

Blunt-Nosed Leopard Lizard

(Gambelia sila)

Legal Status

State: Endangered, Fully Protected

Federal: Endangered

Critical Habitat: No critical habitat has been designated for this species.

Recovery Planning: *Recovery Plan for Upland Species of the San Joaquin Valley* (U.S. Fish and Wildlife Service 1998). In 2010, the U.S. Fish and Wildlife Service (USFWS) issued the *Blunt-Nosed Leopard Lizard (Gambelia sila) 5-Year Review: Summary and Evaluation*. In the 5-Year Review, USFWS recommended no change to the federal status of the species.

Notes: No changes to status proposed or anticipated during the permit term.

Taxonomy

The blunt-nosed leopard lizard is relatively large with a long tail and powerful hind limbs. Its size and body proportions are similar to those of the related long-nosed leopard lizard (*Gambelia wislizenii*), except for the blunt snout (Stebbins 2003). Adult males range in size from 87–120 millimeters (mm) snout-vent length. Females are smaller, averaging 86–111 mm snout-vent length. Adult males weigh between 31.8 and 37.4 grams; adult females weigh between 20.6 and 29.3 grams (U.S. Fish and Wildlife Service 1998).

Males are distinguished from females by a larger head due to larger temporal and mandibular muscles and a larger tail base (U.S. Fish and Wildlife Service 1998). During breeding, females have bright red-orange markings on the sides of the head and body and the undersides of the thighs and tail. Breeding males develop a salmon or pink skin hue that covers most of the body (Stebbins 2003).

Distribution

General

The blunt-nosed leopard lizard is endemic to the San Joaquin Valley. Historically, this species occurred from Stanislaus County in the north to the Tehachapi Mountains in Kern County in the south. The foothills of the Sierra Nevada and the Coast Ranges

roughly define the eastern and western boundaries of its distribution, except for populations on the Carrizo Plain and in the Cuyama Valley west of the San Joaquin Valley. The blunt-nosed leopard lizard is not found above 800 meters (2,624 feet) in elevation (U.S. Fish and Wildlife Service 1998). Blunt-nosed leopard lizards are known to hybridize with long-nosed leopard lizards where their ranges overlap in the Cuyama River watershed in Santa Barbara and Ventura Counties (U.S. Fish and Wildlife Service 1998).

Distribution and Occurrences within the Study Area

Historical

Based on a search of the California Natural Diversity Database (CNDDDB), there are three historical blunt-nosed leopard lizard occurrences (prior to 1990) within the permit area and 86 historical occurrences within the larger study area (California Department of Fish and Game 2012).

Recent

There are four recent occurrences (1990 to present) for the BNLL in the permit area and 55 occurrences in the larger study area (California Department of Fish and Game 2012). All of the occurrences are presumed to be extant.

No comprehensive survey has been conducted of the entire range of the blunt-nosed leopard lizard. The current known distribution includes scattered units of undeveloped land on the valley floor and in the foothills of the Coast Ranges. In the northern part of its range, the blunt-nosed leopard lizard is known to occur in the Firebaugh and Madera Essential Habitat Areas (U.S. Fish and Wildlife Service 1998). In the southern part of the San Joaquin Valley, populations are known to occur in the following locations.

- Pixley National Wildlife Refuge (NWR)
- Liberty Farms
- Allensworth Ecological Reserve
- Semitropic Ridge Reserve
- Kern NWR
- Antelope Plain
- Buttonwillow Ecological Reserve
- Elk Hills and Tupman Essential Habitat Areas
- the Occidental Petroleum Ltd. (Oxy) conservation lands
- on the Carrizo and Elkhorn Plains

- north of Bakersfield around Poso Creek
- the Lokern Natural Area in western Kern County,
- and in the area around the towns of Maricopa, McKittrick, and Taft (Kern County) (U.S. Fish and Wildlife Service 1998)

The largest extant populations of blunt-nosed leopard lizards are in Elk Hills and Buttonwillow Ecological Reserve (Kern County), Semitropic Ridge Reserve (Kings County), and Carrizo Plain Natural Area (San Luis Obispo County) (U.S. Fish and Wildlife Service 2010).

Within the San Joaquin Valley floor, the Semitropic Ridge Preserve protects 5,278 acres of contiguous blunt-nosed leopard lizard habitat, the Pixley NWR protects 3,000 acres of contiguous habitat in Tulare County, the Allensworth Ecological Reserve protects over 5,000 acres of suitable habitat in four fragmented parcels in Tulare County, the Buttonwillow Ecological Reserve protects 1,350 acres of suitable habitat, and the Lokern Natural Area protects over 13,000 acres in Kern County but in fragmented parcels. Within the foothills of western Kern County, the Occidental Petroleum conservation lands protect 2,882 acres of contiguous habitat on the north flank of Elk Hills and 3,770 acres in Buena Vista Valley (U.S. Fish and Wildlife Service 2010).

Natural History

Habitat Requirements

Blunt-nosed leopard lizards are found in areas of sparsely vegetated grasslands, valley sink scrub, and saltbush scrub habitats, canyon floors, and large washes at elevations below 2,600 feet. They inhabit areas with sandy soils and scattered vegetation and are usually absent from thickly vegetated habitats. Typical suitable habitats on the San Joaquin Valley floor include nonnative grassland and valley sink scrub habitats. The soils there are usually saline and alkaline playa clays with a white salty crust and are occasionally covered by introduced annual grasses. Blunt-nosed leopard lizards are known to occur in areas light petroleum development and will recolonize oil fields that have been abandoned. However, population densities decrease as the density of oil development increases (U.S. Fish and Wildlife Service 1998).

Blunt-nosed leopard lizards use small rodent burrows for shelter, predator avoidance, and behavioral thermoregulation. These burrows may be either abandoned ground squirrel tunnels or occupied or abandoned kangaroo rat tunnels. Blunt-nosed leopard lizards also utilize small mammal burrows to avoid predation primarily by quick escape movements or by seeking refuge in small rodent burrows in their territory or under shrubs and rocks. When burrow densities are low, some individuals

may construct shallow tunnels in earth berms or under rocks (U.S. Fish and Wildlife Service 2010).

Table 1. Habitat Associations for Blunt-Nosed Leopard Lizard

Land Cover Type	Land Cover Use	Habitat Designation	Habitat Parameters	Rationale
Saltbush scrub, valley sink scrub, and grasslands with burrows	Breeding, foraging, and denning	Primary	Requires suitable burrows for predator avoidance, denning, and hibernation. Must be managed to maintain low vegetation height.	Presence of burrowing species provides burrows for refugia. Low vegetation is thought to provide clear view of potential predators and prey. Also allows for easier movement.
Oil Field	Breeding, foraging, and denning	Primary and secondary	Are found in light-density oil fields (<25% ground cover. Less abundant in moderate-density (25%-75% ground cover developed). Absent from high-density fields (>75% ground cover developed)	Population densities in oil fields decrease as development density increases.

Sources: U.S. Fish and Wildlife Service 1998; U.S. Fish and Wildlife Service 2010.

Foraging Requirements

Blunt-nosed leopard lizards are opportunistic predatory lizards. Prey consist of arthropods, especially grasshoppers, and small lizards (Germano and Williams 2005). Because of similarity in diets, some level of competition may occur between blunt-nosed leopard lizards and California whiptail (U.S. Fish and Wildlife Service 1998).

Reproduction

The reproductive season of the blunt-nosed leopard lizard generally begins within a month after emergence from dormancy, usually the end of April continuing through the beginning of June and occasionally to the end of June. During this time, adults pair and frequently occupy the same burrow. Males aggressively defend territories using a repertoire of distinct behavioral displays and active aggression against intruders. Blunt-nosed leopard lizards communicate primarily through visual displays, including seasonal and permanent body coloration and ritualistic head and body movements (U.S. Fish and Wildlife Service 1998).

The female lizard lays 2–6 eggs in June and July, the number of eggs being positively correlated with the size of the female. During adverse conditions, reproduction may be delayed up to 2 months or even forgone for a season. Incubation lasts about 2 months, and young hatch from early July through early August. Hatchling size varies between 42 and 48 mm snout-vent length. Young may grow to 88 mm during their

first season prior to hibernation (see Table 2 below). Sexual maturity occurs by 9–21 months. Females are able to breed after their second year of hibernation, (U.S. Fish and Wildlife Service 1998).

Table 2. Key Seasonal Periods for Blunt-Nosed Leopard Lizard

	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Aboveground activity			✓	✓	✓	✓	✓	✓	✓	✓		
Hibernation and aestivation	✓	✓	✓				✓	✓		✓	✓	✓

Sources: U.S. Fish and Wildlife Service 1998; California Department of Fish and Game 2004.

Home Range and Population Density

Male home ranges overlap and are generally larger than those of females, averaging 0.2–1.7 hectares (0.5–4.2 acres) compared with 0.1–1.1 hectares (0.3–2.7 acres) for females (U.S. Fish and Wildlife Service 1998). Environmental factors such as drought can affect lizard density, which can vary over time. Population density at Pixley NWR ranges from 0.3–10.8 lizards per hectare, while at the Elkhorn Plain, from 1989 to 1994, the population density ranged from 4.9–20.2 adults per hectare (U.S. Fish and Wildlife Service 2010).

Ecological Relationships

Blunt-nosed leopard lizards are potential prey for San Joaquin whipsnakes (*Masticophis flagellum ruddocki*) and gopher snakes (*Pituophis catenifer*), loggerhead shrikes (*Lanius ludovicianus*), American kestrels (*Falco sparverius*) and other raptors, American badgers (*Taxidea taxus*), coyotes (*Canis latrans*), and San Joaquin kit foxes (*Vulpes macrotis mutica*) (U.S. Fish and Wildlife Service 1998). Because of similar size and diet between blunt-nosed leopard lizards and California whiptail (*Aspidoscelis tigris munda*), interspecific competition probably occurs when the two species are sympatric.

The seasonal and daily aboveground activity of blunt-nosed leopard lizards is strongly correlated with temperature. Optimal activity occurs when air temperatures are between 74°F and 104°F and ground temperatures are between 72°F and 97°F (U.S. Fish and Wildlife Service 2010).

Population Status and Trends

Global: Critically Imperiled (NatureServe 2012)

State: Declining (California Department of Fish and Game 2010)

Study Area: Same as above

Except the Carrizo and Elkhorn Plains and the Lokern Natural Area, much of the suitable blunt-nosed leopard lizard habitat throughout its range lack sufficient protection to ensure that populations range-wide are stable and are trending upward. Most populations continue to have low densities and instabilities, and the species continues to be threatened by degradation and loss of habitat throughout most of its range (U.S. Fish and Wildlife Service 2010).

Threats and Environmental Stressors

Since the 1870s, more than 95% of the original natural communities in the San Joaquin Valley have been lost to agricultural, urban, and industrial development (U.S. Fish and Wildlife Service 1998). Cultivation, habitat modification for petroleum and mineral extraction, pesticide application, off-road vehicle use, and construction for transportation, communication, and irrigation infrastructure all have resulted in pervasive habitat loss throughout the San Joaquin Valley. These activities present ongoing threats to the survival of blunt-nosed leopard lizards (U.S. Fish and Wildlife Service 2010).

Conservation and Management Activities

The USFWS prepared a recovery plan for the blunt-nosed leopard lizard in 1980 and revised the recovery plan in 1985. In 1998, USFWS completed the *Recovery Plan for Upland Species of the San Joaquin Valley, California* (U.S. Fish and Wildlife Service 1998), which included a revised recovery strategy for the blunt-nosed leopard lizard. The 1998 recovery plan's objective for blunt-nosed leopard lizard was to secure a down listing of the species' status from endangered to threatened. A down listing may be possible when sufficient acreage of valley floor habitat has been secured to maintain self-sustaining populations.

The recovery plan required that five areas of at least 5,997 acres each of contiguous, occupied habitat be secured in the following locations: valley floor in Madera and Merced Counties, valley floor in Tulare or Kern Counties, foothills of the Ciervo-Panoche Natural Area, foothills of western Kern County, and the Carrizo Plain Natural Area (U.S. Fish and Wildlife Service 1998). Down listing also requires that approved and implemented management plans for these areas include as an objective the survival of blunt-nosed leopard lizard and that populations of the blunt-nosed leopard lizard in these areas are collectively managed to meet or exceed a minimum average density of two lizards per hectare through one precipitation cycle (U.S. Fish and Wildlife Service 2010). Only the land acquisition targets for the Carrizo Plain Natural Area have been met (U.S. Fish and Wildlife Service 2010). The 5,278-acre Semitropic Ridge Preserve approaches the acreage requirement for valley floor habitat in Kern County, but the blunt-nosed leopard lizard population densities there are not yet self-sustaining. Blunt-nosed leopard lizard

habitat is protected in smaller fragments in the foothills of western Kern County and the Ciervo-Panoche Natural Area; however, there are no preserves protecting blunt-nosed leopard lizard populations on the valley floor in Merced or Madera Counties. Therefore, the down listing criteria have not been met.

Data Characterization

Because the blunt-nosed leopard lizard is state and federally listed as endangered, numerous studies of this species have been conducted within the study area. The Endangered Species Recovery Program (ESRP) and Dr. David Germano (professor at Cal State Bakersfield) have conducted considerable research on the current status of blunt-nosed leopard lizard in the San Joaquin Valley and Carrizo Plain. Quantitative data are available on population size, reproductive capacity, mortality, dispersal, home-range movement patterns, and habitat characteristics and requirements. A number of models have been developed to describe the species' population dynamics.

Predicted Species Distribution in the Study Area

Model Description

Primary and Secondary Habitat

Blunt-nosed leopard lizards are found predominantly in sparsely vegetated annual grassland, Valley sink scrub, and saltbush scrub habitats below 2,600 feet in elevation. Blunt-nosed leopard lizards are known to occur in areas of petroleum development, especially light-density oil fields (<25% ground cover developed). Therefore, these habitats were considered to be primary habitat for blunt-nosed leopard lizards. Population densities in oil fields decrease as the density of oil development increases (U.S. Fish and Wildlife Service 1998). Medium-density oil fields (25%-75% ground cover developed) were considered suitable secondary habitat for blunt-nosed leopard lizards. It is assumed that blunt-nosed leopard lizards may be present in medium density oil development areas but at low, sporadic populations. Blunt-nosed leopard lizards are presumed be absent from areas of high density oil development (>75% ground cover developed).

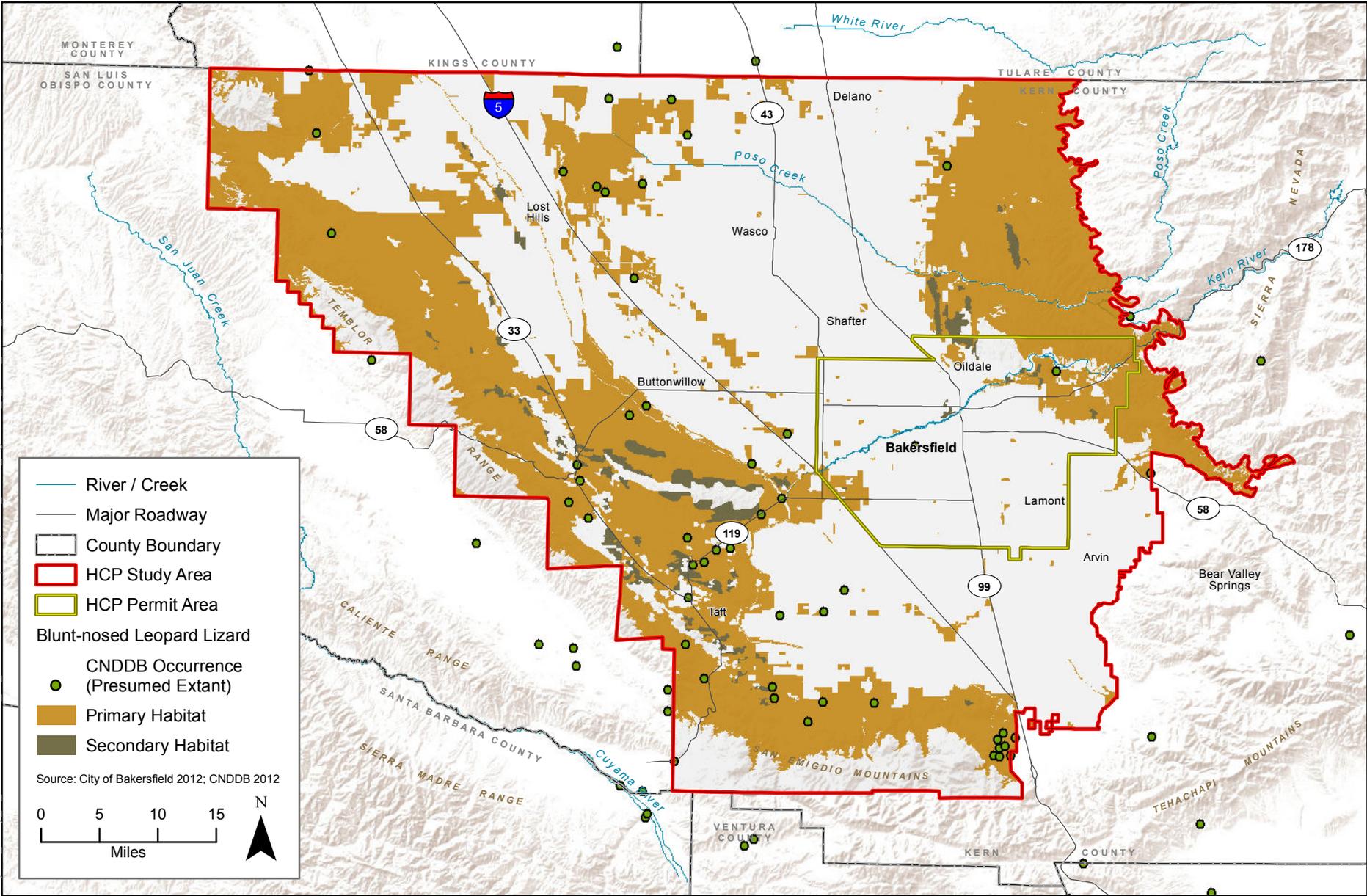
Model Results

Figure D-2 shows the modeled primary habitat for blunt-nosed leopard lizard within the Plan Area and the Study Area. CNDDDB occurrences of this species fall within the modeled habitat.

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Bakersfield Conservation Plan



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Figure D-2
Blunt-nosed Leopard Lizard Modeled Habitat