such as Coulter, sugar, Jeffrey and ponderosa; they range only marginally into associations dominated by white fir or lodgepole pine (Garrett and Dunn 1981).

Conservation Considerations: Similar to those described for the flammulated owl. White-headed woodpeckers are closely associated with mature pine trees, which appear to be declining in many areas of southern California's mountains.

Hermit thrush (*Catharus guttatus*)

Status and Distribution: The hermit thrush is a local species of concern because its breeding population in southern California is small, disjunct, and primarily restricted to high-elevation conifer forests. It does nest at

relatively low elevations in the northern Santa Lucia Mountains, but elsewhere breeds mainly above 6,000 feet. Small breeding populations exist in the higher mountains of the southern Los Padres. The thrush is most numerous in the San Gabriel and San Bernardino mountains but also probably breeds in the San Jacinto Mountains (Garrett and Dunn 1981). In San Diego County there are only four breeding-season records, one each on Palomar, Hot Springs, Volcan, and Cuyamaca mountains (SDNHM 1998). It is considerably more widespread in winter.

Habitat: Hermit thrushes in southern California breed primarily in forests dominated by white fir. They are usually found on steep, north-facing slopes (Garrett and Dunn 1981).

Conservation Considerations: Stand-replacing wildfire in dense montane conifer forests is probably the biggest threat to hermit thrushes. Otherwise, the densification of forest stands caused by the exclusion of low-to moderate-intensity fires is probably increasing the amount of suitable habitat for this species.

Virginia's warbler (*Vermivora virginiae*)

Status and Distribution: The Virginia's warbler is a California Species of Special Concern and an extremely rare breeder in southern California. Within the assessment area, breeding has been documented only in the San Gabriel and San Bernardino mountains. The warbler has been observed in the summer in the Blue Ridge area on the northeastern end of the San Gabriel Mountains (D. Cooper, UC Riverside, in litt.), and at 6,900 feet along Arrastre Creek and at 6,000 feet along the South Fork of the Santa Ana River in the San Bernardino Mountains (Johnson and Garrett 1974).

Habitat: In the breeding season Virginia's warblers occupy brushy areas (e.g., mountain mahogany, manzanita, and serviceberry) within arid coniferous forest (Garrett and Dunn 1981).

Conservation Considerations: More information is needed on the breeding

distribution of this species in the assessment area. However, the habitats occupied by Virginia's warblers are not highly vulnerable to existing land use activities.

Montane Conifer Mammals

Long-eared myotis bat (*Myotis evotis*)

Status and Distribution: The long-eared myotis was a C2 candidate species for federal listing before that designation was discontinued. Its distribution in southern California appears to be restricted to high-elevation habitats. This bat was found in the assessment area at fifteen of seventy-six sites surveyed for bats from 1996 to 1998 (Simons et al. in prep.). Localities include Indian Creek (at Bluff Camp) and Pine Springs (north of Cuddy Valley) on the Los Padres National Forest; Dorr Canyon Spring, Islip Saddle, and Big Rock Campground on the Angeles National Forest; Arrastre Creek, Holcomb Valley, Alpine Canyon, and Coon Creek on the San Bernardino National Forest; and the Laguna and Cuyamaca mountains within the Cleveland National Forest and adjoining Cuyamaca Rancho State Park. Long-eared myotis bats were found only at elevations above 4,000 feet and most were in conifer forests.

Habitat: Long-eared myotis bats can occur in a variety of habitats, but are usually associated with coniferous forests. They roost under exfoliating tree bark, in tree hollows, caves, mines, cliff crevices, and rocky outcrops (Vonhof and Barclay 1996). They also sometimes roost in buildings and under bridges.

Conservation Considerations: Protection of conifer forest habitats from stand-replacing fire will be important to maintaining long-eared myotis populations in the southern California mountains. The ability of this species to roost in a wide variety of sites may help reduce its vulnerability to human activities.

Fringed myotis bat (*Myotis thysanodes*)

Status and Distribution: The fringed myotis was a C2 candidate species for federal listing before that designation was discontinued. Its distribution in southern California

appears to be restricted to high-elevation habitats. This bat was found in the assessment area at ten of seventy-six sites surveyed for bats from 1996 to 1998 (Simons et al. in prep.). Localities include Frazier Mountain and Pine Springs (north of Cuddy Valley) on the Los Padres National Forest, Buckhorn and Big Rock campgrounds on the Angeles National Forest, Arrastre Creek on the San Bernardino National Forest and Laguna Mountain on the Cleveland National Forest. Fringed myotis bats were found only at elevations above 4,600 feet, primarily in montane conifer forests but also in pinyon-juniper woodland.

Habitat: Fringed myotis bats reportedly occur in a wide variety of habitats but are most commonly found in dry pine or mixed conifer forests and in pinyon-juniper woodlands. Caves, buildings, mine shafts, rock crevices in cliff faces, trees, and bridges are used for maternity and night roosts, while hibernation has only been documented in buildings and mines (Bradley and Ports 1998). On Laguna Mountain, these bats were observed roosting in cliff crevices along the eastern escarpment (Miner and Brown 1996).

Conservation Considerations: Same as those described for the long-eared myotis, with the addition that abandoned mines may provide important hibernacula for this species and efforts are needed to identify mines that are used and protect them from human disturbance.

Long-legged myotis (*Myotis volans*)

Status and Distribution: The long-legged myotis was a former C2 candidate species for federal listing before that designation was discontinued. Its distribution in southern California appears to be restricted to high-elevation habitats. This bat was found in the assessment area at twelve of seventy-six sites surveyed for bats from 1996 to 1998 (Simons et al. in prep.). Localities include Frazier Mountain and Chief Peak (just north of Ojai) on the Los Padres National Forest; Dorr Canyon Spring and Buckhorn and Big Rock campgrounds on the Angeles National Forest;

Big Bear Lake Dam and Holcomb, Deep, and Arrastre creeks on the San Bernardino National Forest; and Laguna Mountain and Lost Valley (north of Hot Springs Mountain) on the Cleveland National Forest. All but one of the locations where long-legged myotis bats were found were at elevations above 4,500 feet.

Habitat: The long-legged myotis is primarily a bat of coniferous forests but also occurs seasonally in riparian and desert habitats. It uses abandoned buildings, cliff crevices, exfoliating tree bark, and hollows within snags as summer day roosts; caves and mine tunnels as hibernacula (Bogan et al. 1998c).

Conservation Considerations: Same as those described for the fringed myotis.

Golden-mantled ground squirrel (*Spermophilus lateralis*)

Status and Distribution: The golden-mantled ground squirrel is a local species of concern because in southern California it is found only in the San Bernardino Mountains. The population in these mountains is considered to be a distinct subspecies, *S. l. bernardinus* (Bartels and Thompson 1993). It ranges in elevation from approximately 6,000 feet to over 10,000 feet (Williams 1986).

Habitat: Golden-mantled ground squirrels inhabit a wide variety of montane habitats from the upper edge of the pinyon belt to above timberline. They are most common in open, well-illuminated forests with a mix of tall trees, brush, and open ground supporting herbaceous plants (Williams 1986; Bartels and Thompson 1993).

Conservation Considerations: This species does not appear to be sensitive to land use activities; it is typically common around campgrounds and buildings and invades logged timber stands (Bartels and Thompson 1993). It could be negatively affected by the trend toward increasingly dense forests, but the golden-mantled ground squirrel population in the San Bernardino Mountains seems to be large and well distributed in a variety of plant communities.

San Bernardino flying squirrel (*Glaucomys sabrinus californicus*)

Status and Distribution: The San Bernardino flying squirrel is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. It occurs in the San Bernardino Mountains and, at least historically, in the San Jacinto Mountains. Williams (1986) lists its elevation range as between 5,200 and 8,500 feet. Flying squirrels are preyed upon by spotted owls, and the best information we have on the distribution of this squirrel comes from an analysis of spotted owl pellets which were collected throughout the San Bernardino Mountains (fig. 4.28) (W. LaHaye, unpubl. data). These data suggest that flying squirrels are widespread within the general elevational range reported by Williams.

Grinnell and Swarth (1913) captured a single flying squirrel near Idyllwild in the San Jacinto Mountains, and there reportedly are several other old museum specimens from this range (Williams 1986). However, there have been no recent sightings. Analysis of a substantial number of owl pellets from the San Jacinto Mountains did not turn up any flying squirrel remains (W. LaHaye, unpubl. data). Williams (1986) suggested that flying squirrels were probably present in the San Gabriel Mountains as well, but there is no documented evidence to support that contention.

Habitat: The San Bernardino flying squirrel is known from mid- to upper-elevation coniferous forest habitats. Distributional information from spotted owl pellets indicates that flying squirrels do not inhabit lower montane bigcone Douglas-fir/canyon live oak forests. Flying squirrels use cavities in large trees, snags, and logs for cover. Habitats are typically mature, dense conifer forest, particularly those containing white fir, in close proximity to riparian areas (Zeiner et al. 1990b).

Conservation Considerations: The apparent disappearance of flying squirrels from the San Jacinto Mountains and their limited distribution in upper elevation forests give rise to concerns about their vulnerability in the San Bernardino Mountains. They appear to

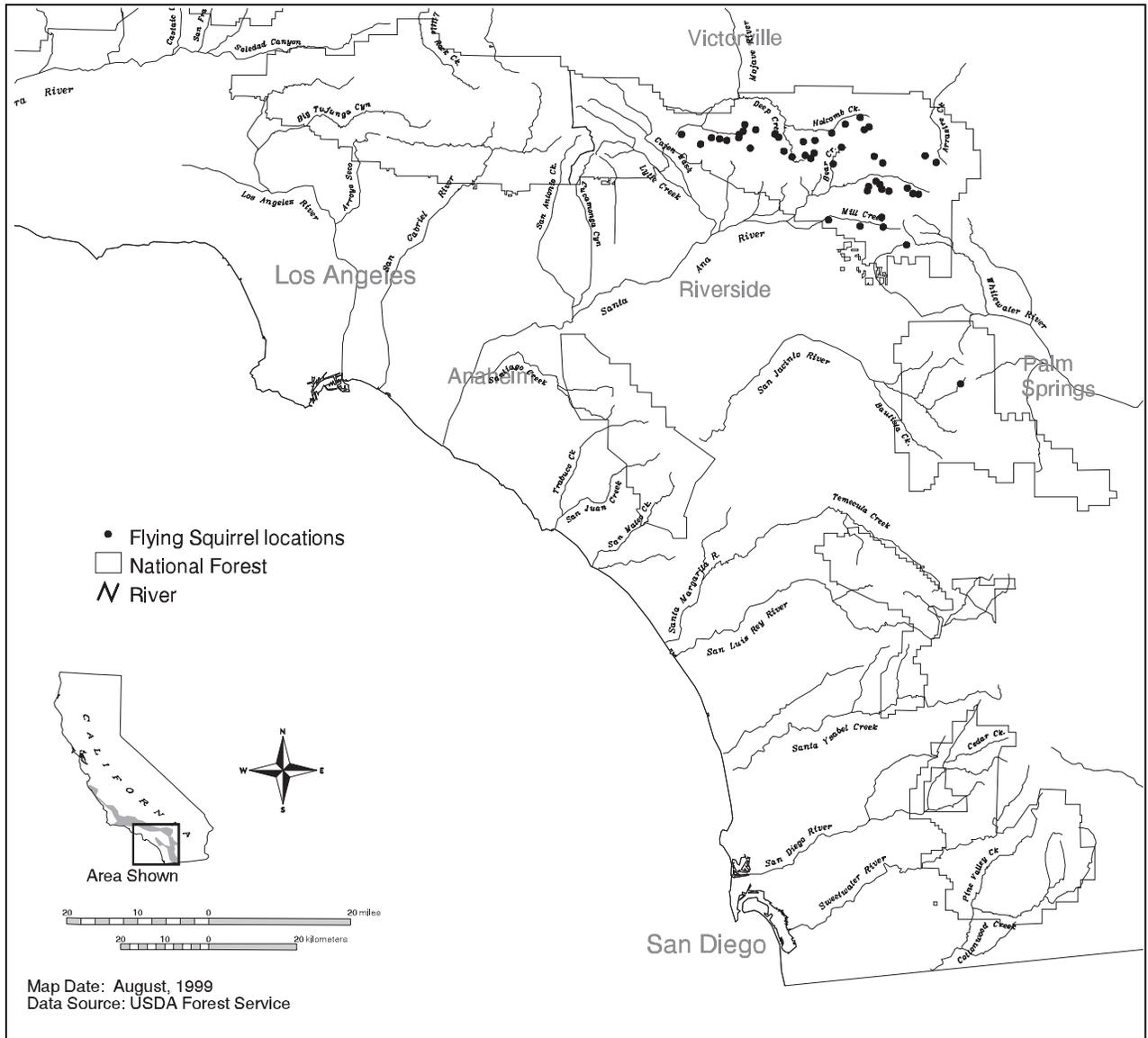


Figure 4.28. The distribution of flying squirrels in the San Bernardino Mountains, based primarily on their occurrence in spotted owl pellets.

still be widespread in the San Bernardino Mountains, but essentially nothing is known about their population dynamics or threat factors. Flying squirrels are often observed using bird feeders around low-density developments in heavily forested areas such as organizational camps and cabins, but it is unclear if they successfully inhabit higher-density residential areas.

An important question is how adept are flying squirrels at dispersing through areas of unsuitable habitat to maintain populations in suitable, but fragmented, areas. They have evolved with a naturally fragmented habitat pattern in the San Bernardino Mountains, but

it is unclear what effect, if any, increasing developments on private lands and habitat modifications on public lands (e.g., ski area developments) are having on the squirrel's distribution. This species may respond positively to increases in white fir density resulting from recent fire exclusion, but large stand-replacing fires have the potential to dangerously reduce suitable habitat and isolate populations. Surveys are needed in the San Jacinto Mountains to more conclusively determine its status there.

San Bernardino white-eared pocket mouse
(*Perognathus alticolus alticolus*)

Status and Distribution: The San Bernardino white-eared pocket mouse is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. Known localities of this species are all from the vicinity of Strawberry Peak and Little Bear Valley in the western San Bernardino Mountains at elevations between 5,400 and 5,800 feet (Williams 1986; Best 1994). These are old museum collections; the white-eared pocket mouse has not been collected since 1934 despite extensive surveys to relocate it in the late 1970s and early 1980s (Sulentic 1983; Williams 1986).

Habitat: Little is known, but historic white-eared pocket mouse localities were in open pine forests that contained bracken fern (Best 1994). Williams (1986) suggests that white-eared pocket mice may occur in sagebrush, pinyon-juniper woodlands, and open pine forests on the north side of the San Bernardino and possibly the San Gabriel mountains.

Conservation Considerations: Surveys are needed to determine the current status and distribution of this species within the assessment area. This taxon is endemic to the San Bernardino Mountains, yet there are no recent observations of it.

Porcupine (*Erethizon dorsatum*)

Status and Distribution: The porcupine is a species of local concern because it is rare in southern California and most known locations are within the assessment area. The distribution of porcupines in the assessment area is somewhat of a mystery. Range maps in Zeiner et al. (1990b) suggest they inhabit the northern and southern Santa Lucia Ranges, the southern Los Padres ranges, and the San Gabriel and San Bernardino mountains. However, maps in Ingels (1965) and Dodge (1982) suggest they are only in the San Bernardino and possibly the San Gabriel mountains.

Documented sightings of porcupines in these mountains are very rare. Vaughan's (1954) thorough report on mammalian fauna

in the San Gabriel Mountains makes no mention of this species. Glenn Stewart (Cal Poly Pomona, in litt.) saw a road kill porcupine in the San Bernardino Mountains in the 1960s. There are also thirdhand reports of a road kill being found in the San Gabriel Mountains. In 1989, one of the authors (J. Stephenson) observed lodgepole pines stripped of bark, in a fashion that is often indicative of porcupine's presence (Dodge 1982), in the upper end of Bally Horse Canyon in the eastern San Bernardino Mountains.

Habitat: In California, porcupines are primarily found in coniferous forests, but across western North America they occur in a wide variety of habitats including pinyon-juniper woodlands, sagebrush, and desert chaparral (Dodge 1982; Zeiner et al. 1990b). Porcupines feed extensively on the cambium and foliage of woody shrubs and small trees in winter and on forbs, grasses, and succulent riparian vegetation in spring and summer (Dodge 1982).

Conservation Considerations: Surveys are needed to determine the current status and distribution of this species within the assessment area.

Animals of Montane Meadow Habitats

Five animals that are primarily associated with montane meadow habitats received individual consideration in this assessment (table 4.19). Two of these are butterflies and three are birds.

Laguna Mountains skipper
(*Pyrgus ruralis lagunae*)

Status and Distribution: The Laguna Mountains skipper was federally listed as endangered in 1997. This butterfly is known only from Laguna and Palomar mountains in San Diego County (fig. 4.29). On Palomar Mountain, it is known to occur in Mendenhall Valley, lower French Valley, and in the vicinity of Observatory Campground. On Laguna Mountain, it occurs near the Laguna-El Prado Campground (Levy 1996). Survey information collected to date indicates that the

Table 4.19. Animals associated with montane meadows that received individual consideration.

Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Montane Meadow Animals of Concern <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulner- ability on NFs	(4) Pop. Trend	(5) Conser- vation Category
		Cleveland NF		San Bern. NF		Angeles NF		Los Padres NF					
		San Diego Rngs	Snta Ana Mts	San Jac Mts	San Bern Mts	San Gab Mts	Cas- taic Rngs	So. LP Rngs	So. SL Rng	No. SL Rng			
Invertebrates													
Laguna Mts. skipper <i>endangered</i>	High (40-70%)	y									High	Decl ¹	Site specific
San Gabriel greenish blue butterfly	Mod (> 90%)					y					High	Decl ²	Site specific
Birds													
Calliope hummingbird	Mod (> 50%)	p		y	y	y	p	y		p	Mod	Unkn	Landscape level
Macgillivray's warbler	Low (> 50%)	t	t	p	y	y	t	p	t	p	Mod	Unkn	Landscape level
Lincoln's sparrow	Mod-Low (> 50%)	w		y	y	y	w	y	w	w	Mod	Unkn	Landscape level

¹ U.S. Fish and Wildlife Service (1997d)

² Murphy (1990)

population in Mendenhall Valley is substantially larger than the others and may support several hundred individuals (Levy 1996; R. Mattoni, in litt., 1998). Laguna Mountain, Observatory Campground, and a portion of Mendenhall Valley are within the Cleveland National Forest. The occupied portion of lower French Valley is within Palomar Mountain State Park.

Habitat: The Laguna Mountains skipper is found in montane meadows where its larval host plant, Cleveland's horkelia (*Horkelia clevelandii*), occurs. This horkelia, and the butterfly, are typically found in edaphic or topographic situations that provide patches of bare ground or at least reduced grass cover (e.g., areas with shallow rocky soils or the drier upper margins of meadows). They appear to be absent from areas that have dense, tall grass cover (Levy 1996). Adult Laguna Mountains skippers have been frequently observed visiting the flowers of a small annual composite, *Pentachaeta aurea*. This plant may be an important nectar resource (Levy 1996).

Conservation Considerations: This butterfly occurs in very small numbers at only a handful of sites. There is great concern about the viability of remaining populations and much uncertainty over how to manage them. Land use activities occurring in or near areas occupied by the skipper include cattle grazing and developed recreation sites. Actions are currently being taken by the Cleveland National Forest to exclude recreational activity in the vicinity of potential skipper habitat. Fences have also been erected to exclude grazing in some patches of Cleveland's horkelia in Mendenhall Valley.

The effect of cattle grazing on the host plant and the butterfly needs further investigation. In some respects grazing appears to be clearly detrimental, since cattle have been observed foraging on horkelia plants and trampling flowering stalks. However, one theory attributes the skipper's decline to reductions in the extent of horkelia (and bare ground which may be important for skipper thermoregulation) because of increased grass

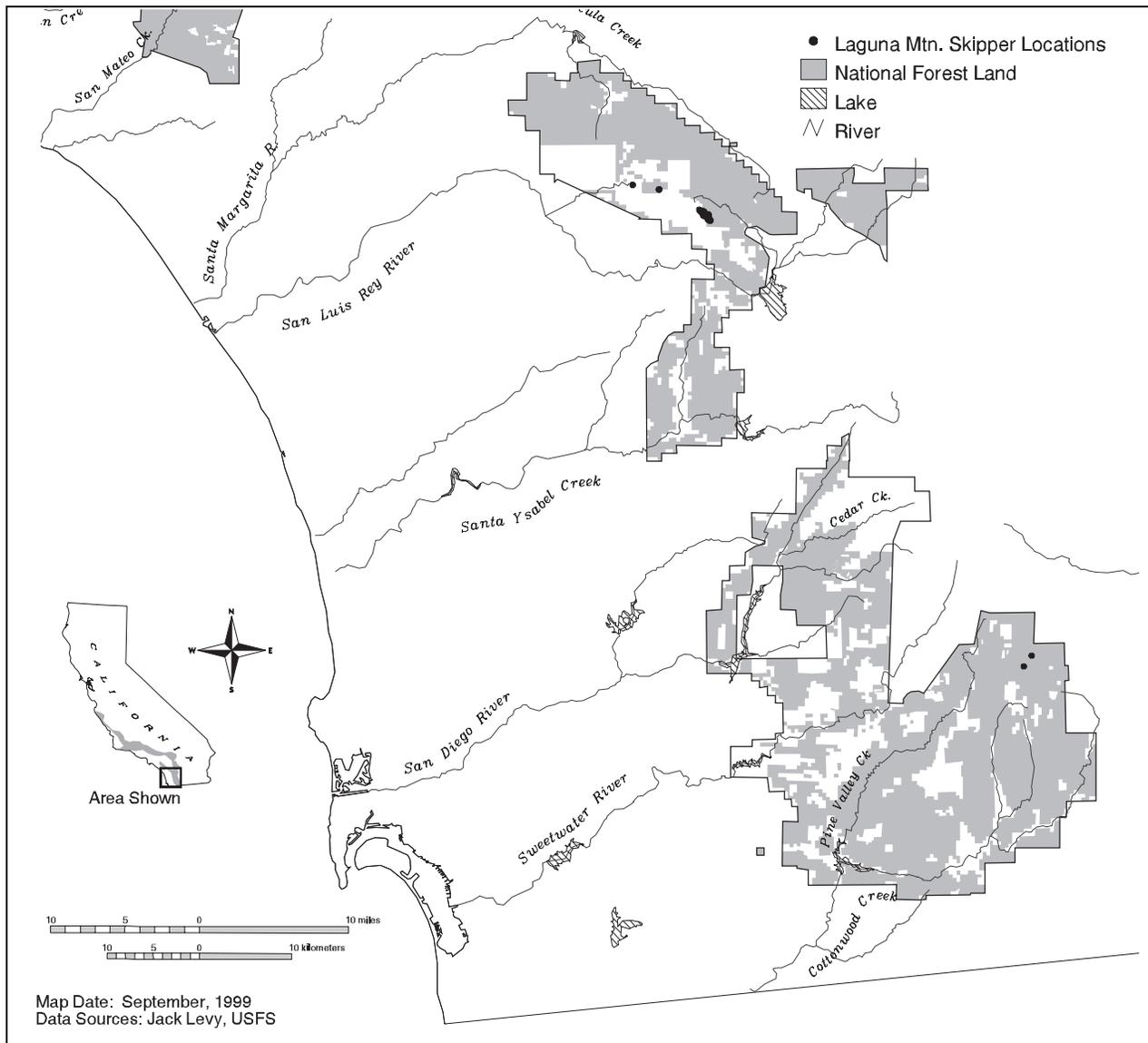


Figure 4.29. Documented localities for the Laguna Mountains skipper.

cover caused by reduced fire frequencies and the spread of non-native grasses (Levy 1996). If this is true, grazing may serve an important function as a surrogate for fire—a useful mechanism to keep grass cover in check. Further research is needed to clarify this situation. Also, additional surveys are needed, particularly on Laguna Mountain, to determine if additional skipper populations are present.

San Gabriel Mountains greenish blue (*Plejebus saepiolus aureolus*)

Status and Distribution: The San Gabriel Mountains greenish blue butterfly is a former C2 candidate species. Murphy (1990) stated it was “arguably the prime conservation emer-

gency among the butterfly taxa of California.” It has been collected by several lepidopterists in a single wet meadow on the Angeles National Forest in the immediate vicinity of Big Pines. It is considered to be a distinctive subspecies, well differentiated from *P. s. saepiolus* which occurs in the Sierra Nevada and *P. s. hilda* which occurs in wet meadows above 5,000 feet on Palomar Mountain and in the San Jacinto and San Bernardino mountains (Murphy 1990). This new greenish blue butterfly has not recently been observed at the meadow near Big Pines and is feared to be extirpated.

Habitat: The San Gabriel Mountains greenish blue butterfly is associated with a clover,

Trifolium wormskioldii, that grows in moist to marshy meadow situations (G. Pratt, UC Riverside, pers. comm., 1999).

Conservation Considerations: Diversion of water from the meadow at Big Pines, and subsequent drying of the habitat, has been implicated in the possible extirpation of this undescribed subspecies (Murphy 1990). Surveys are needed to determine if the taxon still occurs in this meadow or at other potential localities. This situation underscores the importance of maintaining adequate surface and ground water supplies to meadows and other wet microhabitats.

Calliope hummingbird (*Stellula calliope*)

Status and Distribution: The calliope hummingbird is a species of local concern because it is a rare breeder in the southern California mountains. Reported localities on the Los Padres National Forest include the Mount Pinos/Mount Abel area (i.e., around Iris Meadow, Sheep Camp Meadow, and along the McGill trail), Big Pine Mountain (Chokecherry Spring), Frazier Mountain, and Reyes Peak (Garrett and Dunn 1981; Lentz 1993). Calliope hummingbirds are described as rare on the north side of the San Gabriel and San Bernardino mountains (Garrett and Dunn 1981). In the San Jacinto Mountains they are historically known from Round and Tahquitz valleys (Grinnell and Swarth 1913). Calliopes also potentially breed on San Diego County's tallest peak, Hot Springs Mountain (Unitt 1981).

Mist-net and point-count surveys done from 1992 to 1996 at Bluff Lake and Metcalf meadows in the San Bernardino Mountains found calliope hummingbirds present in low numbers at both sites; mist-net results were similar at each meadow, with approximately six captures per year at Metcalf Meadow and five per year at Bluff Lake (Rotenberry and Carlson 1997). Another reported locality in the San Bernardino Mountains is upper Arrastre Creek (D. Freeman, unpubl. notes).

Habitat: Calliope hummingbirds breed along meadow borders and in streamside

thickets (especially willows) within arid mixed conifer forests (Garrett and Dunn 1981). Lentz (1993) found them in association with currants (especially *Ribes cereum*) on Mount Pinos.

Conservation Considerations: Maintenance of riparian vegetation in and around montane meadows is important for this species. Heavy recreation use, facilities development, and overgrazing by livestock can degrade montane riparian habitat condition. Surface water diversions and/or groundwater extraction can reduce or eliminate these habitats. More information is needed on the current distribution of this species, particularly in relation to ongoing land use activities in montane riparian and meadow habitats.

MacGillivray's warbler (*Oporornis tolmiei*)

Status and Distribution: The MacGillivray's warbler is a species of local concern because it is a rare breeder in the southern California mountains. It is most common in the San Gabriel and San Bernardino mountains and may only breed in those two ranges (Garrett and Dunn 1981). In the southern Los Padres, Lentz (1993) reports summer observations of MacGillivray's warbler on Big Pine Mountain, upper Quatal Canyon, at Thorn Meadows near Pine Mountain, and at Iris Meadow on Mount Pinos. However, breeding was not confirmed.

Mist-net and point-count surveys done from 1992 to 1996 at Bluff Lake and Metcalf meadows in the San Bernardino Mountains found MacGillivray's warblers present in low numbers at both sites. Mist-net results indicate they were considerably more common at Metcalf Meadow where a high of twenty captures was reached in 1993. The high for Bluff Lake was five in 1994 (Rotenberry and Carlson 1997).

Habitat: MacGillivray's warblers occur in willow thickets and other brushy, montane riparian areas within coniferous forests above 6,000 feet elevation (Garrett and Dunn 1981).

Conservation Considerations: Same as those described for the Calliope hummingbird.

Lincoln's sparrow (*Melospiza lincolnii*)

Status and Distribution: The Lincoln's sparrow is a species of local concern because it is a rare breeder in the southern California mountains. Historic nesting localities include Mount Pinos (Iris Meadow), the San Gabriel Mountains (Big Pines), the San Bernardino Mountains (vicinity of Big Bear Lake, Green Valley, and South Fork of the Santa Ana River), and the San Jacinto Mountains (Tahquitz and Round valleys) (Grinnell and Swarth 1913; Garrett and Dunn 1981; Lentz 1993).

Mist-net and point-count surveys done from 1992 to 1996 at Bluff Lake and Metcalf meadows in the San Bernardino Mountains found Lincoln sparrows to be common at both sites. Twenty to fifty of these sparrows were captured per year in each meadow during constant-effort mist netting (Rotenberry and Carlson 1997).

Habitat: Lincoln's sparrows breed in wet montane meadows; typical vegetation components include corn lily, sedges, and low willows (Garrett and Dunn 1981).

Conservation Considerations: Same as those described for the Calliope hummingbird.

Animals of Subalpine or Alpine Habitats

Two animal species that are primarily associated with subalpine or alpine habitats were considered individually in this assessment (table 4.20).

American (water) pipit (*Anthus spinoletta*)

Status and Distribution: The American water pipit is a local species of concern because it breeds in alpine habitats and is known from only one location in the southern California mountains. A pair of water pipits was present, and probably nested, on Mount San Gorgonio in the summer of 1978 (Garrett and Dunn 1981).

Habitat: Water pipits nest above timberline. They commonly winter in the vicinity of agricultural fields (Garrett and Dunn 1981).

Conservation Considerations: Surveys are needed to determine if water pipits breed regularly on Mount San Gorgonio or if breeding is a rare, irregular occurrence. Potential breeding habitat on Mount San Gorgonio and the highest portions of the San Gabriel Mountains should also be surveyed. All of these areas are within designated wilderness areas, but recreation activity near mountain summits could potentially impact this species.

Lodgepole chipmunk (*Tamias speciosus*)

Status and Distribution: Two subspecies of lodgepole chipmunk occur in the assessment area. The Mount Pinos lodgepole chipmunk, *T. s. callipeplus*, occurs only in the forests around Mount Pinos and Mount Abel (Williams 1986). It is a Forest Service Region

Table 4.20. Animals associated with subalpine or alpine habitats that received individual consideration. Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Subalpine or Alpine Animals of Concern	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulnerability on NFs	(4) Pop. Trend	(5) Conservation Category
		Cleveland NF		San Bern. NF		Angeles NF		Los Padres NF					
		San Diego Rngs	Snta Ana Mts	San Jac Mts	San Bern Mts	San Gab Mts	Cas-taic Rngs	So. LP Rngs	So. SL Rng	No. SL Rng			
American (water) pipit	Low (100%)	t	t	p	y	p	t	t	t	t	Mod	Unkn	Site specific
Lodgepole chipmunk	Mod (> 70%)			y	y	y		y*			Low	Unkn	Landscape level

* A distinct subspecies, the Mount Pinos lodgepole chipmunk occurs in the southern Los Padres ranges.

5 Sensitive Species. Lodgepole chipmunks in the San Gabriel, San Bernardino, and San Jacinto mountains belong to the subspecies *T. s. speciosus* (Best et al. 1994). The elevation range of this species is from just above 6,000 feet to over 10,000 feet (Williams 1986; Zeiner et al. 1990b).

Habitat: Lodgepole chipmunks are generally found in open-canopy forests with a mix of shrubs and trees. They are common in lodgepole pine forests but also occur in open-canopy stages of other forest habitats including white fir, Jeffrey pine, and mixed conifer. They appear to avoid pure stands of conifers, preferring an understory shrub component, particularly chinquapin or manzanita (Vaughan 1954; Williams 1986; Zeiner et al. 1990b).

Conservation Considerations: The lodgepole chipmunk's high elevation habitats do not appear to be highly vulnerable to existing land use activities or agents of change. However, habitat for the Mount Pinos subspecies is extremely limited, which increases the impact of even small losses of suitable habitat in the Mount Pinos/Mount Abel area. A single, large stand-replacing fire could eliminate this subspecies.

Animals of Desert Montane Habitats

Sixteen animal species that are primarily associated with desert montane habitats were considered individually in this assessment (table 4.21). There are six invertebrates, one reptile, seven birds, and two mammals.

Desert Montane Invertebrates

Desert monkey grasshopper (*Psychomastix pysylla deserticola*)

Status and Distribution: The desert monkey grasshopper is a former C2 candidate for federal listing. It is endemic to lower desert-side slopes of the San Bernardino Mountains (J. Powell, UC Berkeley Department of Entomology, pers. comm.).

Habitat: Little information is available. It is described as occurring in arid environments, and chamise is identified as a possible food plant.

Conservation Considerations: No threats have been identified for this species. More information is needed on its distribution and habitat requirements on the desert side of the San Bernardino Mountains.

San Bernardino Mountains silk moth (*Coloradia velda*)

Status and Distribution: The silk moth *Coloradia velda* is a species of local concern because it is endemic to the San Bernardino Mountains. The type locality for this species is at Coxey Meadow on the north side of the San Bernardino Mountains, and it has also been collected at Horse Springs, Crab Flat, Cactus Flat and Barton Flats (Johnson and Walter 1979).

Habitat: *Coloradia velda* is most commonly found in stands of pinyon pine, which is suspected to be the larval host plant (Johnson and Walter 1979).

Conservation Considerations: More information is needed on the distribution and habitat requirements of this silk moth. No threat factors have currently been identified for it.

Bright blue copper (*Lycaena heteronea clara*)

Status and Distribution: The bright blue copper butterfly is a local species of concern. Murphy (1990) considered it to be a category B taxon, which he defined as one that warrants listing as endangered, but with a less pressing need than category A taxa. This butterfly historically occurred in isolated areas of the Piute and Tehachapi mountains, in the Castac Valley (near Fort Tejon), and near Silverwood Lake in the San Bernardino Mountains (Orzak 1976). However, as of 1976, it is known only from Cuddy and Lockwood valleys near Frazier Park (Murphy 1990). Orzak (1976) estimated that as many as thirty populations existed in this area, with the highest

Table 4.21. Animals associated with desert montane habitats that received individual consideration.

Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t = transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Desert Montane Animals of Concern <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulner- ability on NFs	(4) Pop. Trend	(5) Conser- vation Category	
		Cleveland NF		San Bern. NF		Angeles NF		Los Padres NF						
		San Diego Rngs	Snta Ana Mts	San Jac Mts	San Bern Mts	San Gab Mts	Cas- taic Rngs	So. LP Rngs	So. SL Rng	No. SL Rng				
Invertebrates														
Desert monkey grasshopper	Low (30-70%)				y							Unkn	Unkn	Landscape level
San Bernardino Mts. silk moth	Mod (> 70%)				y							Unkn	Unkn	Landscape level
Bright blue copper butterfly	Mod (10-50%)				h/p		p	y				High	Unkn	Site specific
San Emigdio blue butterfly	Low (10-40%)					y	y	y				Unkn	Unkn	Site specific
Dammer's blue butterfly	Mod (> 70%)				y							Unkn	Unkn	Landscape level
Vernal blue butterfly	Mod (> 90%)				y							Unkn	Unkn	Landscape level
Reptiles														
Small-scaled lizard	Mod (< 20%)	y										Low	Unkn	Landscape level
Birds														
Zone-tailed hawk	Mod (40-60%)	y		y								Low	Unkn	Landscape level
Common nighthawk	Mod (40-70%)			p	y	y						Mod	Unkn	Site specific
Gray flycatcher	Low (> 50%)			p	y	y						Low	Unkn	Landscape level
Pinyon jay	Mod (< 20%)			y	y			p				Mod	Unkn	Landscape level
Gray vireo	Mod (40-80%)	y		y	y	y						Mod	Decl ¹	Landscape level
Plumbeus solitary vireo	Low (> 50%)				y	y						Low	Unkn	Landscape level
Hepatic tanager	Mod (> 60%)	t			y			t	t			Low	Unkn	Landscape level
Mammals														
Tehachapi pocket mouse	Mod (> 60%)					p	h/p	y				Unkn	Unkn	Landscape level
Peninsular Ranges' bighorn sheep <i>endangered</i>	High (< 5%)			y								High	Decl ²	Site specific

¹ Garrett and Dunn (1981)

² USDI Bureau of Land Management et al. (1996)

concentration in Cuddy Valley, 2 to 5 miles west of Interstate 5.

Habitat: In the arid montane valleys around Cuddy Valley and Frazier Park, the bright blue copper occurs in sagebrush-dominated shrublands. Three different buckwheat (*Eriogonum*) species are known larval food plants: *E. heermannii*, *E. umbellatum munzii*, and *E. fasciculatum polifolium* (Orzak 1976).

Conservation Considerations: Most of the valley bottomland in Cuddy and Lockwood valleys is private land and a lot of development is occurring in this area. There is some potential habitat for this butterfly on the Los Padres National Forest. Surveys are urgently needed to see if populations of the bright blue copper occur on national forest system lands in this area. Any discovered populations should receive site-specific management attention until the status of this taxon is better determined.

San Emigdio blue butterfly **(*Plebulina emigdionis*)**

Status and Distribution: The San Emigdio blue butterfly is a former Category 2 Candidate Species. Murphy (1990) considers it to be a category B taxon, which he defined as one that warrants listing as endangered, but with a less pressing need than category A taxa. The primary location where this species has been collected is along the Mojave River near Victorville, but isolated colonies within or near the assessment area are reported from Bouquet and Mint canyons near Castaic, in canyons along the north side of the San Gabriel Mountains near the desert's edge, and in arid areas south of Mount Abel near San Emigdio Mesa (Emmel and Emmel 1973; Murphy 1990).

Habitat: The San Emigdio blue is closely associated with the widespread saltbush, *Atriplex canescens*, in alkali sink areas (Murphy 1990). However, the butterfly's distribution is much more localized than the host plant, suggesting that other factors may determine habitat suitability. Murphy (1990) speculates that there may be an obligatory mutualistic

relationship between this species and one or more ant species.

Conservation Considerations: Additional information is needed on the distribution and status of this butterfly on public lands in the assessment area. At a minimum, the known localities mentioned above need to be revisited to see if populations still exist. The best-known population near Victorville has declined due to urbanization (Murphy 1990).

Dammer's blue butterfly **(*Euphilotes enoptes dammersi*)**

Status and Distribution: This subspecies is newly described and known only from Baldwin Lake, Arrastre Flat, and Arrastre Creek in the San Bernardino Mountains (Pratt and Emmel 1998).

Habitat: At Baldwin Lake and Arrastre Flat, this butterfly is closely associated with spring-blooming populations of the wild buckwheat *Eriogonum kennedyi*, which commonly grows on pebble plains. On dry slopes near Arrastre Creek, a slightly different form of this subspecies is associated with spring-blooming populations of *Eriogonum davidsonii* (Pratt and Emmel 1998).

Conservation Considerations: Too little is currently known about this taxon to assess its conservation status. Gordon Pratt at UC Riverside is the authority on this butterfly.

Vernal blue butterfly **(*Euphilotes baueri [battoides] vernalis*)**

Status and Distribution: This newly described subspecies has only been found at Coxey Meadow (elevation 5,600 feet) on the north side of the San Bernardino Mountains (Pratt and Emmel 1998). It also occurs far to the north of the assessment area in the Coso Mountains near China Lake.

Habitat: The vernal blue butterfly is associated with spring-blooming populations of the wild buckwheat, *Eriogonum kennedyi*. This association is similar to that of the Dammer's blue, but it occurs in different areas and is distinctly different taxonomically (Pratt and Emmel 1998).

Conservation Considerations: More information is needed on the distribution and habitat requirements of this species within the assessment area. As yet, no threat factors have been identified for this taxon.

Desert Montane Reptiles

Small-scaled lizard (*Urosaurus microscutatus*)

Status and Distribution: The small-scaled lizard is a local species of concern because its range in the United States is restricted to the rocky mountains and foothills of eastern San Diego County (Zeiner et al. 1988). Known localities in or near the assessment area include canyons in Anza-Borrego Desert State Park that come off the east sides of Bucksnot, Hot Springs and San Ysidro mountains (i.e., Alder Canyon, South Fork of Sheep Canyon, Borrego Palm Canyon, and Hellhole Canyon), and far to the south at Jacumba, Barrett Junction, and near Barrett Dam along the Dulzura Conduit (J. Copp, CA Academy of Sciences, pers. comm.).

Habitat: The small-scaled lizard inhabits arid and semiarid environments in areas where there are rock outcrops or rocky canyons (Zeiner et al. 1988). It is most common in desert-side habitats, particularly desert canyons, but also occurs on coastal slopes in southern San Diego County in chaparral and other habitats (J. Copp, pers. comm.).

Conservation Considerations: Surveys are needed to better determine the distribution and abundance of this species on public lands within the assessment area. However, the small-scaled lizard's habitat requirements are not likely to make it particularly vulnerable to land use activities occurring on national forest system lands.

Desert Montane Birds

Zone-tailed hawk (*Buteo albonotatus*)

Status and Distribution: The zone-tailed hawk is a local species of concern because it is a rare breeder in southern California and the few known nesting localities are within the assessment area. Zone-tailed hawk nests have

been documented on Hot Springs Mountain (San Diego County) in 1993 (SDNHM 1998) and on Santa Rosa Mountain (Riverside County) in 1980 (Garrett and Dunn 1981; McCaskie 1982). These locations are the extreme western extent of this species' breeding range.

Habitat: Zone-tailed hawks commonly inhabit desert mountains, particularly in northern and central Arizona.

Conservation Considerations: Additional survey work is needed to determine if zone-tailed hawks breed regularly in either the Santa Rosa Mountains or the eastern mountains of San Diego County. However, we believe their vulnerability to existing land use activities is low.

Common nighthawk (*Chordeiles minor*)

Status and Distribution: The common nighthawk is a local species of concern because it is a rare breeder in southern California and the few known nesting localities are within the assessment area. This species is found only in the eastern San Bernardino Mountains (particularly near Baldwin Lake) and on Table Mountain near Wrightwood in the San Gabriel Mountains (Garrett and Dunn 1981; D. Cooper, UC Riverside, in litt.).

Habitat: Common nighthawks forage over a variety of habitats from open coniferous forest to sagebrush plains and are frequently seen foraging over open bodies of water. Some open, gravelly substrate is required for nesting (Garrett and Dunn 1981).

Conservation Considerations: Surveys are needed to identify the specific areas where this highly localized species nests. Both of the locations where common nighthawks occur are areas that receive a high level of recreation use. More survey work is needed to determine if land use activities in these areas are affecting nighthawk nesting grounds.

Gray flycatcher (*Empidonax wrightii*)

Status and Distribution: The gray flycatcher is a local species of concern because it is a rare breeder in southern California and the few known nesting localities are within the assessment area. This species is found only in

northern portions of the San Gabriel and San Bernardino mountains (Garrett and Dunn 1981). This species was not detected in surveys conducted in the early 1900s and may have expanded its breeding range into the assessment area in just the last fifty years (Johnson and Garrett 1974). Documented localities include Sheep Creek near Wrightwood and areas east of Baldwin Lake, including Arrastre Creek (Johnson and Garrett 1974).

Habitat: Gray flycatchers are closely tied to pinyon-juniper-sagebrush associations but do breed locally in other arid conifer associations (Garrett and Dunn 1981).

Conservation Considerations: More information is needed on the distribution and status of gray flycatchers in the assessment area. However, we believe their vulnerability to existing land use activities is low.

Pinyon jay (*Gymnorhinus cyanocephalus*)

Status and Distribution: The pinyon jay is a local species of concern because it is a rare and localized breeder in the assessment area. Known localities include the northeastern San Bernardino Mountains, particularly around Baldwin Lake, and Garner Valley in the San Jacinto Mountains (Garrett and Dunn 1981). Small groups have been seen around Mount Pinos but generally only in the fall and winter (Garrett and Dunn 1981). Lentz (1993) does not mention pinyon jays in her review of birds in the southern Los Padres mountain ranges.

Habitat: Pinyon jays occupy mature pinyon-juniper-yucca woodland on arid mountain slopes and open montane valleys of sagebrush and grassland with are bordered by pinyons, western junipers, or Jeffrey pines (Garrett and Dunn 1981).

Conservation Considerations: Same as those described for the gray flycatcher. However, the pinyon jay may be negatively affected by the steady increase in housing developments on private lands in some montane valleys (e.g., Baldwin Lake and Garner Valley).

Gray vireo (*Vireo vicinior*)

Status and Distribution: The gray vireo is a California Species of Special Concern. It is a summer resident in a few highly localized areas within the assessment area (fig 4.30). It occurs on dry desert-facing slopes in the San Gabriel Mountains (e.g., near Valyermo), San Bernardino Mountains (e.g., Rose Mine and Cactus Flats), and San Jacinto Mountains (e.g., Pinyon Flats) (Garrett and Dunn 1981; D. Cooper, UC Riverside, in litt.). In San Diego County, gray vireos occur in arid shrublands north of Warner Springs between Palomar and Hot Springs mountains, and on the southern flank of the Laguna Mountains from Pine Valley Creek southeast to La Posta Creek (Unitt 1984; SDNHM 1998).

Early work by Grinnell and associates indicates that the gray vireo used to be more widespread, particularly in the San Gabriel and San Jacinto mountains (Grinnell and Swarth 1913; Grinnell and Miller 1944). Little is known about the extent or cause of its decline in these areas.

Habitat: In the San Jacinto Mountains and San Diego ranges, gray vireos are typically found in stands of dense, mature chaparral that are dominated by chamise or redshank (Unitt 1984). In the San Gabriel and San Bernardino mountains they are found on brushy slopes in pinyon-juniper woodlands (Garrett and Dunn 1981). However, gray vireos are highly localized in these plant associations, suggesting that other habitat requirements may be influencing their distribution.

Conservation Considerations: Survey work is needed to better document the distribution and abundance of gray vireos in the assessment area. Systematic surveys resulting from the development of breeding bird atlases in Los Angeles (LACBBA 1999) and San Diego (SDNHM 1999) counties should help in this regard. Like most vireos, gray vireos are considered highly susceptible to cowbird nest parasitism and this has been implicated as a possible reason for their decline (Unitt 1984). Cowbird parasitism of gray vireo nests has

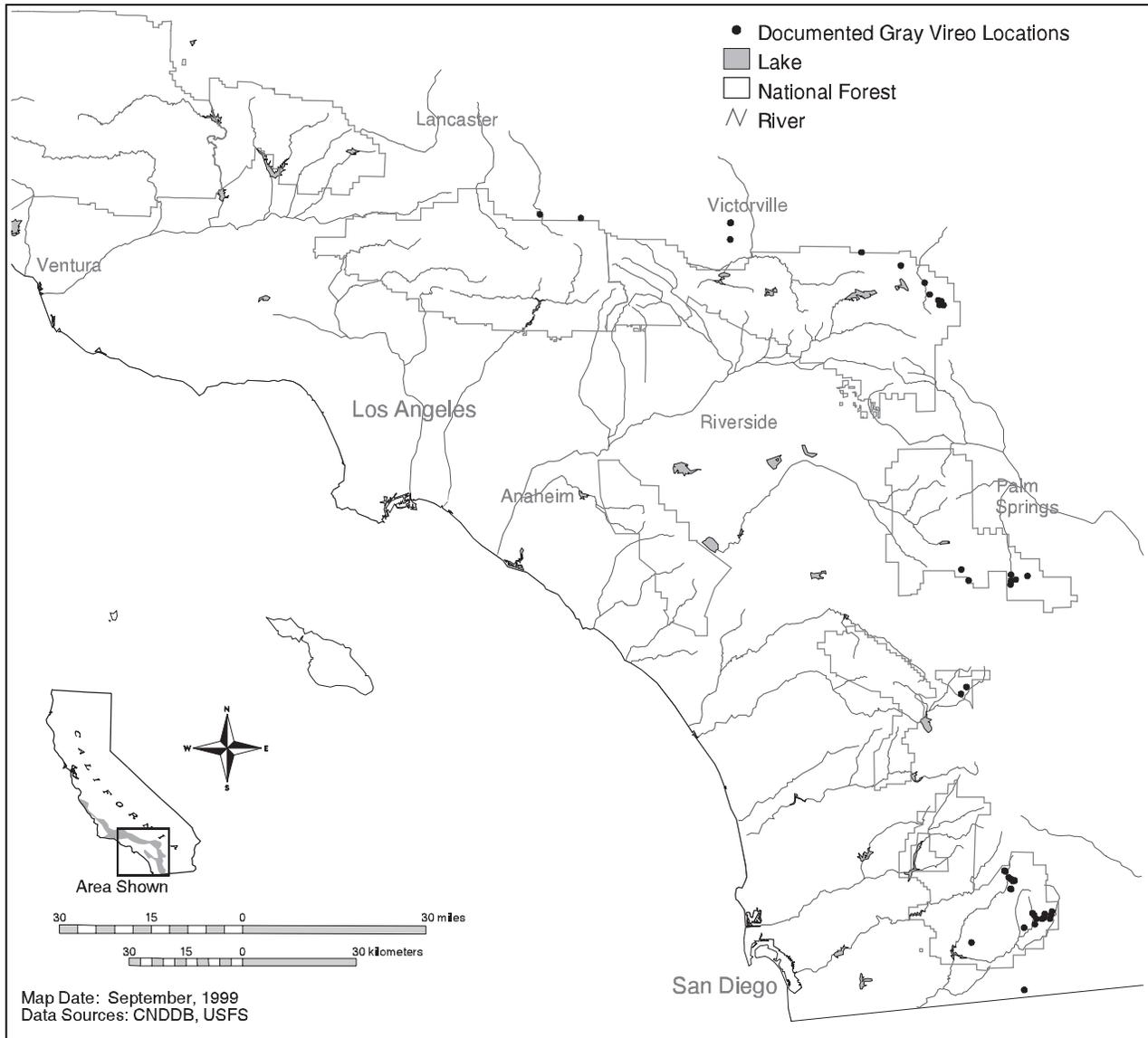


Figure 4.30. Known locations of the gray vireo in the assessment area.

been documented in the San Bernardino Mountains (Hanna 1944).

Plumbeus solitary vireo
(*Vireo solitarius plumbeus*)

Status and Distribution: The rarity of this distinctive subspecies in southern California and its restriction to arid montane habitats are why the Plumbeus solitary vireo was identified as a local species of concern. It has been observed in Big Rock Creek Canyon on the north side of the San Gabriel Mountains and in upper Arrastre Creek on the north side of the San Bernardino Mountains (Garrett and Dunn 1981). This subspecies was not recorded in California prior to 1962 and appears to have

undergone a major westward expansion of its range in the mid-1900s (Johnson and Garrett 1974).

Habitat: Plumbeus solitary vireos breed in arid woodlands of mature pinyon pine, white fir, and Jeffrey pine, often extending into adjacent riparian growth (Garrett and Dunn 1981).

Conservation Considerations: More information is needed on the distribution and abundance of this subspecies in the assessment area. However, we believe its vulnerability to existing land use activities is low.

Hepatic tanager (*Piranga falva*)

Status and Distribution: The rarity of this distinctive species in southern California and its restriction to arid montane habitats are why the hepatic tanager was identified as a local species of concern. It is known to occur only in the San Bernardino Mountains; documented localities include upper Arrastre Creek and Round Valley, both east of Baldwin Lake (Johnson and Garrett 1974; Garrett and Dunn 1981).

Habitat: Breeding habitat for hepatic tanagers in the San Bernardino Mountains consists of mature pinyon pine woodland with a mixture of taller conifers, such as white fir or Jeffrey pine (Garrett and Dunn 1981). Johnson and Garrett (1974) suggest these tanagers also may occur in pine and deciduous oak woodlands on warm, arid slopes.

Conservation Considerations: Additional information is needed on the distribution and abundance of this species in the assessment area. It could also occur in the San Gabriel and San Jacinto mountains. The mature woodland habitats occupied by hepatic tanagers are at some risk to loss in stand-replacing fires but otherwise are not particularly vulnerable to existing land use activities.

Desert Montane Mammals**Tehachapi white-eared pocket mouse (*Perognathus alticola inexpectatus*)**

Status and Distribution: The Tehachapi pocket mouse is a Forest Service Region 5 Sensitive Species and a California Species of Special Concern. This taxon is endemic to the Tehachapi Mountains and the western Transverse Ranges (Best 1994). Known localities within the assessment area, based on museum records and historic information, are near Lake Hughes, Elizabeth Lake, and Quail Lake on the desert side of the Castaic Ranges, and at Pinyon Pines, Cuddy Valley, and Chuchupate Campground in the Mount Pinos/Frazier Mountain region (Williams 1986; Best 1994; CNDDDB 1999). The only one of these locations where Tehachapi pocket mice have been recently observed is at Chuchupate Campground, where they were found in 1998 by

public health biologists monitoring vector-borne diseases (R. Davis, CA Department of Health Services, pers. comm. to M. Foster, 1998).

Habitat: Habitat associations of the Tehachapi pocket mouse are not well defined. They have been collected in arid annual grassland, desert scrub communities, pinyon pine woodland, a grain field, and in open desert-side pine forest at elevations between 3,500 and 6,000 feet (Williams 1986).

Conservation Considerations: So little is known about the status of the Tehachapi pocket mouse that it would be sheer speculation to suggest threat factors and conservation needs. Surveys are needed to determine the distribution and relative abundance of this species on public lands within the assessment area. Williams (1986) identifies desert-facing slopes of the San Gabriel Mountains, the Castaic Ranges, and the Mount Pinos/Frazier Mountain region as areas where this mouse may be found.

Peninsular Ranges' bighorn sheep (*Ovis canadensis "cremnobates"*)

Status and Distribution: Bighorn sheep (fig. 4.31) populations in the Peninsular Ranges of southern California were federally listed as endangered in 1998. There is uncertainty over whether these populations represent a taxonomically distinct subspecies or simply a discrete metapopulation (Wehausen and Ramey 1993; USFWS 1998f). Peninsular Ranges' bighorn sheep occur from the eastern flanks of the San Jacinto and Santa Rosa mountains southeast into the desert ranges of Anza-Borrego State Park to the Mexican border (fig. 4.32) (Rubin et al. 1998).

The Peninsular Ranges' metapopulation is composed of eight distinct populations (Boyce 1995). Four of these populations lie partially within the assessment area; the rest are in desert ranges to the east. There are an estimated 25 sheep in the San Jacinto Mountains, and 117 sheep in three recognized populations within the Santa Rosa Mountains

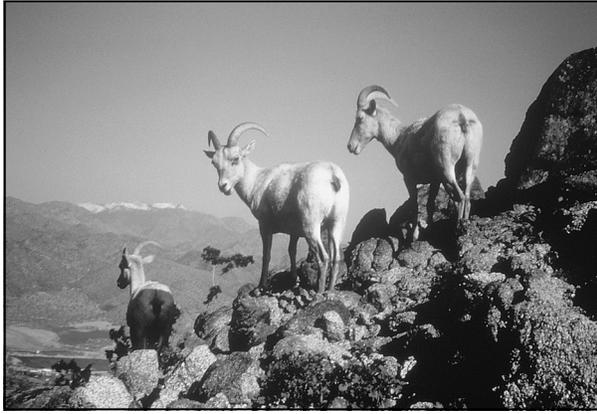


Figure 4.31. Peninsular Ranges' bighorn sheep are often found in steep, rocky terrain above the desert floor. USFWS FILE PHOTO

(USDI BLM et. al. 1996). However, only an estimated 2 percent of Peninsular Ranges' bighorn sheep habitat occurs on the San Bernardino National Forest; BLM (29 percent) and state park (41 percent) lands make up most of the sheep's range, and some critical lambing habitat also occurs on private lands (USDI BLM et. al. 1996). Studies have documented declines in most of the Peninsular Ranges' populations (USDI BLM et. al. 1996).

Habitat: Bighorn sheep habitat in the Peninsular Ranges is characterized by steep slopes, canyons, and washes. Although they can occur at high elevations, these sheep typically are found at elevations below 4,600 feet, which in this area is below the pinyon-juniper woodlands (Rubin et al. 1998). Topography in a patchwork of varying slopes is important for bighorn sheep. Steep (50 to over 70 percent slope) and rough (i.e., with a lot of small-scale changes in slope) terrain is utilized extensively for escape cover, but flatter areas at the base of the mountains are often used for foraging (USDI BLM et. al. 1996).

Conservation Considerations: The primary factors believed to be affecting Peninsular Ranges' bighorn sheep are (1) habitat loss or abandonment due to encroaching human development along the base of the mountains and extending up into them; (2) diseases that can be transmitted by domestic livestock, particularly sheep; and (3) high levels of predation

in some areas by mountain lions and possibly coyotes (USDI BLM et. al. 1996).

Specific management actions for conserving Peninsular Ranges' bighorn sheep and their habitats have been developed by an inter-agency coordinating committee. This direction is in the process of being adopted by all state and federal land and resource management agencies in the affected region (USDI BLM et. al. 1996).

Animals of Desert Floor Habitats

Six potentially vulnerable animals are desert species whose distributions may extend into the assessment area along its extreme northern and eastern boundaries (table 4.22). Although we knew from the start that the assessment area contains little suitable habitat for these species, it was still important to evaluate their conservation potential and vulnerability. One important reason for doing this is to clearly document that public lands in the assessment area will not be sufficient to conserve these species.

Based on discussions with people who have knowledge of these species' distributions, it appears that none of the six have significant populations on public lands within the assessment area. Thus, we consider all of them to be species whose conservation can be minimally influenced by management of public lands in this area.

Desert tortoise

(Xerobates [Gopherus] agassizii)

Status and Distribution: The desert tortoise is state and federally listed as endangered. Surveys for the desert tortoise have been fairly widespread and it has been documented close to the assessment area (fig. 4.33)(CNDDDB 1999). However, suitable habitat for this species disappears rapidly as you move up into the mountains. It is possible that tortoises occur in small numbers along the northern base of the San Bernardino Mountains, where there is friable soil and relatively flat terrain.

Habitat: Desert tortoises occur in a wide variety of desert habitats, including washes and Joshua tree woodlands. They reach highest

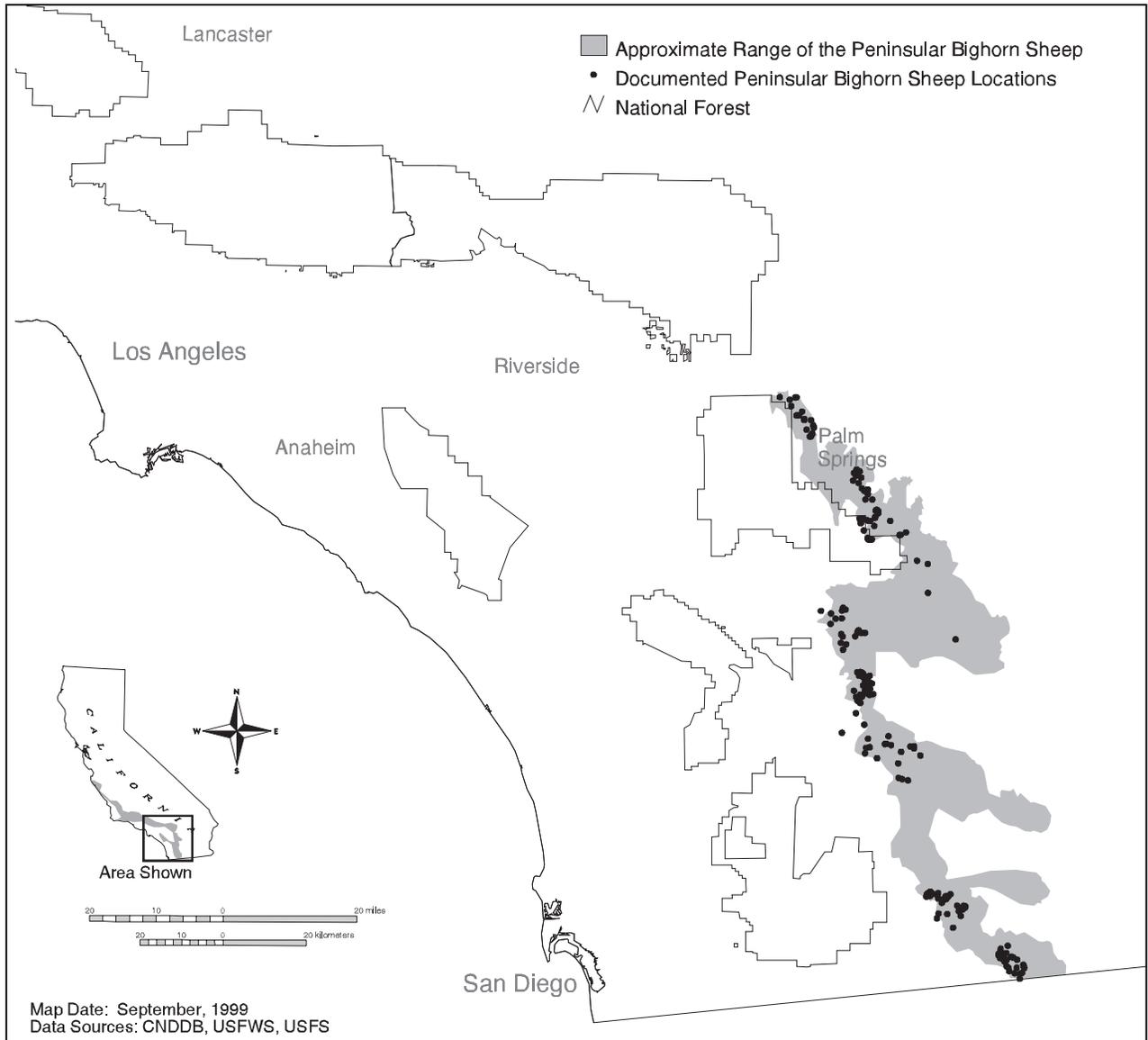


Figure 4.32. Distribution of the Peninsular Ranges' bighorn sheep.

densities in creosote bush communities with extensive annual wildflower blooms, such as occur in the western Mojave Desert (Zeiner et al. 1988). They require friable soil for burrow construction.

Conservation Considerations: It appears unlikely that desert tortoises occur within the assessment area in any significant numbers. Thus, management of public lands within the assessment area will have little influence on the conservation of this species.

Bendire's thrasher (*Toxostoma bendirei*)

Status and Distribution: The Bendire's thrasher is a California Species of Special Concern and is identified as an "extremely high

priority" watch list species by Partners in Flight (Carter et al. 1998). There are several reported locations of Bendire's thrasher in Joshua tree woodlands along the northern and eastern base of the San Bernardino Mountains, including Lucerne Valley and Pioneertown (England and Laudenslayer 1989).

Habitat: At almost all sites where Bendire's thrashers nest in California the most prominent plants are Joshua tree, Spanish bayonet (*Yucca baccata*), or Mojave yucca (*Yucca schidigera*). They seem to avoid steep slopes and rocky terrain (England and Laudenslayer 1989).

Conservation Considerations: Protection of Joshua tree woodlands is important for this

Table 4.22. Animals associated with desert habitats that received individual consideration.

Displayed for each species: (1) the level of knowledge about where it occurs in southern California and, in parentheses, the estimated percentage of locations that are on national forest system lands; (2) the mountain subareas occupied (y = occurs in breeding season, h = historically occurred, p = potentially occurs, t transient, w = winter visitor)—if the species is localized and data are available, the approximate number of occurrences may be displayed; (3) the vulnerability of populations on national forest system lands to existing threat factors; (4) population trends; and (5) the assigned conservation category.

Desert Floor Animals of Concern <i>federal status</i>	(1) Knowledge of SoCal Locations (% on NFs)	(2) areas occupied or estimated # of occurrences if spp. localized									(3) Vulnerability on NFs	(4) Pop. Trend	(5) Conser- vation Category
		Cleveland NF		San Bern. NF		Angeles NF		Los Padres NF					
		San Diego Rngs	Snta Ana Mts	San Jac Mts	San Bern Mts	San Gab Mts	Cas- taic Rngs	So. LP Rngs	So. SL Rng	No. SL Rng			
Reptiles													
Desert tortoise <i>threatened</i>	Mod (< 1%)				p	p					Low	Unkn	Minimal Influence
Birds													
Bendire's thrasher	Mod (< 1%)				y						Low	Unkn	Minimal Influence
Le Conte's thrasher	Mod (< 1%)			p	p	p			p		Low	Unkn	Minimal Influence
Summer tanager	Mod (< 5%)	t		t	t	y					Low	Unkn	Minimal Influence
Mammals													
California leaf-nosed bat	Low (< 5%)	y	p	p	p	p		p			Unkn	Unkn	Minimal Influence
Mohave ground squirrel	Low (0%)				p	p					Low	Unkn	Minimal Influence

species. More information is needed on the distribution and abundance of Bendire's thrashers on public lands in the San Bernardino Mountains. However, the assessment area is on the extreme edge of this species' range with only a small amount of potential habitat.

Le Conte's thrasher (*Toxostoma lecontei*)

Status and Distribution: The Le Conte's thrasher is a California Species of Special Concern and is identified as an "extremely high priority" watch list species by Partners in Flight (Carter et al. 1998). LeConte's thrashers are known to occur in Joshua tree woodlands in the Mojave Desert and arid desert scrub in the Carrizo Plain (Garrett and Dunn 1981), but we found no documented localities within the assessment area.

Habitat: Le Conte's thrashers require less vegetation than other thrashers; they inhabit very sparse desert scrub (e.g., creosote bush), especially around small washes. They also oc-

cupy Joshua tree woodlands in the Mojave Desert, although the Joshua trees themselves seem an unimportant element. In the southwestern San Joaquin Valley, stands of saltbush are occupied and nesting usually takes place around the edges of washes (Garrett and Dunn 1981).

Conservation Considerations: It appears unlikely that Le Conte's thrashers currently occur within the assessment area. Thus, management of public lands within the assessment area will not influence the conservation of this species.

Summer tanager (*Piranga rubra*)

Status and Distribution: The summer tanager is a California Species of Special Concern. There is recent (1998) documentation of summer tanagers nesting along the Santa Clara River in Soledad Canyon and along Big Rock Creek near the town of Valyermo (D. Cooper, UC Riverside, in litt.), although neither location appears to be on public land. Dan

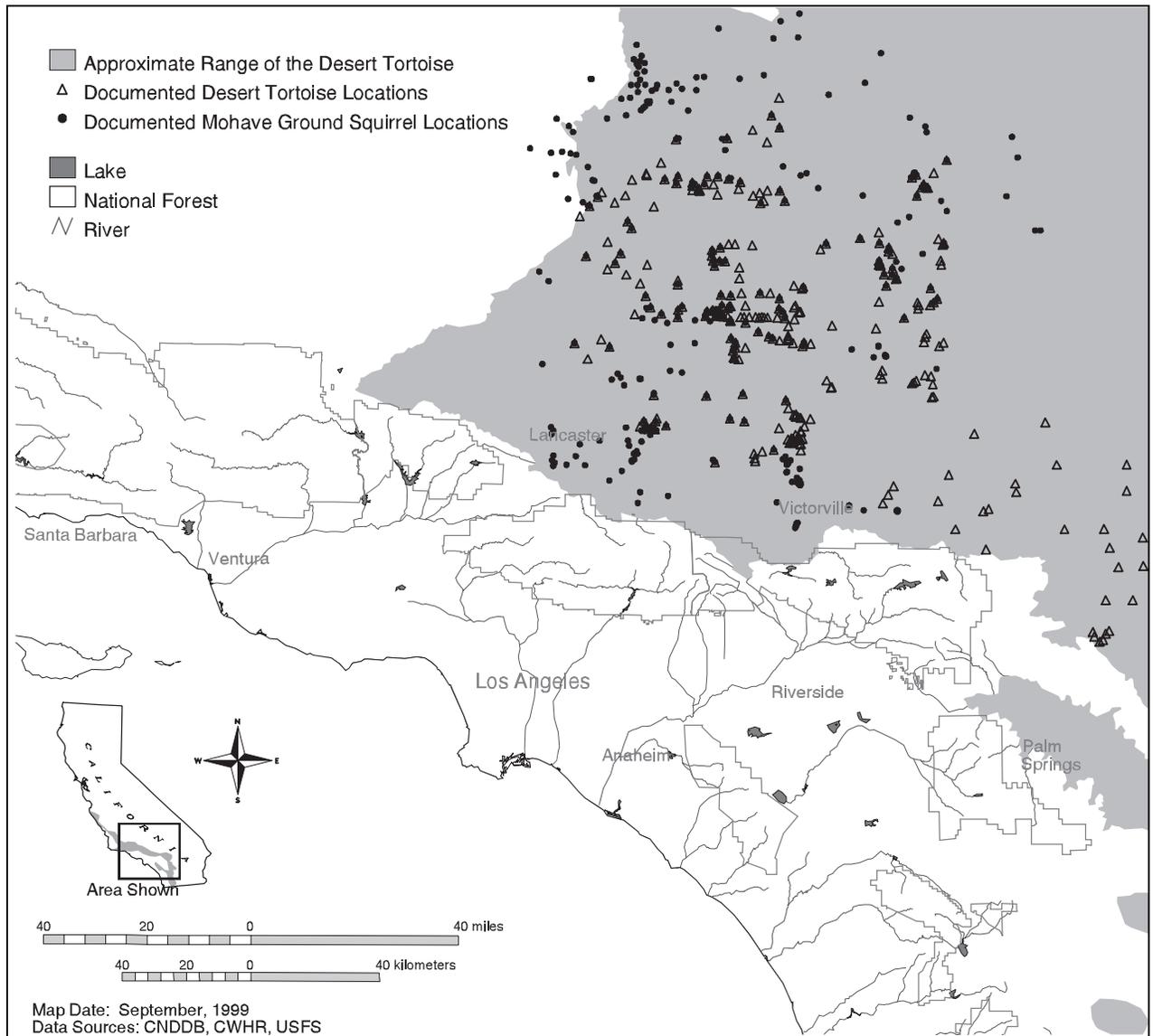


Figure 4.33. Range of the desert tortoise and known locations of the tortoise and Mohave ground squirrel in the vicinity of the assessment area (from CNDDDB 1999).

Cooper stated that they probably nest in Fremont cottonwood groves all along the northern base of the San Gabriel Mountains. Summer tanagers are also reported from the Mojave River at Mojave Narrows Regional Park and Whitewater Canyon along the base of the San Bernardino Mountains (P. Unitt, SDNHM, unpubl. document), and the lower reaches of Palm and Andreas canyons on the desert-side of the San Jacinto Mountains (D. Freeman, San Bernardino NF, unpubl. notes).

Habitat: Summer tanagers nest in desert riparian groves, typically dominated by mature Fremont cottonwoods (Garrett and Dunn 1981).

Conservation Considerations: Riparian gallery forests on the desert's edge at the base of the San Gabriel, San Bernardino, and San Jacinto mountains are important habitats for summer tanagers and should be protected. There is a need to document where these habitats occur on public lands and survey those areas for summer tanagers.

**California leaf-nosed bat
(*Macrotus californicus*)**

Status and Distribution: The California leaf-nosed bat is a California Species of Special Concern. The distribution of this species in the assessment area is poorly known; it was

not detected in bat surveys conducted by the Forest Service from 1996 to 1998 (Simons et al. in prep.). California leaf-nosed bats have reportedly been observed in the Arrastre Creek area of the San Bernardino Mountains and on the desert side of the San Jacinto Mountains (Diane Freeman, San Bernardino NE, unpubl. notes).

Habitat: California leaf-nosed bats are strongly associated with desert riparian and wash habitat. Radio-telemetry work done on this species in the California desert found them foraging almost exclusively in desert washes (Brown et al. 1993). They roost in mine shafts and caves (Brown 1998). Long, warm mine tunnels are utilized for winter roosts and maternity colonies (Berry and Brown 1995).

Conservation Considerations: Desert riparian habitats and suitable mine shafts are important to the conservation of this species. Surveys are needed to determine if occupied roosting or foraging habitat occurs within the assessment area.

Mohave ground squirrel (*Spermophilus mohavensis*)

Status and Distribution: The Mohave ground squirrel is state listed as threatened. The current range of this species, delineated, is well north of the San Gabriel and San Bernardino mountains in the Mojave Desert (Best 1995). However, there are historic records from Apple Valley and Lucerne Valley (fig. 4.33) (Whitaker 1991). These are close to the San Bernardino Mountains and potential habitat seems to extend a short ways up into the mountains. Mohave ground squirrels have been found at elevations up to 5,000 feet in some desert ranges (Best 1995).

Habitat: Optimal habitats for Mohave ground squirrels are open desert scrub (e.g., creosote bush), open alkali scrub (e.g., salt-bush), and Joshua tree woodlands (Zeiner et al. 1990b). They typically construct burrows in the sandy soils of desert washes (Best 1995).

Conservation Considerations: It appears unlikely that Mohave ground squirrels currently occur within the assessment area. Thus,

management of public lands within the assessment area will not influence the conservation of this species.