Coast horned lizard  
*(Phrynosoma blainvillii)*  
a.k.a., *Phrynosoma coronatum blainvillii*

**Legal Status**

- **State:** Species of Special Concern  
- **Federal:** None  
- **Critical Habitat:** N/A  
- **Recovery Planning:** N/A  
- **Notes:** State status applies to *Phrynosoma blainvillii*. *Phrynosoma coronatum blainvillii* was previously listed as a Category 2 Candidate Species in 1982 (47 FR 58454–58460) and again in 1994 (59 FR 58982–59028).

**Taxonomy**

The following discussion of coast horned lizard taxonomy is taken primarily from Klauber (1936) and Montanucci (2004). The coast horned lizard was first described as *Agama coronate* by De Blainville (1835) based on a specimen collected by P.E. Botta. It was soon ascribed to *Phrynosoma blainvillii* by John Edward Gray in 1839 (Beechey et al. 1839). However, the taxonomy of the coast horned lizard was and continues to be a subject of contention. Various papers have ascribed various forms of the coast horned lizard to other species or subspecies with revisions made in 1893 (Stejneger), 1894 (Van Denburgh), 1921 (Barbour), 1922 (Schmidt), and 1932 (Terron), among others. Linsdale (1932) recognized only one species (*P. coronatum*), while Reeve (1952) indicated a single species composed of five subspecies. Jennings and Hayes (1994) list two subspecies of the coast horned lizard: *P. c. blainvillii* and *P. c. frontale*. As many as six subspecies have been ascribed to the coast horned lizard (SDMNH 2011): San Diego horned lizard (*P. c. blainvillii*), Cape horned lizard (*P. c. coronatum*), California horned lizard (*P. c. frontale*), central peninsular horned lizard (*P. c. jamesi*), northern peninsular horned lizard (*P. c. schmidti*), and Cedros Island horned lizard (*P. c. cerroense*).
Prior to 1997, two of these subspecies, *P. c. blainvillii* and *P. c. frontale*, were recognized, but Brattstrom (1997) has demonstrated that the two subspecies were synonymous. More recently, Crother (2008) renamed coast horned lizard Blainville’s horned lizard (*P. blainvillii*). However, because the California Department of Fish and Game Special Animals List (CDFG 2011a) still retains the coast horned lizard as the common name for the special-status species, this account also refers to coast horned lizard. Information in this account would also apply to Blainville’s horned lizard because only the scientific and common names have been revised.

A more recent examination of coast horned lizard taxonomy by Leaché et al. (2009), based on ecological, morphological and genetic (mtDNA nuclear DNA) characteristics, suggests “... there are three ecologically divergent and morphologically diagnosable species within the *P. coronatum* complex.” However, the authors go on to state that the grouping of the *P. coronatum* complex into three [full] species “... is not supported by all of the operational species criteria evaluated in this study ...”

## Distribution

### General

As the name implies, the coast horned lizard is found primarily in coastal areas of the southwestern coast of the United States and the Baja Peninsula of northwestern Mexico (Figure 1).
Within California, in addition to coastal areas generally south of San Francisco, the coast horned lizard crosses the coastal ranges into the southern areas of the Central Valley, as well as the fringing desert side of the San Gabriel, San Bernardino, San Jacinto, and the more southern Peninsular ranges (Figure SP-R3). Within the Central Valley, its range extends across the Tejon Pass/Taft area and then follows the lower foothills of the Sierra Nevada Range in a narrow band as far north as Butte County.

**Distribution and Occurrences within the Plan Area**

**Historical**

Little is known of the historical range of the coast horned lizard, although according to the Jennings (1998, cited in SAWA 2004),
the horned lizard was found from the Transverse Ranges of Kern and Santa Barbara counties, south along the coast and inland valleys to the tip of the Baja Peninsula, Mexico. It is reported to have disappeared from 35% to 45% of its historical habitat (Jennings and Hayes 1994). There are 55 recorded occurrences of coast horned lizard in the Plan Area that were recorded prior to 1990, have an unknown observation date, or are considered non-extant. These generally occur along the western edge of the Plan Area with one disjunct record east of Twentynine Palms (Figure SP-R3; Dudek 2011).

Recent

The coast horned lizard is a fringe species in relation to the Plan Area. Primarily sequestered on the coast and the coastal valleys, it spills over into the Plan Area in four principal locations: the Tehachapi (California Poppy Reserve) area, the Palmdale area, the Cajon Pass area, and the Morongo Valley/Little San Bernardino Mountain areas (CDFG 2011b). Examination of the California Natural Diversity Database (CNDDB) indicates that the coast horned lizard has been reported in the following U.S. Geological Survey 7.5-minute quadrangles that either occur within the Plan Area, or are partially within the Plan Area:

- Acton;
- Apple Valley South;
- Baldy Mesa;
- Big Bear City;
- Butler Peak;
- Cajon;
- Del Sur;
- Hesperia;
- Juniper Hills;
- Key's View;
- Lake Arrowhead;
- Lake Hughes;
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- Lancaster East;
- Lancaster West;
- Mescal Creek;
- Morongo Valley;
- Pacifico Mountain;
- Palmdale;
- Phelan;
- Rimrock;
- Ritter Ridge;
- Silverwood Lake;
- Sleepy Valley;
- Tehachapi North;
- Tehachapi South;
- Valyermo;
- Victorville;
- Walker Pass;
- Yucca Valley North; and
- Yucca Valley South.

The coast horned lizard does not range extensively into the desert areas of the Desert Renewable Energy Conservation Plan project, but instead inhabits the mid-elevation desert fringes of the San Gabriel, San Bernardino, and Little San Bernardino Mountains, and extends its range to around the California Poppy State Reserve (Brattstrom, pers. comm., as cited in Hollingsworth and Beaman 2001). There are 30 recorded occurrences of coast horned lizard in the Plan Area that are considered extant and recorded since 1990. These occur along the western boundary of the Plan Area from southeast of Bakersfield south to Joshua Tree National Park (Figure SP-R3; Dudek 2011).
Natural History

Habitat Requirements

The coast horned lizard is found in a fairly wide variety of habitats within its range (Stebbins 1985; CDFG 2000; SAWA 2004; UC Davis 2011). These habitats can include various scrublands, grasslands, coniferous and broadleaf forests, and woodlands. It can range from the coast to elevations of 6,000 feet in the Southern California mountains (CDFG 2000). It is most common in mid-elevations of the coastal mountains and valleys within open habitat that offer good opportunities for sunning. It is often associated with sandy soils in which it will bury itself; these often support ant colonies (Behler and King 1979). The coast horned lizard needs loose, fine soils with open areas for basking and shrubs for refugia (Jennings and Hayes 1994, cited in UC Davis 2011). Fischer et al. (2002) report the primary determinants of coast horned lizard presence and abundance in coastal mountain areas are 1) a lack of Argentine ants (*Linepithema humile*) (and the presence of native ant species), 2) the presence of chaparral plants, and 3) the presence of sandy soils.

In the Plan Area, it appears that the desert fringing areas that support the coast horned lizard are generally the shrubby areas at the desert base or mid-elevations of the San Gabriel and San Bernardino mountains, and some areas around Yucca and Morongo valleys.

Foraging Requirements

The coast horned lizard is considered to be myrmecophagous, or an ant-eating specialist, although it is reported that they will take other small insect prey, including beetles, wasps, grasshoppers, and caterpillars (CDFG 2000). Ants have been estimated as comprising more than 90% of the diet for some local populations (Pianka and Parker 1975 and Suarez et al. 2000, cited in UC Davis 2011). They almost exclusively favor native harvester ants (*Pogonomyrmex desertorum, P. rugosus, P. californicus*, and *Crematogaster californica*) (Suarez and Case 2002; Zipcodezoo 2011). Coast horned lizards that are forced to eat the introduced Argentine ant experience reduced fitness (Suarez and Case 2002).
Reproduction

Coast horned lizards mate and reproduce in spring and early summer, and depending upon local conditions and climate, they are generally active through the summer and into the early fall months. In some areas, they may aestivate during especially hot summer months. During the colder winter months, they hibernate. In Southern California, the male coast horned lizard reproductive cycle begins during mid- to late March and ends in June (Goldberg 1983). Usually a clutch of 6 to 17 eggs is laid (Hollingsworth and Beaman 2001), with a mean clutch size of 13 (CDFG 2000). Eggs hatch in about 2 months (Hollingsworth and Beaman 2001) in the summer and early fall. These hatchlings will reach sexual maturity in 2 to 3 years (Zipcodezoo 2011).

<table>
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<tr>
<th>Table 1. Key Seasonal Periods for the Coast Horned Lizard</th>
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<tr>
<td>Jan</td>
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<td>Breeding</td>
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<td>General Activity</td>
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<td>Hibernation</td>
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Notes: Activity can vary with location and yearly differences in temperature.
Sources: Hollingsworth and Beaman 2001; Zipcodezoo 2011.

Movement

The coast horned lizard exhibits extremely high site fidelity (Zipcodezoo 2011), and pronounced seasonal movement or migration has not been reported (CDFG 2000). They apparently lack territorial behavior, although it has been reported that males will joust for mating purposes (CDFG 2000). Daily movement distances average 154 feet per day (Whitford and Bryant 1979, cited in Zipcodezoo 2011). There are no movement and dispersal data specifically for the coast horned lizard, but horned lizards as a group show limited home ranges, usually less than 5 acres (Munger 1984). However, daily foraging distances and home range size appear to vary
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inversely with lower plant diversity and higher disturbance (Grant and Alberts 2005).

**Ecological Relationships**

Coast horned lizards are ant specialists. It is reported that more than 90% of their diet can consist of ants. As ant specialists, the presence of native ants in their habitat is essential (Suarez and Case 2002, Suarez et al. 2000, and Pianka and Parker 1975, as cited in UC Davis 2011).

The coast horned lizard serves as prey to a wide variety of predators, including snakes, loggerhead shrike (*Lanius ludovicianus*), burrowing owl (*Athene cunicularia*), greater roadrunner (*Geococcyx californianus*), hawks, and domestic cats and dogs (CDFG 2000; Jennings and Hayes 1994; Shiozuki 2006).

The coast horned lizard abuts the range of the desert horned lizard (*P. platyrhinos*) in these areas, but apparently there is little overlap in their use of the available habitats, the coast horned lizard being found only in juniper-desert chaparral habitat, while the desert horned lizard is found in creosote bush scrub (Brattstrom 1997).

**Population Status and Trends**

- **Global:** G3G4 (NatureServe 2011)
- **State:** Same as above
- **Within Plan Area:** Same as above

The coast horned lizard has a fairly limited distribution within the Plan Area, but is widespread further toward the coast. Due to their limited range and habitats within the Plan Area, populations there are probably stable to slightly imperiled assuming that development of the lower elevations of the San Gabriel and San Bernardino Mountains remains light. Traditionally, development has been relatively light in these areas. However, should increased development pressure occur in these areas, the persistence of the coast horned lizard within the Plan Area may become more tenuous.
Threats and Environmental Stressors

Several threats and stressors affect the coast horned lizard, although few are extensively documented. It is reported to have disappeared from 35% to 45% of its historical habitat in California (Jennings and Hayes 1994). Figure 2 presents a simple conceptual model of threats and stressors for the coast horned lizard.

Figure 2. Simple Conceptual Model of Threats and Stressors for the Coast Horned Lizard.

Chief among these is the loss of habitat by urbanization in the coastal areas of Southern California (SDNHM 2011). Accompanying this loss of habitat, areas adjacent to development are generally subject to higher disturbance and a decrease in vegetative density. As a result, horned lizards adapt by increasing their home ranges to ensure enough resources are available to them (Grant and Alberts 2005). This necessary increase in home range in disturbed areas, especially those adjacent to development, increases the probability of horned lizard mortality as they are forced to range into areas where vehicles and pets are found.
A recent and highly significant threat to the coast horned lizard is the expansion of the Argentine ant (Jennings and Hayes 1994; Hollingsworth and Beaman 2001; Suarez and Case 2002; Yolo Natural Heritage Program 2009; SDNHM 2011). Argentine ants are typically associated with areas of disturbance, principally around urban development, and they displace native harvester ants, the main food of the coast horned lizard. Hatchling horned lizards fed on Argentine ants showed decreased or no growth, compared to those fed native ant species (Suarez and Case 2002). Thus, as native ants are displaced by this biological invasion, horned lizards may be significantly affected, and may be eliminated in areas where complete dominance by Argentine ants has occurred.

In conjunction with the direct habitat loss by development, an increase in wildland fires associated with adjacent highways and other activities (e.g., off-road vehicles) can impact horned lizard populations. Domestic pets, especially domestic cats, have increased predation pressure (Jennings and Hayes 1994).

In the past, collecting for the curio trade and later by biological supply houses has significantly impacted the species (Jennings 1987; SDNHM 2011). However, since 1981, commercial collecting of the horned lizard has been banned (SDNHM 2011).

**Conservation and Management Activities**

Because the coast horned lizard is not listed as threatened or endangered, specific recovery plans or other management efforts for this species are lacking. However, the coast horned lizard is often included as a covered species in habitat conservation plans (HCPs). The following is a list of HCPs that include the coast horned lizard as a covered species (USFWS 2011):

- California Department of Corrections Statewide Electrified Fence Project;
- El Sobrante Landfill HCP;
- Fieldstone/La Costa and City of Carlsbad;
- Lake Mathews Multiple Species Habitat Conservation Plan (MSHCP);
- City of Carlsbad Habitat Management Plan; and
Data Characterization

Although taxonomic and habitat relations of the coast horned lizard are well represented in the scientific literature, it appears that little is known about the distribution of the coast horned lizard within the confines of the Plan Area (i.e., desert slopes of the San Gabriel and San Bernardino mountains). As this species is primarily coastal in nature, there are significant data gaps in its specific range (especially along the Mojave River), habitat characteristics, and abundance within these areas. Additionally, the nature and extent of Argentine ants within these areas is poorly understood, and should be assessed. Jennings and Hayes (1994) indicate that data are needed on how domestic cats, grazing, prescribed fire, and off-road vehicles impact the coast horned lizard. Fisher et al. (2002) caution against using remote sensing for determination of abundance based on perceived habitat, since data on the single most important variable for determining presence, native ants, is not obtainable by this method.

Management and Monitoring Considerations

Effective management for the coast horned lizard in the Plan Area could include the following:

- Attempt to control (or eliminate) Argentine ants in project areas; care must be taken to not affect native ants if using pesticides;
- Ensure a mixture of shrub and open areas in the habitat to allow efficient thermoregulation by the coast horned lizard;
- Investigate re-introduction of native ants into project areas;
- Ensure sandy substrates;
- Maximize isolation by limiting public access to areas of known coast horned lizard populations to help prevent vehicle accidents and collecting;
- Prevent wildland fires and other disturbances that could foster the colonization of the area by Argentine ants;
- Close redundant or unnecessary roads to curtail vehicle travel in areas known to support the coast horned lizard;
- For residential developments within or adjacent to occupied habitat, develop an information program (e.g., informative
pamphlet) about the significance of collecting, off-road driving, and uncontrolled pets to the horned lizard; and

- Develop a set of best management practices and construction education programs for developments within areas likely to support the coast horned lizard.

### Predicted Species Distribution in Plan Area

There are XX acres of modeled suitable habitat for coast horned lizard. Modeled suitable habitat occurs in the western portion of the Plan Area from Joshua Tree National Park north to the northern end of the High Desert Plains and Hills below 6,000 feet in elevation. Modeled suitable habitat includes grassland, forest, woodland, scrub and chaparral communities, as well as rural areas. Modeled suitable habitat is also restricted to sandy soils (Figure SP-R3).

### Literature Cited


REPTILES

Coast Horned Lizard (Phrynosoma blainvillii)


Grant, T., and A. Alberts. 2005. Monitoring the Effects of Natural and Anthropogenic Habitat Disturbance on the Ecology and Behavior of the San Diego Coast Horned Lizard (Phrynosoma
Coast Horned Lizard (*Phrynosoma blainvillii*)


Coast Horned Lizard in the Plan Area (N=85)

Note: Occurrence point size graphically represents the precision level code for the data point but is not scaled geographically.