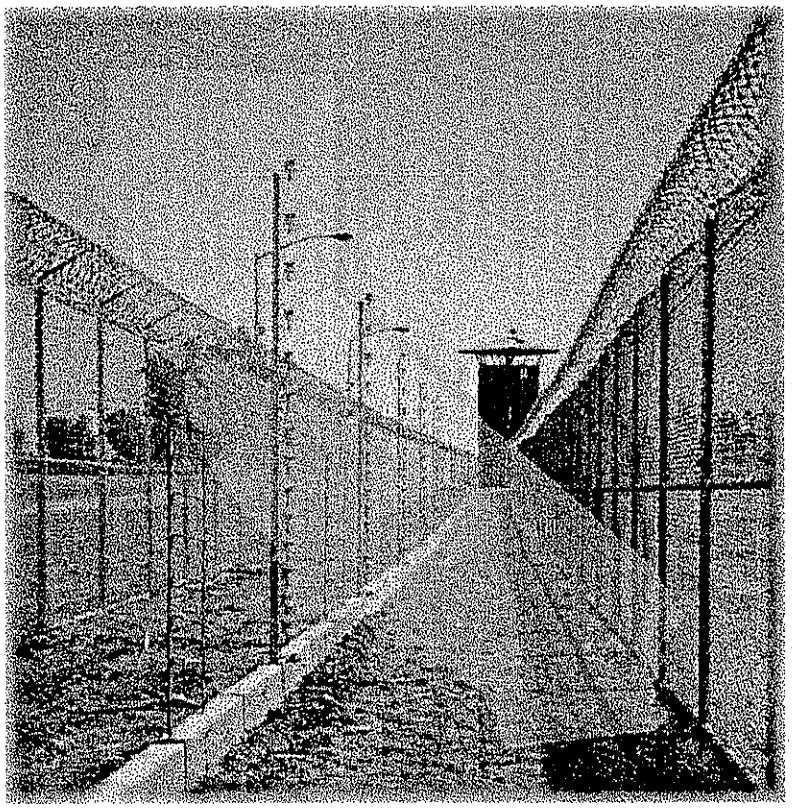
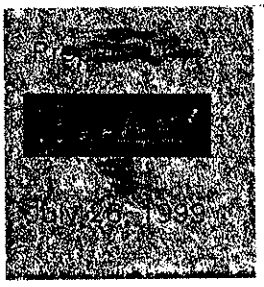
Statewide Electrified Fence Project

Biological Opinion



California Department of Corrections



United States Department of the Interior

FISH AND WILDLIFE SERVICE
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IN REPLY REFER TO:

1-1-02-F-0121

May 29, 2002

Memorandum

To: Manager, California/Nevada Operations Office, Sacramento, California

From: Field Supervisor, Sacramento Fish and Wildlife Office, Sacramento, California

Subject: Intra-Service Biological and Conference Opinions on Issuance of a Section 10(a)(1)(B) Incidental Take Permit to the California Department of Corrections for Twenty-seven Electrified Prison Fences in the State of California

This document transmits the biological/conference opinion of the U.S. Fish and Wildlife Service (USFWS), Sacramento Fish and Wildlife Office (SFWO), regarding the issuance of an incidental take permit (Permit) to the California Department of Corrections (CDC or Permittee) for implementation of the Statewide Electrified Fence Project pursuant to section 10(a)(1)(B) and section 10(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*)(Act), and in accordance with section 7 of the Act and their implementing regulations (50 **CFR** §402). These actions are described in the habitat conservation plan (HCP) for the subject action (EDAW 1999). The USFWS proposes to issue this Permit to the CDC for a period of 50 years.

The Permittee is requesting coverage under the Permit for a total of 62 species (Covered Species). The Permit would cover incidental take for five (5) endangered species: San Joaquin kit fox (*Vulpes macrotis mutica*); Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*); blunt-nose leopard lizard *Gambelia sila*); brown pelican (*Pelecanus occidentalis*); and southwestern willow flycatcher (*Empidonax trailii extimus*). The Permit would cover incidental take for four (4) threatened animal species: desert tortoise (*Gopherus [=Xerobates] agassizi*); bald eagle (*Haliaeetus leucocephalus*); western snowy plover (*Charadrius alexandrinum nivosus*); and coastal California gnatcatcher (*Polioptila californica californica*). The Permit would cover two (2) species formerly listed as threatened and endangered: the Aleutian Canada goose (*Branta canadensis leucopareia*) and peregrine falcon (*Falco peregrinus anatum*), de-listed on March 20, 2001, and August 25, 1999

respectively. The Permit would also cover 51 currently unlisted animal species, including the San Joaquin antelope squirrel (*Ammospermophilus nelsoni*); Mohave ground squirrel (*Spermophilus mohavensis*); San Diego black-tailed jackrabbit (*Lepus californicus bennettii*); San Joaquin pocket mouse (*Perognathus inornatus inornatus*); short-nosed kangaroo rat (*Dipodomys nitratoides brevinasus*); southern grasshopper mouse (*Onychomys torridus ramona*); Tulare grasshopper mouse (*Onychomys torridus tularensis*); San Diego desert woodrat (*Neotoma lepida intermedia*); white-footed vole (*Arborimus albipes*); San Diego horned lizard (*Phrynosoma coronatum blainvillei*); orange-throated whiptail (*Cnemidophorus hyperythrus*); northern red-diamond rattlesnake (*Crotalus ruber ruber*); Swainson's hawk (*Buteo swainsoni*); western yellow-billed cuckoo (*Coccyzus americanus occidentalis*); black-crowned night heron (*Nycticorax nycticorax*); osprey (*Pandion haliaetus*); white-tailed kite (*Elanus leucurus*); northern goshawk (*Accipiter gentilis*); northern harrier (*Circus cyaneus*); sharp-shinned hawk (*Accipiter striatus*); Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*); rough-legged hawk (*Buteo logopus*); ferruginous hawk (*Buteo realis*); golden eagle (*Aquila chrysaetos*); American kestrel (*Falco sparverius*); merlin (*Falco columbarius*); prairie falcon (*Falco mexicanus*); California gull (*Larus californicus*); long-billed curlew (*Numenius americanus*); barn owl (*Tyto alba*); western screech-owl (*Otus kennicottii*); great horned owl (*Bubo virginiana*); northern pygmy owl (*Glaucidium gnoma*); burrowing owl (*Athene cunicularia*); long-eared owl (*Asio otus*); short-eared owl (*Asio flammeus*); Vaux's swift (*Chaetura vauxi*); California horned lark (*Eremophila alpestris actia*); purple martin (*Progne subis*); Bendire's thrasher (*Toxostoma bendirei*); San Diego cactus wren (*Campylorhynchus brunneicappillus sandiegensis);*loggerhead shrike (*Lanius ludovicicanus*); yellow warbler (*Dendroica petechia*); yellow-breasted chat (*Icteria virens*); southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*); Bells' sage sparrow *(Amphispiza belli belli*); and tricolored blackbird (*Agelaius tricolor*) should they become listed in the future. Take authorization for currently unlisted Covered Species would become effective concurrent with their listing under the Act.

This biological opinion is based on information provided in the following documents: (1) the CDC permit application; (2) the July 29, 1999, Habitat Conservation Plan for the Statewide Electrified Fence Project (HCP); (3) the June 28, 2001, Addendum to the Project's Habitat Conservation Plan (Addendum); (4) the May 21, 1999, Environmental Assessment (EA); (4) the July 25, 1999, draft *Implementation Agreement for the California Department of Corrections Electric Fence Project* (IA); and (6) various other published and unpublished agency and academic literature. A complete administrative record is on file at the SFWO.

Consultation History

CDC originally reviewed the Statewide Electrified Fence Project and determined that it was exempt from the California Environmental Quality Act (CEQA) (two Notices of Exemption, were filed with the

Governors' Office of Planning and Research and posted on April 15 and July 17, 1992). It was therefore concluded by CDC that the addition of the electrified fencing to the existing secured perimeter fencing would not have a significant effect on the environment.

However, in late 1993, after activation of the fencing it was found that accidental wildlife electrocution was occurring on the fences, including the loss of some bird species of special concern (e.g., burrowing owl). In 1994 CDC began informal consultation with the USFWS and the California Department of Fish and Game (CDFG) and proposed that CDC would prepare a statewide Environmental Impact Report (EIR) to assess impacts on wildlife and to identify mitigation measures. Concurrently with the last phases of the CEQA process, CDC began consulting with the USFWS and CDFG over what mitigation measures would be needed for compliance with the federal and California Endangered Species Acts (ESA and CESA, respectively). During 1994-1995 field work was conducted and the EIR prepared. The EIR was published in April 1996, and was certified in July 1997.

CDC initiated formal consultation with the USFWS in 1996. CDC began meeting with the USFWS and CDFG in 1996 to discuss HCP methodology. Throughout 1997, 1998, and into the spring of 1999, CDC conducted Working Group and Management Group meetings with the wildlife agencies; the objectives being to jointly develop methodologies for estimating levels of take and creating a compensatory mitigation program to offset the take. An Environment Assessment (EA) was prepared, dated May 21, 1999, and a HCP was prepared dated July, 26, 1999. The EA was noticed in the Federal Register in the summer of 1999. Responses to public comments were prepared in the fall of 1999.

CDC submitted a 10(a) permit application form on May 21, 1999. Meetings and discussions occurred throughout 2000 and into the spring of 2001. During this time period CDC's project description changed. CDC decided to drop two of the electrified fence sites because they were to occur at future prisons that were no longer planned for construction. An Addendum to the HCP was prepared on June 28, 2001 and submitted to the USFWS. It included a slightly reduced project description (27 electrified fences now, instead of 29) along with the corresponding modifications to the HCP and mitigation program.

BIOLOGICAL AND CONFERENCE OPINIONS

Description of the Proposed Action

Introduction

The CDC HCP is a 50-year plan intended to address the need to protect and conserve "Covered Species" and other biological resources within the CDC project area. The CDC HCP and CDC IA

provide more detail on the project description and implementation of the HCP, and are incorporated by reference into this biological opinion. The CDC HCP covers 27 prisons located within the State of California and eight off-site mitigation sites within the State of California. CDC seeks an incidental take permit (ITP) from the USFWS pursuant to section 10(a)(1)(B) of the Act. The permit would authorize incidental take of the Covered Species. Such authorization is needed because the activation of the electrified fence system at 27 prison sites and habitat restoration associated with the proposed action may result in take of federally listed species, as well as of other unlisted species.

Electrified fences are installed and operating, or planned for installation and operation, at 27 sites throughout California. The 27 prison sites are generally located near rural communities or in isolated areas, with a few exceptions. All of the electrified fence sites are or would be located on State property. Of the 27 sites, 25 are existing prisons that have the fences installed and activated. Of the remaining two sites, none of which are currently authorized, one is associated with a proposed future prison, and one involves an existing prison where an electrified fence would be constructed only if its mission changes from housing female to housing male inmates.

The project involves the installation and activation of lethal electrified fences within the secured perimeter of prison facilities. The electrified fence is installed between two parallel, chain link security fences that are topped with razor wire. The electrified fence consists of galvanized posts spaced approximately 30 feet apart, supporting 15 to 18 electrified wires. The posts are 13 to 17 feet high with post-mounted insulators that isolate the high-voltage wires from the grounding posts, grounding brackets, and the concrete grade beam. The electrified wires are spaced more closely near the ground and farther apart near the top of the fence, with an average separation of approximately 10 inches. The electrified fence design includes detection rings around the lower seven wires and grounding posts enveloping the lower wires between the fence posts to ensure that contact is made if the lower electrified wires are spread apart.

The precise length of each fence varies somewhat to adjust to local site conditions and the size of the prison perimeter. Typical fence lengths range from approximately 3,500 to 9,400 feet (except one prison where the fence length is 14,000 feet). The space between the standard parallel fences is graded and kept clear of vegetation and debris.

The following are brief descriptions of the location, surrounding land use, and vegetation communities found at each of the 27 prison sites (Appendix A):

Calipatria State Prison (Calipatria): This prison is located approximately 4 miles northeast of the City of Calipatria and 10 miles east of the Salton Sea in Imperial County. The 1,200-acre prison facility is 167 feet below sea level with summer highs of 107° F to winter lows of 39° F. Rainfall averages 3.05 inches per year.

The three vegetation communities identified on-site are: Barren/disturbed/ruderal areas, landscaped areas, and open water/wetland. The barren/disturbed/ruderal areas have weedy vegetation such as Russian thistle (*Salsola tragus*), dove weed (*Eremocarpus setigerus*), and wild oats (*Avena* spp) that provide seed food for a variety of bird species. Landscaped areas provide shelter and foraging habitat for a variety of urban adapted birds. The detention pond on site provides habitat for inland species of shorebirds.

Centinela State Prison (Centinela): This prison located in southwestern Imperial County, approximately 12 miles from El Centro on 2,300 acres of land. Summer temperatures reach 107° F and winter temperatures to 39° F. Rainfall averages 3.05 inches per year. Habitat types on site include barren/disturbed/ruderal areas, creosote bush, tamarisk, open water/wetland, landscaped areas, and desert wash. Creosote bush (*Larrea tridentata*), with all-scale (*Atriplex polycarpa*) goldenbush (*Isocoma* sp.), and bur-sage (*Ambrosia dumosa*). There are also two detention basins and a network of drainage ditches. Plants also include prickly sow thistle (*Sonchus asper*), cattail (*Typha* sp.), and western sunflower (*Helianthus annuus*).

Disturbed habitat provides open areas preferred by black-tailed jackrabbits (*Lepus californicus*), Audubon's cottontail (*Sylvilagus audubonii*), and round-tailed ground squirrel (*Spermophilus tereticaudus*). Desert type habitat provide feeding and sheltering opportunities for desert adapted species such as desert iguana (*Dipsosaurs dorsalis*), zebra-tailed lizard (*Callisaurus draconoides*), and desert kangaroo rat (*Dipodomys deserti*) The detention pond on site provides habitat for inland species of shorebirds.

California Institution for Men, West (CIM): CIM is located three miles south of Chino, in San Bernardino County on 2,600 acres, 1.5 miles east of the Chino Hills. Much of the site is in active agriculture which supports the prison dairy. Summer temperatures reach a high of 95° F and winter temperatures reach 44° F with rainfall averages of 15 inches per year.

Habitat types include fresh emergent wetlands and active and fallow agriculture. Offsite along Chino Creek is a willow dominated valley-foothill riparian habitat, but the creek banks have been rip-rapped. Vegetation types along the creek include black willow (*Salix gooddingii*), mule fat (*Baccharis salicifolia*), and California bulrush (*Scirpus californica*) among other riparian adapted species. These vegetation types provide habitat for raptors and song birds that favor riparian vegetation. The agricultural areas provide habitat for birds such as Brewer's blackbird (*Euphagus cyanocephalus*), rough-legged hawks (*Buteo lagopus*), and American kestrel (*Falco sparverious*). Wetland habitats provide habitat for wading bird species such as green herons (*Butorides striatus*) and a variety of duck species.

R. J. Donovan Correctional Facility at Rock Mountain.(R..J. Donovan): This prison is located approximately 18 miles southeast of San Diego on 760 acres on a plateau. Slopes drop steeply into two Otay River tributary canyons, O'Neal Canyon and Johnson Canyon, that border the plateau on the northeast and southwest, respectively. Temperatures range from normal summer highs of 75° F to 45° F in the winter. Five habitat types are found on site including: Diegan coast sage scrub, riparian/wetland, non-native annual grassland, barren/disturbed/ruderal areas, and landscaped areas. Native coastal scrub is found on the north-facing slope of O'Neal Canyon and in the southwest portion of the site. This vegetation is dominated by California sagebrush (*Artemisia californica*) and California buckwheat (*Eriogonum fasciculatum*). Wetlands consist of drainage ditches bordered by willows, cattail, tamarisk and mulefat. Non-native grassland consists of oat, ripgut brome (*Bromus diandrus*), and foxtail chess (*Bromus madritensis* ssp. *rubens*).

Coastal scrub provides habitat for California thrasher, California towhee, and a variety of other bird species. Coastal scrub also provides habitat for reptile species such as San Diego horned lizard, numerous snake species and small mammal species. Open grassland areas provide habitat for bird species including Brewer's blackbird, red-winged blackbird, and western meadowlark. Wetland areas provide habitat for red-winged blackbird and killdeer.

Ironwood State Prison (ISP) and Chuckawalla Valley State Prison (CVSP): ISP and CVSP are located next to each other in eastern Riverside County 17 miles west of Blythe they occupy 1,720 acres of desert type habitat. Six vegetation communities are found on site including: creosote bush scrub, desert wash, disturbed areas (disced and barren areas), drainage ditches and storm water detention basins, jojoba fields, and landscaped areas. Temperatures range from a summer daily high of 108° F to winter daily low of 38° F with an average rainfall of 3.8 inches per year.

Creosote bush scrub consists of creosote bush, bursage, brittlebush (*Ewncelia farinosa*), and broom snakeweed (*Gutierrezia sarothrae*). Desert wash areas include those plant types and also tree species such as desert ironwood (*Olneyo tesota*), catclaw (*Acacia gregi*), and blue palo verde (*Cercidium flordum* ssp. *floridum*). Open water and wetland habitat is confined to a detention basin and drainage ditches on the prison perimeter. Agricultural areas include an abandoned jojoba fields and orange orchard. Creosote bush scrub and desert wash areas provide habitat for desert adapted species, such as desert iguanas, zebra-tailed lizards, and western diamond-back rattlesnakes. Waterfowl, plovers and shorebird species utilize the detention basin and wetland areas for feeding, breeding and sheltering.

California State Prison-Los Angeles: (CSP-Los Angeles): CSP-Los Angeles is located approximately 2.5 miles west of Antelope Valley Freeway in Lancaster, at the southwestern edge of the Mojave Desert on 282 acres. Normal summer daily highs are approximately 97° F and winter daily lows of 31° F. Rainfall average is 6.92 inches a year. Vegetation communities on or adjacent to the prison are wetland, barren/disturbed/ruderal areas and desert scrub. Disturbed areas and barren areas

are a result of frequent grading on-site. Wetlands consist of depressions that hold water seasonally and a small freshwater marsh. The freshwater marsh has broad-leaved cattail (*Typha latifolia*), four-wing saltbush (*Atriplex canescens*), and narrow-leaved willow, among other species. The desert scrub surrounding the prison is dominated by mormon tea (*Ephedra nevadensis*), shadescale (*Atriplex confertifolia*), and great basin sagebrush. Joshua trees are located offsite to the south of the prison.

The wetlands provide habitat for egrets and herons, while the smaller seasonal depressions provide habitat for plovers, ducks and shorebirds such as killdeer, ring-necked duck (*Aythya collaris*) and ring-billed gull. Species associated with desert scrub include side-blotched lizard, California quail (*Callipepla californica*), western kingbird, and Swainson's hawk.

California Correctional Institutions (CCI), Levels II, IVA and IVB: These facilities are grouped together on 1,705 acres prison site in the Cummings Valley 10 miles southwest of the City of Tehachapi in Kern County. Climatic conditions are transitional between the southern Sierra Nevada to the north, the Mojave Desert to the east and the transverse mountains of southern California to the south. Normal summer daily temperatures are approximately 97° F to a normal winter los of 35° F Rainfall averages 11.13 inches a year with occasional snow.

Seven habitat types were identified on or near prison grounds: barren/disturbed/ruderal areas; landscaped areas; spray fields; open water/wetland; non-native grasslands; sagebrush scrub, and blue oak woodland. The open water/wetland habitat consists of wastewater treatment ponds, stormwater detention basins, and seasonal drainages with occasional clumps of riparian vegetation. Sagebrush scrub, either dominated by sagebrush (*Artemisia tridentata* ssp. *Vaseyana*) or rabbitbrush (*Chrysothamnus nauseosus*), occurs near each of the perimeters and surrounding prison property. Blue oak woodland occurs on several knolls onsite and is present southeast of the prison property.

Most of the observed species onsite are adapted to disturbed and urbanized habitats. The sprayfields provide foraging habitat for raptor species, including red-tailed hawks, turkey vultures, and red-shouldered hawks. The open water/wetland habitat provides habitat for inland shorebirds and ducks, such as mallard, gadwall (*Ana strepera*), and buffleheads. Blue-oak woodland, scrub habitat and the non-native grassland provides habitat for numerous species of reptiles, birds, and mammals.

California State Prison-Corcoran(CSP-Corcoran) and California Substance Abuse Treatment Facility(CSATF): These facilities are located in the City of Corcoran approximately 45 miles south of the City of Fresno, along the eastern edge of the Tulare Lake Basin. CSP-Corcoran comprises approximately 960 acres, and CSATF occupies a 750-acre parcel adjacent to CSP-Corcoran. The surrounding land use is almost entirely active agriculture, with several wastewater percolation ponds to the north of the prison. An annual normal summer daily high are approximately 99° F and a normal winter daily low of 35° F with an average rainfall of 7.04 inches a year. Three habitat types occur on site: agricultural fields, wetlands (drainage ditches, irrigation canals and wastewater treatment ponds,

and barren/disturbed/ruderal areas. Agricultural crops grown on the prison grounds include corn (*Zea mays*), wheat (*Triticum aestivum*); and alfalfa (*Medicago sativa*) and some fields are fallow. The ditches contain the following vegetation: California bulrush, broad-leaved cattail, and common sunflower.

Agricultural fields and disturbed areas provide habitat for many species of birds, mammals, and reptiles. Species that were observed or would be expected to be site include: greater yellowlegs (*Tringa melanoleuca*), green heron, long-tailed weasel (*Mustela frenata*), Audubon's cottontail (*Sylvilagus auduboni*), and side-blotched lizard. The wastewater treatment ponds and drainage ditches provide habitat for shorebirds and waterfowl such as long-billed dowitcher (*Limnodromus scolopaceus*), Wilson's phalarope (*Phalaropus tricolor*), and ruddy duck.

Pleasant Valley State Prison (PVSP): is located in western Fresno County, approximately five miles east of Coalinga. PVSP is 637 acres and is primarily flat and is surrounded by agriculture and ranch land. Temperatures ranged from a normal summer daily high of approximately 99° F to a normal winter daily low of 35 ° F, with rainfall averages of 7.82 inches per year. Five vegetation communities were identified on or adjacent to PVSP: barren areas; wetlands, agricultural fields, tamarisk and saltbush scrub. Wetlands include newly-constructed wastewater treatment ponds, stormwater detention basins and ditches. The wastewater treatment ponds are lined and do not support any vegetation.

Disturbed habitat provides open areas preferred by black-tailed jackrabbits, Audubon's cottontail, and harvest mouse (*Reithrodontomys megalotis*). The stormwater detention pond and ditches on site provide roosting and foraging habitat for inland species of shorebirds and ducks. The saltbush scrub and tamarisk provide foraging habitat for many species of birds and mammals.

Avenal State Prison (ASP): ASP is located approximately three miles south of the City of Avenal in Kings County on 640 acres. The southwest corner of the site abuts the rolling foothills of the coastal mountains and the remainder of ASP is surrounded by active agricultural and disced fields. Much of the undeveloped lands is disced regularly to eliminate vegetation. Annual temperatures ranged from a normal summer daily high of approximately 98° F. to a normal winter daily low of 38° F with a rainfall average of 6.61 inches per year.

Five vegetation communities are found on or adjacent to the ASP. These include open water/wetland, barren/disturbed/ruderal areas, landscaped areas, non-native grassland and agricultural fields. A stormwater detention basin and wastewater storage ponds comprise the open water and wetland habitat, neither of which support emergent vegetation, but tamarisk was present along the banks of the wastewater storage pond.

The wetland habitat provides habitat for ducks and shorebirds, such as black-necked stilts. The non-native grassland and agricultural fields provide habitat for a variety of birds, mammals, and reptiles.

Wasco State Prison (WSP) - Reception Center: WSP Reception Center is located at the intersection of Highway 46 and Scofield Road, approximately 4 miles west of Wasco and 11 miles west of Highway 99 in Kern County. Land use in the surrounding areas is primarily agricultural; however, Wasco Valley Road Golf Course is located to the east of the site. One parcel of native vegetation is to the south of WSP. Annual temperatures range from a normal summer daily high of approximately 100° F to a normal winter daily low of 36° F, with an average rainfall of 6.69 inches per year.

Four vegetation communities were identified on or adjacent to WSP: alkali scrub, open water/wetland, barren/disturbed/ruderal areas and agricultural fields. Dominant species in the alkali scrub were allscale and spiny saltbush. Fresh emergent wetland habitat directly offsite includes willow-week, cattail, and curly dock. Onsite wetlands consist of man-made drainage ditches and irrigation water basins. Agricultural fields are the dominant habitat type on WSP grounds and are comprised primarily of alfalfa.

Wildlife species observed in the alkali scrub include side-blotched lizard, California whiptail (*Cnemidophorus tigris mundus*), Audubon's cottontail, and kangaroo rats. The freshwater emergent wetlands and holding basins onsite provide habitat for American coot, eared grebe, ruddy duck, and killdeer. Agricultural fields adjacent to and on the prison provide foraging and roosting habitat for a variety of bird species and mammals.

North Kern State Prison(NKSP) and California State Prison -Kern County at Delano II (Delano II): These prisons are located near each other in the San Joaquin Valley, on the border of Kern and Tulare counties, approximately 2 miles west of the City of Delano. Land use in the immediate vicinity of the two prison sites is almost entirely active agriculture. NKSP is an existing facility and Delano II is a proposed future prison to be located about ½ mile south of NKSP. NKSP is 175 acres and Delano II is 400 acres. Temperatures range from a normal summer daily high of approximately 100° F to a normal winter daily low of 37° F, with rainfall averages of 7.17 inches per year.

Six vegetation communities were found on or adjacent to the two prison properties: valley salt scrub, valley sink scrub, riparian, open water/wetland, barren/disturbed/ruderal areas and agricultural fields. Valley saltbush scrub is found both on the prison grounds and in the surrounding areas. Valley sink scrub is found on and in the vicinity of NKSP, but in more saline areas that valley saltbush scrub. Riparian habitat located offsite is dominated by black willock, cocklebur (*Xanthium strumarium*) and soft chess. The small detention basin on site has weedy species including tamarisk, salt heliotrope and non-native grasses. Agricultural fields contain the following crops, alfalfa, wheat, corn, grapes, sugar beets and cotton. Species utilizing the valley saltbush scrub and valley sink scrub habitat include California whiptail, side-blotched lizard, western kingbird, western meadowlark, Audubon's cottontail,

and kangaroo rat. Species utilizing the detention basin include mallard, killdeer, black-necked stilt, and greater yellowlegs.

Mule Creek State Prison(MCSP): MCSP is located on 864 acres in western Amador County in the lower Sierra Nevada foothills, near the crossing of State Route 104 over Mule Creek in the City of Ione. Land use surrounding MCSP consists of pasture, Dry Creek and a golf course within one mile of the prison. Temperatures range from a normal summer daily high of approximately 95° F to a normal winter daily low of 37° F, with an average rainfall of 21.85 inches per year.

Six native habitat types are found on and adjacent to MCSP: altered blue-oak/foothill pine woodland, valley-foothill riparian, open water/wetland, chaparral, and non-native annual grassland. Altered habitats include spray fields (within oak-pine woodlands and non-native annual grassland onsite,) agricultural fields and areas that were barren or heavily disturbed. Blue oak-foothill pine is the dominant habitat at MCSP. Valley-foothill riparian habitat is located along Mule Creek and Dry Creek. Species in the valley-foothill riparian habitat include Fremont's cottonwood (*Populus fremontii*), red willow (*Salix laevigata*), interior live oak (*Quercus wislizenii*), blue oak, and Himalayan blackberry (*Rubus discolor*). Freshwater emergent wetland habitat is confined to man-made ditches. Lined sewage treatment ponds and a large detention basin support barnyard grass, knotweed and nutsedge. Chaparral habitat is found on the cliffs and hills in the northeast corner of the prison property where chamise (*Adenostoma fasciculatum*), and yerba santa (*Eriodictyon californicum*) are dominant shrubs.

Wildlife diversity was highest in the foothill pine/oak woodlands and chaparral. Species utilizing these habitats include numerous species including California quail, acorn woodpecker (*Melanerpes formicuvorus*), Nuttall's woodpecker, black-tailed jackrabbit, and bobcat (*Felis rufus*). Riparian habitat is used by species such as Anna's hummingbird, black phoebe, ruby-crowned kinglet, and raccoons.

California State Prison-Solano (CSP-Solano): CSP-Solano is located within the incorporated limits of the City of Vacaville, approximately five miles southwest of the city center on approximately 980 acres at the base of the east slope of the Vaca Mountains. A residential subdivision borders the prison's eastern boundary. Other land uses in the area include farming and livestock grazing. Temperatures range from a normal summer daily high of 94° F to a normal winter daily los of 36° F, and a rainfall average of 23.84 inches per year.

Six vegetation communities are found on the prison grounds: blue oak woodland, non-native annual grassland, open water/wetland, barren/disturbed/ruderal area, and orchards. Blue oak woodland is the dominant habitat in the foothills west of CSP-Solano. Two large irrigation water storage ponds, four small sludge settling ponds, and a drainage canal constitute the open/water/wetland habitat onsite. Emergent vegetation is found in all ponds and includes species such as cattail, curly dock and tule. Non-

native grassland habitat is primarily slender wild oats and red-brome. English walnut and plum orchards are located in the northwest corner of the site.

Wildlife species that would utilize the blue oak woodland and orchard habitats include yellow-billed magpie (*Pica nuttalli*), yellow-rumped warblers, and mule deer. A variety of birds and mammals would be expected to utilize the non-native annual grassland. Storage ponds provide habitat for a variety of bird species including killdeer, common snipe (*Gallinago gallinago*), and pied-billed grebe.

Pelican Bay State Prison (PBSP): PBSP is located on 430 acres, approximately 7.5 miles northeast of Crescent City and 14 miles south of the California-Oregon border in Del Norte county. The Smith River runs east to west approximately two miles north of PBSP. The north end of Lake Earl is within 0.5 mile of the project site. Land use in the vicinity of the prison consists of a few individual residences to the south and north within the coast redwood forest habitat. Relatively undisturbed stands of coast redwood forest are found to the east and many small wetlands, marshes, swamps and drainages occur in the project vicinity. Second- and third-growth redwood forest and other native forest and wetland habitat surround the prison site. Temperatures range from a normal summer daily high of approximately 67° F to a normal winter daily low of 40° F with an average rainfall of 65.21 inches per year.

Six vegetation communities occur on or adjacent to PBSP: upland redwood forest, red alder forest, red alder riparian forest, barren/disturbed/ruderal areas, agricultural fields and wetlands. Upland redwood forest is comprised mainly of second-and third-growth coast redwood (*Sequoia sempervirens*), with scattered western hemlock (*Tsuga heterophylaa*), and Douglas fir (*Pseudotsuga menziesii*). Red Alder forest is associated with gaps in the redwood forest canopy and isolated, moist situations on the prison grounds. Several freshwater marshes are located onsite in areas that have been dammed to create water detention basins. Marsh species include broad-leaved cattail, although California bullrush and willows. The agricultural fields are used to grow alfalfa.

Numerous bird species that utilize the red alder and redwood forests habitat including Stellar's jay (*Cyanocitta sterlleri*), red-tailed hawk, red-shouldered hawk, cliff swallows, and cedar waxwing (*Bombycilla cedrorum*). Freshwater marshes and wastewater treatment ponds provide habitat for many species of birds including: green heron, killdeer, common yellowthroat (*Geothlypis trichas*), and Virginia rail (*Rallus limicola*), and several species of waterfowl.

California Correctional Center, Level III (CCC Level III) and High Desert State Prison (HDSP): These two prisons are located nest to each other, 7 miles east of the City of Susanville, in Lassen County. The prison property includes the 1,100-acre CCC facility and the 655-acres HDSP and 475 acres of spray fields. Temperatures range from a normal summer daily high of approximately 85°F to a normal winter daily low of 13°F, with an average rainfall of 11.18 inches per year.

Six vegetation communities are on or adjacent to the CCC Level III and HDSP properties: sagebrush scrub barren/disturbed/ruderal areas, spray fields, non-native annual grassland, open water/wetland, and landscaped areas. Sagebrush scrub is dominated by great basin sagebrush, but also includes bitterbrush (*Arshia tridentata*), spineless horsebush (*Tetradymia canescens*), cheatgrass, and Great Basin wild rye. Sprayfields are planted with alfalfa. Wastewater treatment ponds and drainage channels create the open water and wetland habitat. The ponds are mostly devoid of vegetation, but the channel supports willow and mule fat.

The sagebrush scrub provides habitat for many species, including some not found elsewhere onsite. Species observed only in the sagebrush scrub include sage sparrow, sage thrasher (*Oreoscoptes montanus*), Brewer's sparrow, Nuttall's cottontail (*Sylvilagus nuttalii*), and kangaroo rat. Spray fields provide foraging habitat for raptors and mammals. Wetland habitat provides habitat for species such as ring-billed gull, red-necked phalarope, barn swallow, and violet-green swallow (*Tachycineta thalassina*).

California State Prison-Sacramento (CSP-Sacramento): CSP-Sacramento is located in the City of Folsom, approximately 26 miles east of the City of Sacramento, in eastern Sacramento County. The 1,173-acre site is in the rolling Sierra Nevada foothills east of the American River. Most of the undeveloped land onsite is relatively undisturbed. Temperatures range from a normal summer daily high of approximately 94° F to normal winter daily low of 37° F while rainfall averages 23.91 inches a year.

Five vegetation communities are on or adjacent to the prison property: blue oak woodland, mixed oak woodland, non-native annual grassland, barren/disturbed/ruderal areas, and landscaped areas. Blue oak woodlands are dominated by blue oaks. Mixed oak woodland are found in the hilly portions of the site and is dominated by blue oak and interior live oak with toyon (*Heteromeles arbutifolia*), blue elderberry (*Sambucus medica*), foothill pine (*Pinus sabiniana*), and California buckeye. Non-native annual grassland support yellow star thistle, foxtail chess, and wild oats.

Wildlife found in mixed oak and blue oak woodlands include western fence lizard, scrub jay, American kestrel, red-tailed hawk, western bluebird, gray squirrel (*Sciurus griseus*), mule deer, and coyote. Species found in the grassland include western meadowlark, American goldfinch, savannah sparrow, California ground squirrel, and mule deer.

Central California Women's Facility (CCWF) and Valley State Prison for Women(VSPW): These prisons are located on adjoining properties in the San Joaquin Valley, approximately six miles southeast of the City of Chowchilla, in Madera County. Land use in the immediate vicinity of the prisons is entirely active agriculture. CCWF and VSPW each comprise approximately 640 acres. Temperatures range from a normal summer daily high of approximately 98°F to a normal winter daily low of 35° F, with rainfall averages of 11.15 inches per year.

Four vegetation communities were identified o or adjacent to the prison properties: agricultural fields, orchard, open water/wetlands, and barren/disturbed/ruderal areas. Agricultural fields consist primarily of alfalfa. Orchards in the area are primarily nuts. Wetland habitat onsite is comprised of man-made drainage ditches, stormwater detention ponds, and wastewater treatment and storage ponds. Species found in the agricultural fields onsite include white-crowned sparrow, savannah sparrow, western meadowlark, and Audubon's cottontail. Open water/wetland areas supports shorebirds and ducks such as great egret, snowy egret (*Egretta thula*), killdeer, coots, mallards, and pied-billed grebes.

Northern California Women's Facility (NCWF): NCWF is located in the northern San Joaquin Valley, approximately four miles southeast of the City of Stockton and immediately southeast of the Northern California Youth Center. NCWF will only receive an electrified fence is it is converted to a medium security men's institution. Land use in the vicinity is primarily active agriculture. Temperatures range from a normal summer daily high of approximately 94° F to a normal winter daily low of 37° F, with rain fall average of 13.95 inches per year.

Three vegetation communities are on or adjacent to the site: barren/disturbed/ruderal area, landscaped areas and agricultural fields. Some areas are kept clear of vegetation or disced regularly. Most species found on site are those adapted to urbanized habitats. Agricultural fields supports raptors, such as red-tailed hawk and American kestrel. Other species include western kingbird, loggerhead shrike, Audubon's cottontail, and California ground squirrel.

Salinas Valley State Prison (SVSP): SVSP is located on the 950-acre Correctional Training Facility (CTF) in southern Monterrey County in the City of Soledad. Temperatures range from a normal summer daily high of approximately 84° F to a normal winter low of 34° F, with rainfall averages of 11.55 inches a year.

Four vegetation communities are on or adjacent to the SVSP: landscaped/vineyards, barren/disturbed/ruderal areas, and open water/wetland. The prison property is adjoined on three sides by active agricultural fields and vineyards. Agricultural crops are row crops and disced fields. Four man-made ponds are found onsite. Patches of emergent vegetation are present in most ponds. Urban adapted species are found on and off site, with shorebirds and ducks found in the open water/wetland areas.

Conservation Measures

A three tiered approach will be implemented to minimize and mitigate impacts to covered species: Tier 1 includes measures to reduce wildlife attractants near the perimeter; Tier 2 includes exclusion and deterrent devices installed in the perimeter; and Tier 3 includes off-site habitat enhancement. For a complete description of the minimization and mitigation measures see pages 5-1 through 5-87 of the HCP and the June 28, 2001 HCP Addendum.

Tier 1 conservation measures consist of maintenance and operations, and urban wildlife control program and a landscape modification program in the most highly disturbed areas of the prisons. CDC will conduct Tier 1 measures throughout the life of the electrified fences. CDC will inspect each prison site several times a year to ensure that Tier 1 measures are being properly implemented. Tier 1 measures are directed at reducing wildlife use of areas nearest the electrified fence, which will be accomplished by the use of maintenance and operations procedures. These procedures are aimed at reducing the attractiveness of existing landscaping to wildlife.

Maintenance and Operations Activities:

These activities include:

Vegetation Removal in the Perimeter: To prevent wildlife from utilizing the area between the perimeter chain link fences and areas immediately adjacent to the outer and inner perimeter fences these areas are kept free of vegetation and as barren as possible.

Vegetation Removal Near the Perimeter: The first 100 feet of vacant land outside the patrol road is generally kept free of weeds and crops and is hand-trimmed, mowed, or disced. Native habitats in this area is not removed.

Reduce Standing Water Near the Perimeter: To avoid attracting wildlife to a water source, rainwater is not be left standing for more than 24 hours following a storm. Puddles are removed by localized grading, hand-filling, or the creation of small ditches to divert water.

Correct Erosion Under the Fences: To prevent access to the electric fence from wildlife going under the chain link fence, fences are inspected on a weekly basis. Gaps and spaces under chain link fences (inner and outer) are filled with soil or stone within a day of being found or as soon thereafter as feasible.

Improve Drainage Maintenance: Man-made ditches located near the perimeter fence are periodically inspected to remove any weedy or non-native vegetation to ensure that standing water is not occurring within the channel. If water remains standing beyond 24 hours following storm events, corrective measures are taken to reduce the problem.

Routine Removal of Litter/Debris: To avoid wildlife from being attracted to litter as a food source or as shelter, all trash, letter, and construction debris is removed from areas within 200 feet of the perimeter.

Improve Food Waste Storage: To prevent wildlife from being attracted to a potential food source, garbage cans and dumpsters are covered at all times and are emptied as needed. All loose food waste is removed from all areas as part of routine grounds maintenance.

Relocate/Reduce Materials Storage Areas: To the extent feasible, equipment, supplies, rubble, pallets, etc., are not stored within 200 feet of either side of the perimeter to prevent wildlife from using this material as shelter.

Urban Wildlife Control

To prevent birds and mammals from breeding, feeding, and sheltering within the prison environment, and therefore reduce the likelihood of electrocution, general procedures are implemented. These measures include instructing staff and inmates not to feed any wildlife; regularly inspecting all external building structures (such as chain link fences, guard tower eaves, patio roofs, warehouse overhangs and nearby dairy buildings) for bird nests and removing accessible nests during the non-breeding season; installing screening, netting and other exclusion devices to prevent future nesting in these areas; and screening of culvert openings.

Landscape Modification Program: To prevent birds from using landscape vegetation as cover, perching, nesting, or foraging habitat, each institution is provided with a landscape plan which is less hospitable to wildlife.

Tier 2 measures consist of both exclusion and deterrent devices which have been installed in the secured perimeter of existing electrified fence site and will be installed at some future electrified fence prison sites (Appendix B). The purpose of these devices is to reduce the likelihood that wildlife will contact the electrified fences. These exclusion devices have been evaluated for biological effectiveness and feasibility concerns, such as jeopardizing prison security, creating maintenance problems, or causing technical problems for fence operation. Budget constraints were also considered.

Vertical Netting: Three-quarter inch mesh vertical netting enveloping both sides of the electrified fence, from the ground to the ninth wire, will prevent many birds from contacting the fence. CDC has installed the vertical netting at 14 existing prisons, and will install it at three future electrified fence sites. Vertical netting will not be placed at the following prisons where snow and ice accumulations make it infeasible: CCC Level III, HDSP, CCI Levels III, IV-A, IV-B, and CSP-Los Angeles.

Anti-Perching Wire: Anti-perching wire consists of 2- to 4-inch lengths of stiff wire connected to an aluminum or plastic base attached to strategic perching site in or near the perimeter. Anti-perching wire reduces the ability of birds to perch near the electrified fence.

Anti-Rodent Fencing: Burrowing wildlife such as gophers, skunks, and foxes can dig under the outer fence, or crawl under the fence in eroded areas increasing the potential for electrocution. Some animals can squeeze through the chain link fence at ground level. Small mesh (one inch or less) "Hardware cloth" or similar fencing installed for at least two feet above ground along the outer chain link fence will prevent these wildlife species from entering the perimeter. Anti-rodent fencing is not feasible under

extreme weather conditions or where wind blown sand occurs. The following sites will not have anti-rodent fencing: CCC Level III and HDSP, CSP-Los Angeles, CCI Levels, III, IV-A and IV-B, and CVSP.

Tier 3 is intended to compensate for wildlife mortality resulting from electrified fences by enhancing 2,354 acres of various habitat types at 10 sites throughout California (Appendix C). Enhancement is achieved through habitat acquisition, restoration, management, and creation actions. Actions will also be undertaken, such as cowbird trapping, to improve nesting success of bird species. CDC will develop conceptual restoration plans, including remedial measures and detailed construction plans for each site and will submit these plans for approval by CDFG and the USFWS.

All sites will be managed for wildlife habitat values and protected in perpetuity. Where no acquisition is involved, the enhancement actions will take place on land already encumbered for permanent protection. Where property acquisition is involved, the land will be bought and protected by deed restrictions or conservation easements at the time the property is transferred.

Allensworth Ecological Reserve (Allensworth): CDC will acquire and enhance, via active management, 282 acres of alkali sink/scrub habitat and restore an additional 800 acres of alkali sink/scrub habitat on lands within the existing Allensworth located in Tulare County. Twenty-six covered species are expected to benefit from the acquisition and enhancement action. Of these three are federally listed species: blunt-nosed leopard lizard, Tipton kangaroo rat, San Joaquin kit fox. The state listed San Joaquin antelope squirrel is found here also.

Compensation at Allensworth will consist of acquisition, and enhancement of 282 acres to protect high quality habitat, restrict disturbance, and improve connectivity within Allensworth. Compensation will also include restoration of an additional 800 acres of lower quality habitat. CDC will fund the cost and transfer of land to Allensworth, initial enhancement/restoration efforts, and an endowment to CDFG for management of these lands in perpetuity.

Enhancement of Allensworth will be through fencing and management activities. The purchase and fencing of these property will protect the integrity of the reserve and decrease the threat of unauthorized activities by adjacent lands owners, including trespass grazing. CDC will enhance 800 acres of the existing reserve by restoring microtopography and planting native shrubs. CDC restoration of microtopography will involve moving approximately 175,000 cubic yards of earth with heavy equipment to construct between 750 and 850 mounds and berms (linear mounds). Soil will be moved into irregular shapes and sizes varying in length from 10-200 feet, in height from one to five fees and in width from 5 to 25 feet. Mounds will be formed and placed in Areas to avoid creating ponded water. A CDFG biologist will direct equipment operators on the size, shape and location of the berm or mounds. Native vegetation will allowed to establish naturally or will be planted on the mounds.

Restoration will be conducted in two phases. Restoration activities conducted on Allensworth will be monitored for five years following implementation or until performance criteria are met. The second phase of restoration is expected to be completed in year three of the restoration program, therefore, monitoring will continue through year 8 of the program. Should major remedial actions be required, the monitoring period will be extended until performance criteria have been met. Performance criteria for restoration and enhancement activities will be developed as part of the final restoration plan and included as a component of the implementation agreement between CDC and CDFG.

California City Desert Tortoise Natural Area (DTNA). CDC will acquire 60 acres of creosote bush scrub or saltbush scrub habitat within the DTNA located near California City. Compensation involves contribution of funding for acquisition and enhancement of creosote bush scrub habitat in the Mojave Desert.

The DTNA is a federally-designated 39.5 square mile nature preserve and Area of Critical Environmental Concern in the eastern portion of Kern County. The leading conservation agency involved in land acquisition, habitat protection and public education activities at the DTNA is the Desert Tortoise Preserve Committee, Inc. (DTPC).

CDC will fund DTPC for the purchase of 60 acres of creosote bush scrub habitat and pay the DTPC required fees for short-term enhancement activities and long term management of the land. Short-term enhancement activities include: removal of non-native plant species, weeds, hazards, and man-made litter and other obstruction, a survey of the biological and management conditions of the habitat; and repair of protective fencing or other protective devices that assist in limiting unmonitored access to the compensation land sit. Long-term management activities may include: establishment of a long-term, photo-monitoring program to assess the condition of and changes to habitat over time; construction of protective fencing, public education, outreach and interpretive program, and habitat restoration utilizing native plant species and non-intrusive, low-impact restoration techniques.

Humboldt Bay National Wildlife Refuge: CDC will undertake habitat acquisition, restoration, and enhancement of the 109-acre Woll parcel adjacent to the Lanphere Dune Preserve, which is part of the USFWS's Humboldt Bay National Wildlife Refuge. A total of 23 species, including brown pelican, bald eagle, and western snowy plover, are expected to benefit from the acquisition and enhancement of foredune and coastal forest habitats.

Restoration and enhancement will include removal of two non-native invasive plant species common in the foredune habitat: nine acres of European beachgrass (*Ammophila arenaria*) and 50 acres of yellow bush lupine (*Lupinus arboreus*). Invasive species in the coastal forest that will be removed are English ivy (*Hdera helix*) and German ivy (*Senecio mikaniodes*). Restoration protocols will follow those of The Nature Conservancy as conducted at Lanphere Dunes. It is anticipated that removal of non-natives will take six years and revegetation will occur in year six. Native plant revegetation will use plants

propagated from seed collected on site. CDC will provide funding for fencing of approximately 4,500 linear feet of the existing Lanphere Dunes.

The planned restoration effort is an 11 year program. Restoration implementation is planned for two three-year phases. Restoration activities in each phase will be monitored for five years following implementation of the phase, or until performance criteria are met. Should major remedial actions be required, the monitoring period will be extended until performance criteria have been met to ensure the long-term success of mitigation activities. Monitoring will be conducted by the CDC-funded Restoration Supervisor in years three through seven of the program. The final four years of the restoration will be funded by CDC but conducted by USFWS staff or a CDC contractor. Performance criteria for restoration and enhancement activities will be developed as part of the final restoration plan and included as a component of the mitigation implementation agreement between CDC and the USFWS. If performance criteria are not met, then remedial actions will be undertaken after received approval from the USFWS and CDFG. Annual monitoring reports will be submitted and a final report will be submitted at the completion of the program.

Kern River Preserve (KRP): CDC will acquire and/or enhance a total of 23 acres of riparian and wetland habitat near the Kern River in Kern County (21 acres of riparian, 2 acres of wetland). Twelve of these acres are privately owned riparian habitat that will be purchased and transferred to Audubon California to be added to the KRP. Nine acres of riparian habitat and approximately two acres of wetland habitat will be created or enhanced on the existing KRP. CDC will also fund a management position at the KRP to further benefit riparian habitat and species.

KRP is located along the south fork of the Kern River, approximately 60 miles northeast of Bakersfield. KRP encompasses 1,127 acres, including 869 acres of riparian forest and 250 acres of non-native grassland. Several small irrigation ditches and a beaver pond are present on KRP. Riparian habitat on KRP is dominated by Fremont's cottonwood, yellow willow, red willow, stinging nettle, and mulefat.

A total of 26 covered species are expected to benefit from the acquisition and enhancement actions. These include the southwestern willow flycatcher, Swainson's hawk, and western yellow-billed cuckoo.

CDC will acquire and enhance 12 acres of riparian habitat and create/enhancement an additional nine acres of riparian and two acres of wetland habitat. The 12 acres of acquired riparian habitat will be adjacent to the existing KRP and enhanced via planting of riparian species. Enhancement and restoration will occur on two parcels known as the Sierra field and the Prince field. Restoration of approximately nine acres of riparian habitat on the Sierra field will consist of the creation of a riparian strip (approximately 200 feet wide and 2000 feet long) through the middle of the field. Approximately 1.5 acres of wetlands will be created on the Sierra field and one-half acre on the Prince field. Enhancement will include fencing the riparian and wetland restoration areas to exclude grazing. Wetland habitat will be created by excavating depressions that intercept the water table. Wetland species

including cattails, tules, and yerba mansa are expected to naturally colonize the wetland. Additional planting of wetland species will be undertaken by Audubon California. Riparian areas will be planted with cuttings and/or poles of Fremont's cottonwood and red willow collected from the preserve.

CDC will also fund a management position for a three-quarter time employee for five years. In April 1998 the National Audubon Society signed a Memorandum of Understanding with the U.S. Army Corps of Engineers and the USFWS that will result in Audubon California acquiring and managing a minimum of 360 additional acres of riparian habitat in the Kern River Valley. Maintenance activities on the new parcels, as well as on the whole preserve, will include removal of exotic plant species, fencing and fence maintenance, patrol of the preserve, and mitigation monitoring. CDC will purchase all fencing supplies.

A detailed restoration and enhancement plan will be developed by CDC with assistance from Audubon California. All restoration activities conducted on the KRP will be monitored for five years following implementation or until performance criteria are met. Should major remedial actions be required, the monitoring period will be extended until performance criteria have been met to ensure the long-term success of mitigation activities. The restoration plan and mitigation implementation agreement will be reviewed and approved by the USFWS and CDFG prior to finalization. Performance criteria will include both quantitative and qualitative criteria to measure the overall success of restoration and enhancement activities. An annual monitoring report will be prepared and submitted to the USFWS and CDFG. A final report will be submitted at the completion of the program (year 5, or later, if extended by required remedial actions.)

Mayacama Mountains Sanctuary (MMS): CDC will undertake a habitat restoration and enhancement effort at MMS. Compensation involves a total of 250 acres of enhancement (via fencing and active management) of oak woodland habitat. Additional enhancement of oak woodland habitat (via planting of oak seedlings), and of grassland and riparian habitat, will be undertaken on portions of the site. CDC will also fund a full-time site steward to continue restoration efforts and conduct routine maintenance and annual monitoring.

MMS is a 1,400-acre sanctuary in Sonoma County that is owned by Audubon California. The sanctuary supports three habitat types, including mixed oak/pine woodland, non-native grassland and riparian habitat. The primary habitat type is mixed oak/pine woodland and savanna, comprised predominately of Interior live oak, blue oak, black oak, ponderosa pine, and foothill pine. Riparian habitat occurs along Sulphur Creek and its tributaries, and the riparian vegetation is dominated by stands of interior live oak and arroyo willow.

A total of 18 covered species are expected to benefit from the enhancement actions. These include California Species of Special Concern and protected raptors.

CDC will fund a five-year site steward position to manage and enhance MMS's ecosystems. CDC will develop a detailed restoration and management plan for the MMS with assistance from Audubon California. The plan will guide the site steward's activities. The plan will include fencing of 250 acres of MMS to reduce impacts from off-road vehicles, trespass grazing and other sources. Other enhancement includes planting of oak seedlings and grassland and riparian restoration. All restoration will be monitored for five years following implementation or until performance criteria are met. Should major remedial actions be required, the monitoring period will be extended until performance criteria have been met. Performance criteria for restoration and enhancement activities will be developed as part of the final restoration plan and included as a component of the mitigation implementation agreement between CDC and Audubon California. The restoration plan and mitigation implementation agreement will be reviewed and approved by the USFWS and CDFG. Performance criteria will include both quantitative and qualitative criteria to measure the overall success of restoration and enhancement activities. An annual monitoring report will be prepared and submitted to the USFWS and CDFG. A final report will be submitted at completion of the program (year 5, or later, if extended by required remedial actions).

Oak woodland restoration will consist of collecting acorns onsite in the fall that will be stored until the planting season in the fall. Restoration of non-native grasslands to native grasslands will occur in the areas specified in the restoration plan that can be managed through controlled grazing and/or mowing to favor native species. A mix of three to eight native grass species will be planted. Riparian restoration will occur along the tributaries to Sulphur Creek in areas specified in the restoration plant where woody riparian species do not currently occur. Native plant species that will be planted include arroyo willow, California buckeye, and valley oak.

Paul Wattis Sanctuary (PWS): CDC will enhance 200 acres of wetlands and restore 20 acres of riparian plant communities at Audubon California's PWS in Colusa County, west of Butte Creek and east of the City of Colusa.

Young riparian stands dominated by cottonwood trees have begun to establish naturally in the seasonally flooded fields since restoration efforts began in 1989. Mature Central Valley riparian forest fragments occur in the project vicinity.

Eighty-five bird species were identified at the sanctuary in 1991-92 surveys. A total of 27 covered species are expected to benefit from the enhancement actions. Two of these are federally listed: the bald eagle and peregrine falcon. State-listed species include the Swainson's hawk, greater sandhill crane, western yellow-billed cuckoo, and bank swallow.

CDC will fund an additional 1/4 time increment to the site manager's salary (the site manager is employed half time) to facilitate management of the wetlands. Audubon California has calculated that this increment of increased management support will provide for an additional 200 acres of active

management. The manager, among other duties, will participate in the cowbird trapping program that will be funded and conducted by CDC at the PWS (this separate mitigation effort is described later.) A separate enhancement activity that will be funded and performed by CDC on the 200 acres is the removal of giant reed, an invasive non-native weedy species. Approximately one acre of giant reed has been found in scattered patches in the PWS's seasonal wetlands and riparian areas. Each site will be re-treated in six months after the initial cutting and monitored for five years. Remedial treatments will occur as necessary.

CDC will actively restore and enhance an additional 20 acres of riparian woodland on the PWS through augmentation of naturally regenerating stands. Restoration and enhancement efforts will be directed at establishing diverse riparian patches in appropriate areas. Species for planting will be selected based on an analysis of remnant riparian communities along the Sacramento River and elsewhere in the project vicinity. Seeds and cuttings will be grown at a nursery and then planted. Propagation materials will be collected on-site or from the nearby populations.

All restoration will be monitored for five years following implementation or until performance criteria are met. Should major remedial actions be required, the monitoring period will be extended until performance criteria have been met. Performance criteria for restoration and enhancement activities will be developed as part of the final restoration plan and included as a component of the mitigation implementation agreement between CDC and Audubon California. The restoration plan and mitigation implementation agreement will be reviewed and approved by the USFWS and CDFG. Performance criteria will include both quantitative and qualitative criteria to measure the overall success of restoration and enhancement activities. An annual monitoring report will be prepared and submitted to the USFWS and CDFG. A final report will be submitted at completion of the program (year 5, or later if extended by required remedial actions).

Stanislaus River Park (SRP): CDC will restore 30 acres of riparian habitat along the Stanislaus River in Stanislaus County. The restoration site is located within the Stanislaus River Park and includes ten separate recreation sites, scattered along the river that are connected by dedicated open space. The park is owned and operated by the U.S. Army Corps of Engineers as mitigation for impacts resulting from the New Melones Dam upstream.

At total of 31 covered species are expected to benefit from the riparian restoration activity. Two of these are previously federally listed species, the Aleutian Canada goose and peregrine falcon. State listed species within the 31 covered species include: Swainson's hawk, greater sandhill crane, western yellow-billed cuckoo and bank swallow.

Riparian woodland restoration will be conducted on a 30-acre parcel that is a portion of the McHenry Avenue Recreation Area. The site is a former agricultural field located along the Stanislaus River, below the McHenry Avenue bridge. A narrow band of existing cottonwood and willow riparian forest

separates the field from the river. A three-acre parcel at the western end of the field is the site of an ongoing restoration effort conducted by the Santa Fe Railroad Company.

CDC will undertake the riparian restoration using inmates from the California Department of Forestry and Fire Protection Camp at Jamestown. Inmates will be instructed and their activities overseen by the experienced habitat restoration specialists. It is anticipated that CDC will establish a nursery at the Jamestown Camp. Seed and cuttings for plant propagation will be obtained from local sources. CDC crews will conduct regular weed control and maintenance of the planting. All restoration will be monitored for five years following implementation or until performance criteria are met. Should major remedial actions be required, the monitoring period will be extended until performance criteria have been met. Performance criteria for restoration and enhancement activities will be developed as part of the final restoration plan and included as a component of the mitigation implementation agreement between CDC and representatives from the U.S. Army Corps of Engineers. The restoration plan and mitigation implementation agreement will be reviewed and approved by the USFWS and CDFG. Performance criteria will include both quantitative and qualitative criteria to measure the overall success of restoration and enhancement activities. An annual monitoring report will be prepared and submitted to the USFWS and CDFG. A final report will be submitted at completion of the program (year 5, or later if extended by required remedial actions).

Starr Ranch Sanctuary (Starr): The 4,000-acre preserve is located in the foothills of the Santa Ana Mountains approximately 60 miles southeast of Los Angeles. Starr is bordered by the Cleveland National Forest on the north and east, on the south by Ronald W. Caspers Regional park, and housing development on the west. CDC will enhance 700 acres by removing artichoke thistle at Audubon California's Starr Ranch Sanctuary in Orange County. Of these 700 acres, 450 acres will be restored to bunch grass and as much as 250 acres maybe restored to coastal sage shrub. Coastal sage scrub species will benefit from improved foraging opportunities within the grassland being enhanced onsite. Artichoke thistle is highly invasive and highly competitive with native plants. Dense thistle patches exclude most native plant species while providing little habitat value. Information gained from the systematic artichoke thistle control efforts at Starr will provide information that may be used in region wide control efforts.

A total of 25 covered species are expected to benefit from the enhancement actions undertaken at Starr. The only federally listed species is the California gnatcatcher. No state listed only species will benefit, but raptors and California Species of Special Concern will benefit.

CDC's funding of grassland enhancement at Starr will provide resources for staff and equipment needs. Sufficient funding is provided for field staff and CDC will also fund acquisition or rent of required equipment. Staff and equipment times will be available to replant native grasses into approximately 100 acres of the total 700 acres of artichoke thistle control.

A detailed restoration and enhancement plan will be developed by CDC with assistance from Audubon California. This plan will specifically target areas for artichoke thistle removal, describe methods to be employed, provide a schedule of planned activities, and develop performance criteria and a monitoring program. Artichoke thistle removal and grass plantings will be monitored for five years following implementation, or until performance criteria are met. Should major remedial actions be required, the monitoring period will be extended until performance criteria have been met to ensure long-term success of artichoke thistle removal efforts. The restoration plan and mitigation implementation agreement will be reviewed and approved by the USFWS and CDFG prior to finalization. Performance criteria will include both quantitative and qualitative criteria to measure the overall success of restoration and enhancement activities. An annual monitoring report will be prepared and submitted to the USFWS and CDFG. A final report will be submitted at the completion of the program (year 5, or later if extended by required remedial actions.

Cowbird Trapping Program: CDC will develop, operate and fund a cowbird trapping and songbird monitoring program at the PWS. Cowbirds are a pest species and are believed to be the primary cause for a decline in the reproductive success of riparian nesting songbirds. The cowbird trapping program will likely benefit other migratory bird species.

With assistance from the USFWS and CDFG, CDC will assemble a Technical Advisory Committee (TAC) to guide and oversee the proposed cowbird trapping and songbird monitoring activities at the PWS. The TAC will meet as frequently as needed and review and approve the cowbird trapping and songbird monitoring plans. CDC will develop, manage, and operate the cowbird trapping program, concurrently with an in-depth songbird monitoring program. The program is proposed to run for six years, with the first year dedicated to agency coordination, trap construction, identification of paid consultants and unpaid volunteers, development of a trapping program and monitoring plan, and development of an annual songbird monitoring program. Cowbird trapping will be conducted in the subsequent five years.

During each of the five years of cowbird trapping, a minimum of ten cowbird traps or modified Australian crow traps will be constructed and placed adjacent to riparian habitat. Standard traps are approximately six feet by six feet by eight feet high and resemble a chicken coop. Traps will be baited with wild bird seed, water and live wing-clipped cowbirds. Traps will be set and monitored for three weeks between April 1 and June 30. Traps will be checked daily and non-target species will be immediately released. Cowbirds will be humanely destroyed and disposed of properly.

CDC will prepare an annual report of each years trapping activities and results of the songbird monitoring program. The TAC will review the report and then submit it to the USFWS and CDFG for review and comment. At the end of the fifth year of trapping, a final report will be prepared by CDC, reviewed by the TAC and submitted to the USFWS and CDFG.

Burrowing Owl Habitat Enhancement within the San Diego MSCP: CDC will partially fund habitat enhancement activities being targets for burrowing owls within the San Diego MSCP. CDC is providing funding for this mitigation specifically to offset take of burrowing owls. Areas identified within the MSCP area. The MSCP identifies habitat enhancement opportunities in the following areas: Spring Canyon, San Pasqual Valley, Lake Hodges, Otay Mesa northeast of Brown Field, Otay Ranch, Otay River Valley, and Future Urbanizing Area 4. Enhancement is being considered within known, historical, and potential burrowing owl habitat. It may also include management for ground squirrels, as burrowing owls may be precluded from nesting in certain areas if not for the burrows left behind by ground squirrels. Specific enhancement activities identified in the MSCP for burrowing owls include: creation of artificial burrows, vegetation management (e.g., mowing, grazing) to promote short-grass foraging habitat, predator control, and buffer zone establishment for known nesting areas.

CDC will contribute $50,000 to CDFG to support burrowing owl habitat enhancement activities within the MSCP. The exact location and types of activities that will be supported by this contribution will be determined by the USFWS and CDFG. CDC is solely responsible for the funding; the USFWS and CDFG will determine how the money should be spent, and CDFG will provide staff (or designate third parties) to implement the agreed-to habitat enhancement efforts within the MSCP plan area in a manner that will benefit burrowing owls.

Status of the Species and Environmental Baseline

Federally listed species (includes species listed under both State and Federal law):

Desert Tortoise *(Xerobates [=Gopherus] agassiz)*

Status: Federal Threatened (55 **FR** 12178, April 2, 1990; 59 **FR** 5821, February 8, 1994)
California Threatened

Recovery Plan: U.S. Fish and Wildlife Service. 1994. Desert Tortoise (Mojave population) Recovery Plan. Portland, Oregon.

Species description: The desert tortoise is a large, herbivorous reptile with an adult carapace length of about eight to 14 inches. Males, on average, are larger than females and are distinguished by having a concave plastron, longer gular horns, larger chin glands on each side of the lower jaw, and a longer tail. Carapace color varies from light yellow-brown (horn color) to dark grey-brown. A composite of characteristics often is necessary to distinguish the desert tortoise from the other species of gopher tortoises, but its most unique feature is its very large hind feet.

Desert tortoises are long lived with delayed maturation. Some individuals begin reproducing when 7.4

inches (180 mm) long (median carapace length, MCL) which is when they attain about 12-15 years old. The majority do not begin reproducing until they reach 8.2 inches (208 mm; approximately 12-20 years old; Turner and Berry 1984; Turner *et al.* 1986). Maximum longevity in the wild is likely to be 50-70 years. The average clutch size is approximately 5-7 eggs with 0-3 clutches deposited per year. Clutch size and number probably depend on female size, water, and annual productivity of forage plants in the current and previous year (Turner *et al.* 1984; Turner *et al.* 1986; Henen 1997). The ability to alter reproductive output in response to resource availability may allow individuals more options to ensure higher lifetime reproductive success. The interaction of longevity, late maturation, and relatively low annual reproductive output causes their populations to recovery slowly from natural or anthropogenic decreases in density. To ensure population stability or increase, these factors also require relatively high juvenile survivorship (75-98 percent per year), particularly when adult mortality is elevated (Congdon *et al.* 1993).

Most eggs are laid in spring (Apr -Jun) and occasionally in fall (Sept-Oct). Eggs are laid in sandy or friable soil, often at the mouths of burrows. Hatching occurs 90-120 days later, mostly in late summer and fall (mid Aug-Oct). Eggs and young are untended by the parents. Tortoise sex determination is environmentally controlled during incubation (Spotila *et al.* 1994). Hatchlings are female when the incubation (i.e., soil) temperature is greater than 89.3° F (31.8° C) and male when the temperature is below that (Spotila *et al.* 1994). Mortality is higher when incubation temperatures are greater than 95.5° F (35.3° C) or less than 78.8° F (26.0° C). The sensitivity of embryonic tortoises to incubation temperature may make populations vulnerable to unusual changes in soil temperature (e.g., from changes in vegetation cover), but there are no data available from the field that can be used to test this hypothesis.

Tortoise activity patterns are primarily controlled by ambient temperature and precipitation (Nagy and Medica 1986; Zimmerman *et al.* 1994). In the East Mojave and Colorado Deserts, annual precipitation occurs in both summer and winter, providing food and water to tortoises throughout much of the summer and fall. Most precipitation occurs in winter in the West Mojave Desert resulting in an abundance of annual spring vegetation, which dries up by late May or June. Tortoises in this region are primarily active between May and June, with a secondary activity period from September through October. Tortoises may also be active during periods of mild or rainy weather in summer and winter. During inactive periods, tortoises are hibernating, aestivating, or resting in subterranean burrows or caliche caves, spending approximately 98 percent of the time in these cover sites (Marlow 1979; Nagy and Medica 1986). During active periods, they usually spend nights and the hotter part of the day in their burrow; they may also rest under shrubs or in shallow burrows (called pallets). Each tortoise may use an average of 7-12 burrows at any given time (Barrett 1990; Bulova 1994; TRW Environmental Safety Systems Inc. 1997); some burrows may be used for relatively short periods of time and then are replaced by other burrows.

Desert tortoises are most active in California during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and occasionally after summer rain storms. Desert tortoises spend the remainder of the year in burrows, escaping the extreme conditions of the desert.

The desert tortoise is widely distributed throughout major portions of the Mojave and Sonoran deserts of California, Nevada, Utah, and Arizona. It also occurs in Sonora and Sinaloa, Mexico. Genetic, morphological, ecological, and behavioral features suggest an evolutionary divergence between the tortoises found south and east of the Colorado River ("Sonoran population"), and those found north and west of the river ("Mojave population"). The latter is the population Federally- and State-listed as threatened. This population will be referred to in the remainder of this account. The majority of animals in the Mojave population occur at variable densities in six distinct population segments (i.e. evolutionarily significant units), each identified in the Recovery Plan for desert tortoises as separate Recovery Units (USFWS 1994).

In California, the desert tortoise occurs primarily within the creosote, shadscale, and Joshua tree series of Mojave desert scrub, and the lower Colorado River Valley subdivision of Sonoran desert scrub. Optimal habitat has been characterized as creosote bush scrub in which precipitation ranges from two to eight inches, diversity of perennial plants is relatively high, and production of ephemerals is high (Luckenbach 1982; Turner 1982; Turner and Brown 1982; Schamber and Turner 1986). Soils must be friable enough for digging of burrows, but firm enough so that burrows do not collapse. In California, desert tortoises are typically associated with gravelly flats or sandy soils with some clay, but are occasionally found in windblown sand or in rocky terrain (Luckenbach 1982). Live desert tortoises have been found in the California desert from below sea level to an elevation of 7,300 feet, but the most favorable habitat occurs at elevations of about 1,000 to 3,000 feet (Luckenbach 1982; Schamberger and Turner 1986).

Environmental Baseline: It is commonly claimed that tortoise populations have suffered drastic declines throughout much of the species' range, but a thorough presentation of these data has never been published (Bury and Corn 1995). Nonetheless, the cursory published accounts of tortoise populations in the West Mojave Desert do show significant reductions, at least in that region (Corn 1994; Berry and Medica 1995). At one site in the Desert Tortoise Natural Area, north of California City, a loss of approximately 56 percent of adult and subadults was estimated to occur between 1979 and 1989 (Berry 1994).

In general, downward trends in desert tortoise numbers and habitats result from urban development, long-term livestock grazing, mining, off-highway vehicle use, and collecting. Mortimore and Schneider (1983) suggested a Nevada die-off in the early 1980s was due in part to drought conditions and that habitat had been adversely impacted by long-term grazing intensities. D'Antonio and Vitouseki (1992) indicate that the increasing incidence and severity of fires combined with changes in vegetative

community types, primarily towards exotic ephemerals, have adversely effected desert tortoises. Habitat fragmentation is another major contributor to population declines (Berry 1992). Populations have been fragmented and isolated by urban development, highway construction, and development within power line corridors.

The most serious problem facing the Mojave population of the desert tortoise is the "cumulative effects of human and disease-related mortality accompanied by habitat destruction, degradation, and fragmentation" (USFWS 1994).

Human contact includes a number of threats. Among the most common are collection for food, pets, commercial trade, and medicinal uses, as well as being struck and killed by on-and-off road vehicles. Still another is by gunshot. Berry (1990) found that between 1981-1987, 40 percent of the tortoises found dead on a study plot in Freemont Valley, California, had been killed by gunshot or by off-road vehicles (USFWS 1994).

Predation is another factor. Hatchlings and juveniles are preyed upon by several native species of reptiles, birds, and mammals, as well as by domestic and feral dogs. Predation by ravens is intense, as their population has grown over the last few decades due to increased food supplies provided by human development. Berry (1990) believes that predation pressure by ravens in some portions of the Mojave is so great that recruitment of juveniles into the adult population has been halted.

Disease has been noted as a factor since 1990. An upper respiratory tract disease has been discovered and is currently a major cause of mortality in the western Mojave Desert population. Predisposing factors, such as habitat degradation, poor nutrition, and drought, have only served to compound the problem (USFWS 1994).

Habitat destruction, degradation, and fragmentation are yet some other threats. Over the last 150 years, there have been substantial decreases in perennial grasses and native annuals and an increase in exotics, which serve as fire hazards. Perennial shrubs and grasses used for cover and food have been diminished and have been replaced by inedible exotic ephemerals. Also, as the habitat becomes increasingly fragmented, desert tortoises are forced to forage over larger areas and are thus exposed to greater dangers. Finally, grazing by domesticated animals damages the soil, reduces water filtration, promotes erosion, and invites invasion by exotic vegetation (USFWS 1994).

On April 2, 1990, The USFWS determined the Mojave population of the desert tortoise to be threatened (USFWS 1990). The Mojave population includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Colorado Desert in California (a division of the Sonoran Desert). Reasons for the determination included loss and degradation of habitat from construction projects such as roads, housing and energy developments, and conversion of native habitat to agriculture. Grazing and off-highway vehicles have

degraded additional habitat. Also cited as threatening the desert tortoise's continuing existence were illegal collection, upper respiratory tract disease, and predation on juvenile desert tortoises by common ravens.

On February 8, 1994, the USFWS designated approximately 6.4 million acres of critical habitat for the Mojave population of the desert tortoise (USFWS 1994), which became effective on March 10, 1994. A final recovery plan for the desert tortoise was published by the USFWS in June, 1994. Following the recommendations of the desert tortoise recovery team, the final rule established six Recovery Units, the USFWS defined at least one Critical Habitat Unit (CHU) patterned after the Desert Wildlife Management Area concept recommended by the recovery team.

The recovery plan is the basis and key strategy for recovery and delisting of the desert tortoise (USFWS 1994). The plan divides the range of the desert tortoise into six distinct population segments or Recovery units and recommends establishment of 14 Desert Wildlife Management Areas throughout the Recovery Units. Within each Desert Wildlife Management Area, the recovery plan recommends implementation of reserve level protection of desert tortoise population and habitat while maintaining and protecting other sensitive species and ecosystem functions. The design of Desert Wildlife Management Areas should follow accepted concepts of reserve design. As part of the actions needed to accomplish recovery, land management with all Desert Wildlife Management Areas should restrict human activities that negatively affect desert tortoises (USFWS 1994).

The closest desert tortoise occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 15.3 miles to Ironwood State Prison and Chuckawalla Valley State Prison. The closest desert tortoise occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 29.8 miles to California City Desert Tortoise Natural Area. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California State Prison, Los Angeles	X	
Chuckawalla Valley State Prison	X	
Ironwood State Prison	X	
California City Desert Tortoise Natural Area	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Critical Habitat

Proximity of prison and Tier 3 mitigation sites to critical habitat for Desert Tortoise.

Site Name	Within Critical Habitat*	Next Closest Site
Calipatria State Prison		X (12.5 Miles)
Chuckawalla Valley State Prison	X	
Ironwood State Prison	X	
California City Desert Tortoise Natural Area	X	

* GIS distribution coverages (USFWS 2002) were used as the primary source.

Blunt-nosed Leopard Lizard (*Gambelia sila*)

Status: Federal Endangered (32 **FR** 4001, March 11, 1967)
California Endangered, Fully-Protected

Recovery Plan: U.S. Fish and Wildlife Service. 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Portland, Oregon.

Species description: The blunt-nosed leopard lizard is a relatively large lizard of the family Iguanidae and is endemic to the San Joaquin Valley. Blunt-nosed leopard lizards feed primarily on insects, lizards, and occasionally plant material.

Males are highly combative in establishing and maintaining territories. Male and female home ranges often overlap. The mean home range size varies from 0.25 to 2.7 acres for females and 0.52 to 4.2 acres for males. Density estimates range from 0.1 to 4.2 lizards per acre. Population densities in marginal habitat generally do not exceed 0.2 blunt-nosed leopard lizards per acre. There are no current overall population size estimates for the species (USFWS 1998*a*).

Breeding activity begins within a month of emergence from dormancy and lasts from the end of April to the end of June. Male territories may overlap those of several females, and a given male may mate with several females. Two to six eggs are laid in June and July, and their numbers are correlated with the size of the female. Under adverse conditions, egg-laying may be delayed 1 or 2 months or reproduction may not occur at all. Females typically produce only one clutch of eggs per year, but some may produce three or more under favorable environmental conditions. After about 2 months of incubation, young hatch from late July through early August, rarely to September (USFWS 1998*a*).

Seasonal above ground activity is correlated with weather conditions, primarily temperature. Lizards are active on the surface when air temperatures are between 73 and 104°F and surface soil temperatures

are 71 and 122°F. Optimal activity occurs when ground temperatures are between 71 and 97°F or slightly higher. Smaller lizards and young have a wider activity range than the adults (USFWS 1998*a*).

Leopard lizards use small rodent burrows for shelter from predators and temperature extremes. Burrows are usually abandoned ground squirrel tunnels, or occupied or abandoned kangaroo rat tunnels. Each lizard uses several burrows without preference, but will avoid those occupied by predators or other leopard lizards. In areas of low mammal burrow density, lizards will construct shallow, simple tunnels in earth berms or under rocks. Potential predators are numerous and include snakes, predatory birds, and most carnivorous valley mammals (USFWS 1998*a*).

Habitat losses for this species are continuing. For example, the 1980 Recovery Plan (USFWS 1980) reported that 176,604 acres of priority blunt-nosed leopard lizard habitat was available in 1977. By 1980, the remaining priority habitat had declined to 128,530 acres, and by 1985, habitat losses reduced that to 102,460 acres, only 58 percent of the habitat available in 1977. Unpublished maps prepared by the California Energy Commission (CEC), in 1991, indicated that habitat losses for this species are continuing (CEC 1991).

Although the boundaries of its original distribution are uncertain, blunt-nosed leopard lizards probably occurred in the San Joaquin Valley from Stanislaus County in the north to the Tehachapi Mountains of Kern County in the south, and from the Coast Range mountains, Carrizo Plain and Cuyama Valley in the west to the foothills of the Sierra Nevada in the east. In general, leopard lizards are absent from areas of steep slope, dense vegetation, or areas subject to seasonal flooding (USFWS 1998*a*).

The currently occupied range consists of scattered parcels of undeveloped land on the Valley floor, most commonly annual grassland and valley sink scrub. The lizards also inhabit alkali playa and valley saltbush scrub. In the southern San Joaquin Valley, extant populations are known to occur on the Kern and Pixley National Wildlife Refuges, Liberty Farms, Allensworth, Antelope, the Carrizo and Elkhorn plains, the Buttonwillow, Elk Hills and Tupman Essential Habitat Areas, north of Bakersfield around Poso Creek, and in western Kern County around the towns of Maricopa, McKittrick and Taft. There are no current overall population size estimates for the species (USFWS 1998*a*).

Since the 1870s and the advent of irrigated agriculture in the San Joaquin Valley, more than 95 percent of the original natural communities have been destroyed. This dramatic loss of natural communities was the result of cultivation, modification and alteration of existing communities for petroleum and mineral extraction, pesticide applications, off-road vehicle use, and construction of transportation, communications, and irrigation infrastructures. These processes collectively have caused the reduction and fragmentation of populations and decline of blunt-nosed leopard lizards (Stebbins 1954; Montanucci 1965; USFWS 1980; USFWS 1985; Germano and Williams 1993).

Farming began in the Valley as a direct response to increased demands for local food supplies, created by the migration of settlers to California during the 1849 Gold Rush (California Department of Water Resources 1974). Land conversion was accelerated in the 1920s with the advent of reliable electrical groundwater pumps and in the 1950s and 1960s with importation of water via Federal and State water projects (San Joaquin Valley Interagency Drainage Program 1979). By 1985, 94 percent of wildlands on the Valley floor had been lost to agricultural, urban, petroleum, mineral, or other development (USFWS 1985; CDFG 1985).

Stebbins (1954) first recognized that agricultural conversion of its habitat was causing the elimination of the blunt-nosed leopard lizard. The cumulative effects of the dramatic decline in its available habitat and degradation of existing habitat by a variety of human activities have resulted in the lizard's present status as endangered.

In the first blunt-nosed leopard lizard recovery plan (USFWS 1980), 20 Habitat Units were identified as "Essential" to the continued survival of the blunt-nosed leopard lizard, though these did not have any legal protection equivalent to critical habitat. Ten of these habitat units were recommended as having priority for protection (USFWS 1985). Between 1977 and 1985, over 74,000 acres of this important Valley-floor habitat were destroyed.

Habitat disturbance, destruction, and fragmentation continue as the greatest threats to blunt-nosed leopard lizard populations. Stebbins first recognized, in 1954, that agricultural conversion of its habitat was causing the extirpation of the blunt-nosed leopard lizard. Livestock grazing can result in removal of herbaceous vegetation and shrub cover and destruction of rodent burrows used by lizards for shelter. However, light or moderate grazing may be beneficial, unlike cultivation of row crops, which precludes use by leopard lizards.

Cultivation, petroleum and mineral extraction, pesticide applications, off-road vehicle use, and construction of transportation, communication, and irrigation infrastructures collectively have caused the reduction, fragmentation of populations and decline of blunt-nosed leopard lizards. Direct mortality occurs when animals are killed in their burrows during construction, killed by vehicle traffic, drowned in oil, or fall into excavated areas from which they are unable to escape. Displaced lizards may be unable to survive in adjacent habitat if it is already occupied or unsuitable for colonization.

The use of pesticides may directly and indirectly affect blunt-nosed leopard lizards. The insecticide Malathion has been used since 1969 to control the beet leafhopper, and its use may reduce insect prey populations. Fumigants, such as methyl bromide, are used to control ground squirrels. Because leopard lizards often inhabit ground squirrel burrows, they may be inadvertently poisoned.

The blunt-nosed leopard lizard was listed as endangered by the State of California in 1971. A recovery plan was first prepared in 1980 and revised in 1985 (USFWS 1985). In 1998, a recovery plan for San Joaquin Valley upland terrestrial species was released which includes the blunt-nosed leopard lizard (USFWS 1998*a*).

Environmental Baseline: There are no current overall population size estimates for the species. Uptain *et al.* (1985) reported densities ranging from 0.1 to 4.2 per acre for a population on the Pixley National Wildlife Refuge in Tulare County. In a previous study of this population, Tollestrup (1979) estimated an average density of 1.3 lizards per acre. In 1991, after three previous years of severe drought, two 20-acre plots had estimated densities of 2.7 and 2.8 lizards per acre on Pixley National Wildlife Refuge (Williams and Germano 1991). On the Elkhorn Plain, estimated population size on two 20-acre plots of adult and subadult blunt-nosed leopard lizards in June (period of peak above-ground activity) varied between 0 in 1990 to more than 170 in 1993 (but see below).

The currently occupied range of the blunt-nosed leopard lizard is in scattered parcels of undeveloped land on the Valley floor, and in the foothills of the Coast Range. Surveys in the northern part of the San Joaquin Valley documented the occurrence of the blunt-nosed leopard lizard in the Firebaugh and Madera Essential Habitat areas. Essential Habitat Areas were defined in previous recovery plan editions for this species as undeveloped wildlands containing suitable habitat for the blunt-nosed leopard lizard and essential to the continued survival of the species (USFWS 1980; USFWS 1985). Within the last decade, at least 2800 acres of leopard lizard habitat in western Madera County has been lost through agricultural conversions (P. Kelly, *pers. comm.*). More recently, the population in the Madera Ranch area is believed to be extirpated (P. Kelly, *pers. comm.*), and populations in the Lokern and Elkhorn areas are also believed to be severely depressed or extirpated (D. Germano, *pers comm.*).

In the southern San Joaquin Valley, extant populations are known to occur on the Pixley National Wildlife Refuge, Liberty Farms, Allensworth State Park, Kern National Wildlife Refuge, Antelope Plain, Buttonwillow, Elk Hills, and Tupman Essential Habitat areas, on the Carrizo and Elkhorn Plains, north of Bakersfield around Poso Creek, and in western Kern County in the area around the towns of Maricopa, McKittrick, and Taft (Byrne 1987; R.L. Anderson *pers. comm.*). Remaining undeveloped lands farther north that support blunt-nosed leopard lizard populations include the Ciervo, Tumey, and Panoche Hills, Anticline Ridge, Pleasant Valley, and the Lone Tree, Sandy Mush Road, Whitesbridge, Horse Pasture, and Kettleman Hills Essential Habitat areas (CDFG 1985). The species is presumed to be present still in the upper Cuyama Valley, though no recent inventory is known for that area.

Within the San Joaquin Valley, recent, dramatic declines in leopard lizard populations have been reported by researchers. The Madera Ranch metapopulation has presumably been extirpated (P. Kelly *pers. comm*). Drastic declines, and possibly extirpations, have also been noted for the Lokern and Elkhorn areas in the southern San Joaquin Valley (D. Germano *pers. comm.*).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Avenal State Prison	2.90 - 4.10	3.53	5
North Kern State Prison (Delano) California State Prison - Kern County at Delano II	0.75 - 4.90	2.66	10
Pleasant Valley State Prison (Coalinga)	4.20 - 4.90	4.56	3
Wasco State Prison	2.00 - 4.15	3.08	2
Allensworth Ecological Reserve	0 - 4.75	2.50	13

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California State Prison, Kern County at Delano II	X	
North Kern State Prison	X	
Pleasant Valley State Prison	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Brown Pelican (*Pelecanus occidentalis*)

Status: Federal Endangered (35 **FR** 16047; October 13, 1970, and 50 **FR** 4945; February 4, 1985) California Endangered, California Fully-Protected

Recovery Plan: U.S. Fish and Wildlife Service. 1983. The California Brown Pelican Recovery Plan. Portland, Oregon.

Species description: The CDFG Annual Report for 2000 (CDFG 2001*b*) gives the following description of the Brown pelican:

> "The California brown pelican is a large, grayish-brown bird with a long, pouched bill. The adult has a white head and dark body, but immature birds are dark with a white belly. The pelicans nest from the Channel Islands of southern California southward along the Baja California coast

and in the Gulf of California to coastal southern Mexico. The pelican builds nests of sticks on the ground, typically on islands or offshore rocks. The only breeding population in United States waters is the Southern California Bight (SCB) population, which consists of breeding birds on the Channel Islands and several islands off Baja California: West Anacapa Island, Santa Barbara Island, Isla Coronado Medio, and Isla Coronado Norte. Between breeding seasons, pelicans from other populations join SCB birds in wandering along the west coast of North America as far north as British Columbia. Habitat for the pelican is generally marine including islands, bays, coastal ponds and sloughs; and piers and jetties

Environmental Baseline: Disease outbreaks affecting local populations of pelicans have been known as an endangerment factor to the species. However, the scale of mortalities from disease had not been large until more than 1,400 brown pelicans died in an avian botulism outbreak at the Salton Sea (Sea) in August 1996. The Salton Sea is a large inland sea located in Imperial County, near Calipatria, California. In 1997, about 150 brown pelicans died as a result of chronic avian botulism incidence at the Sea. The brown pelican does not nest at the Sea, but it does gather there in the post-breeding season. Since brown pelicans from both SCB and Mexico likely move to the Sea after the breeding season, biologists do not know whether any, or how many, SCB pelicans were among the mortalities or the survivors of avian botulism in 1996 and 1997. However, the SCB population is threatened by such outbreaks elsewhere, along with many other phenomena. These include low productivity and colony failure, the dependence for food primarily on the northern anchovy, oil and other spills from ships, the presence of relatively high levels of pesticides in the tissues of some pelicans, human and non-native-mammal disturbance at central California coast post-breeding roosts, physical injury and mortality due to fish hooks and entanglement of birds in abandoned fishing line, and El Niño events that cause pelican forage-fishes to move well offshore and away from pelican nesting islands (CDFG 2001*b*).

Approximately 4,200 pairs built nests on Santa Barbara and West Anacapa islands in 1993, and an estimated 5,800 pairs built nests in 1994. In 1995, no comparable data were collected. For 1996, about 5,300 pairs built nests, with about 880 nest on Santa Barbara Island, and in 1997, about 6,380 pairs built nests, with only about 500 of these on Santa Barbara Island (CDFG 2001*b*).

In 1999, the CDFG became aware of potential impacts to pelican nesting colonies by the market squid fishery. A pelican researcher had found that more than 50 percent of the pelican nests had been abandoned and that chick mortality was relatively high on Anacapa island in 1999, an unusual situation in a non-El Niño year. The researcher noted that the high nest abandonment coincided with a potentially very disruptive disturbance factor close to the breeding colonies from night lighting used by the squid fishery. In December 1999, in consultation with the USFWS, NPS, and Channel Islands National Marine Sanctuary, the CDFG proposed that the California Fish and Game Commission adopt a regulation intended to avoid disturbance of pelican colonies by the squid fleet. The status in 1999 of the California brown pelican population is unknown (CDFG 2001*b*).

In mid-1995 the USFWS informally proposed delisting the pelican in its entire range. A draft report on the proposal from the USFWS later noted that the SCB population failed to achieve the specific thresholds for determining when this population could be delisted. Soon afterward the proposal to delist was abandoned (CDFG 2001*b*).

The closest Brown pelican occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 17.7 miles to R.J. Donovan Correctional Facility. The closest Brown pelican occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 64.3 miles to Starr Ranch. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Pelican Bay State Prison	X	
Humboldt Bay National Wildlife Refuge	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Bald Eagle (*Haliaeetus leucocephalus*)

Status: Federal Threatened (60 **FR** 36010; July 12, 1995)
California Endangered, California Fully-Protected

Recovery Plan: U.S. Fish and Wildlife Service. 1986. Recovery Plan for the Pacific Bald Eagle. Portland, Oregon, 160 pp.

Species description: The following material came from CDFG Annual Report for 2000 (CDFG 2001*b*):

> The bald eagle is a large, dark brown bird of prey, which, as an adult, has a white head and tail. It occurs widely in North America. The species winters throughout most of California at lakes, reservoirs, river systems, and some rangelands and coastal wetlands. The breeding range is mainly in mountainous habitats near reservoirs, lakes and rivers, mainly in the northern two-thirds of the State, in the Central Coast Range, and on Santa Catalina Island. Large nests are normally built in the upper canopy of large trees, usually conifers. The birds are opportunistic foragers, usually feeding on fish or waterfowl, but they also prey on other small animals and eat carrion.

The information listed below is excerpted verbatim from : Lawrence F. Leprae, Tierra Madre Consultants, 1159 Iowa Avenue, Suite D, Riverside, California 92507 (Ventura FWO file)

> The bald eagle breeds from central Alaska east across northern Canada to the Atlantic coast, south to Baja California and northern Sonora, Mexico, central Arizona, southwestern and central New Mexico, and the Gulf coast from southeastern Texas east to southern Florida. Bald Eagles are absent as breeding birds in most of the Great Basin, the prairie and plains region, and the eastern United States west of the Appalachian Mountains (AOU 1983; Brown 1988*a*).

Environmental Baseline: The CDFG has coordinated annual, statewide breeding surveys since 1973. The breeding population continues its long-term increase in numbers and in range. The number of breeding pairs occupying territories was 124 in 1996, 142 in 1997, 146 in 1998, and potentially more than in previous years based on incomplete results in 1999. Productivity continues to be good, with the number of young produced per occupied territory of known success, averaging 1.1 in 1996 and 1997. Productivity dropped to 0.97, lower than normal in 1998, but seems to be back at an average of 1.1 young per occupied territory of known success in 1999 (CDFG 2001*b*).

During 1996, 1997, and 1998, 32 new bald eagle breeding territories were reported in California, resulting in a total of 180 territories known to have been occupied at sometime in the 1990s. Significantly, three of these were in the central coast zone, which has expanded from one territory in 1992 to five, owing mainly to the success of the bald eagle release program at the Ventana Wilderness Sanctuary. Other significant new territories included the first successful nesting pair on the California side of Lake Tahoe and, near there, the first occupied territory in Nevada. The breeding range has expanded from portions of eight counties in 1981 to 27 of the California's 58 counties currently (CDFG 2001*b*).

Pre-harvest timber planning and other local management planning minimize disturbance and other conflicts statewide in eagle nesting areas. Increasing numbers of territories, however, have created increasing difficulties for land and wildlife management organizations in monitoring territory status as regularly and thoroughly as in the past. The bald eagle is included in several HCPs, 2081 agreements, and other planning documents across the State. Examples include the Headwaters HCP/Sustained Yield Plan in Humboldt County and the Lake Mathews HCP in Riverside County (CDFG 2001*b*).

USFWS coordinated the annual, mid-winter bald eagle survey in 1996 and 1997. At scores of water bodies and upland areas each year, representing a large sample of wintering habitats in the State, hundreds of volunteers participated in the counts. In 1997, 425 observers reported 1,020 bald eagles at 77 survey areas; more than half of the birds were in the Klamath Lakes Basin and at Eagle Lake. These are not complete counts; however, the data provide information on the statewide distribution and ratio of immature to adult bald eagles that breed in and migrate to California for the winter and are present during this mid-winter period (CDFG 2001*b*).

Electrocution from small electrical distribution and transmission lines is a significant problem for the Bald Eagle (Olendorff *et al.* 1981). Most collisions and electrocutions are of juveniles and birds flying in windy or stormy weather. The high-voltage metal transmission lines are rarely a problem for bald eagles due to wide conductor spacing and the availability of several perch sites on a single tower (APLIC 1996).

The closest bald eagle occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 5.4 miles to Pelican Bay State Prison, Solana. The closest bald eagle occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 10.6 miles to Mayacama Mountain Sanctuary. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison	X	
Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	

Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Western Snowy Plover (*Charadrius alexandrinum nivosus*)

Status: Federal Threatened (58 **FR** 12874, March 5, 1993)

Critical habitat has been designated in twenty-eight areas along the coasts of California, Oregon and Washington (64 **FR** 6850, December 7, 1999). Critical habitat in California includes both nesting and wintering habitat in coastal areas of California in the following areas: Humboldt County (Stone Lagoon and Big Lagoon, Eel River North and South), Sonoma County (Bodega Harbor and Doran Spit), Marin County (Dillon Beach), San Mateo County (Half Moon Bay beaches), Santa Cruz County (Waddell Creek, Scott Creek, Laguna Creek and Wilder Creek beaches; Sunset beach in Monterey Bay), Monterey County (Mudowski Beach, Elkhorn Slough, Mud Flat/Salt Pond, Salinas River Beach, Fort Ord/Seaside Beaches, Point Sur Beach), San Luis Obispo County (Arroyo Hondo Creek Beach, Arroyo Laguna Creek Beach, Torro Creek Beach, Atascadero Beach, Morro Bay Beach, Pismo Beach/Nipomo Dunes), Santa Barbara County (Vandenburg Air Force Base, Santa Ynez River mouth/Ocean Beach, Jalama Beach, Devereaux Beach, Point Castillo/Santa Barbara Harbor Beach, Carpinteria Beach), Ventura County (San Buenaventura Beach, Mandalay Bay/Santa Clara River Mouth, Omond Beach, Mugu Lagoon Beach, San Nicolas Island beaches), Los Angeles County (Malibu Lagoon), San Diego County (Silver Strand/Delta Beach, Tijuana River Beach).

Recovery Plan: U.S. Fish and Wildlife Service. 2001. Western Snowy Plover *(Charadrius alexandrinus nivosus)* Pacific Coast Population Draft Recovery Plan. Portland, Oregon.

Species description: The western snowy plover is a small shorebird distinguished from other plovers (family Charadriidae) by its small size, pale brown upper parts, dark patches on either side of the upper breast, and dark gray to blackish legs. Snowy plovers weigh between 1.2 and 2 ounces. They are about 5.9 to 6.6 inches long.

The Pacific coast population of the western snowy plover breeds primarily on coastal beaches from southern Washington to southern Baja California, Mexico. The nesting season extends from early March through late September. The breeding season generally begins earlier in more southerly latitudes, and may be two to four weeks earlier in southern California than in Oregon and Washington. Fledging (reaching flying age) of late-season broods may extend into the third week of September throughout the

breeding range. Nests typically occur in flat, open areas with sandy or saline substrates. Vegetation and driftwood are usually sparse or absent. The typical clutch size is three eggs but it can range from two to six.

The Pacific coast population of the western snowy plover is defined as those individuals that nest beside or near tidal waters, and includes all nesting colonies on the mainland coast, peninsulas, offshore islands, adjacent bays and estuaries from southern Washington to southern Baja California, Mexico. Habitats used by nesting and non-nesting birds include sandy coastal beaches, salt pans, coastal dredged spoils sites, dry salt ponds, salt pond levees and gravel bars. Historic records suggest that nesting western snowy plovers were once more widely distributed in coastal California.

Breeding occurs from March 1 through September 15. Important nesting areas include: (Pismo Beach/Nipomo Dunes, Morro Bay, Monterey Bay, San Francisco Bay, Callendar-Mussel Rock Dunes area, Vandenburg Air Force Base, Oxnard lowland, Santa Rosa Island, San Nicolas Island); Bolsa Chica Wetlands (Orange County); Marine Corps Base Camp Pendleton, Batiquitos Lagoon, San Diego Bay, and Tijuana Estuary (San Diego County).

Snowy plovers breed in loose colonies with the number of adults at coastal breeding areas ranging from 2 to 318 (Page and Stenzel 1981). Sand spits, dune backed beaches, sparsely to unvegetated beach strands, open areas around estuaries, and beaches at river mouths are the preferred coastal nesting areas of the western snowy plover (Page and Stenzel 1981; Wilson 1980). Other areas utilized by nesting snowy plovers include dredge spoil fill, dry salt evaporation ponds, and salt pond levees (Wilson 1980; Page and Stenzel 1981). Nest sites typically occur in flat, open areas with sandy or saline substrates with little or no vegetation (Wilson 1980; Page and Stenzel 1981). The majority of snowy plovers are site faithful returning to the same breeding location in subsequent breeding seasons. In southern California, snowy plovers can often be found nesting in association with the federally listed endangered California least tern.

The coastal population of the western snowy plover consists of both resident and migratory birds with some birds wintering in the same areas used for breeding (Warriner *et al.* 1986; Powell and Collier 1994).

The breeding range of the western snowy plover extends along coastal beaches from the southern portion of Washington State to southern Baja California, Mexico.

There have been sightings of this subspecies recorded within CNDDB (CDFG 2001*a*) throughout California between 1904 and 1999, with a majority of the sightings between 1980 and 1998.

Environmental Baseline: Prior to 1970, snowy plovers bred at 53 locations along coastal California (Page and Stenzel 1981). Presently, breeding occurs at only 20 locations representing a 62 percent decline in breeding sites. The greatest losses of habitat have occurred in southern California where breeding western snowy plovers have vanished from parts of San Diego, Ventura and Santa Barbara counties, most of Orange County, and all of Los Angeles County. In all these areas the plovers' absence can be correlated with industrial or residential development and/or heavy recreational use of former beach nesting areas (Page and Stenzel 1981).

In addition to the loss of nesting habitat, the breeding population of the western snowy plover in California, Oregon, and Washington has experienced a 17 percent decline between 1977 and 1989 (Page *et al.* 1991). The breeding population in California has declined from an estimated 1565 adults in 1980 (Page and Stenzel 1981) to 1386 adults in 1989 with a 55 percent decline occurring in north San Diego County and a 41 percent decline at San Diego Bay (Page *et al.* 1991). Surveys conducted in 1991 found 1371 adults during the breeding season, which declined to 969 adults in 1995 and 976 adults in 2000 (R. Bransfield *pers. comm.*).

Current threats to the snowy plover include loss and degradation of nesting and foraging habitat; human disturbances at nesting, wintering, and foraging areas; and predation by mammalian and avian predators.

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Pelican Bay State Prison	4.00	4.00	1
California City Desert Tortoise Natural Area	1.80	1.80	1
Humboldt Bay National Wildlife Refuge	0 - 2.35	1.18	2

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California State Prison, Los Angeles	X	
Pelican Bay State Prison	X	
California City Desert Tortoise Natural Area	X	
Humboldt Bay National Wildlife Refuge	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Critical Habitat

Proximity of prison and Tier 3 mitigation sites to critical habitat for Western Snowy Plover.

Site Name	Within Critical Habitat*	Next Closest Site
RJ Donovan Correctional Facility at Rock Mountain		X (11 Miles)

* GIS distribution coverages (USFWS 2002) were used as the primary source.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

Status: Federal Endangered (60 **FR** 10694, February 27, 1995)
California Endangered

Designated critical habitat for the southwestern willow flycatcher includes portions of the Santa Ana River (Riverside and San Bernardino Counties, California), Santa Margarita River, San Luis Rey River, San Diegito River, San Diego River, and Tijuana River, (San Diego County, California), South Fork Kern River (Kern County, California), San Pedro River (Cochise, Pima and Pinal Counties, Arizona), Verde River (Yavapai and Gila Counties, Arizona), Wet Beaver Creek and West Clear Creek (Yavapai County, Arizona), Colorado River (Coconino County, Arizona), Little Colorado River, and the West, East, and South Forks of the Little Colorado River (Apache County, Arizona), Gila River and the East and West Forks of the Gila River (Catron, Grant and Hidalgo Counties, New Mexico), and San Francisco River, Tularosa River and Apache Creek (Catron County, New Mexico). 62 **FR** 39129 of July 22, 1997, with a correction made August 20, 1997 (62 **FR** 44228). Critical habitat was vacated by the US Court of Appeals, Tenth Circuit, on May 11, 2001.

Recovery Plan: U.S. Fish and Wildlife Service. 2001. Southwestern Willow Flycatcher (*Empidonax traillii extimus*) Draft Recovery Plan. Portland, Oregon.

Species description: The southwestern willow flycatcher is a small neotropical migratory bird, with a grayish-green back and wings, whitish throat, light grey-olive breast, and pale yellowish belly. Two wingbars are visible and the eye ring is faint or absent. The upper mandible is dark; the lower is yellowish. It breeds in relatively dense growths of trees and shrubs in riparian ecosystems in the arid southwestern United States and possibly extreme northwestern Mexico. Surface water or saturated soil are typically present year-round or seasonally, and ground water is generally at a depth of less than 2 to 3 m (6.5 to 9 ft) within or adjacent to nesting habitat.

Migration routes used by the flycatcher are not well documented. Migrant flycatchers may use non-riparian habitats or riparian habitats unsuitable for breeding. The flycatcher winters in Mexico, Central America, and northern South America (Phillips 1948, Gorski 1969, McCabe 1991, Koronkiewicz *et al.*

1998, Unitt 1999). Wintering habitat consists of partially open areas such as woodland borders, second-growth forests, brushy savanna edges, and scrubby fields with hedges in a humid to semi-arid climate (Stiles and Skutch 1989; Howell and Webb 1995; Ridgely and Tudor 1994). The vegetation is generally dense and shrubby, bordering and extending into wet areas.

The willow flycatcher is one of 11 flycatchers in the genus *Empidonax* that breeds in North America. The southwestern willow flycatcher is one of four subspecies of the willow flycatcher currently recognized (Hubbard 1987; Unitt 1987). *Empidonax* flycatchers are notoriously difficult to distinguish in the field, and separation of the four willow flycatcher subspecies is even more problematic. The willow flycatcher subspecies are distinguished primarily by subtle differences in color and morphology, including wing formula, bill length, and wing tail ratio (Unitt 1987; Unitt 1997; Browning 1993), and habitat use.

The historical breeding range of the southwestern willow flycatcher included southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, southwestern Colorado, and extreme northwestern Mexico (Hubbard 1987; Unitt 1987; Browning 1993). The flycatcher's current range is similar to its historical range, but the quantity and quality of suitable habitat within this range has been reduced from historical levels. The flycatcher occurs from near sea level to over 2,600 m (8,500 ft), but is primarily found in lower elevation riparian habitats. Throughout its range, the flycatcher's distribution coincides with the occurrence of its riparian habitat, which forms a widely dispersed pattern of small, isolated areas within a vast arid region.

The flycatcher breeds in patchy to dense riparian habitats along streams or other wetlands, near or adjacent to surface water or underlain by saturated soil. Common tree and shrub species used as nesting habitat include willows (*Salix* spp.) seepwillow (*Baccharis* spp.), boxelder (*Acer negundo*), stinging nettle (*Urtica* spp.), blackberry (*Rubus* spp.), cottonwood (*Populus* spp.), arrow weed (*Pluchea sericea*), salt cedar, and Russian olive (*Eleagnus angustifolia*) (Grinnell and Miller 1944; Phillips *et al.* 1964; Hubbard 1987; Whitfield 1990; Brown and Trosset 1989; Brown 1991; Sogge *et al.* 1993; Muiznieks *et al.* 1994; Maynard 1995; Cooper 1996; Skaggs 1996; Cooper 1997; McKernan and Braden 1998; Stoleson and Finch 1999; Paradzick *et al.* 1999). Habitat characteristics such as plant species composition, size and shape of habitat patch, canopy structure, vegetation height, and vegetation density all vary throughout the species' range. However, vegetation in the interior of the patch is generally dense, particularly within the first 3 to 4 m (10 to13 ft) above the ground, and in almost all cases, slow-moving or still surface water and/or saturated soil is present at or near breeding sites.

Historically, the southwestern willow flycatcher nested in native vegetation such as willows, boxelder, buttonbush, seepwillow, and cottonwoods (Grinnell and Miller 1944; Phillips 1948; Whitmore 1977; Unitt 1987). Following conversion of most riparian vegetation in the southwestern United States from native to non-native species, the southwestern willow flycatcher still nests in native vegetation where

available, but also nests in thickets of non-native salt cedar and Russian olive, and in habitats with a mixture of native and non-native species (Hubbard 1987; Brown 1988b; Sogge, 1993; Muiznieks *et al.* 1994; Maynard 1995; Sferra *et al.* 1997; Sogge *et al.* 1997; Paradzick *et al.* 1999).

Southwestern willow flycatchers typically arrive on breeding grounds between early May and early June, although some may establish territories as early as late April. Flycatchers lay 3 to 4 eggs, and incubation lasts 12 to 13 days. Nestlings fledge 12 to 15 days after hatching, and stay in the general vicinity of the nest area for 14 to15 days after fledging. Dispersal after the nesting cycle is poorly understood. Second clutches within a single breeding season are uncommon if the first nest is successful. Renesting may occur if the young from the first nest fledge by late June or if the first nest is lost or abandoned. Migration south to wintering grounds generally begins between mid August and mid September.

Environmental Baseline: As of 1999, the current flycatcher population was estimated at approximately 1,000 pairs. The rangewide population is distributed in a large number of small breeding groups and a small number of large breeding groups. Marshall (2000) found that 53 percent of known flycatcher territories were in 10 sites rangewide, while the other 47 percent were distributed among 99 smaller sites comprising 10 or fewer territories.

Historically, southwestern willow flycatchers were most likely rare rangewide, but were known to be locally common in parts of their range where suitable habitat existed. Flycatcher populations have declined rangewide. The historic range of the flycatcher in California apparently included all lowland riparian areas of the southern third of the State, and the species once was considered common in the Los Angeles basin, the San Bernardino/Riverside area, San Diego County, coastal southern California, and along the lower Colorado River near Yuma. The flycatcher now exists only in small, disjunct nesting groups in California. The flycatcher has also declined in Arizona. Records indicate that the former range of the flycatcher in Arizona included portions of all major watersheds, but the species now only persists in several small, widely scattered locations. Whitmore (1977) noted that Behle (1943) listed the species as a common breeder in the streamside willows throughout the Virgin River valley in Utah, but is now uncommon to rare. In portions of the Rio Grande Valley in New Mexico, suitable habitat and flycatchers no longer persist where they once may have been fairly common and widespread.

The primary cause of the flycatcher's decline has been identified as loss and modification of habitat. Flycatcher breeding populations are susceptible to local extirpation due to the stochastic nature of the processes that create, maintain, and regulate its habitat. Typical flycatcher habitat is frequently subjected to natural disturbances such as scouring flash floods, stream channel movement, periodic inundation, sediment deposition, and groundwater fluctuation that may destroy a habitat patch at one locale but create it in another. The dynamic nature of southwestern riparian ecosystems has now been altered by agricultural, urban, and industrial developments, and many of the processes needed to establish and perpetuate native riparian vegetation have been eliminated. Instream flows of rivers have been depleted, hydrological cycles have been altered, streambeds have been physically modified, and riparian

vegetation has been removed. The major mechanisms resulting in loss and modification of habitat include the operation and maintenance of dams and reservoirs, diversions and groundwater pumping, channelization and bank stabilization, phreatophyte control, agricultural and urban development, livestock grazing, recreational activities, and fire. Non-native plant species such as salt cedar and Russian olive have replaced native riparian species, resulting in a decrease in habitat quality. Increased abundance of the brown-headed cowbird (*Molothrus ater*) has most likely resulted in increased incidence of brood parasitism within the flycatcher's range.

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Kern River Preserve	0.45	0.45	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Correctional Center, Level III		X
California Correctional Institution, Level III		X
California Correctional Institution, Level IVA		X
California Correctional Institution, Level IVB		X
California Institution for Men, West		X
California State Prison, Los Angeles		X
High Desert State Prison		X
California City Desert Tortoise Natural Area		X
Kern River Preserve	X	
Starr Ranch Sanctuary		X

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Coastal California Gnatcatcher (*Polioptila californica californica*)

Status: Federal Threatened (March 25, 1993 (58 **FR** 16742); and March 27, 1995 (60 **FR** 15693)); Final special rule on take December 10, 1993 (58 **FR** 63088).
California Species of Special Concern

On October 24, 2000, the USFWS designated critical habitat for the gnatcatcher that encompasses approximately 513,650 acres of land in Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties (65 **FR** 63680). The primary constituent elements of this critical habitat are provided in undeveloped areas that support, or have the potential to support, various types of sage scrub or

chaparral, grassland, and riparian habitats where they occur proximally to CSS and may be used for biological needs such as breeding and foraging. Primary constituent elements associated with juvenile dispersal are also found in undeveloped areas (including agricultural lands) that provide connectivity or linkage between or within larger core areas, including open space and disturbed areas containing introduced plant species that may receive only periodic use. Primary constituent elements are found within several plant communities including, but not limited to, the different sub-associations of CSS described by Holland (1986). These plant communities may be in their natural state or they may have been recently disturbed (e.g., by fire or grubbing).

Species Description: California gnatcatchers are small, mostly gray nonmigratory birds endemic to the coastal slopes of southern California and Baja California, Mexico (Brewster 1881; Coues 1903; Atwood 1990). An evaluation of the historic range of the coastal California gnatcatcher indicates that about 41 percent of its latitudinal distribution is within the United States and 59 percent within Baja California, Mexico (Atwood 1990). A more detailed analysis, based on elevational limits associated with gnatcatcher locality records, reveals that a significant portion (65 to 70 percent) of the coastal California gnatcatcher's historic range may have been located in southern California rather than Baja California (Atwood 1992).

Although gnatcatchers are essentially obligate residents of coastal sage scrub, they are "[o]ccasionally found in chaparral, riparian, or disturbed habitats, especially where such areas are located to adjacent to stands of coastal sage scrub (CSS) (Atwood 1993; Campbell *et al.* 1998)" (Atwood and Bontrager 2001). The gnatcatcher occurs in several different sub-associations of CSS (Braden and Powell 1994*a*; Atwood and Bontrager 2001). Within the United States range of the species, CSS is generally composed of low-growing, drought-deciduous shrubs and succulent plants. CSS is dominated by one or more of the following species: California sagebrush (*Artemisia californica*), several species of sage (*Salvia* spp.), California encelia (*Encelia californica*), California buckwheat (*Eriogonum fasciculatum*), and *Eriogonum cinereum* (O'Leary 1990). CSS may be interspersed with lemonadeberry (*Rhus integrifolia*) and various species of cactus and cholla *(Opuntia* spp.). This community consists of drought-deciduous low shrubs and an herbaceous understory. It grows typically on steep slopes, severely drained soils, or clays that release soil moisture slowly. Riversidean sage scrub (RSS) is the driest, most inland expression of the CSS series. RSS is considered a CDFG highest inventory priority California Natural Diversity Data Base (CNDDB) community (CNDDB Element Code 32700). It ranges throughout southern California and south into Baja California between the elevations of approximately 1,500 to 4,500 feet.

The gnatcatcher is not uniformly distributed within the structurally and floristically variable CSS community but tends to occur most frequently within California sagebrush-dominated stands of CSS on mesas and lower slopes of the coast ranges (Atwood 1990). Gnatcatchers are typically found in moderately dense stands of CSS vegetation (40 to 70 percent cover) below 2,034 feet elevation (Atwood 1980). Gnatcatchers occur predominantly in CSS with open or broken canopy, less

frequently in CSS with closed canopy, and are relatively absent from CSS dominated by tall shrubs (Bontrager 1991, Weaver 1998). The relative availability of shrub species and characteristics were not reported in these studies and may influence use (Braden and Powell 1994*b*). In addition, comparative data on population densities within different CSS vegetation types are lacking.

Gnatcatchers also use chaparral, grassland, and riparian habitats adjacent to, or intermixed with, CSS (Campbell *et al.* 1998 for paragraph). Though the use of non-CSS vegetation appears to be most frequent after the breeding season, nests have been reported in non-CSS vegetation (e.g., chaparral, grassland-ruderal). Gnatcatcher use of CSS and non-CSS vegetation has been documented to shift between breeding and non-breeding seasons, within breeding seasons, and diurnally. Potential factors contributing to gnatcatcher use of non-CSS vegetation types may include more abundant food resources, higher survival rates during dispersal, fire avoidance, and favorable microclimate characteristics.

Gnatcatchers exhibit strong site tenacity (Atwood 1990), and mated pairs defend territories throughout the year (Preston *et al.* 1998). Territory sizes cannot be inferred across areas since they tend to increase as distance from the coast increases (Preston *et al.* 1998) and can differ within similar geographic areas (e.g., Braden 1992; Braden *et al.* 1995). In San Diego County, breeding territory sizes for gnatcatcher pairs have been found to vary from 2 to 40 acres (Preston *et al.* 1998). Sizes of gnatcatcher breeding territories within western Riverside County range between 2.5 to 24.2 acres and average about 10.6 acres (Braden 1992; Braden *et al.* 1995). Non-breeding home ranges of the gnatcatcher are typically about 80 percent larger than breeding territories (Bontrager 1991; Preston *et al.* 1998), and size estimates range between 5 and 62 acres (Bontrager 1991; Braden *et al.* 1994; Preston *et al.* 1998).

The gnatcatcher breeding season extends from late February through August, with peak of egg laying occurring from mid-March through May (Bontrager *et al.* 1995; Grishaver *et al.* 1998). Nests are constructed over a 4 to 10 day period and are often placed in coastal sagebrush about 3 feet above the ground (Atwood 1990). California gnatcatchers typically lay clutches of three to four eggs (Grishaver *et al.* 1998). The incubation and nestling periods encompass about 14 and 10 to 15 days, respectively. Both sexes participate in all phases of the nesting cycle. The female is the primary incubator and brooder, but the male makes almost twice as many feeding trips to the nestlings (Grishaver *et al.* 1998).

Little is known about dispersal of juvenile gnatcatchers. Parents provide 3 to 5 weeks of care for fledglings before excluding them from their territory (Grishaver *et al.* 1998). The young then disperse, or leave the area occupied by the adults, to find other territories in which to forage and raise young. Individual juvenile gnatcatchers have been observed to successfully disperse more than 18 miles (G. Braden, unpublished data), and spatially isolated occurrences of gnatcatchers suggest high juvenile dispersal capabilities over human-modified landscapes (Bailey and Mock 1998). More typically, juvenile gnatcatcher disperse average distances of 0.7 to 1.7 miles from their natal site (Braden *et al.* 1994; Bailey and Mock 1998; Galvin 1998), with shorter dispersal distances in more intact CSS (Galvin

1998). The frequency at which juvenile gnatcatchers attempt to disperse longer distances through more human-modified landscapes and their relative survival rates are unknown (Galvin 1998).

Environmental baseline: The coastal California gnatcatcher was considered locally common in the mid-1940s, although a decline in the extent of its habitat was noted (Grinnell and Miller 1944). At that time, gnatcatchers were present locally throughout southern Ventura County southward through Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties to approximately 30 degrees north latitude near El Rosario, Baja California, Mexico (Grinnell and Miller 1944; Atwood 1990).

By the 1960s, this species had apparently experienced a significant population decline in the United States that has been attributed to widespread destruction of its habitat. Atwood (1980) estimated that no more than 1,000 to 1,500 pairs remained in the United States. He also noted that remnant portions of its habitat were highly fragmented with nearly all being bordered on at least one side by rapidly expanding urban centers. Subsequent reviews of gnatcatcher status by Garrett and Dunn (1981) and Unitt (1984) tended to corroborate the findings of Atwood (1980).

Habitat loss and degradation are thought to be the greatest factors limiting gnatcatcher populations. As much as 90 percent of the historic distribution of the coastal sage scrub (CSS) community on which the gnatcatcher largely depends has been destroyed by development, conversion to agriculture, and fuel modification for fire control (Kirkpatrick and Hutchinson 1977; Mooney 1988; Westman 1981*a*; Westman 1981*b*). Other causes of habitat degradation include grazing, illegal clearing, and pollution (Westman 1987). In addition, the reduction of usable habitat due to wildfires and subsequent conversion to nonnative grassland has contributed to habitat loss and degradation. The close proximity of urban development to native habitat has resulted in increased fire frequency in many areas (Scott and Minnich 1996) and five to seven years of vegetation recovery may be necessary before gnatcatchers will breed within previously burned areas (Beyers *et al.* 1995; Atwood *et al.* 1998).

Gnatcatcher nest failures are most often attributed to predation and brood parasitism. Predation is the most common cause of nest failure, accounting for as many as 30 to 60 percent of failures in some areas (Bontrager *et al.* 1995; Braden *et al.*1997*b*; Grishaver *et al.* 1998). Data from western Riverside County suggest that nest predation of gnatcatchers may be high relative to predation rates reported for other similarly-sized passerines (Braden *et al.* 1995). Most predation occurs during egg laying and incubation. Potential predators of gnatcatcher eggs or nestlings include the gray fox (*Urocyon cinereoargenteus*), Virginia opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), corvids (*Corvus* spp.), several species of snakes and rodents, and the domestic or feral cat (*Felis catus*) (Atwood 1990). The continued fragmentation of habitat over time has increased exposure of gnatcatchers to predators that thrive on habitat edges. Brood parasitism by the brown-headed cowbird (*Molothrus ater*, "cowbird") also appears to be exacerbated by increased edge effects. Thirty-one percent of gnatcatcher nests monitored in Riverside County during the 1992-1995 breeding seasons were parasitized by cowbirds (Braden *et al.*1997*b*).

Annual estimates of abundance of gnatcatchers in a given locale can fluctuate dramatically. Reproductive rates may vary substantially from year-to-year in response to weather, predation, and other factors (Grishaver *et al.* 1998), and rapid increases in population size are possible when environmental conditions are favorable. For example, Preston *et al.* (1998) observed an annual reduction of 50 percent in the number of pairs at one site in Rancho San Diego. Such fluctuations appear to be partially induced by precipitation, but relations are complex with above-average rainfall resulting in both decreased overwinter survivorship and increased productivity during the following nesting season (Erickson and Miner 1998; Grishaver *et al.* 1998). Notably, the lowest annual productivity (less than two fledglings per pair) has been found in areas further from the coast, such as Rancho San Diego (Grishaver *et al.* 1998) and Riverside County (Braden *et al.* 1997*a*). Similar to other passerine species, gnatcatcher mortality is highest for the youngest age class, with much of this attributable to predation of young in nests (Atwood 1990). Juvenile birds are also more susceptible to predation than adults. Sources of mortality for adult gnatcatchers have not been well studied; however, Braden and others (1995) estimated annual adult mortality at 63 percent and juvenile mortality at 86 percent in Riverside County.

In 1996, we estimated the total number of gnatcatchers in the United States at 2,899 pairs (USFWS 1996). The range of the subspecies currently is primarily restricted to Orange, western Riverside, and San Diego counties with only small, extremely isolated populations remaining in portions of Los Angeles, San Bernardino, and Ventura counties. The United States and Mexican populations may now be disjunct.

Short- and long-term conservation of the gnatcatcher depend on protection of core population areas and linkage habitat between core populations. For resident bird species like the gnatcatcher, natal dispersal is a critical feature of demographic success. Because the extent and relative mortality incurred by gnatcatchers during dispersal over non-habitat areas is unknown, we expect that optimal linkages or corridors for dispersal will be those that provide contiguous habitat with no or few inclusions of urban development.

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
R. J. Donovan Correctional Facility	0.70 - 4.45	2.95	13
Starr Ranch Sanctuary	0 - 4.75	2.95	19

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Correctional Institution, West	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, species occurrences from CNDDB (CDFG 2001*a*) and the GIS coverage displaying critical habitat were used to estimate which prisons were within the range for this species.

Critical Habitat

Proximity of prison and Tier 3 mitigation sites to critical habitat for Coastal California Gnatcatcher.

Site Name	Within Critical Habitat*	Next Closest Site
California Institution for Men, West		X (4.5 Miles)
RJ Donovan Correctional Facility at Rock Mountain		X (.05 Miles)
Starr Ranch Sanctuary	X	

* GIS distribution coverages (USFWS 2002) were used as the primary source.

Tipton Kangaroo Rat (*Dipodomys nitratoides nitratoides*)

Status: Federal Endangered (53 **FR** 25608; July 8, 1988)
California Endangered

Recovery Plan: U.S. Fish and Wildlife Service. 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Portland, Oregon.

Species description: The Tipton kangaroo rat is one of three subspecies of the San Joaquin kangaroo rat, morphologically distinguished by being larger than the Fresno kangaroo rat and smaller than the short-nosed kangaroo rat. Adaptations for two-footed or bipedal hopping include elongated hind limbs, a long, tufted tail for balance, a shortened neck, and a large, flattened head. Other characteristics include large, dorsally placed eyes and small, rounded ears. Forelimbs are comparatively short with stout claws that facilitate digging burrows (Best 1991). The fur is dark yellowish-buff dorsally and white ventrally (Knapp 1975). A white stripe extends across the hips, continuing for the length of the tufted tail. The base of the tail is circumscribed by white. Dorsal and ventral sides of the tail are blackish. Dark whisker patches on each side of the nose are connected by a black band of fur (Grinnell 1922; Culbertson 1934; Williams *in litt.* 1985). The San Joaquin kangaroo rat can be distinguished from other kangaroo rats within its geographic range by the presence of four toes on the hind foot; the other species have five.

The preferred location for Tipton kangaroo rat burrows typically involves alluvial fans and flood plains and includes fine, highly alkaline sands and, to a lesser degree, alkaline sandy loams. Burrow systems are usually in open areas but may occur in areas of thick scrub. They are typically simple, but may include interconnecting tunnels. Most are less than 10 inches deep. They are commonly in slightly elevated mounds, the berms of roads, canal embankments, railroad beds, and bases of shrubs and fences where wind-blown soils accumulate above the level of surrounding terrain. Terrain not subject to flooding is essential for permanent occupancy by Tipton kangaroo rats.

Tipton kangaroo rats inhabit saltbush scrub and alkali sink scrub communities in the southern San Joaquin Valley. The historical geographic range of Tipton kangaroo rats was over 1.7 million acres. Distribution was limited to arid-land communities occupying the valley floor of the Tulare Basin in level or nearly level terrain. By 1985, the inhabited area had been reduced, primarily by cultivation and urbanization, to about 60 thousand acres. In 1997, The USFWS (1998) estimated that they inhabited approximately 4 percent of their historic range. Current occurrences are limited to scattered, isolated areas. In the southern San Joaquin Valley, this includes the Kern National Wildlife Refuge, Delano, and other scattered areas within Kern County.

Environmental baseline: The principal reason for this action was the extensive loss and fragmentation of their habitats by agricultural, industrial, and urban developments in the Central Valley and adjacent foothills. Critical habitat was not designated for this species. Information regarding the description, taxonomy, life history, habitat requirements, behavior, and population demographics of this subspecies is provided in the Recovery Plan for Upland Species of the San Joaquin Valley (USFWS 1998*a*).

The historical range of the Tipton kangaroo rat encompassed more than 1.7 million acres in the Tulare Lake Basin of the southern San Joaquin Valley, extending from Tulare Lake in the north to the foothills of the Tehachapi Mountains in the south. By 1985, however the area inhabited by Tipton kangaroo rats had been reduced to approximately 63,000 acres; primarily by cultivation and urbanization. The construction of dams and canals, which made a dependable supply of water available and allowed the cultivation of the alkaline soils of saltbush, valley sink scrub, and relictual dune communities facilitated the decrease in abundance and distribution of the Tipton kangaroo rat. Since 1985, Tipton kangaroo rats have re-inhabited several hundred to a few thousand acres retired from crop production because of drainage problems or lack of water. Unfortunately, these gains have been offset by the loss of a similar acreage of habitat to development. Hence, the current acreage of occupied habitat is probably not much different from the 1985 estimate. Less than 4 percent of the habitat for Tipton kangaroo rats remains and, currently, this subspecies is limited to scattered, isolated areas in Tulare County (e.g., west of Tipton, Pixley, and Earlimart; Pixley National Wildlife Refuge; Allensworth Ecological Reserve; Allensworth State Historical Park) and Kern County (e.g., southeast of Bakersfield, Kern National Wildlife Refuge, Coles Levee Ecosystem Preserve).

Habitat destruction and fragmentation associated with agriculture and urban, industrial, and petroleum development have reduced habitat for Tipton kangaroo rats, and continue to contribute to their decreasing status. Nearly every parcel of land in private ownership that is currently inhabited by Tipton kangaroo rats is surrounded by cultivated fields or urbanized land where these animals cannot live. Also, more than half of this remaining habitat is subject to winter flooding owing to high water tables. As a result, individuals may be drowned or captured by predators after being forced from their burrows during floods. Furthermore, several parcels with extant natural lands in the 1970's now have private evaporation ponds into which salt-laden, agricultural drain waters are being diverted. Unless other solutions are found for agricultural drainage problems, more habitat for Tipton kangaroo rats probably will be lost to this purpose.

Other threats that have contributed to the decrease in status of Tipton kangaroo rats include pesticides and rodenticides, the formation of heavy thatch by exotic grasses, competition with Heermann's kangaroo rats, and the risk of chance extinction owing to small population size, isolation, and high natural fluctuations in abundance. The use of rodenticides to control California ground squirrels (*Spermophilus beecheyi*) probably contributed to the decrease or extirpation of small populations of Tipton kangaroo rats that were isolated and surrounded by agricultural land. Populations of Tipton kangaroo rats are characterized by marked instability in population size, with periodic irruptions to high levels, rapid decreases, and occasional local extinctions. For example, a population of Tipton kangaroo rats at Pixley National Wildlife Refuge decreased 99 percent during January 1993 to April 1995 in response to above average precipitation. This high rainfall apparently caused the deaths of kangaroo rats from water penetrating burrows and drowning occupants, spoiling seed stores, hypothermia, or pneumonia-like diseases that afflict these animals when they are placed in a cool, moist environment. When large expanses of connected habitat existed, local extinction was not a great problem because some surviving populations eventually irrupted and individuals re-colonized areas where they had been eliminated. Given the small, fragmented populations that remain for this subspecies, however, precipitous population decreases owing to random catastrophic events currently pose a high threat to their long-term survival.

Compounding this pattern of high-amplitude, high-frequency population dynamics is competition with Heermann's kangaroo rats, which are much larger in body size, more general in their habitat requirements, and more successful in maintaining populations in fragmented landscapes than Tipton kangaroo rats. Hence, during times when the environment is poorly suited to Tipton kangaroo rats, competition with Heerman's kangaroo rats may lead to local extirpation of the former. Furthermore, following periods of high rainfall, a heavy thatch of exotic grasses may develop in areas where there is little grazing by native ungulates or livestock. Because kangaroo rats are adapted for habitats with low, sparse vegetation, their usual defenses of speed and alertness may be hampered when vegetation is high and dense. As a result, more animals may be taken by predators and their survival and persistence may be threatened.

A goal of recovery (USFWS 1998*a*) for the Tipton kangaroo rat is to consolidate, protect, and manage blocks of suitable habitat to minimize the effects of random catastrophic events and competition with

Heerman's kangaroo rats on their populations. To contribute to this goal, the *Recovery Plan* calls for protecting additional natural land and restoring contiguous agricultural land in the Kern Fan area, the Pixley National Wildlife Refuge-Allensworth Natural Area, and the Kern National Wildlife Refuge-Semitropic Ridge area. Blocks of habitat should be several thousand acres in size, with a core of at least 5,000 acres of "high quality" habitat that is not subject to periodic flooding. The vegetation should be actively managed by an appropriate level of livestock grazing to prevent excessive accumulation of mulch and growing plants. Studies of competition between Tipton and Heermann's kangaroo rats, and range-wide monitoring programs to measure population and environmental fluctuations at sites representative of the range of natural land sizes and habitat conditions, are also recommended. To date, the goals of the *Recovery Plan* have not been met, and none of the current threats to the survival and recovery of the Tipton kangaroo rat have been alleviated through conservation efforts.

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
North Kern State Prison (Delano) California State Prison - Kern County at Delano II	1.95 - 4.35	3.21	7
Allensworth Ecological Reserve	0 - 4.75	1.96	15

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California Substance Abuse Treatment Facility	X	
Central California Women's Facility		X
North Kern State Prison	X	
Pleasant Valley State Prison		X
Valley State Prison for Women		X
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve		X

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source. Hall (1981) provided coarse scale distribution maps for subspecies.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

San Joaquin Kit Fox (*Vulpes macrotis mutica*)

Status: Federal Endangered (32 **FR** 4001, March 11, 1967)
California Threatened

Recovery Plan: U.S. Fish and Wildlife Service. 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Portland, Oregon.

Species description: The San Joaquin kit fox is a small canid, with an average body length of 20 inches and weighing about 5 pounds. They are lightly built, with long legs and large ears. Pelage color ranges from tan to buffy gray in the summer to silvery gray in the winter. The belly is whitish and the tail is black-tipped (USFWS 1998*a*).

The diet of kit foxes varies geographically, seasonally and annually, based on temporal and spatial variation in abundance of potential prey. In the southern portion of their range, kangaroo rats *(Dipodomys* spp.), pocket mice (*Perognathus* spp.), white-footed mice (*Peromyscus* spp.), and other nocturnal rodents comprise about one-third or more of their diets. Kit foxes also prey on California ground squirrels (*Spermophilus beecheyi*), black-tailed hares (*Lepus californicus)*, San Joaquin antelope squirrels (*Ammospermophilus nelsoni)*, desert cottontails (*Sylvilagus audubonii)*, ground-nesting birds, and insects. Dens are used by the fox for temperature regulation, shelter from adverse environmental conditions, and escape from predators. Kit foxes excavate their own dens, use those constructed by other animals, and use human-made structures (culverts, abandoned pipelines, and banks in sumps or roadbeds). Kit foxes often change dens and many dens may be used throughout the year. However, evidence that a den is being used by kit foxes may be absent. Kit foxes are subject to competitive exclusion or predation by other species, such as the nonnative red fox *(Vulpes vulpes)*, coyote (*Canis latrans)*, domestic dog (*Canis familiaris*), bobcat (*Felis rufus*), and large raptors (USFWS 1998*a*).

Although the San Joaquin kit fox has been listed as endangered for over 30 years, there has never been a comprehensive survey of its entire historical range. And, despite the loss of habitat and apparent decline in numbers since the early 1970s, there has been no new survey of habitat that was then thought to be occupied (Morrell 1975).

Despite the lack of a comprehensive survey, local surveys, research projects and incidental sightings indicate that kit foxes currently inhabit some areas of suitable habitat on the San Joaquin Valley floor and in the surrounding foothills of the coastal ranges, Sierra Nevada, and Tehachapi Mountains, from southern Kern County north to Contra Costa, Alameda, and San Joaquin Counties on the west, and near La Grange, Stanislaus County on the east side of the Valley (Williams 1990), and some of the larger scattered islands of natural land on the Valley floor in Kern, Tulare, Kings, Fresno, Madera, and Merced Counties. Kit foxes also occur westward into the interior coastal ranges in Monterey, San

Benito, and Santa Clara Counties (Pajaro River watershed), in the Salinas River watershed, Monterey and San Luis Obispo Counties, and in the upper Cuyama River watershed in northern Ventura and Santa Barbara Counties and southeastern San Luis Obispo County. Kit foxes are also known to live within the city limits of the city of Bakersfield in Kern County (Laughrin 1970; Jensen 1972; Morrell 1975; USFWS 1983*b*; Swick 1973; Waithman 1974; Endangered Species Recovery Program unpubl. data).

Some researchers have suggested that as San Joaquin Valley natural lands were cultivated or otherwise developed, displaced kit foxes colonized nearby valleys and foothills (Laughrin 1970; Jensen 1972); however, there is no concrete evidence to support this assertion. As early as 1925, Grinnell *et al.* reported kit fox specimens from the Panoche Creek area in the foothills of western Fresno County, and east of Rose Station (Fort Tejon) in southern Kern County at an elevation of 1,200 feet (Grinnell *et al.* 1937; USFWS 1983*b*). Therefore, it is more probable that kit foxes have always occurred in these areas, possibly at low density.

The largest extant populations of kit foxes are in western Kern County on and around the Elk Hills and Buena Vista Valley, Kern County, and in the Carrizo Plain Natural Area, San Luis Obispo County. The kit fox populations of Elk Hills and the City of Bakersfield, Kern County (B.L. Cypher *pers. comm.*), Carrizo Plain Natural Area, San Luis Obispo County (White and Ralls 1993; Ralls and White 1995), Ciervo-Panoche Natural Area, Fresno and San Benito Counties (Endangered Species Recovery Program), Fort Hunter Liggett, Monterey County (V. Getz *pers. comm.*), and Camp Roberts, Monterey and San Luis Obispo Counties (W. Berry *pers. comm.*) have been recently, or are currently, the focus of various research projects. Though monitoring has not been continuous in the central and northern portions of the range, populations were recorded in the late 1980s at San Luis Reservoir, Merced County (Briden *et al.* 1987), North Grasslands and Kesterson National Wildlife Refuge area on the Valley floor, Merced County (Paveglio and Clifton 1988), and in the Los Vaqueros watershed, Contra Costa County in the early 1990s (V. Getz *pers. comm.*). Smaller populations and isolated sightings of kit foxes are also known from other parts of the San Joaquin Valley floor, including Madera County and eastern Stanislaus County (Williams 1990).

Environmental baseline: In the San Joaquin Valley before 1930, the range of the San Joaquin kit fox is believed to have extended from southern Kern County north to Contra Costa County on the west side and near La Grange, Stanislaus County, on the east side. Until the 1990s, Tracy was the farthest northwest record. We now have records from the Antioch area of Contra Costa County (USFWS 1998*a*).

Historically, San Joaquin kit foxes occurred in several San Joaquin Valley native plant communities. In the southernmost portion of the range, these communities included Valley Sink Scrub, Valley Saltbush Scrub, Upper Sonoran Subshrub Scrub, and Annual Grassland. By 1930, the kit fox range had been reduced by more than half, with the largest portion remaining in the southern and western parts of the

Valley. By 1958, an estimated 50 percent of the Valley's original natural communities had been lost, due to extensive land conversions, intensive land uses, and the use of pesticides. In 1979, only about 6.7 percent of the San Joaquin Valley's original wildlands south of Stanislaus County remained untilled and undeveloped. Today many of these communities are represented only by small, degraded remnants. Kit foxes are, however, found in grassland and scrubland communities, which have been extensively modified by humans with oil exploration, wind turbines, agricultural practices, and/or grazing. The population is fragmented, particularly in the northern part of the range (USFWS 1998*a*).

Loss and degradation of habitat by agricultural, industrial, and urban developments and associated practices continue, decreasing the carrying capacity of remaining habitat and threatening kit fox survival. Such losses contribute to kit fox declines through displacement, direct and indirect mortalities, barriers to movement, and reduction of prey populations. The San Joaquin kit fox was listed as endangered by the State of California in 1971. A recovery plan approved in 1983 proposed interim objectives of halting the decline of the San Joaquin kit fox and increasing population sizes above 1981 levels (USFWS 1983*b*). In 1997 a recovery plan for San Joaquin Valley upland terrestrial species was drafted which includes a revised recovery plan for the kit fox (USFWS 1997). This plan calls for protecting the Carrizo Plain, western Kern County, and the Ciervo-Panoche Natural Area as core populations while reducing their isolation by managing populations on connecting private and public lands through conservation agreements. In 1998, the recovery plan was finalized and published (USFWS 1998*a*).

One of the largest extant populations of the kit fox occurs in western Kern County. Hence, the recovery strategy for this subspecies hinges on the enhanced protection and management of habitat in this region. The level of protection recommended by the *Recovery Plan* is 90 percent of the existing potential habitat in western Kern County (USFWS 1998*a*).

Recent studies of kit foxes in the Elk Hills and Lokern areas documented decreases in the abundance of kit foxes. The estimated density of kit foxes at the Naval Petroleum Reserves, California, decreased during 1982-1983, increased during 1992-1994, and then decreased during 1995 (Cypher and Scrivner 1992; Cypher and Spencer 1998). Likewise, during 1989 to 1991 kit foxes in the Lokern area had reduced reproductive and neonatal survival rates following a drought-induced decrease in the abundance of their staple prey (Spiegel 1996). These populations have not rebounded to pre-decrease levels.

Genetic assessments indicate that historic and recent gene flow among most populations of kit foxes in the southern portion of their range were quite high, with effective dispersal rates of 2.7 to 9.4 migrants per generation. There were no major barriers to dispersal among populations, and genetic dispersal was likely sufficient to allow for local adaptation while preventing the loss of any rare alleles. Estimated gene flow among subpopulations of kit foxes in western Kern County is even higher, with effective dispersal rates of more than 10 migrants per generation between the Lokern and Elk Hills areas. Estimates of heterozygosity and the mean number of alleles per locus from foxes in western Kern County are also

relatively high, indicating that this population is not experiencing the deleterious effects of inbreeding (K. Ralls *pers. comm.*).

Most of the valley bottom grassland and alkali scrub habitats in western Kern County have been eliminated or degraded by agricultural, suburban, and industrial development (USFWS 1998*a*). This loss and fragmentation of habitat has adversely affected kit foxes via injuries and mortalities, displacement, reduction of prey populations and denning sites, changes in the distribution and abundance of larger canids (e.g., red foxes) that are known to kill kit foxes or compete with them for resources, and/or reductions in carrying capacity. In addition, remaining habitat in western Kern County is fragmented by obstacles and hazards to movements by foxes, including the following: 1) Interstate 5, State Highways 33, 46, and 58, and other busy roads, 2) California aqueduct and numerous canals, 3) the towns of McKittrick, Buttonwillow, and Taft, and other commercial developments, 4) intensive oil development in the Midway Sunset, Elk Hills, and Lost Hills areas, and 6) irrigated agricultural fields. These obstacles and hazards may constrain and/or impede movements by foxes within or through portions of this area, and increase rates of mortality owing to increased exposure vehicles, competitors and predators (e.g., red foxes, feral/domestic dogs), and humans.

Loss and degradation of habitat by agricultural, industrial, and urban developments and associated practices continue to contribute to decreases in the abundance and distribution of San Joaquin kit foxes in western Kern County through displacement, direct and indirect mortalities, barriers to movement, and reduction of carrying capacity. Although kit foxes may persist in agricultural areas if enough uncultivated land is maintained to provide adequate denning sites and a suitable prey base (Jensen 1972; Knapp 1978; Hansen 1988), intensively irrigated or cultivated areas are often devoid of kit foxes (Jensen 1972; Morrell 1975). Agricultural interests in western Kern County generally employ "clean farming" practices in orchards and fields to reduce pests and weeds that might decrease field productivity. An attendant effect of this management is that it eliminates all vegetation other than the crops themselves. As a result, these areas generally lack sufficient denning sites and prey to support viable populations of kit foxes. Furthermore, effective dispersal (i.e., dispersal followed by successful reproduction; dispersal of genes) is often precluded or low because patches of habitat are isolated and connectivity between subpopulations have been severed. The Endangered Species Recovery Program, Fresno, California, has documented that kit foxes in the Lost Hills area travel as much as 1 mile into the orchards and agricultural fields during nocturnal foraging. However, no kit fox has ever utilized any natural or artificial den in orchards or agricultural fields.

Petroleum development in this region has also fragmented habitat. Petroleum field developments in the southern half of the San Joaquin Valley result in high surface disturbance and widely dispersed patches of natural habitat for kit foxes. Increased noise, ground vibrations, venting of toxic and noxious gases, and the release of petroleum products and waste waters also contribute to habitat degradation. The most significant impact of hydrocarbon extraction on kit foxes appears to be mediated through habitat loss (USFWS 1997). Kit fox abundance in the Midway-Sunset oil field of western Kern County, which

is highly developed with about 70 percent ground disturbance, was only about 50 percent that of the nearby, undeveloped Lokern area (Spiegel 1996). Capture rates of kit foxes at the former Naval Petroleum Reserves tended to be negatively associated with the extent of oil-field development after 1987; likely owing to changes to habitat or direct loss of habitat (Warrick and Cypher 1998). Even moderate development tends to encourage dense stands of saltbush, which may have a detrimental affect on kit foxes by contributing to increased densities of predators and reduced visibility (Warrick and Cypher 1998). Petroleum field activities also reduce the number of typical, earthen dens available to kit foxes. Dens are essential for the survival and reproduction of kit foxes which use them year-round for shelter and escape, and in the spring for rearing young. Hence, kit foxes generally have dozens of dens scattered throughout their territories (White *et al.* 1994). The average density of typical, earthen kit fox dens at NPRC, was negatively correlated with the intensity of petroleum development (Zoellick *et al.* 1987), and almost 20 percent of the dens in developed areas were found to be in well casings, culverts, abandoned pipelines, oil well cellars, or in the banks of sumps or roads (USFWS 1983*a*). These results are important because the California Energy Commission found that, even though kit foxes frequently used pipes and culverts as dens in oil-developed areas of western Kern County, only earthen dens were used to birth and wean pups (Spiegel 1996). Furthermore, petroleum development has influenced the selection of foraging sites by kit foxes in western Kern County. Development often results in a shift in the small mammal community from primarily granivorous species (e.g., *Dipodomys*) to species adapted to early successional stages and disturbed areas (e.g., California ground squirrels, murid rodents; Spiegel 1996). Development also results in an increase in the availability of human-derived food sources. Refuse from human discarded food items were found more frequently in the diets and at dens of foxes inhabiting an oil-developed site as compared to an undeveloped site; particularly during years of low rainfall when heteromyid densities were low (Spiegel 1996). Hence, kit foxes in developed areas are often able to utilize smaller home ranges than foxes in undeveloped areas, and may not be as susceptible to periods of prey scarcity (Spiegel 1996). The opportunistic use of refuse may not be beneficial in the long-term, however, because human-derived food supplements are ephemeral, unpredictable, and lack the equivalent nutritional value of natural prey items (Spiegel 1996).

The closest San Joaquin kit fox occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 6.4 miles to Wasco State Prison - Reception Center. The closest San Joaquin kit fox occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 10.1 miles to Allensworth Ecological Reserve. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison	X	
Chuckawalla Valley State Prison	X	
Ironwood State Prison	X	
North Kern State Prison	X	
Pleasant Valley State Prison	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

The following species have been de-listed by the Federal government:

Aleutian Canada Goose (*Branta canadensis leucopareia*)

Status: Federal Delisted (66 **FR** 15643, March 20, 2001); previously listed as Threatened (55 **FR** 51106, December 12, 1990) and endangered (32 **FR** 4001, March 11, 1967)

Recovery Plan: U.S. Fish and Wildlife Service. 1991. Aleutian goose recovery plan. Anchorage, Alaska.

Species description: Canada geese have brownish grey bodies, darker wings, and black necks and heads *with a distinctive white "chin strap."* They range in length from about 22-45 inches. The Aleutian subspecies can be distinguished from most other subspecies by its small size (only cackling Canada geese are smaller) and a ring of white feathers at the base of black neck feathers in birds older than 8 months.

Historically, the Aleutian Canada goose was known to nest on most of the larger islands in the Aleutian Islands and in the Commander and northern Kuril Island chains. When the species was first listed as endangered in 1967, its only known nesting site was Buldir Island in the western Aleutian Islands, Alaska. Subsequently, remnant flocks have been found on Chagulak Island in the eastern Aleutians, and Kaliktagik Island in the Semidi Islands.

In California, the Aleutian Canada goose spends the winter on agricultural lands along the north coast, and throughout the Sacramento and San Joaquin Valleys. Major migration and wintering areas include agricultural lands north of Crescent City in Del Norte County, around the Sutter Buttes in the Sacramento Valley, near El Sobrante in Contra Costa County, and along the San Joaquin River between Modesto and Los Banos.

Aleutian geese are very traditional in their selection of foraging and roosting locations. They forage primarily in the hours around dawn and dusk, and roost in the afternoon and at night. The decline of this subspecies is largely attributed to predation resulting from the introduction of foxes and other small mammals to the Aleutian Islands during the period 1836 to 1930.

Environmental Baseline: In March 2001, the Aleutian Canada goose was removed from the list of Federal endangered or threatened species because the species had recovered due to removal of predators from some of the nesting islands, release of captive-reared and translocate wild geese to establish to new breeding islands, protection of the species from hunting and disease, and protection of migration and wintering habitat. Estimated numbers of Aleutian Canada goose wintering in California have increased from 6,300 in 1989/90 to 36,978 in 1999/00 (66 **FR** 15643, March 20, 2001).

At one time, recreational and subsistence take of this subspecies in the Pacific Flyway may have been a significant factor preventing the remnant breeding segments from recovering. The actual wintering areas were not known until the recovery of the first banded birds was reported in late 1974 in California. The wintering habitat has been the focus of study from 1974 to present. Areas in California and Oregon, essential to winter survival, have been identified and partially protected by inclusion of the lands used in the National Wildlife Refuge System or California's Resource Agency Wildlife Area and State Park systems. Additionally, major staging and migration areas, and additional wintering areas, including areas in California, have been closed to the hunting of this and/or other subspecies of Canada goose, offering further protection.

Threats to this species still exist on their wintering grounds by development and modification of wintering and migration habitat, for example by conversion of farmlands to human uses or altered agricultural uses. Threats on their breeding grounds still include fox predation on nests, though fox trapping efforts will be continued even after delisting of the species from protection as an endangered or threatened species (66 **FR** 15643, March 20, 2001).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Pelican Bay State Prison	3.40	3.40	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Correctional Center, Level III		X
California Institution for Men, West		X
California State Prison, Corcoran		X
California State Prison, Kern County at Delano II		X
California State Prison, Los Angeles		X
California State Prison, Solano		X
California State Prison, Sacramento		X
California Substance Abuse Treatment Facility		X
Central California Women's Facility		X
High Desert State Prison		X
Mule Creek State Prison		X
Northern California Women's Facility		X
North Kern State Prison		X
Pelican Bay State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain		X
Valley State Prison for Women		X
Wasco State Prison, Reception Center		X
Allensworth Ecological Reserve		X
Humboldt Bay National Wildlife Refuge	X	
Paul L. Wattis Sanctuary		X
Stanislaus River Park		X
Starr Ranch Sanctuary		X

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

American Peregrine Falcon (*Falco peregrinus anatum*)

Status: Federal Delisted, previously listed as Endangered (50 **CFR** Part 17, Wednesday August 25, 1999; 35 **FR** 16047, October 13, 1970; and 49 **FR** 10526, March 20, 1984).
Critical Habitat designated in Sonoma, Napa, and Lake Counties (50 **CFR** 17.95(b))
California Endangered, California Fully-Protected

Recovery Plan: U.S. Fish and Wildlife Service. 1982. Pacific Coast Recovery Plan for the American Peregrine Falcon. Portland, Oregon.

Species description: The American peregrine falcon is a medium-sized, swift flying bird of prey with pointed wings. Wingspan is three to four feet. Adults have slate gray backs with white underparts streaked or barred in black. They have distinctive white and black "helmet-shaped" facial markings. They do not build their own nest, but scrape out shallow hollows on inaccessible cliff ledges or use the

abandoned nests of ravens or hawks. Recently, peregrines have successfully nested on tall buildings in a number of large cities. The same nest site may be used by peregrines for many years. Pairs roost together and hunt cooperatively. Peregrine falcons feed primarily on birds (ranging in size from songbirds to ducks and herons), which they capture in high-speed (up to 175 mph) stooping dives or chases. Typically they occur in open country around rocky cliffs and bluffs, or along coasts or rivers where water birds congregate. In cities they feed on abundant pigeon populations.

The peregrine falcon is the most widely distributed of all birds, occurring broadly throughout the Eastern and Western Hemispheres. The American peregrine falcon historically nested throughout North America from the boreal forest south into Mexico, wherever suitable nesting and foraging habitat occurred. Breeding populations currently occur in California, Arizona, New Mexico, Utah, Texas, and Alaska. A few pairs nest in other states in the northeast and northwest.

In California, the peregrine falcon is a an uncommon breeding resident and migrant. Known nesting areas are along the coast north of Santa Barbara, in the Sierra Nevada, and other mountains of northern California (Zeiner *et al.* 1990*a*), and on the northern Channel Islands. Migrants from outside California are found along the coast and in the western Sierra Nevada in the winter months (Zeiner *et al.* 1990*a*).

Environmental baseline: The peregrine falcon suffered major worldwide population declines from 1950 to 1975, due principally to contamination of the food chain by DDT and other persistent pesticides. DDT interferes with calcium metabolism and causes eggshell thinning and nest failure. By 1964 peregrines had been extirpated in the eastern United States and were declining rapidly in the West. With the banning of DDT for use in the U.S. in 1972 and implementation of a management program, populations have for the most part stabilized and increased. Many nest sites are now protected from human disturbance. A large captive breeding program has reintroduced hundreds of peregrines into the wild throughout the United States. Captive-bred peregrines released into the wild without parental protection are often killed by great horned owls, so releases have been most successful in large cities. However, eggshell contamination data indicate that there has been a continued input of DDT into some local environments and/or wintering ranges outside the U.S. The resident peregrine falcons on the northern Channel Islands and central coastal California continue to be impacted by eggshell thinning due to high levels of DDE in their diet (Walton 2000; Hunt 2000) from historical DDT releases to the Southern California ocean from a DDT manufacturing plant.

In California, numbers of breeding peregrine falcons has increased steadily since 1975 due to reintroduction efforts. It is estimated that approximately 300 pairs of breeding peregrine falcons inhabited the State prior to the widespread releases of DDT into the environment. That number decreased to fewer than 10 nest sites found in 1969. By 1991, ground and helicopter surveys estimated 111 pairs throughout the State (USDA 1994). Survey data since that time have been limited, but indications are that the species is not declining, and may be increasing within the State (CDFG 2001*b*).

Manager, California/Nevada Operations Office

In 1999 the USFWS removed the peregrine falcon from the list of endangered and threatened species (50 **CFR** Part 17, Wednesday August 25, 1999). In 1999 it was estimated that there are a minimum of 1,425 pairs occupying Alaska, Canada, and the western United States. In 1998, the known breeding population of peregrine falcons in the United States and Canada was 1,650 pairs. In the Pacific Coast recovery region, 270 pairs of peregrine falcons were known in 1998, and productivity met the goal of 1.5 young/pair. Productivity goals were met or exceeded in each of the recovery regions, except for some localized areas within a recovery region, such as the Channel Islands in California. Levels of pesticide residues in eggs varies among the recovery regions, but eggshell thinning is greater than pre-pesticide era eggshells. Overall, peregrine falcons have increased considerably, even after reintroduction efforts were reduced.

The closest American peregrine falcon occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 14.4 miles to California State Prison, Solana. The closest American peregrine falcon occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 14 miles to Mayacama Mountain Sanctuary. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison		X
California Correctional Center, Level III		X
California Correctional Institution, Level III		X
California Correctional Institution, Level IVA		X
California Correctional Institution, Level IVB		X
California Institution for Men, West		X
California State Prison, Corcoran		X
California State Prison, Kern County at Delano II		X
California State Prison, Solano		X
California State Prison, Sacramento		X
California Substance Abuse Treatment Facility		X
Calipatria State Prison		X
Central California Women's Facility		X
High Desert State Prison		X
Mule Creek State Prison		X
North Kern State Prison		X
Northern California Women's Facility		X
Pelican Bay State Prison		X
Pleasant Valley State Prison		X
RJ Donovan Correctional Facility at Rock Mountain		X
Salinas Valley State Prison		X
Valley State Prison for Women		X
Wasco State Prison, Reception Center		X

Allensworth Ecological Reserve		X
Humboldt Bay National Wildlife Refuge		X
Kern River Preserve		X
Mayacama Mountains Sanctuary		X
Paul L. Wattis Sanctuary		X
Stanislaus River Park		X
Starr Ranch Sanctuary		X

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

State only listed species:

Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)

Status: Federal Proposed for listing as candidate species Federal Register October 30, 2001
California Endangered

In July 2001, the USFWS published a 12 -month finding for the petition to list this species in the western United States under the Endangered Species Act of 973, as amended. The USFWS determined that there was sufficient information to list the species, but was precluded from listed by higher priority listing actions (50 **CFR** Part 17, **FR** 66 (143:38611 - 38626, July 25, 2001)). The proposed listing is based on *C.a. occidentalis* being a distinct population segment based on a marked separation from other populations, even though genetic data do not support separation of the eastern and western subspecies. More recent data on the molecular genetics of the species may support the separation of the eastern and western birds into distinct subspecies (Pruett *et al.* 2001).

Species description: The yellow-billed cuckoo is one of two species belonging to the family *Cuculidae* that breeds in the United States. Both the yellow-billed cuckoo and the black-billed cuckoo (*C. erythropthalmus*) are widely distributed throughout the United States, but only the yellow-billed cuckoo extends its range into the western and southwestern regions. The yellow-billed cuckoo is a neotropical migratory bird that nests in extensive woodlands and riparian areas with dense, brushy undergrowth. It is a slender long-tailed bird, with grayish brown upper parts glossed with olive, dull white underparts shaded with pale bluish gray or buff, and large rufous wing patches. A pattern of six large white spots is apparent on the underside of the long graduated tail. Yellow-billed cuckoos have a black upper mandible and a yellow to orange yellow lower mandible with a black tip. Females are slightly larger than males, but are otherwise sexually monomorphic.

In the western United States, cuckoos are restricted to riparian areas that commonly support a mixture of mature cottonwood and willow. Cuckoos generally build nests in the dense willow understory and

use the cottonwood overstory for foraging. Birds most often occupy habitat patches greater than 40 ha (100 ac) in size and are greater than 200 m (650 ft) in width (Laymon and Halterman 1989). Occupied habitat is usually in the vicinity of slow-flowing or standing water. Its diet consists mainly of large insects such as caterpillars, katydids, cicadas, grasshoppers, and crickets (Nolan and Thompson 1975; Laymon 1980). It is a relatively late breeder, with nesting activity occurring from June through August. Clutch size varies from one to five eggs with typical clutches of two or three eggs. Incubation lasts 9 to 11 days, and chicks fledge 7 to 9 days after hatching. The nesting cycle is among the shortest for any species of bird.

The species is common in eastern regions of the United States but declining in the west. Based on historical accounts, the yellow-billed cuckoo was widespread and locally common in California and Arizona; locally common in a few river reaches in New Mexico; common very locally in Oregon and Washington; generally local and uncommon in scattered drainages of the arid and semiarid portions of western Colorado, western Wyoming, Idaho, Nevada, and Utah; and, probably uncommon and very local in British Columbia. The last confirmed breeding records from the Pacific Northwest were in the 1930s in Washington and in the 1940s in Oregon. Arizona may support the largest remaining cuckoo population for states west of the Rocky Mountains, but the cuckoo may now be absent from many areas where it once occurred along the lower and middle Gila, the lower Salt, and the lower Colorado rivers.

Environmental baseline: In California, where the yellow-billed cuckoo was once considered a common breeder in riparian forests (Cooper 1870; Belding 1890; Jay 1911; Shelton 1911; Willett 1912; Hanna 1937), populations declined to an estimated 122 to 163 pairs in 1977 (Gaines 1977). By 1987, the state's population was estimated at 31 to 42 pairs (Laymon and Halterman 1987), representing a 66 to 81 percent decline since 1977. Results from the latest state-wide survey estimate the California population at 41 to 45 pairs (Halterman *et al.* 2000). The species is rare in Colorado, Idaho, and Nevada, and the remaining breeding populations in Nevada may have been extirpated (Hughes 1999), although individuals are frequently observed.

Decline of the species has been attributed to loss, degradation, and fragmentation of riparian habitat in the western United States. Factors contributing to this loss include urban expansion, agricultural and flood control practices, livestock overgrazing, salt cedar invasion, operation and maintenance of dams and reservoirs, logging, and pesticide use.

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
California Institution for Men, West (Chino)	2.85 - 3.50	3.16	2
Kern River Preserve	0.95	0.95	1
Paul Wattis Sanctuary	2.10 - 4.45	3.36	9

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Institution for Men, West	X	
Kern River Preserve	X	
Paul L. Wattis Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Greater Sandhill Crane (*Grus canadensis tabida*)

Status: California Threatened, California Fully protected

Species description: The following species account was excerpted from CDFG Annual Report 2000 (CDFG 2001*b*):

> Greater sandhill cranes are the largest of six subspecies of sandhill cranes. Average adult males weigh 10.5 pounds while females average 8.4 pounds. Except for these size differences, sexes are similar in appearance. General coloration is pale gray with darker primary feathers. The cheeks, ear coverts, and chin are white, and all but juveniles have bare, reddish foreheads. Fledglings are similar in size to adults but can be distinguished by rust-brown feathers on the nape of the neck. Greater sandhill cranes eat a variety of foods but are primarily vegetarians.
>
> There is some confusion in the identification of subspecies: the American Ornithologists' Union recognizes 3 subspecies (lesser sandhill crane (*G.c. canadensis*), Florida sandhill crane (*G.c. pratensis*), and greater sandhill crane (*G.c. tabida*)), while more recent information indicates there may be 6 subspecies (Tacha *et al.* 1992).

Worldwide breeding distribution of this crane is eastern Siberia and North America from parts of Alaska across through northern Canada, and into the Great Lakes area, with local breeding locations in Oregon, northeastern California, northeastern Nevada, northcentral Utah, southern Idaho, Wyoming, Colorado., S. Dakota, Nebraska (Sibley and Munroe1990; Tacha *et al.* 1992). Birds in parts of Florida, southern Mississippi, and Cuba are year round residents (Tacha *et al.* 1992). Wintering areas include the Central Valley of California, and portions of Texas, southern Florida, and Mexico (Tacha *et al.* 1992).

In California, historically, greater sandhill cranes nested in eastern Siskiyou County and northeastern Shasta County southward to Honey Lake in Lassen County. Presently, greater sandhill cranes nest in Lassen, Modoc, Plumas, Shasta, Sierra, and Siskiyou counties.

In California, sandhill cranes establish territories in wet meadows that are often interspersed with emergent marsh. California birds tend to nest in rather open habitat, however, in certain areas, they nest in association with a dense cover of bulrush and burreed. The last statewide breeding population study in California was conducted in 1988, and the breeding population in this State was estimated to be 276 pairs. Favorable roost sites and abundance of cereal grain crops characterize the cranes' Central Valley wintering ground. Rice is used extensively by cranes near the Butte Sink are of Butte County, and corn is the principal food source at most other Central Valley wintering areas, particularly in the Sacramento-San Joaquin Delta near Lodi, San Joaquin County.

Environmental baseline: Currently, the estimate for greater sandhill cranes within their Pacific Flyway range is between 5,000 and 6,000 individuals. There are about 25,000 lesser sandhill cranes wintering in California each year. In addition about 6,000 intermediate sandhill cranes (*C.g. rowani*) or Canadians, as they are also called, also mix with the other two subspecies. This latter subspecies is a relatively new arrival in the State and is midway in size between the other and tends to be quite brownish in coloration.

This species continues to experience threats on both wintering and breeding grounds by agricultural and residential conversion of habitat, predation, human disturbance and collisions with power lines.

There are no occurrences of greater sandhill crane within CNDDB (CDFG 2001*a*). There may be closer occurrences that have not been entered into CNDDB or recorded for input. There have also been no mortality of greater sandhill crane at any prison site (EDAW 1999).

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison		X***
California Correctional Center, Level III	X	
California Correctional Institution, Level III		X
California Correctional Institution, Level IVA		X
California Correctional Institution, Level IVB		X
California State Prison, Corcoran		X***
California State Prison, Kern County at Delano II		X***
California State Prison, Los Angeles		X
California State Prison, Sacramento		X***
California State Prison, Solano		X***
California Substance Abuse Treatment Facility		X***
California Institution for Men, West	X	
Central California Women's Facility		X***
High Desert State Prison	X	
Mule Creek State Prison		X***
North Kern State Prison		X***
Northern California Women's Facility		X***
Pleasant Valley State Prison		X***
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison		X***
Valley State Prison for Women		X***
Wasco State Prison, Reception Center		X***
Allensworth Ecological Reserve		X
Paul L. Wattis Sanctuary		X

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

*** Based on species occurrences within CNDDB (CDFG 2001*a*), these prisons may be which seasonal movement areas between summer and winter ranges for this species.

Swainson's Hawk (*Buteo swainsoni*)

Status: California Threatened

Species description: The following species accounts was excerpted from the Annual Report (CDFG 2001*b*):

> The Swainson's hawk is a medium-sized hawk with relatively long, pointed wings and a long, square tail. Adult females weigh 28 to 34 ounces and males 25 to 31ounces. Swainson's hawks breeding in California may spend the winter in Mexico and South America. Central Valley birds appear to winter in Mexico and Columbia and hawks from northeastern California have been satellite-transmitter tracked to Argentina. The diet of the Swainson's hawk is varied with the California vole

being the staple in the Central Valley. A variety of bird and insect species are also taken. Over 85 percent of Swainson's hawk territories in the Central Valley are in riparian systems adjacent to suitable foraging habitats. Swainson's hawks often nest peripherally to riparian systems of the valley as well as utilizing lone trees or groves of trees in agricultural fields. Valley oak, Fremont cottonwood, walnut, and large willow with an average height of about 58 feet, and ranging from 41 to 82 feet, are the most commonly used nest trees in the Central Valley. Swainson's hawks require large, open grasslands with abundant prey in association with suitable nest trees. Suitable foraging areas include native grasslands or lightly grazed pastures, alfalfa and other hay crops, and certain grain and row croplands. Unsuitable foraging habitat includes crops such as vineyards, orchards, certain row crops, rice, corn and cotton crops. Suitable nest sites may be found in mature riparian forest, lone trees or groves of oaks, other trees in agricultural fields, and mature roadside trees.

Environmental baseline: Swainson's hawks were once found throughout lowland California and were absent only from the Sierra Nevada, north Coast Ranges and Klamath Mountains, and portions of the desert regions of the State. Today, Swainson's hawks are restricted to portions of the Central Valley and Great Basin regions where suitable nesting and foraging habitat is still available. Central Valley populations are centered in Sacramento, San Joaquin, and Yolo counties. During historical times (ca. 1900), Swainson's hawks may have maintained a population in excess of 17,000 pairs. Based on a study conducted in1994, the statewide population is estimated to be approximately 800 pairs. Although more recent surveys have been planned to revise this estimate, there has been inadequate funding available to carry out the research. However, surveys in 1998 and 1999 in the Owens Valley area of the State revealed a larger population (about 20 pairs) than previously documented, centered around alfalfa fields in the area. The loss of agricultural lands to various residential and commercial developments is a serious threat to Swainson's hawks throughout California. Additional threats are habitat loss due to riverbank protection projects, conversion from agricultural crops that provide abundant foraging opportunities to crops such as vineyards and orchards which provide fewer foraging opportunities, shooting, pesticide poisoning of prey animals and hawks on wintering grounds, competition from other raptors, and human disturbance at nest sites (CDFG 2001*b*).

An ad-hoc group of researchers called the Swainson's Hawk Technical Advisory Committee (TAC) is currently developing a draft of a recovery plan for the species. The TAC has been active in habitat management planning, symposia sponsorship, and county planning issues within the critical three county range of the species. The TAC is currently active in several telemetry research projects. Despite the lack of a recovery plan, actions that may lead to recovery have been ongoing since the listing in 1983. These include the development of federal HCPs and State 2081 incidental take agreements within the range of the species.

Management needs of the Swainson's hawk are fairly well known for the Central Valley breeding population. These include ensuring the availability of suitable nesting and foraging habitat through preservation of riparian systems and groves of and lone mature trees in agricultural fields, and

maintenance of compatible (with the Swainson's hawk) agricultural practices in grasslands, pastures and croplands. Compatible agriculture is essential to the maintenance of current Swainson's hawk populations (CDFG 2001*b*).

Recent die-offs of several thousand Swainson's hawks and other raptors attributed to pesticide use at agricultural fields in Argentina have prompted intense interest and actions on the part of scientists, industry, and governments to alleviate the problem. In partnership with chemical companies and landowners, initial efforts of raptor researchers have resulted in certain chemical compounds known to cause hawk mortality being replaced with what are hoped to be less dangerous substitutes. Monitoring will continue to detect and ensure against further hawk die offs. In 1997, six hawks were fitted with satellite transmitters and tracked during their southward migration. The birds were located wintering in a region north of Mexico City, Mexico, and near Bogota, Columbia. No birds from the Central Valley have been tracked further south, although a bird from northern California was tracked to Argentina during the winter of 1996. This study is ongoing and is intended to gather data on migration and wintering habits of the species over the next several years. The significance of the finding that Swainson's hawks winter in Mexico rather than Argentina is that there is little exposure to the kinds of pesticide poisoning suffered by the birds south of the equator. Agricultural operations are different with little or no pesticide application to croplands that the birds frequent in order to find prey. Transmitters were affixed in 1998 and 1999 and results confirm that the Swainson's hawks of the Central Valley migrate to a wintering area (in Mexico) quite different (and perhaps safer) from the majority of the Nation's population of Swainson's hawks.

The CDFG is currently developing state-of-the-art GIS products for use in Swainson's hawk recovery planning. Earlier generations of these same GIS tools have been developed at the county level to aid in land use planning tasks and HCP development. The status in 1999 of Swainson's hawk is declining.

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
California Correctional Center, Level III (Susanville I) High Desert State Prison (Susanville II)	4.35	4.35	1
California State Prison - Corcoran California Substance Abuse Treatment Facility and California State Prison (Corcoran II)	4.45	4.45	2
Central California Women's Facility	0.90 - 4.60	3.04	21
Paul Wattis Sanctuary	2.90 - 3.40	3.15	2

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Correctional Center, Level III	X	
California State Prison, Corcoran	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Central California Women's Facility	X	
High Desert State Prison	X	
Mule Creek State Prison	X	
Northern California Women's Facility	X	
Valley State Prison for Women	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Bank Swallow (*Riparia riparia*)

Status: California Threatened

Species description: The CDFG Annual Report 2000 (CDFG 2001*b*) describes the bank swallow as:

The bank swallow is the smallest North American swallow, with a body length of about 4.75 inches. Bank swallows are distinguished from other swallows by their distinct brown breast band contrasting with white underparts. The upper parts are brown. The species nests in colonies and creates nests by burrowing into vertical banks consisting of fine-texture soils. Bank swallows breed in California from April to August and spend the winter months in South America. Currently, bank swallows are locally common only in restricted portions of California where sandy, vertical bluffs or riverbanks are available for the birds to dig their burrows and nest in colonies. Most of California's remaining populations nest along the upper Sacramento River where it still meanders in a somewhat natural manner. In this alluvial plain, the river system provides suitable soil types and erosion needed for prime nesting habitat. It is estimated that the range of bank swallows in California has been reduced by 50 percent since 1900. Seventy-five percent of the State's population is concentrated on the banks of Central Valley streams, including several colonies on the Sacramento River.

Currently there are remaining, scattered populations exist in portions of Inyo and Mono counties and northern, north coastal, and central coastal regions of the State.

Environmental baseline: Bank swallows have been extirpated from Southern California. Historically, they occurred principally along the coast. Bank swallows were eliminated from Southern California because virtually every river and natural waterway where it was known to occur was converted to flood control channels. Former coastal colonies have been abandoned by swallows due to increased human disturbance. Remaining, scattered populations exist in portions of Inyo and Mono counties and northern, north coastal, and central coastal regions of the State.

There have been significant changes in the degree and type of endangerment factors for the bank swallow since the 1992. The rip-rapping of natural stream bank associated with bank protection projects is the single most serious, human-caused threat to the long-term survival of the bank swallow in California. It is projected that as much as 50 percent of the remaining population of bank swallows could be lost if all bank protection projects currently proposed are completed. Existing colonies and areas of potential habitat may be lost over the next several years if current planning is implemented. Rip-rap installed by the U.S. Army Corps of Engineers (Corps) under the Sacramento River Bank Protection Project has already affected almost 150 miles of Sacramento River bank since 1960. Additional rip-rap proposed under this project may result in extensive loss of essential, eroding bank habitat.

Recent survey information indicates a continuing decline in bank swallow populations on the Sacramento River. Based on an average occupancy rate of about 45 percent of all burrows dug into river banks, an estimated population of 13,170 pairs of bank swallows nested in Sacramento River habitats in 1986. In 1997, the breeding population had declined to about 5,770 pairs. This represents a loss of about 61 percent of the population in 12 years. Additionally, the average colony size has declined from 410 burrows to approximately 250 burrows between 1986 and 1997. In 1998 the population reached its lowest level of 4,990 pairs and then rebounded dramatically in 1999 to 8,210 pairs regaining some habitat from which it was extirpated (in 1998) on the lower end of its Sacramento River range.

The significance of the apparent turnaround may not be known for a few years if it continues. Factors responsible for the declines from 1986 to the present are not completely understood, but the drought years followed by flooding may have had a major influence along with the loss of several major breeding colonies to bank protection projects. Additionally, the killing of several thousand young swallows in their burrows that occurred from about 1960 to 1985, when the USFWS and the CDFG prevented the Corps from working on projects during the height of the nesting season, certainly has to have had a negative effect on the population's ability to rebound. The 1999 result may be a beginning of an expanding population boom for the species or just a momentary upswing. Further monitoring will be necessary to deter-mine the true population trend, if any. The status in 1999 of the bank swallow is considered to be declining.

Although a State Recovery Plan for the bank swallow was completed and adopted by the California Fish and Game Commission in 1992, the implementation of the recommendations has not occurred. The Recovery Plan identifies habitat preserves and a return to a natural, meandering riverine ecosystem as the two primary strategies for recovering the bank swallow. A recovery planning team has also been established and has had periodic meetings since 1990. The group discusses bank swallow research and recovery issues, and the group has also cited the return to naturally functioning riparian ecosystems as the best way to preserve, recover, and conserve the many species, including the bank swallow, that are dependent on this unique ecosystem.

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
California Correctional Center, Level III (Susanville I) High Desert State Prison (Susanville II)	1.45	1.45	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Correctional Center, Level III	X	
High Desert State Prison	X	
Paul L. Wattis Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

San Joaquin Antelope Squirrel (*Ammospermophilus nelsoni*)

Status: Federal Species of Concern
California Threatened

Recovery Plan: U.S. Fish and Wildlife Service. 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Portland, Oregon.

Species description: The San Joaquin antelope squirrel has a typical ground-squirrel shape: tiny, rounded ears, and streamlined, *fusiform* (spindle shaped) body with relatively short legs and tail. The tail has laterally projecting thick fringes of hairs, and is usually held cocked or curled over the back. The upper parts are colored buffy-tan with a light stripe along the sides. The underside of the tail is light grayish or whitish.

The breeding period for San Joaquin antelope squirrels is late winter through early spring. There is only one breeding period per year, coinciding with the time of year when green vegetation is present (Hawbecker 1953; Hawbecker 1958). Young squirrels do not breed their first year (Hawbecker 1975). Copulation and conception usually take place in February or March. Gestation lasts about 26 days. Young are born between March and April and are first seen above ground when about 30 days of age (Williams and Tordoff 1988). Young are weaned beginning in late April; the last young are weaned in mid- or late-May (Hawbecker 1975).

Timing, nature, and distance of dispersal are poorly documented; Hawbecker (1975) noted that weaned young were still together in late May. Williams and Tordoff (1988) noted at least some family groups were still together in mid-July. Young San Joaquin antelope squirrels on the Elkhorn Plain Ecological Reserve had a mortality rate of about 70 percent during their first year of life, and adults had a mortality rate from about 50 to 60 percent (Williams and Tordoff 1988).

San Joaquin antelope squirrels live in burrows, either of their own construction or ones dug by kangaroo rats. They may also take over and enlarge burrows dug by Heermann's kangaroo rats (Grinnell and Dixon 1918; Hawbecker 1947; Hawbecker 1953; Williams 1980). Hawbecker (1947, 1953) believed that antelope squirrels were dependent upon kangaroo rats to dig burrows because the many burrows examined by him all seemed to have been dug by kangaroo rats. In contrast, Grinnell and Dixon (1918) believed that they dug their own burrows. Burrows vary in complexity and length, but generally have two to six openings and are between about 12 to 20 inches deep. Favored locations for burrows are in the side of an arroyo, the berm of an unimproved road, or under shrubs (Williams 1980).

Antelope squirrels make use of both shrubs and burrows of giant kangaroo rats as sites of refuge from predators as they move across their home ranges. They also regularly retreat to the shade of shrubs to avoid the heat of the sun and to dump excess body heat to the cooler, shaded ground. Burrows of giant kangaroo rats may serve the same purpose (Williams *et al.* 1988; Williams and Kilburn 1992).

California ground squirrels displace San Joaquin antelope squirrels and may even restrict the range of the antelope squirrel (Taylor 1916; Harris and Stearns 1991). Hawbecker (1953) noted that the range of the San Joaquin antelope squirrel may be determined, to some degree, by the range of co-occurring kangaroo rat species. The range of giant kangaroo rats most nearly coincides with that of the San Joaquin antelope squirrel, but their microhabitats generally differ in many areas. Populations of Heermann's kangaroo rats are common in most areas where antelope squirrels are found. San Joaquin kangaroo rats also occur in the same areas as San Joaquin antelope squirrels, but these kangaroo rats are much smaller; their small-diameter burrows would have to be enlarged considerably before antelope squirrels could use them (Williams 1980).

San Joaquin antelope squirrels probably compete with kangaroo rats for seeds, especially those of grasses and forbs, and, to a lesser extent, green herbaceous material. The extent to which kangaroo rats eat insects, an important staple for antelope squirrels, is unknown, but insects are probably only a minor part of their diets. Species of birds are probably the main competitors of antelope squirrels for insects (Williams and Tordoff 1988). San Joaquin antelope squirrels are prey for a variety of animals: hawks, falcons, eagles, snakes, kit foxes, coyotes, badgers and probably other predators (Williams and Tordoff 1988).

San Joaquin antelope squirrels are primarily diurnal, usually active early or late in the day (Elliot 1904). Activity is reduced when ambient temperatures drop below about 50 degrees Fahrenheit (Hawbecker 1958), but on sunny days they have been observed when air temperatures were around 32 degrees Fahrenheit (D.F. Williams *unpubl. observ.*). Activity also is reduced at high ambient temperatures, but the amount and critical temperatures at which activity is curtailed are unclear. On the Elkhorn Plain Ecological Reserve, antelope squirrels were observed at all hours of the day and at ambient temperatures in excess of 108 degrees Fahrenheit during July and August (Williams and Tordoff 1988). In contrast, Hawbecker (1958) noted that squirrels occasionally ventured into the hot sun only for short periods. They are active above ground for extensive periods during the day in the spring when temperatures are generally between about 68 to 86 degrees Fahrenheit.

San Joaquin antelope squirrels are omnivorous. The amount and type of food consumed are mostly dependent upon availability. The squirrels eat green vegetation, fungi, and insects more often than seeds, even when seeds are relatively abundant (Hawbecker 1975; Harris 1993). Vegetation and seeds of filaree and red brome are the main food plants (Hawbecker 1953). Insects, principally grasshoppers, are eaten regularly when available. Seeds of shrubs such as ephedra and saltbush also are staples. Seeds and insects may be necessary in the diet as sources of protein. When seeds and grasshoppers are scarce, antelope squirrels eat harvester ants (Hawbecker 1975). During spring, especially during severe drought, San Joaquin antelope squirrels eat large quantities of ovaries and developing seeds of ephedra (D.F. Williams unpubl. observ.).

San Joaquin antelope squirrels live in relatively arid annual grassland and shrubland communities in areas receiving less than about 10 inches of mean annual precipitation. They are most numerous in areas with a sparse-to-moderate cover of shrubs such as saltbushes, California ephedra, bladderpod, goldenbushes, matchweed, and others. Shrubless areas are only sparsely inhabited, especially where giant kangaroo rats are not present or not common.

Environmental baseline: Extant, uncultivated habitat for San Joaquin antelope squirrels was estimated in 1979 to be 680,000 acres (Williams 1980). This estimate encompassed the land occupied by towns, roads, canals, pipelines, strip mines, airports, oil wells, and other developments. None of the best habitat described by Grinnell and Dixon (1918) remained. Only about 102,000 acres was rated as fair to good quality, supporting from 1 to 4 antelope squirrels per acre. Antelope squirrels had been nearly

eliminated from the floor of the Tulare basin, and existed mainly in marginal habitat in the mountainous areas bordering its western edge. Substantial populations were found only in and around Lokern and Elk Hills in western Kern County, and on the Carrizo and Elkhorn Plains in eastern San Luis Obispo County. Since 1979, San Joaquin antelope squirrels have disappeared from many of the smaller islands of habitat on the Valley floor, including Pixley National Wildlife Refuge, Tulare County; Alkali Sink and Kerman Ecological Reserves, Fresno County; and several areas within the Allensworth Conceptual Area of Tulare and Kern Counties (Williams 1980; Harris and Stearns 1991; D.F. Williams unpubl. observ.; Endangered Species Recovery Program unpubl. data). The two largest populations are on the Carrizo Natural Area and in western Kern County with additional populations in western Fresno and eastern San Benito County, along the fringe of the Valley between Fresno and Kern Counties, and on the Valley floor.

Loss of habitat to agricultural developments, urbanization, and petroleum extraction is the principal factor threatening San Joaquin antelope squirrels. Use of rodenticides for control of ground squirrels and San Joaquin antelope squirrels was reported by Grinnell and Dixon in 1918. Use of insecticides to control leafhoppers and other insects might impact antelope squirrels negatively by temporarily reducing the abundance of insects, an important source of food and moisture during summer.

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Avenal State Prison	2.90 - 3.70	3.31	2
North Kern State Prison (Delano) California State Prison - Kern County at Delano II	1.50 - 1.55	1.54	2
Pleasant Valley State Prison (Coalinga)	4.15	4.15	1
Allensworth Ecological Reserve	4.80	4.80	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California State Prison, Kern County at Delano II	X	
North Kern State Prison	X	
Pleasant Valley State Prison	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Mojave Ground Squirrel (*Spermophilus mohavenssis*)

Status: Federal Species of Concern
California Threatened

Species description: The Mojave ground squirrel cinnamon-gray in color with white underparts. There is little difference in size between the sexes. Dorsal coloration is uniformly light gray or brown, with no stripes. There is often a wash of cinnamon or pink, particularly on the feet. Ventrally, coloration is white. Juveniles are cinnamon-colored and molt to the grayer pelage as they mature. The tail measures half the length of the head and body, and is white ventrally and brown dorsally. The ears are small. The eyelids are white. *S. mohavensis* can be distinguished from *S. tereticaudus* by a shorter, flatter tail with a white ventral surface and brown rather than white cheeks. *S. mohavensis* is significantly larger than *S. tereticaudus* in most cranial measurements (Best 1995). Mojave ground squirrels feed primarily on the leaves, seeds and fruits of plants. Individuals may maintain several home burrows that are used at night, as well as accessory burrows that are used for temperature control and predator avoidance. The aestivation burrow is dug specifically for use during the summer and winter period of dormancy (Best 1995). Burrows are often constructed beneath large shrubs (Leitner *et al.* 1997).

Mojave ground squirrels feed primarily on the leaves, seeds and fruits of plants. The diet varies greatly over the course of a season. Leaves of perennial shrubs make up a large part of the diet, and are consumed primarily when annual plants are not available. Shrub species that were consumed most often at the Coso study area were spiny hopsage (*Grayia spinosa*), winterfat (*Krascheninnikovia lanata*) and saltbush (*Atriplex* sp.) (Leitner and Leitner 1996). As herbaceous annuals begin to appear in the spring, Mojave ground squirrels forge on forb leaves, flowers, seeds and/or pollen. Individuals in the same area have been found to consume different species.

The Mojave ground squirrel exhibits a strongly seasonal cycle of activity and torpor. The species may emerge from dormancy as early as January, but more typically in mid-February or March (Leitner and Leitner 1996). Dates of emergence appear to vary geographically. Males typically emerge one or two weeks prior to females (Recht *pers. comm.*). Once a sufficient amount of fat has been accumulated, individuals enter a period of aestivation and hibernation (Bartholomew and Hudson 1961). Aestivation generally begins anytime between July and September, but during drought conditions, dormancy may begin as early as April or May (Leitner *et al.* 1995). Body mass ranges between 2.5 and 3.5 ounces (70-100 grams) when individuals emerge from hibernation in the spring and increases to between 5.8 and 10.6 ounces (165-300 grams) prior to aestivation (Recht *pers. comm.*; Leitner *pers. comm.*).

The reproductive success of the Mojave ground squirrel is dependent on the amount of fall and winter rains. A clear correlation between fall and winter precipitation and the number of juveniles the following year has been demonstrated (Leitner and Leitner 1996). Following low rainfall, annual herbaceous plants are not readily available, and the species forgoes breeding (Recht *pers. comm.*; Leitner *et al.*

1997). Instead, individuals build up fat reserves and enter dormancy earlier, increasing their chances of surviving until the next season.

Adults of the species are solitary except during breeding, which occurs soon after emergence from hibernation. Gestation lasts 28-30 days, at which time a litter of between four and ten young are born. Juveniles emerge from natal burrows within four to six weeks. Mortality is high during the first year (Leitner and Leitner 1996). Females will breed at one year of age if environmental conditions are appropriate, while males do not normally mate until two years of age (Leitner and Leitner 1996).

Individuals may maintain several home burrows that are used at night, as well as accessory burrows that are used for temperature control and predator avoidance. The aestivation burrow is dug specifically for use during the summer and winter period of dormancy (Best 1995). Burrows are often constructed beneath large shrubs (Leitne *et al.* 1997). Home ranges of adults vary between seasons and throughout a season, presumably as a result of variation in quantity and quality of food resources. There is some disagreement as to whether territories are actively defended (Leitner *pers. comm.*; Recht *pers. comm.*). Radio-telemetry data from the Coso Range indicates that there is a good deal of overlap between home ranges of adults of both sexes. Juveniles are gregarious and initially stay close to the natal burrow. Beginning in June, juveniles begin making exploratory movements away from the natal burrow, and some individuals eventually make long-distance movements (Leitner *et al.* 1997). Recent radio-telemetry data suggest that females are more likely than males to remain in the vicinity of their natal burrows (Leitner *et al.* 1997). In 1997, the majority of radio-collared juvenile males moved greater than 0.6 miles (1 km.), up to a maximum of 3.9 miles (6.2 km.) (Leitner *pers. comm*).

The Mojave ground squirrel inhabits flat to moderate terrain and is not generally found in steep contours. However, juveniles can apparently traverse steep terrain during dispersal (Leitner *pers. comm.*). The species has been found in a range of soil types from sandy to gravelly, and occasionally rocky (Wessman 1977; Best 1995). Elevations of known localities range from 548-1524 m (1800-5000 ft.; CDFG 2001*a*).

The Mojave ground squirrel occupies scrub habitats in the western Mojave Desert. It has been observed in Mojave Creosote Bush Scrub, dominated by creosote bush (*Larrea tridentata*) and burrobush (*Ambrosia dumosa*), with winterfat (*Krascheninnikovia lanata*), desert thorn (*Lycium* sp.), cheesebush (*Hymenoclea salsola*), goldenhead (*Acamptopappus sphaerocephalus*) and/or goldenbush (*Haplopappus cooperi*) occurring at lower frequencies. The species also inhabits Mojave Saltbush Scrub and Alkali Desert Scrub dominated by one or more of the following: allscale (*Atriplex polycarpa*), shadscale (*A. confertifolia*), wingscale (*A. canescens*) or spiny saltbush (*A. spinifera*). In the northern part of its range, it is found in Mojave Mixed Woody Scrub, typically dominated by one or more of the following shrubs: saltbush (*Atriplex* sp.), goldenhead, Mormon tea (*Ephedra nevadensis*), spiny hopsage (*Grayia spinosa*) and desert thorn (*Lycium* sp.). Over much of the range of the Mojave ground squirrel, Joshua tree (*Yucca brevifolia*) is a component of the plant community.

Important habitat features appear to center around availability of food resources and soils with appropriate composition for burrow construction. The presence of shrubs that provide reliable forage during drought years may be critical for a population to persist in a particular area. In the Coso Range, spiny hopsage (*Grayia spinosa*), winterfat (*Krascheninnikovia lanata*) and saltbush (*Atriplex* sp.) were consumed extensively in the early spring before annuals were available, during the summer after annuals dried, and during drought years (Leitner and Leitner 1996).

The Mojave ground squirrel occupies the western Mojave Desert in portions of Inyo, Kern, Los Angeles and San Bernardino counties. The species historically ranged from near Palmdale on the southwest to Lucerne Valley on the southeast, the Coso Range on the northwest and the Avawatz Mountains on the northeast.

Environmental baseline: Determining the status of the Mojave ground squirrel is confounded by aspects of its biology. The species is inactive throughout much of the year, and the period of surface activity varies from year to year. In addition, Mojave ground squirrel population dynamics are dependent on the amount of fall and winter precipitation (Leitner and Leitner 1996). The failure to reproduce can result in dramatic population declines and, if poor conditions persist for several seasons, eventual extirpation from an area. This may be especially true in less optimal habitats. Therefore, potential habitat can be unoccupied during some years but occupied during others.

Numerous historic localities for the Mojave ground squirrel are in areas that have been converted to urban uses. This is especially true for the Palmdale/Lancaster and Victorville/Apple Valley/Hesperia areas (Aardahl and Rousch 1985). Although Mojave ground squirrels have been observed at the edge of urbanization (e.g., Barstow), it is unlikely that the species can persist for long in urban settings. The species appears to be extirpated from its historic range in the Lucerne Valley and Rabbit Springs area, possibly due to agricultural development and the expansion of the California ground squirrel (*Spermophilus beecheyi*) in the area (Wessman 1977).

The primary threat to the Mojave ground squirrel is destruction and degradation of its habitat (CDFG 1992). Habitat conversion not only decreases the amount of available habitat, but fragments the remaining habitat, isolating populations from one another.

Urbanization has resulted in the loss of considerable habitat, particularly surrounding the cities of Palmdale, Lancaster, Victorville and Hesperia. Urban development results in the direct loss of habitat, and likely has effects on surrounding native habitats, including increased numbers of domestic and feral cats and dogs. The potential for mortality and injury posed by traffic on paved and dirt roads likely increases as traffic volume increases. Agricultural development could affect the species through conversion of habitat, exposure to pesticides and herbicides and increases in California ground squirrel populations. Mining and energy development result in the alteration of native habitats, which probably decreases habitat quality for Mojave ground squirrels.

On public lands, off-highway vehicles may pose a threat to Mojave ground squirrels by crushing individuals or burrows. Over time, the plant diversity and abundance decreases in areas with high off-highway vehicle use. This reduces cover needed by the species for shade and forage. Military maneuvers may affect Mojave ground squirrels through direct mortality or decreasing shrub cover.

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
California City Desert Tortoise Natural Area	0 - 4.35	1.35	5

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California State Prison, Los Angeles	X	
California City Desert Tortoise Natural Area	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Unlisted species:

San Diego Horned Lizard (*Phrynosoma coronatum blainvillii*)

Status: Federal Species of Concern
California Species of Special Concern

Species description: The San Diego horned lizard is a medium-sized lizard with a dorsoventrally compressed body and short tail, posterior margin of head has enlarged head scales, orientated posteriorly, forming a crown of daggerlike spines; two posteriormost spines larger than those more lateral, supraocular scale pointed and orientated posteriorly, dorsal body and legs interspersed with enlarged, keeled to pointed scales, lateral body and tail with enlarged, pointed fringes, dorsal ground color yellowish, light brown, gray, white, or reddish-brown with dark blotches on neck and back, usually matching substrate color, ventral color light yellow to white with dusky spots (Van Denburgh 1922; Smith 1946; Reeve 1952; Stebbins 1972; Stebbins 1985). The San Diego horned lizard is distinguished from all other species of horned lizard by the presence of two rows of lateral body fringe scales, two to three rows of enlarged, pointed scales on the sides of the throat, and smooth, convex dorsal head scales (Smith 1946; Reeve 1952; Stebbins 1985; Brattstrom 1997). Recent taxonomic

studies of *Phrynosoma coronatum* (Grismer and Mellink 1994; Brattstrom 1997) indicate that there is no character basis for the recognition of the various subspecies.

The San Diego horned lizard is usually a solitary animal that relies on camouflage in open areas and is known to bury itself in fine, loose soil (Stebbins 1985; Jennings and Hayes 1994). The San Diego horned lizard is insectivorous, feeding primarily on native Harvester Ants (*Pogonmyrmex* sp.), but it will also feed on termites, beetles, flies, wasps, and grasshoppers (Ingles 1929; Reeve 1952; Miller and Stebbins 1964; Dixon 1967; Pianka and Parker 1975; Stebbins 1985; Jennings and Hayes 1994).

Sexual maturity is reached between 3 in (73-76 mm) SVL, two to three years after hatching (Howard 1974; Pianka and Parker 1975; Goldberg 1983; Stebbins 1985; Jennings and Hayes 1994). A clutch of 6-17 eggs are laid between May and early July (Howard 1974; Goldberg 1983; Stebbins 1985; Jennings and Hayes 1994). Eggs hatch in approximately two months appearing in July and early August (Shaw 1952; Howard 1974; Goldberg 1983; Jennings and Hayes 1994).

Seasonal activity occurs between late March and early October, with hibernation setting in as early as August (Pequegnat 1951; Howard 1974; Jennings 1987; Hager 1992). Daily activity patterns are temperature dependent and lizards will emerge from their burial sites before sunrise to position themselves for basking in the first rays of sun (Heath 1965; Hager 1992; Jennings and Hayes 1994). The San Diego Horned Lizard has a internal body thermal voluntary maximum of 102.2˚F (39.0˚C), thermal voluntary minimum of 69.4˚F (20.8˚C), and thermal preference of 94.8˚F (34.9˚C; Brattstrom 1965; Heath 1965; Jennings and Hayes 1994).

Predators of the San Diego horned lizard include coyotes (*Canus latrans*), badgers (*Taxidea taxus*), foxes, kestrels, falcons, shrikes, roadrunners (*Geococcyx californianus*), burrowing owls, and various snakes including the Southern Pacific rattlesnake (*Crotalus viridis helleri*) and Striped Racer (*Masticophis lateralis*; Bryant 1916; Von Bloeker 1942; Klauber 1972; Eakle 1984).

The San Diego horned lizard is endemic to southern California and northern Baja California, Mexico. In California, this species is distributed predominately throughout cismontane regions of the Transverse Ranges in Kern, Los Angeles, Santa Barbara, San Bernardino, and Ventura Counties, southward to the Peninsular Ranges in Orange, Riverside, and San Diego Counties (Van Denburgh 1922; Smith 1946; Reeve 1952; Schmidt 1953; Pickwell 1972; Jennings 1988; Jennings and Hayes 1994; Brattstrom 1997).

San Diego horned lizards are found in a wide variety of habitats including coastal sage scrub, chaparral, grassland, coniferous forest, oak woodland, riparian, and the margins of the higher elevation desert where it is restricted to the juniper-desert chaparral (Grinnell and Grinnell 1907; Van Denburgh 1922; Klauber 1939; Smith 1946; Dixon 1967; Stebbins 1985; Jennings and Hayes 1994; Brattstrom 1997). Within each of these habitats, this species prefers areas with loose, fine soils, an abundance of open

areas for basking, and plenty of native ants and other insects (Jennings and Hayes 1994). This species has been reported from elevations ranging from sea level to 8,000 ft (0 to 2600 m; Brattstrom 1997).

Environmental baseline: No reliable data on population status and relative density of the San Diego horned lizard are available. Hager (1992) presented information on home range and movement in San Bernardino and Riverside Counties, but due to difficulties in re-sightings, home ranges are likely underestimated and interpretations of movement patterns inconclusive (Jennings and Hayes 1994). The San Diego horned lizard is believed to be extinct in 45 percent of its original range in southern California, including desert regions near Palmdale, Los Angeles County and the Mojave River, San Bernardino County (Jennings and Hayes 1994).

Declines are attributed to collecting, habitat loss, off-highway vehicles, livestock grazing, increased predation by domestic dogs and cats, and the introduction of Argentine ants; habitat loss and collecting have been cited as the main reasons for the species' decline; predators include coyotes, badgers, foxes, kestrels, falcons, shrikes, roadrunners, burrowing owls, and various snakes.

A number of factors have been implicated in the decline of the San Diego horned lizard, including collecting, habitat loss, off-highway vehicles, livestock grazing, and the introduction of Argentine ants (Jennings and Hayes 1994). Unfortunately, there is little baseline data to properly understand the exact nature of the current decline.

The San Diego Horned Lizard was heavily exploited at the turn of the century for the curio trade (Jennings 1987); Horned Lizards were varnished or sold as pets (Klauber 1939). Later, biological supply companies and the modern pet trade contributed to their exploitation, until 1981, when commercial collecting was banned (Jennings and Hayes 1994).

The San Diego Horned Lizard's habitat is increasingly becoming destroyed and fragmented due to urban development, the conversion of land to agriculture, and off-highway use (Jennings and Hayes 1994). Habitat loss and collecting have been cited as the main reasons for this species decline (Jennings 1987).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
R. J. Donovan Correctional Facility	2.40 - 4.15	3.34	3
Starr Ranch Sanctuary	0 - 4.65	1.66	9

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison		X
California Correctional Institution, Level III		X
California Correctional Institution, Level IVA		X
California Correctional Institution, Level IVB		X
California Institution for Men, West		X
California State Prison, Sacramento		X
Pleasant Valley State Prison		X
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison		X
California City Desert Tortoise Natural Area		X
Starr Ranch Sanctuary		X

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Orange-throated Whiptail (*Cnemidophorus hyperthrus*)

Status: California Species of Special Concern

Species description: A moderate-sized gray, reddish brown, dark brown, or black lizard with five to seven pale yellow or tan stripes (Walker and Taylor 1968; Stebbins 1985; Rowland 1992). The top of the head has a single, fused frontoparietal scale (Rowland 1992), and is yellow-brown to olive gray (Jennings and Hayes 1994). Undersurfaces are yellowish white, often with gray or bluish slate on the belly; adults have varying degrees of red-orange wash (Stebbins 1985) that may occur on all undersurfaces (Rowland 1992). The later is especially prominent on the throat and chest in breeding males. The iris is brown (Jennings and Hayes 1994). In hatchlings and juveniles, the tail is a highly visible bright blue (Rowland 1992).

Bostic (1966*a*) found that Orange-throated whiptails feed primarily on prey of a secretive nature and low activity (e.g., ants), depending primarily on chemo-reception when hunting such prey. When hunting prey of intermediate or high activity (e.g., Lepidopterans), vision is most often employed. In San Diego County and Baja California, Mexico, the subterranean termite, *Reticulitermes hesperus* comprises over 85 percent of all prey consumed. Bostic's (1966*a*) data indicates that termites comprised 72 percent to92 percent of the whiptail diet, with peak consumption occurring simultaneously with the swarming of reproductives in April. In late summer, when termites migrate deep into the soil to avoid high surface temperatures, alternate prey items dominate the whiptail's diet. No significant differences in diet between the sexes or between adults and juveniles was found (Bostic 1966a). The most important alternate prey item for the orange-throated whiptail is the spider (*Aranedia*), which was found by Bostic (1966a) to be the next most abundant prey item after termites. Additional alternate prey items, listed in order of

importance are: Orthopterans, cockroaches (*Blattidae*), short-horned grasshoppers (*Acrididae*), long-horned grasshoppers, crickets; Lepidopterans, pyralid moths (*Pyralidae*) and their larvae; Neuropterans, antlion larvae; adult Coleopterans, their larvae and pupae, ground beetles (*Carabidae*) and darkling beetles (*Tenebrionidae*); and Homopterans, leafhoppers (*Cicadellidae*) and planthoppers (*Fulgoridae*).

Whiptails are diurnal, but they are also bimodal, spending the warmest portion of the day in shade or an underground retreat (Milstead 1957). During relatively low early morning temperatures, whiptails move slowly while foraging and frequently stop to bask (Bostic 1966*b*). During this time, whiptail activity is confined to open or sparsely covered grass areas between bushes. Basking becomes infrequent and of short duration as mid-morning temperatures increase and foraging largely occurs in shaded or semi-shaded areas around bushes, with travel in open areas occurring very rapidly (Bostic 1966*a*). Few whiptails are observed foraging as mid-day temperatures increase. Most retreat to cooler areas (e.g., rodent burrows, shade beneath bushes, or they excavate shallow retreats in the substrate).

Adult whiptails usually enter into hibernation in late July through most of September, while immatures enter into hibernation in December (Bostic 1966*a*). Hibernation, and likely oviposition sites, occur on well isolated, south facing slopes (Jennings and Hayes 1994). Unlike several species in the genus *Cnemidophorus*, orange-throated whiptails do not reproduce parthenogenetically. Males are reproductively active from the first week of April through the first week of July based on the presence of enlarged testes during this period. Whiptails were generally found to reach maturity in the spring following hatching in the previous summer based on examination of the gonads and accessory reproductive structures of the dissected lizards. In yearlings, reproductive potential is lower than in adults of two years of age or older. Bostic (1966*c*) estimated average clutch size to be 2.3 eggs. It appears that adult females (2 years of age or older) deposit one clutch of eggs in June and another in mid-July (Bostic 1966c). In contrast, one clutch per season is probably the rule for yearlings which deposit their eggs in late June through mid-July (Bostic 1966*c*).

Bostic (1965) recorded an average home range of 0.11 acre for adult orange-throated whiptails, which is considerably smaller than the average home ranges of larger species of *Cnemidophorus* (Dudek and Associates 2000). Females have significantly larger home ranges than males. The mean home range size for females was approximately 2.1 times larger than the mean home range for males. Consequently, female home ranges extensively overlap and superimpose with each other as well as overlap male ranges. "Overlap, but not superimposition of male home ranges was also recorded" (Bostic 1965).

Orange-throated whiptails use chaparral, non-native grassland, coastal sage scrub, juniper woodland and oak woodland habitats as well as alluvial fan scrub and riparian areas. This species is presumably tied to perennial vegetation because termites are its major food source (Bostic 1966*a*). California buckwheat or flattop buckwheat (*Eriogonum fasciculatum*), a colonizing species of disturbed, sandy soils, is an important indicator of favorable habitat for whiptails (McGurty 1981; Rowland 1992). The

presence of California buckwheat generally indicates a particular amount of inter-shrub spacing (10 to 40 percent bare ground cover) apparently required for foraging and thermoregulatory behavior of this species (McGurty 1981; Rowland 1992). California buckwheat is known to commonly occur in both coastal sage scrub and chaparral. California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), and white sage (*Salvia apiana*) are some of the other plant species that may fill the perennial plant requirement for the whiptail. Friable soil appears to be a necessary requirement for excavating burrows and hiding eggs (Bostic 1965). Indeed, soil grain size preference data clearly suggest that whiptails choose only the two finest grain sizes in which to bury (Brattstrom 1989). However, the whiptail may choose to bury in loose soil aprons brought up from the sub-surface by rodents, in an otherwise large grain exposure (Brattstrom 1989).

The current range includes southwestern California and Baja California. In California, orange-throated whiptails (whiptails) range from the southern edges of Orange County (near Corona del Mar) and San Bernardino County (near Colton) southward to the Mexican border. They are located on the coastal slope of the Peninsular Ranges, and extend from near sea level to 3412 feet (Jennings and Hayes 1994). The distribution of *Reticulitermes hesperus*, the orange-throated whiptail's primary prey item, curiously delimits certain boundaries of the distribution of the whiptail, where apparently suitable habitat continues. For example, the Peninsular Mountain Range in Riverside and San Diego Counties where *R. hesperus* is limited to its slopes, possibly restricts eastward and altitudinal expansion of the whiptail populations. Similarly, in San Bernardino, the restriction of R. hesperus to the lower slopes of the transverse and Peninsular Mountain Ranges, and their local scarcity, possibly prevents eastward expansion of whiptails in that county. The fact that *Reticulitermes* are abundant in Los Angeles and Orange counties, but whiptails are conspicuously absent from these counties, despite the frequency of what appears to be suitable whiptail habitat, suggests that urban, suburban and agricultural development activities serve, in part, as effective dispersal barriers (Dudek and Associates 2000).

Environmental baseline: Cooper *et al.* (1973) reviewed the status of *C. h. beldingi* in California in the course of an assessment of the Santa Margarita Ecological Reserve and environs, and concluded that this taxon was depleted. McGurty's (1980) data suggested that *C. h. beldingi* had been extirpated from 60 percent of its historic range at the time of his survey (i.e., 1980). Jennings and Hayes (1994) compared McGurty's data to aerial photographs in 1990 and estimated that 75 percent of the historic range of *C. h. beldingi* no longer supported this subspecies.

Habitat destruction is likely the major cause of the decline of orange-throated whiptail populations. Despite what appears to be abundant suitable whiptail habitat, urban and agricultural development may serve as effective dispersal barriers (Bostic 1966*b*). Argentine ants (*Irdomyrmex humilis*) are an invasive exotic species known to displace many native insects, and may influence the food base of orange-throated whiptails (Jennings and Hayes 1994). Excessive prescribed burning can lead to increased exposure to predation due to modification of the canopy profile, and can ultimately lead to type conversion from coastal sage scrub and chaparral to non-native grassland (McGurty 1981). In

addition, repeated reduction of normally abundant woody fuels has a direct effect on western subterranean termite (*Reticulitermes hesperus*) presence, the nearly exclusive food-prey source of orange-throated whiptails. Further threats include irreversible habitat destruction resulting from land-filling or artificial channelization of natural drainage bottoms, which likely serve as foraging and dispersal areas for this species (Jennings and Hayes 1994).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
California Institution for Men, West (Chino)	2.85	2.85	1
R. J. Donovan Correctional Facility	2.35 - 4.05	3.26	3
Starr Ranch Sanctuary	0.10 - 2.60	1.38	6

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Institution for Men, West	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Northern Red-diamond Rattlesnake (*Crotalus ruber ruber*)

Status: California Species of Special Concern

Species description: A large, heavy-bodied rattlesnake with a tan, pink, brick-red, or reddish-colored dorsal color, and obscure, usually light-edged brick or pinkish diamond-shaped blotches (Klauber 1937; Gloyd 1940; Stebbins 1985). The tail base is prominently "coontail" marked with broadly spaced, but relatively narrow, distinct black rings contrasting with the rest of the body color. The belly is white to pale yellow, and the undersurface of the tail is pinkish buff (Wright and Wright 1957).

Although red diamond rattlesnakes are recorded from a number of vegetative associations, they seem to occur more frequently in habitats with heavy brush associated with large rocks or boulders (Klauber 1972). The red-diamond rattlesnake is frequently observed in chamise- and red shank-dominated associations, probably because these associations best fulfill the aforementioned structural habitat

requirements. Such associations likely provide better refuges or food resources for red-diamond rattlesnakes than other habitats, but how this is facilitated is not well understood. Red-diamond rattlesnakes are also found in coastal sage scrub and desert slope scrub associations.

The known range of the northern red-diamond rattlesnake extends from Pioneertown and Morongo Valley (San Bernardino County) southward on both sides (coastal and desert slopes) of the Peninsular Ranges (including the Santa Ana Mountains; Peguegnat 1951) to Loreto, Baja California, Mexico (Stebbins 1985). Its known elevational range extends from near sea level to about 1520 m (Klauber 1972), although the red-diamond rattlesnake is most frequently encountered below 1200 m (Klauber 1972). In California, the red-diamond rattlesnake ranges southward from San Bernardino County to the Mexican border.

Environmental baseline: The red-diamond rattlesnake has a relatively restricted range in California, and a significant portion of the habitat that was historically prime red-diamond rattlesnake habitat has been developed over the last 20 years. Particularly significant has been the rate of development in northern San Diego County and southwestern Riverside County during the 1970s and 1980s. A combination of urban development and the trend toward increasing drip irrigation of orchards, such as avocados, on steeper, rocky slopes has significantly intruded into the habitat that red-diamond rattlesnakes historically used. Systematic evaluation of habitat los has not been quantified in detail, but Jennings and Hayes (1994) estimate that this snake has lost at least 20 percent of the suitable habitat within its range die to these types of development.

The closest northern red-diamond rattlesnake occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 5.5 miles to R.J. Donovan Correctional Facility. The closest northern red-diamond rattlesnake occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 12.2 miles to Starr Ranch. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
RJ Donovan Correctional Facility at Rock Mountain	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Black-crowned Night Heron (*Nycticorax Nycticorax*)

Status: None

Species description: The black-crowned night-heron is a medium-size colonial breeding bird that is stocky in appearance often observed in a hunched position during the day due to its nocturnal and crepuscular feeding habits outside the breeding season (Davis 1993). Adults have a black cap and back, with pale gray or whitish underparts. The bill is thick and black, eyes red, legs are yellow-green, turning to pink during the breeding season. During breeding, two long, white plumes extend from the head (Peterson 1990). Squawking call is often hear at dusk. Females are slightly larger than males, With body weights ranging from 727 - 1014 grams (Dunn 1984).

The black-crowned night-heron is an opportunistic forager which feeds on freshwater and marine organisms. The diet is highly variable consisting of fish, crustaceans, aquatic insects, amphibians and reptiles, small mammals, and occasionally small birds (Davis 1993; Zeiner *et al.* 1990*a*).

Habitat is varied, most often associated with fresh, brackish, or saltwater, including streams, rivers, swamps, ponds, lakes, lagoons, tidal marshes, and man-made ditches, canals, and wet agricultural fields (Davis 1993). Breeding habitat is in dense trees and in fresh or brackish emergent wetlands in California (Zeiner *et al.* 1990*a*). Non-breeding roost sites are not always near water.

The black-crowned night-heron is found in most of North America from the State of Washington across to coastal areas in Quebec and New Brunswick in Canada, and extends southward into Mexico and locally in Central America, the Caribbean, and Hawaii. Distribution is determined by suitable aquatic feeding habitat. After breeding, night-herons in the northern part of the range migrate south, with a few birds wintering in Oregon and New England. Wintering birds often roost communally (Davis 1993). There is some evidence from band recovery studies which indicate California birds migrate less than East Coast birds. In California, the black-crowned night-heron is a year round resident in the Central Valley, all coastal areas and the Coast Range, and southern California and the desert regions, with isolated resident birds in the northwestern part of the State. In summer, the birds range extends into the northwestern part of the State (Zeiner *et al.* 1990*a*).

Environmental baseline: Counts from aerial surveys tend to underestimate numbers of breeding black-crowned night-herons because of their crepuscular and nocturnal habits. In 1975, 12,944 breeding birds were estimated for the Atlantic states; 1,200 birds were reported for the San Francisco Bay area in California (Davis 1993). Human disturbance at nesting colonies habitat destruction from drainage of marshes and swamps, and cutting of trees have contributed to reduced numbers, but this species has proven adaptable (Zeiner *et al.* 1990*a*). Population trends are difficult to assess for this species, but it appears to be stabilized throughout most of its range, or increasing in some areas due to adaptation to man-made water systems used for feeding habitat.

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Species	Distance Range (Miles)	Average Distance (Miles)	Total Count
Humboldt Bay National Wildlife Refuge	4.55 - 4.85	4.70	2

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison	X	
Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Humboldt Bay National Wildlife Refuge	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Osprey (*Pandion haliaeetus*)

Status: California Species of Special Concern

Species description: The osprey is a large bird of prey that is the only raptor to forage by hovering over water and plunging feet-first into the water for fish. The osprey is the only representative of the subfamily *Pandioninae*. The osprey is black above and white below, with characteristic black "wrist" marks when seen overhead. Tail has horizontal black and white barring. The head is mostly white, with a wide, black cheek patch (Peterson 1990). Females are slightly heavier than males (average 1568 g and 1403 grams, respectively) (Dunn 1984). Formerly called "Fishhawk" because the osprey preys mostly on fish, but occasionally also eats mammals, birds, reptiles, amphibians and invertebrates (Sibley and Munroe 1990; Zeiner *et al.* 1990*a*; USDA 1994).

Because of the osprey's foraging habits, it requires clear, open waters such as rivers, lakes, reservoirs, bays, estuaries and surf zones. For cover and nesting, the osprey uses large trees, snags and topped trees (Zeiner *et al.* 1990*a*). Habitat type is variable ranging from coastal areas, wilderness lakes, forested areas, farmland, and inland streams and lakes (USDA 1994).

The osprey is found scattered locally throughout the world, except for South America (Sibley and Munroe 1990). In North America, its breeding range is from Alaska across Canada, and south to Baja California. In winter, the osprey's range is from California to the north and into Arizona, Texas, South America and from Florida and Louisiana to the Carribean (Bent 1937). In California, the osprey breeds in the northern part of the State, along the coast to Marin County and from the Cascade Range to Lake Tahoe. This raptor is an uncommon breeder along the southern part of the Colorado River, and is resident in coastal areas just north of San Francisco Bay. In winter, the osprey is an uncommon visitor to coastal Southern California (Zeiner *et al.* 1990*a*).

Environmental baseline: In the early 1980's, populations were estimated at 8,000 pairs in the United States, and 10,000 - 12,000 pairs in Alaska and Canada (USDA 1994). Breeding pairs in California in 1975 were estimated at 350 - 400, with numbers appearing to increase in more recent years (Zeiner et a. 1990*a*). The osprey has expanded it's range and distribution due to the creation of man-made reservoirs and other water features (USDA 1994). Threats to this species currently include decreased availability of nesting trees due to timber harvest and management practices, decreased prey availability in some areas due to fluctuating water levels, human disturbance during the nesting season, and injuries and electrocutions in some locations (USDA 1994).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Humboldt Bay National Wildlife Refuge	3.80 - 4.65	4.12	3

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Institution for Men, West	X	
California State Prison, Solano	X	
Calipatria State Prison	X	
Centinela State Prison	X	
Pelican Bay State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Humboldt Bay National Wildlife Refuge	X	
Mayacama Mountains Sanctuary	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

White-tailed Kite (*Elanus leucurus*)

Status: California Fully Protected

Species description: The white-tailed kite, previously referred to as the black-shouldered kite, is a pale gray to whitish kite with distinctive black "shoulder patches" on long pointed wings. From overhead, black markings on the "wrist" is apparent. Tail is long and white (Peterson 1990). Body weight is slightly heavier for females than males (average of 350 g for females and 316 g for males; Dunn 1984).

Active during the day and at dawn and dusk, this kite feed primarily on voles and other small mammals, but also occasionally takes birds, insects, reptiles, and amphibians. Foraging is often observed in open grasslands and meadows, farmlands, and emergent wetlands, and is characterized by stationary hovering low above the ground, then slowly descending with wings and legs extended (Zeiner *et al.* 1990*a*).

The white-tailed kite is found most often in agricultural areas, inhabiting herbaceous and open stages of most habitats. Nests are located near foraging areas, and within trees with dense canopies for cover (Zeiner *et al.* 1990*a*).

The white-tailed kite is found locally from North America to middle and South America. In North America, this kite occurs from northwestern Oregon south to Baja California, and in locally from Mississippi and S. Carolina to Florida (Sibley and Munroe 1990).

Environmental baseline: This kite is resident in California in coastal and valley lowlands, and is only rarely found outside of agricultural areas. The white-tailed kite has extended its range in recent years, and populations have increased (Zeiner *et al.* 1990*a*). James Graham Cooper in 1870 described this bird as being "quite abundant in the middle districts of California, remaining in large numbers through the winter among the extensive tule marshes of the Sacramento and other valleys" (Cooper, and cited in Bent 1937).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
California State Prison - Sacramento (New Folsom)	2.65 - 4.75	3.91	3
Pelican Bay State Prison	2.60	2.60	2

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Central California Women's Facility	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
Humboldt Bay National Wildlife Refuge	X	

Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Northern Harrier (*Circus cyaneus*)

Status: California Species of Special Concern

The following species account is excerpted from: K.L. Garrett and K.C. Molina. Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California. The exceptions are Zeiner et al. (1990) and USDA (1994) citations.

Northern harriers are moderately large raptors with rather long, narrow wings, a long tail, and a striking white band on the upper tail coverts. Females are considerably larger and heavier than males, with the mass averaging 513 g in the breeding season, vs. 336 g for breeding males (MacWhirter and Bildstein 1996). This species is strongly dimorphic in plumage. Adult males are primarily pale gray on the head, breast and upperparts, and white below; in flight they show black wingtips and white uppertail coverts. Females are brown on the head, breast and upperparts and buffy below with dark streaks; they also show white uppertail coverts. Immatures generally resemble adult females but are a deeper, ruddier brown in coloration.

The diet is usually dominated by rodents. There have been few studies of winter dietary habits in southwestern North America; voles (*Microtus*) and other rodents probably dominate the winter diet in southern California, although small birds are undoubtedly taken as well.

The northern harrier (called "Hen Harrier" in the English-speaking Old World, and formerly called "Marsh Hawk" in North America) breeds across North America and Eurasia, south in the New World to northwestern Baja California, the southern Great Plains and the mid-Atlantic Coast. The northern populations are migratory, with the species' winter range extending north in North America to southwestern and southeastern Canada, the central Great Plains, Pennsylvania, and southern New York. Some winter as far south as Panama and the Greater Antilles (rarely south to northernmost South America). In California, the Northern Harrier is a year-round resident in the Modoc Plateau, the Central Valley, the Sierra Nevada to 5700 feet elevation, and portions of the California coast from the California-Oregon border down to Point Conception in Santa Barbara County (Zeiner et al. 1990).

Northern harriers breed in open wetlands, wet, lightly grazed pastures, fallow fields, dry uplands, prairies, agricultural lands, and cold desert shrub-steppe (MacWhirter and Bildstein 1996); in western North America they are found more often in dry upland habitats than in the rest of the continent (MacWhirter and Bildstein 1996). Breeding habitat in California consists of both coastal and freshwater marshlands, usually where there is adjacent upland vegetation of grasslands including saltgrass, pasturelands, native prairies, and montane meadows (Grinnell and Miller 1944).

Migrants and wintering birds are somewhat broader in their range of occupied habitats, using both wetland habitats and a variety of upland habitats with low vegetation. The northern harrier is a widespread migrant and winter visitor through California. Fall migrants may be noted as early as late August, and this species is numerous away from breeding areas by late September; wintering birds may be present through March and often until mid-April (Garrett and Dunn 1981). An estimated 13,200 birds winter in California (MacWhirter and Bildstein 1996).

Environmental baseline: In California this harrier is a local and declining breeding species (Grinnell and Miller 1944; Garrett and Dunn 1981). Grinnell and Miller (1944) cite breeding localities over much of the state, including the interior from Siskiyou County south to western Riverside and San Bernardino Counties and coastal regions from Marin County to San Diego County. Most former nesting areas along the southern coast had been deserted by the 1970s, with current nesting only in coastal San Luis Obispo and San Diego counties (Garrett and Dunn 1981).

Overall, North American populations have declined during the twentieth century, with the major causes being the extensive draining of wetlands, implementation of monoculture farming, and reforestation of open farmlands (MacWhirter and Bildstein 1996). White (1994) considers this species of variable, but possibly decreasing trends in western North America, citing habitat alterations (particularly wetlands loss) as the most important cause of possible declines. Breeding Bird Survey and Christmas Bird Count data suggest a decline in populations of the southwestern United States since the early 1960s (MacWhirter and Bildstein 1996).

Population estimates for this species can vary with prey abundance, and so are difficult to determine accurately. Based on Christmas Bird Count data collected in 1986, North American populations number 111,500 birds, with California's population estimated at 13,200 birds. (USDA 1994).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Starr Ranch Sanctuary	1.60	1.60	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison	X	
Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Northern Goshawk (*Accipiter gentilis*)

Status: California Species of Special Concern

Species description: A large raptor known throughout history as a powerful hunter, the northern goshawk is one of three species of *Accipiter* in North America which hunts in woodlands. Female goshawks average 1137 g in weight, while the males are generally lighter at an average of 912 g (Dunn 1984). Back and topside of wings are gray, underparts are pale gray with fine barring on breast, belly, and wing. The tail is long and rounded at the end; gray above with 3-5 dark horizontal bands (Peterson 1990; Squires and Reynolds 1997). The head has a dark gray cap and cheek, with a conspicuous white stripe across the eye.

The goshawk long tail and powerful wings allow it the maneuverability to hunt for prey in woodlands and open habitats. Foraging pattern is to perch briefly on snags and trees while searching out prey, then moving to another perch site. May also stalk prey on foot (Squires and Reynolds 1997; Zeiner *et al.* 1990*a*). This aggressive hunter is known to crash through vegetation in pursuit of its prey (Squires and Reynolds 1997). Prey spans a variety of woodland species including large birds, squirrels, rabbits and hares. Males can kill prey 2.2 times their own body weight, and females can kill prey 2.4 times their body weight (Squires and Reynolds 1997).

Foraging habitat is varied depending on location, from mature forests to open sagebrush. Nesting habitat is variable depending on availability, generally nests in forest stands with large trees, with a high degree of canopy closure, near bottom part of slopes containing sparse ground cover (Squires and Reynolds 1997).

Worldwide distribution in the Palearctic includes the British Isles, Scandinavia, Russia, northwestern Africa, the Mediterranean, Japan, and parts of China. In North American, it breeds in parts of Alaska, and Canada across to Newfoundland, the Great Lakes region, and northeastern U.S.; south from Alaska through the Pacific Northwest and Northern California (Sibley and Munroe 1990; Squires and Reynolds 1997). In California, the breeding range is from the North Coast range through the Sierra Nevada, Klamath, Cascade, and Warner Mountains and possibly in Mt. Pinos, and San Jacinto, San Bernardino, and White Mts. (Zeiner *et al.* 1990*a*). Migration patterns for this species in North America are poorly understood; it is believed the goshawk is a partial migrant that may respond to prey availability during winter months (Squires and Reynolds 1997). In California, it is a rare to uncommon yearlong resident (Zeiner *et al.* 1990*a*).

Environmental baseline: It is difficult to estimate populations in North America because of the low numbers and irruptive migration patterns. It appears that populations in the eastern United States are increasing in response to forest regeneration. Studies conducted in Utah, Nevada, and New Mexico indicate numbers may be declining 4 percent / year during the period 1983 - 1991 (Squires and

Reynolds 1990). There is concern that populations are declining in California and the western United States, in part due to the loss of older-aged forests (USDA 1994). Gross estimates of California populations, in 1994, are approximately 1,300 nesting territories in California, with 61 percent being active each year (USDA 1994). In 1998, a total of 816 goshawk territories were reported within California (USFWS 1998*b*).

The closest northern goshawk occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 13.6 miles to California Correctional Center, Level III (Susanville I) and High Desert State Prison (Susanville II). The closest northern goshawk occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 19.7 miles to Kern River Preserve. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
High Desert State Prison	X	
Pelican Bay State Prison	X	
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Sharp-shinned Hawk (*Accipiter straitus*)

Status: California Species of Special Concern

Species description: The following species account is excerpted from: P. Grindrod. Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California. The exceptions are Zeiner *et al.* (1990*a*), Sibley and Munroe (1990), Bildstein and Meyer (2000), and USDA (1994) citations.

The smallest of the North American *Accipiter,* the sharp-shinned hawk shares a common general morphology with its larger congeners: short, rounded wings and a long, rudder-like tail for maneuverability in wooded habitats; long legs; and lithe, grasping toes. They occur in two distinct plumages; hatch-year or immature, and adult (definitive for the duration of the bird's life). Adults are

slate-gray on the back and head, lacking a contrasting dark cap as seen on the Cooper's hawk (*Accipiter cooperii)*. The breast and belly are heavily barred in rufous on white, as are the flanks, with only the undertail coverts clear and starkly white (Wheeler and Clark 1995). sharp-shinned hawks show the highest degree of sexual size-dimorphism of any North American bird, with the female nearly one-third larger, and up to twice as heavy as the male (Hill 1944; Reynolds 1972; Snyder and Wiley 1976; Mueller *et al.* 1979; Meyer 1987; Palmer 1988; Hoffman *et al.* 1990). In addition to age and sex related dimorphism, there is significant regional variation in size (Wattel 1973; Smith *et al.* 1990). The diet is composed primarily of avian prey, from small songbirds up to bobwhite-sized quail, as well as the young of domestic fowl and sharp-tailed grouse (Fisher 1893; Ferguson 1922; Storer 1966; Snyder and Wiley 1976; Jones 1979; Clarke 1984; Joy *et al.* 1994). Occasionally they take small terrestrial mammals, bats, insects, lizards, frogs, and snakes (Jones 1979; Palmer 1988).

Sharp-shinned hawks nest in large forests composed of conifer, deciduous, or mixed woodlands with a closed canopy dense enough that the nest is completely hidden. Nest trees are generally located near openings and brushy areas where prey is abundant and cover is sufficient for the perch and dash foraging style.

During migration, sharp-shinned hawks use most habitat types with vegetative cover, avoiding bare areas and extensive openings (Palmer 1988). They frequently follow ridgelines to exploit updrafts and, particularly in the inland west, avoid open valley floors by staying in montane forests at higher elevations where both prey and roosts are more available (Hawk Watch International unpublished data).

Sharp-shinned Hawks also take advantage of a wide array of habitats during winter. They populate lower elevations using brush, shrubs, and trees that provide cover, and where there are concentrations of small birds (Palmer 1988). Accordingly, riparian areas are probably the most important habitat on wintering grounds, providing foraging opportunities and roost sites for avian predators and prey species.

This species is distributed in Alaska, the Yukon, across Canada to Larador and Newfoundland, and south to California, Arizona, New Mexico, Texas and the Gulf states, and into Mexico and the Greater Antilles (Sibley and Munroe 1990). Sharp-shinned hawks winter infrequently in all areas of the breeding range (some individuals may remain year-round on the breeding territory). Most individuals vacate the northern half of the species' range during winter and they occur commonly in migration across the United States. In winter, they are present coast to coast throughout the southern United States and northern Mexico, and range as far south as Nicaragua, Costa Rica, and Panama (HawkWatch International unpublished data; Evans and Rosenfield 1985; AOU 1983).

In California, their breeding range is poorly documented: the sharp-shinned hawk probably breeds south in the Coast Ranges to about 35 degrees latitude, and in some locations in the Transverse and Peninsular Ranges, and an uncommon breeder in mid-elevation habitats (Zeiner *et al.* 1990*a*). The

sharp-shinned hawk is a common migrant and winter resident through virtually all of California except at the highest elevations (Zeiner *et al.* 1990*a*).

Environmental baseline: There is no evidence of a decline in migratory populations of sharp-shinned hawks in the western U.S. (HawkWatch International unpublished data; Golden Gate Raptor Observatory data in McDermott 1996; Battalio 1996). There are few estimates of population because it is difficult to see during the breeding season and is difficult to census. There was a population decline in the 1940s to 1970s due to the widespread use of DDT. Another apparent population decline in the 1980s and 1990s has since been attributed to migratory short-stopping in northern regions and not an actual decline in the population overall (Bildstein and Meyer 2000). Based on the 1986 Christmas Bird Count, there were an estimated 30,100 birds wintering in Canada and the United States (USDA 1994). The current status of breeding birds in California is unknown and needs to be researched (Zeiner *et al.* 1990*a*).

Threats to this species include illegal shooting (which has declined significantly from the earlier part of this century), pesticides such as DDT which causes eggshell thinning, and forest management practices with decrease the amount of suitable nesting and foraging habitat (USDA 1994).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
California Correctional Institution, Level IVB (Tehachapi IV B)	0	0	1
Chuckawalla Valley State Prison	0	0	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	

Centinela State Prison	X	
Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Cooper's Hawk (*Accipiter cooperii*)

Status: California Species of Special Concern

Species description: The following species account is excerpted from: P. Grindrod. Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California. The exceptions are Zeiner *et al.* (1990) and USDA (1994) citations.

The Cooper's hawk is the middle-sized North American *Accipiter*, larger than the sharp-shinned hawk (*Accipiter striatus*) and smaller than the northern goshawk (*Accipiter gentilis*). Like these other members of its genus, it is a species adapted to woodlands, with relatively short, rounded wings and a long, somewhat rounded tail that allow a high degree of maneuverability in thick cover. Adults of both sexes are heavily barred in rufous on a white background on the breast, belly, and flanks, but the undertail coverts are clear white (Wheeler and Clark 1995). The species shows a large degree of sexual size dimorphism, with the female as much as one-third larger than the male, and there is pronounced

variation in size between eastern and western individuals (Wattel 1973; Mueller *et al.* 1981; Hoffman *et al.* 1990; Smith *et al.* 1990).

The diet of the Cooper's hawk is more varied than that of the sharp-shinned hawk. Although it takes more birds than any other prey type, (70-80 percent of the diet) the Cooper's hawk takes more mammals than the sharp-shinned hawk, (estimated at 12-17 percent of the diet; Meng 1951; Jones 1979). The Cooper's hawk hunts from a concealed perch and makes short, fast attacks, sometimes flying low to the ground and using brush for concealment until the brief, final strike. In addition to being an expert at this typical hunting method, the Cooper's hawk will also hunt from greater height, taking aerial prey in a falcon-like stoop in open habitat (Mead 1963; Clark 1977).

The Cooper's hawk nests in deciduous, conifer, and mixed woodlands. In southern California it generally favors extensive riparian bottomlands (Garrett and Dunn 1981). Elsewhere in California the Cooper's hawk will nest in trees from 10 - 50 feet above the ground; usually nesting in second-growth coniferous or deciduous riparian areas often near streams (Zeiner *et al.* 1990*a*). Most nests in a California study were in groves of six or more deciduous trees, with two or more trees close enough together that the crowns formed one continuous canopy (Asay 1987). Breeding territory sizes vary significantly from study to study (one pair per 1815-5683 acres), depending on the quality of the habitat and abundance of prey (Craighead and Craighead 1956; Reynolds and Wight 1978).

During migration, Cooper's hawks use a mixture of habitat types with vegetative cover, often hunting on the edges of wooded areas (Palmer 1988). They frequently follow ridgelines to exploit updrafts and, particularly in the intermountain west, avoid open valley floors by staying in montane forests at higher elevations where both prey and roosts are more available (HawkWatch International unpublished data).

Winter habitat requirements are poorly quantified. Christmas Bird Count data, particularly from the west Mojave and adjacent southern California, suggest that Cooper's hawks use essentially the same habitats during winter and summer. Water and cover are probably the limiting factors for prey species and, therefore, may determine the distribution of hawks. Accordingly, riparian areas are probably important habitat on wintering grounds, providing foraging and roosting opportunities.

The Cooper's hawk breeds throughout the contiguous 48 United States, southern Canada, and northern Mexico. Cooper's hawks winter infrequently in all areas of the breeding range (some individuals may remain year-round on the breeding territory). Most individuals vacate the northern half of the species' range during winter, and Cooper's hawks commonly occur in migration across the United States. They are present coast to coast throughout most of the southern United States and Mexico. In winter, Cooper's hawks range regularly from the southern United States south to northern Central America, casually to Costa Rica, and are possibly present in Panama and Colombia (AOU 1983; Rosenfield and Bielefeldt 1993).

In California, the Cooper's hawk is a resident bird throughout most of the wooded habitat of the State, up to 9000 feet elevation. In parts of the Central Valley and Sonoran desert area of Southern California, it is present during the winter (Zeiner *et al.* 1990*a*).

Environmental baseline: Population data are limited for many areas, but numbers are probably low in the Canadian prairie provinces, the Great Plains states, and along the eastern gulf coast (AOU 1983; Rosenfield and Bielefeldt 1993). Garrett and Dunn (1981) suggest a significant decline in breeding pairs throughout southern California due to the destruction of their principal nest habitat, extensive riparian areas. There is no evidence of a decline in migratory populations of Cooper's hawks in the western U.S. (HawkWatch International unpublished data; Golden Gate Raptor Observatory data in McDermott 1996; Battalio 1996). Based on 1986 Christmas Bird Count data, there are an estimated 19,400 birds in the United States and Canada. California has the second largest state population of birds at an estimated 3,200 birds; thus protection of Cooper's hawks and their habitats within the State are important to the species (USDA 1994).

Major threats to this species are los of both breeding and wintering habitat due to timber harvest, a reduction in productivity due to pesticide exposure, and human disturbance (e.g. shooting of this hawk on its wintering grounds in Mexico and Central America) (USDA 1994; Rosenfield and Bielefeldt 1993).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
California Correctional Institution, Level IVB (Tehachapi IV B)	0	0	1
California State Prison - Sacramento (New Folsom)	3.95	3.95	1
Kern River Preserve	2.5	2.5	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	

California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison	X	
Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Red-shouldered Hawk (*Buteo lineatus*)

Status: None

Species description: The red-shouldered hawk has the broad wings and wide, rounded tail characteristic of buteos. The rusty red "shoulders" are usually visible against the barred, black and white of the upperside of the flight feathers. When spread, flight feathers appear to have a translucent patch or "window" when seen overhead. Underparts are red in adults, tail is barred with alternating wide, black and narrow, white bands (Peterson 1990; Crocoll 1994). Females are generally larger than males (643 g and 475 g, respectively; Dunn 1984).

This diurnal hunter searcher for prey either from a perch in a forest canopy, or by flying low in open habitat; may also take prey from the water surface. Major food items are mammals, but diet can also include birds, reptiles, and amphibians (Crocoll 1994). In California, feeding occur mostly along edges of wet meadows, swamps, and wetlands (Zeiner *et al.*1990).

Habitat is a variety of forest and woodland habitats, especially during the breeding season. Nest sites are often located near some form of permanent water (Crocoll 1994; Zeiner *et al.* 1990*a*).

The red-shouldered hawk's distribution is limited to the eastern United States, parts of southeastern Canada, and locally in southeastern Oregon, California and Baja Mexico; (Sibley and Munroe 1990; Crocoll 1994). Migration occurs in only the northern part of the range. The western subspecies of this hawk (*Buteo lineatus elegans*) occurs only in a narrow band from southern Oregon down through the Coast Range and Central Valley of California, and into parts of Baja California. *Buteo l. elegans* differs from the nominate *lineatus* by being smaller in size, having a rusty-red breast, brighter red shoulder patches, and wider tail. The *l. elegans* subspecies is mostly a year-round residents (Crocoll 1994; Zeiner *et al.* 1990).

Environmental baseline: Western subspecies populations are considered stable, though numbers have likely declined from historical levels due to habitat loss (Croccoll 1994). Wintering numbers have declined in all states except California and West Virginia. Although there are indications the species is stable in California, others dispute that pesticide exposure and declines in riparian habitat have not affected affecting California populations (USDA 1994). Red-shouldered hawks (*B.l. elegans*) in California have lower productivity than in other areas of the United States. Population estimates for the western United States are about 1,500 pairs (mostly in California)(USDA 1994).

Threats to the western population of this species are primarily destruction or degradation of nesting habitat in riparian and oak woodlands. Elsewhere in its range, the loss and fragmentation of habitat, land clearing for agriculture, channelization and alterations of streams, is believed to be responsible for the declines in populations (USDA 1994).

In eastern U.S., populations of this hawk have decreased, believed due largely to loss of forest habitat. Long- term trends from migration counts suggests a decline in numbers, especially between 1946 to 1986 (Crocoll 1994).

In southern California, this hawk is affected by the introduced European grass florets, whose seeds are an irritant that can lodge in the eye and decrease hunting success (USDA 1994).

There are no occurrences of red-shouldered hawk within CNDDB (CDFG 2001*a*). There may be closer occurrences that have not been entered into CNDDB or recorded for input. There have also been no mortality of red-shouldered hawk at any prison site (EDAW 1999).

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Central California Women's Facility	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Allensworth Ecological Reserve	X	
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Red-tailed Hawk (*Buteo jamaicensis*)

Status: None

Species description: The red-tailed hawk is a common raptor which ranges across North America. Coloration can be highly variable among the 16 subspecies. In the western United States, a "dark morph" and "rufuos morph" are distinguished form the more typical western form, which has coloration distinct from the subspecies generally found in the eastern United States (Peterson 1990; Preston and Beane 1993). Tail is red when seen from above; from below is pale with a bit of red tint. Males and females are similar in body weight at approximately 100 g (Dunn 1984).

Forages by a variety of methods including perching and pouncing, soaring, or hovering over prey (USDA 1994; Zeiner *et al.* 1990*a*). Food items are most often small to medium sized mammals, birds and reptiles. Foraging habitat is mostly open areas such as desert scrub, grasslands, open woodland,

but can also use agricultural fields and urban parks (Preston and Beane 1993). Nest sites are usually located in large trees, often the tallest in the surrounding area, or on a slope so there is visibility surrounding the site (USDA 1994; Preston and Beane 1993; Zeiner *et al.* 1990*a*). Occasionally, nests in manmade structures such as a tall building or similar structure (Preston and Beane 1993).

Red-tailed hawks are common throughout its range, from all but the northernmost provinces in Canada, through virtually the entire United States, into Mexico, Central and northern region of South America, and the Caribbean (USDA 1994; Sibley and Munroe 1990). This raptor is a year-round resident across California, with the exception of areas above the timberline in the Sierra Nevada Mountains (Zeiner *et al.* 1990*a*). Most birds in the northern part of the range migrate south for the winter; otherwise birds remain around breeding grounds throughout the year (Preston and Beane 1993).

Environmental baseline: The red-tailed hawk is one of the few raptors whose populations have actually increased in numbers and expanded its range in the last century (USDA 1994; Preston and Beane 1993). This expansion has been attributed to changing forest practices in which forests and woodland habitats have been fragmented with large open areas used by this hawk for nest sites (Preston and Beane 1993). The North American population has been estimated at 350,000 birds in 1986, with California having 45,800 individuals (USDA 1994).

In California, major wintering areas for red-tailed hawk occur from Kern National Wildlife Refuge to Clear Lake refuge, and into western Nevada. One of the largest breeding populations occurs in the foothills of California (Preston and Beane 1993).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
California Correctional Institution, Level IVB (Tehachapi IV B)	0	0	1
California Institution for Men, West (Chino)	0	0	0
California State Prison - Corcoran California Substance Abuse Treatment Facility and California State Prison (Corcoran II)	0	0	2
California State Prison - Solano (Vacaville)	0	0	1
Central California Women's Facility (Madera I) Valley State Prison for Women (Madera II)	0	0	2
Pleasant Valley State Prison (Coalinga)	0	0	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison	X	
Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Rough-legged Hawk (*Buteo logopus*)

Status: None

Species description: The rough-legged hawk, named for the long feathers on its legs and feet, is a large hawk found in open areas. This buteo has somewhat longer tail and large wings than related species. Wingspan is 48 - 56 inches, body weight is 1278 g for females, 1027 for males (Terres 1980; Dunn 1984). This buteo hovers while hunting, similar to a kestrel or white-tailed kite. The rough-legged hawk has two color phases: one is dark above and below, with white patch at base of tail and some white on feathers when seen overhead; the light phase back and wings are dark, but underpart of wings, breast, head and thighs are lighter colored (Terres 1980; Peterson 1990).

Foraging habits in its wintering are can be similar to northern harrier in that low, quartering flights are made in open country. Also hovers and pounces on prey. The rough-legged hawk is an open-country hunter, frequently in wet meadows, marshes, swamps, and forest edges. Primary food is small mammals, but also ingests insects and small birds, fish, or reptiles (Terres 1980; Zeiner *et al.* 1990*a*).

The breeding range is from Alaska across arctic and subartic Canada, northern Scandinavia, northern Russia and Siberia. Its winter range includes California, New Mexico, Oklahoma, Tennessee, and Virginia (Godfrey 1986). In wintering in California, the rough-legged hawk is a migrant and winter resident found along the coast to Santa Barbara County, in the Central Valley, Sierra Nevada, Modoc Plateau south to the desert regions in Southern California. Food availability determines winter distribution and abundance (Zeiner *et al.* 1990*a*).

Environmental baseline: Bent (1937) indicate that this hawk had grown scarce due to human persecution of this bird, though it's diet of almost exclusively rodents would present a great value to agriculture. Bent (1937) also documents the "considerable numbers" of this hawk observed during migration in the spring, with one account in 1936 from the Churchill River that "...at least 1,000 of these hawks must have quietly passed over our camp during the first 10 days we were there..."

There are no occurrences of rough-legged hawk within CNDDB (CDFG 2001*a*). There may be closer occurrences that have not been entered into CNDDB or recorded for input. There have also been no mortality of rough-legged hawk at any prison site (EDAW 1999).

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	

California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison	X	
Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Humboldt Bay National Wildlife Refuge	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Ferruginous Hawk (*Buteo regalis*)

Status: California Species of Special Concern

Species description: The following species account is excerpted from: P. Grindrod. Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California. The exceptions are Zeiner *et al.* (1990) and USDA (1994) citations.

The largest member of the genus *Buteo* in North America, the ferruginous hawk is a large, soaring bird of wide-open country. With the long, broad wings and relatively short tail characteristic of the genus, it is distinctive, nonetheless, for its size, bulk and wing shape. Both a light and dark morph occur in the species, with dark morph individuals estimated at 1-10 percent of the population (Schmutz and Schmutz 1981; Bechard and Schmutz 1995). Ferruginous hawks are barrel-chested and stocky. The wings are broad, long, and taper gently to the tips. In soaring flight, the wings are held in a slight dihedral (Dunne *et al.* 1988; Wheeler and Clark 1995).

Ferruginous hawks are largely perch hunters, although they will also spend more time foraging from on the ground than any other large raptor, course low over the ground to flush prey, and hover hunt from heights up to 300 feet (Wakely 1974; Bechard and Schmutz 1995). Mammals, make up roughly 70-85 percent of the diet (up to 99 percent of the biomass). Birds comprise 5-13 percent of the diet (< 5 percent of the biomass), and amphibians, reptiles, and insects add the remaining proportion (Olendorff 1993; Bechard and Schmutz 1995).

The ferruginous hawk breeds in open, arid country in the western U.S. and the southern edge of the Canadian prairie provinces: southern Alberta, Saskatchewan, and southwestern Manitoba. In the continental United States the range extends from eastern Washington and Oregon through Nevada east of the Sierra Nevada Mountains, across northern Arizona to the Texas panhandle, and north to North Dakota (AOU 1983; Olendorff 1993; Bechard and Schmutz 1995; Washington Dept. of Fish and Game 1996). Strongly associated with plains and desert, ferruginous hawks are absent from montane forest; thus, the range is nearly bisected by the Rocky Mountains. In California, the ferruginous hawk is an uncommon winter resident and migrant found in the lower elevations and open grasslands of the Central Valley, Coast Range, and Modoc Plateau. In southwestern California, it is fairly common in grasslands and agricultural fields in the winter (Zeiner *et al.* 1990*a*).

Ferruginous hawks winter in grassland and shrub-steppe habitat from the central and southern portions of the breeding range southwest through much of California (Garrison 1990), northern Baja and irregularly to Baja California Sur (Unitt *et al.* 1992); south to southern Arizona, New Mexico, west Texas, and into northern Chihuahua and the central states of northern Mexico; and southeast to western Kansas, Oklahoma, and central Texas (Bent 1961; Olendorff 1993; Bechard and Schmutz 1995; Washington Dept. of Fish and Game 1996). They occur casually east to Wisconsin, Illinois, Indiana, western Ohio, and Missouri (Christmas Bird Count compilation map; Palmer 1988).

Winter and migratory habitat requirements largely overlap with breeding habitat, but without the need for trees or other elevated nest placements, although trees may be used to roost if they are available (Steenhof 1984; King *et al.* 1988). Prey availability is probably the most important factor influencing winter habitat selection. Grassland, pasture, and fallow winter croplands in which there is an abundance of prairie dogs, lagomorphs, or gophers are used extensively (Schmutz and Fyfe 1987; Allison *et al.* 1995; Plumpton 1996).

Environmental baseline: An estimated 5,842 to 11,330 individuals in the North American population has been estimated, while other estimates have placed the number at 14,000 individuals in the Great Plains alone (Bechard and Schmutz (1995). The population status of the ferruginous hawk is uncertain owing to a need for range-wide censusing, including correlation of breeding, migration, and winter observation numbers. Many studies postulated declines in species numbers. Warkentin and James (1988) analyzed Christmas Bird Count data and found no evidence for range-wide population decline and, in fact, found several areas that showed significant local increases. In an analysis of California CBC

data, Garrison (1990) concluded that apparent increases in numbers of winter ferruginous hawks were largely the result of newer CBCs started in areas with more of the birds, as well as increased raptor awareness and improved identification skills. Some populations have declined locally, most notably in western Utah (Woffinden and Murphy 1989;), where the prey base has apparently crashed. Simultaneous increases in numbers of Ferruginous Hawks in other parts of their range (Alberta, Idaho, and Wyoming; Olendorff 1993) may indicate opportunistic nomadism with nearly entire local or regional populations relocating to follow prey (K. Steenhof *pers. comm.*).

Impacts to this species come primarily from conversion of habitat in its breeding range to agriculture. Other effects on the species include shooting on breeding grounds, pesticides and other environmental contaminants, collision with stationary or moving objects, and disturbance at the nest or roost site (e.g. mining) (USDA 1994; Bechard and Schmutz 1995).

There are no occurrences of ferruginous hawk within CNDDB (CDFG 2001*a*). There may be closer occurrences that have not been entered into CNDDB or recorded for input. There have also been no mortality of greater sandhill crane at any prison site (EDAW 1999).

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison	X	
Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	

Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Golden Eagle (*Aquila chrysaetos*)

Status: California Species of Special Concern, California Fully-Protected

Species description: The following species account is excerpted from: L.F. Leprae Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California. The exceptions are Zeiner *et al.* (1990) and USDA (1994) citations.

The golden eagle is a large (length 30-40 inches [76-102 cm]) dark brown bird with a wingspan reaching six feet (152-204 cm). Females average 20 percent larger than males by weight. Plumages are similar for males and females, and quite variable, especially the amount of white at the base of the tail and in the flight feathers of immatures. The feathers on the nape and neck are golden, especially when lit by the sun.

The diet of golden eagles varies with location, but consists almost exclusively of mammals. They may feed on carrion, especially in agricultural areas.

The golden eagle is found in nearly all habitats of the western states, from deserts to above timberline, avoiding only densely forested areas where hunting is impossible (Thelander 1974). In winter, they hunt near agricultural areas as well as in sparse desert vegetation.

The golden eagle breeds in northern latitudes of Europe, Asia, and North America. In North America, it breeds from northern and western Alaska east to northern Quebec and Labrador and south to Baja California and the mountains of northern Mexico. The nesting range extends from the Pacific coast east to west-central Texas, western Oklahoma, Kansas, Nebraska, and the Dakotas. The breeding range in the eastern United States is discontinuous and less well-known, but includes parts of New York and New England and the Appalachian Mountains of eastern Tennessee and western North Carolina (AOU

1983). Northern populations of the golden eagle are migratory, wintering in all parts of the southwestern United States. Golden eagles breeding in southern California are resident and may remain within their home range throughout the winter. The golden eagle is found throughout California with the exception of the extreme northwest coast, high elevations of the Sierra Nevada, the Los Angeles Basin, and the Imperial Valley (Zeiner *et al.* 1990*a*).

Environmental baseline: No recent estimates of the golden eagle population are available. Braun *et al.* (1975) estimated the total North American population of Golden Eagles at "up to 100,000 individuals." Huegly (1975) estimated the population in the western U. S. in excess of 40,000 birds. Olendorff *et al.* (1981) estimated a winter population of 63,000 Golden Eagles in the western United States, with 5,000 of these in California. Thelander (1974) estimated 500 breeding pairs of Golden Eagles in California. The golden eagle population is believed to be stable or increasing, although the Breeding Bird Survey trends indicate a decline in the central part of the United States between 1968 to 1989, while populations in the west have fluctuated, with the most recent years (1980 - 1989) showing a decline. California populations increased from 1968 to 1980, but have decreased non-significantly from 19980 to 1989 (USDA 1994).

Electrocution from small electrical distribution and transmission lines is a significant problem for the golden eagle (Olendorff *et al.* 1981). Most collisions and electrocutions are of juveniles and of birds flying in windy or stormy weather. The high-voltage metal transmission lines are rarely a problem for golden eagles due to wide conductor spacing and the availability of several perch sites on a single tower (APLIC 1996).

Other threats to this species include habitat destruction (mining, logging, ranching), and direct disturbance and mortality (hunting, pesticides and other environmental contaminants) (USDA 1994).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
California Institution for Men, West (Chino)	4.65	4.65	1
Mule Creek State Prison (Ione)	3.60	3.60	1
Starr Ranch Sanctuary	0	0	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Centinela State Prison	X	
Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

American Kestrel (*Falco sparverius*)

Status: None

Species description: The American kestrel (previously referred to as sparrow hawk), is the smallest falcon in North American, and is about the size of a jay and weighs only on average 111 to 120 g (Dunn 1984). The female is larger than the male. This falcon is characterized by the black and white "double mustache" on the face of both sexes (two black marks extending vertically on the cheek against white). Both sexes have red-colored back and tail, while the male had blue-gray wings. Typically seen perched erectly on a tree, wire, pole, or fence post while watching for prey; will occasionally lift its tail (Peterson 1990; Terres 1980; Zeiner *et al.* 1990*a*).

This falcon hunts for prey by either perching and pouncing, pouncing from a hover position, or during flight when catching insects. Diet consists of small mammals, birds, insects, earthworms, reptiles, and amphibians (Zeiner *et al.* 1990*a*). The American kestrel usually perches quietly during the day, and hunts mostly during the morning and late afternoon (Terres 1980).

This falcon has a high tolerance for heat and humidity, and is not dependent upon drinking water as it can obtain its water needs from its diet (Terres 1980). This kestrel is found in a variety of open habitats, from open country, farmland, cities, wood edges, and highways, but seeks cover for nesting in trees, snags, rocky areas and even buildings (Terres 1980; Zeiner 1990).

The distribution of this species is most of North and South America, and occurs within every state within the continental United States (Sibley and Munroe 1990). The kestrel migrates from its breeding range only in the northern most latitudes, where it migrates southward (USDA 1994). In California, the American kestrel is a common, year-round resident in all but the high elevations, and will move from higher elevations to lower elevations in the winter (Zeiner *et al.* 1990*a*). The size of the breeding range in the United States and Canada is estimated at 3 million square miles (USDA 1994).

Environmental baseline: Specific number for the American kestrel's worldwide population are not available, but it is believed to be abundant in its summer range (USDA 1994). Throughout the continent, the American kestrel has experienced a non-significant increase in numbers from survey data gathered during the mid 1960's through the late 1980's. However, during that same time period in California, Breeding Bird Survey data indicates there is a decline in breeding birds of about 1.8 percent/year; with the last ten years of that period having a 6.7 percent/year decline. The decline in birds in California is attributed to a loss of suitable nesting cavities (USDA 1994).

The most recent Breeding Bird Survey data for 1990 to 2000 indicates a non-significant increase in American kestrel in California (USGS 2002*d*). Christmas Bird Count data in California for the 1990s indicates an slight increase from 1990 to 1994, with a general decline in counts from 1994 to 2000;

counts for the period 1990 - 2000 are in the order of 5000 birds (Audubon 2002).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Avenal State Prison	0	0	1
California Correctional Institution, Level III (Tehachapi III)	0	0	1
California Correctional Institution, Level IVA (Tehachapi IV A)	0	0	2
California State Prison - Los Angeles (Lancaster)	0	0	3
California State Prison - Solano (Vacaville)	0	0	2
Calipatria State Prison	0	0	3
Centinela State Prison	0	0	3
Central California Women's Facility (Madera I) Valley State Prison for Women (Madera II)	0	0	3
Ironwood State Prison	0	0	1
Pleasant Valley State Prison (Coalinga)	0	0	1
R. J. Donovan Correctional Facility	0	0	3
Salinas Valley State Prison (Soledad II)	0	0	4
Wasco State Prison	0	0	4

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	

California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison	X	
Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Merlin *(Falco columbarius)*

Status: California Species of Special Concern

Species description: The merlin is a small raptor, with three subspecies found in North America (*F.c. suckleyi, F.c. columbarius and F.c. richardsonii*). This male falcon is blue-gray when seen from above, with large black bands on a light-colored tail. When seen in flight overhead, dark and light streaks. Head has a dark cap and the lower part of the forward is white (Peterson 1990; Sodhi *et al.* 1993). Female (average of 213 g) is larger than the male (average 158 g), and brownish-color on back instead of blue-gray coloration (Dunn 1984; Peterson 1990).

Most prey is captured in mid-air, often flying low to the ground; can also capture prey on the ground (Zeiner *et al.* 1990*a*). Hunting flights usually originate from perches where the Merlin can scan large areas for prey (Sodhi *et al.* 1993). Diet consists chiefly of small birds, but will also take small mammals and insects (Zeiner *et al.* 1990*a*; Sodhi *et al.* 1993).

The Merlin uses a wide variety of habitats, but prefers open habitat such as grasslands and open woodlands, but also welands and lakes, though cover and nesting is usually done near forest openings (Zeiner *et al.* 1990*a*; Sodhi *et al.* 1993; USDA 1994).

The Merlin's distribution worldwide for breeding is the Palearctic, from Iceland and Scandinavia, to Russia and Siberia, Britain, and in North America from Alaska and Canada to British Columbia, Washington, Oregon, Idaho, Michigan and Ohio (Sibley and Munroe 1990). Winter range includes Europe, northern Africa, portions of the Middle East, and India, and Asia (Sodhi *et al.* 1993; Sibley and Munroe 1990). The Merlin does not breed in California, but migrates here in the winter months (September to May). Its winter range is extensive throughout the state, only being absent from high elevations and deserts (Zeiner *et al.* 1990*a*)

Environmental baseline: Breeding populations of the subspecies *F.c. Richardsonii* is increasing, with the exception of the populations in northeastern parts of North America, where there has been a steady decrease in the number of migrants between the mid-1980's to 1992 (Sodhi *et al.* 1993). In California, numbers have decreased in recent decades (Zeiner *et al.* 1990*a*).

Threats to the merlin include shooting, loss or change of suitable habitat in its breeding range (e.g. agricultural practices which reduce nesting sites and foraging habitat), and organochlorine pesticides (no longer a principle threat with the banning of many of these chemicals) (Sodhi *et al.* 1993; USDA 1994).

There are no occurrences of merlin within CNDDB (CDFG 2001*a*). There may be closer occurrences that have not been entered into CNDDB or recorded for input. There have also been no mortality of merlin at any prison site (EDAW 1999).

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison	X	

Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Prairie Falcon (*Falco mexicanus*)

Status: California Species of Special Concern

Species description: The following species account is excerpted from: L.F. Leprae Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California. The exceptions are Zeiner *et al.* (1990), Sibley and Munroe (1990), Steenhoff 1998), and USDA (1994) citations.

The prairie falcon is a pale brown bird with a creamy white breast with prominent spotting. It has distinctive facial markings (dark malar stripes), a relatively small notched beak, and long pointed wings. The diagnostic field mark is the dark axillaries. Males and females are readily distinguishable if seen together; there is no overlap in adult size. The average weight of females is 810 grams and of males, 570 grams (Steenhof 1983). No color phases are known, and geographic variation in plumage is not detectable. No subspecies have been recognized.

The prairie falcon is a generalist in prey selection, taking what is available within its territory. They eat birds as large as grouse and ring-necked pheasants and as small as sparrows (Palmer 1988). They often pursue flocks of sparrows, quail, horned larks, blackbirds, or doves, singling out individuals as prey. In many areas, small mammals make up the majority of their diet, although several reports of falcons feeding on cottontail rabbits and black-tailed jackrabbits exist (Bent 1937). Individual birds may favor particular species, such as the report of a nest containing prey remains consisting almost entirely of the chuckwalla (*Sauromalus obesus*)(Pierce 1935).

The prairie falcon is found only in the western North America, from southwestern Canada southward to Baja California and central Mexico, and eastward to N. Dakota, Missouri and Texas (Sibley and Munroe 1990). The prairie falcon breeds throughout the western United States and southern Canada east to southeastern Saskatchewan, the Dakotas, extreme western Nebraska and south to central Mexico and Baja California (Johnsgard 1979; AOU 1983; Lanning and Hitchcock 1991).

This falcon has nesting, post-nesting, and wintering areas that are geographically separated, making it more of a wanderer rather than having a north-south migration (Steenhof 1998). Northern populations of the Prairie Falcon are migratory, wintering in the southwestern United States and northern Mexico. In California, the prairie falcon is an uncommon year-round resident in the southeastern deserts, inner sections of the Coast Range, and the lower elevations of the Sierra Nevada (Zeiner *et al.* 1990*a*). Resident birds may move upslope in summer and downslope in winter, for example into the Central Valley and southern coastal areas (Zeiner *et al.* 1990*a*).

Environmental baseline: Cade (1982) is widely cited as estimating the total number of prairie falcons range-wide as 5000-6000 pairs. However, many statewide censuses have been conducted, and the total of these studies does not exceed 3,700 pairs (compiled from Anderson and Squires 1997; Boyce *et al.* 1986; Herron *et al.* 1985; Johnsgard 1990). Steenhoff (1998) reviews studies conducted from 1971 - 1995 and estimates there is a minimum population of 8,546 individual adults, with a total population estimated in the 1980s from Christmas Bird Count data to be 13,000.

Breeding Bird Survey (BBS) and Christmas Bird Count (CBC) data for the period 1990 to 2000 in California is equivocal; BBS indicates a non-significant decrease of 2.55%/year, while the CBC data suggest a fluctuating but stable population. Christmas Bird Count data for the period 1990 - 2000 counted less than 200 birds in California (USGS 2002*a*; Audubon 2002).

Boyce *et al.* (1986) studied 520 nesting territories in California during the 1970s (1970-1979) and reported a maximum of 300 occupied nest sites in any one year (1977). They estimated 300-500 breeding attempts may occur annually within the state. The Mojave Desert had the greatest density of breeding Prairie Falcons.

Electrocution from electrical distribution and transmission lines is not considered a problem for the prairie falcon (Avian Power Line Interaction Committee 1996) because the conductors are generally spaced wider than the falcon's wingspan. However, certain poles with transformers containing uninsulated jumper wires and uncovered bushings do present an electrocution hazard to prairie falcons and other smaller raptors.

Removal of nestlings by falconers is permitted by the CDFG in populations considered stable, but is limited to about 15 birds per year statewide. There are no geographic take limitations for falconry purposes in California. During the past few years reported take has been between 3 and 18 birds annually, with 19 taken in 1997, mainly from Kern (7) and San Bernardino (9) counties. Unreported take is unknown (LaPre Updated).

Besides trapping, illegal shooting is a common cause of mortality for this species. Collision with fences, telephone wires and vehicles is also a problem. Degradation of habitat, or disturbance around the nesting site, also adversely affects the prairie falcon. In particular, large scale development around its breeding grounds can reduce prey base for this falcon, or if near cliffs, can disrupt or eliminate nesting at that location. In the past, organochlorine pesticide exposure have adversely affected this species, but this threat has abated with the banning of these chemicals (USDA 1994; Steenhof 1998).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
California City Desert Tortoise Natural Area	4.80	4.80	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison	X	

Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve		
California City Desert Tortoise Natural Area	X	
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Long-billed Curlew (*Numenius americanus*)

Status: California - Species of Special Concern

Species description: The following species account is excerpted from: C. McGaugh. Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California. The exceptions are Stenzel *et al.* 1989, Pampush 1980, and Zeiner *et al.* (1990) citations on population status.

The long-billed curlew is the largest North American shorebird (length 23 in., 58 cm, wingspan to 40 in., 1.0 m; Terres 1980). By virtue of its size and its very long, decurved bill, it is almost unmistakable. Confusion with the whimbrel (*Numenius phaeopus*) is possible, but the long-billed curlew is considerably larger, lacks distinct head stripes, has a longer, more smoothly curved bill, and warmer cinnamon-buff plumage. It is distinguished from the other "long billed" curlews of the world (which are allopatric) by its cinnamon wing-linings. The marbled godwit (*Limosa fedoa*), a large sandpiper with remarkably similar plumage, is smaller and has a long, slightly recurved bill.

Both of the recognized subspecies occur in California. Breeders in northern California are *N. a. parvus*, the smaller, shorter-billed, more northern subspecies (AOU 1957; Garrett and Dunn 1983). Based on what is known of the winter distribution of the subspecies, it is likely that most of the birds in southern California in winter are *N. a. americanus*, although *parvus* occurs in mixed flocks with *americanus*. Short-billed *parvus* may be mistaken for whimbrels (Garrett and Dunn 1983). Age and gender variation in size and bill length make field identification of subspecies problematic. Grinnell and Miller (1944, p. 141) stated that "in California there is no practicable way of separating available specimens into two racial categories."

The long-billed curlew's extraordinary bill, which is longer on females, is used to probe into muddy or sandy substrates or to grab prey from the surface. Curlews often wade belly-deep and forage in submersed mud. Food items on the Pacific coast include mud crabs (*Hemigrapsus oregonensis*), ghost shrimp (*Callianassa californiensis*), mud shrimp (*Upogebia pugettensis*), gem clams (*Gemma gemma*), and insect pupae (Stenzel *et al.* 1976). Inland, curlews eat insects, worms, spiders, crayfish, berries, snails, and small crustaceans (Bent 1929).

Long-billed curlews are birds of open habitats: upland shortgrass prairies, wet meadows, grasslands, and, in winter, agricultural fields, saltwater marshes with tidal channels, intertidal mudflats, and coastal estuaries. At all seasons, flat or gently rolling terrain is characteristic of curlew habitat. Breeding habitat in northern California has been characterized as wet meadow habitat and "grasslands with lakes or marshes nearby" (Small 1994).

The long-billed curlew breeds from south-central British Columbia, southern Alberta, southern Saskatchewan and southern Manitoba south to eastern Washington, northeastern California (Siskiyou, Modoc, Lassen counties, irregularly south to the vicinity of Big Pine in Inyo County; McCaskie 1978; Small 1994), central Nevada, central Utah, southern Colorado, central New Mexico, northern Texas and east to southwestern Kansas.

The winter range extends from central California, southern Arizona (rarely), northern Mexico, southern Texas, southern Louisiana and coastal South Carolina south to southern Mexico and southern Florida, irregularly south to Costa Rica (AOU 1983; Zeiner *et al.* 1990*a*). The winter range in California includes the San Joaquin Valley, the Imperial Valley, portions of the West Mojave, and (locally) coastal estuaries (Garrett and Dunn 1983). Some non-breeders spend the summer in the wintering areas. The species is gregarious in migration and winter. Wedge-shaped flocks move through the deserts in July, August, and September. Most wintering birds depart by early May.

Environmental baseline: The breeding range of the long-billed curlew has decreased in the last 80 years, although western numbers have not decreased to the extent that eastern populations have. Little is known about the causes for the declining numbers, but it is believed to be due to changes in agricultural practices (Zeiner *et al.* 1990*a*).

The largest winter flocks in interior California occur in the Central and Imperial valleys, and are associated with agricultural habitats. The Salton Sea (south) Christmas Bird Count often has the national high count of long-billed curlews; 4,490 in 1987 is the highest total of any count in North America in the last ten years (*American Birds* 42:1137, 1988). A survey of long-billed curlews during breeding season was conducted in 1980 in the Columbia and Northern Great Basin (portions of California, Nevada, Idaho, Oregon, and Washington) estimated 8,000 - 13,000 breeding pairs occupy that area (Pampush 1981). In September 1988, a census of northern and central coastal California was conducted for shorebirds and other birds. Coastal wetlands in north and central California and San Francisco Bay had the highest counts of long-billed curlew at 2879 and 2297 individuals, respectively (Stenzel *et al.* 1989).

There are no occurrences of long-billed curlew within CNDDB (CDFG 2001*a*). There may be closer occurrences that have not been entered into CNDDB or recorded for input. There have also been no mortality of long-billed curlew at any prison site (EDAW 1999).

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Correctional Center, Level III	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Central California Women's Facility	X	
High Desert State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
Humboldt Bay National Wildlife Refuge	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

California Gull (*Larus californicus*)

Status: California Species of Special Concern

Species description: The following species account is excerpted from: K.C. Molina and K.L. Garrett. Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California.

California gulls are medium-large (21 in.; 54 cm) gulls with a medium-dark gray mantle (Scott 1993), and exhibit little sexual size dimorphism. Winkler (1996) reported mean mass for males and females of the subspecies *californicus* as 657 and 556 g, respectively. Breeding adults have a bright yellow bill with a red spot near the gonys that merges with a black subterminal mark. Legs are bright yellow and the head is completely white. Adult plumage is generally attained at four years of age (Grant 1986).

California gulls are highly opportunistic and may eat small mammals, young chicks and eggs, fish, and a great variety of invertebrates. These gulls commonly scavenge garbage and occasionally pirate food from other species. California gulls also forage well offshore, following ships and fishing boats (Winkler 1996). They have also been known to forage on fruit in orchards (Cottam 1935).

California gulls breed in the western interior of North America from Mono Lake, California north to lakes of the Canadian Northwest Territories. Breeding colonies extend east through the northern Great Basin and northern Rocky Mountain states to the Dakotas and western Manitoba. Within this range, breeding sites are widely distributed and year to year occupation is variable (AOU 1983; Winkler 1996). Coastal nesting occurs only at San Francisco Bay (Winkler 1996). Recently, a small nesting colony has become established along the southern shores of the Salton Sea, California (K. C. Molina, unpubl. data), extending the species' southern breeding limit some 600 km.

In winter, California gulls range along the Pacific Coast from British Columbia south through Mexico to the states of Nayarit and Guerrero, including both coasts of Baja California (AOU 1983). In the interior of California, large numbers of California gulls winter in the Central Valley (Small 1994; Christmas Bird Count data), with smaller flocks of up to several hundred aggregating at the north end of the Salton Sea (Christmas Bird Count data), and along the Colorado River, particularly at Davis Dam (Rosenberg *et al.* 1991).

Environmental baseline: Although many aspects of California gull demography remain unclear, Winkler (1996) suggested that this species' current population size is greater than that during the last century. The largest breeding aggregations of California gulls occur in Alberta, Canada, the Great Salt Lake/Snake River area and Mono Lake. Estimates by Conover (1983) indicate that California Gull populations breeding in the United States comprised some 276,000 individuals in 1982.

The closest California gull occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 9.4 miles to California Correctional Center, Level III (Susanville I) and High Desert State Prison (Susanville II). The closest California gull occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 89.4 miles to Paul Wattis Sanctuary. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Central California Women's Facility	X	
High Desert State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
Humboldt Bay National Wildlife Refuge	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Barn Owl (*Tyto alba*)

Status: None

Species description: The barn owl has a distinctive white, heart-shaped face on a rusty-colored head and back that are specked with black. The eyes are dark and ear tufts are absent. When seen flying overhead, this owl appears white or light-colored. The legs and wings are long (Peterson 1990; Terres 1990). Females are slightly heavier than males (average of 490 g and 442 g, respectively; Dunn 1984).

The Barn Owl hunts on the wing or from a perch in open fields, wetlands and grasslands. Hunting is done mostly at night, with some feeding at dawn and dusk (Zeiner *et al.* 1990*a*). Diet consists small mammals, but also observed to eat insects, crustaceans, reptiles, and amphibians. Small birds are an important source of food during the winter months (Zeiner *et al.* 1990*a*).

Habitat is open spaces, but roosts in hollow trees, cliffs, barns, lofts, and towers of abandoned or little-used buildings (Godrey 1986). Nests are usually located in sheltered locations such as ledges, crevices, including buildings or other such structures (Zeiner *et al.* 1990*a*; Godfrey 1986).

Distribution for this owl is nearly worldwide in tropical and temperate locales (Peterson 1990; Sibley and Munroe 1990). In California, the Barn Owl is a common resident in most of the State, occupying areas from sea level to 1690 m altitude but avoiding dense forests and open deserts (Zeiner *et al.* 1990*a*). The Tytonidae family is not usually migratory, though some birds may travel north in spring and south in the fall and winter (Terres 1980). In California, the species in not migratory (Zeiner *et al.* 1990*a*).

Environmental baseline: No information is available on population numbers, although severe winter weather and collisions with automobiles are major causes of mortality. Forested land cleared for agriculture appears to have allowed the barn owl to expand their range in some locations (northwestern United States), while changing agricultural practices in other areas have lead to declines in some locations (e.g. upper Midwest United States)(Marti 1992).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Avenal State Prison	0	0	1
California Correctional Center, Level III (Susanville I) High Desert State Prison (Susanville II)	0	0	1
California Institution for Men, West (Chino)	0	0	1

California State Prison - Corcoran California Substance Abuse Treatment Facility and California State Prison (Corcoran II)	0	0	1
California State Prison - Sacramento (New Folsom)	0	0	1
Calipatria State Prison	0	0	2
Central California Women's Facility (Madera I) Valley State Prison for Women (Madera II)	0	0	8
North Kern State Prison (Delano) California State Prison - Kern County at Delano II	0	0	2
Pleasant Valley State Prison (Coalinga)	0	0	5
Salinas Valley State Prison (Soledad II)	0	0	2
R. J. Donovan Correctional Facility	0	0	1
Wasco State Prison	0	0	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	**Within Range***	**Possibly Within Range****
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison	X	
Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	

Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Western Screech-owl (*Otus kennicuttii*)

Status: None

Species description: The western screech-owl is closely related to the eastern screech owl (*Otus osio*), but is geographically distinct with the western species inhabiting areas west of the Rocky Mountains and the eastern species inhabiting areas east of the Rocky Mountains (Hekstra 1973). Previously, screech owls in California were further divided into several different subspecies (Grinnel and Miller 1944). The western screech owl has characteristic ear tufts, yellow eyes, and is usually gray in color: in northern, humid areas this owl is more often darker brown, and in arid areas is paler grey (Peterson 1990). This owl is relatively small, with females averaging 186 g and males averaging 152 g (Dunn 1984).

The principle food of this screech owl is insects in the summer and fall, otherwise eats a variety of food including small mammals, birds, fish, reptiles, and amphibians (Hekstra 1973; Zeiner *et al.* 1990*a*). Hunting is by perching and pouncing, and swooping (Zeiner *et al.* 1990*a*). Like most owls, the western screech owl is feeds at night.

Habitat for this species ranges from open woodland, savannah and desert areas (Hekstra 1973). In California, the western screech owls is found in open oak, pinyon-juniper, riparian, redwood and mixed conifer woodlands as well as in more developed areas such as towns, suburbs, farms, ranches and meadows (Zeiner *et al.* 1990*a*).

The western screech owl is found in western North America and Mexico from Alaska and British Columbia down through the western United States, and into Baja California and the cental Mexico (Sibley and Munroe 1990; Peterson 1990). In California, the western screech owl is a common to uncommon yearlong resident in the majority of the State at elevations to 8 000 feet, with the exception of

parts of the Mojave Desert (Zeiner *et al.* 1990*a*). In general this species is not migratory, but may move from higher elevations to lower elevations during the winter (Hekstra 1973; Zeiner *et al.* 1990*a*).

Environmental baseline: There are no occurrences of western screech-owl within CNDDB (CDFG 2001*a*). There may be closer occurrences that have not been entered into CNDDB or recorded for input. There have also been no mortality of western screech-owl at any prison site (EDAW 1999).

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Great Horned Owl (*Bubos virginiana*)

Status: None

The great horned owl has been referred to as the "Cat Owl" because of its large ear tufts, large yellow eyes, and large head. This owl is big (1769 g for females, 1318 g for males), and in flight appears as large as a hawk (Dunn 1984; Peterson 1990). Overall the great horned owl is heavily barred and brownish all over, with white at the throat (Peterson 1990; Houston *et al.* 1998).

The great horned owl is a nocturnal hunter, but has been known to hunt during the day as well, for example when needing to provision young (Houston *et al.* 1998). Hunting is usually done from a perch and making low flight over the ground in open areas such as woodland edges, meadows, grasslands, and sagebrush. The great horned owl has the most varied diet, with respect to size and type of prey, of any of owl found in N. America, with prey ranging from small insects, small mammals, to large rabbits and birds such as duck, goose and heron. The majority of prey food are mammals (Zeiner *et al.* 1990*a*; Houston *et al.* 1998).

The great horned owl inhabits a variety of habitats such as forests, woodlands, swamps, orchards, wooded parks, urban and suburban areas, and agricultural areas. This owl needs some open habitat in part of their home range, but also requires trees with dense foliage for roosting (Zeiner *et al.* 1990*a*; Houston *et al.* 1998).

Distribution of the great horned owl includes almost all of North America except the northernmost latitudes of Alaska and Canada, down through Mexico and in to parts of Central America and South America down to Cape Horn (Sibley and Munroe 1990). Most of its range it is a year-round resident, with some movement of bird in response to prey availability especially in the northern parts of its range or from areas of higher altitude. In California, the great horned owl is a common, permanent resident that occupies virtually the entire State with the exception of locations greater than 10,500 feet above sea level, or Los Angeles metropolitan area (Zeiner *et al.* 1990*a*).

Environmental baseline: Population estimates are difficult to determine for this species because although it is widespread and found in a variety of habitats it is sparsely distributed, with low density. Population levels have been linked most to prey availability, and is especially evident in areas with a cyclic prey base (Houston *et al.* 1998).

Great-horned owl populations appear to be linked to the availability of prey species. Threats to this species include pesticides and rodenticides (secondary poisoning from contaminated prey), illegal shooting, collisions with moving or stationary objects and electrocution (Houston *et al.* 1998).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from mortality reports provided by CDC (EDAW 1999). There were no sightings within CNDDB (CDFG 2001*a*).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
California Correctional Institution, Level III (Tehachapi III)	0	0	3
California Correctional Institution, Level IVA (Tehachapi IV A)	0	0	3
California State Prison - Solano (Vacaville)	0	0	2
Centinela State Prison	0	0	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison	X	
Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Humboldt Bay National Wildlife Refuge	X	

Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Northern Pygmy Owl (*Glaucidium gnoma*)

Status: None

Species description: This northern pygmy owl is a very small owl, roughly the size of a bluebird (Terres 1980). This pygmy owl is only 7 - 7 ½ inches in body length and weighing only 54 to 87 g (Dunn 1984; Peterson 1990). Overall, the northern pygmy owl is brown, with white belly, breast and sides that are heavily streaked with brown. The tail is long and barred, and the back of the head has distinct black feathers that resemble eyes. This owl does not have a facial disk that is common to other owls.

The northern pygmy owl is known as a fierce hunter, preying on a diversity of prey including insects, reptiles, birds, and mammals. For its size, the northern pygmy owl can take prey that is greater than its own body weight. Prey is captured during the day, unlike most owls that are nocturnal hunters (Holt and Petersen 2000). Hunting is done by swooping or pouncing on prey on the ground but also by catching prey in vegetation (Holt and Peterson 2000; Zeiner *et al.* 1990*a*).

Generally the northern pygmy owls is a forest-dwelling owl that uses cavities in tress for roosting and nesting, for example, holes made by woodpeckers. The northern pygmy owl is found in southeastern Alaska, parts of British Columbia, mountainous regions of Washington, Oregon and California, and south through parts of Mexico and Central America (Holt and Peterson 2000; Sibley and Munroe 1990). It is not thought to be a long-distance migrant, but may move down from higher elevations to lower during winter months (Holt and Peterson 2000). In California, the northern pygmy owl is a year round resident in most forested areas of the State, occupying valley foothill hardwood, mixed conifer, valley foothill riparian, and montane riparian to an elevation of 12,000 feet above sea level). It is absent in the Central Valley, the Modoc Plateau in the northwestern part of State, and desert areas lacking trees (Zeiner *et al.* 1990*a*).

Environmental baseline: Population estimates of the northern pygmy owl are few since it is rarely observed during the nesting season and difficult to locate. Breeding pairs in Canada have been guessed to be between 2,000 to 10,000. Breeding Bird Survey data from 1969 - 1989 indicates a non-significant decline in California populations, while also finding a significant increase in some coastal and

interior mountain regions of California. Overall, there was no apparent increase in populations of northern pygmy owl in the United States of North America (Holt and Petersen 2000).

Information on effects on the northen pygmy owl population are limited. Since this owl is an obligate cavity nester, forestry practices which nest sites would likely have an impact reproduction. In addition, forestry practices which impact prey species or woodpeckers (nest cavity excavators) would also likely impact this species. It is believed that collisions with stationary or moving objects is a minor contributor to mortality of this species, and this owl is remarkably tolerant of human disturbance at nest and roost sites (Holt and Petersen 2000).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
California Correctional Institution, Level III (Tehachapi III)	0	0	3
California Correctional Institution, Level IVA (Tehachapi IV A)	0	0	3
California State Prison - Solano (Vacaville)	0	0	2
Centinela State Prison	0	0	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Correctional Center, Level III		X
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West		X
California State Prison, Los Angeles		X
California State Prison, Solano	X	
California State Prison, Sacramento	X	
Centinela State Prison	X	
Central California Women's Facility		X
High Desert State Prison		X
Mule Creek State Prison	X	
Pelican Bay State Prison	X	
Salinas Valley State Prison		X
Valley State Prison for Women	X	X
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	

Stanislaus River Park	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Burrowing Owl (*Athene cunicularia*)

Status: California Species of Special Concern

Species description: The following species account is excerpted from: K.F. Campbell. Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California. The exceptions species description, feeding ecology, habitat, and Zeiner *et al.* (1990) citations.

Burrowing owl is a small (19 - 25 cm) owl which nests in ground burrows usually dug by mammals such as ground squirrels or prairie dogs. The head is rounded, ear tufts are absent, with distinctive facial features marked by white eyebrows and white chin stripe. Iris is a bright yellow. Burrowing owl is brownish all over, with back and scapulars, and crown spotted with white, and barring on primary feathers, chest, and tail (Haug *et al.* 1993). Legs are long and sparsely feathered. The owl is often seen standing on the ground or posts during the day (Peterson 1990).

The burrowing owl feeds on a variety of arthropods, small mammals and birds. Typically forages in short-grass or overgrazed pastures, foraging primarily at dawn and dusk. The owl hunts by running or hopping along the ground, by hovering, from a perch, or from flight anytime during the day or night (Haug *et al.* 1993).

In California, the burrowing owl inhabits grassland and desert areas. It is a year-round resident in the Central Valley, north and central coastal areas, and desert regions of the State; the exception is in the extreme northeastern section of the State (present only in summer), and along the coast from Point Conception south in Santa Barbara and Ventura Counties (winter only) (Zeiner *et al.* 1990*a*). Shrub stages of pinyon juniper and ponderosa pine provide habitat. This owl is also adapted to using golf courses, cemeteries, airports, vacant lots and roadways provided there is suitable habitat (Haug *et al.* 1993). This raptor was formerly common throughout the State, but populations have been reduced markedly.

Burrowing owls breed from south central Canada south through most of the western United States and Central America to the southern tip of South America, as well as in Florida and on most of the larger Carribean islands (Haug *et al.* 1993). In North America, northern populations withdraw irregularly southward in winter (Zarn 1974), corresponding with anecdotal evidence of a slight winter influx in the

southwest and Mexico (Coulombe 1971). Populations breeding in northern Arizona are apparently migratory (Phillips *et al.* 1964), while those breeding in California and southern Arizona are largely non-migratory (Thomsen 1971; Haug *et al.* 1993).

A tendency for coloniality, with large intervening areas unoccupied (Zarn 1974; pers. obs.), probably reflects the patchy distribution of available habitat. Dispersal of young and seasonal migration account for occasional appearances nearly anywhere within the species' general range.

A wide variety of mammalian and avian native predators are known; badger (*Taxidea taxus*) especially seems to be a potentially serious local problem (Haug *et al.* 1993), but is rarely a threat except where native predators have increased as a result of changes by man, for example with coyote (*Canis latrans*) or great horned owl (*Bubo virginianus*). Non-native predators, especially domestic dog (*Canis familiaris*) and domestic cat (*Felis domesticus*) are known predators of adult and young burrowing owls.

Environmental baseline: Existing records of burrowing owls compiled for West Mohave Plan includes 53 records within the proposed plan area. The records on hand certainly represent only a small sample of the locations at which Burrowing Owls have recently been or currently are present. Of the 53 records, 23 (43 percent) are from within Edwards Air Force Base; all of these have no specific locale or date. Of the other 30 records, only 13 have specific locales and dates. Probable or confirmed breeding was noted at 5 locales (most data available on this species are from studies in Florida, Pacific coastal areas, and the Great Plains (e.g., Thomsen 1971; Butts 1973; Ross 1974; Green 1983; and others cited in Haug *et al.* 1993). Studies in desert areas include Coulombe (1971), Martin (1973), Barrows (1989), and Silva et al. (1995), although there are apparently no thorough or long-term published studies of this species in the Mojave Desert. The information presented here is based primarily on existing desert studies, along with compiled information in Haug *et al.* (1993).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Avenal State Prison	0 - 4.10	1.37	3
California Institution for Men, West (Chino)	0 - 4.10	2.65	3
California State Prison - Corcoran California Substance Abuse Treatment Facility and California State Prison (Corcoran II)	0	0	4
California State Prison - Los Angeles (Lancaster)	0	0	3
California State Prison - Sacramento (New Folsom)	0	0	4

California State Prison - Solano (Vacaville)	0 - 4.80	2.38	8
Calipatria State Prison	0	0	102
Centinela State Prison	0	0	2
Central California Women's Facility	0.35 - 4.85	3.17	11
Central California Women's Facility (Madera I) Valley State Prison for Women (Madera II)	0	0	4
Chuckawalla Valley State Prison	0	0	1
North Kern State Prison (Delano) California State Prison - Kern County at Delano II	0	0	5
Pleasant Valley State Prison (Coalinga)	0	0	2
R. J. Donovan Correctional Facility	0 - 2.50	0.63	4
Salinas Valley State Prison (Soledad II)	0 - 4.40	0.73	6
Wasco State Prison	0	0	4
Allensworth Ecological Reserve	2.40	2.40	1
California City Desert Tortoise Natural Area	4.20	4.20	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	**Within Range***	**Possibly Within Range****
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison	X	
Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	

RJ Donovan Correctional Facility at Rock Mountain	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Long-eared Owl (*Asio otus*)

Status: California Species of Special Concern

Species description: The long-eared owl is a medium size owl with a large, rounded head with prominent ear tufts. Iris is yellow to yellow gold in North American, orange in Eurasian species. Facial features have white eyebrows and patch below the bill. Overall color is a mixture of black, brown, gray, buff and white (Marks *et al.* 1994). Barring on underparts is streaked lengthwise, not crosswise (Peterson 1990).

In California, this owl may make only local movements seasonally, though some migration may occur. Resident populations in California have declined for reasons not entirely known. Major factors include destruction and fragmentation of habitat (Zeiner *et al.* 1990*a*).

The following species account is excerpted from: K.F. Campbell. Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California.

As in most raptorial birds, male long-eared owls are on average smaller than females. Average mass in males is 8.6 oz. (245.3 g.; n = 38) with females 14 percent greater; average wing-length in males is 11.06 in. (281 mm.; n = 47) with females 1 percent greater (Earhart and Johnson 1970).

This is one of the most strictly nocturnal of all owls. Very occasional vocalizations or hunting to support young occur before sunset, especially on overcast days and during breeding activities. Food is typically a broad variety of mammals below 3.5 oz. (100 g) in mass, with mean mass estimated at 0.88-1.58 oz. (25-45 g.) in various studies (see Marks *et al.* 1994). In many areas voles (*Microtus* spp.) are dominant in the diet, but among studies in arid areas the most usual prey items are pocket mice

(*Perognathus* spp.) and/or kangaroo rats (*Dipodomys* spp.), as summarized in Marks *et al.* (1994); this was confirmed by Barrows (1989) in a study of pellets at six locations in the Colorado Desert of California. Shifts in diet among years within sites may indicate that Long-eared Owls are responsive to prey availability (Barrows 1989).

Grinnell and Miller (1944) describes the habitat as, "typically, bottomlands grown to tall willows and cottonwoods; but also, west of Sierran divides, belts of live oaks, especially as paralleling stream courses. Adjacent open land productive of mice is requisite, as is the presence of old nests of crows, hawks or magpies for breeding purposes. Indeed, east of Sierra Nevada, the breeding range of this owl is suggestively coincident with that of the black-billed magpie." Marks *et al.* (1994) describe habitat as, "dense vegetation adjacent to grasslands or shrublands; also open forests. Elevations range from near sea level to >2000 m. Reports of forests as main habitat (Bent 1938; AOU 1983; Johnsgard 1988; Sibley and Monroe 1990) [is] misleading in that long-eared owls normally use these habitats for nesting and roosting only."

Because the species appears to be relatively adaptable in prey selection (see above), habitat, human disturbance, and predation may be the primary factors determining where long-eared owls occur on a local scale. There is anecdotal evidence that long-eared owls avoid great horned owls (*Bubo virginianus*) in coastal southern California, both in site selection and in behavior (Bloom 1994). In desert areas the species frequently occurs in artificial plantings near structures, indicating considerable tolerance of human disturbance. In contrast, Bloom (1994), speaking about coastal California, noted that, "I have never found an active long-eared owl nest within 1 km [0.62 mi.] of a residential area in California."

This medium-sized owl occurs across many portions of the temperate zone of the Northern Hemisphere (Marks *et al.* 1994; Voous 1988). In North America it is found across central Canada southward, across the northeastern United States and within most of the western United States. The species occurrence in desert areas of the southwest is probably limited by the availability of appropriate roosting and nesting habitat, but where this occurs, the species is not rare (Garrett and Dunn 1981).

Environmental baseline: Within most of California the species' status is poorly known. It appears to occur most regularly in desert areas, but this may be a function of greater detectability rather than of different status in more mesic habitats. In Europe and other areas of its range, this species appears to vary cyclically in abundance, in synchrony with strong population cycles in its prey species, especially voles (Voous 1988). However in North America this pattern is largely absent, and winter irruptions in North America are also weak (Marks *et al.* 1994). This may indicate adaptability in diet or energetic requirements. Moderate winter influxes in California occur most strongly or at least conspicuously in desert areas (Garrett and Dunn 1981; Barrows 1989). The species does not usually occur at elevations over about 5900 feet except as a transient, though there are a few high elevation nest records in California (Garrett and Dunn 1981; Gaines 1988).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Starr Ranch Sanctuary	0 - 1.00	0.36	5

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Correctional Center, Level III	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Central California Women's Facility	X	
High Desert State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
Kern River Preserve	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Short-eared Owl (*Asio flammeus*)

Status: California Species of Special Concern

Species description: The following species account is excerpted from: K.F. Campbell. Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California.

This medium-large owl (15 in, 38 cm) is distinguished by its buffy overall coloration, streaked underparts, and distinctive black "comma"-shaped marks on the greater primary coverts on the underside of the wing. Females are larger than males, averaging 378g to the males' 315g (Holt and Leasure 1993). Short-eared owls are largely crepuscular and are often active during the day. Short-eared owls are not especially vocal away from the nesting areas; winter birds occasionally give a barking "kee-ow" call. On the breeding grounds they give a variety of additional calls and also engage in distinctive aerial courtship flights, often termed "sky-dancing" (Holt and Leasure 1993).

Ecologically, this species is a crepuscular/nocturnal analog of the northern harrier, although the owl's diet includes far fewer birds. Numerous dietary studies (summarized by Clark 1975 and Holt and Leasure 1993) show that mammal prey constitutes up to 99 percent (and nearly always over 80 percent) of the diet. The great majority of mammal prey items are microtine rodents (e.g., voles, genus *Microtus*), with smaller numbers of *Thomomys* gophers, other rodents, shrews, and moles making up the remainder. In parts of the range of the short-eared owl, especially where colonial-nesting waterbirds are in close proximity, the owls may take chicks and recently-fledged young birds. Prey is located by auditory and visual cues.

Typical habitat consists of open country which supports concentrations of microtine rodents; depending on the region breeding habitat might include prairies, coastal grasslands, salt and freshwater marshes, shrub-steppe, or agricultural lands including irrigated alfalfa fields (Grinnell and Miller 1944; Holt and Leasure 1993). Winter habitats are similar to those occupied in the breeding season, but more often include marshes and weedy fields; winter birds are sometimes noted at garbage dumps (Holt and Leasure 1993). Grinnell and Miller (1944) note that, in California, tule (*Scirpus*) patches or tall grass is needed for nesting and daytime roosts; nest sites are usually on drier, raised sites compared to surrounding vegetation (Holt and Leasure 1993). Rosenberg *et al.* (1991) consider this species to benefit from the agricultural development of the lower Colorado River Valley, where it occupies alfalfa fields as well as marshes.

Much habitat apparently suitable for short-eared owls is unoccupied, and presence of owls at a given sight may vary considerably from year to year (Holt and Leasure 1993). In some instances wintering birds may remain to breed on the wintering territory (Holt and Leasure 1993).

This widespread owl breeds over much of northern North America; additional populations occur across Eurasia, in the grasslands of South America, and on many oceanic islands. Many populations are migratory, and North American breeders winter south to Baja California, northern Mexico, and Florida. All North American birds belong to the nominate subspecies *A. f. flammeus*.

In California, short-eared owls breed (or formerly bred) locally in the northern part of the state, in the Central Valley, and along the coast of southern California (Grinnell and Miller 1944); a few breeding stations on the deserts have been recorded as well. Garrett and Dunn (1981) indicated that this species was eliminated as a breeder on the southern California coast before the middle of the twentieth century.

As noted above, the more northerly populations of this species are migratory, with an influx of birds into southern California occurring mainly from late October (casually as early as early September) through early March (and casually through April; Garrett and Dunn 1981). Short-eared owls were formerly "abundant" in winter through much of California, and were still considered "common and widely distributed" by Grinnell and Miller (1944). Garrett and Dunn (1981) considered the species an uncommon and local winter visitor on the coastal slope, and generally rare on the deserts (although concentrations are sometimes reported).

Environmental baseline: Concern for this species' status in parts of North America led to its placement on the National Audubon Society "Blue List" in 1976; it remained on that list until the Blue List was discontinued in 1986 (Holt and Leasure 1993). Declines have been precipitous in much of northeastern United States, where loss of habitat due to human encroachment has been cited as the major factor (Holt and Leasure 1993). Breeding Bird Survey data show significant declines in short-eared owls in much of Oregon, southern Idaho, and south-central Washington from 1966-1989; the same data suggest non-significant increases in California populations, although sample sizes are low (Holt and Leasure 1993). Many authors have commented on the fluctuating nature of winter populations of short-eared owls.

The destruction of marsh and tall grassland habitat was considered "certainly the main cause for the decline" of this species in California (Remsen 1978). Such degradation has occurred through the draining and filling of coastal and freshwater marshlands, grazing of grasslands, conversion of grasslands to agriculture, and urbanization.

Management of this species must recognize the degree of annual fluctuations in wintering populations and the occasional or ephemeral nature of breeding populations. The total amount of suitable habitat is certainly higher after exceptionally wet winters.

The closest short-eared owl occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 12.7 miles to Calipatria State Prison. The closest short-eared owl occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 25.7 miles to California City Desert Tortoise

Natural Area. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Correctional Center, Level III	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Central California Women's Facility	X	
High Desert State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
Humboldt Bay National Wildlife Refuge	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Vaux's Swift (*Chaetura vauxi*)

Status: California Species of Special Concern

Species description: The following species account is excerpted from: K.L. Garrett and K.C. Molina. Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California.

A small (4 3/4"; 11 cm) aerially-foraging bird, with typical swift proportions (long, narrow wings, short bill with large gape, very short and weak legs). The tail is short and slightly rounded, with spines projecting at the tip of each rectrix. Flight is rapid and "twinkling," consisting of rapid series of shallow wing beats alternated with short looping glides (Chantler and Driessens 1995; Dunn 1979;).

Burrowing Owl

Prison[1]	November 1993 - December 1997	1998	1999	2000	2001	Total (As of 12/31/2001
ASP[2]	2 (as of 10/94)					2
CIM[2]	1 (as of 1995)					1
CSP-COR[2]	4 (as of 9/94)			1		5
CSP-LAC	3 (as of 11/94)	2	1	1		7
CSP-SAC[2]	4 (as of 12/94)					4
CSP-SOL[2]	2 (as of 3/95)					2
CVSP	1 (as of 11/95)					1
CAL[2]	102 (as of 11/93)	1	1	4		108
CCWF[2]	1 (as of 8/95)					1
CEN	2 (as of 10/94)	2	2	2		8
ISP		1		1		2
NKSP[2]	5 (as of 10/94)					5
PVSP[2]	2 (as of 9/94)					2
RJD[2]	3 (as of 2/95)					3
SVSP[2]	5 (as of 3/96)					5
VSPW[2]	3 (as of 2/96)					3
WSP[2]	4 (as of 12/94)					4
Totals	**144**	**6**	**4**	**9**	**0**	**163**

1 ASP: Avenal State Prison
CIM: California Institute for Men
CSP-COR: California State Prison - Corcoran
CSP-LAC: California State Prison - Los Angeles
CSP-SAC: California State Prison - Sacramento
CSP-SOL: California State Prison - Solano
CVSP: Chuckawalla Valley State Prison
CAL: Calipatria State Prison
CCWF: Central California Women's Facility
CEN: Centinela State Prison
ISP: Ironwood State Prison
NKSP: North Kern State Prison
PVSP: Pleasant Valley State Prison
RJD: R.J. Donovon Correctional Facility
SVSP: Salinas Valley State Prison
VSPW: Valley State Prison for Women
WSP: Wasco State Prison - Reception Center

2 Prisons where Tier 2 vertical netting with anti-perching devices are installed.

At prisons were Tier 2 netting is installed, 138 individuals have been killed prior to the installation of netting (roughly four years) with 6 individuals killed post-netting. The post net mortality for four consecutive years shows a reduction in mortality of 95 percent exceeding the estimated that post-netting reduction would be 75 percent for the burrowing owl (Ground-foraging Raptors) stated within the HCP.

It cannot be determined with certainty if the loss of 163 individuals since 1993 is negatively affecting the current population since there are currently no estimates of population numbers for the species within California or nation-wide. Though it is the USFWS's opinion that the loss of 19 individuals, mainly prisons where Tier 2 netting and anti-perching devices have not been installed, is low to negligible since this is fairly wide ranging species within California and is known to occupy and use a wide range of habitats for breeding and foraging.

Bendire's Thrasher

Only a single Bendire's thrasher has been killed to date. The individual was killed at Ironwood State Prison in July of 1995 (Kitchell 1996).

The effectiveness of the netting cannot be determined with certainty due to lack of data for this species. It cannot be determined with certainty what the effect of the mortality of a single individual is to the current population since there is no quantitative information available for this species. It is the USFWS's opinion that the impact is low since there are no prisons within the range of this species based on the range maps provided by CDFG (CDFG 1999) and the distance of the closest occurrence to any prison based on data within CNDDB (CDFG 2001*a*).

Loggerhead Shrike

Prison[1]	November 1993 - December 1997	1998	1999	2000	2001	Total (As of 12/31/2001
ASP[2]	6 (as of 10/94)					6
CCI	6 (as of 1995)	1	3		1	11
CIM[2]	7 (as of 1995)	1	1			9
CSP-COR[2]	4 (as of 9/94)	1	1			6
CSP-LAC	2 (as of 11/94)	2				4
CSP-SOL[2]	19 (as of 3/95)		3	8	1	31
CSATF[2]			1			1
CVSP	2 (as of 11/95)	2				4
CAL[2]	3 (as of 11/93)					3
CCWF[2]	25 (as of 8/95)		2	4	2	33
CEN	1 (as of 10/94)					1
HDSP	2 (as of 1/96)					2
ISP	6 (as of 11/94)		1	3		10
NKSP[2]	3 (as of 10/94)	1				4
PVSP[2]	23 (as of 9/94)	1			2	26
RJD[2]	1 (as of 2/95)					1
SVSP[2]					1	1
VSPW[2]	1 (as of 2/96)	1		1	6	9
Totals	**111**	**10**	**12**	**16**	**13**	**162**

1 ASP: Avenal State Prison
CCI: California Correctional Institution (Levels III, IVA, IVB)
CIM: California Institute for Men
CSP-COR: California State Prison - Corcoran
CSP-LAC: California State Prison - Los Angeles
CSP-SOL: California State Prison - Solano
CSATF: CA Substance Abuse Treatment Facility and CSP-Corcoran II
CVSP: Chuckawalla Valley State Prison
CAL: Calipatria State Prison
CCWF: Central California Women's Facility
CEN: Centinela State Prison
HDSP: High Desert State Prison
ISP: Ironwood State Prison
NKSP: North Kern State Prison
PVSP: Pleasant Valley State Prison
RJD: R.J. Donovon Correctional Facility
SVSP: Salinas Valley State Prison
VSPW: Valley State Prison for Women

2 Prisons where Tier 2 vertical netting with anti-perching devices are installed.

At prisons were Tier 2 netting is installed, 92 individuals have been killed prior to the installation of netting (roughly four years) with 38 individuals killed post-netting. The post net mortality for four consecutive years shows a decrease in mortality of 59 percent where as, it is stated in the HCP that the installation of Tier 2 netting would reduce mortality for species by 75 percent. It is therefore determined that the Tier 2 vertical netting and anti-perching devices and possibly Tier 1 minimization measures are ineffective in avoiding and minimizing mortality to this species at several of the prison sites (e.g. California State Prison - Solano and Valley State Prison for Women) based on actual mortality.

It cannot be determined with certainty if the loss of 162 individuals since 1993 is negatively affecting the current population since there are currently no estimates of population numbers for the species within California or nation-wide. Though it is the USFWS's opinion that the average loss of 12.75 individuals each year (based on actual mortality since 1998 - posting netting) is affecting this species since studies show that population levels are declining nation-wide.

Tricolored Blackbird

Prison	November 1993 - December 1997	1998	1999	2000	2001	Total (As of 12/31/2001
ASP[2]	23 (as of 10/94)			3		26
CSP-LAC					9	9
CSP-SAC[2]	1 (as of12/94)					1
RJD[2]	10 (as of 2/95)	5				15
Totals	**34**	**5**	**0**	**3**	**9**	**51**

1 ASP: Avenal State Prison
CSP-LAC: California State Prison - Los Angeles
CSP-SAC: California State Prison - Sacramento
RJD: R.J. Donovon Correctional Facility

2 Prisons where Tier 2 vertical netting with anti-perching devices are installed.

At prisons were Tier 2 netting is installed, 34 individuals have been killed prior to the installation of netting (roughly four years) with 8 individuals killed post-netting. The post net mortality for four consecutive years shows a reduction in mortality of 76 percent where the HCP estimated that post-netting reduction would be 90 percent for Large Ground-gleaning Birds. It is therefore determined that the Tier 2 vertical netting and anti-perching devices and possibly Tier 1 minimization measures are ineffective in avoiding and minimizing mortality to this species

The current numbers of individuals being killed each year at all prisons (totaling 51 since 1993) is low to negligible when compared to the current populations levels within the state, estimated at 162,000 birds in 2000.

Tier 3 Mitigation - Tier 3 is the project's mitigation program designed to compensate for residual wildlife mortality impacts. After implementation of Tier 1 and Tier 2 measures, a small amount of residual wildlife mortality risk is unavoidable, primarily because the upper lethal wires must be left outside the vertical net (for security reasons) at electrified fence sites with Tier 2 mitigation, and certain electrified fence sites will not receive either or both Tier 2 nets. This tier is designed to mitigate impacts of the predicted future take of the Covered Species addressed in the HCP. The mitigation program include some acquisition of lands; habitat enhancement via creation, restoration, or management; and monetary contributions to species recovery efforts.

The following table displays the Tier 3 mitigation sites that will mitigation for take and provide a net benefit for each species.

Species	Location Where Mitigated[1]	Mitigation Explanation
desert tortoise	California City	The California Desert Tortoise Natural Area is located within the area designated as critical habitat for desert tortoise (USFWS 1994). This species would benefit from purchase of credits within this private mitigation bank, with the money being used to fund land acquisition, and habitat enhancement and management activities.

Species	Location Where Mitigated[1]	Mitigation Explanation
blunt-nosed leopard lizard	Allensworth	This species is known to occur at this site and would benefit from purchase and enhancement of saltbush scrub habitat. In addition, re-establishing microtopography would provide new burrowing opportunities for other San Joaquin species, which would add to the burrow availability for this species.
San Diego horned lizard	Starr Ranch	This species is known to occur at Starr Ranch Sanctuary. Removal of artichoke thistle from non-native grasslands and preventing its spread into coastal sage scrub habitat at this site would benefit this species.
orange-throated whiptail	Starr Ranch	This species is known to occur at Starr Ranch Sanctuary. Removal of artichoke thistle from non-native grasslands and preventing its spread into coastal sage scrub habitat at this site would benefit this species.
northern red-diamond rattlesnake	Starr Ranch	This species is known to occur at this site. Removal of artichoke thistle from non-native grasslands and preventing its spread into coastal sage scrub habitat at this site would benefit this species.
Brown pelican	Humboldt Bay	This species is known to occur at this site. This species would benefit from new land acquisitions, which would be protected, and from restoration activities that include removal of non-native invasive plant species from beach and dune habitat at the refuge.
black-crowned night heron	Humboldt Bay Kern River Paul Wattis Stanislaus River	This species is known to occur at all the sites. This species would benefit from restoration and enhancement of riparian and wetland habitat at all of these sites.
Aleutian Canada goose	Paul Wattis Stanislaus River	This species are known to occur at both sites during the winter months. This species would benefit from wetland creation and restoration at both of these mitigation sites.
osprey	Kern River Stanislaus River	This species is known to occur near both sites. Property acquisition and preservation, and restoration and enhancement of riparian woodlands would provide nesting habitat for this species.
white-tailed kite	Allensworth Kern River Mayacama Mountains Paul Wattis Stanislaus River	This species is known to occur at sites except Mayacama Mountains. Property transfer, acquisition and preservation efforts, and/or habitat restoration and enhancement would benefit this species. These areas could be used as either nesting or foraging habitat.
bald eagle	Paul Wattis	This species is known to occur at this site. Riparian restoration would provide winter roosting habitat for this species.

Species	Location Where Mitigated[1]	Mitigation Explanation
northern harrier	ALL[2]	This species would benefit from all of the proposed property acquisition and preservation efforts, and from all of the habitat restoration and enhancement projects. All of these areas could be used by this species as either foraging or nesting habitat.
sharp-shinned hawk	ALL (excluding wetlands)	This species would benefit from all of the proposed property acquisition and preservation efforts, and from all of the habitat restoration and enhancement projects. All of these areas (excluding wetland portions) could be used by this species for foraging.
Cooper's hawk	ALL (excluding wetlands)	This species would benefit from all of the proposed property acquisition and preservation efforts, and from all of the habitat restoration and enhancement projects. All of these areas (excluding wetland portions) could be used by this species as either foraging or nesting habitat.
northern goshawk	Humboldt Bay	This species is known to occur at this site. This species would benefit from new land acquisitions that would be protected.
red-shouldered hawk	ALL	This species would benefit from all of the proposed property acquisition and preservation efforts, and from all of the habitat restoration and enhancement projects. All of these areas could be used by this species as either foraging or nesting habitat.
Swainson's hawk	Kern River Paul Wattis Stanislaus River	This species is known to occur at Kern River Preserve and nest at Paul Wattis Sanctuary and Stanislaus River Park. Restoration and/or enhancement of riparian woodlands would provide nesting habitat for this species.
red-tailed hawk	ALL	This species would benefit form all of the proposed property acquisition and preservation efforts, and from all of the habitat restoration and enhancement projects. All of these areas could be used as either nesting or foraging habitat
ferruginous hawk	Allensworth Kern River Paul Wattis Stanislaus River (excluding wetlands)	This species would benefit from proposed property transfer, acquisition and preservation efforts, and/or from habitat restoration and enhancement, at all these sites. Habitat on these sites (excluding wetlands) could be used by this species for foraging.
rough-legged hawk	ALL	This species would benefit form all of the proposed property acquisition and preservation efforts, and from all of the habitat restoration and enhancement projects. All of these areas could be used as either nesting or foraging habitat.

Species	Location Where Mitigated[1]	Mitigation Explanation
golden eagle	All (excluding wetlands)	This species would benefit from all of the proposed property acquisition and preservation efforts, and from all of the habitat restoration and enhancement efforts, excluding mitigation at Humboldt Bay National Wildlife Refuge. Habitat on these sites (excluding wetlands) could be used by this species as either foraging or nesting habitat.
American kestrel	ALL	This species would benefit form all of the proposed property acquisition and preservation efforts, and from all of the habitat restoration and enhancement projects. All of these areas could be used as either nesting or foraging habitat.
merlin	All (excluding wetlands)	This species would benefit from all of the proposed property acquisition and preservation efforts, and from all of the habitat restoration and enhancement projects. All of these areas (excluding wetland portions) could be used by this species for foraging.
American peregrine falcon	Paul Wattis Stanislaus River	This species is known to occur at both sites. Property acquisition and preservation at these sites would benefit this species.
prairie falcon	Allensworth California City Kern River Stanislaus River	This species is known to occur at all sites. Property transfer, acquisition and preservation efforts, and/or habitat restoration and enhancement would benefit this species. These areas could be used as either nesting or foraging habitat.
greater sandhill crane	Paul Wattis Stanislaus River	This species is known to forage in the wetland and riparian areas at both sites. Restoration and enhancement of these habitats would benefit this species.
western snowy plover	Humboldt Bay	This species is known to occur at this site. This species would benefit from new land acquisitions, which would be protected, and from restoration activities that include removal of non-native invasive plant species from beach and dune habitat at the refuge.
long-billed curlew	Paul Wattis Stanislaus River	This species is known to occur at both sites. Restoration and enhancement of riparian and wetland habitats at these sites would provide higher quality winter foraging habitat for this species.

Species	Location Where Mitigated[1]	Mitigation Explanation
California gull	Humboldt Bay Stanislaus River	This species is known to occur at both sites. This species would benefit from new land acquisitions, which would be protected, and from restoration activities that include removal of non-native invasive plant species from beach and dune habitat and wetland and riparian restoration.
western yellow-billed cuckoo	Kern River Paul Wattis Stanislaus River	This species is known to occur at Kern River Preserve and Stanislaus River Park, and is expected to occur at Paul Wattis Sanctuary. This species occurs in riparian habitat and would benefit from riparian restoration and enhancement efforts at these site.
barn owl	ALL	This species would benefit form all of the proposed property acquisition and preservation efforts, and from all of the habitat restoration and enhancement projects. All of these areas could be used as either nesting or foraging habitat.
western screech-owl	ALL	This species would benefit form all of the proposed property acquisition and preservation efforts, and from all of the habitat restoration and enhancement projects. All of these areas could be used as either nesting or foraging habitat.
great horned owl	ALL	This species would benefit form all of the proposed property acquisition and preservation efforts, and from all of the habitat restoration and enhancement projects. All of these areas could be used as either nesting or foraging habitat.
northern pygmy-owl	Kern River Humboldt Bay Mayacama Mountains	This species is know to occur at all sites. This species would benefit from land acquisitions, which would be protected, and from proposed restoration and enhancement activities conducted on all of these sites.
burrowing owl	Allensworth Mayacama Mountains San Diego MSCP Starr Ranch	This species are known to occur at all these sites. This species would benefit from land acquisitions, which would be protected, and from proposed restoration and enhancement of grasslands at these sites. In addition, this species would benefit from habitat enhancement activities being targeted for burrowing owls within the San Diego MSCP.
long-eared owl	Allensworth California City Kern River Mayacama Mountains Stanislaus River	This species is known to occur at all these sites. This species would benefit from new land acquisitions, which would be protected, and from restoration and enhancement activities conducted on all of these sites.

Foraging is exclusively aerial and diurnal. Food consists almost exclusively of aerial insects and aerially-drifting spiders; in one study, 88 percent of food items in boluses brought to nestlings consisted of *Homoptera*, *Diptera*, and *Ephemeroptera* (Bull and Beckwith 1993).

The Vaux's swift is a diurnal migrant, usually flying high (Bull and Collins 1993); they may fly as low as 1-2 m (3-6 feet) when encountering strong headwinds.
In coastal northern and central California, where the state's highest breeding densities occur, preferred nesting habitat is old-growth redwood (*Sequoia sempervirens*) forests. Breeding distribution seems closely linked to nest site availability (Sterling and Paton 1996). Breeding habitat in the Sierra Nevada is montane coniferous forest; one nest in the Yosemite region was in a red fir (*Abies magnifica*; Gaines 1988).

In the spring large numbers concentrate over lakes and marshes during northerly storms and associated westerly or northerly winds, often mixed with flocks of migrant swallows. During calm, warm weather such concentrations are less common, as birds appear to pass through southern California rapidly on their way north. Migration over the deserts of southern California appears to be on a broad front.

For roosting, migrant Vaux's swifts require some kind of shelter. If available they will utilize hollow structures such as decayed or burned trees, chimneys, barns, outbuildings, or building shafts (Bull and Collins 1993). If such protection is not available they may cling to tree trunks on cold nights (Stager 1965), huddling together to reduce thermal stress.

Vaux's swifts breed in western North America from the Pacific Northwest south through the mountain ranges of central California and, in the Neotropics, from eastern and western Mexico south to Panama and, disjunctly, on the Yucatan Peninsula and in northern Venezuela (Bull and Collins 1993). The northern, nominate subspecies is the one occurring in western North America. Its breeding range extends from extreme southeastern Alaska, western and southern British Columbia, Washington, northern Idaho, and western Montana, to Oregon (except the arid southeast) and California. The California breeding range, detailed by Sterling and Paton (1996) includes the forested coastal regions from Del Norte County to Santa Cruz County, with a small breeding population possibly also occurring on the Big Sur coast of Monterey County (Roberson and Tenney 1993). Breeding populations also occur locally and in low densities through northeastern California and south in the Sierra Nevada to Tulare County (Sterling and Paton 1996).

The winter range of northern, nominate Vaux's swifts is not well known, because of difficulty in separating birds of this subspecies from birds of resident subspecies of the Neotropics. Most birds probably winter from central and southern Mexico south through Guatemala and Honduras (AOU 1957; Bull and Collins 1993).

Environmental baseline: Vaux's swifts are scarce and irregular winter visitors in coastal southern California (Garrett and Dunn 1981), although concentrations of 100 or more have been noted.

Migrant Vaux's swifts occur throughout southern California, primarily from mid-April to late May in spring, and from late August to mid-October in fall. Large concentrations of 10,000+ migrants may gather at traditional roosting sites, such as in downtown Los Angeles, in spring and fall (Garrett 1996). Miller and Stebbins (1964) cite spring dates of 27 April-13 May and fall dates of 4-13 September for Joshua Tree National Park. Along the lower Colorado River, Rosenberg *et al.* (1991) cite a spring peak for early May. Numbers are generally small there, with the largest concentrations noted during series of severe storms; fall numbers are even lower than those of spring.

Breeding Bird Survey data show sharp declines over much of the breeding range of this species (Bull and Collins 1993). These declines, and the restriction of most of the California breeding population to old-growth forests, led to the placement of this species on the California Bird Species of Special Concern list. No estimates of the total population of nominate *vauxi* exist.

The chief cause of population decline is thought to be the felling of old growth forests and replacement with young, even-age stands; this deprives swifts of available nest and roost sites (Bull and Collins 1993). Man-made structures such as chimneys are used for nest sites in parts of the breeding range; changes in chimney design and blocking of chimney entrances by screens and spark arresters may eliminate potential nest sites (Bull and Collins 1993).

A potential threat to migrants is the loss of important, traditional roost sites for migrants. For example, a large concentration of migrant Vaux's swifts occurs annually in the downtown Los Angeles area, perhaps taking advantage of foraging opportunities provided by updrafts along slopes adjacent to the Los Angeles River (K. L. Garrett pers. obs.); as many as 10,000 of these birds utilize a single man-made roost site, a building shaft in central Los Angeles. Loss of availability of this roost site, or severe disturbance to roosting birds within the site, has the potential for harming a significant number of swifts.

There are no occurrences of Vaux's swift within CNDDB (CDFG 2001*a*). There may be closer occurrences that have not been entered into CNDDB or recorded for input. There have also been no mortality of Vaux's swift at any prison site (EDAW 1999).

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Pelican Bay State Prison	X	
Humboldt Bay National Wildlife Refuge	X	
Mayacama Mountains Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

California Horned Lark (*Eremophila alpaestris actia*)

Status: California Species of Concern

Species description: The California horned lark is a common bird of open habitats with low vegetation and agricultural areas. The male horned lark has a black cap with distinctive "horns" or feather tufts on top of the head above the eyes, with a black cheek patches and black bib on a white or yellowish throat and face (Peterson 1990; Beason 1995). Females are duller colored overall with streaking on the chest, and lack the black cap, cheek patch and bib of the male. The horned lark weighs approximately 31 g, with males being slightly larger than females (Dunn 1984).

Horned larks are divided into 21 subspecies, with 15 subspecies found in North America. The California horned lark (*E.a.actia*) is one of four subspecies found in California (distinguised by the yellow throat and eyebrow strip in all three subspecies), and is resident in the Coast Range, and San Joaquin Valley to northern Baja California. The subspecies *E.a. ammophila* breeds in the Mojave and Amargosa deserts and its winter range extends to the northern part of the Sonora desert. The subspecies *E. a. leucansiptila* is resident in southeastern California, and the subspecies *E.a. insularis* is only found on the Channel Islands (Beason 1995).

This lark forages for food as it walks along the ground, therefore preferring open habitats where trees and large shrubs are lacking. The winter diet is mostly grass and weed seeds, but will also take insects, especially in the spring and fall. During the breeding season, the horned lark will eat seeds, but feed its young insects (Beason 1995; Zeiner et al. 1990).

The horned lark is a year-round inhabitant of open, barren country that is absent of trees and large bushes. Cover is provided by forbs, grasses, rocks, and other objects. In agricultural areas, will utilize bare ground or low crop stubble; will also utilize mowed areas around airstrips or other structures, and beaches and sand dunes (Benson 1995; Zeiner et al. 1990).

Horned larks are found almost worldwide, ranging form Norway, Sweden and Finland, to Russia, Europe, the Middle East, parts of China and India (Sibley and Munroe 1990). In North America, the horned lark breeds throughout Alaska and northern and southern Canada, and is a year round resident in most every state in the United States with the exception of the northeast and southeast. The breeding range extends down into Baja California and parts of Mexico and contains an isolated population in the Andes in Columbia (Beason 1995; Sibley and Munroe 1990). The horned lark is non-migratory in most of its breeding range, but birds in northernmost regions migrate to southern latitudes during the winter months.

Environmental baseline: No specific information on the population status of the subspecies (*E. a. actia*) could be found. For the horned lark species, the population appears relatively stable in North America based on Breeding Bird Survey data. Trends over a 25 year period (1966 - 1991) indicate that numbers are increasing in the southeastern United States, decreasing in the Northeast, and are declining in parts of the western United States (Beason 1995).

The closest California horned lark occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 8.6 miles to R.J. Donovan Correctional Facility. The closest California horned lark occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 6.5 miles to Stanislaus River Park. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison		X
California Correctional Center, Level III		X
California Correctional Institution, Level III		X
California Correctional Institution, Level IVA		X
California Correctional Institution, Level IVB		X
California Institution for Men, West		X
California State Prison, Corcoran		X
California State Prison, Kern County at Delano II		X
California State Prison, Los Angeles		X
California State Prison, Solano		X
California State Prison, Sacramento		X
California Substance Abuse Treatment Facility		X
Calipatria State Prison		X
Centinela State Prison		X
Central California Women's Facility		X
Chuckawalla Valley State Prison		X
High Desert State Prison		X
Ironwood State Prison		X
Mule Creek State Prison		X

North Kern State Prison		X
Northern California Women's Facility		X
Pleasant Valley State Prison		X
RJ Donovan Correctional Facility at Rock Mountain		X
Salinas Valley State Prison		X
Valley State Prison for Women		X
Wasco State Prison, Reception Center		X
Allensworth Ecological Reserve		X
California City Desert Tortoise Natural Area		X
Kern River Preserve		X
Paul L. Wattis Sanctuary		X
Stanislaus River Park		X
Starr Ranch Sanctuary		X

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Purple Martin (*Progne subis*)

Status: California Species of Concern

Species description: The purple martin is the largest swallow in North America, weighing on average 49.4 g (Dunn 1984). The adult male is blue-black overall, including its underparts, which distinguishes this swallow from all others. The female has a light-colored belly and gray throat and breast (Peterson 1990; Brown 1997).

The purple martin forages during the day by catching insects during aerial flights over fields, shrubby vegetation, or ponds and lakes (Brown 1997; Zeiner *et al.* 1990*a*). Occasionally the purple martin will also forage on the ground for insects (Zeiner *et al.* 1990*a*). This swallow often forages in the air at altitudes of at 100- 200 feet above the ground, so is infrequently observed feeding. During the breeding season, foraging flights are lower and closer to the nest.

In the eastern part of North America, historic breeding habitat was forest edges, riparian areas containing suitable cavities. Since about the 1900, eastern purple martins have adapted to birdhouses erected by humans and inhabit towns and cities. In western North America the purple martin is not so adapted to artificial nest sites and nests in woodpecker holes and cavities in forests and coastal areas (Brown 1997; Zeiner *et al.* 1990*a*). Little is know of its habitat preferences along its migration route to South America, but some studies in Brazil find the purple martin inhabiting savanna and agricultural fields while roosting in cities and towns (Brown 1997).

The breeding range in North America occurs primarily east of the Rocky Mountains. The eastern range extends into southcentral Canada, Ontario, New Brunswick and Nova Scotia. The purple martin occurs in select areas in the western half of North America, in parts of Washington, Oregon, California, Baja California, Utah, Idaho, and portions of Mexico and Central America. In winter, the purple martin migrates to South America (Sibley and Munroe 1990; Brown 1997). In California, the purple martin is an uncommon to rare summer visitor in coastal areas of California, interior mountain ranges, the Modoc and Lassen counties, and in isolated areas in San Diego, Imperial, Riverside, Orange, and Santa Barbara counties. In California, this swallow is also observed in a variety of open habitats during winter migration southward (Zeiner *et al.* 1990*a*).

Environmental baseline: Data from Breeding Bird Surveys (BBS) suggest the purple martin populations are declining in northern parts of its breeding range since 1980. Weather may play a factor in this decline, as may competition for nest sites from introduced species such as the house sparrow and European Starlings (Brown 1997). In California, there was no significant change in purple martin populations based on BBS for 1980- 1989 (USDA 1994), although southern California has had a major decline in breeding birds since the 1950s (Brown 1997).

The closest purple martin occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 37.8 miles to California State Prison - Solano (Vacaville). The closest purple martin occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 10.7 miles to Mayacama Mountain Sanctuary. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Correctional Center, Level III	X	
High Desert State Prison	X	
Mule Creek State Prison	X	
Pelican Bay State Prison	X	
Humboldt Bay National Wildlife Refuge	X	
Mayacama Mountains Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Bendire's Thrasher (*Toxostoma bendirei*)

Status: California Species of Special Concern

Species description: The following species account is excerpted from: A. S. England. Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California.

Bendire's thrasher is a medium-sized songbird measuring 9-10 in (23-25 cm) in total length and weighing approximately 60 g (Ridgway 1907; Dunning 1984). Unlike other sympatric *Toxostoma* thrashers in California, the bill is only weakly decurved, and the eye is yellow. The ecology of Bendire's thrasher is poorly documented and not well understood. Much of the existing information comes from anecdotal observations of nesting, distribution, and food habits collected in the late 1800's and early 1900's. Most of this information was gathered on birds in Arizona.

Spring migration in California begins by February and early March, when birds occasionally appear in the southern Colorado Desert and continues through April and May when a few records exist for coastal California (England and Laudenslayer 1989*a*). Birds seen during late May and early June in habitat not suitable for breeding may be late spring migrants, unsuccessful breeders, or post-breeding dispersers wandering away from breeding habitats. The end of spring migration may overlap with movements by early post-breeding dispersers and unsuccessful breeders. Singing birds begin to appear on the breeding grounds in late March and early April. Most Bendire's thrashers leave breeding areas in the Mojave Desert of California by the end of July; a few individuals may remain into August or later. Most migrants move to wintering grounds in the southern Arizona, southwestern New Mexico, or Mexico (Zeiner *et al.* 1990*a*). Occasional individuals, from either California or elsewhere, move north and west and spend all or part of the winter in coastal California. Winter records at Lancaster, the south end of the Salton Sea, and near Bard suggest that a few birds may winter in the California deserts (England and Laudenslayer 1989*a*).

The diet of the Bendire's thrasher is primarily insects and other arthropods, but also includes seeds and berries (Ambrose 1963). Anecdotal reports of birds observed foraging or carrying prey to the nest indicate the diet is dominated by grasshoppers, beetles, caterpillars, and other larvae and pupae. Seeds and fruit are taken less often (Engels 1940; Bent 1948). The only quantitative study that examined stomach contents found that the diet was dominated by ants, termites, and *lepidoptera* larvae (Ambrose 1963).

Bendire's thrashers forage primarily on the ground (Engels 1940; Ambrose 1963), but will also glean vegetation for insects and pluck fruit (Ambrose 1963). They use the bill to peck and probe, and to hammer into the ground (Engels 1940). They will dig with the bill, but digging is not believed to be as powerful or efficient, and this technique is used less frequently than other thrashers (Ambrose 1963).

They do not scratch with their feet (Engels 1940; Ambrose 1963), and Bent (1948) reported one observation of a bird "running along between plant rows, occasionally jumping up into the air as if catching insects."

The breeding season habitat of Bendire's thrashers in California is typically described as Mojave desert scrub with either Joshua Trees (*Yucca brevifolia*), Spanish bayonet (*Yucca baccata*), Mojave yucca (*Y. schidigera*), cholla cactus (*Opuntia acanthocarpa*, *O. echinocarpa*, or *O. ramosissima*), or other succulents (Grinnell and Miller 1944; Bent 1948; Garrett and Dunn 1981; England and Laudenslayer 1989a). However, the species composition of the shrubs within these habitats is highly variable (England and Laudenslayer 1989*a*).

England and Laudenslayer (1989*b*) compared habitat parameters at points where Bendire's thrashers were found with those where they were absent, and identified several habitat relationships in the Mojave Desert of California. These results confirm that yuccas, Joshua Trees, and columnar cholla cactus are important components of Bendire's thrasher breeding habitat, and for California, they strongly suggest an interrelationship between the biology of the thrasher and members of the genera *Yucca* and *Opuntia*.

The breeding season distribution of Bendire's thrasher extends from southeastern California, southern Nevada, southern Utah, and southeastern Colorado, south through Arizona and western New Mexico to Sonora, northern Sinaloa, and extreme northern Chihuahua (Monson and Phillips 1981; AOU 1983; Alcorn 1988; England and Laudenslayer 1989a; Andrews and Righter 1992; England and Laudenslayer 1993; Howell and Webb 1995). The distributional details within this general range are poorly understood and documented. Breeding populations are very patchily distributed; apparently suitable habitat is disjunct and many apparently suitable sites are not occupied. During the winter, Bendire's thrashers withdraw from the breeding range in the Mojave and Great Basin deserts, on the Colorado Plateau, and on the Arizona/New Mexico Plateau (Hayward *et al.* 1976; Andrews and Righter 1992; England and Laudenslayer 1993).

Environmental baseline: The distributional details within this general range are poorly understood and documented. Breeding populations are very patchily distributed; apparently suitable habitat is disjunct and many apparently suitable sites are not occupied. The breeding distribution of Bendire's thrasher in California is restricted almost exclusively to the Mojave Desert. The most extensive and best known population is in the eastern Mojave Desert and extends in suitable habitat from the south side of the Kingston Range to the Old Woman Mountains and from near the Nevada-California border west to Halloran Summit and the Granite Mountains (Grinnell and Miller 1944; England and Laudenslayer 1993).

In the northern and western Mojave Desert, Bendire's thrashers are restricted to widely scattered locations supporting either Joshua Trees (*Yucca brevifolia*), other species of yuccas, or cholla cactus (*Opuntia* spp.). Large tracts of the desert, especially in the western Mojave Desert, support one or

more of these plant species but lack thrasher populations. Bendire's thrashers do breed very locally and sporadically in the Colorado Desert, where they are restricted to habitats with arborescent species such as palo verde (*Cercidium* spp.). This type of habitat is similar to that occupied in Arizona. Breeding records in the Colorado Desert are largely along the northern edges near the boundary with the Mojave Desert (e.g., near Vidal Junction and at Corn Springs) and in the northeast near the Colorado River (England and Laudenslayer 1989a). Outside the breeding season, Bendire's thrasher is a migrant and casual winter visitor (England and Laudenslayer 1989a; Rosenberg *et al.* 1991; England and Laudenslayer 1993).

The primary reasons for concern about the status of Bendire's thrasher populations in California are their disjunct distribution, apparently isolated populations, and presumed small population size. However, systematic surveys of breeding birds in New Mexico (Darling 1970) and California (England and Laudenslayer 1989*a*) greatly expanded the known distributions in both states. Regional surveys apparently are not available from other areas. Virtually no quantitative information is available about population densities, and most of our understanding of potential threats is based on an almost anecdotal knowledge of the ecology of this species.

Breeding populations are patchily distributed, suitable habitat is disjunct. Breeding Bird Survey results for the period 1990 - 2000 indicate a statistically significant decline in populations of 24% per year (USGS 2002*b*).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Ironwood State Prison	0	0	1*
Chuckawalla Valley State Prison	0.1	0.1	1*

* A single individual was killed on the electrified fence at Ironwood State Prison.

Based GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) there are no prison sites or mitigation sites within the summer range of this species though a single individual was killed at the Ironwood State Prison. This is possibly due to season migrations to and from winter grounds in Arizona and New Mexico.

San Diego Cactus Wren (*Campylorhynchus brunneicappillus sandiegensis*)

Status: California Species of Special Concern

Species description: One of eight subspecies of the cactus wren, the San Diego cactus wren is distinguished from other U.S. wrens by its much larger size and heavy spotting, which in adults gather into a cluster on the upper breast. White stripe over eye and white spots in outer tail (Peterson 1990). Plumage is intermediate between peninsular and continental races. Underparts with heavier spotting as in peninsular birds (versus desert birds to the east, which show distinct dark breast-patch and clear demarcation with pale belly) but upperparts are paler and the tail has more white banding than continental birds (Proudfoot *et al.* 2000).

The cactus wren is primarily insectivorous; e.g., beetles, ants and wasps, grasshoppers, butterflies and moths, true bugs, and spiders (Beal 1907; Storer 1920). It generally forages on the ground, turning over fallen leaves and other debris in search of insects. It also searches bushes and probes tree bark housing insects (Anderson and Anderson 1946).

Breeding occurs from March through June. Nests are placed in thickets of cacti. Several nesting pairs can often occupy the same stand of cacti even though the species is territorial. This subspecies is found only in coastal sage scrub with extensive stands of tall prickly pear or cholla cacti (Proudfoot *et al.* 2000).

The San Diego cactus wren is found in coastal sage scrub from southern Orange County, south through San Diego County to extreme northwestern Baja California (range as in Rea and Weaver 1990).

Environmental baseline: Once widespread in San Diego County, by 1990 it had been reduced to fewer than 400 pairs in about 55 colonies. Most of these are threatened by proposed developments, and most are doubtfully viable, as they consist of only one to four pairs. The long-tern viability of almost all others is questionable because of habitat fragmentation and degradation. Some of the larger colonies occur near Lake Jennings and around the San Diego Wild Animal Park (Ogden 1992).

Habitat manipulation in San Diego County, California, significantly reduced effective size of apparently isolated population in coastal sage-scrub community (Phillips 1986). Breeding Bird Surveys suggest cactus wren population numbers declined 1.4 percent in California between 1966 and 1998 (Sauer *et al.* 1999).

The coastal southern California populations of cactus wren is seriously endangered throughout its range, which is restricted, as far as is known, to coastal lowlands from the San Juan Creek drainage basin in Orange County south to the River drainage basin in extreme northwestern Baja California (Rea and Weaver 1990).

There are no occurrences of San Diego cactus wren within CNDDB (CDFG 2001*a*). There may be closer occurrences that have not been entered into CNDDB or recorded for input. There have also been no mortality of San Diego cactus wren at any prison site (EDAW 1999).

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California State Prison, Los Angeles		X
Calipatria State Prison		X
Centinela State Prison		X
Chuckawalla Valley State Prison		X
Ironwood State Prison		X
RJ Donovan Correctional Facility at Rock Mountain	X	
California City Desert Tortoise Natural Area		X
Starr Ranch Sanctuary		X

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Loggerhead Shrike (*Lanius ludovicianus*)

Status: California Species of Special Concern

Species description: The loggerhead shrike is a large-headed, gray, white, and black passerine with a hooked bill. It is gray on top and white below with a distinctive black facial mask; black wings. Bill is black and moderately curved; legs and feet are black. Loggerhead shrike has a horizontal perching posture (Yosef 1996).

The following species account is excerpted from: K.F. Campbell. Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California.

Adult loggerhead shrikes average about 1.66 ounces (47.5 g) in mass and 8.27 inches (210 mm) in total length. There are no thorough studies of longevity or survivorship, as efforts have been stymied by a lack of quantification of emigration and immigration rates (Yosef 1996).

Loggerhead shrikes are opportunistic and generalist in diet, with prey items including primarily arthropods, and as available, a variety of small to medium-sized vertebrates (Miller 1931; Chapman and Castro 1972; Reid and Fulbright 1981; Yosef 1992; Yosef 1996). The majority of the diet in all or nearly all areas is invertebrates, but prey can also potentially exceed the shrike in mass (Balda 1965).

The importance of vertebrates in the diet in desert areas is not well-established, but may be critical at some seasons. The species is known to occasionally forage on carrion, including road kills (Anderson 1976; Hayes and Baker 1987).

Grinnell and Miller (1944) state, of this species, that, "chief requisites are open terrain with well spaced lookout posts, at least two feet high, from which moving animals -- insects or small vertebrates -- may be seen below on the bare ground or in short or sparse grass. Densely timbered areas and chaparral are avoided." Garrett and Dunn (1981) add that, "Loggerhead Shrikes are very widespread in open and semi-open habitats throughout the lowlands of the region. Often only very limited taller vegetation is required. There is some expansion into open agricultural areas in winter." The same habitat types are occupied all year.

Loggerhead Shrikes are widely distributed across North America, from Alberta south to the Isthmus of Tehuantepec in southern Mexico, they are absent from heavily forested areas in the Pacific Northwest and Canada, as well as much of the midwestern and northeastern United States (Yosef 1996). The species departs northern areas in winter, with individuals remaining as far north as northern Nevada in the western United States. In the deserts of southern California there is a modest influx in winter, with breeding birds probably resident (Grinnell and Miller 1944).

Environmental baseline: This species has declined precipitously in portions of eastern North America, and Breeding Bird Survey data indicate a significant negative trend in much of the west (Peterjohn and Sauer; 1995; Sauer *et al.* 1995). The most recent Breeding Bird Surveys indicate the loggerhead shrike has declined precipitously in parts of the eastern North America, and western populations have a negative trend (USGS 2002*c*). There are no current estimates of population levels within California, though Christmas Bird Counts estimates are generally less than 2000 birds in California for the period 1990 to 2000.

Yosef (1996) notes that, "the loggerhead shrike is one of the few North American passerines whose populations have declined continent-wide in recent decades. Changes in human land-use practices, the spraying of biocides, and competition with species that are more tolerant of human-induced changes appear to be major factors contributing to this decline." The role of biocides has not been fully elucidated. Anderson and Duzan (1978) found thinning of eggshells in shrike eggs from southern Illinois, while Morrison (1979) found none in shrike eggs from California and Florida; however, for both studies, sample size was very small (Klaas *et al.* 1974). It remains unclear how such potential eggshell changes, and various tissue levels of biocides, affect loggerhead shrikes.

Based on studies summarized in Yosef (1996), the primary causes of direct mortality appear to be: (1) inclement weather (mainly affecting nestlings and fledglings); (2) predation (low nests and hunting posts, and frequent foraging bouts to the ground probably heighten their vulnerability, as does association with

habitat edges, a trait in common with many predators); (3) and collisions with vehicles and other man-made objects (the species often forages at road edges).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Avenal State Prison	0	0	6
California Correctional Center, Level III (Susanville I) High Desert State Prison (Susanville II)	0	0	2
California Correctional Institution, Level III (Tehachapi III)	0	0	5
California Correctional Institution, Level IVA (Tehachapi IV A)	0	0	1
California Institution for Men, West (Chino)	0	0	7
California State Prison - Los Angeles (Lancaster)	0	0	2
California State Prison - Corcoran California Substance Abuse Treatment Facility and California State Prison (Corcoran II)	0	0	4
California State Prison - Solano (Vacaville)	0	0	19
Calipatria State Prison	0	0	3
Centinela State Prison	0	0	1
Central California Women's Facility (Madera I) Valley State Prison for Women (Madera II)	0	0	26
Chuckawalla Valley State Prison	0	0	2
Ironwood State Prison	0	0	6
Pleasant Valley State Prison (Coalinga)	0	0	22
North Kern State Prison (Delano) California State Prison - Kern County at Delano II	0	0	3
R. J. Donovan Correctional Facility	0	0	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison	X	
Central California Women's Facility	X	
Chuckawalla Valley State Prison	X	
High Desert State Prison	X	
Ironwood State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Yellow Warbler (*Dendroica petechia*)

Status: California Species of Special Concern

Species description: The following species account is excerpted from: S.J. Myers. Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California.

Yellow warblers belong to the wood-warbler genus *Dendroica*, whose members generally possess distinct characteristics such as wing bars, tail spots, flank streaks, and patterning around the eyes (Dunn and Garrett 1997). Yellow warblers are 4.5-5.25 in. (11-13 cm) long, and weigh an average of 0.35 oz. (10 g) (Dunning 1984). Yellow warbler upperparts are yellow to greenish-yellow, with underparts bright yellow. Adult males have vertical reddish streaks on the breast. Males of subspecies in the *petechia* and *erithachorides* groups also have chestnut crowns and heads, respectively.

Across its vast range, the yellow warbler is a highly variable species. Forty-three subspecies are currently recognized, and are treated geographically as three groups. The *aestiva* group breeds throughout much of the U.S. and Canada, from northern Alaska and northern Yukon east to southern Labrador and Newfoundland, south to northern Georgia, and west to Alabama, Mississippi, Arkansas, Oklahoma, Texas (formerly), New Mexico, Arizona, and California. The *aestiva* group winters from Veracruz, Oaxaca, and Yucatán south to Peru and northern Brazil. The *petechia* group is resident from southernmost Florida and the Bahamas south through the West Indies to the northern coast of Venezuela (including Trinidad, Tobago, and Cozumel islands). The *erithachorides* group is resident from southern Baja California, Sonora, and southern Tamaulipas south along both coasts of Central America to eastern Panama; it also ranges along the west coast of South America from northwestern Colombia south to central Peru, and east along the northern coast of Colombia to northwestern Venezuela (AOU 1983; Dunn and Garrett 1997).

Three yellow warbler subspecies nest in California: *D. p. brewsteri* along the Pacific coast (plus a few desert locations), *D.p. morcomi* from the east slope of the Sierra Nevada to the Great Basin, and *D.p. sonorana* along the Colorado River (Dunn and Garrett 1997). Yellow warblers are commonly observed during migration in California, on both the Pacific slope and in the deserts and interior valleys (Garrett and Dunn 1981).

This species primarily eats insects, which, like most other wood-warblers, it captures by foliage gleaning (Bent 1953; Ehrlich *et al.* 1988). Male and female Yellow Warblers have exhibited marked differences in average foraging heights (Morse 1989).

In southern California, yellow warblers usually arrive on their nesting grounds at the end of March or the first week of April. The influx of migrants from breeding grounds to the north makes departure dates for southern California breeders difficult to determine. Spring migration numbers in southern California peak during the first half of May, and during September in the fall (Dunn and Garrett 1997).

In the California desert, yellow warblers occur in riparian woodland or forest dominated by cottonwoods and willows. The yellow warbler is a summer resident in the northern part of the state, occupying almost all the northern counties, except for the Central Valley. In the southern part of the State, this warbler occupies Sierra Nevada and coastal southern California locations in the summer. Rare, isolated coastal locations in southern California host this warbler year round. Usually found in riparian habitats in summer; also breeds in montane shrubbery in open conifer forests. In migration, visits woodland, forest, and shrub habitats (Zeiner *et al.* 1990*a*).

Environmental baseline: Most yellow warbler populations in the eastern U.S. appear to be stable. Western populations, however, are declining (Remsen 1978; Garrett and Dunn 1981; Dunn and Garrett 1997). Grinnell and Miller (1944) considered *D.p. brewsteri* to be common or abundant at many breeding localities, but there has been a steady and significant decline of Pacific coast populations (Dunn and Garrett 1997). The most serious decline has been along the Colorado River, where *D.p. sonorana* was thought to be extirpated (Rosenberg *et al.* 1991; Garrett and Dunn 1997), until surveys for the southwestern willow flycatcher (*Empidonax traillii extimus*) in 1997 revealed the presence of approximately 30 pairs between Topock and Picacho (McKernan and Braden 1998).

Habitat destruction and parasitism by brown-headed cowbirds are the primary threats to breeding yellow warblers. Habitat destruction can occur in many ways, with the most catastrophic losses resulting from clearing of large tracts of forest or woodland for agriculture, development, or flood control. Activities such as wood cutting can degrade or destroy suitable breeding habitat for this species.

Grazing by cattle or other livestock can have significant adverse effects on riparian habitats. In addition to eating seedlings, saplings, shrubs, and herbaceous plants, livestock trample vegetation and the substrate of riparian areas, causing increased erosion and sedimentation. These adverse effects lead to a reduction in cover and nesting sites for birds, along with declines in available insect prey (USFWS 1981; Crumpacker 1984). Smith (1989), studying the recovery of a riparian habitat in northern California following the exclusion of cattle, concluded that the establishment of good quality willow riparian habitat is possible only in the absence of cattle browsing.

Frequency of parasitism varies geographically, with a maximum rate of 59 percent of nests parasitized in Michigan. Friedmann does not include rates for *D.p. brewsteri*, but Gaines (1974) considered nesting yellow warblers in the Sacramento Valley to be highly susceptible to parasitism. Brown-headed cowbird parasitism on yellow warblers is a serious problem in southern California (Garrett and Dunn 1981). Brown-headed cowbirds are common in Morongo Valley and Victorville during the nesting

season. At the South Fork Kern River Valley the yellow warbler population has increased from 14 pairs in 1986 to approximately 500 pairs in 1997; an active brown-headed cowbird control program is thought to be responsible for this impressive recovery (S.A. Laymon, *pers. comm.*).

Occurrences within 5 mile of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
California Institution for Men, West (Chino)	3.00	3.00	1
Kern River Preserve	0.60	0.60	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles		X
California State Prison, Solano	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Calipatria State Prison	X	
Centinela State Prison		X
Central California Women's Facility	X	
Chuckawalla Valley State Prison		X
High Desert State Prison	X	
Ironwood State Prison		X
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pelican Bay State Prison	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area		X
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve		X

Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Yellow-breasted Chat (*Icteria virens*)

Status: California Species of Special Concern

Species description: The following species account is excerpted from: S.J. Myers. Undated. Prepared for the Planning Team, West Mojave Coordinated Management Plan, Bureau of Land Management. Riverside, California.

The yellow-breasted chat is the largest wood-warbler, and differs from other wood-warblers in behavior, vocalizations, and morphology. This species is characterized by its large size, bright yellow throat and breast, white belly, uniform olive-green upperparts, and distinct white "spectacles," which contrast with a black or gray loral area (Dunn and Garrett 1997). The Yellow-breasted Chat is 7-7.5 inches (17-19 cm) long, and weighs an average of approximately 0.9 oz (26 g). The western subspecies (*I. v. auricollis*) has a longer tail than the eastern subspecies (*I. v. virens*), by an average of ¼ inch (6mm) (Dennis 1958; Dunning 1984; Dunn and Garrett 1997).

The yellow-breasted chat's diet is comprised of insects, including beetles, bugs, ants, weevils, bees, wasps, mayflies, and caterpillars, and wild fruit such as elderberries, blackberries, and grapes. It forages for insects by gleaning foliage and branches (Bent 1953; Ehrlich *et al.* 1988).

Yellow-breasted chats occur in a wide variety of habitats across the U.S., including thickets and brambles of willows and thorny vegetation at the edges of deciduous forests in the east, and mesquite in the southwest (Phillips *et al.* 1964; Dunn and Garrett 1997).

The yellow-breasted chat breeds from southern British Columbia, southern Alberta, southern Saskatchewan, North Dakota, southern Minnesota, southern Wisconsin, southern Michigan, southern Ontario, central New York, southern Vermont, and southern New Hampshire south to Baja California, Jalisco, the state of México, Tamaulipas, the Gulf coast, and north-central Florida. It winters from southern Baja California, southern Sinaloa, southern Texas, and southern Florida south through Middle America to western Panama (AOU 1983; Dunn and Garrett 1997). Chats are known to wander northward following breeding, at least in the eastern U.S. (Harrison 1984).

Environmental baseline: In California, yellow-breasted chats nest locally in riparian habitats the length of the state, including several widely-scattered desert locations. They are uncommonly observed in California during spring migration, and rarely observed during fall migration. There are only a few winter records for the west coast of California, and north to Oregon (Garrett and Dunn 1981; Small 1994).

Yellow-breasted chat populations in the eastern U.S. have declined significantly in recent times. Western populations are generally stable, but some local declines have occurred in California as a result of urbanization, flood control activities, and cowbird parasitism (Dunn and Garrett 1997). A serious decline has occurred along the Colorado River (Remsen 1978; Hunter 1984; Rosenberg *et al.* 1991).

Habitat destruction and parasitism by brown-headed cowbirds are the primary threats to breeding yellow-breasted chats. Habitat destruction and degradation occurs in many ways, with the most catastrophic losses resulting from clearing of large tracts of forest or woodland for agriculture, development, or flood control. In southern California, yellow-breasted chats rely heavily on early seral stage willows for nesting, so flood control maintenance involving the removal of vegetation along active river channels can destroy habitat, at least temporarily.

Grazing by cattle or other livestock can have significant adverse effects on riparian habitats. In addition to eating seedlings, saplings, shrubs, and herbaceous plants, livestock tramples vegetation and the substrates of riparian areas, causing increased erosion and sedimentation. These adverse effects lead to a reduction in cover and nesting sites for birds, along with declines in available insect prey (USBLM 1981; Crumpacker 1984). Smith (1988), studying the recovery of a riparian habitat in northern California following the exclusion of cattle, concluded that the establishment of good quality willow riparian habitat is possible only in the absence of cattle browsing.

Brown-headed cowbird parasitism on yellow-breasted chats may be a serious problem in southern California (Garrett and Dunn 1981). Brown-headed cowbirds are common in Morongo Valley and along the Mojave River during the nesting season. Both of these areas are commonly used for horseback riding; stables, which provide feeding areas for cowbirds (Laymon 1987), are located near riparian habitats in these areas.

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
California Institution for Men, West (Chino)	2.85	2.85	1
Kern River Preserve	0.60 - 2.50	1.55	2

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Institution for Men, West	X	
California State Prison, Solano	X	
California State Prison, Sacramento	X	
Calipatria State Prison		X***
Centinela State Prison		X***
Chuckawalla Valley State Prison		X***
Ironwood State Prison		X***
Mule Creek State Prison		X***
Pelican Bay State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Humboldt Bay National Wildlife Refuge	X	
Kern River Preserve	X	
Mayacama Mountains Sanctuary	X	
Paul L. Wattis Sanctuary	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

*** Based on species occurrences within CNDDB (CDFG 2001*a*), these prisons may be which seasonal movement areas between summer and winter ranges for this species.

Southern California Rufous-crowned Sparrow (*Aimophila ruficeps canescens*)

Status: California Species of Special Concern

Species description: The Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) is a small bird with a small bill. The wing and tail are longer and the bill smaller than the similar *A. r. ruficeps*. Adult rufous-crowned sparrows are distinguished by the distinctly bicolored bill with yellow-orange lower mandible. Upper parts are chestnut with grayish-buff streaking and the underparts are brown with a grayish wash (Collins 1999).

The rufous-crowned sparrow is diurnally active throughout the year (Zeiner *et al.*1990). All rufous-crowned sparrow activities are focused on and around the ground, usually in the area of dense vegetative cover (Grinnell and Miller 1944; Bent 1968; Root 1988). The southern California rufous-crowned sparrow forages on the ground in herbage and in leaf-litter beneath shrubs, gleaning from the ground and foliage. It also gleans the foliage of live oak, foraging predominantly on insects during the breeding season. During other times of the year its diet includes seeds, grasses, and forb shoots (Bent 1968). Rufous-crowned sparrows are relatively secretive, seeking cover in shrubs, rocks, and grass and forb patches, concealing their nest on the ground at the base of a grass tussock or shrub or about 1

to 3 feet above the ground (Terres 1980). In southern California coastal sage scrub, the territory size averages 2.0 acres with a range from 1.2 to 3.2 acres (Bent 1968). The species is not gregarious and is generally found in groups composed of no greater than five or six (Bent 1968) which exist in scattered metapopulations across patchy landscapes.

Optimal habitat for the southern California rufous-crowned sparrow (rufous-crowned sparrow) consists of sparse, low brush or grass, on hilly slopes preferably interspersed with boulders and rock outcrops (Grinnell and Miller 1944; Bent 1968; Unitt 1984; Ehrlich *et al.* 1988; Root 1988). Some observers have noted a preference for south-facing slopes and an affinity for California sagebrush (*Artemisia californica*) over other vegetative types (Grinnell and Miller 1944; Bent 1968; Root 1988). It also colonizes grass that grows as a successional stage following brush fires (Unitt 1984) and may occur on steep, grassy slopes without shrubs if rock outcrops are present (Zeiner *et al.* 1990*a*).

The rufous-crowned sparrow (*Aimophila ruficeps*) is largely a resident species and occurs in central California, northcentral Arizona, southwestern New Mexico, southeastern Colorado, northwestern and central Oklahoma, south discontinuously to southern Baja California and mainland Mexico. East of the Rocky Mountains, it winters from central and southern Oklahoma to northern Texas and south into Mexico (Terres 1980).

Environmental baseline: The current range and distribution of the southern California subspecies is extremely restricted to a narrow belt of semiarid coastal sage scrub and sparse chaparral from Santa Barbara south to the northwestern corner of Baja California, Mexico. (Grinnell and Miller 1944; Bent 1968; Zeiner *et al.* 1990*a*; Unitt 1984).

Fragmentation of suitable scrub habitat adversely affects the relative abundance of rufous-crowned sparrows. They are more abundant in larger patches of suitable coastal scrub habitat than in smaller, more fragmented patches (Bolger *et al.* 1997). From 1966 to 1991 there were significant increases in Southern California (5.0 percent), Arizona (3.1 percent), and the entire western U.S. (3.6 percent). However, between 1982 and 1991 populations declined in Texas (-8.1 percent) and the Osaga Plain-Cross Timbers physiographic region (-5.8 percent). The overall trend for U.S. populations between 1966 and 1995 was stable (Collins 1999). This data is for *Aimophila ruficeps*. No data is available specifically for the coastal subspecies, *A. r. canescens*. Because of the presumed wide distribution of this species, determination of critical populations does not appear to have been evaluated on a broad scale for conservation purposes (Dudek & Associates 2000).

The loss of coastal sage scrub for agriculture and urban development has reduced the available habitat for this resident species (Bent 1968; Unitt 1984). Other stressors include a range of avian, mammalian and reptilian predators, both native and domestic, that find the ground-nesting habit of this bird an easy target (Bent 1968). Bolger *et al.* (1997) studied the 20-most common bird species within a 100 square-miles area of coastal San Diego County in relation to edge and fragmentation sensitivity. The

rufous-crowned sparrow was found to be one of four species whose abundance is most reduced by presence of edges/fragmentation.

The closest southern California rufous-crowned sparrow occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 8.2 miles to R.J. Donovan Correctional Facility. The closest southern California rufous-crowned sparrow occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 16.7 miles to Starr Ranch Sanctuary. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Correctional Institution, Level III		X
California Correctional Institution, Level IVA		X
California Correctional Institution, Level IVB		X
California Institution for Men, West		X
California State Prison, Sacramento		X
Mule Creek State Prison		X
RJ Donovan Correctional Facility at Rock Mountain		X
Kern River Preserve		X
Mayacama Mountains Sanctuary		X
Starr Ranch Sanctuary		X

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Bell's Sage Sparrow *(Amphispiza belli belli)*

Status: California Species of Special Concern

Species description: A subspecies of the sage sparrow, this grayish, brown sparrow has a combination of a single breast spot and heavy dark "whiskers" on each side of the throat. It has dark cheeks, white eye-ring, and a touch of whitish in front of the eye. It is much darker with heavier black whiskers than the sage sparrow (Peterson 1990).

The sage sparrow forages mainly on the ground among shrubs within sage scrub or chaparral. They also glean prey from lower main stems of shrubs, occasionally from leaves. This species is categorized as a ground foraging omnivore during the breeding season, and as a ground-gleaning granivore during the nonbreeding period (DeGraaf *et al.* 1985; Polis 1991). Foods taken during the breeding season include adult and larval insects, spiders, seeds, small fruits, and succulent vegetation. Fall, winter, and early-spring foods include small seeds, plant material, and insects when available (Martin and Carlson 1998).

They nest in low dense shrubs and form small feeding flocks during the non-breeding season. The sage sparrow is locally common in sage scrub and chaparral habitats.

A localized resident in Coast Ranges of California from Marin County (coastally) and Trinity County (inland) south through western California to north, central Baja California. It also occurs along the western slope f the central Sierra Nevada from El Dorado County south to Mariposa Count. (Martin and Carlson 1998). It is a scattered and localized resident in San Diego County (Unitt 1984). Although the Bell's sage sparrow is essentially sedentary over much of its range, northernmost breeding populations in California are migratory, and other populations move down-slope from higher elevations during winter (Martin and Carlson 1998).

Environmental baseline: Breeding densities measured with breeding bird census method for Bell's sage sparrow were 94-111/km^2 in unburned coastal sagebrush scrub near Perris, Riverside County, California (Carlson 1983). In the same study, densities in first-year burns varied from 6/km^2 in poor recovery areas to 39/km^2 in burns with faster recovery. By the third year, the density in the are that recovered faster was 67/km^2.

Through the West, the Breeding Bird Surveys indicate decline (1966-1991) of 1.0-2.3 percent ; Arizona, Idaho, and Washington showed the largest decline (1982-1991; Robbins *et al.* 1986; Saucer *et al.* 1996). For western states, too few routes to sufficiently assess trend data, but preliminary discussions ranking species and habitat type fro conservation and/or management efforts by the Western Working Group of Partners in Flight indicate that the sage sparrow will be a priority species (Martin and Carlson 1998).

According to Unitt (1984), this species "merits attention because of its predilection for mesa tops and other areas of nearly flat topography," i.e., highly developed areas. The sage sparrow is believed to be sensitive to disturbance and habitat fragmentation, often being absent from small habitat fragments that support other scrub birds.

The closest Bell's sage sparrow occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 20.7 miles to California Institution for Men, West (Chino). The closest Bell's sage sparrow occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 13.8 miles to Mayacama Mountain Sanctuary. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison		X
California Correctional Center, Level III		X
California Institution for Men, West		X
California State Prison, Kern County at Delano II		X
California State Prison, Los Angeles		X
Calipatria State Prison		X
Chuckawalla Valley State Prison		X
High Desert State Prison		X
Ironwood State Prison		X
Mule Creek State Prison		X
North Kern State Prison		X
Pleasant Valley State Prison		X
RJ Donovan Correctional Facility at Rock Mountain		X
Salinas Valley State Prison		X
Wasco State Prison, Reception Center		X
California City Desert Tortoise Natural Area		X
Kern River Preserve		X
Mayacama Mountains Sanctuary		X
Starr Ranch Sanctuary		X

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Tricolored Blackbird (*Agelaius tricolor*)

Status: Federal Species of Concern
California Species of Special Concern

Species description: Particulars concerning the physical description and life history can be found in Neff (1937). Additional information can be found in the *Draft Recovery Plan for the Giant Garter Snake* (USFWS 1999).

Tricolored blackbirds feed on both plant and animal matter, depending mostly on season. In spring and summer the majority of their diet is composed of insects, grasshoppers, and spiders; in the fall and winter, seeds and grain crops such as oats and rice constitute the dominant food items (CDFG 1990a). An abundant, concentrated supply of insects is important to the success of tricolored blackbird breeding colonies. Foraging occurs on the ground in croplands, grassy fields, flooded land, and along edges of ponds (Zeiner *et al* 1990).

In studies conducted prior to the 1990s, the most common substrates used by tricolored blackbird were cattail and bulrush marshes, and Himalaya blackberries (Neff 1937; DeHaven *et al.* 1975a). During the 1990s, along with these substrates, a significant number of colonies have been recorded utilizing certain spiny grain crops, including barley and wheat grown for either grain or dairy silage (Beedy and Hamilton 1999). Sporadic nesting also occurs in other dense, protective vegetation such as willows, nettles, thistles, giant cane, and safflower, and at sites with various mixtures of the recorded wetland and upland vegetation types (DeHaven *et al.* 1975*a*; Beedy and Hamilton 1999). In several recent years, over half of the total yearly breeding effort has occurred in blackberries and other non-native plant substrates (Beedy and Hamilton 1997). During one recent study, the overall reproductive success for entire colonies was higher in blackberry colonies than in cattail marshes (Cook 1996), although great variation can occur between years.

Over 99 percent of the entire tricolored blackbird population occurs in California (Beedy and Hamilton 1999). The California distribution of this species extends throughout the Central Valley, surrounding foothills, coastal areas, and scattered inland areas of northern and southern California (Beedy and Hamilton 1999). A small segment (<1 percent) of the population also extends into scattered sites in Oregon, western Nevada, central Washington, and western coastal Baja California (Beedy and Hamilton 1999).

Environmental baseline: Neff (1937), in 1937, located as many as 736,000 breeding adults in 1934 from surveys of just eight California counties. While recent efforts have shown the species' geographic range mostly unchanged compared to the 1930s (Neff 1937) and 1970s (DeHaven *et al.* 1975*a*), they do provide strong evidence of a continuing overall population decline. The recent population declines have been most apparent in historical strongholds of the species' range in the Central Valley, including Fresno, Kern, Merced, and Sacramento counties, although range-wide losses are evident as well (Beedy *et al.* 1997). Surveys in late April of 1997, reported by Beedy and Hamilton, found roughly 230,000 breeding tricolored blackbirds in California (USFWS 1999). A follow up survey conducted in 1999 found fewer than 95,000 breeding individuals. The preliminary estimate for a different survey conducted during the spring of 2000 is 162,000 birds (W. J. Hamilton III, *pers. comm.*). The CNDDB (CDFG 2001*a*) shows a total of 79 occurrences in the Sacramento County of which 73 occurrences presumed extant, 5 possibly extirpated, and 1 Extirpated.

DeHaven (2000) found that a large population decline was evident from the 1970s to the present and that much of the present-day breeding habitat is associated with land conversions associated with large dairy operations in the San Joaquin Valley. DeHaven also found that silage harvest, associated with dairy feed, has had an adverse impact on breeding tricolored blackbirds. The report concludes that future increases in the tricolored blackbird will likely be obtained through; (1) potentially large increments of reproductive output, provided the silage harvest effects are minimized, and (b) possible long-term stabilization and management of existing, high-value tricolored blackbird habitat associated with large dairies.

The main causes for decline of the tricolored blackbird are loss of native wetland habitat for nest building, loss of associated foraging habitat, disturbance and mortality by predators and humans, destruction of colonies by agricultural practices, direct poisoning, and poisoning by selenium (Beedy *et al.* 1991). Existing colonies in active agricultural fields are susceptible to destruction when crops are harvested (Beedy and Hamilton 1997). Tricolors are particularly susceptible to mowing and heavy grazing during the breeding season (Hamilton *et al* 1994). Of particular concern is the harvesting of silage fields that have tricolor colonies in them. Large colonies of tricolors have been completely destroyed when the silage is harvested (Beedy and Hamilton 1997). e loss of native vegetation causes tricolors to concentrate in large colonies. Large concentrated colonies are more vulnerable to catastrophic events that may destroy the entire colony (Hamilton *et al* 1994).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Avenal State Prison	0	0	23
California Correctional Center, Level III (Susanville I) High Desert State Prison (Susanville II)	0.60 - 2.45	1.53	2
California State Prison - Corcoran California Substance Abuse Treatment Facility and California State Prison (Corcoran II)	2.00 - 4.90	3.53	8
California State Prison - Sacramento (New Folsom)	0 - 3.35	2.16	4
R. J. Donovan Correctional Facility	0	0	10
California City Desert Tortoise Natural Area	2.15 - 2.35	2.25	3
Kern River Preserve	0.30 - 2.50	1.53	3
Starr Ranch Sanctuary	1.05 - 4.85	2.43	6

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Center, Level III	X	
California Institution for Men, West	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Sacramento	X	
California Substance Abuse Treatment Facility	X	
Central California Women's Facility	X	

High Desert State Prison	X	
Mule Creek State Prison	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pleasant Valley State Prison	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Humboldt Bay National Wildlife Refuge		
Kern River Preserve	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

San Diego Black-tailed Jackrabbit *(Lepus californicus bennettii)*

Status: California Species of Special Concern

Species description: A distinctive, long-legged hare with very long ears and tail black (or partly black) dorsally and grayish ventrally.

They are strictly herbivorous, preferring grasses and forbs. Chew and Chew (1970) reported a diet of 65 percent shrub browse and 35 percent herbage. These rabbits breed throughout the year, with the greatest number of births occurring from April through May. Females may have up to 4 litters per year consisting of 3 to 4 young. Unlike other jackrabbit species, the San Diego black-tailed jackrabbit does not construct a nest; young are born beneath vegetation which provides overhead cover (Zeiner *et al.* 1990*b*). Based on current literature, average home range for this species is 45 acres ((Zeiner *et al.* 1990*b*).

It inhabits open lands but requires some shrub for cover. Typical habitats include early stages of chaparral, open coastal sage, and grasslands near the edges of brush.

The black-tailed jackrabbit is widely distributed in California about forested areas and eastern slopes of the high mountains. Common in deserts, irrigated pastures, and row crops (Jameson and Peeters 1988). The San Diego subspecies ranges from the southern half of Santa Barbara County south through Ventura County, the southwestern portion of Los Angeles County, Orange County, the southwestern tip

of San Bernardino County, the western portion of Riverside County, the western portion of San Diego County, through the northwestern portion of Baja California (Hall 1981).

Environmental baseline: The San Diego subspecies of black-tailed jackrabbit is threatened by the loss of scrub habitats through continued development in southern California.

The closest San Diego black-tailed jackrabbit occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 8.1 miles to R.J. Donovan Correctional Facility. The closest San Diego black-tailed jackrabbit occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 17.6 miles to Starr Ranch Sanctuary. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Institution for Men, West	X	
RJ Donovan Correctional Facility at Rock Mountain	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source. Hall (1981) provided coarse scale distribution maps for subspecies.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

San Joaquin Pocket Mouse (*Perognathus inornatus inornatus*)

Status: Federal Species of Concern
California Species of Special Concern

Recovery Plan: U.S. Fish and Wildlife Service. 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Portland, Oregon.

Species description: The San Joaquin pocket mouse is a small buff-orange colored mouse with a sprinkling of darker guard hairs on its back; it does not contain the spiny hairs found in some of the other species of pocket mice. An indistinct lateral line which separates the lighter belly hairs from the darker back can be observed on most individuals. Some distinctive characteristics are short ears that may have a patch of lighter hair at their base; a hind foot that has hair on the sole; a long tail that is covered with hair, is unicolored, and has a small tuft of hair on the tip. The external fur-lined cheek patches are used to store seeds of grasses and forbs which are carried back to, or near, their dens for eating.

The diet of the pocket mouse consists of seeds and soft bodied insects. Seeds of grasses, forbs, and shrubs such as Atriplex are the main food source and soft bodied insects such as cutworms and even grasshoppers are also eaten. The pocket mouse lives in arid habitats, therefore all water needs are metabolized through seed digestion. The foraging habits of the pocket mouse tend to occur under the cover of shrubs and even above the ground within a shrub. They generally do not travel far to forage and stay out of relatively open areas.

The breeding season for the San Joaquin pocket mouse is from March to July and the females have at least two litters [a season] of four to six young per litter. It is believed that the young will remain in the birthing den until mature, however, the length of time to maturity is uncertain (Jameson and Peeters 1988).

Typical habitat includes areas with friable soils in grasslands and blue oak savannas, from near sea level to about 1,500 feet in elevation. The oldest and largest collections, made near the beginning of the century, were from areas of wind-drifted and stream-deposited sand, a habitat that has essentially disappeared due to cultivation and urban development (Williams and Kilburn 1992).

The pocket mouse's historic range includes most of the Central Valley (Ingles 1965). Its approximate range includes the Sacramento Valley from Tehama County southward, and the San Joaquin Valley to Rose Station.

Environmental baseline: Twelve occurrences in western Kern County have been recorded, and all are in the vicinity of Nuevo/Torch lands (CDFG 1997). The entire Nuevo/Torch Plan Area is assumed to be suitable habitat for the San Joaquin pocket mouse (Nuevo/Torch 1998). San Joaquin pocket mouse biology is little understood. It is known that the mouse is active during the night, and might become inactive (torpid) during extreme heat or cold. Therefore it is susceptible to entombment during the day, and on extremely hot summer days and during the winter. The mouse is probably susceptible to vehicle strikes at night during the summer. Impacts to the mouse will be minimized by Nuevo/Torch implementing avoidance and minimization measures, as well as by setting aside occupied habitat in the Lokern Area.

The San Joaquin pocket mouse is designated as a species of concern by the USFWS and a species of special concern by the CDFG (Zeiner *et al.* 1990*b*). Little information is available on the basic biology of the San Joaquin pocket mouse (pocket mouse), and its taxonomic status is not settled (Williams and Kilburn 1992). The San Joaquin pocket mouse has deep fur-lined cheek pouches, and is granivorous, solitary, and nocturnal, like other pocket mice. The mouse may become torpid during extreme heat or cold (Zeiner *et al.* 1990*b*).

Threats to the San Joaquin pocket mouse include habitat reduction, fragmentation and degradation from human activities. (Williams and Kilburn 1992). Even less is known about the San Joaquin pocket mouse than the Tulare grasshopper mouse. Threats are probably similar (habitat reduction, fragmentation, and degradation during development of San Joaquin Valley land for agriculture, and use of insecticides on natural lands to control beet leafhoppers). Twelve occurrences in western Kern County have been recorded (CDFG 1997).

Individual San Joaquin pocket mice also may be subject to harassment resulting from increased levels of human disturbance and vehicle use. The San Joaquin pocket mouse also may be adversely affected through temporary loss or degradation of their habitats. Because the San Joaquin pocket mouse is a burrowing animal, oil and gas activities involving ground disturbance may impact the species. Destruction of burrows may result in a net reduction of burrowing habitat used by these animals for shelter, reproduction, and escape cover. Animals may be displaced into adjacent areas resulting in increased predation, exposure, or stress through disorientation and loss of shelter. The viability of the species is dependent upon the protection of habitat.

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Avenal State Prison	2.90 - 4.40	3.66	2
Pleasant Valley State Prison (Coalinga)	2.95	2.95	1
Allensworth Ecological Reserve	1.75	1.75	1
Kern River Preserve	0.30	0.30	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles	X	
California State Prison, Solano	X	
California Substance Abuse Treatment Facility	X	
Central California Women's Facility	X	
North Kern State Prison	X	
Northern California Women's Facility	X	
Pleasant Valley State Prison	X	

Salinas Valley State Prison	X	
Valley State Prison for Women	X	
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area	X	
Kern River Preserve	X	
Paul L. Wattis Sanctuary	X	
Stanislaus River Park	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Short-nosed Kangaroo Rat (*Dipodomys nitratoides brevinasus*)

Status: Federal Species of Concern
California Species of Special Concern

Recovery Plan: U.S. Fish and Wildlife Service. 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Portland, Oregon.

Species description: The short-nosed kangaroo rat is a small nocturnal rodent, one of three recognized subspecies of the San Joaquin kangaroo rat (*Dipodomys nitratoides*). It can be distinguished from other kangaroo rats within the genus *Dipodomys* by its diminutive size and absence of a small fifth toe on the hind feet. At present this subspecies is separated from the Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*) by artificial geographic criteria. The short-nosed kangaroo rat occupies the areas west of the California Aqueduct and south of Buena Vista and Kern lakes.

Most females appear to have only a single litter, and young-of-the-year females appear to have reproduced only when there is a prolonged wet season (Williams *et al.* 1993; ESRP *unpubl. data*). Like other subspecies of the San Joaquin kangaroo rat, populations of the short-nosed kangaroo rat undergo dramatic population fluctuations, and sometimes disappear from an area (Williams *et al.* 1993; ESRP *unpubl. data*)

Short-nosed kangaroo rats are nocturnal and active year round. They do not become dormant. They frequently appear above ground shortly after sunset and before dark (Tappe 1941).

Short-nosed kangaroo rats occupied arid grassland and shrubland associations along the western half of the Valley floor and hills on the western edge of the Valley from about Los Banos, Merced County, south to the foothills of the Tehachapi Range and extending east and northward inland above the edge of the Valley floor to about Poso Creek, north of Bakersfield. They also occurred on the Carrizo Plain and

the upper Cuyama Valley (Grinnell 1920; 1922; Boolootian 1954; Hoffmann 1974; Hafner 1979; Hall 1981; Williams 1985; Williams and Kilburn 1992; Williams *et al.* 1993).

Environmental baseline: Current occurrences are incompletely known because there has not been a comprehensive survey for the species. Yet relatively intensive trapping surveys at several historically occupied sites with extant natural communities show that populations mostly are small, fragmented, and widely scattered.

The largest existing population of short-nosed kangaroo rats is in western Kern County in the Lokern and Elk Hills region. Though several thousand acres are in public ownership, relatively little of it is adequately protected by title or statute. Currently there is talk in Congress and elsewhere of selling the NPR to corporate interests (Henry 1995*a;* Henry 1995*b*). If this should happen, the long-term protection of the natural communities in the NPR is in doubt. This change alone probably would warrant listing of the short-nosed kangaroo rat as threatened or endangered. Unless a substantial proportion of the occupied habitat can be protected from development and the habitat managed by appropriate land uses, additional habitat fragmentation and habitat degradation could lead to extinction of this population by environmental stoichasticity.

The main cause for decline of short-nosed kangaroo rats was the extensive agricultural developments of the 1960s through 1970s within their range, made possible by the Central Valley and State Water projects. Loss of the best habitats and the largest populations they supported, together with fragmentation and isolation, and subsequent random catastrophic events (e.g., drought, flooding, fire), have apparently caused their elimination from some sites still undeveloped. In limited areas, widespread broadcasting of rodenticides to control California ground squirrels (and sometimes kangaroo rats) may have contributed to elimination of some populations (Williams and Kilburn 1992).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Pleasant Valley State Prison (Coalinga)	1.55 - 3.15	2.45	5

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	

California Substance Abuse Treatment Facility	X	
Central California Women's Facility		X
North Kern State Prison	X	
Pleasant Valley State Prison	X	
Valley State Prison for Women		X
Wasco State Prison, Reception Center	X	
Allensworth Ecological Reserve		X

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source. Hall (1981) provided coarse scale distribution maps for subspecies.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Southern Grasshopper Mouse (*Onychomys torridus ramona*)

Status: Federal Species of Concern
California Species of Special Concern

Species description: A heavy-bodied mouse with a buff to cinnamon dorsum and white belly. The tail is thick, usually more than 50 percent of the total length. (Jameson and Peeters 1988). Grasshopper mice are nocturnal. They have a high-pitched voice, which can be heard long before they are seen. The nest is usually made in a burrow dug by another mammal (Ingles 1965).

For southern grasshopper mice in general, breeding occurs throughout the year in laboratory settings, but is seasonal in natural populations (McCarty 1975). Gestation is between 27 and 32 days, with two to six young born per litter. Most litters are born from May through July, with a sharp decline in August (Taylor 1968). Both male and female southern grasshopper mice care for the young (Horner 1961).

The reproductive efficiency of female grasshopper mice declines significantly following the first year. Taylor (1968) reported that only 17 percent (8 of 47) of females that bore young in the laboratory bred in their second year, and only 2 percent (1 of 47) continued into the third year. Female southern grasshopper mice rarely remain reproductively active in the laboratory after 2 years of age. The oldest female to successfully rear a litter was 24 months old. The oldest male to sire a litter was 31 months old (Pinter 1970). Southern grasshopper mice survived in the laboratory up to 3 years, but mice in the wild probably live less than 12 months (Horner and Taylor 1968).

Females appear to be sexually active for a single breeding season, with a rapid onset of reproductive senility following the first year. Females born early in the year (April) may produce two or three litters prior to the end of the breeding season. Females born later in the year would have the potential to produce up to six litters in the following breeding season, but seasonality of breeding probably reduces the actual number to one to three litters. Distinct lulls in the testicular activity of males during the breeding season also may contribute to low population densities (Taylor 1963).

Generally, southern grasshopper mice exist at relatively low density and have home ranges much larger than similarly-sized rodents such as white-footed mice (McCarty 1975).

The most consistent social unit is reported to be a male-female pair with offspring in a burrow system within a wide home range (McCarty 1975). Blair (1943) reported the home range size of male southern grasshopper mice was 7.8 acres, and that of females was 5.9 acres. The nest of the southern grasshopper mouse is typically located in a burrow system that may have been abandoned by another small mammal (Bailey and Sperry 1929; Hall and Kelson 1959).

Adult males are highly territorial and frequently vocalize during nocturnal activity. Adult males emit a high-pitched call, lasting several seconds, while standing on the hind legs with head raised and mouth open. Calls are less frequently given by females. Calling appears to function as a territorial and spacing mechanism (McCarty 1975).

The grasshopper mouse Feeds almost exclusively on arthropods, especially scorpions and orthopteran insects (Horner *et al.* 1964). Vertebrate prey include salamanders, lizards, frogs, and small mammals (McCarty 1975). Both vertebrate and seeds are minor components of the diet (Bailey and Sperry 1929; Horner *et al.* 1964).

Environmental baseline: Common in arid desert habitats of the Mojave Desert and southern Central Valley of California. Alkali desert scrub and desert scrub habitats are preferred, with somewhat lower densities expected in other desert habitats, including succulent shrub, wash, and riparian areas. Also occurs in coastal scrub, mixed chaparral, sagebrush, low sage, and bitterbrush habitats. Uncommon in valley foothill and montane riparian, and in a variety of other habitats.

The closest southern California rufous-crowned sparrow occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 8.2 miles to R.J. Donovan Correctional Facility. The closest southern California rufous-crowned sparrow occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 16.6 miles to Starr Ranch Sanctuary. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison		X
California Correctional Institution, Level III		X
California Correctional Institution, Level IVA		X
California Correctional Institution, Level IVB		X
California Institution for Men, West		X
California State Prison, Kern County at Delano II		X
California State Prison, Los Angeles		X

Calipatria State Prison		X
Centinela State Prison		X
Chuckawalla Valley State Prison		X
Ironwood State Prison		X
North Kern State Prison		X
Pleasant Valley State Prison		X
RJ Donovan Correctional Facility at Rock Mountain		X
Wasco State Prison, Reception Center		X
Allensworth Ecological Reserve		X
California City Desert Tortoise Natural Area		X
Kern River Preserve		X
Starr Ranch Sanctuary		X

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Tulare Grasshopper Mouse (*Onychomys torridus tularensis*)

Status: Federal Species of Concern
California Species of Special Concern

Recovery Plan: U.S. Fish and Wildlife Service. 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Portland, Oregon.

Species description: The Tulare grasshopper mouse has a stout bodies with short, relatively thick tails. The pelage is sharply bicolored with the head, back, and upper sides pale-brown to grayish or pinkish cinnamon and the underparts white and distinctly different from the upper parts. The tail is usually bicolored with a white tip (Hall and Kelson 1959; McCarty 1975). Juvenile pelage is gray; adult pelage is buffy or tawny; and the pelage of older individuals may be gray, closely resembling subadults in color (Hall and Kelson 1959). Within-species variation in adult coat color may be a result of adaptation to local environmental conditions (McCarty 1975).

Specific information on the reproduction and the mating system of Tulare grasshopper mice is unknown. For southern grasshopper mice in general, breeding occurs throughout the year in laboratory settings, but is seasonal in natural populations (McCarty 1975). Gestation is between 27 and 32 days, with two to six young born per litter. In the wild, Tulare grasshopper mice may produce up to three litters per year. Most litters are born from May through July, with a sharp decline in August (Taylor 1968). Both male and female southern grasshopper mice care for the young (Horner 1961).

The reproductive efficiency of female grasshopper mice declines significantly following the first year. Taylor (1968) reported that only 17 percent (8 of 47) of females that bore young in the laboratory bred in their second year, and only 2 percent (1 of 47) continued into the third year. Female southern grasshopper mice rarely remain reproductively active in the laboratory after 2 years of age. The oldest female to successfully rear a litter was 24 months old. The oldest male to sire a litter was 31 months old (Pinter 1970). Southern grasshopper mice survived in the laboratory up to 3 years, but mice in the wild probably live less than 12 months (Horner and Taylor 1968).

Females appear to be sexually active for a single breeding season, with a rapid onset of reproductive senility following the first year. Females born early in the year (April) may produce two or three litters prior to the end of the breeding season. Females born later in the year would have the potential to produce up to six litters in the following breeding season, but seasonality of breeding probably reduces the actual number to one to three litters. Distinct lulls in the testicular activity of males during the breeding season also may contribute to low population densities (Taylor 1963).

The most consistent social unit is reported to be a male-female pair with offspring in a burrow system within a wide home range (McCarty 1975). Blair (1943) reported the home range size of male southern grasshopper mice was 7.8 acres, and that of females was 5.9 acres. The nest of the southern grasshopper mouse is typically located in a burrow system that may have been abandoned by another small mammal (Bailey and Sperry 1929; Hall and Kelson 1959).

Adult males are highly territorial and frequently vocalize during nocturnal activity. Adult males emit a high-pitched call, lasting several seconds, while standing on the hind legs with head raised and mouth open. Calls are less frequently given by females. Calling appears to function as a territorial and spacing mechanism (McCarty 1975).

Small mammals associated with Tulare grasshopper mice include giant kangaroo rats, San Joaquin kangaroo rats (all three subspecies), Heermann's kangaroo rats, California ground squirrels, San Joaquin antelope squirrels, San Joaquin pocket mice, California pocket mice, deer mice, harvest mice, and house mice (Hawbecker 1951; D.F. Williams unpubl. data).

Predators of the Tulare grasshopper mouse are known to include American badgers, San Joaquin kit foxes, coyotes, and barn owls (Hawbecker 1951).

Tulare grasshopper mice are nocturnal and active year round. They probably do not become dormant, at least not for long periods, though in captivity individuals have exhibited short episodes of torpor (D.F. Williams unpubl. observ.). Other aspects of activity of Tulare grasshopper mice are unknown.

Tulare grasshopper mice typically inhabit arid shrubland communities in hot, arid grassland and shrubland associations (Williams and Kilburn 1992). There is little information about the habitat requirements of the Tulare subspecies. Habitats recorded in the literature include Blue Oak Woodland at 1,476 feet where it is very rare (Newman and Duncan 1973), and Upper Sonoran Subshrub Scrub (Hawbecker 1951). Other reported habitats are alkali sink, dominated by one or more saltbush species, iodine bush, seepweed, and paleleaf goldenbush; mesquite associations on the Valley floor; saltbush scrub; Upper Sonoran shrub associations dominated by California ephedra/Anderson desert thorn; and grassland associations (primarily Arabian grass and red brome) on the sloping margins of the San Joaquin Valley and the Carrizo Plain region (Williams and Tordoff 1988).

Southern grasshopper mice eat mostly small animals, with insects forming the bulk of their diets (Bailey and Sperry 1929; Chew and Chew 1970; Horner *et al.* 1964). Prey items include scorpions, beetles, grasshoppers, pocket mice, and western harvest mice. Other ingested animals include spiders, mites, ants, insect cocoons, caterpillars, lizards, and frogs (*Rana* sp.) (Horner *et al.* 1964). They also eat seeds. Captive grasshopper mice stored sunflower seeds in their nest boxes during the winter months. The cache was used only when no other food source was available (Bailey and Sperry 1929).

The Tulare grasshopper mouse historically ranged from about western Merced and eastern San Benito Counties east to Madera County and south to the Tehachapi Mountains; on the east, they ranged from Madera County south (Newman and Duncan 1973; Williams and Kilburn 1992). Currently, Tulare grasshopper mice are known to occur along the western margin of the Tulare Basin, including western Kern County, Carrizo Plain Natural Area, along the Cuyama Valley side of the Caliente Mountains, San Luis Obispo County, and the Ciervo-Panoche Region, in Fresno and San Benito Counties (Williams and Kilburn 1992; D.F. Williams unpubl. data).

Environmental baseline: There is no information on demography or dispersal of Tulare grasshopper mice. Generally, southern grasshopper mice exist at relatively low density and have home ranges much larger than similarly-sized rodents such as white-footed mice (McCarty 1975). Though there has not been a comprehensive survey of existing potential habitat, there are several large blocks of historical habitat on the floor of the Tulare Basin where extensive trapping has occurred, but no Tulare grasshopper mice have been captured, such as Alkali Sink Ecological Reserve, Fresno County, and Pixley National Wildlife Refuge, Tulare County (Endangered Species Recovery Program unpubl. data). The only recent record is the capture of a grasshopper mouse in 1994 at Allensworth Ecological Reserve (CDFG 1998).

The habitat reduction, fragmentation, and degradation accompanying settlement and development of the Valley for agriculture are the principal causes of decline of Tulare grasshopper mice. Random catastrophic events (e.g. floods, drought combined with their low reproductive rate and other demographic factors probably are the most significant factors in elimination of fragmented populations. However, use of insecticides (first DDT and others, now mainly malathion) on natural lands to control

beet leafhoppers could have contributed to the disappearance of grasshopper mice from fragmented islands of natural land on the Valley floor, both from direct and indirect poisoning, and reduction of their staple food, insects. Rodenticides targeted for ground squirrels and insecticide drift from adjacent farmland may also have been a factor in elimination of grasshopper mice from fragmented parcels on the Valley floor.

The closest Tulare grasshopper mouse occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 17.4 miles to California Correctional Institution, Level III, Level IV A, and Level IV B. The closest Tulare grasshopper mouse occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 15.1 miles to Kern River Preserve. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Avenal State Prison	X	
California Correctional Institution, Level III	X	
California Correctional Institution, Level IVA	X	
California Correctional Institution, Level IVB	X	
California State Prison, Corcoran	X	
California State Prison, Kern County at Delano II	X	
California State Prison, Los Angeles		X
California Substance Abuse Treatment Facility	X	
North Kern State Prison	X	
Pleasant Valley State Prison	X	
Wasco State Prison, Reception Center	X	X
Allensworth Ecological Reserve	X	
California City Desert Tortoise Natural Area		X
Kern River Preserve		X

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source. Hall (1981) provided coarse scale distribution maps for subspecies.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

San Diego Desert Woodrat *(Neotoma lepida intermedia)*

Status: California Species of Special Concern

Species description: A relatively small, pale gray woodrat with a distinctly bicolored tail. Underparts pale or white but hairs gray at the base, next to the skin. Ears large and naked. Like other species of woodrat, the desert woodrat eats many sorts of forbs, both leaves and seeds. Their diet consists of buds, fruits, seeds, bark, leaves, and young shoots of many plant species. It also browses on the leaves

of shrubs and eats berries. In coastal scrub habitats, this woodrat prefers live oak, chamise, and buckwheat for food. It is often associated with cholla and other desert succulents, from which it obtains necessary water. Remains of partly eaten cacti are often strewed about the entrances to their houses (Jameson and Peeters 1988). Breeding season extends from October to May, resulting in an average litter size of 3 young (Zeiner *et al.* 1990*b*).

Like other woodrats, it constructs large middens, usually of small twigs, cactus pads and other plant material. Middens are often constructed under patches of prickly pear or cholla (*Opunita* spp.), or in rock outcrops or under low trees. Although the middens are easily detectable, trapping is usually necessary to distinguish between the middens of the dusky-footed woodrat (*Neotoma fuscipes*) and those of the desert woodrat. This woodrat also constructs a house of twigs, sticks, and or rocks at the base of shrubs, in the lower branches of trees or in rock crevices. These houses provide escape cover, protection for their nests, and a place to cache food.

It species occupies a variety of habitats, but is common to chaparral, sagebrush, and desert habitats.

The species as a whole is found within California in the southern half of the state, often in the vicinity of rocky outcrops. Known also to occupy old burrows of ground squirrels or kangaroo rats. The San Diego subspecies occurs in the following coastal Southern California counties south of San Luis Obispo County through Santa Barbara County, Ventura County, Los Angeles County, Orange County, the southwestern tip of San Bernardino County, the western portion of Riverside County, San Diego County to the northern part of Baja California (Hall 1981).

Environmental baseline: The primary threat to this species is urbanization and habitat degradation.

The closest San Diego desert woodrat occurrence to a prison site, using information within CNDDB (CDFG 2001*a*), is 18.5 miles to R.J. Donovan Correctional Facility. The closest San Diego desert woodrat occurrence to a mitigation site, using information within CNDDB (CDFG 2001*a*), is 13.3 miles to Starr Ranch Sanctuary. There may be closer occurrences that have not been entered into CNDDB or recorded for input.

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
California Institution for Men, West	X	
California State Prison, Los Angeles		X
RJ Donovan Correctional Facility at Rock Mountain	X	
Starr Ranch Sanctuary	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source. Hall (1981) provided coarse scale distribution maps for subspecies.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

White-footed Vole (*Arborimus albipes*)

Status: California Species of Special Concern

Species description: A small, dark vole with a long, clearly bicolored tail. Venter is gray, sometimes with a pinkish cast and the snout is darker than rest of head. The claws are straight.

The vole feeds principally on leaves of green plants including trees, shrubs, forbs, ferns, grasses, and aquatic plants (Maser and Johnson 1967; Voth *et al.* 1983). It is found in mature, coastal forests, preferring the vicinity of small, clear streams, with dense alder and other deciduous trees and shrubs, and occupies the habitat from ground surface to canopy, feeding in all layers, and nesting on the ground. White-footed voles are often found near logs and in brush when on the ground (Zeiner *et al.* 1990*a*).

Environmental baseline: Known from streamside thickets in redwood forests in northwestern California and also in the coastal forests of Oregon (Jameson and Peeters 1988). In California, the white-footed vole is known only from Humboldt and Del Norte counties. This scarce resident of humid coastal forests is found in redwood, Douglas-fir, and riparian forests from sea level to 1100 m (3500 ft) in Oregon (Zeiner *et al.* 1990*a*).

Occurrences within 5 miles of each prison and Tier 3 mitigation site. Source information from CNDDB (CDFG 2001*a*) and the mortality reports provided by CDC (EDAW 1999).

Site Name	Distance Range (Miles)	Average Distance (Miles)	Total Count
Humboldt Bay National Wildlife Refuge	0	0	1

Prisons and/or Tier 3 mitigation sites that are within the distributional range for the covered species.

Site Name	Within Range*	Possibly Within Range**
Pelican Bay State Prison	X	
Humboldt Bay National Wildlife Refuge	X	

* GIS distribution coverages created by the California Interagency Wildlife Task Group (CDFG 1999) were used as the primary source. CNDDB (CDFG 2001*a*) was used as a secondary source.

** When GIS distribution coverages (CDFG 1999) were no available for the covered subspecies, the GIS coverage for the species level was used as the primary source. Species account narratives of known distribution was used as a secondary source where possible.

Effects of the Proposed Action

Overview - The Statewide Electrified Fence Project involves the operation of lethal electrified fences within the secured perimeter of 25 existing and two planned prison facilities. The perimeter is the area that circumscribes the secure portion of each prison facility; it is bounded on both sides by standard chain link fences that are 12 feet high (or higher) and topped with razor wire. For security reasons, the perimeter and adjacent areas (with or without an electrified fence) are generally maintained in a barren (i.e., vegetation-free) state.

Because vegetation within the perimeter is already sparse to absent, no native plant species are being directly or indirectly affected by the operation of electrified fences. Maintenance activities in and near the perimeter include periodic removal of vegetation, which involves elimination of non-native, invasive, and weedy plants. Habitat removal is, therefore, not an impact resulting from the electrified fence project. Prison construction and construction of new electrified fences is not a covered activity under this project.

Netting will be installed at several prison sites to reduce mortality of Covered Species in the form of vertical netting of the bottom nine wires with anti-perching devices installed along the top wire and anti-rodent netting installed along the bottom of the outer chain-linked fence. Mitigation sites will be enhanced and restored to benefit affected species since potential mortality cannot be avoided due to implementation of Tier 1 and Tier 2 minimization measures.

The primary direct effect of this project is mortality of wildlife by electrocution. No indirect effects to wildlife from electrocution have been identified and none are expected. Nor will any federally designated critical habitat be affected by operation of the electrified fences, or Tier 1, and Tier 2 mitigation. There are direct and indirect effects related to Tier 3 mitigation. In conclusion, there will be a net beneficial effect through Tier 3 mitigation for Covered Species.

General Effects from Electrocution - For the purpose of this analysis, the USFWS has determined that several common effects will occur to all Covered Species for the duration of the permit (e.g. 50 years). The following is a general discussion of the direct effects related to the electrocution from the electrified fences. Species specific effects related to electrocution are found in the discussion following this section. A later discussion is presented in relation to effects (direct and indirect effects where appropriate) from the implementation of Tier 1 and Tier 2 minimization measures and Tier 3 mitigation.

I. *Direct mortality and injury*: By definition, a lethal electrical fence will have fatal or injurious impacts to individuals that come in contact with it in such a manner as to complete a circuit.

Species were considered at substantial risk of electrocution if they occurred or could occur in habitats immediately adjacent to one or more prison sites; have the opportunity to periodically enter the secured perimeter (i.e., access the area between the two chain link fences); and must be capable of either spanning two lethal wires, or making contact between a grounded surface and one lethal wire (EDAW 1999). Animals cannot be electrocuted by a single wire (B. Van Dover *pers. comm.*).

For the purpose of initially analyzing general effects, Covered Species are separated into three groups based upon broad life history patterns that relate to level of risk. The paragraphs below describe why many birds, some mammals, and only a few reptiles are believed to be at substantial risk.

Avian Species at Substantial Risk - As a group, avian wildlife generally has the highest risk of electrocution because they are more "wide ranging" (i.e., can move long distances; are very mobile), often abundant, and many tend to perch on wires or fences; thus, even when not present in large numbers on a site, many bird species are at substantial risk because their exposure to the hazard is higher.

Mammalian Species at Substantial Risk - Mammalian wildlife is another group at substantial risk, but their degree of risk is considerably less than electrocution risks for birds. Mammals that are considered at substantial risk typically include species that burrow or are small enough to pass through the 2-inch chain links of the perimeter fences; also included are those that tend to frequent disturbed habitats and are opportunistic enough to find a way into the perimeter while wandering and foraging.

Reptiles at Substantial Risk - The final wildlife taxon being considered is reptiles. Several species are considered to be at substantial risk since they could conceivably occur within the perimeter and make contact with the lowest wire.

Species Group Specific Effects from Electrocution - Species are now separated into 15 groups based upon specific species' behavior and life history patterns in relation to their interactions with and around the electrified fences to analyze directs effects from electrocution. Refer to the Statewide Electrified Fence Project Habitat Conservation Plan for an in depth discussion related to species grouping (EDAW 1999).

Large Raptors - Species in this category include bald eagle, Swainson's hawk, Cooper's hawk, osprey, golden eagle, northern harrier, merlin, ferruginous hawk, long-eared owl, short-eared owl, western screech-owl, red-shouldered hawk, red-tailed hawk, barn owl, and great horned owl. When using the perimeter, these perching birds-of-prey will hunt from the utility poles, razor wire, and fence posts. Most of the kills to date have probably been the result of these large birds hitting the fence (spanning two wires) while searching for or pursuing prey on the ground. And, given their size and patterns for foraging, many of the kills have probably occurred on the upper half of the fence.

Small Raptors - Species in this category include American kestrel, white-tailed kite, northern goshawk, peregrine falcon, prairie falcon, sharp-shinned hawk, and northern pygmy owl. The behavior of the smaller raptors is similar to the large raptors, except that these smaller birds-of-prey are slightly more maneuverable.

Aquatic and Semi-aquatic Birds - Species in this category include Aleutian Canada goose, greater sandhill crane, brown pelican, western snowy plover, long-billed curlew, and black-crowned night heron. Most of the prisons do not have permanent standing water or wetlands close to the perimeter. These species, though, will use the damp drainages for feeding in adjacent agricultural lands. Although they fly into the perimeter, these species probably spends most of its time on the ground once inside. Because these species are not perching species, its low vulnerability is reflective of the slight risk that remains from flying into (striking) two wires simultaneously.

Gulls - Species in this category include only the California gull. A few gulls (27 ring-billed gulls and 2 herring gulls) have been killed to date prior to netting, most of which were probably the result of contacts with the lower wires while ground feeding. Similar to aquatic and semi-aquatic birds, this group's risk will be mostly the result of simultaneously striking two wires while attempting to land in the perimeter to forage.

Small Ground-gleaning Birds - Species in this category include southern California rufous-crowned sparrow, California horned-lark, San Diego cactus wren, and Bell's sage sparrow. Because of their small size and foraging habits, several of these species were being killed on the lower portion of the fence prior to netting. These species are mostly too small to span the distance between two of the six upper wires.

Large Ground-gleaning Birds - Species in this category include tricolored blackbird and Bendire's thrasher. The risks to the large ground-gleaning birds is the same as with small ground-gleaning birds, except that this group's larger overall size makes them more vulnerable to electrocution on all wires.

Foliage-gleaning Birds - Species in this category include yellow warbler, western yellow-billed cuckoo, yellow-breasted chat, coastal California gnatcatcher. These species' small size would suggest that most of those kills and potential kills probably occurred or could occur on the lower wires of the fence, where shorter distances occur between lethal wires and grounded surfaces, or between two lethal wires.

Ground-foraging Raptors - The only species in this group is the burrowing owl. Although similar in size to birds-of-prey in the small raptor group, burrowing owls were separated out because of their tendency to feed on the ground and perch on structures. Field observations strongly suggest that this species is most vulnerable on the lower portions of the fence, where this species "bumps" into the lowest 2 wires in attempts to move over the grade beam, and where they uses the rungs of the grounding bracket as perch sites.

Aerial-foraging/Perching Birds - The only species in this group is southwestern willow flycatcher This species is vulnerable to electrocution because of its tendency to "fly-catch"; i.e., it pursues aerial insect prey after spotting them from elevated perch sites. While in the perimeter, it is therefore vulnerable to being electrocuted at its perch sites, or by "bumping" into two wires while in flight.

Swallows - Species in this category include bank swallow, Vaux's swift, and purple martin. Most of the species in this category have not been observed perching in the perimeter and, to date, only a few have been killed. For the most part, the swallows fly through the perimeter in search of flying insects. Because of their small size, they are mostly vulnerable to electrocution on the lower fence where wires are spaced closer together.

Loggerhead Shrike - Loggerhead shrike was assigned to its own group because this species' feeding behavior near the prison perimeters is somewhat unique. Similar to small raptors, such as kestrels, shrikes prefer to hunt from elevated positions, and will (occasionally) prey on small birds, mammals, etc. More often, though, they forage on large insects (their primary prey) by fly-catching. Loggerhead shrikes are vulnerable to being electrocuted at their perch sites by piercing captured prey, or by flying into two wires while foraging.

Small Terrestrial Mammals - Species in this category include San Diego black-tailed jackrabbit, Tipton kangaroo rat, short-nosed kangaroo rat, southern grasshopper mouse, and Tulare grasshopper mouse. Because they are ground-dwellers, nearly all of the small mammals are at substantial risk (pre-net) of being electrocuted on the lower wires of the fence.

Medium Terrestrial Mammals - The only species in this category is the San Joaquin kit fox. This species can only gain access into the perimeter through gaps under the outer chain link fence; once inside, individuals probably become trapped and disoriented, eventually getting electrocuted on one of the lowest three wires trying to escape.

Gnawing Mammals - Species in this category include Mohave ground squirrel, San Joaquin antelope squirrel, San Joaquin pocket mouse, San Diego desert woodrat, and white-footed vole. These gnawing mammals were assigned to their own group, primarily because of their known or expected ability to chew through netting. Six California ground squirrels have already chewed through the netting at the initial installation prison site for anti-rodent netting, and species in this group are capable of doing the same.

Reptiles - Species in this category include blunt-nosed leopard lizard, desert tortoise, San Diego horned lizard, orange-throated whiptail, and northern red-diamond rattlesnake. The lizards in this group may be at some risk as their climbing abilities may allow them access to insulators. The snakes may be more at risk, as they are capable of contacting two lethal wire. Two gopher snakes and two western fence lizards have been killed through electrocution on the fences.

No Federally-listed species have been electrocuted between October 1993 through August 1997 (EDAW 1999). During that period, a total of 351 individuals, representing 12 Covered Species, have been electrocuted statewide, including 1 state-listed species, 5 California Species of Special Concern (CSC), 7 raptor species (3 of which are also CSC), and one heron species whose colonies are CDFG-protected. This constitutes approximately 5% of the total recorded mortality. Burrowing owls comprise the largest component (39% or 134 individuals) of Covered Species lost. The one individual of a State-listed Threatened species, bank swallow, was killed at Wasco State Prison. The Covered Species lost between October 1993 and August 1997 are as follows:

Species	Number Killed
black-crowned night heron (protected heron)	1
sharp-shinned hawk (CSC, raptor)	2
red-tailed hawk (raptor)	5
Cooper's hawk (CSC, raptor)	1
American kestrel (raptor)	29
barn owl (raptor)	28
great horned owl (raptor)	8
burrowing owl (CSC, raptor)	134
Bendire's thrasher (CSC)	1
loggerhead shrike (CSC)	107
tricolored blackbird (CSC)	34
bank swallow (California Threatened)	1
TOTAL SPECIAL-STATUS SPECIES	351

Other effects of mortality due to electrification are as follows. Following common scientific principles of conservation biology, these effects are possible. The mortality of reproducing adults leads to the mortality of young. The mortality of reproducing and potentially reproducing individuals leads to loss of genetic material and less young produced. The mortality of individuals leads to increased availability of resources for other individuals and species.

The electrocution of adult individuals may lead to the mortality of their eggs, young, or juveniles in the form of starvation, predator mortality, exposure, etc from the mortality of adults during the breeding season. The negative effect of this is that the mortality if of Covered Species, possibly leading to the loss of genetic material from those individuals and young and the loss of potentially future offspring from the adults and successfully fledged young that are able to reproduce. The positive effect would be that the predators that are benefitting from the mortality are Covered Species.

Resources (e.g. forage, nests, etc.) are now available to Covered Species which are in the immediate area and where competition with other individuals and species is potentially reduced thus providing higher availability for limited resources (e.g. increased numbers of prey due to decrease in competition with other predators) and potentially making available new resources (e.g. new nests that were built just prior adult mortality).

Tiered Mitigation - CDC is minimizing and mitigating wildlife electrocution impacts. An extensive feasibility evaluation has been conducted by CDC to determine which minimization and mitigation measures were biologically effective, cost effective, and viable based on weather, security, maintenance,

and operational issues. Minimization and mitigation measures are organized into three tiers to facilitate implementation. Tier 1 measures include operations-related measures designed to modify or remove habitat or other attractions to wildlife from the secured perimeter area of each prison. Tier 2 involves installation of exclusion and deterrent devices on the electrified fences and in the perimeters. Tier 3, is designed to offset the residual loss of wildlife resources at the prisons as a result of electrocution risks that remain even after Tier 1 and Tier 2 have been implemented.

Tier 1 Mitigation - The first tier minimization measures consist of maintenance and operations activities, an urban wildlife control program, and a landscape modification program. Tier 1 involves alteration to the most "highly disturbed" portions (e.g., areas that are paved, graded, etc.) of the State prison setting; that is, the areas in and around the actual prison facilities. All Tier 1 measures are directed at reducing wildlife use of the areas nearest the electrified fence, which will be accomplished primarily through use of maintenance and operations procedures. These procedures have been implemented at all prisons with electrified fences. They are incorporated into a handbook and training module for use by each institution. The landscape modification and urban wildlife control programs are aimed mostly at reducing the attractiveness of existing landscaping to wildlife, and at limiting the numbers of certain urbanized wildlife that tend to occur in large numbers at many sites. Refer to the Project Description for details for each procedure and program.

By making the perimeters less hospitable to wildlife, species will frequent this area less often, thus reducing their exposure to accidental electrocution. Though there will be effects to species in the area of the fences, through disturbance, as these procedures and programs are implemented. The probability of mortality to Covered Species is expected to be low to negligible since no habitat will be present; a majority of the activities will occur during day light hours; and security patrols by personnel already occur, independent of the proposed action, and the level and frequency of disturbances may not significantly increase.

Tier 2 Mitigation - Tier 2 minimization measures include the installation of exclusion and deterrent fence devices which are designed to prevent or deter wildlife from making contact with the electrified fences. These measures avoid and minimize the risk of wildlife electrocution for those animals which continue to visit the secured perimeters despite the Tier 1 measures. This is expected to reduce the number of lethal contacts substantially. Netting procedures include installation of exclusionary vertical netting on the bottom nine wire with an anti-perching device along the top of the fence or no netting. Even with vertical netting installed, the top 6 wires will still be exposed (refer to the Project Description or section 5.1 of the HCP (EDAW 1999) for more details). Several locations have protective netting installed (see table below). Choice of the appropriate netting is based upon climatic factors (possibility of snow or sand accumulation), past history of species impacts (both species type and number of events), cost, and security factors.

Ironwood State Prison is currently the only electrified fence site where anti-rodent fencing has been installed. Although the results of the field test at Ironwood were inconclusive, anti-rodent fencing is presumed to be effective at reducing entry into the perimeter by ground-dwelling and burrowing wildlife. It will be installed at other prisons where USFWS determine that its site-specific use would avoid unnecessary take of ground-dwelling animals after the first year of data collection when the permit has been received by CDC.

For the purpose of this analysis, Tier 2 minimization measures will only refer to vertical netting and anti-perching devices, which will always be installed together.

Types of Tier 2 Netting Installed at Each Prison.

PRISON NAME	COUNTY	TIER 2 Netting
Avenal State Prison	Kings	Netting*
California Correctional Center, Level III	Lassen	No Netting
California Correctional Institution, Level III	Kern	No Netting
California Correctional Institution, Level IVA	Kern	No Netting
California Correctional Institution, Level IVB	Kern	No Netting
California Institution for Men, West	San Bernardino	Netting*
California State Prison, Corcoran	Kings	Netting*
California State Prison, Kern County at Delano II	Kern	Netting*
California State Prison, Los Angeles	Los Angeles	No Netting
California State Prison, Solano	Solano	Netting*
California State Prison, Sacramento	Sacramento	Netting*
California Substance Abuse Treatment Facility	Kings	Netting*
Chuckawalla Valley State Prison	Riverside	No Netting
Calipatria State Prison	Imperial	Netting*
Central California Women's Facility	Madera	Netting*
Centinela State Prison	Imperial	No Netting**
High Desert State Prison	Lassen	No Netting
Ironwood State Prison	Riverside	No Netting**
Mule Creek State Prison	Amador	No Netting**
Northern California Women's Facility	San Joaquin	Netting*
North Kern State Prison	Kern	Netting*
Pelican Bay State Prison	Del Norte	No Netting**
Pleasant Valley State Prison	Fresno	Netting*
RJ Donovan Correctional Facility	San Diego	Netting*
Salinas Valley State Prison	Monterey	Netting*
Valley State Prison for Women	Madera	Netting*
Wasco State Prison, Reception Center	Kern	Netting*

* These are the prison sites where anti-rodent is potentially proposed for based on the prototype study at Ironwood State Prison. These prison currently have vertical netting installed.

** These are the prison sites where anti-rodent is potentially proposed for based on the prototype study at Ironwood State Prison. Vertical netting will not be installed at these prison.

Test results from data up to November 31, 1997 for the 7 prisons where vertical netting has been installed have demonstrating that Tier 2 netting has reduced mortality of Covered Species. At the first seven sites where netting has been installed, an overall 93% reduction in take has been achieved after netting; this is based on pre- and post-net data sets that cover comparable time periods and equivalent numbers of months. This analysis was limited to these seven sites and a only a nine month period because nets had not yet been installed elsewhere as of August 31, 1997 (EDAW 1999).

Buetenmuller (*pers. comm.*) and Hoffman (*pers. comm.*) have confirmed through personal communications to USFWS on April 11, 2002, that no Federally-listed species have been electrocuted at prison sites including sites where Tier 2 nets have been installed. Between December 1, 1997 and December 31, 2001, a total of 156 individuals, representing 10 Covered Species, have been killed (this includes prison sites where no Tier 2 vertical netting was installed)(EDAW 2001*b*, EDAW 2002). The Covered Species lost at all prisons after 1997 through December 31, 2001, including prisons where Tier 2 netting was installed, are as follows:

Species	Number Killed
sharp-shinned hawk (CSC, raptor)	3
red-tailed hawk (raptor)	9
red-shouldered hawk (raptor)	2
Cooper's hawk (CSC, raptor)	1
American kestrel (raptor)	18
barn owl (raptor)	15
great horned owl (raptor)	21
burrowing owl (CSC, raptor)	19
loggerhead shrike (CSC)	51
tricolored blackbird (CSC)	17
TOTAL SPECIAL-STATUS SPECIES	156

For prison sites where Tier 2 vertical netting was installed, a total of 89 individuals, representing 10 Covered Species, have been killed between December 1, 1997 and December 31, 2001. The Covered Species lost only at prisons where Tier 2 vertical netting has been installation are as follows:

Species	Number Killed
sharp-shinned hawk (CSC, raptor)	1
red-tailed hawk (raptor)	4
red-shouldered hawk (raptor)	1
Cooper's hawk (CSC, raptor)	1
American kestrel (raptor)	10
barn owl (raptor)	10
great horned owl (raptor)	10
burrowing owl (CSC, raptor)	6
loggerhead shrike (CSC)	38
tricolored blackbird (CSC)	8
TOTAL SPECIAL-STATUS SPECIES	89

The negative effects of installing Tier 2 netting at several prisons vary. The following effects could occur but the probability of them occurring are low. Installation of vertical netting along with anti-perching devices would force individuals of bird species to find alternate perching locations within the prison boundary, on adjacent paralleling chain-linked fences, or within the vicinity of the electrified fences outside of the prison boundary. Installation of vertical netting along with anti-perching devices may force individuals of predator bird species (e.g. raptors) to forage in alternate locations following the displaced perching species. Installation of anti-rodent netting along the bottom of the outer chain-linked fence may impede and modify movement patterns of individuals of terrestrial species.

Installation of anti-perching wire will force several species of birds to find alternative perching sites which may increase competition for limited perching sites adjacent to the electrified fences. Predation may increase as individuals are forced to perch in alternate locations where perches are more exposed or in areas that individuals are not accustom to. The same could occur for species that are using the horizontal wires on electrified fence that will be covered by the vertical netting. The chain-link fences that runs parallel to the electrified fence, both inside and outside of the prison, could be used and possibly is currently being used as perching sites.

The installation of anti-rodent netting may affect terrestrial species (e.g. mammals and reptiles). Prior to electrification of the fences and netting, individuals had access to the interior areas of the prisons. The potential affects from this may be change in movement (fence may impede movement that was occurring prior to electrifying fence and construction of mitigation measures). This may increase competition for resources within areas that displaced individuals now have to use (e.g. movement, cover, forage). This

may increase mortality in the short-term related to affected species now having to access new areas (by increasing exposure to elements, predation, inter/intra species competition). This may also provide access to new and "better" areas that were not available due to current behavioral patterns (movement through the prison area was the shortest route to foraging areas though now species has to cover a long distance to old foraging area, but on the way now accesses new foraging area that now is closer to cover habitat).

The following are the estimated benefits of netting (EDAW 1999) only for prison sites where netting will be installed, expressed as a predicted *percent reduction* in mortality attributed to net installation; also included are the rationales that were developed to help explain each prediction, as well as examples of species being addressed by the HCP, EA, and Biological Opinion for each group. The predictions are rough estimates, being partly based on actual species response to netting (limited data) and expected species benefits. A group of species with a 90% reduction in mortality (i.e., a remaining 10% mortality after net installation) would be at higher risk of electrocution and have a lower benefit from netting than a species with a 95% reduction in mortality (5% post-net mortality).

The following discussion is provided to display that mortality could occur for all groups of Covered Species to some extent, though netting will reduce the potential of mortality to a larger extent for some groups of Covered Species when compared to others. These are estimates and do not reflect actual reductions. Annual monitoring reports will be used to either support these estimates or be used to modify estimates.

Large Raptors (30% Reduction) - This is the group with the greatest amount of post-net (i.e., "residual") risk. When using the perimeter, these perching birds-of-prey will hunt from the utility poles, razor wire, and fence posts. The only kill after netting (e.g. one red-tailed hawk) has probably been the result of the hawk birds hitting the fence (spanning two wires) while searching for or pursuing prey on the ground. And, given their size of the birds in this group and patterns for foraging, the kill have probably occurred on the upper half of the fence. Although the anti-perching wire that has or will be installed on post tops (as part of the netting system) will remove some of the risk, the species in this group are still vulnerable to electrocution on the un-netted upper 6 wires and at the prison sites where vertical netting along with anti-perching devices were not installed.

Small Raptors (60% Reduction) - These species tend to spend more time in the narrow confines of the perimeter, especially foraging down low, so the benefits of netting the lowest 9 (of 15) wires would be higher.

Aquatic and Semi-aquatic Birds (90% Reduction) - Because these species are not perching species, their low post-net vulnerability is reflective of the slight risk that remains from flying into (striking) two upper wires simultaneously.

Gulls (80% Reduction) - Similar to aquatic and semi-aquatic birds, the California gull's post-net risk will be mostly the result of simultaneously striking two wires while attempting to land in the perimeter to forage.

Small Ground-gleaning Birds (95% Reduction) - These species are mostly too small to span the distance between two of the un-netted upper wires. Therefore, netting will be most effective with this group of species. The small, residual, post-net risk (i.e. two similar species killed after installation of netting - 3 house finch and one savanna sparrow) reflects the slight chance that these species may be occasionally killed by perching on an upper insulator and touching a wing, tail, or bill to a post. The residual risk also takes into account infrequent entries into the lower fence area through tears or gaps in the netting that could periodically occur.

Large Ground-gleaning Birds (90% Reduction) - The risks to the large ground-gleaning birds is the same as with small ground-gleaning birds, except that this group's larger overall size makes them more vulnerable to electrocution on the exposed upper insulators.

Foliage-gleaning Birds (90% Reduction) - Although most members of this group are relatively small, their post-net risk is somewhat higher than the small ground-gleaning birds because, while in the perimeter, these species will spend most of their time on the fence in search of spiders and other insects.

Ground-foraging Raptors (75% Reduction) - By netting the lowest 9 wires, much of its risk of electrocution while feeding is eliminated. However, as with the California gull, burrowing owls are still vulnerable to contacts with the upper wires on flights into the perimeter (usually beginning from an elevated perch site, such as utility poles or razor wire coils). The anti-perching devices on the tops of all electrified fence posts help to reduce the residual risk, but this species' tendency to perch and the possibility that it could still land on the un-netted, upper insulators keeps the residual risk fairly high (i.e., slightly higher than gulls).

Aerial-foraging/Perching Birds (80% reduction) - By netting 9 of the 15 wires and installing anti-perching devices on all electrified fence post tops, the risks to this group are substantially reduced (i.e., more than half of the electrified fence becomes unavailable to them). The explanation for this group's post-net residual risk (i.e. a single Cassin's kingbird, a similar species, has been killed after installation of netting) is comparable to the foliage-gleaning birds; however, these species are more vulnerable because they are larger, which makes their risk slightly higher.

Swallows (90% Reduction) - Because these species are less likely to land on the fence, their vulnerability to electrocution after netting is less than the aerial-foraging/perching birds. Also, because of their small size, they were mostly vulnerable to electrocution on the lower fence

where wires are spaced closer together. Netting the lower fence substantially reduces this risk. The reduction in mortality was estimated at 90% to take into account the infrequent incidents of swallows and nighthawks flying into two un-netted wires on the upper fence while foraging.

Loggerhead Shrike (75% Reduction) - Netting the lower nine wires and insulators, and installing anti-perching wires on post tops, will substantially reduce this species' risk of electrocution. However, because of their large size, frequent use of the prison perimeter, and their tendency to hunt from the electrified fence wires, nearby utility lines, and razor wire coils, this species is likely to still be killed on the un-netted upper fence (i.e. a single individual has been killed after installation of netting). The mortality reduction achieved by Tier 2 was set at 75%, which is comparable to the other aerial-foraging birds.

Small Terrestrial Mammals (95% Reduction) - Because they are ground-dwellers, nearly all of the small mammals are at substantial risk (pre-net) of being electrocuted on the lowest two wires (i.e. a single striped skunk, a similar species, as been killed after installation of netting). With this group, however, the net is likely to represent an impenetrable barrier, and most will be deterred by it. The reduction in mortality resulting from netting was set at 95%, equivalent to small ground-gleaning birds, to take into account infrequent entries into the lower fence area through tears or gaps in the netting that could periodically occur.

Medium Terrestrial Mammals (90% Reduction) - For reasons similar to the small mammal group, netting the lower nine wires should prevent most medium-sized mammal kills from occurring. However, their larger body mass, coupled with the determination of a trapped individual, could lead to occasional failure of the netting and slightly higher risks for this group.

Gnawing Mammals (80% Reduction) - Of all the mammals at substantial risk of electrocution, this group was assigned the highest residual post-net risk because they are persistent and tenacious, and they are capable of gnawing through netting. Two California ground squirrels, a similar species, have been killed after installation of netting.

Reptiles (80% Reduction) - Species in this category are likely to experience variable benefits from netting the lower wires. The post-net reduction in kills was estimated at 80%, primarily because it seems to be a conservative average for this group. The lizards in this group may still be at some risk after netting is installed, as their climbing abilities may allow them access to the un-netted upper insulators. The snakes may be even more at risk, as they are capable of squeezing under the lower edge of the net, and determined individuals could gain access to the top of the grade beam and lowest lethal wire.

In summary, the above 15 groups are listed in descending order of percent reduction in mortality (i.e., the estimated benefit derived from netting the lowest 9 of the 15 wires, and installing anti-perching devices on all fence post tops):

Percent Reduction	Species Group
95%	Small Ground-gleaning Birds
95%	Small Terrestrial Mammals
90%	Aquatic and Semi-aquatic Birds
90%	Large Ground-gleaning Birds
90%	Foliage-gleaning Birds
90%	Swallows
90%	Medium Terrestrial Mammals
80%	Gulls
80%	Aerial-foraging/Perching Birds
80%	Gnawing Mammals
80%	Reptiles
75%	Ground-foraging Raptors (i.e., burrowing owl)
75%	Loggerhead Shrike
60%	Small Raptors
30%	Large Raptors

The use of exclusionary netting (Tier 2) will reduce animal/fence incidents. Studies done by consultants for the CDC on prison fences statewide indicate estimated reductions in mortality will range from 30 per cent for large raptors to 95 per cent for smaller birds (EDAW 1999). Netting is estimated to reduce the average annual mortality, for all sites where electric fences are in place, from 168 per year (mean= 167.7) to an estimated 65 (mean = 65.07) per year (EDAW 1999). The installation of anti-perching wire at the top of all fenceposts will serve as an additional deterrent.

Species Specific Mortality - The following are the actual mortality numbers for those Covered Species that have actually been killed by the electrified fences from when electrified fences, beginning in 1993, were activated up to December 31, 2001 by prison. The mortality reports provided by Kitchell (1996), the mortality reports in appendix B of the HCP (EDAW 1999), the monthly report for the year 1999 (EDAW 2000), and the annual mortality reports for 2000 (EDAW 2001*b*) and 2001 (EDAW 2002) were used to summarize the following findings.

Bank Swallow

Only a single bank swallow was killed to date. The individual was killed at Wasco State Prison - Reception Center in July of 1996 (Kitchell 1996).

The effectiveness of the netting cannot be determined with certainty due to lack of data for this species. The loss of a single individual is determined to be low in relation to the estimated populations levels of 1999.

Black-crowned Night Heron

Only a single black-crowned night heron was killed to date. The individual was killed at Pleasant valley State Prison in December of 1994 (Kitchell 1996).

The effectiveness of the netting cannot be determined with certainty due to lack of data for this species. The loss of a single individual is determined to be low in relation to the estimated populations levels of 1993 the San Francisco area.

Sharp-shinned Hawk

Prison[1]	November 1993 - December 1997	1998	1999	2000	2001	Total (As of 12/31/2001
CCI	1 (as of 1995)					1
CVSP	1 (as of 11/95)	1				2
ISP					1	1
WSP[2]			1			1
Totals	**2**	**1**	**1**	**0**	**1**	**4**

1 CCI: California Correctional Institution (Levels III, IVA, IVB)
CVSP: Chuckawalla Valley State Prison
ISP: Ironwood State Prison
WSP: Wasco State Prison - Reception Center

2 Prisons where Tier 2 vertical netting with anti-perching devices are installed.

Determining if the estimated reduction in take of 60% is reasonable is not possible since there were no kills of individuals at prisons prior to netting being installed. The current numbers of individuals being killed each year at all prisons (totaling 4 since 1993) is negligible when compared to the current populations levels range wide for North America.

Cooper's Hawk

Prison[1]	November 1993 - December 1997	1998	1999	2000	2001	Total (As of 12/31/2001
CCI	1 (as of 1995)					1
WSP[2]		1				1
Totals	**1**	**1**	**0**	**0**	**0**	**2**

1 CCI: California Correctional Institution (Levels III, IVA, IVB)
WSP: Wasco State Prison - Reception Center

2 Prisons where Tier 2 vertical netting with anti-perching devices are installed.

Determining if the estimated reduction in take of 30% is reasonable is not possible since there were no kills of individuals at prisons prior to netting being installed. The current numbers of individuals being killed each year at all prisons (totaling 2 since 1993) is negligible when compared to the current populations levels within the state and nation wide.

Red-shouldered Hawk

Prison[1]	November 1993 - December 1997	1998	1999	2000	2001	Total (As of 12/31/2001
CCI			1			1
VSPW[2]					1	1
Totals	**0**	**0**	**1**	**0**	**1**	**2**

1 CCI: California Correctional Institution (Levels III, IVA, IVB)
VSPW: Valley State Prison for Women

2 Prisons where Tier 2 vertical netting with anti-perching devices are installed.

Determining if the estimated reduction in take of 30% is reasonable is not possible since there were no kills of individuals at prisons prior to netting being installed. The current numbers of individuals being killed each year at all prisons (totaling 2 since 1993) is low when compared to the 1994 populations levels (USDA 1994) of an estimated 1,500 pairs within California.

Red-tailed Hawk

Prison[1]	November 1993 - December 1997	1998	1999	2000	2001	Total (As of 12/31/2001
CCI	1 (as of 1995)		2		1	4
CIM[2]	1 (as of 1995)					1
CSP-COR[2]	2 (as of 9/94)					2
CSP-SAC[2]		1		1		2
CSP-SOL[2]	1 (as of 3/95)				1	2
CVSP		1				1
CCWF[2]	1 (as of 8/95)	1				2
CEN					1	1
NKSP[2]	1 (as of 10/94)					1
PVSP[2]	1 (as of 9/94)					1
VSPW[2]	1 (as of 2/96)					1
Totals	**9**	**3**	**2**	**1**	**3**	**18**

1 CCI: California Correctional Institution (Levels III, IVA, IVB)
CIM: California Institute for Men
CSP-COR: California State Prison - Corcoran
CSP-SAC: California State Prison - Sacramento
CSP-SOL: California State Prison - Solano

CVSP: Chuckawalla Valley State Prison
CCWF: Central California Women's Facility
CEN: Centinela State Prison
NKSP: North Kern State Prison
PVSP: Pleasant Valley State Prison
VSPW: Valley State Prison for Women

2 Prisons where Tier 2 vertical netting with anti-perching devices are installed.

At prisons were Tier 2 netting is installed, 8 individuals have been killed prior to the installation of netting (roughly four years) with 4 individuals killed post-netting. The post net mortality for four consecutive years shows a reduction in mortality of 50 percent where the HCP estimated that post-netting reduction would be 30 percent for large raptors.

The current numbers of individuals being killed each year at all prisons (totaling 18 since 1993) is negligible when compared to the current populations levels within the state and nation wide.

American Kestrel

Prison[1]	November 1993 - December 1997	1998	1999	2000	2001	Total (As of 12/31/2001
ASP[2]	1 (as of 10/94)					1
CCI	3 (as of 1995)		1			4
CSP-COR[2]					1	1
CSP-SAC[2]			2			2
CSP-SOL[2]	2 (as of 3/95)					2
CSATF[2]					1	1
CVSP		1		1	1	3
CAL[2]	3 (as of 11/93)					3
CCWF[2]	2 (as of 8/95)					2
CEN	3 (as of 10/94)		1	1		5
ISP	1 (as of 11/94)				1	2
MCSP		2				2
NKSP[2]	1 (as of 10/94)			1		1
PVSP[2]	1 (as of 9/94)					1
RJD[2]	5 (as of 2/95)		1		3	9
SVSP[2]	4 (as of 3/96)					4
VSPW[2]	1 (as of 2/96)					1
WSP[2]	6 (as of 12/94)			1		7
Totals	**33**	**3**	**5**	**3**	**7**	**51**

1 ASP: Avenal State Prison
CCI: California Correctional Institution (Levels III, IVA, IVB)
CSP-COR: California State Prison - Corcoran
CSP-SAC: California State Prison - Sacramento
CSP-SOL: California State Prison - Solano
CSATF: CA Substance Abuse Treatment Facility and CSP-Corcoran II

CVSP:	Chuckawalla Valley State Prison
CAL:	Calipatria State Prison
CCWF:	Central California Women's Facility
CEN:	Centinela State Prison
ISP:	Ironwood State Prison
MCSP:	Mule Creek State Prison
NKSP:	North Kern State Prison
PVSP:	Pleasant Valley State Prison
RJD:	R.J. Donovon Correctional Facility
SVSP:	Salinas Valley State Prison
VSPW:	Valley State Prison for Women
WSP:	Wasco State Prison - Reception Center

2 Prisons where Tier 2 vertical netting with anti-perching devices are installed.

At prisons were Tier 2 netting is installed, 26 individuals have been killed prior to the installation of netting (roughly four years) with 10 individuals killed post-netting. The post net mortality for four consecutive years shows a reduction in mortality of 61 percent where the HCP estimated that post-netting reduction would be 60 percent for small raptors.

The impact to the current population of American kestrels from the loss of 51 individuals since 1993 is unknown since current population levels cannot be determined with certainty at this time. Within the literature, it is stated that throughout California, the Breeding Bird Survey data indicates there is a decline in breeding birds of about 1.8 percent/year; with the last ten years of that period having a 6.7 percent/year decline though no current estimates of populations can be found.

Barn Owl

Prison[1]	November 1993 - December 1997	1998	1999	2000	2001	Total (As of 12/31/2001
ASP[2]	1 (as of 10/94)		1			2
CCC		1				1
CIM[2]	1 (as of 1995)			1		2
CSP-LAC	3 (as of 11/94)					3
CSP-SAC[2]	1 (as of 12/94)		1		1	3
CSP-SOL[2]			1	1		2
CSATF[2]	1 (as of 12/97)					1
CVSP				1		1
CAL[2]	2 (as of 11/93)					2
CCWF[2]	4 (as of 8/95)	1	1		1	7
CEN			1			1
HDSP	1 (as of 1/96)					1
ISP				1		1
NKSP[2]	2 (as of 10/94)					2
PBSP			1			1

PVSP[2]	5 (as of 9/94)					5
RJD[2]	1 (as of 2/95)					1
SVSP[2]	2 (as of 3/96)			1		3
VSPW[2]	4 (as of 2/96)					4
WSP[2]	1 (as of 12/94)					1
Totals	**29**	**2**	**6**	**5**	**2**	**44**

1 ASP: Avenal State Prison
CCC: California Correctional Center (Level III)
CIM: California Institute for Men
CSP-LAC: California State Prison - Los Angeles
CSP-SAC: California State Prison - Sacramento
CSP-SOL: California State Prison - Solano
CSATF: CA Substance Abuse Treatment Facility and CSP-Corcoran II
CVSP: Chuckawalla Valley State Prison
CAL: Calipatria State Prison
CCWF: Central California Women's Facility
CEN: Centinela State Prison
HDSP: High Desert State Prison
ISP: Ironwood State Prison
NKSP: North Kern State Prison
PBSP: Pelican Bay State Prison
PVSP: Pleasant Valley State Prison
RJD: R.J. Donovon Correctional Facility
SVSP: Salinas Valley State Prison
VSPW: Valley State Prison for Women
WSP: Wasco State Prison - Reception Center

2 Prisons where Tier 2 vertical netting with anti-perching devices are installed.

At prisons were Tier 2 netting is installed, 25 individuals have been killed prior to the installation of netting (roughly four years) with 10 individuals killed post-netting. The post net mortality for four consecutive years shows a reduction in mortality of 60 percent exceeding the estimated that post-netting reduction would be 30 percent for large raptors stated within the HCP.

It cannot be determined with certainty if the loss of 44 individuals since 1993 is negatively affecting the current population since there are currently no estimates of population numbers for the species within California or nation-wide. Though it is the USFWS's opinion that the loss of 31 individuals is low to negligible since this is wide ranging species within California and is known to occupy and use a wide range of habitats for breeding and foraging.

Great Horned Owl

Prison[1]	November 1993 - December 1997	1998	1999	2000	2001	Total (As of 12/31/2001
CCC			1			1
CCI	7 (as of 1995)	2	2	3		14
CSP-SOL[2]	2 (as of 3/95)		1			3
CCWF[2]					1	1
CEN	1 (as of10/94)					1
HDSP					2	2
PVSP[2]					1	1
RJD[2]				1	2	3
SVSP[2]					2	2
VSPW[2]			1		2	3
Totals	**10**	**2**	**5**	**4**	**10**	**31**

1 CCC: California Correctional Center (Level III)
CCI: California Correctional Institution (Levels III, IVA, IVB)
CSP-SOL: California State Prison - Solano
CCWF: Central California Women's Facility
CEN: Centinela State Prison
HDSP: High Desert State Prison
PVSP: Pleasant Valley State Prison
RJD: R.J. Donovon Correctional Facility
SVSP: Salinas Valley State Prison
VSPW: Valley State Prison for Women

2 Prisons where Tier 2 vertical netting with anti-perching devices are installed.

At prisons were Tier 2 netting is installed, 2 individuals have been killed prior to the installation of netting (roughly four years) with 10 individuals killed post-netting. The post net mortality for four consecutive years shows an increase in mortality of 500 percent where as, it is stated in the HCP that the installation of Tier 2 netting would reduce mortality for species within the Large Raptor group by 30 percent. It is therefore determined that the Tier 2 vertical netting and anti-perching devices and possibly Tier 1 minimization measures are ineffective in avoiding and minimizing mortality to this species.

It cannot be determined with certainty if the loss of 31 individuals since 1993 is negatively affecting the current population since there are currently no estimates of population numbers for the species within California or nation-wide. Though it is the USFWS's opinion that the loss of 31 individuals is low to negligible since this is wide ranging species within California and is known to occupy and use a wide range of habitats for breeding and foraging.

Species	Location Where Mitigated[1]	Mitigation Explanation
short-eared owl	Paul Wattis Stanislaus River Starr Ranch	This species is known to occur at all three sites. Restoration and enhancement of riparian woodland, wetlands, and saltbush scrub habitat would provide wintering habitat for this species.
Vaux's swift	Humboldt Bay Kern River Mayacama Mountains Stanislaus River	This species is known to breed in Sonoma County and is expected to nest at Mayacama Mountains Sanctuary. This species is also known to occur during migration at Humboldt Bay National Wildlife Area, Kern River Preserve, and Stanislaus River Park. Purchase and preservation of land and restoration and enhancement of habitat at these sites would benefit this species by providing foraging and/or nesting areas.
southwestern willow flycatcher	Kern River	This species is known to nest at this site. Proposed riparian restoration and enhancement activities would provide nesting and foraging habitat for this species.
California horned lark	Allensworth California City	This species is known to occur at both sites. This species occupies a variety of open habitats and would benefit from restoration and enhancement of alkali scrub and creosote bush scrub habitat.
purple martin	Humboldt Bay	This species is known to occur at this site. This species would benefit from land acquisitions, which would be protected, and from restoration activities that include removal of non-native invasive plant species from the montane coastal forest habitat.
Bendire's thrasher	California City	This species is know to occur at this site. This species would benefit from purchase and enhancement of creosote bush scrub habitat.
San Diego cactus wren	Starr Ranch	This species is known to occur at this site. Removal of artichoke thistle from non-native grasslands and preventing its spread into coastal sage scrub habitat at Starr Ranch Sanctuary would benefit this species.
bank swallow	Paul Wattis Stanislaus River	This species breed along the upper Sacramento River and Stanislaus River and would benefit from riparian and wetland restoration proposed at both sites.
coastal California gnatcatcher	Starr Ranch	This species is known to occur at this site. Removal of artichoke thistle from non-native grasslands and preventing its spread into coastal sage scrub habitat at this site would also benefit this species.

Species	Location Where Mitigated[1]	Mitigation Explanation
loggerhead shrike	Mayacama Mountains	This species is known to nest at this site. Restoration of native grasslands and oak woodlands would provide higher quality foraging and nesting habitat for this species. In addition, fencing and management of the property would reduce degradation of habitats by human activity.
yellow warbler	Cowbird Trapping Humboldt Bay Kern River Paul Wattis Stanislaus River Starr Ranch	This species is known to nest at all sites. This species occurs in riparian habitat and would benefit from riparian restoration and enhancement activities at these site. In addition, implementation of a cowbird trapping program at Paul Wattis Sanctuary would likely increase the reproductive success of this species.
yellow-breasted chat	Cowbird Trapping Humboldt Bay Kern River Paul Wattis Stanislaus River Starr Ranch	This species is known to nest at all these sites. This species occurs in riparian habitat and would benefit from restoration and enhancement of this habitat. In addition, implementation of a cowbird trapping program at Paul Wattis Sanctuary would likely increase the reproductive success of this species.
southern California rufous-crowned sparrow	Starr Ranch	This species is known to occur at this site. Removal of artichoke thistle from non-native grasslands and preventing its spread into coastal sage scrub habitat at Starr Ranch Sanctuary would also benefit this species.
Bell's sage sparrow	Starr Ranch	This species is known to occur at this site. Removal of artichoke thistle from non-native grasslands and preventing its spread into coastal sage scrub habitat at Starr Ranch Sanctuary would also benefit this species.
tricolored blackbird	Kern River Paul Wattis Stanislaus River	This species is known to breed at these sites. Restoration and enhancement of woodland and wetlands at these sites would provide higher quality nesting habitat for this species.
San Joaquin kit fox	Allensworth	This species is known to occur at this site and would benefit from purchase and enhancement of saltbush scrub habitat. In addition, re-establishing microtopography would provide new burrowing opportunities for this species.
San Diego black-tailed jackrabbit	Starr Ranch	This species is known to occur at this site. Removal of artichoke thistle from non-native grasslands and preventing its spread into coastal sage scrub habitat at this site would also benefit this species.

Species	Location Where Mitigated[1]	Mitigation Explanation
San Joaquin antelope squirrel	Allensworth	This species is known to occur at this site and would benefit from purchase and enhancement of saltbush scrub habitat. In addition, re-establishing microtopography would provide new burrowing opportunities for this species.
Mohave ground squirrel	California City	The California Desert Tortoise Natural Area is a CDFG and USFWS approved mitigation bank for Mohave ground squirrel. This species would benefit from purchase of credits within this private mitigation bank, with the money being used to fund land acquisition, and habitat enhancement and management activities.
San Joaquin pocket mouse	Allensworth	This species is known to occur in saltbush scrub habitat at this site. This species would benefit from re-establishment of microtopography at this site, which would provide new burrowing opportunities.
short-nosed kangaroo rat	Allensworth	This species is known to occur at this site and would benefit from purchase and enhancement of saltbush scrub habitat. In addition, re-establishing microtopography would provide new burrowing opportunities for this species.
Tipton kangaroo rat	Allensworth	This species is known to occur at this site and would benefit from purchase and enhancement of saltbush scrub habitat. In addition, re-establishing microtopography would provide new burrowing opportunities for this species.
southern grasshopper mouse	Allensworth California City	This species is known to occur at both sites. This species would benefit from purchase and enhancement of habitat at both of these sites.
Tulare grasshopper mouse	Allensworth	This species is known to occur at this site and would benefit from purchase and enhancement of saltbush scrub habitat. In addition, re-establishing microtopography would provide new burrowing opportunities for this species.
San Diego desert woodrat	Starr Ranch	This species is known to occur at this site. Removal of artichoke thistle from non-native grasslands and preventing its spread into coastal sage scrub habitat at this site would also benefit this species.
white-footed vole	Humboldt Bay	This species is known to occur at this site. This species would benefit from new land acquisitions, which would be protected, and from restoration activities that include removal of non-native invasive plant species from the montane coastal forest habitat.

[1] **Abbreviations for mitigation opportunities are:**

Allensworth: Allensworth Ecological Reserve
California City: California City Desert Tortoise Preserve
Humboldt Bay: Humboldt Bay National Wildlife Refuge
Imperial Valley: Imperial Valley Burrowing Owl Management Plan
Kern River: Kern River Preserve
Mayacama: Mayacama Mountains Sanctuary
Paul Wattis: Paul Wattis Sanctuary
Stanislaus River: Stanislaus River Park
Starr Ranch: Starr Ranch Sanctuary

[2] **ALL:** This species would benefit from all mitigation opportunities except the cowbird trapping program.

The following is a summary, by mitigation site, of the general effects of proposed mitigation activities for all species that do or could occur within each specific site. See the table above for which species is mitigated by which site. Also included is the negative effects from implementing Tier 3 mitigation, though it is determined that these effects will be will short term:

Allensworth Ecological Reserve (Tulare County): These efforts will benefit specified Covered Species through the creation and enhancement of nesting, foraging, or sheltering habitat.

The CDFG has prepared a Biological Assessment for habitat enhancement activities for these federally listed species at the Allensworth Ecological Reserve and entered into a cooperative agreement with USFWS for these activities. A formal consultation was conducted pursuant to Section 7(a)(2) of the Endangered Species Act, and an *Intra-Service Biological Opinion on a Cooperative Agreement on Management of the Habitats on CDFG Allensworth Ecological Reserve and Pixley National Wildlife Refuge* was issued by USFWS on October 2, 1995 (1-1-95-F-0122; USFWS 1995). Under this opinion, USFWS authorized habitat enhancement, land management, and restoration activities on these lands with the understanding that they would result in incidental take of the above mentioned federally-listed species (e.g. blunt-nosed leopard lizard, Tipton kangaroo rat, and San Joaquin kit fox). However, enhancement activities must result in a verifiable benefit through habitat enhancement for listed species. All restoration activities conducted by CDC would comply with the terms and condition of this agreement and the biological opinion, including any subsequent revisions to the opinion.

The work of enhancing 282 acres of acquired alkali sink/scrub habitat and restoring 800 acres of alkali sink/scrub habitat within the Allensworth Ecological Reserve may harass certain Covered Species found within the Reserve, if they are within the vicinity of the site during enhancement. Work activities will produce noise that may cause animals to move to adjacent areas for an indeterminate period of time. These individuals may be subject to increased predation and

competition for resources depending upon the current or possible occupation of these areas by other individuals of these species or other predator and/or competitory species.

Killing of individuals through operations may occur though the probability is low due to current operations following avoidance and minimization measures under the biological opinion (USFWS 1995) for this site. Enhancement activities may result in the short term harassment, and harm of Covered Species. Construction activities may entrap, bury, or crush leopard lizards, kit foxes, and rodents. Foraging areas of raptors and prey availability, both diurnal and nocturnal will be diminished in the short term during restoration and enhancement activities. Noise may also interfere with such vital behavior as mating or nesting. Individuals may move back into the enhanced areas during night time hours and/or after enhancement activities have finished.

The temporary effects of enhancing operations will be offset by the acquisition of an additional 282 acres as well as the eventual benefit derived from 800 acres of improved habitat. Land acquired will be protected and managed in perpetuity for the benefit of Covered Species. Leopard lizard densities for the nearby Pixley Wildlife Refuge were estimated to range from 0.1 lizard/acre to 4.2 lizard/acre (USFWS 1998). Acquisition of 282 acres of habitat, therefore, will provide additional protected habitat for an estimated 28 to 1184 leopard lizards per year. Enhancement of the proposed habitat at Allensworth Ecological Reserve will result in a net benefit to the species. Rodent populations are quite variable and, in the San Joaquin Valley, correlate with plant growth (D. Williams, ESRP, *unpubl. data*). It is reasonable that enhancing existing habitat and providing additional protected habitat will benefit and increase existing rodent populations. This, in turn, will provide a greater prey-base for migrating and residence raptors. To ensure the effectiveness of enhancement activities, the site will be monitored through year 8 of the HCP. Monitoring shall be extended, if necessary, to ensure that success criteria are met.

California City Desert Tortoise Area (Kern County): The acquisition of an additional 60 acres of habitat, to be joined to existing, protected habitat, will benefit the more xeric Covered Species as well as certain migratory species. Acquisition and enhancement of protected habitat will benefit the specified Covered Species. The California City Desert Tortoise Area is within designated critical habitat for the desert tortoise.

Enhancement operations and activities will be conducted by a private land bank as part of existing operations and will, if resulting in take of federally or state listed species, require a separate, site-specific consultation by the private land bank. Acquisition of habitat, protected in perpetuity, will, as described above, provide a net benefit for Covered Species. The site will be monitored three times annually in perpetuity. Enhancement will result in more vigorous, enhanced growth of vegetation and, in turn, result in greater rodent populations (including some

Covered Species). This will, in turn, produce a more abundant prey-base for raptors and other predators. Vegetation enhancement will also benefit herbivorous and omnivorous Covered Species by providing cover, nesting areas, and additional foraging areas. Enhancement of habitat will not adversely affect critical habitat.

Cowbird Trapping Program (Colusa County): Cowbirds are brood parasites upon a number of Covered Species, including the yellow warbler, yellow-breasted chat, and, rarely, loggerhead shrikes (Dechant *et al.* 2001). The elimination of cowbirds will benefit yellow warblers and yellow-breasted chats, and, to a lesser degree loggerhead shrikes, by increasing nestling success and, therefore, recruitment. It is also expected that this additional recruitment will offset any minimal loss as the result of the direct effects resulting from the mortality of Covered Species from the electrified fences.

No indirect effects are expected to result from the trapping of brown-headed cowbirds to Covered Species. It is expected that a potential increase in productivity of Covered Species will result from decreased parasitism and competition for limited resources.

Humboldt Bay National Wildlife Refuge (NWR)(Humboldt County): The acquisition of an additional 109 acres of habitat, enhancement of such habitat for nesting and foraging and protecting the site in perpetuity will benefit the specified Covered Species.

Enhancement of nine acres by removal of European beachgrass and 25 acres of bush lupine (*Lupinus arboreus*), both invasive non-native plants will enhance habitat for Covered Species associated with this habitat type. English ivy (*Hedera helix*) and German ivy (*Senecio mikanioides*), both invasive species, will also be removed from the site. These species will be removed to allow for revegetation of the site with native vegetation. This is designed to enhance the habitat for nesting and foraging for the Covered Species that use this site. The site will be managed in perpetuity by the NWR. Monitoring will be conducted for 8 consecutive years. Restoration activities may cause mortality or disturbance to Covered Species. Covered Species may be crushed or killed by vehicles, though the likelihood is low due to the known behavior of these Covered Species in relation to human activities. Species are known to search for escape cover or "freeze" when humans are within a certain proximity to the individual animal. Noise and disturbance may result in predation caused by increased exposure to predators, increased competition for resources, decreased reproduction and recruitment, or stress related disease.

Enhancement activities will primarily consist of the removal of non-native plants from dune areas. If mechanical means are used (i.e. bulldozers), changes in hydrology could result. However, this will be a continuation of an existing successful program and no such impacts are expected to result. Noise from restoration activities may disrupt and interfere with bird singing activities and

interfere with reproduction., though the impact is expected to be minimal due to the duration of the restoration activities.

Kern River Preserve (Kern County): The acquisition of 12 acres of habitat, together with the enhancement of an additional 11 acres will benefit the specified Covered Species by providing 23 acres of breeding and foraging habitat for Covered Species that use riparian type habitats.

Enhancement activities will primarily consist of restoration of riparian habitat. Enhancement activities may cause direct mortality through crushing or road mortality, though the likelihood is low due to the known behavior of the Covered Species mentioned above in relation to human activities. Effects related to noise and disturbance may result in predation caused by increased exposure to predators, increased competition for resources, decreased reproduction and recruitment, or stress related disease. If mechanical means are used (i.e. bulldozers), changes in hydrology could result. However, this will be a continuation of an existing successful program and no such impacts are expected to result.

Mayacama Mountains Sanctuary (Sonoma County): Enhancement and restoration of 250 acres will benefit the specified Covered Species.

Enhancement and restoration activities may result in direct mortality of Covered Species through crushing or road mortality, though the likelihood is low due to the known behavior of these species in relation to human activities. Disturbance may result in predation caused by increased exposure to predators, increased competition for resources, decreased reproduction and recruitment, or stress related disease. Temporary effects may include loss of nesting or foraging areas but a net gain will result from these activities when completed.

Enhancement activities will primarily consist of the restoration of oak-woodland habitat. If mechanical means are used (i.e. bulldozers), changes in hydrology could result. However, this will be a continuation of an existing successful program and no such impacts are expected to result.

Paul Wattis Sanctuary (Colusa County): Management of 200 acres of wetland habitat and restoration of 20 acres of riparian habitat, together with cowbird trapping will benefit the specified Covered Species.

Enhancement and restoration activities may result in direct mortality of Covered Species through crushing or road mortality, though the likelihood is low due to the known behavior of Covered Species mentioned above in relation to human activities. Disturbance may result in predation caused by increased exposure to predators, increased competition for resources, decreased reproduction and recruitment, or stress related disease. Temporary effects may include loss of

nesting or foraging areas but a net gain will result from these activities when completed. The elimination of cowbirds will benefit yellow warblers and yellow-breasted chats, and, to a lesser degree loggerhead shrikes, by increasing nestling success and, therefore, recruitment. It is also expected that this additional recruitment will off set any minimal loss as the result of the direct effects resulting from the project.

Enhancement activities will primarily consist of the restoration of oak-woodland and riparian habitats for Covered Species using these habitat types in this area. If mechanical means are used (i.e. bulldozers), changes in hydrology could result. However, this will be a continuation of an existing successful program and no such impacts are expected to result.

Stanislaus River Park (Stanislaus County): The restoration of 30 acres of degraded riparian corridor will benefit the specified Covered Species. Improvement and enhancement of riparian habitat will provide additional foraging areas, nesting.

Enhancement and restoration activities may result in direct mortality of Covered Species through crushing or road mortality, though the likelihood is low due to the known behavior of these species in relation to human activities. Disturbance may result in predation caused by increased exposure to predators, increased competition for resources, decreased reproduction and recruitment, or stress related disease. Temporary effects may include loss of nesting or foraging areas but a net gain will result from these activities when completed. The elimination of cowbirds will benefit yellow warblers and yellow-breasted chats, and, to a lesser degree loggerhead shrikes, by increasing nestling success and, therefore, recruitment. It is also expected that this additional recruitment will off set any minimal loss as the result of the direct effects resulting from the project.

Enhancement activities will primarily consist of the restoration of riparian and woodland habitats. If mechanical means are used (i.e. bulldozers), changes in hydrology could result. However, this will be a continuation of an existing successful program and no such impacts are expected to result.

Starr Ranch Sanctuary (Orange County): The enhancement of 700 acres of grassland at the Starr Ranch Sanctuary will benefit the specified Covered Species.

Enhancement and restoration activities may result in direct mortality of Covered Species through crushing or road mortality, though the likelihood is low due to the known behavior of Covered Species mentioned above in relation to human activities. Disturbance may result in predation caused by increased exposure to predators, increased competition for resources, decreased reproduction and recruitment, or stress related disease. Temporary effects may include loss of nesting or foraging areas but a net gain will result from these activities when completed.

Enhancement activities will primarily consist of the removal of artichoke thistle from grassland habitat. If mechanical means are used (i.e. bulldozers), changes in hydrology could result. However, this will be a continuation of an existing successful program and no such impacts are expected to result.

San Diego County Multi-Species Habitat Conservation Plan (San Diego County): The CDC will fund habitat enhancement for burrowing owls through the San Diego County Multi-Species Habitat Conservation Plan. These funds will help enhance habitat through an existing plan. No indirect effects are expected to occur.

The implementation of Tier 3 mitigation measures will positively benefit Covered Species primarily through restoration and enhancement of habitat for breeding and foraging.

Summary of Effects - In summary, the USFWS has determined that:

A. Direct effects will consist of the take (primarily in the form of kill) of a majority of Covered Species through the operation of the electric fences. For all federally listed Covered Species, there is a probability of take (primarily in the form of kill) due to the duration of the permit. Tier 1 and Tier 2 avoidance and minimization measures will reduce the level of mortaility of Covered Species, though there may be take, in the form of harassment, to Covered Species by procedures and programs under Tier 1 mitigation.

    1. By definition sensitive species are usually uncommon, therefore the likelihood of a sensitive species being present when an event occurs are small. Since installation, no federally listed species has been killed at any of the sites where fences currently are in place, as of April 11, 2002. One individual of a State-listed species (e.g. bank swallow) has been taken at the Wasco site (EDAW 1999, EDAW 2001*a*, EDAW 2001*b*, EDAW 2002).

    2. Many of the Covered Species are seasonally migratory and will be present at the project sites only at specific times of the year and only for a limited duration.

    3. Many of the raptors, such as the golden eagle, have large foraging areas and avoidance of a small area adjacent to the prison will have little impact upon these activities. Nesting sites, due to the design of the fences, will not be available in proximity to the fences.

B. Direct and indirect effects may result from enhancement and restoration activities at the Tier 3 compensation sites. The provisions of existing plans will minimize the level of take expected.

C. Beneficial effects will occur from the restoration and enhancement of habitat, at the Tier 3 compensation sites for specific Covered Species.

D. The overall result of the effects from the CDC HCP will be a net benefit to Covered Species through habitat enhancement and restoration activities.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Cumulative effects that have been identified as impacting the Covered Species, within the action area defined by the location of the prisons that have electric fences, include loss of habitat. The CDC HCP will not contribute to long-term loss of habitat. Conversely, habitat enhanced, created, and restored will increase nesting, foraging, and dispersal areas available to the Covered Species.

Conclusion

Federally listed and proposed species

After reviewing the current status of the threatened blunt-nosed leopard lizard (*Gambelia Sila*); endangered brown pelican (*Pelecanus occidentalis*); endangered southwestern willow flycatcher (*Empidonax traillii extimus*); endangered Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*); endangered San Joaquin kit fox (*Vulpes macrotis mutica)*; threatened desert tortoise (*Gopherus agassizii*); threatened bald eagle (*Haliaeetus leucocephalus*); threatened western snowy plover (*Charadrius alexandrinum nivosus*); and threatened coastal California gnatcatcher (*Polioptila californica californica)*, the environmental baselines for these species in relation to the prison sites and the effects of the proposed action, including all measures proposed to avoid, minimize, and mitigate adverse effects; and the cumulative effects, it is the USFWS's biological opinion that the issuance of an incidental take permit pursuant to section 10(a)(1)(B) of the Act is not likely to jeopardize the continued existence of these species. Critical habitat has not been designated for the blunt-nosed leopard lizard; brown pelican; southwestern willow flycatcher; Tipton kangaroo rat; San Joaquin kit fox; bald eagle; western snowy plover, therefore none will be affected. Critical habitat has been designated for the desert tortoise and coastal California gnatcatcher but the action is not likely to affect critical habitat for the above mentioned two species. Therefore, there is no destruction or adverse modification of the critical habitat.

Other Covered Species - Not Federally Listed as Threatened or Endangered

After reviewing the current status of the unlisted Covered Species, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the USFWS's opinion that

should any of these species be listed in the future, issuing the incidental take permit authorizing implementation of the CDC HCP, pursuant to the IA and supporting documents, is not likely to jeopardize the continued existence of the Covered Species. Summaries of the components of the proposed CDC HCP that were particularly instrumental in supporting the USFWS's conclusion with regard to currently unlisted Covered Species are provided in the effects section of this opinion.

INCIDENTAL TAKE STATEMENT

Section 9(a)(1) of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened fish and wildlife species without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the USFWS as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the USFWS to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The proposed CDC HCP and its associated documents clearly identify anticipated impacts to affected species likely to result from the proposed taking and the measures that are necessary and appropriate to minimize those impacts. All conservation measures described in the proposed HCP, together with the terms and conditions described in any associated Implementing Agreement and any section 10(a)(1)(B) permit or permits issued with respect to the proposed HCP, are hereby incorporated by reference as reasonable and prudent measures and terms and conditions within this Incidental Take Statement pursuant to 50 **CFR** §402.14. Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(B) and section 7(o)(2) of the Act to apply. If the Permittee fails to adhere to these terms and conditions, the protective coverage of the section 10(a)(1)(B) permit and section 7(o)(2) may lapse. The amount or extent of incidental take anticipated under the CDC HCP, associated reporting requirements, and provisions for the disposition of dead or injured animals are described in the HCP and its accompanying section 10(a)(1)(B) permit.

Amount or Extent of Take

The operation and maintenance of the electric fence, and enhancement and restoration activities are expected to result in incidental take of the Covered Species. All of the incidental take that will result from these operation of the electric fence will be authorized through the section 10(a)(1)(B) permit for

the CDC HCP. Take will be in the form of wound, harassment, and kill. It is expected that individual animals of the Covered Species will or may be taken during operation as well as other activities addressed above and in the CDC HCP.

The USFWS has determined that take levels will be reduced from those displayed in the CDC HCP for all federally listed species and several MBTA bird species based upon new and current information on populations levels or population trends available since the submittal of the draft CDC HCP in 1999. The following table displays the list of species where take levels will be reduced, the actual mortality that has occurred, the proposed take level under the CDC HCP, the expected take level per five year period based upon actual average yearly mortality, and the revised take level determined by the USFWS.

Prison Fences, Summary for certain bird species

Species (status)	Pre-Net Take (1993 - 97)	Post-Net Take, 4 years (1997 - 2001)[2]	Proposed Take per 5 years (50 years)	Expected Take per 5 years [1]	Revised Take per 5 years
Desert Tortoise	0	0	5 (50)	0	2 (20)
Blunt-nosed leopard lizard	0	0	10 (100)	0	2 (20)
Brown pelican	0	0	10 (100)	0	2 (20)
Bald eagle	0	0	5 (50)	0	2 (20)
Western snowy plover	0	0	5 (50)	0	2 (20)
Southwestern willow flycatcher	0	0	10 (100)	0	2 (20)
Coastal California gnatcatcher	0	0	5 (50)	0	2 (20)
Tipton kangaroo rat	0	0	10 (100)	0	2 (20)
San Joaquin kit fox	0	0	5 (50)	0	2 (20)
American peregrine falcon	0	0	5 (50)	0	2 (20)

Species (status)	Pre-Net Take (1993 - 97)	Post-Net Take, 4 years (1997 - 2001)[2]	Proposed Take per 5 years (50 years)	Expected Take per 5 years [1]	Revised Take per 5 years
Western yellow-billed cuckoo (candidate)	0	0	5 (50)	0	2 (20)
American kestrel (none)	33	18 total (10 at prisons with netting)	50 (500)	23	25 (250)
Prairie falcon (CSC)	0	0	10 (100)	0	2 (20)
Great Horned Owl[3]	10	21 total (11 at prisons with netting)	50 (500)	27	30 (300)
Burrowing owl (CSC)	144	19 total (6 at prisons with netting)	80 (800)	24	30 (300)
Bendire's thrasher (CSC)	1	0	10 (100)	0	2 (20)
San Diego cactus wren (CSC)	0	0	10 (100)	0	2 (20)
Loggerhead shrike (CSC)[4]	111	51 total (38 at prisons with netting)	110 (1100)	64	75 (750)

[1] Expected take is calculated by dividing the total post-net take by 4 to estimate average annual take, then multiply by 5 to estimate expected take in a 5 year period.

[2] Information provided in the paraphyses is the number of individuals killed only at prisons that have installed Tier 2 vertical netting with anti-perching devices.

[3] Tier 2 vertical netting and anti-perching devices have been determined to be ineffective for great horned owl based on a comparison between pre- and post-netting mortality at prisons where Tier 2 netting has been installed. Estimated reduction = 30 percent. Actual increase = 500 percent. Two kills pre-netting and 10 kills post-netting at prisons where Tier 2 netting was installed.

[4] Tier 2 vertical netting and anti-perching devices have been determined to be ineffective for loggerhead shrike based on a comparison between pre- and post-netting mortality at prisons where Tier 2 netting has been installed. Estimated reduction = 75 percent. Actual reduction = 59 percent. 93 kills pre-netting and 38 kills post-netting at prisons where Tier 2 netting was installed.

Take of Migratory Birds

To the extent that this statement concludes that take of any threatened or endangered species of migratory bird will result from the agency action for which consultation is being made, the USFWS will not refer the incidental take of any such migratory bird for prosecution under the MBTA of 1918, as amended (16 U.S.C. §§ 703-712) or the Bald Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

The USFWS has determined not to pursue prosecution for previous takings of migratory birds at CDC electrified fence sites. Although future unintentional taking of migratory birds cannot be authorized, the Law Enforcement Division at the time of permit decision, intends to sign a letter indicating that it is highly unlikely that the USFWS will pursue such taking if CDC's Habitat Conservation Plan is being fully implemented.

LISTED SPECIES

Desert tortoise

Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that two (2) desert tortoises may be taken through operation of the electric fences in the form of kill or wound or harass within a five-year period. The USFWS has determined that no more than one (1) desert tortoise may be taken at any individual prison within a five-year period.

Take level is being reduced for this species from 5 to 2 individuals in the form of kill, wound, or harass, for take from the electrified fences or the operation of the electrified fences. Due to the low population numbers and the low possibility of individuals interacting with an electrified fence based on size and mobility of the species and the removal of vegetation adjacent to the electrified fence and chain linked fences from Tier 1 mitigation and that only three prisons are within the range of this species, the USFWS has determined that the take level will be lowered to two individuals per each five year period.

Western snowy plover

Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that two (2) western snowy plovers may be taken through operation of the electric fences in the form of kill or wound or harass within a five-year period. The USFWS has determined that no more than one (1) western snowy plover may be taken at any individual prison within a five-year period.

Take level is being reduced for this species from 5 to 2 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. Currently, breeding occurs at only 20 locations along the coast of California; this is a decline of 62% in breeding sites since the 1970s. In addition, breeding numbers have also declined precipitously: in 1980 there were an estimated 1565 adults, which declined in 1991 to an estimated 1371 adults, which declined further to 969 in 1995 and 976 in 2000. Due to breeding sites primarily occurring in coastal habitat, low population levels within the state, the precipitous decline in both breeding habitat and breeding populations, and the low possibility of individuals interacting with an electrified fence based on foraging behavior and habitat preference (coastal dunes for breeding) and that only one prison is within the breeding range for this species, the USFWS has determined that the take level will be lowered to two individuals per each five year period.

Southwestern willow flycatcher

Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that two (2) southwestern willow flycatchers may be taken through operation of the electric fences in the form of kill or wound or harass within a five-year period. The USFWS has determined that no more than one (1) southwestern willow flycatcher may be taken at any individual prison within a five-year period.

Take level is being reduced for this species from 10 to 2 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. Throughout the southwestern willow flycatchers range, the quantity and quality of suitable habitat has been reduced from historic levels. The riparian habitat upon which it relies is widely dispersed in small, isolated areas, and this species has been extirpated from parts of its historic range. It is estimated that there are only about 1000 pairs range wide (southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, southwestern Colorado, and extreme north western Mexico). No population estimates are available for, but this bird was once considered common in southern California and now exists in only small, disjunct nesting groups. Due to the decline in riparian habitat throughout its range, the isolated, disjunct location of the remaining breeding habitat, the low population estimates range wide, and the lack of data on estimates for the California population, this species is vulnerable to further loss of adults. Due to location of breeding sites, the low population levels within the state, and the low possibility of individuals interacting with an electrified fence based on habitat preferences (dense riparian habitat for breeding)

and that there are no prisons within the range of this species, the USFWS has determined that the take level will be lowered to two individuals per each five year period.

Coastal California gnatcatcher

Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that two (2) coastal California gnatcatchers may be taken through operation of the electric fences in the form of kill or wound or harass within a five-year period. The USFWS has determined that no more than one (1) coastal California gnatcatcher may be taken at any individual prison within a five-year period.
Take level is being reduced for this species from 5 to 2 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. Once common throughout its range (coastal slopes of southern California and Baja California, Mexico), the population has declined significantly due to widespread destruction of its habitat. The United States and Mexican populations may not be disjunct. As much as 90 percent of the historic distribution of the coastal sage scrub community on which the gnatcatcher depends has been lost. Fragmentation of habitat, which increases exposure of gnatchatchers to predators and brood parasitism by brown-headed cowbirds, has also contributed to the decline of this species. Population estimates in 1996 indicate there are 2,899 pairs in the United States. Due to the low population levels within the state, the widespread destruction and fragmentation of its habitat, the adverse effect that predation and brood-parasitism has, this species is vulnerable to further loss of adults. Also, the low possibility of individuals interacting with an electrified fence based on habitat preference (primarily coastal sage scrub) and that there are only two prisons within the range of the species, the USFWS has determined that the take level will be lowered to two individuals per each five year period.

Tipton kangaroo rat

Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that two (2) Tipton kangaroo rats may be taken through operation of the electric fences in the form of kill or wound or harass within a five-year period. The USFWS has determined that no more than one (1) Tipton kangaroo rat may be taken at any individual prison within a five-year period.

Take level is being reduced for this species from 10 to 2 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. Current population levels are not available for this species, but declining population trends have been occurring at several locations including Pixley National Wildlife Refuge and range wide due to continued habitat loss. Due to the low possibility of individuals interacting with an electrified fence based on the size of the species, the removal

of vegetation (possible habitat if not removed) adjacent to the electrified fence and chain linked fences from Tier 1 mitigation, and that only eight prisons are within the range of this species, the USFWS has determined that the take level will be lowered to two individuals per each five year period.

San Joaquin kit fox

Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that two (2) San Joaquin kit foxes may be taken through operation of the electric fences in the form of kill or wound or harass within a five-year period. The USFWS has determined that no more than one (1) San Joaquin kit fox may be taken at any individual prison within a five-year period.

Take level is being reduced for this species from 5 to 2 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. San Joaquin kit fox population are declining throughout the species' range. It is currently estimated that less than 20 percent of the species range is remaining since the species was listed in 1967. Due to the continual decline of the population based on continual loss of habitat, the USFWS has determined that the take level will be lowered to two individuals per each five year period.

UNLISTED SPECIES

Aleutian Canada goose

The USFWS anticipates that an undetermined number of Aleutian Canada geese could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 Aleutian Canada geese may be taken within any five-year period.

Swainson's hawk

The USFWS anticipates that an undetermined number of Swainson's hawks could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 5 Swainson's hawks may be taken within any five-year period.

Western yellow-billed cuckoo

The USFWS anticipates that an undetermined number of western yellow-billed cuckoos could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to two (2) western yellow-billed cuckoo may be taken within any five-year period.

Take level is being reduced for this species from 5 to 2 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. This cuckoo is restricted to inhabiting riparian habitat in the western United States. Although historically the yellow-billed cuckoo was widespread or common locally in much of its historic range, it is now believed to be extirpated from portions of its historic range due to loss, degradation and fragmentation of riparian habitat. Declines in California populations have been declined precipitously with 122 to 163 pairs in 1977, decreasing to 31 to 42 pairs by 1987. It is estimated that as of 2000, there are between 41 to 45 pairs within California. There is one prison and possibly 3 others that are within the range of this species. Due to the low numbers of individuals, the rapid decline in populations, extirpations from many portions of its historic range, and the continued loss of riparian habitat, the USFWS has determined that the take level will be lowered to two individuals per each five year period.

Bank swallow

The USFWS anticipates that an undetermined number of bank swallows could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 bank swallows may be taken within any five-year period.

San Joaquin antelope squirrel

The USFWS anticipates that an undetermined number of San Joaquin antelope squirrels could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 San Joaquin antelope squirrels may be taken within any five-year period.

Mohave ground squirrel

The USFWS anticipates that an undetermined number of Mohave ground squirrels could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 Mohave ground squirrels may be taken within any five-year period.

San Diego horned lizard

The USFWS anticipates that an undetermined number of San Diego horned lizards could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 San Diego horned lizards may be taken within any five-year period.

Orange-throated whiptail

The USFWS anticipates that an undetermined number of orange-throated whiptails could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 orange-throated whiptails may be taken within any five-year period.

Northern red-diamond rattlesnake

The USFWS anticipates that an undetermined number of northern red-diamond rattlesnakes could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 northern red-diamond rattlesnakes may be taken within any five-year period.

Black-crowned night heron

The USFWS anticipates that an undetermined number of black-crowned night herons could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 black-crowned night herons may be taken within any five-year period.

Osprey

The USFWS anticipates that an undetermined number of ospreys could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 osprey may be taken within any five-year period.

Northern goshawk

The USFWS anticipates that an undetermined number of northern goshawks could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 northern goshawks may be taken within any five-year period.

Northern harrier

The USFWS anticipates that an undetermined number of northern harriers could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 northern harriers may be taken within any five-year period.

Sharp-shinned hawk

The USFWS anticipates that an undetermined number of sharp-shinned hawks could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will

be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 15 sharp-shinned hawks may be taken within any five-year period.

Cooper's hawk

The USFWS anticipates that an undetermined number of Cooper's hawks could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 Cooper's hawks may be taken within any five-year period.

Red-shouldered hawk

The USFWS anticipates that an undetermined number of red-shouldered hawks could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 15 red-shouldered hawks may be taken within any five-year period.

Red-tailed hawk

The USFWS anticipates that an undetermined number of red-tailed hawks could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 50 red-tailed hawks may be taken within any five-year period.

Rough-legged hawk

The USFWS anticipates that an undetermined number of rough-legged hawks could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 rough-legged hawks may be taken within any five-year period.

Ferruginous hawk

The USFWS anticipates that an undetermined number of Ferruginous hawks could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 Ferruginous hawks may be taken within any five-year period.

American kestrel

The USFWS anticipates that an undetermined number of American kestrels could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 25 American kestrels may be taken within any five-year period.

Take level is being reduced for this species from 50 to 25 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. There are no accurate estimates of population levels within California to date, but a decline of 1.8 percent per year in California has been estimated to be have occurred between the 1960s and 1980s based on breeding bird survey results. The decline in the last ten years of that time period has had greater declines of 6.7% per year decline. Christmas Bird Count data indicate that there was a steady increase in numbers found until 1988, then a drop in the 1990s. The most recent Breeding Bird Survey data for 1990 to 2000 indicates a non-significant increase in American kestrel in California. Christmas Bird Count data for the 1990s indicates an slight increase from 1990 to 1994, with a general decline in counts from 1994 to 2000; counts for the period 1990 - 2000 are in the order of 5000 birds. All 27 prisons are within the range of this species. Due to continued decline in population levels throughout its range, and significant declines in the last ten years within California, and the lack of specific information on population numbers and status within California, the USFWS has determined that the take level will be lowered to 25 individuals per each five year period.

Merlin

The USFWS anticipates that an undetermined number of merlins could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 merlins may be taken within any five-year period.

Prairie falcon

The USFWS anticipates that an undetermined number of prairie falcons could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 2 prairie falcons may be taken within any five-year period.

Take level is being reduced for this species from 10 to 2 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences due. The most recent information on population estimates that there were a maximum of 300 nest sites between the years of 1970 and 1979. Breeding Bird Survey (BBS) and Christmas Bird Count (CBC) data for the period 1990 to 2000 in California is equivocal; BBS indicates a non-significant decrease of 2.55%/year, while the CBC data suggest a fluctuating but stable population. Christmas Bird Count data for the period 1990 - 2000 counted less than 200 birds in California. Only two prisons are currently within the range of the species. Due to estimates of low numbers (based on data from 1979) and the low possibility of individuals interacting with an electrified fence due to low density of individuals within the state, the USFWS has determined that the take level will be lowered to two individuals per each five year period.

California gull

The USFWS anticipates that an undetermined number of California gulls could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 15 California gulls may be taken within any five-year period.

Long-billed curlew

The USFWS anticipates that an undetermined number of long-billed curlews could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 long-billed curlews may be taken within any five-year period.

Barn owl

The USFWS anticipates that an undetermined number of barn owls could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 50 barn owls may be taken within any five-year period.

Western screech-owl

The USFWS anticipates that an undetermined number of western screech-owls could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 western screech-owls may be taken within any five-year period.

Great horned owl

The USFWS anticipates that an undetermined number of great horned owls could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 30 great horned owls may be taken within any five-year period.

Take level is being reduced for this species from 50 to 30 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. Based on actual mortality of 21 individuals for a four year period post-Tier 2 netting, the expected take for a 5 year period is estimated to be 27 individuals. The USFWS has determined that the take level will be lowered to 30 individuals per each five year period based on the modification of behavior in reducing exposure to the electrified fences through implementation of Tier 2 minimization measures and the sparse distribution of the species with low density.

Northern pygmy owl

The USFWS anticipates that an undetermined number of northern pygmy owls could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence

operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.
The USFWS has determined that up to 10 northern pygmy owls may be taken within any five-year period.

Burrowing owl

The USFWS anticipates that an undetermined number of burrowing owls could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 30 burrowing owls may be taken within any five-year period.

Take level is being reduced for this species from 80 to 30 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. The burrowing owl is declining in much of the western North America, and is listed as threatened in Canada and Mexico, and has special status in 12 States, including California. The burrowing owl is fairly wide ranging within California. There are no accurate estimates of population levels within California currently. Populations in 1996 were estimated at 9, 266 breeding pairs in California. Population trend surveys for California conducted between 1986 to 1991 indicate a 23 to 53% decline in the number of breeding groups, and a 12-27% decline in breeding pairs. This owl has been extirpated from many counties in California where it historically occurred. Twenty two of the 27 prisons are within the range of this species. Due to the precipitous drop in breeding bird in the late 1980's and the fact it has been extirpated from much of its historic range in California indicates this species is vulnerable to further loss of breeding adults. Due to modifications of behavior in reducing exposure to the electrified fences from the installation of Tier 2 vertical netting and anti-perching devices, the USFWS has determined that the take level will be lowered to 30 individuals per each five year period.

Long-eared owl

The USFWS anticipates that an undetermined number of long-eared owls could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 long-eared owls geese may be taken within any five-year period.

Short-eared owl

The USFWS anticipates that an undetermined number of short-eared owls could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations

will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 short-eared owls may be taken within any five-year period.

Vaux's swift

The USFWS anticipates that an undetermined number of Vaux's swifts could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 Vaux's swift may be taken within any five-year period.

California horned lark

The USFWS anticipates that an undetermined number of California horned larks could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 15 California horned-larks may be taken within any five-year period.

Purple martin

The USFWS anticipates that an undetermined number of purple martins could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 purple martins may be taken within any five-year period.

Bendire's thrasher

The USFWS anticipates that an undetermined number of Bendire's thrashers could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be

primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 2 Bendire's thrasher may be taken within any five-year period.

Take level is being reduced for this species from 10 to 2 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. There is currently no information on population levels within California, though it is presumed that there are less that 200 pairs within the state with the breeding distribution for the species being restricted almost exclusively to the Mojave Desert. Breeding populations are patchily distributed, suitable habitat is disjunct. Breeding Bird Survey results for the period 1990 - 2000 indicate a statistically significant decline in populations of 24% per year. Only two prisons are currently within the range of the species. Due to estimates of low numbers within the state, the limited breeding areas within the state, the isolated and disjunct nature of breeding populations, the precipitous decline in populations in California, and the low possibility of individuals interacting with an electrified fence due to only two prisons within the range of this species, the USFWS has determined that the take level will be lowered to two individuals per each five year period.

San Diego cactus wren

The USFWS anticipates that an undetermined number of San Diego cactus wrens could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 2 San Diego cactus wrens may be taken within any five-year period.

Take level is being reduced for this species from 10 to 2 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. Once widespread, the current range is restricted to coastal lowlands in Orange County south to northwestern Baja California. There is currently no information on population levels within California, though it was determined that there were 400 pairs in 1990. One prison and possibly five others are currently within the range of the species. Due to estimates of low numbers within the state, the restricted nature of its remaining habitat, and the low possibility of individuals interacting with an electrified fence since only a single prison is within the range of this species, the USFWS has determined that the take level will be lowered to two individuals per each five year period.

Loggerhead shrike

The USFWS anticipates that an undetermined number of loggerhead shrikes could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be

primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 75 loggerhead shrikes may be taken within any five-year period.

Take level is being reduced for this species from 110 to 75 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. Although this species is widely distributed in North America, Breeding Bird Surveys indicate the loggerhead shrike has declined precipitously in parts of the eastern North America, and western populations have a negative trend. There are no current estimates of population levels within California, though Christmas Bird Counts estimates are generally less than 2000 birds in California for the period 1990 to 2000. All 27 prisons are within the range of this species. Due to declining population levels nation-wide, significant declines in population levels in the west, and modifications of behavior in reducing exposure to the electrified fences from the installation of Tier 2 vertical netting and anti-perching devices, the USFWS has determined that the take level will be lowered to 75 individuals per each five year period.

Yellow warbler

The USFWS anticipates that an undetermined number of yellow warblers could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 yellow warbler may be taken within any five-year period.

Yellow-breasted chat

The USFWS anticipates that an undetermined number of yellow-breasted chats could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 yellow-breasted chats may be taken within any five-year period.

Southern California rufous-crowned sparrow

The USFWS anticipates that an undetermined number of southern California rufous-crowned sparrows could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 southern California rufous-crowned sparrows may be taken within any five-year period.

Bells' sage sparrow

The USFWS anticipates that an undetermined number of Bells' sage sparrows could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 Bell's sage sparrow may be taken within any five-year period.

Tricolored blackbird

The USFWS anticipates that an undetermined number of Tricolored blackbirds could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 25 Tricolored blackbirds may be taken within any five-year period.

San Diego black-tailed jackrabbit

The USFWS anticipates that an undetermined number of San Diego black-tailed jackrabbits could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 San Diego black-tailed jackrabbits may be taken within any five-year period.

San Joaquin pocket mouse

The USFWS anticipates that an undetermined number of San Joaquin pocket mice could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 San Joaquin pocket mice may be taken within any five-year period.

Short-nosed kangaroo rat

The USFWS anticipates that an undetermined number of short-nosed kangaroo rats could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 short-nosed kangaroo rats may be taken within any five-year period.

Southern grasshopper mouse

The USFWS anticipates that an undetermined number of southern grasshopper mice could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 southern grasshopper mice may be taken within any five-year period.

Tulare grasshopper mouse

The USFWS anticipates that an undetermined number of Tulare grasshopper mice could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 Tulare grasshopper mice may be taken within any five-year period.

San Diego desert woodrat

The USFWS anticipates that an undetermined number of San Diego desert woodrats could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 San Diego desert woodrats may be taken within any five-year period.

White-footed vole

The USFWS anticipates that an undetermined number of white-footed voles could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 white-footed voles may be taken within any five-year period.

Covered Species and State Fully Protected Species

The following Covered Species are also considered fully protected species by the State of California according to Fish and Game Code section 3511, section 4700, section 5050, and section 5515: blunt-nosed leopard lizard, California brown pelican, bald eagle, American peregrine falcon, greater sandhill crane, white-tailed kite, and golden eagle. Take levels for these species have been analyzed in this biological opinion, although the take limit authorized for kill and wound of these species on the permit if issued will be 0, consistent with California Fish and Game code. The USFWS believes that minimal take of all Covered Species will occur if Tier 1 and Tier 2 measures are followed. If take of any of the species listed below does occur, CDC and CDFG, in consultation with the USFWS, will confer with regard to increasing the effectiveness of take avoidance measures at the CDC institution where the take has occurred. In the event that CDFG in the future obtains the legal authority to take these species, then the permit will be amended for the following species to include take in the form of kill or wound.

Blunt-nosed leopard lizard

Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that two (2) blunt-nosed leopard lizards may be taken through operation of the electric fences in the form of kill or wound or harass within a five-year period. The USFWS has determined that no more than one (1) blunt-nosed leopard lizard may be taken at any individual prison within a five-year period.

Take level is being reduced for this species from 10 to 2 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. Based on current information, researchers have reported recent, dramatic declines in leopard lizard populations in San Joaquin Valley and possibly extirpations for the Lokern and Elkhorn areas in the southern San Joaquin Valley. Due to this information, the removal of potential habitat adjacent to the electrified fence and chain linked fences from Tier 1 mitigation, and that only five prisons are within the range of this species, the USFWS has determined that the take level will be lowered to two individuals per each five year period.

California brown pelican

Take associated with electrical fence operations may be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that two (2) brown pelicans may be taken through operation of the electric fences in the form of kill or wound or harass within a five-year period. The USFWS has determined that no more than one (1) brown pelican may be taken at any individual prison within a five-year period.

Take level is being reduced for this species from 10 to 2 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. In California, brown pelicans only nest on Anacapa and Santa Barbara Islands in the Channel Islands off the Southern California Coast. Brown pelicans at the California nest sites have largely recovered from the effects of massive amounts of DDE discharged into the Southern California Bight between the late 1940's and early 1970s. Estimates from 1997 indicate that there are 6,380 nests on the two Channel Islands. However, eggshell thinning effects from the DDE continue. In addition, there are potential impacts to pelican nesting colonies by the market squid fishery, which has resulted in high levels of nest abandonment and chick mortality. Between breeding seasons, the Southern California pelicans join birds from other populations and wander along the west coast of North America inhabiting coastal islands, bays, ponds, slough, piers and jetties. The brown pelican also gathers in large numbers in the Salton Sea. In the last several years there have been significant die-offs of this species due to chronic avian botulism at the Salton Sea. In 1996, over 1,400 pelicans died during an avian botulism outbreak. Due to the low population numbers, the continued susceptibility of California breeding birds to DDE effects, deaths from avian botulism, and impacts on reproductive success from commercial fisheries, the California population of nesting brown pelicans is vulnerable to further impacts. In addition, the limited number of prisons within the range of the species, and the low possibility of individuals interacting with an electrified fence due to foraging behavior (plunge diving in open water) and habitat preferences (coastal habitat for nesting and open water for foraging habitat) and that only one prison is within the range of this species, the USFWS has determined that the take level will be lowered to two individuals per each five year period.

Bald eagle

Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that two (2) bald eagles may be taken through operation of the electric fences in the form of kill or wound or harass within a five-year period. The USFWS has determined that no more than one (1) bald eagle may be taken at any individual prison within a five-year period.

Take level is being reduced for this species from 5 to 2 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. In 1998, it was estimated that there were 180 territories occupied at some time in the 1990s within California, with a majority of the

territories being in Northern California. Due to the low numbers of breeding bald eagles in California, this population is vulnerable to the loss of adult breeding birds. In winter, bald eagles from other parts of North America migrate to California, largely in the Klamath Lakes Basin and at Eagle Lake, with estimates of wintering birds at over 1000. The main wintering areas for the bald eagles is not near any of the prisons, and the habitat around the prisons is unsuitable for bald eagle foraging, so there should be very low probability of wintering bald eagles coming into contact with the electrified prison fences. Due the limited number of prisons within the wintering and breeding locations for this species (mainly in mountainous habitats near reservoirs, lakes and rivers), the low number of territories within the state, and the low possibility of individuals interacting with an electrified fence based on foraging behavior (mainly foraging within major stream and river drainages), the USFWS has determined that the take level will be lowered to two individuals per each five year period.

American Peregrine falcon

The USFWS anticipates that an undetermined number of peregrine falcons could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 2 American peregrine falcons may be taken within any five-year period.

Take level is being reduced for this species from 5 to 2 individuals in the form of kill, wound, or harass, from the electrified fences or the operation of the electrified fences. The California population has been increasing since the banning of DDT, though the population levels are still low, 111 pairs in 1991. Peregrine falcons breeding in central coastal California on the Channel Islands though still suffer from elevated levels of DDE and eggshell thinning due to historic releases from a DDT manufacturing plant near Los Angeles. The nesting and feeding habits of the peregrine falcon make it unlikely to be attracted to the environment around the prisons, and no known breeding areas occur in near any of the prisons. Due to the low population level for this species, the low probability of peregrine falcons interacting with the electrified fences, and that no prisons are near habitat of this species, the USFWS has determined that the take level will be lowered to two individuals per each five year period.

Greater sandhill crane

The USFWS anticipates that an undetermined number of greater sandhill cranes could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 5 greater sandhill cranes may be taken within any five-year period.

White-tailed kite

The USFWS anticipates that an undetermined number of white-tailed kites could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 white-tailed kites may be taken within any five-year period.

Golden eagle

The USFWS anticipates that an undetermined number of golden eagles could be taken over a 50-year period as a result of this proposed action. Take associated with electrical fence operations will be primarily in the form of kill. Take may occur in the form of wound or harass associated with electrical fence operations.

The USFWS has determined that up to 10 golden eagles may be taken within any five-year period.

Effect of the Take

The USFWS has determined that this level of anticipated take is not likely to result in jeopardy to the listed wildlife species in this opinion or result in destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures and Terms and Conditions

The CDC HCP and accompanying agreements identify anticipated adverse effects to all Covered Species likely to result from the proposed actions, and the specific measures and levels of species and habitat protection that are necessary and appropriate to minimize those adverse effects. All of the conservation and management measures in the CDC HCP and accompanying agreements, together with the terms identified in the associated Implementing Agreement, are hereby incorporated by reference as reasonable and prudent measures, and terms and conditions for this incidental take statement pursuant to 50 **CFR** 402.14(I). Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(B) and section 7(o)(2) of the Act to apply. If the Permittee fails to adhere to these terms and conditions, the protection of the Permit, and section 7(o)(2), may lapse. The amount or extent of the incidental take under the CDC HCP, associated reporting requirements, and provisions for disposing of dead or injured animals, are as described in the Permit.

Further, the following terms and conditions apply to the USFWS after issuance of the Permit:

1. The USFWS shall provide technical assistance to CDC throughout the term of the Permit.

2. For species where the revised take is limited to two individuals, when one individual per species is taken, the USFWS will confer with CDC to determine corrective measures to reduce mortality to zero for the current 5 year period and the remaining 5 year periods. This will allow CDC to continue operation of the electrified fences.

3. The USFWS shall review all contracts, restoration plans, and mitigation implementation agreements for enhancement and restoration activities on the conservation sites to ensure that all activities shall be conducted in accordance with current USFWS guidelines for activities within listed species habitat, as appropriate.

4. The USFWS will facilitate ESA compliance for all the mitigation sites. All of the incidental take that will result from enhancement and restoration activities, habitat conversion and acquisition, restoration, and management of reserve lands due to Tier 3 mitigation will be authorized through either a separate section 10(a)(1)(B) permit or Section 7 consultation for the mitigation site.

5. The USFWS and CDC will initiate dialogue when 50 percent of the number of individuals for each covered species has been taken within any 5 year period.

Reporting Requirements

The CDC is required to compile and submit an annual report to the USFWS and CDFG detailing project activities for the preceding year. The report is due by January 15th of the following year. The annual report shall include the following sections:

1. Section 1: *Incidental Take*: Each report shall include a species-by-species accounting for all species electrocuted as detailed in the HCP.

2. Section 2: *Implementation of Tier 1 Measures*: Each report shall include the results of a site inspection of each prison, to be conducted annually, evaluating the Tier 1 measures.

3. Section 3: *Monitoring and Effectiveness of Tier 2 Measures*: Each report shall include the results of a site inspection of each prison with Tier 2 measures installed and shall include a report on the effectiveness of such measures.

4. Section 4: *Implementation of Tier 3*: Each Annual report shall include a summary of the mitigation activities occurring at each compensation site.

5. Section 5: *Mitigation Program Summary*: A summary of the preceding years activities shall be

included.

The USFWS shall work with CDC to ensure the annual reporting requirements are met. The Sacramento Fish and Wildlife Office is to be notified within three working days of the finding of any dead listed wildlife species or any unanticipated harm to the species addressed in this biological opinion. The USFWS contact person for this is the Chief, Endangered Species Division at (916) 414-6620.

CDC must report to the USFWS immediately any information about take or suspected take of listed wildlife species not authorized in this opinion. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal. The USFWS contact is the USFWS's Law Enforcement Division at (916) 414-6660.

Any contractor or employee who during routine operations and maintenance activities inadvertently kills or injures a listed wildlife species must immediately report the incident to their representative. This representative must contact CDFG immediately in the case of a dead or injured Federal or State listed species. The CDFG contact for immediate assistance is State Dispatch at (916) 445-0045.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or o develop information. The USFWS has the following conservation recommendations:

1. Develop a database of information on the take of Covered Species by electric fences at project sites.

2. Conduct, or fund, studies on exclusionary methods for Covered Species.

REINITIATION-CLOSING STATEMENT

This concludes formal consultation and conference on the issuance of a Permit to implement the CDC HCP. As provided in 50 **CFR** §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals that the agency action may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or

extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The incidental take statement provided in this conference opinion for the unlisted species does not become effective until an unlisted species is listed under section 4 of the ESA, and the conference opinion is adopted as the biological opinion. At that time, the project will be reviewed to determine whether any take of the species has occurred. Modifications of the opinion and incidental take statement may be appropriate to reflect that take.

If you have any questions regarding this consultation, please contact Vicki Campbell, Conservation Planning Division Chief, at (916) 414-6600.

c:
U.S. Fish and Wildlife Service, Portland, Oregon (Attn: L. Salata)
California Department of Fish and Game, Fresno, California (Attn: S. Juarez)
California Department of Corrections, Sacramento, California (Attn: Berend Buetenmuller)

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