

Protection of sensitive and federally listed animals and plants is an important aspect of pest control operations. Chemical control is used only when nonchemical techniques are inadequate or impractical. FHL Regulation 200-3 lists the following potential threats that require Environmental Review prior to pest control activities:

- Application of poisoned baits or fumigants for ground squirrel control
- Application of flea dust (Sevin® 10 or Ficam D®)
- Live-trapping for cats or other problem mammals
- Application of herbicides within 200 meters (656 feet) of rare plant populations
- Application of herbicides or insecticides within 200 meters (656 feet) of known vernal pool fairy shrimp pools
- Release of mosquito fish
- Cattail/tule control.

California ground squirrels carry the fleas that transmit plague, and their burrowing activities are destructive to roads, buildings, dams, berms, and range targets. California ground squirrels are controlled primarily around buildings and fields in the administrative area of the cantonment, and along roads and berms in the ASP and fixed ranges. Biologists survey prior to ground squirrel poisoning. Trapping is conducted infrequently within the cantonment at or near buildings primarily to remove feral cats and raccoons causing problems to facilities. No San Joaquin kit foxes or other fox species have been caught or observed during trapping efforts.

Herbicides are sprayed along main paved roads, near buildings, power poles, and other property to reduce the chance of damage by fire. Herbicide use along shoulders of main roads occurs along Mission Road from the Main Gate to San Antonio Mission, Silo Road, Infantry Road, Sam Jones Road from Martinus Corner to Sam Jones Bridge, ASP Road, Nacimiento-Fergusson Road, Del Venturi Road, Vasques Road, Sulphur Springs Road, and San Miguelito Loop Road from Nacimiento-Fergusson Road to Site 8-J; use will not exceed 3 meters (10 feet) from the edge of the road or structure and is applied using a vehicle-mounted boom or hand applicator.

Insecticides are used inside and around buildings to control ants and spiders. Malathion® is sprayed as a fog along roads in populated areas from about mid-April through mid-October to control adult mosquitoes. Malathion® is not sprayed if winds are greater than 10 miles per hour (mph). Mosquito fish (*Gambusia* spp.) are used in permanent water bodies such as reservoirs and cattle troughs to control mosquito larvae. Larvicide can be applied to water bodies containing mosquito larvae as a last resort measure. Mosquito fish are released only into reservoirs already stocked with nonnative fish associated with the fishing program. Mosquito fish can be released into cattle troughs if PWE determines there is no chance of their entry into nearby drainages during heavy rains.

## 4.8 Threatened and Endangered Species

AR 200-1 requires that installations prepare and implement an Endangered Species Management Component to the INRMP consistent with current policy and guidance. It is a U.S. Army goal to systematically conserve biological diversity on Army lands within the context of its mission.

The ESA, as amended, defines endangered species protection for federal agencies. “Taking” is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to do so. Harm includes the destruction of habitat. The ESA imposes five primary requirements upon the U.S. Army:

1. Conserve listed species.
2. Not “jeopardize” listed species.
3. “Consult” and “confer”.
4. Conduct a biological assessment.
5. Not to “take” listed fish and wildlife species or to remove or destroy listed plant species.

The *Programmatic Biological Assessment of the Effects of Activities Conducted at FHL, Monterey County, California, on Federal Endangered and Threatened Species* (FHL 2004c) that was submitted to USFWS to initiate consultation contains species- and activity-specific minimization measures to protect federally listed or proposed species. The minimization measures are subject to modification during the consultation process through coordination between FHL and USFWS; the measures are finalized at the conclusion of consultation. The PBA was amended in and consultation reinitiated in 2007 and 2009.

USFWS proposed critical habitat on FHL for purple amole (2001), arroyo toad (2000 and 2004), and vernal pool fairy shrimp (2002 and 2004). In the most recent final designations for each species, FHL was excluded from critical habitat designation based on conservation benefits to the species through U.S. Army actions, which are addressed in the INRMP and have been reviewed and co-signed by USFWS (FHL 2009e).

There are five species federally listed as endangered and four species federally listed as threatened that have the potential to occur within or near FHL, including the San Joaquin kit fox (*Vulpes macrotis mutica*), endangered; California condor (*Gymnogyps californianus*), endangered; least Bell’s vireo (*Vireo bellii pusillus*), endangered; arroyo toad (*Anaxyrus californicus*), endangered; Chorro Creek bog thistle (*Cirsium fontinale* var. *obispoense*), endangered; California red-legged frog (*Rana draytonii*), threatened; California tiger salamander (*Ambystoma californiense*), threatened; vernal pool fairy shrimp (*Branchinecta lynchi*), threatened; and purple amole (*Chlorogalum purpureum* var. *purpureum*), threatened (see **Table 4-4**). Two “delisted species,” the peregrine falcon and the bald eagle, were previously listed under the ESA but have recovered to the point that they no longer require protection under the ESA.

**San Joaquin Kit Fox.** The San Joaquin kit fox (*Vulpes macrotis mutica*) was listed as federally endangered on March 11, 1967. The species inhabits grasslands, scrublands, oak woodlands, and vernal pool areas in the California Central Valley floor and the interior coastal ranges. It is the smallest canid in North America. Den sites are dug in sandy loam on hillsides. The California ground squirrel (*Spermophilus beecheyi*) is an important prey species for kit fox on FHL. Coyotes compete with the kit fox for prey on FHL. Potential habitat for kit fox can be found in portions of the San Antonio River Valley (cantonment and TAs 7, 10, 13, 16B, 22 and 25), and the Nacimiento River Valley (TAs 12, 15, 16, 19, 20, 21, 24, and 27).

Spotlight and scent station surveys have been conducted 2-3 times per year since 1998. The most recent sighting was in 2000 near TA 22. Pre-activity surveys are regularly conducted prior to construction or use of rodenticide in potential habitat; however, no San Joaquin kit fox dens have been found.

**California Condor.** The California condor (*Gymnogyps californianus*) was listed as federally endangered on March 11, 1967. It is the largest bird in the United States, with a wing span of more than 3 meters (9 feet). The reintroduction of captive-bred individuals into the wild, which began in 1992, continues today and contributes to the increase in current population estimates (FHL 2004b). Suitable habitat for condors includes foothill rangeland and forest in remote areas where the birds can roost and nest in tall trees and on cliffs. Rocky outcrops in the Nacimiento River valley provide suitable foraging habitat for California condors (NPS 2007). In May 2002, one California condor was observed foraging on an elk killed by a mountain lion in TA 20 on FHL (FHL 2004b). Releases of captive-bred young California

**Table 4-4. Federally Endangered and Threatened Species with the potential to occur on or near FHL**

Scientific Name	Common Name	Federal Status
<b>Plants</b>		
<i>Chlorogalum purpureum</i> var. <i>purpureum</i>	Purple amole	T
<i>Cirsium fontinale</i> var. <i>obispoense</i>	Chorro Creek bog thistle	E
<b>Invertebrates</b>		
<i>Branchinecta lynchi</i>	Vernal pool fairy shrimp	T
<b>Reptiles and Amphibians</b>		
<i>Ambystoma californiense</i>	California tiger salamander	T
<i>Anaxyrus californicus</i>	Arroyo toad	E
<i>Rana draytonii</i>	California red-legged frog	T
<b>Birds</b>		
<i>Gymnogyps californianus</i>	California condor	E
<i>Vireo bellii pusillus</i>	Least Bell's vireo	E
<b>Mammals</b>		
<i>Vulpes macrotis mutica</i>	San Joaquin kit fox	E

Source: FHL 2009e

Key: E = Endangered; T = Threatened

condors continue in Los Padres National Forest to the north and Pinnacles National Monument to the northeast of FHL. No nesting habitat is known on the installation, but the area continues to provide suitable foraging areas with a forage base of carcasses from deer, elk, coyote, and other medium to large animals (FHL 2009g). As of October 2009, 15 wild condors have fledged, and the current wild population in California was 87 (Ventana 2009). California condors have been observed on FHL, and sightings could increase as more birds are released in Monterey County. To date, no specific monitoring program has been implemented for the California condor on FHL. Free-flying California condors continue to have lead poisoning, which is believed to be the result of scavenging on carcasses killed by hunters using lead bullets. The hunting program on FHL requires that ammunition does not contain more than one percent lead (FHL 2009f).

**Least Bell's Vireo.** The least Bell's vireo (*Vireo bellii pusillus*) was listed as federally endangered on May 2, 1986. The least Bell's vireo is a small songbird with grey upper and white underparts and nondistinct spectacles (NatureServe 2009). The least Bell's vireo was once abundant in the Central Valley; however, populations have declined significantly due to loss and degradation of riparian habitat and the expansion of the range of the nest-parasitizing brown-headed cowbird (*Molothrus ater*). The last documented occurrence of least Bell's vireo on FHL was a lone singing male observed on El Piojo Creek in TA 24 in 1988 (Roberson and Tenney 1993). FHL began annual surveys for the species in suitable breeding habitat in 1999 along Mission Creek, the San Antonio River, Nacimiento River, and other scattered drainages on FHL. Although the species has not been detected, potential for colonization exists with the continuing recovery of the least Bell's vireo range in California (Howell et al. 2010).

**California Tiger Salamander.** The Central California distinct population segment of the California tiger salamander (*Ambystoma californiense*) was listed as a threatened species in 2004 (USFWS 2009). The California tiger salamander is a large terrestrial salamander with a rounded snout. It is black in color with white to pale yellow spots or bars. The California tiger salamander inhabits vernal and seasonal pools in grassland, oak savanna, and coastal scrub communities. Populations of California tiger salamander have

declined due to habitat degradation and loss caused by urban and agricultural development (USFWS 2009). All tiger salamanders on FHL are considered hybrids, a combination of the native California tiger salamander and the nonnative Eastern tiger salamander (*Ambystoma tigrinum*) (FHL 2005, FHL 2004b). Tiger salamanders occur in at least 16 locations on the installation (FHL 2004b). Due to the hybrid nature of occurrences on FHL, there is no formal protection for the populations here.

**Arroyo Toad.** The arroyo toad (*Anaxyrus californicus*) was listed as endangered on December 16, 1994, and is classified as a species of concern by the State of California. This species inhabits very restricted areas in southern California and Baja California, Mexico (USFWS 1999). The arroyo toad is a medium-sized species that inhabits streams where water levels fluctuate and natural disturbance is common during flooding events (FHL 2004b, NPS 2007). Primary threats to this species include habitat loss due to urbanization, agriculture, and dam construction. Additional threats include water management and diversion activities; road construction, maintenance, and use; predation by exotic species; loss of habitat to exotic plants; livestock grazing; mining; and recreational activities. Arroyo toads are limited to 22 drainages in California, to include the San Antonio River on FHL where breeding and upland habitat occurs in the cantonment area and TAs 6B, 16B, 22, 25, and 29. In these areas, arroyo toads breed, forage, and aestivate in sandy soils along the San Antonio River and may forage in adjacent nonsandy upland terraces (FHL 2010a).

Annual surveys are conducted and comprise breeding distribution (April–July), clutch development and survivorship (May–August), and habitat assessment surveys (May–July). Surveys conducted every 1 to 5 years include fall surface water mapping, invasive tamarisk distribution, and remote sensing of vegetation encroachment. Preactivity surveys are performed regularly prior to construction in or around potential arroyo toad habitat (FHL 2004a, 2007c, 2008b, 2009c). Arroyo toads continue to be found in suitable habitat along the San Antonio River with minor and expected annual changes in abundance and distribution. A decrease in abundance was noted in the upstream reaches of suitable habitat in the cantonment associated with channel incision and riparian vegetation succession (FHL 2009g).

**California Red-legged Frog.** The California red-legged frog (*Rana draytonii*) was listed as federally threatened on May 23, 1996 (USFWS 2010). Breeding habitat includes streams, deep pools, backwaters within streams and creeks, ponds, marshes, sag ponds, dune ponds, and lagoons with deep, slow-moving water with or without dense vegetation. The range of the California red-legged frog has diminished by 70 percent due to habitat loss and alteration. Non-native bullfrog predate upon California red-legged frog. Occurrences of the California red-legged frog have been reported in the Nacimiento River Valley in 1948; however, surveys conducted of the California red-legged frog since 2003 have not detected them on the installation (FHL 2004b, FHL 2005, FHL 2009g). Potential habitat for this species exists along the San Antonio and Nacimiento rivers (FHL 2004b).

**Vernal Pool Fairy Shrimp.** The vernal pool fairy shrimp (*Branchinecta lynchi*) was listed as threatened in 1994 (59 FR 180, September 19, 1994). The vernal pool fairy shrimp occur in vernal pools in the Central Valley, Coast Ranges, and a limited number of other sites. Threats to the species include destruction of vernal pools from urban development, flood control, agricultural development, highway, and utility projects. At FHL, most vernal pool fairy shrimp sites are in the San Antonio Valley in the cantonment area and TAs 13, 16B, 22, and 25, with two additional sites in the Nacimiento Valley in TA 20. Additional vernal pools occur in both valleys. Surveys continue annually. One additional occupied pool was discovered in 2008 (FHL 2009g).

**Purple Amole.** Purple amole (*Chlorogalum purpureum* var. *purpureum*) was federally listed as threatened on March 20, 2000 (CNPS 2010). Purple amole is a small perennial member of the lily family that flowers from April through June. It is threatened by habitat fragmentation, habitat conversion, nonnative plants, foot traffic, vehicles, and military activities and is potentially threatened by grazing (CNPS 2010). Purple amole is known only from limited areas (i.e., approximately 15 occurrences)

almost entirely on FHL and Camp Roberts in Monterey and San Luis Obispo counties in the Nacimiento and San Antonio River watersheds. On FHL it occurs primarily in the San Antonio Valley in portions of the cantonment area and TAs 13, 16B, 22, and 25, with an additional small site in TA 24 in the Nacimiento Valley (FHL 2009c).

Annual surveys are conducted at 14 transects to count the number of purple amole plants present, the number of those plants that successfully produced seed, and the numbers of seeds produced. The majority of purple amole is currently found in TAs 13 and 25. Gopher activity continues to be the primary disturbance factor of purple amole on FHL (2004–2008 Yearly Reviews). Surveys continue annually. Additional populations have been found within the general known distribution on FHL (FHL 2009c).

***Chorro Creek Bog Thistle.*** The Chorro Creek bog thistle was listed as federally endangered on December 15, 1994. The species inhabits inland seeps associated with serpentine soils (USFWS 1994). The closest known population to FHL is in western San Luis Obispo County, south of FHL's most southern border. Serpentine soils occur on FHL in Training Areas 17, 19, 23, 26 and 28. Biologists did not detect the species during surveys of serpentine soils in Training Area 28 in June 2012; additional surveys will be conducted during future growing seasons.

### Sensitive Resource Management Areas

Sensitive resource protection areas (SRPAs) were previously designated as mitigation for construction and use of ranges and to place land use restrictions to protect vernal pool fairy shrimp, San Joaquin kit fox, and purple amole. The Programmatic Biological Assessment (PBA) (FHL 2004c) was amended (FHL 2009f) to redesignate SRPAs as Sensitive Resource Management Areas (SRMAs) to highlight their long-term management requirements. Management area boundaries should be adapted as new information is available, with changes proposed to USFWS and included in annual updates to the INRMP.

The PBA evaluated existing SRPAs 1 through 7 in relation to (i) conflicts with military training and development, (ii) sensitive resources protected, (iii) existing protections in place, and (iv) potential and need for future management and protection actions. Existing overlap between the SRPAs was eliminated so that no areas were double-counted. Revised SRMAs are described in **Table 4-5**. Current land use for each area includes the following unless stated otherwise: vehicle traffic on existing roads to include low water crossings, maintenance of roads and facilities, emergency traffic, foot traffic, landings by helicopters, and habitat improvement projects. All other activities require coordination with PWE.

## 4.9 Cultural Resources

Cultural resources consist of landscapes, archaeological sites, structures, artifacts, flora and fauna, and geological features that are considered important to a social, ethnic, cultural, or occupational group's shared identity, existence as a community, or necessity for continuation of traditional life ways. The National Historic Preservation Act (NHPA), as amended in 2006 (16 U.S.C. 470 et seq.), NEPA, and AR 200-4 require the consideration of impacts on cultural resources either listed in or eligible to be listed in the NRHP. Cultural resources on FHL are discussed, and management of the resources is prescribed in the ICRMP.

The potential for the inadvertent discovery of unknown cultural resources during ground-disturbing activities always exist. Certain areas (e.g., stream banks and bottoms, hilltops, and near rock outcrops) have a higher potential to yield cultural resources and at a greater density than others (e.g., steep slopes). Consistent with the ICRMP, FHL ensures that in the event of the inadvertent discovery of an archaeological resource, measures are taken promptly to protect the find from disturbance, assess the significance of the discovery, and implement appropriate mitigative measures for significant resources.