Herpetofaunal Monitoring in MSCP Region of San Diego

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Arboreal Salamander from Torrey Pines


Western Spadefoot Toad from San Diego NWR

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Coast Horned Lizard from Torrey Pines


Array 6 at Spring Canyon

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1. Introduction and background

The herpetofauna (reptiles and amphibians) of coastal southern California are very diverse (Stebbins, 1985) due to a variety of factors including topography, history, and climate. The complex topography with steep slopes from canyons and hills combined with flat regions on mesas and in lowlands provides for several different microhabitats that can support unique fauna. The Mediterranean climate in San Diego also creates suitable habitat for increased herpetofaunal biodiversity, providing adequate moisture for amphibians while producing mild and warm temperatures for reptiles, allowing them to be active nearly all year. This herpetofauna consists of over 70 species in coastal southern California, of which 24 are considered sensitive at the state or federal levels (Fisher and Case, 1997; Jennings and Hayes, 1994). Urban, industrial and agricultural development has left much of the remaining open space highly fragmented. The future of herpetofaunal diversity in southern California will depend on an understanding of the distribution and abundance of these species within this fragmented landscape. Protection within fragments may depend on taking the following measures: restricting access to the public, adaptive management, control of exotics, limiting future fragmentation and many other factors. Management decisions should be based on scientific research in order to best maintain this region's natural resources. The Multi-Species Conservation Plan (MSCP) is a proposed large reserve of high quality habitat for conservation of biodiversity in urban San Diego. As such, it plays an important role in maintaining populations of the herpetofauna (herps) in San Diego County, as it is one of the few protected regions in Coastal San Diego County.

An important step towards maintaining herpetofauna diversity, particularly sensitive species, is identification of management needs . To achieve this goal, we began an autecological study of the herpetofauna of San Diego County to identify reptile and amphibian species present, when they are active, and habitat associations. The various study sites within the MSCP Region of San Diego County have been initiated over the past six years and are at different stages data collection (Table 1). Study sites and array locations are distributed throughout the MSCP reserve within San Diego County (Figure 1). Two new sites were added during the year 2000 with in order to examine urban edge effects. The Mission Trails and La Cresta study sites were established along the urban edge to interior habitat axis. In addition, these sites are being examined by Dr. John O'Leary and Dr. Douglas Stow to detect vegetation differences using traditional vegetation plots on the ground linked to ADAR imagery along this axis. Three additional sites will be referenced which are funded alternatively to the MSCP (Point Loma, Chula Vista 1 and 2). Additional descriptive information about each site including survey dates, array locations and individual topographic maps of each site can be found in Appendix A.

2. Materials and methods

In 1995, we began an intensive study of the diversity and autecology of the herpetofauna of the southern California portion of the California Floristic Province, including much of the area within the MSCP region of San Diego County. Pitfall trap arrays have been utilized to best detect and monitor the herpetofauna of the region. Each array consisted of seven 5 gallon buckets as pit fall traps, connected by shade cloth drift-fences (15 meter arms), in the shape of a Y (Figure 2). A hardware cloth funnel trap was placed at each of the three arms for capturing large snakes and lizards. In spring of 1997, we also added a 1 foot square plywood board along each array arm for the purposes of detecting ants, other arthropods and tracks of Silvery Legless Lizards (*Anniella pulchra*) as well as any other small reptiles or amphibians which may make use of cover.

Study sites contain several pitfall trap arrays (five to twenty, depending on study site size and habitat heterogeneity) and were constructed to assess the herpetofauna at each locality. Arrays were distributed across the various habitats within each study site. Throughout 1995, study sites were initiated at Elliott Reserve, Wild Animal Park, Marron Valley, Little Cedar Ridge, San Diego National Wildlife Refuge (NWR), Torrey Pines State Reserve, Point Loma Ecological Reserve and Chula Vista. Tijuana Estuary NWR study site was added in 1997 and La Cresta, Mission Trails and Spring Canyon were added in 2000. These arrays cover Coastal Sage Scrub, Maritime Succulent Scrub, Chaparral, Riparian and Oak, Torrey Pine and Tecate Cedar Woodlands. Sampling was conducted at each study site for 10 consecutive days every 6 weeks, for a total of 50 to 60 days a year. This sampling regime was spread evenly across all seasons and traps are closed between the sampling periods. Vegetation was recorded in the vicinity of each array following established protocols of the California Native Plant Society, and various local landscape features were also recorded.

The animals captured were individually marked (except for slender salamanders) either by toe clipping or scale clipping (snakes) and then released. We processed the reptiles and amphibians in the field and released other trapped vertebrates. Processing included marking, weighing, and measuring the body length; we kept the toe-clips from lizards and tail tips from snakes in ethanol for future molecular systematic work.

3. Results: Diversity and distribution of reptiles and amphibians in coastal San Diego

To date, over 20,600 specimens of reptiles and amphibians have been documented from the MSCP Region of San Diego County representing 39 species (Table 2). These species represent six families of amphibians and eleven families of reptiles. Descriptions and photos of each species can be viewed at the website http://ratbert.wr.usgs.gov/fieldguide for the Field Guide to the Reptiles and Amphibians of Coastal Southern California (Fisher and Case).

Twenty four southern California reptile and amphibian species are listed or have become candidates for federal endangered species status, or are currently listed as California Species of Special Concern by California Department of Fish and Game (Fisher and Case, 1997). Twelve of these species have been detected during these surveys (Tables 5 and 6). These include the Western spadefoot toad, San Diego banded gecko, silvery legless lizard, western/Coronado Skink, orange-throated whiptail lizard, coastal western whiptail lizard, coast horned lizard, coastal rosy boa, western ring-necked snake, coast patch-nosed snake, two-striped garter snake, and the red diamond rattlesnake (Table 2 includes scientific names for each species). All 12 of these species were detected at only one study site (Wild Animal Park), while over half of the sensitive species were detected at five of the remaining study sites.

Across the MSCP study sites, species richness varies from 3 (La Cresta) to 23 (Wild Animal Park) species per array, and from 12 to 33 species per study site. The lowest species richness recorded at a single array was at La Cresta, and lowest species richness recorded at a site was at Mission Trails, however, presently these sites have only 50 sample days. Overall, species richness tends to increase with total captures: sites with 2000 or more captures record 20 or more species and sites with higher capture rates show greater species richness. This indicates that overall capture rate at a given study site may be an indicator of habitat health.

4. Status of sensitive species

Here we give an account of the status of the sensitive species that have been detected within the San Diego MSCP study sites. In addition, we suggest specific management recommendations that the MSCP could implement to maintain populations of these sensitive species. Of the 13 sites within the MSCP region only one, the Wild Animal Park, has capture records of all the species of special concern detected during this survey, but eight sites have captures of six or more of the sensitive species.

A. Western Spadefoot Toad (*Spea hammondii*)

Status: California and Federal Species of Special Concern (Protected)

The western spadefoot toad has been in decline throughout its range primarily due to loss of breeding habitat from the destruction of vernal pools (Fisher and Shaffer, 1996). This species has survived habitat loss in some areas by utilizing cattle tanks, road ruts, and other artificial temporary aquatic habitats. This species was relatively abundant at Marron Valley, San Diego NWR and Wild Animal Park with occasional captures at Chula Vista 2, Elliot Reserve, Spring Canyon and Tijuana Estuary NWR (Table 3). The addition (creation of new pools or rehabilitation of historic pools) of upland breeding pools would greatly help this species to remain viable within the reserve.

B. San Diego Banded Gecko (*Coleonyx variegatus abbotti*)

Status: Federal Species of Special Concern

The local subspecies ***Coleonyx variegatus abbotti*** is thought to have declined in southern California due to the destruction of coastal sage scrub. The most elusive of the sensitive lizard species found here, the coastal banded gecko has been detected at only three sites: La Cresta, Marron Valley and Wild Animal Park. Within the sites where they occur this species is typically very rare. This species is most common at the Wild Animal Park with 26 captures, the other two sites having recorded only 1 and 2 captures respectively (Table 3). Further study is required to determine specific management recommendations for this species.

C. Silvery Legless Lizard (*Anniella pulchra*)

Status: California and Federal Species of Special Concern (Sensitive)

The silvery legless lizard (nearly as uncommon as the San Diego banded gecko) has been detected at only 5 study sites. They are relatively abundant at Tijuana Estuary NWR and Wild Animal Park with occasional captures at Point Loma, San Diego NWR and Torrey Pines (Table 3). The limited occurrence of this species may be due to specific habitat requirements. The silvery legless lizard prefers loose sandy soils, which are common along the coast (Tijuana Estuary NWR, Torrey Pines and Point Loma) or along river drainages as found near San Diego NWR (Sweetwater River) and Wild Animal Park (San Pasqual Valley). Further study is required to determine specific management recommendations for this species.

D. Western / Coronado Skink (*Eumeces skiltonianus*)

Status: California Species of Special Concern

The local subspecies of western skink, the Coronado skink, has only recently received interest, and although the species is widespread, the subspecies is not very well known (Jennings

and Hayes, 1994). This species was most widespread of the sensitive species, and occurred at all but one study site within the MSCP (Table 3). Long-term maintenance of this species in the reserve may be dependent on appropriate management practices including addressing the issue of Argentine ant invasion. This ant appears to be negatively affecting these lizards in some coastal sites. Sites with Argentine ants have relatively low abundance of the Coronado skink. Continued Argentine ant invasion may put the persistence of the Coronado Skink at risk. Further study is required to determine specific management recommendations for this species.

E. Orange-Throated Whiptail (*Cnemidophorus hyperythrus*)

Status: California and Federal Species of Special Concern (Protected)

This species has been a federal concern for many years, although much of the biology of this species is still unknown (Jennings and Hayes, 1994). Widespread in Baja California, this species only occurs in coastal southern California in the United States. This species was the most common sensitive species at sites where it occurred with the exception of San Diego NWR where it was still among the most common (Table 3). It occurred at all but two southeastern sites (Marron Valley and Little Cedar Ridge). Activity data for the orange-throated whiptail indicate that there is good evidence of reproduction and recruitment at the sites where they have been documented. Thus, we conclude that the orange-throated whiptail does not currently appear at risk of extinction within the MSCP boundary, however, certain edge populations should be monitored for trends that might change due to various edge effects (including feral cats, exotic plants, invasive ants, etc.). The highest densities of orange-throated whiptails were recorded from Wild Animal Park with a capture rate over four times that of the next highest site (Tijuana Estuary NWR) (Table 3).

F. Coastal Western Whiptail (*Cnemidophorus tigris multiscutatus*)

Status: Federal Species of Special Concern

The coastal western whiptail has only recently received federal attention, and the status of most populations is unknown. We recorded this species at 9 of the 13 MSCP survey sites (Table 3). One concern is that these lizards are often very active on dirt and paved roads. To avoid population declines along roads within the MSCP, signs warning drivers and mountain bikers to be particularly careful in this region should be posted. In addition, accidental deaths should be quantified.

G. Coast Horned Lizard (*Phrynosoma coronatum*)

Status: California and Federal Species of Special Concern (Protected)

The coast horned lizard has been a species of concern at the state and federal level for numerous years. Historically, this species was very common throughout southern California, especially in coastal dune systems (Fisher and Case, 1997; Jennings and Hayes, 1994). There has been a marked decline in this species for several decades, although the causes are still unknown. This species was recorded in relative abundance at Elliot Reserve, Little Cedar Ridge, San Diego NWR, Tijuana Estuary NWR (which has an intact coastal dune) and Wild Animal Park (Table 3). We recorded these lizards primarily in coastal sage scrub and chaparral within the MSCP, usually on ridgelines (with the exception of the dunes at Tijuana Estuary NWR). They appear to prefer chamise chaparral. This lizard species prefers a diet of native ants (Suarez, et al., 1998), which are found in abundance at these study sites. The invasion of the non-native Argentine ant could change the ant community and be a cause for the decline of the coastal horned lizard in many areas in the MSCP (Suarez, et al., 1998). Coastal horned lizards have also been detected at La Cresta, Marron Valley, Spring Canyon and Torrey Pines. This species tends to occur along dirt roadsides, especially near thick vegetation. New trails and roads should be restricted in areas where they are known to occur. This species is easily captured and often collected for pets. This should be discouraged through educational signage indicating their protected status.

H. Coastal Rosy Boa (*Charina trivirgata*)

Status: Federal Candidate Species

The coastal rosy boa is a very slow moving and easily to identified species. We found this species at 5 of the 13 study sites (the single capture at Point Loma may be an introduction) (Table 3). Their long-term persistence is at risk for two reasons. First, habitat fragmentation due to roads may negatively affect this species. In addition to issues related to habitat fragmentation, this species will often lie on roads at night to obtain heat, and are easily run over. Second, this snake is a very popular pet, due to its mild temper. Any snakes found by hikers are at risk of poaching. Over the next 50 years these snakes could be unintentionally collected out of the MSCP region by naturalists, and visitors. The number of people using the reserve is likely to increase posing greater risk of poaching. A more thorough posting of the fines for collecting within the MSCP might help to limit poaching as visitation increases.

I. Western Ring-necked Snake (*Diadophis punctatus*)

Status: Federal Species of Special Concern (Sensitive)

The western ring-necked snake has been detected at 8 of the 13 MSCP study sites with the greatest abundance at San Diego NWR and Torrey Pines (Table 3). This species is very secretive most of the year, although often in spring they may be found foraging during the day. They tend to prefer areas with increased moisture levels, including riparian zones. Any additional sightings of this species should be noted in order to better understand what factors may limit its distribution throughout San Diego County. Further study is required to determine specific management recommendations for this species.

J. Coast Patch-Nosed Snake (*Salvadora hexalepis virgultea*)

Status: California and Federal Species of Special Concern

The coast patch-nosed snake was recorded at only 5 of the study sites (Chula Vista 1, Little Cedar Ridge, Marron Valley, Mission Trails and Wild Animal Park) (Table 3). Historically this species probably occurred throughout the region, particularly in areas with coastal sage scrub and chaparral. This species is an active forager, and is often run over as they cross roads. Therefore, this species may be negatively impacted by traffic increases in certain areas. This species would benefit from having some areas of the MSCP restricted to little or no human impact.

K. Two-striped Garter Snake (*Thamnophis hammondii*)

Status: California and Federal Species of Special Concern (Protected)

The two-striped garter snake is typically associated with freshwater wetlands, including vernal pools, creeks, rivers, marshes, and ponds (Jennings and Hayes, 1994). Two-striped Garter snakes have been collected at 6 study sites within the region, and have been associated with riparian or pool habitats (Table 3). The preferred diet consists of treefrogs and toads. Interestingly, two-striped garter snake was detected only at sites that have both a toad and treefrog species. Bullfrogs appear to be an important predator of this species. Persistance of this species may require maintenance of the non-native fauna. Further study is required to determine specific management recommendations for this species.

L. Red Diamond Rattlesnake (*Crotalus ruber*)

Status: California and Federal Species of Special Concern

The red diamond rattlesnake was widespread throughout southern California historically, and still appears to be widespread but with a patchier distribution. It has been detected at 8 of the study sites, appearing to be more common at larger and more inland study sites (Table 3).

The unique structure of the canyon at Chula Vista 1 supports a surprising abundance of this species at a small and somewhat coastal study site. The red diamond rattlesnake appears to be common at Chula Vista 1, Marron Valley, San Diego NWR and Wild Animal Park which are fairly large intact core habitats (with the exception of Chula Vista 1). If portions of the MSCP region could be insulated from roads, then this species might be able to develop a core area with little human activity**.**

5. Species presence patterns for reptiles and amphibians in the MSCP region of San Diego

We have calculated the average capture rate per array per day for each of the 13 study sites within the MSCP region of San Diego for each species (Tables 4 and 6). The capture rate plotted was the total number of captures for a taxa at a site, divided by the number of arrays at the site, and the number of days that a site has been sampled. This procedure standardizes capture rates, accounting for the fact that different sites have both varied numbers of arrays and sample days. The standardized rates allow comparison of capture rates and species presence between sites. The number is further manipulated by multiplying by 1000 sample days, resulting in the average number of captures per 1000 sample days per array at each site.

Mathematically:

$$CR = [\, {}^{n}i/(a_S \times d_p)] \times 1000$$

where

CR = mean capture rate for each taxa at a site
${}^{n}i$ = number of individuals of a species
a_S = number of arrays per site
d_p = number of days site has been sampled

These calcluations have been made for all sites within the MSCP region (Tables 4 and 6)

Diversity differences within San Diego's MSCP region:

All study sites contain at least 12 species, 6 sites contain at least 20 species and 2 sites have 30 or more species (Figure 3). No site contained all 39 species detected during this survey.

A. Elliot Reserve

Elliot Reserve spans several hundred acres of chaparral and coastal sage scrub habitats including a sizeable amount of remaining vernal pool habitat. This large University of California (UC) reserve is connected to Miramar Marine Corp Air Station, resulting in a large core area of habitat. The site has been sampled for a total of 335 days with over 3000 captures and 23 species, including four amphibian, seven lizard and twelve snake species. Eight species of special concern were detected.

B. La Cresta

La Cresta study site has been established in order to investigate urban edge effects by placing 2 arrays near urban edge, 2 arrays in the interior coastal sage scrub and 2 arrays between the urban and interior. This relatively new study site has only been sampled for 50 days and has 100 captures of fifteen different species. The two interior arrays have only been sampled 30 days because they could not be accessed and has thus resulted in low captures at those arrays. Over half of the captures have been species of special concern, largely the orange-throated whiptail and the western/Coronado skink. A total of six species of special concern have been detected at this site.

C. Little Cedar Ridge

Little Cedar Ridge is a north-facing slope of the Otay Mountains, primarily covered with chamise chaparral with patches of coastal sage scrub and Tecate cypress forest. This study site has been sampled for 285 days and has 570 captures of 22 species, including 6 species of special concern. The intact chaparral and Tecate cypress have yielded the highest capture rates of monterey salamander and coast horned lizard of all study sites in the MSCP region.

D. Marron Valley

Marron Valley is a tributary to the Tijuana Watershed and drains southward from the Otay Mountains. It consists of coastal sage scrub, chaparral and oak woodland. This site was burned in 1996 and was subsequently rebuilt. As a result of the burn, some portions of the habitat at the study site was changed to grassland. This site has been sampled for 292 days resulting in over 1600 captures of over 29 different species. At present, this represents the third highest species richness detected in the MSCP region study sites and includes 9 species of special concern. However, it also includes several captures of the exotic African clawed frog. These exotic frogs should be removed from the upper pond in order to aid in restoration of the amphibian fauna in the northern reaches of the study site.

E. Mission Trails

Similar to La Cresta, Mission Trails was established with urban edge, interior and middle arrays to investigate urban edge effects. Thus far, there have been 50 sample days yielding 162 captures of 12 species. No discernible difference has been detected in the edge versus interior arrays at this time. Six species have been recorded at the edge arrays and 7 and 10 species have been recorded from the middle arrays and 9 species have been recorded from the interior. No amphibians have been detected at this site, however, there has been no wet weather during the sample periods. Five species of special concern including a large number of orange-throated and western whiptail lizards have been recorded from this site.

F. San Diego NWR

San Diego NWR is a large study site containing intact chaparral, coastal sage scrub and riparian habitat along the Sweetwater River. This study site has the second highest species richness of the MSCP region study sites with 1,176 captures of 30 species from 295 days sampling. This includes 10 species of special concern with relatively high capture rates of the western whiptail, coast horned lizards and the San Diego ring-necked snake.

G. Spring Canyon

Spring Canyon is a relatively new study site consisting of coastal sage scrub, vernal pool habitat and a unique mix of Jojoba and cliff-spurge in a maritime succulent scrub habitat. It has been sampled for 60 days with 169 captures of 14 species including 4 species of special concern. This site has a long history of disturbance from off road vehicle usage (both recreational and by Border Patrol) and grazing by goats, but still has intact vernal pools and coastal scrub.

H. Tijuana Estuary NWR

Tijuana Estuary NWR is a large fragment of coastal sage scrub, succulent maritime scrub, coastal dune and salt marsh habitat with occasional vernal pool habitat. Urban development, agriculture and the ocean surround the wildlife refuge. It has historical military usage and a history of disturbance from off road activities, both recreational and pertaining to international border enforcement. The refuge has maintained intact and healthy coastal habitat with over 2,000 captures of 20 different species including 8 species of special concern. The coastal sage scrub supports a relatively large orange-throated whiptail population though encroaching non-native vegetation and Argentine ants pose a threat to some of the habitat along urban edges. The coastal dunes support a relatively large population of coast horned lizards. This site also has several captures of the Baja California racer (*Masticophis flagellum fulginosis,*

a subspecies of the coachwhip found in Baja California and only in the southernmost regions of San Diego County), and a large coastal population of the western blind snake.

I. Torrey Pines

The Torrey Pines study site is located at Torrey Pines State Reserve and consists of coastal sage scrub, chaparral, Torrey Pine woodland and marsh upland. Originally, three study sites with ten, ten and fifteen arrays, the new Torrey Pines study site has 17 arrays in order to maximize habitat and diversity sampling while reducing sampling effort. This study site has produced over 3,000 captures of 20 different species including 7 species of special concern. This site has a relatively high abundance of arboreal salamanders and is the only site in the MSCP region where this species has been detected. Torrey Pines also has the highest capture rate for southern alligator lizards within the MSCP region study sites and is the only extreme coastal study site with western toad or coastal western whiptail captures.

J. Wild Animal Park

The Wild Animal Park is a large study site bordered on the east by Cleveland National Forest. The habitat consists primarily of coastal sage scrub, chaparral and grassland habitat with some riparian influence. This large intact habitat has documented the greatest species richness of all the MSCP region study sites and all 12 species of special concern in the MSCP region. This site has been sampled for 305 days resulting in over 5,000 captures of 33 species. Only one species of snake and one species of lizard that have been detected in the San Diego MSCP region have not been detected at the Wild Animal Park. This site has the highest capture rates for the orange-throated whiptail, Gilbert's skink, granite spiny lizard and coastal rosy boa compared to other MSCP study sites.

6. Discussion on Ants in Focal Sites within the MSCP region of San Diego

Introduction

In conjunction with herpetofaunal monitoring in San Diego County, ant sampling began in March 2000. Ant diversity was quantitatively sampled using ant pitfall traps (Majer, 1978) at three study sites: La Cresta, Mission Trails and Spring Canyon. Three sample periods have occurred to date: spring 2000, fall 2000 and winter 2000. Ants serve many roles on different

ecosystem levels, and can serve as sensitive indicators of change for a variety of factors. Data gathered from these samples provide the first of three years of baseline data on which long-term land management plans can be based.

Materials and Methods

Ant pitfall traps were installed at the herpetofaunal arrays at the La Cresta, Mission Trails and Spring Canyon study sites. At each array, five ant pitfall traps (50mL tubes) were used. The five traps overlaid the existing herpetofaunal array in the shape of the "5" on a die. The four corners of the "5" were approximately 21m apart from each other. Holes were made in the soil using a metal stake. A polyvinyl chloride sleeve constructed from 1" class 200 PVC pipe was inserted into each hole, and an ant pitfall trap was inserted into the sleeve so that it became flush with the ground. Each pitfall trap was left open for ten consecutive days and contained approximately 25mL of Sierraä brand antifreeze. This product preserves the specimens while remaining environmentally safe (Suarez et al. 1998). The sleeves were closed between sampling visits. Samples were then analyzed, identified and counted at the San Diego State University Biological Field Station laboratory. Samples from the five pitfall traps from each array were combined for analysis. These data were used to estimate abundance and diversity by sampling location. Hypogeic (belowground foraging) and arboreal ants may be under sampled using this technique, since the ant pitfall trap design is designed for the collection of epigeic, (aboveground foraging) ants. An evaluation of pitfall traps as a sampling method for ground-dwelling ants found that most epigeic ants were well represented, especially in open habitats (Bestelmeyer et al. 2000). Also, Suarez et al. (1998) found reasonable epigeic diversity estimates using the proposed sampling technique in coastal sage scrub habitat. Other incidental captures of invertebrates and small vertebrates were saved for future use in additional diversity estimates.

Results

The following data are from spring (March 2000), fall (October 2000) and winter (January 2001). Ant pitfall traps were obtained from the three sites, which are abbreviated as follows: La Cresta (Crest), Mission Trails (MT) and Spring Canyon (SC). All ants were counted

and identified to genus with two exceptions. Genera *Linepithema* and *Solenopsis* were identified to species to determine presence of the exotic ants *L. humile* (Argentine Ant) and *S. invicta* (Red Imported Fire Ant) (Table 7).

The following tables present spring 2000 through winter 2000 sampling data, first in summation (Table 8), and then in site-specific format (Tables 9-11). Arrays were pooled by site for analysis (Table 8). Site tables contain ant data for each array (Tables 9-11). At the Spring Canyon site, arrays were divided into mesa and valley locations. At the La Cresta and Mission Trails sites, two arrays were installed on urban edges, two were further away from the edges, and one array was in the interior of native habitat (MT only). The viability of a site for native ant populations can be determined using the following criteria: surrounding landscape, existing habitat, exotic ant presence, and species diversity and abundance. Descriptions of site habitat will be reported along with future baseline data.

An important observation from our data is the presence of the non-native Argentine ant, *Linepithema humile,* in two of the three sampled sites. Argentine ant presence is negatively correlated with native ant species diversity, and is one cause of local native ant extinction (Suarez et al. 1998). Therefore, our baseline data will show where sound management practices should be implemented to prevent further native ant decline. *L. humile* accounted for 35% of all ants captured, however abundance differed between sites and sample dates. The total genera found at one site, or generic richness, ranged from two to eight during one sample date. Array number one at Mission Trails (an edge array) showed a high percentage of Argentine ants in fall, supporting the conclusions by Suarez (1998) that Argentine ants are succesful invaders of habitat near urban edges. In comparison, the remaining Mission Trails arrays in fall 2000 had low Argentine ant abundance and higher native generic diversity and abundance. Argentine ants were not detected at array number three (an interior array) at Mission Trails, most likely due to the distance from an urban edge. Argentine ants require more water than that found in the interior of native habitat patches. Spring Canyon site also supported small numbers of Argentine ants. Interestingly, in spring 2000 Argentine ants were captured in a valley array, while in winter 2000 they were found in a mesa array. However, the data set is too small to draw any significant conclusions. Another exotic ant threat, *Solenopsis invicta* (Red Imported Fire Ant) was not found at any of the three San Diego sites.

All three sites showed a general trend of greater generic diversity and abundance in warmer months (March and October) compared to January. Future sampling and identification will continue to investigate how fragment size, length of time since isolation from a core habitat area, and relative abundance of an exotic ant species affect native ants. Monitoring over time is vital to revealing local stability or changes in native ant populations.

7. Recommendations for management and monitoring small vertebrates in San Diego County

We present our preliminary recommendations for the following 3 categories: diversity differences within the reserve, management activities, and identification of movement corridors. We have been able to identify several regions that are important for the maintenance of diversity of reptiles and amphibians within San Diego County. We have also identified several management activities that could benefit several species. These were discussed under each species accounts presented above and some are repeated below. We attempt to determine which habitat linkages and corridors may connect fragments of habitat with core habitat throughout San Diego. Some of these habitat linkages and corridors may be non-functional at present, but with some modification may be used by reptiles and amphibians for movement through the region.

Specific management activities for species and diversity:

Exotic Species:

- **Argentine ants**

We have found these exotic ants to be widespread in southern California. These ants are known to displace native ant species in San Diego (Suarez et al., 1998), and could possibly effect higher trophic levels if they spread within the Reserve. The California horned lizard is an ant specialist that prefers a diet of native ants to Argentine ants (Suarez, 2000). Within the MSCP region of San Diego the ants appear limited by moisture, and have not widely invaded natural habitats (Suarez et al., 1998). These ants may also play a role in disrupting and depressing the arthropod community within natural areas (Suarez, pers. comm.), and therefore might negatively affect many species in the region. These ants may benefit from additional water runoff into the region. Increased moisture level associated with irrigation would play a role in their invasion. The dead humus from exotic plants, irrigation from adjacent landscaping, and the silt runoff from construction might also help raise moisture levels in the region and benefit the ants.

- **Red Imported Fire Ants**

These ants may become a problem in the future and monitoring will to detect there presence has begun.

- **House/feral cats**

Domestic cats are a problem at most wildland/urban boundaries, and we know from previous and on-going studies that they are killers of lizards, small mammals and birds (Crooks, pers. comm.). Some data from San Diego County suggests that they may be major predators of coast horned lizards. During initial horned lizard radio-tracking studies at Torrey Pines Reserve Extension, the first two lizards were attacked by what we suspect were cats. The presence of coyotes within San Diego should minimize the ability of feral cats to invade. Any residents within the MSCP region should keep their cats indoors not only for their safety, but also to restrict them from incidental killing of native wildlife.

Physical modifications:

- **Pond creation**

Pacific treefrogs, western toads, and western spadefoot toads may benefit from additional habitat and habitat improvement. We have not searched exhaustively for breeding pools, but where necessary they should be enhanced. Enhancement such as increasing pool depth will ensure they hold water through the breeding season. Sites for pool creation should be strategically chosen locations to maximize pool water holding capacity. These pools may benefit some invertebrates as well as frog and toad species. Ridgelines in flat areas would be appropriate for pool creation for western spadefoot toad populations.

Enforcement:

The following two items may need increased enforcement within the MSCP region of San Diego (Open Spaces and Parks)

- **Bikes on trails**

We have personal observations of animals killed and maimed by bikes in natural areas and we present them as evidence for increasing mountain bike restrictions in a majority of the open spaces in the MSCP regions. Observations include dead alligator lizards along bike trails, a dying southern Pacific rattlesnake (*Crotalus viridis*), nearly meter in length, hit in open space in Chula Vista, and a red racer (*Masticophis flagellum*) dragging the rear third of its body along a

bike trail at Lake Perris State Park. These incidental mortalities might be avoided by posting signs at the base of trails that indicating fines for cycling, and informing the public of risks to species along bike trails.

- **Poaching**

Signage should be installed around reserves indicating that it is illegal to collect from the property. Trails should avoid areas where coast horned lizards, rosy boas and other species sensitive to poaching have been detected.

Education:

- **Information on rattlesnakes**

Educational fliers and/or billboards about rattlesnakes should be available and/or posted in open spaces in San Diego. They should address safety issues and include statistics on snakebites relative to other injuries in the park. These should also show how to differentiates the southern pacific rattlesnake from the red diamond rattlesnake. We know that these snakes are widespread in the region (Table 1), and prefer using trails. Therefore, it is inevitable that people will see them. San Diego could have checklist identifying where snakes have recently been seen (and when). This may help identify locations where physical barriers could be used to keep rattlesnakes out of public facilities.

Identification of corridors for reptiles and amphibians

Most of the reptiles and amphibians of San Diego are upland species. They will require some form of upland habitat linkage to maintain gene flow, and reinvasion if local extinctions occur. The tree frog, western Toad and Pacific pond turtle might utilize a riparian corridor connecting with populations in the east. A few species might become extinct without a habitat linkage to eastern populations; these include the coast horned lizard, red racer, long-nosed rnake, red diamond rattlesnake, and the coast patch-nosed snake. Several upland species may remain viable provided land adjacent to the MSCP region of San Diego are not further developed.

8. Conclusion

We have documented significant diversity in reptiles and amphibians within coastal San Diego. We have over 20,000 captures from a total of 39 different species throughout the MSCP region of San Diego. Species richness and capture rates can be indicators of overall habitat and ecosystem health. Factors such as habitat fragmentation, introduced/exotic species and

disturbance (grazing, off road activity and recreation) all appear to have negative effects on the native herpetofauna. In highly fragmented and disturbed study sites (relative to other study sites in the MSCP region) such as La Cresta, Mission Trails, Point Loma and Spring Canyon, the species richness of the herpetofauna is much lower than larger, less disturbed study sites including Elliot Reserve, Marron Valley, San Diego NWR and Wild Animal Park.

Maintenance of high herpetofaunal diversity relies on active management of open space and reserve lands within the MSCP boundaries. Keeping disturbance of native habitats to a minimum is necessary. Planning development near high quality habitat should be avoided; regions of habitat with lower biodiversity can be utilized as buffer zones between development and species rich habitat.

Roads and trails within reserve lands should be minimized and planned carefully so they do not pass through preferred habitat of sensitive species (such as ridgelines in chaparral, mesas with vernal pools and other regions where sensitive species have been documented). Signs with descriptions of the local herpetofauna discussing their natural history, habitat requirements and value to the ecosystem as part of trophic levels as well as indicators of overall ecosystem health should be posted in open spaces and parks.

Exotic species including grazing goats, feral cats and dogs, Argentine ants and introduced plant species may all have negative effects on herpetofaunal diversity. Study sites impacted by these exotics tend to have lower capture rates and overall species richness than those without exotics (with the exception of Marron Valley whereAfrican Clawed Frogs are present near one array). The long-term effects of exotic species have not been fully determined in many cases, however, it is likely that removing exotics may help restore or maintain high biodiversity.

Herpetofaunal diversity should be monitored throughout the MSCP region to document effects of further development and other habitat disturbance. Continued monitoring is necessary to document the success of restoration and conservation projects throughout San Diego. Baseline data for many areas within the MSCP will be important for future management to determining the relative success of various management strategies.

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Table 1. List of study sites with site number in reference to distribution map labels (see also Figures 1, 3-16). Also included is number of arrays per site, first sample date and total number of species detected at the study site.

Site Number	Study Site	Number of Arrays	First Sample Date	Number of Species
1	Chula Vista 1	7	8/22/95	15
2	Chula Vista 2	9	9/12/95	17
3	Elliot Reserve	17	4/22/95	23
4	La Cresta	6	11/15/99	15
5	Little Cedar Ridge	9	6/12/95	22
6	Marron Valley	9	6/11/95	29
7	Mission Trails	5	11/15/99	12
8	Point Loma	17	8/1/95	13
9	San Diego NWR	10	6/11/95	30
10	Spring Canyon	7	11/2/99	14
11	Tijuana Estuary NWR	15	3/11/97	20
12	Torrey Pines	*	5/11/95	20
13	Wild Animal Park	20	5/11/95	33

*Torrey Pines originally consisted of three separate study sites with 10, 10 and 15 arrays, which were sampled for 195 days. In January 1998, these were combined into a single site consisting of 17 of the original arrays. These were sampled for 135 days. Total array days are 8040.

Table 2. Common and scientific names of species detected at San Diego MSCP study sites. "Status" refers to the level of attention or protection the species receives from either State or Federal government.

	Common Name	Scientific Name	Status
Amphibians	Pacific Slender Salamander	*Batrachoseps pacificus*	
	Arboreal Salamander	*Aneides lugubris*	
	Monterey Salamander	*Ensatina eschscholtzii*	
	California Treefrog	*Hyla cadaverina*	
	Pacific Treefrog	*Hyla regilla*	
	Western Toad	*Bubo boreas*	
	Bullfrog	*Rana catesbeiana*	*Exotic
	African Clawed Frog	*Xenopus laevis*	*Exotic
	Western Spadefoot Toad	*Spea hammondii*	California and Federal Special Concern / Protected
Lizards	San Diego Banded Gecko	*Coleonyx variegatus*	Federal Special Concern
	Granite Night Lizard	*Xantusia henshawii*	
	Silvery Legless Lizard	*Anniella pulchra*	California and Federal Special Concern / Sensitive
	Southern Alligator Lizard	*Elgaria multicarinatus*	
	Gilbert's Skink	*Eumeces gilberti*	
	Western / Coronado Skink	*Eumeces skiltonianus*	California Special Concern
	Orange-Throated Whiptail	*Cnemidophorus hyperythrus*	California and Federal Special Concern / Protected
	Western Whiptail	*Cnemidophorus tigris*	Federal Special Concern
	Desert Spiny Lizard	*Sceloporus magister*	
	Western Fence Lizard	*Sceloporus occidentalis*	
	Granite Spiny Lizard	*Sceloporus orcutti*	
	Side Blotched Lizard	*Uta stansburiana*	
	Coast Horned Lizard	*Phrynosoma coronatum*	California and Federal Special Concern / Protected
Snakes	Western Blind Snake	*Leptotyphlops humilis*	
	Coastal Rosy Boa	*Charina trivirgata*	Federal Special Concern
	Western Yellow Bellied Racer	*Coluber constrictor*	
	Western Ring-Necked Snake	*Diadophis punctatus*	Federal Special Concern / Sensitive
	Night Snake	*Hypsiglena torquata*	
	California Kingsnake	*Lampropeltis getula*	
	Coachwhip	*Masticophis flagellum*	
	Striped Racer	*Masticophis lateralis*	
	San Diego Gopher Snake	*Pituophis melanoleucus*	
	Western Long-Nosed Snake	*Rhinocheilus lecontei*	
	Coast Patch-Nosed Snake	*Salvadora hexalepis*	California and Federal Special Concern
	Black-Headed Snake	*Tantilla planiceps*	
	Two-Striped Garter Snake	*Thamnophis hammondii*	California and Federal Special Concern / Protected
	Lyre Snake	*Trimorphodon biscutatus*	
	Speckled Rattlesnake	*Crotalus mitchelli*	
	Southern Pacific Rattlesnake	*Crotalus viridis*	
	Red Diamond Rattlesnake	*Crotalus ruber*	California and Federal Special Concern

Table 3. Captures by site indicates total captures of each species at each study site as well as a combined total of captures at all study sites within the MSCP study area.

	Species	Otay Mesa 1	Otay Mesa 2	Elliot Reserve	La Cresta	Little Cedar Ridge	Mahogany Valley	Mission Trails	Point Loma	San Diego NWR	Spring Canyon	Tijuana Estuary NWR	Torrey Pines	Wild Animal Park	Total Captures (All Sites)
Amphibians	Pacific Slender Salamander	1	1	235			3		87	19		3	202	30	581
	Arboreal Salamander												18		18
	Monterey Salamander					37								1	38
	California Treefrog						2								2
	Pacific Treefrog	2		347		1	20			15		31	16	5	437
	Western Toad			701	4		10			1			2	43	761
	Bullfrog					2									2
	African Clawed Frog						192			1					193
	Western Spadefoot Toad		1	7			41			22	7	2		17	97
Lizards	San Diego Banded Gecko				1		2							26	29
	Granite Night Lizard					1	4			1				16	22
	Silvery Legless Lizard								2	4		13	1	11	31
	Southern Alligator Lizard	49	47	100	2	54	8	6	165	59	8	66	325	52	941
	Gilbert's Skink									1				126	127
	Western / Coronado Skink	2	30	315	13	33	164	5		249	7	196	75	201	1290
	Orange-Throated Whiptail	559	161	362	34			41	450	182	76	665	614	3159	6303
	Coastal Western Whiptail		31	38	2	29	384	38		83			55	232	892
	Desert Spiny Lizard									1					1
	Western Fence Lizard	199	242	545	15	221	339	28	508	214	30	511	1086	427	4365
	Granite Spiny Lizard						4	1		7				67	79
	Side Blotched Lizard	66	115	12	5	14	259	19	357	15	21	451	558	285	2177
	Coast Horned Lizard			95	1	98	3			88	2	98	41	136	562
Snakes	Western Blind Snake				11	1	11	13		21	1	14		45	117
	Coastal Rosy Boa						1		1	4		1		9	14
	Western Yellow Bellied Racer			48									2		50
	Western Ring-Necked Snake			12	1	2			7	16		1	16	7	62
	Night Snake		1	13		3	1		1	4		2	11	1	37
	California Kingsnake	3	23	64	1		7		5	20	4	24	9	42	202
	Coachwhip	1	6	6		3	4			6		23		5	54
	Striped Racer	40	29	28	3	21	16	2	42	63	2	11	98	117	472
	San Diego Gopher Snake	12	16	16	3	29	30		6	24	2	23	27	30	218
	Western Long-Nosed Snake	4	3	8			5			10	1			12	43
	Coast Patch-Nosed Snake	2				5	8	2						32	49
	Black-Headed Snake		1	11		7	3	6		13	4			20	65
	Two-Striped Garter Snake			20			61			3		2	1	2	89
	Lyre Snake					1								1	2
	Speckled Rattlesnake					2	6							2	10
	Southern Pacific Rattlesnake	3	13	20	5	5	9		7	19	4	5	26	8	124
	Red Diamond Rattlesnake	11	3	1		1	8	1		11				35	71
	Total Captures:	954	723	3004	101	570	1605	162	1638	1176	169	2142	3183	5202	20627
	Total Species:	15	17	23	15	22	29	12	13	30	14	20	20	33	39

Table 4. Capture rate by site indicates capture rates for each species at each study site, lists number of arrays and total days sampled at each site. Capture rates are number of captures per array per day times 1000.

		Chihuahua Valley Road 1	Chihuahua Valley Road 2	Elliot Reserve	La Cresta	Little Cedar Ridge	Marron Valley	Mission Trails	Point Loma	San Diego NWR	Spring Canyon	Tijuana Estuary NWR	Torrey Pines (8040 array days)	Wild Animal Park	Total Captures (All Sites)**
	Number of Arrays:	**7**	**9**	**17**	**6**	**9**	**9**	**5**	**17**	**10**	**7**	**15**	*	**20**	**132**
	Days Sampled:	**270**	**270**	**335**	**50**	**285**	**292**	**50**	**280**	**295**	**60**	**200**	*	**305**	**2692**
Amphibians	Pacific Slender Salamander	0.5	0.4	39.0			1.1		18.3	6.4		1.0	25.1	4.9	1.6
	Arboreal Salamander												2.2		0.0
	Monterey Salamander					14.4								0.2	0.1
	California Treefrog						0.8								0.0
	Pacific Treefrog	1.1		57.5		0.4	7.6			5.1		10.3	2.0	0.8	1.2
	Western Toad			116.3	13.3		3.8			0.3			0.2	7.0	2.1
	Bullfrog					0.8									0.0
	African Clawed Frog						73.1			0.3					0.5
	Western Spadefoot Toad		0.4	1.2			15.6			7.5	14.6	0.7		2.8	0.3
Lizards	San Diego Banded Gecko				3.3		0.8							4.3	0.1
	Granite Night Lizard					0.4	1.5			0.3				2.6	0.1
	Silvery Legless Lizard								0.4	1.4		4.3	0.1	1.8	0.1
	Southern Alligator Lizard	25.9	19.3	16.6	6.7	21.1	3.0	24.0	34.7	20.0	16.7	22.0	40.4	8.5	2.6
	Gilbert's Skink									0.3				20.7	0.3
	Western / Coronado Skink	1.1	12.3	52.2	43.3	12.9	62.4	20.0		84.4	14.6	65.3	9.3	33.0	3.5
	Orange-Throated Whiptail	295.8	66.3	60.0	113.3			164.0	94.5	61.7	158.3	221.7	76.4	517.9	17.2
	Coastal Western Whiptail		12.8	6.3	6.7	11.3	146.1	152.0		28.1			6.8	38.0	2.4
	Desert Spiny Lizard									0.3					0.0
	Western Fence Lizard	105.3	99.6	90.4	50.0	86.2	129.0	112.0	106.7	72.5	62.5	170.3	135.1	70.0	11.9
	Granite Spiny Lizard						1.5	4.0		2.4				11.0	0.2
	Side Blotched Lizard	34.9	47.3	2.0	16.7	5.5	98.6	76.0	75.0	5.1	43.8	150.3	69.4	46.7	5.9
	Coast Horned Lizard			15.8	3.3	38.2	1.1			29.8	4.2	32.7	5.1	22.3	1.5
Snakes	Western Blind Snake				36.7	0.4	4.2	52.0		7.1	2.1	4.7		7.4	0.3
	Coastal Rosy Boa						0.4		0.2	1.4		0.3		1.5	0.0
	Western Yellow Bellied Racer			8.0									0.2		0.1
	Western Ring-Necked Snake			2.0	3.3	0.8			1.5	5.4		0.3	2.0	1.1	0.2
	Night Snake		0.4	2.2		1.2	0.4		0.2	1.4		0.7	1.4	0.2	0.1
	California Kingsnake	1.6	9.5	10.6	3.3		2.7		1.1	6.8	8.3	8.0	1.1	6.9	0.6
	Coachwhip	0.5	2.5	1.0		1.2	1.5			2.0		7.7		0.8	0.1
	Striped Racer	21.2	11.9	4.6	10.0	8.2	6.1	8.0	8.8	21.4	4.2	3.7	12.2	19.2	1.3
	San Diego Gopher Snake	6.3	6.6	2.7	10.0	11.3	11.4		1.3	8.1	4.2	7.7	3.4	4.9	0.6
	Western Long-Nosed Snake	2.1	1.2	1.3			1.9			3.4	2.1			2.0	0.1
	Coast Patch-Nosed Snake	1.1				1.9	3.0	8.0						5.2	0.1
	Black-Headed Snake		0.4	1.8		2.7	1.1	24.0		4.4	8.3			3.3	0.2
	Two-Striped Garter Snake			3.3			23.2			1.0		0.7	0.1	0.3	0.2
	Lyre Snake					0.4								0.2	0.0
	Speckled Rattlesnake					0.8	2.3							0.3	0.0
	Southern Pacific Rattlesnake	1.6	5.3	3.3	16.7	1.9	3.4		1.5	6.4	8.3	1.7	3.2	1.3	0.3
	Red Diamond Rattlesnake	5.8	1.2	0.2		0.4	3.0	4.0		3.7				5.7	0.2
	Total Captures:	505	298	498	337	222	611	648	344	399	352	714	396	853	56

*Torrey Pines = 195 days of 17 arrays + 135 days of 10 arrays + 35 days of 10 arrays + 35 days of 15 arrays = 8040 array days.

**Total Captures "Days Sampled" and "Number of Arrays" fields do not include the Torrey Pines arrays, but species data includes the 8040 array days from Torrey Pines.

Table 5. Species of special concern captures at each study site.

Species	Otay Mesa Vista 1	Otay Mesa Vista 2	Elliot Reserve	La Cresta	Little Cedar Ridge	Mission Trails Valley	Mission Trails	Point Loma	San Diego NWR	Spring Canyon	Tijuana Estuary NWR	Torrey Pines	Wild Animal Park	Total Captures (All Sites)
Western Spadefoot Toad		1	7			41			22	7	2		17	97
San Diego Banded Gecko				1		2							26	29
Silvery Legless Lizard								2	4		13	1	11	31
Western / Coronado Skink	2	30	315	13	33	164	5		249	7	196	75	201	1290
Orange-Throated Whiptail	559	161	362	34			41	450	182	76	665	614	3159	6303
Coastal Western Whiptail		31	38	2	29	384	38		83			55	232	892
Coast Horned Lizard			95	1	98	3			88	2	98	41	136	562
Coastal Rosy Boa						1		1	4		1		9	14
Western Ring-Necked Snake			12	1	2			7	16		1	16	7	62
Coast Patch-Nosed Snake	2				5	8	2						32	49
Two-Striped Garter Snake			20			61			3		2	1	2	89
Red Diamond Rattlesnake	11	3	1		1	8	1		11				35	71
Total Captures:	574	226	850	52	168	672	87	460	662	92	978	803	3867	9489
Total Species:	4	5	8	6	6	9	5	4	10	4	8	7	12	12

Table 6. Species of special concern capture rates at each study site. Capture rates are captures per array per day times 1000.

	Otay Mesa Vista 1	Otay Mesa Vista 2	Elliot Reserve	La Cresta	Little Cedar Ridge	Mission Trails Valley	Mission Trails	Point Loma	San Diego NWR	Spring Canyon	Tijuana Estuary NWR	Torrey Pines (8040 array days)	Wild Animal Park	Total Captures (All Sites)***
Number of Arrays:	**7**	**9**	**17**	**6**	**9**	**9**	**5**	**17**	**10**	**7**	**15**	*	**20**	**133**
Days Sampled:	**270**	**270**	**335**	**50**	**285**	**292**	**50**	**280**	**295**	**60**	**200**	*	**305**	**2692**
Western Spadefoot Toad		0.4	1.2			15.6			7.5	14.6	0.7		2.8	0.3
San Diego Banded Gecko				3.3		0.8							4.3	0.1
Silvery Legless Lizard								0.4	1.4		4.3	0.1	1.8	0.1
Western / Coronado Skink	1.1	12.3	52.2	43.3	12.9	62.4	20.0		84.4	14.6	65.3	9.3	33.0	3.5
Orange-Throated Whiptail	295.8	66.3	60.0	113.3			164.0	94.5	61.7	158.3	221.7	76.4	517.9	17.2
Coastal Western Whiptail		12.8	6.3	6.7	11.3	146.1	152.0		28.1			6.8	38.0	2.4
Coast Horned Lizard			15.8	3.3	38.2	1.1			29.8	4.2	32.7	5.1	22.3	1.5
Coastal Rosy Boa						0.4		0.2	1.4		0.3		1.5	0.0
Western Ring-Necked Snake			2.0	3.3	0.8			1.5	5.4		0.3	2.0	1.1	0.2
Coast Patch-Nosed Snake	1.1				1.9	3.0	8.0						5.2	0.1
Two-Striped Garter Snake			3.3			23.2			1.0		0.7	0.1	0.3	0.2
Red Diamond Rattlesnake	5.8	1.2	0.2		0.4	3.0	4.0		3.7				5.7	0.2
Total Captures:	505	298	498	337	222	611	648	344	399	352	714	396	853	56

*Torrey Pines = 195 days of 17 arrays + 135 days of 10 arrays + 35 days of 10 arrays + 35 days of 15 arrays = 8040 array days.

**Total Captures "Days Sampled" and "Number of Arrays" fields do not include the Torrey Pines arrays, but species data includes the 8040 array days from Torrey Pines.

Table 7. List of ant genera / species detected. **Bold type** indicates exotic species.

Subfamily	Code	Genus/species	Common Name
Dolichoderinae	DO	Dorymyrmex	Pyramid Ant
	FO	Forelius	
	LIHU	**Linepithema humile**	**Argentine Ant**
Dorylinae	NE	Neivamyrmex	Army Ant
Formicinae	CA	Camponotus	Carpenter Ant
Myrmicinae	CR	Crematogaster	Acrobat Ant
	LE	Leptothorax	
	PH	Pheidole	
	PO	Pogonomyrmex	Harvester Ant
	SOMO	Solenopsis molesta	Thief Ant
	SOXY	Solenopsis xyloni	Native Fire Ant

Table 8. Sample sites and dates from spring 2000 to winter 2000. **Bold type** signifies exotic species. ( )= Total Arrays

	Mar-00	Oct-00		Jan-01			Total	% Site
	SC (7)	Crest (4)	MT (5)	Crest (4)	MT (5)	SC (7)	Individuals	Occurrence
Genus/species								
Subfamily Dolichoderinae								
Dorymyrmex					1		1	17
Pyramid Ant								
Forelius		21	20				41	33
Linepithema humile	**3**		**442**		**2**	**3**	**450**	**67**
Argentine Ant								
Subfamily Dorylinae								
Neivamyrmex			5				5	17
Arny Ant								
Subfamily Formicinae								
Camponotus			1				1	17
Carpenter Ant								
Subfamily Myrmicinae								
Crematogaster	8	1	4	2	1	1	17	100
Acrobat Ant								
Leptothorax		1	1		2	4	8	67
Pheidole	5	45	646	13	6	10	725	100
Pogonomyrmex		3					3	17
Harvester Ant								
Solenopsis molesta	1	5					6	33
Thief Ant								
Solenopsis xyloni	7	7	9		2		25	67
Native Fire Ant								
Total Individuals	24	83	1128	15	14	18	1282	
Total Genera	4	6	8	2	6	4	10	

Table 9. Ant distributions by arrays at La Cresta.

La Cresta	Oct-00						Jan-01					
	Edge Arrays		Middle Arrays		Total	% Array	Edge Arrays		Middle Arrays		Total	% Array
	2	3	1	4	Individuals	Occurrence	2	3	1	4	Individuals	Occurrence
Genus/species												
Subfamily Dolichoderinae												
Forelius	18	1		2	21	75						
Subfamily Myrmicinae												
Crematogaster Acrobat Ant			1		1	25			2		2	25
Leptothorax				1	1	25						
Pheidole	19	9	3	14	45	100		2	11		13	50
Pogonomyrmex		2		1	3	50						
Solenopsis molesta Thief Ant		1		4	5	50						
Solenopsis xyloni Native Fire Ant	5		2		7	50						
Total Individuals	42	13	6	22	83		0	2	13	0	15	
Total Genera	3	4	3	5	6		0	1	2	0	2	

Table 10. Ant distributions by array at Mission Trails.

Mission Trails	Oct-00							Jan-01						
	Edge Arrays		Middle Arrays		Interior	Total	% Array	Edge Arrays		Middle Arrays		Interior	Total	% Array
	1	4	2	5	3	Individuals	Occurrence	1	4	2	5	3	Individuals	Occurrence
Genus/species														
Subfamily Dolichoderinae														
Dorymyrmex Pyramid Ant										1			1	20
Forelius	7		7	2	4	20	80							
Linepithema humile Argentine Ant	434	6		2		442	60		1		1		2	40
Subfamily Dorylinae														
Neivamyrmex Army Ant					5	5	20							
Subfamily Formicinae														
Camponotus Carpenter Ant		1				1	20							
Subfamily Myrmicinae														
Crematogaster Acrobat Ant		1	1		2	4	60				1		1	20
Leptothorax					1	1	20	2					2	20
Pheidole	2	3	588	28	25	646	100			1	1	4	6	60
Solenopsis xyloni Native Fire Ant			4	4	1	9	60			2			2	20
Total Individuals	443	11	600	36	38	1128		2	1	4	3	4	14	
Total Genera	3	4	4	4	6	8		1	1	3	3	1	6	

Table 11. Ant distributions by array at Spring Canyon.

Spring Canyon	Mar-00									Jan-01								
	Mesa Arrays				Valley Arrays			Total	% Array	Mesa Arrays				Valley Arrays			Total	% Array
	1	2	3	7	4	5	6	Individuals	Occurrence	1	2	3	7	4	5	6	Individuals	Occurrence
Genus/species																		
Subfamily Dolichoderinae																		
Linepithema humile Argentine Ant						3		3	14				3				3	14
Subfamily Myrmicinae																		
Crematogaster Acrobat Ant	2	6						8	29					1			1	14
Leptothorax										1					3		4	29
Pheidole	2	3						5	29	1			2	1	3	3	10	71
Solenopsis molesta Thief Ant			1					1	14									
Solenopsis xyloni Native Fire Ant	7							7	14									
Total Individuals	11	9	1	0	0	3	0	24		2	0	0	5	2	6	3	18	
Total Genera	3	2	1	0	0	1	0	5		2	0	0	2	2	2	1	4	

Figure 1. Study site locations.

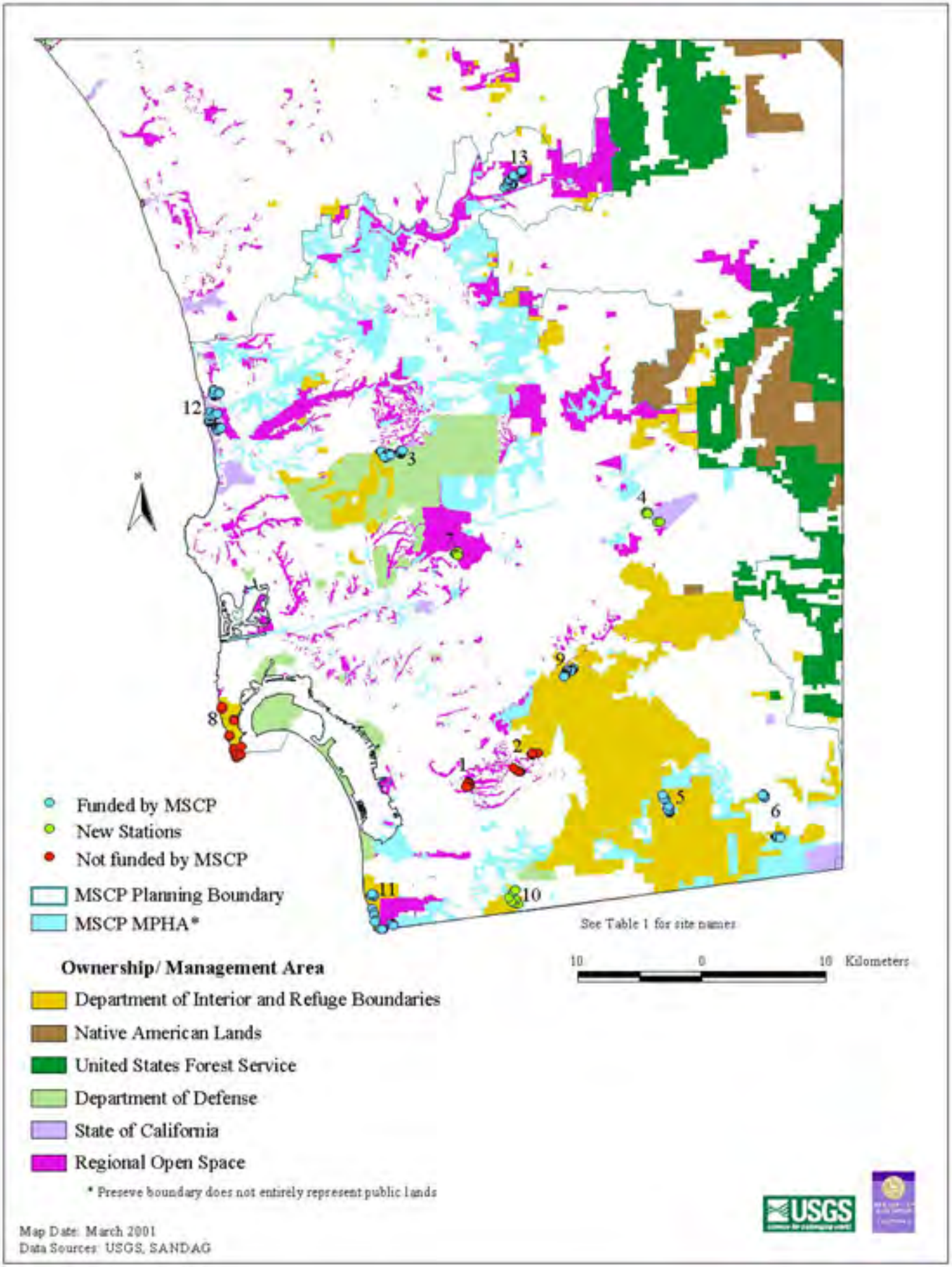


Figure 2. Diagram of pitfall trap array developed for sampling reptiles and amphibians.

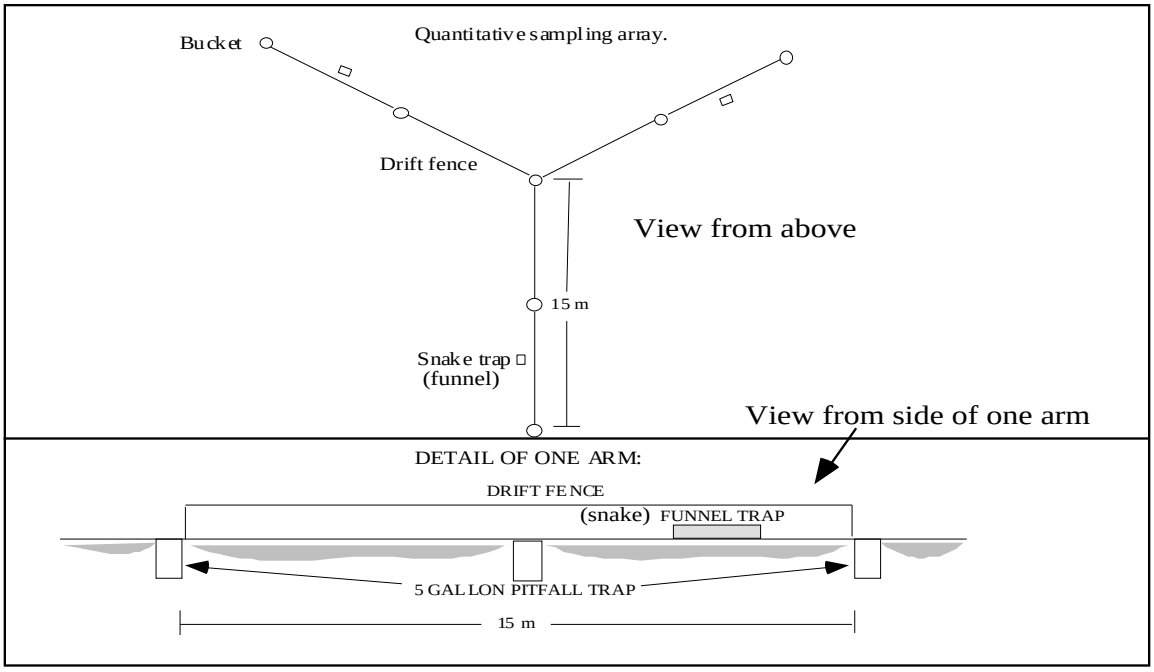


Figure 3. Number of species detected at each site.

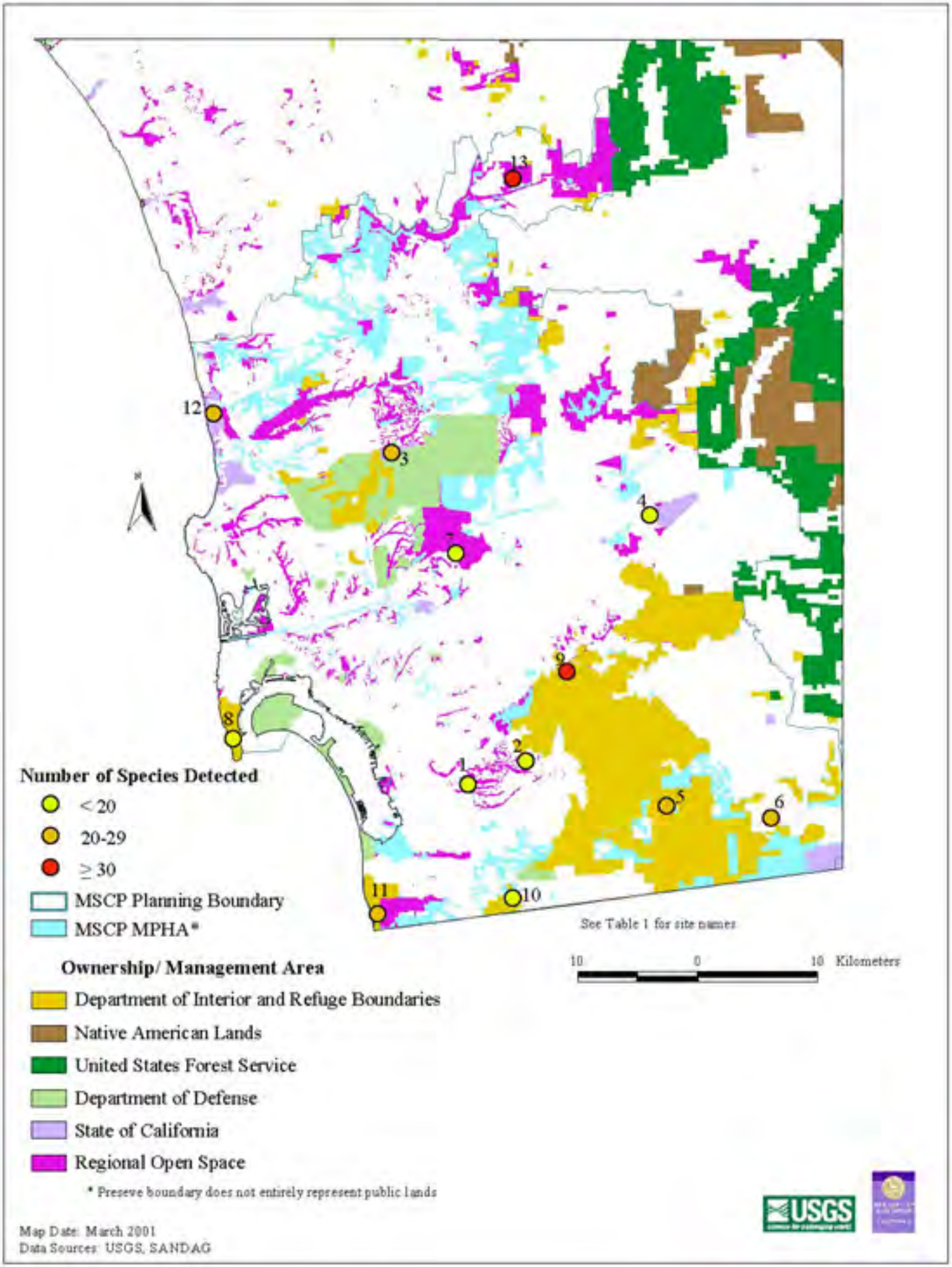


Figure 4. Western spadefoot toad *(Spea hammondii)* detections.

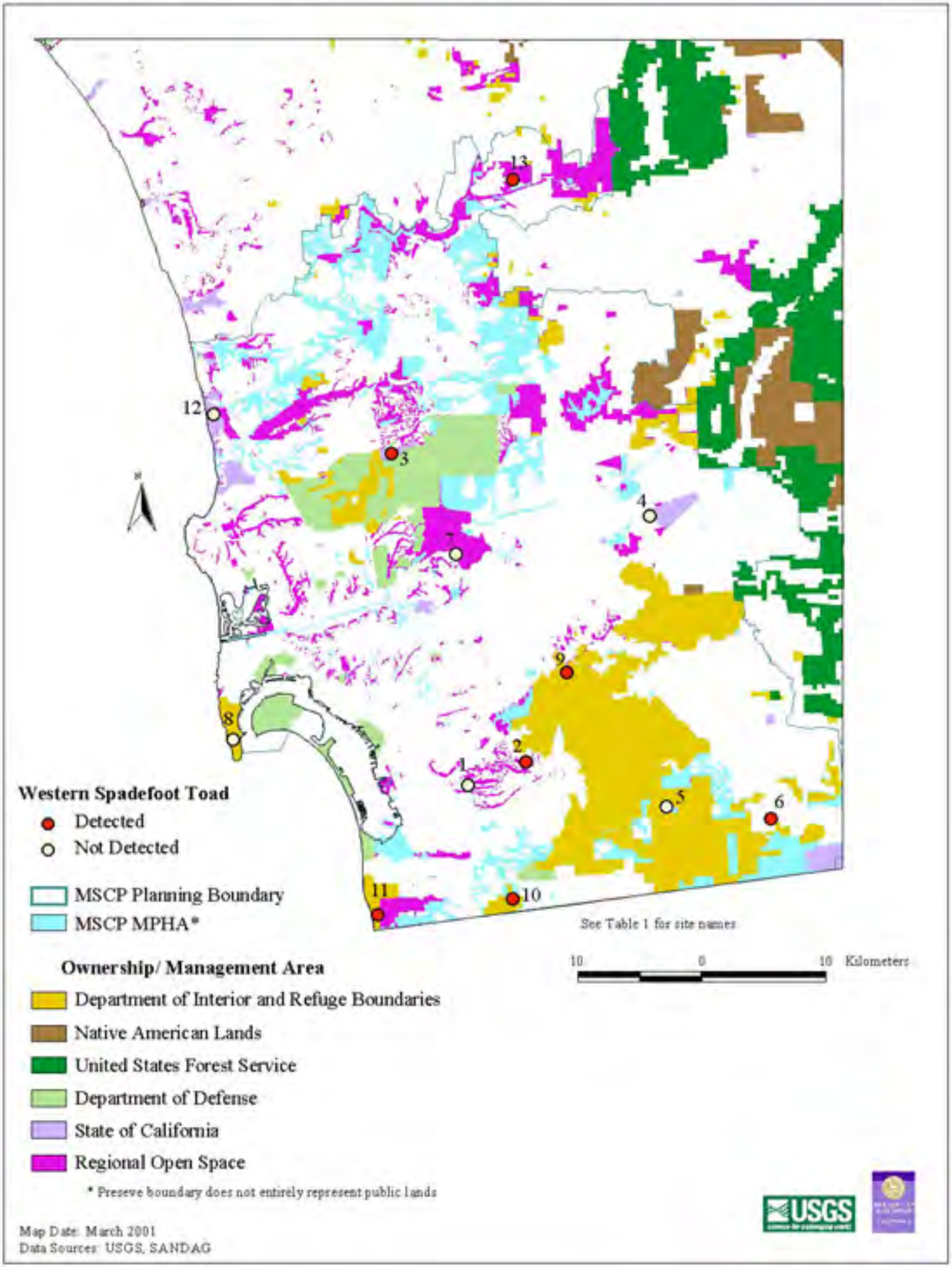


Figure 5. San Diego Banded Gecko *(Coleonyx variegatus)* Detections.

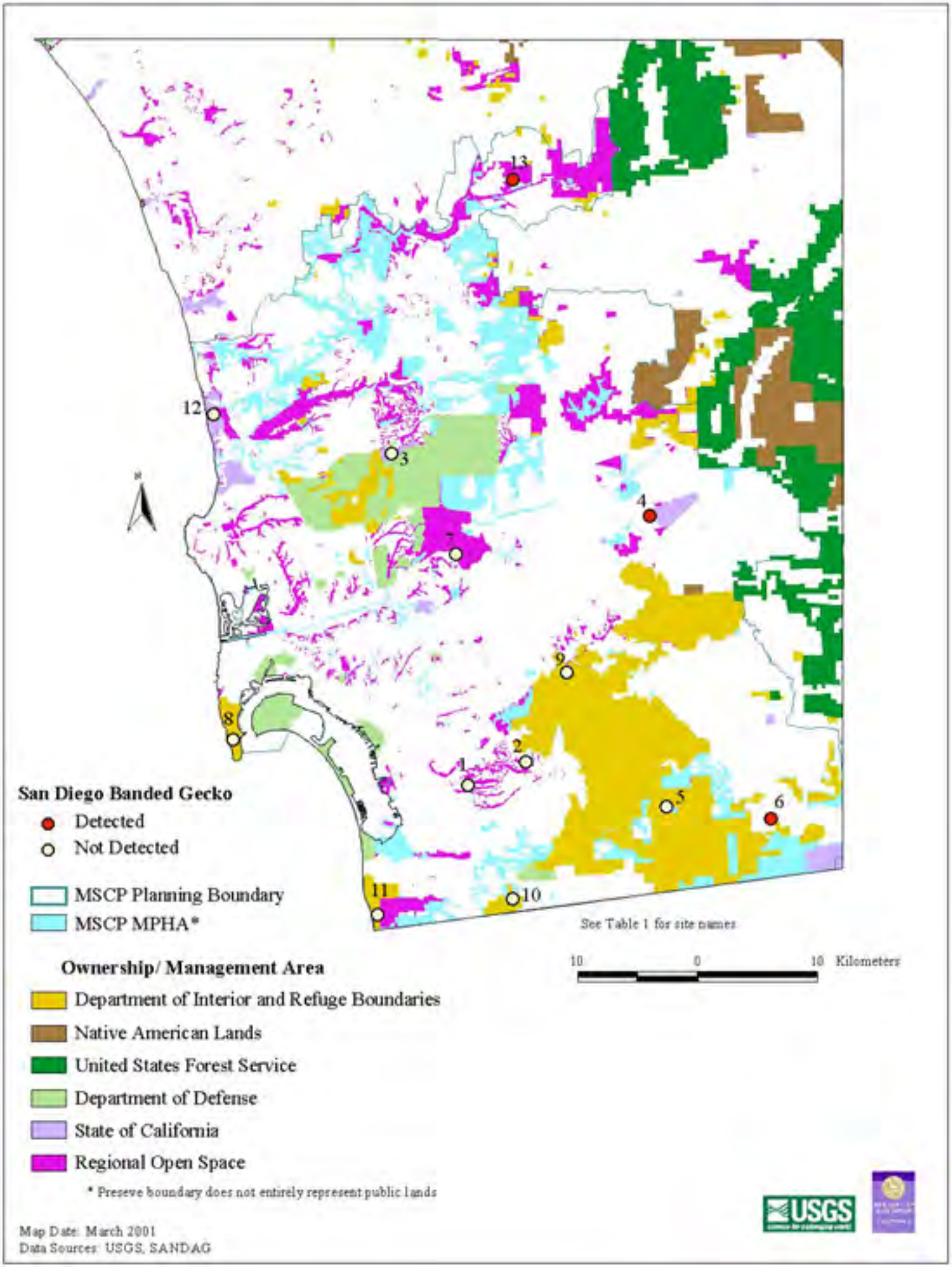


Figure 6. Silvery legless lizard *(Anniella pulchra)* detections.

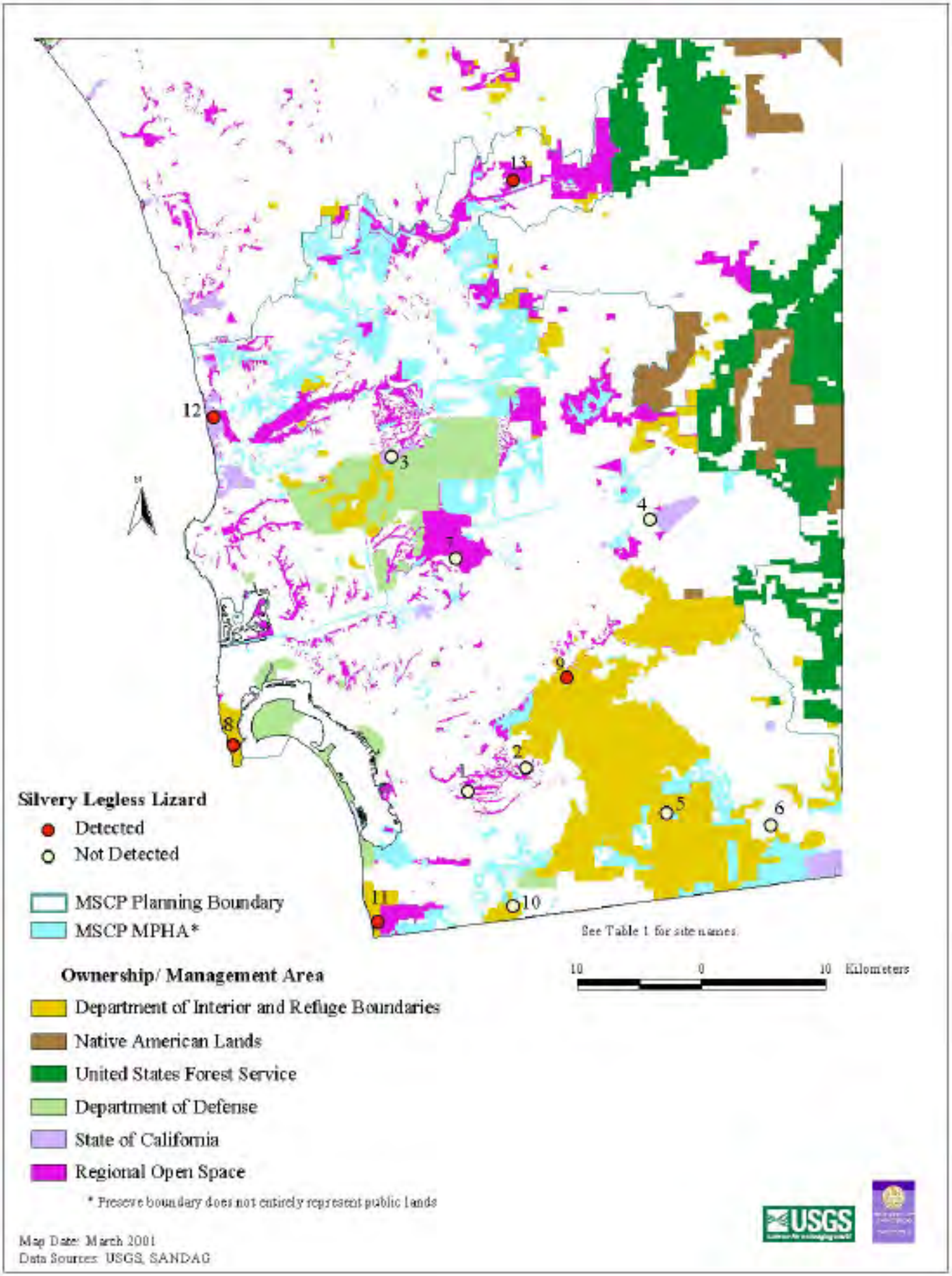


Figure 7. Western/Coronado skink *(Eumeces skiltonianus)* detections.

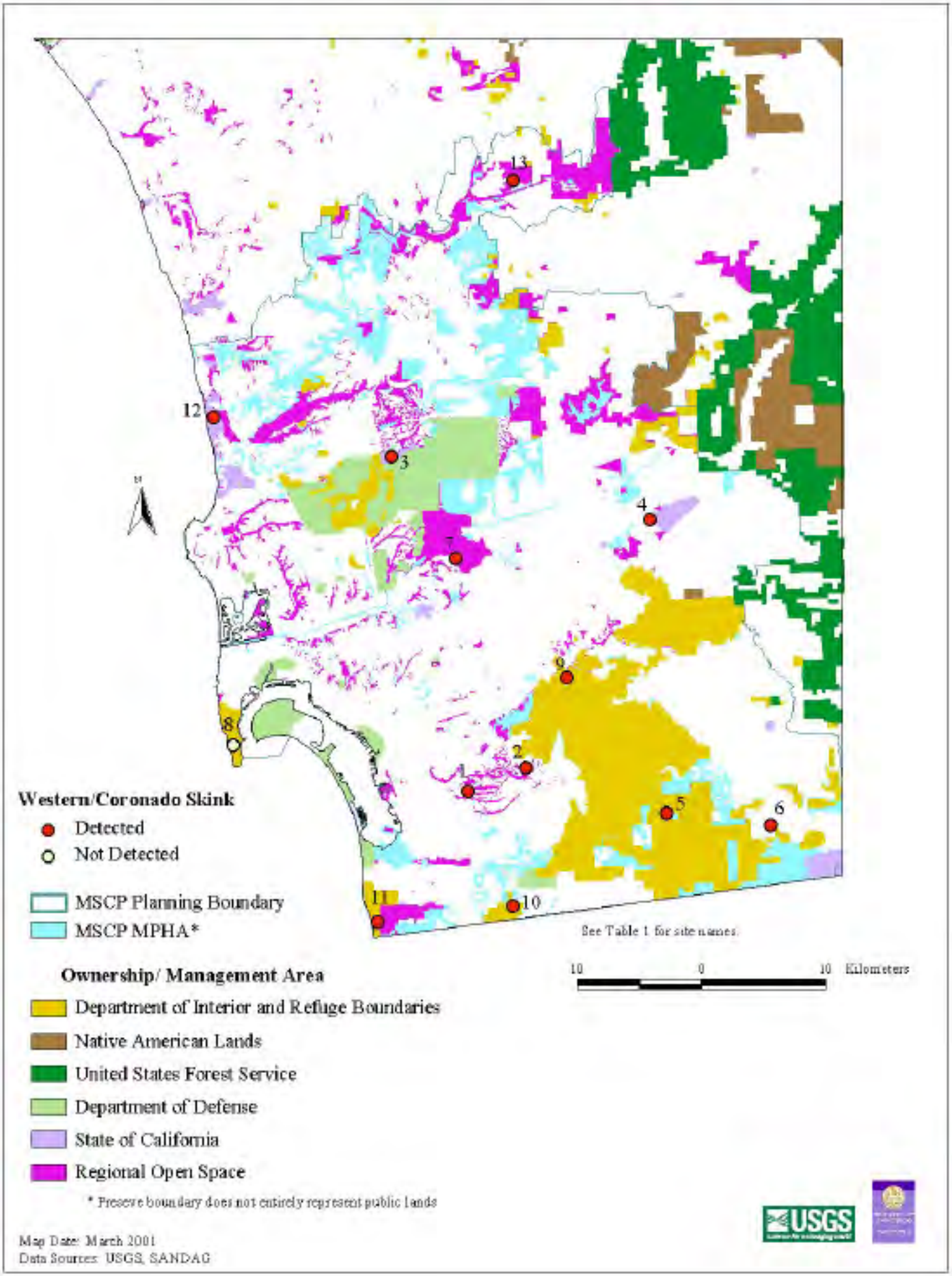


Figure 8. Orange-throated whiptail *(Cnemidophorus hyperythrus)* detections.

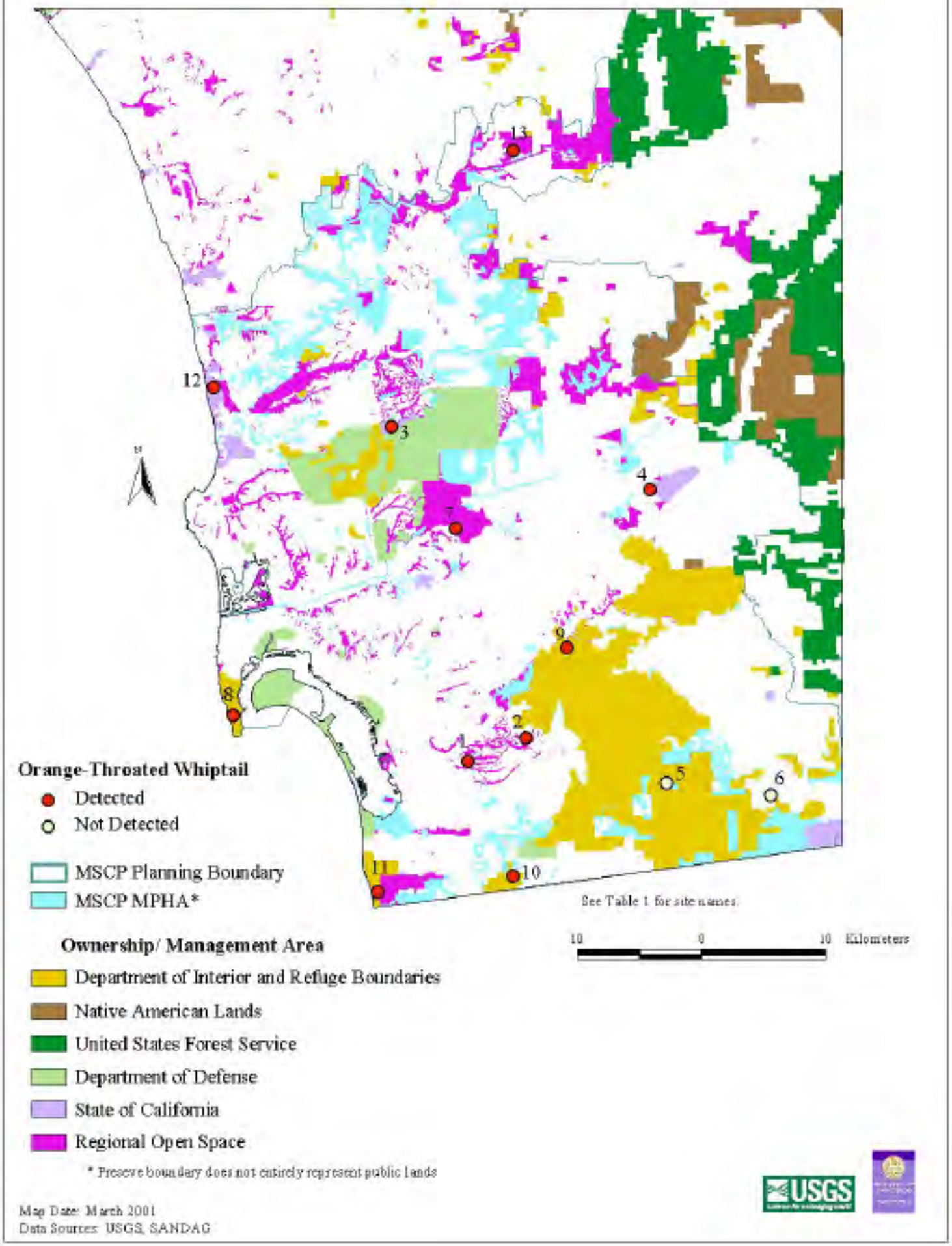


Figure 9. Coastal western whiptail *(Cnemidophorus tigris)* detections.

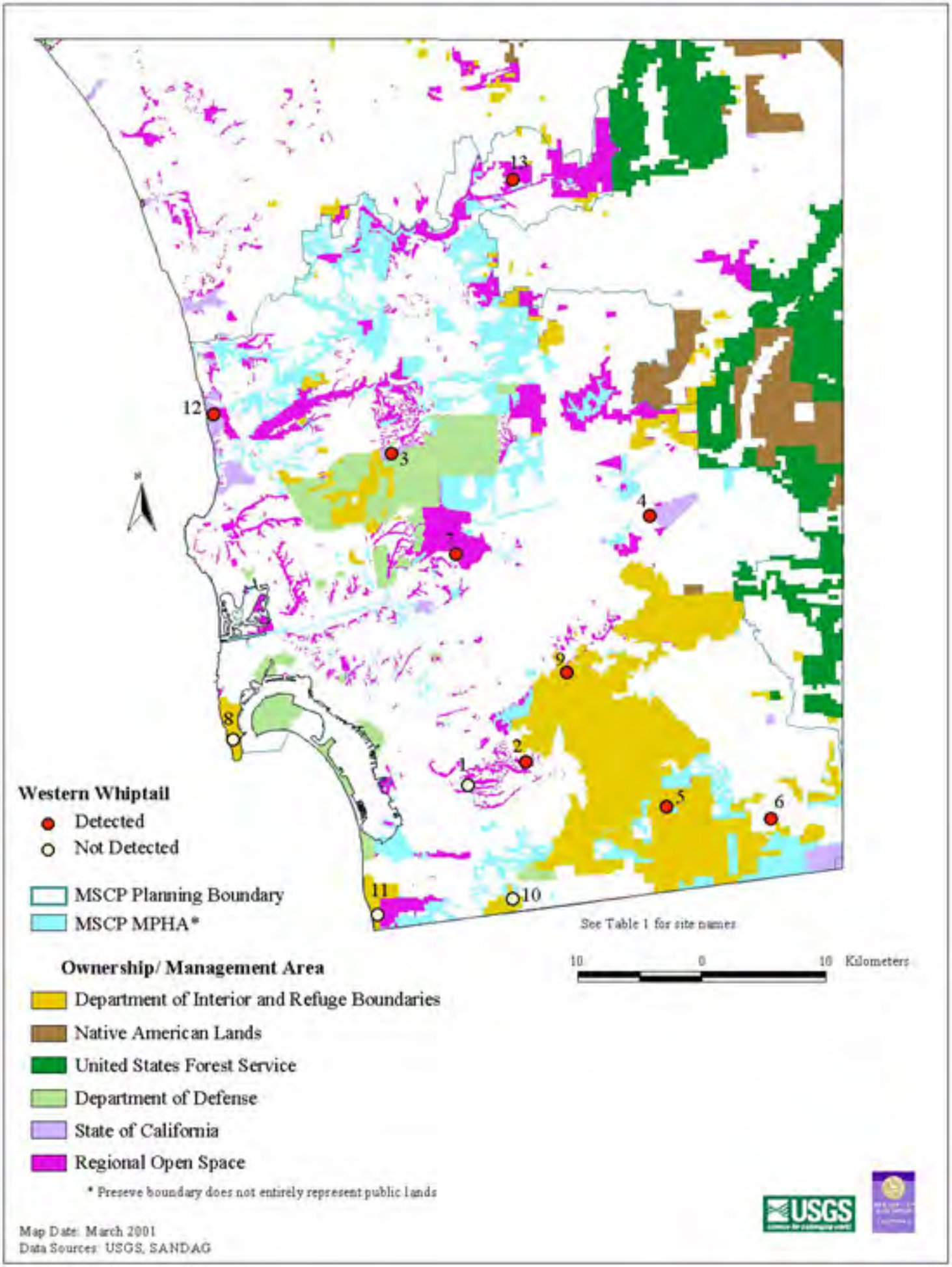


Figure 10. Coast horned lizard *(Phrynosoma coronatum)* detections.

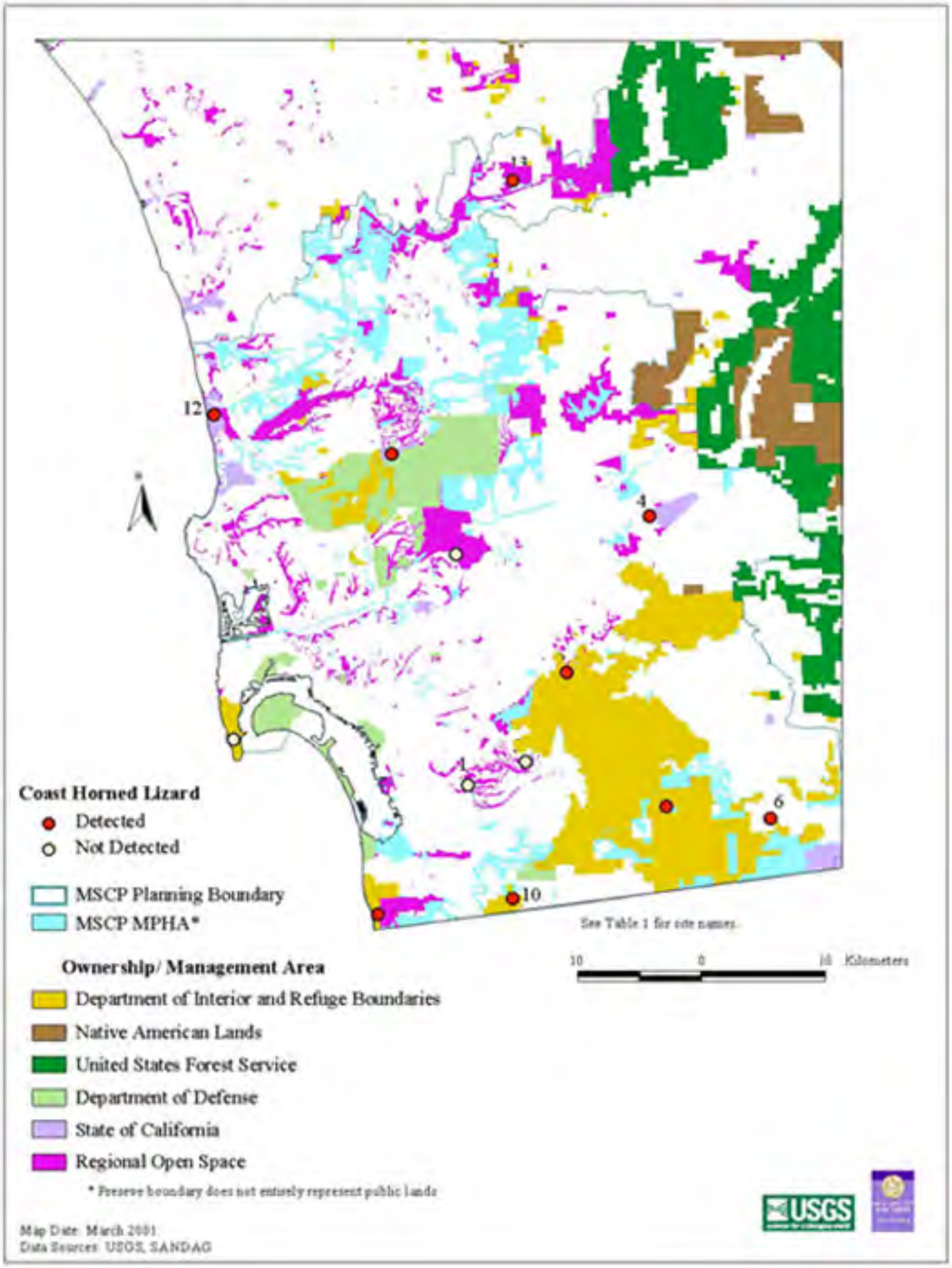


Figure 11. Coastal rosy boa *(Charina trivirgata)* detections.

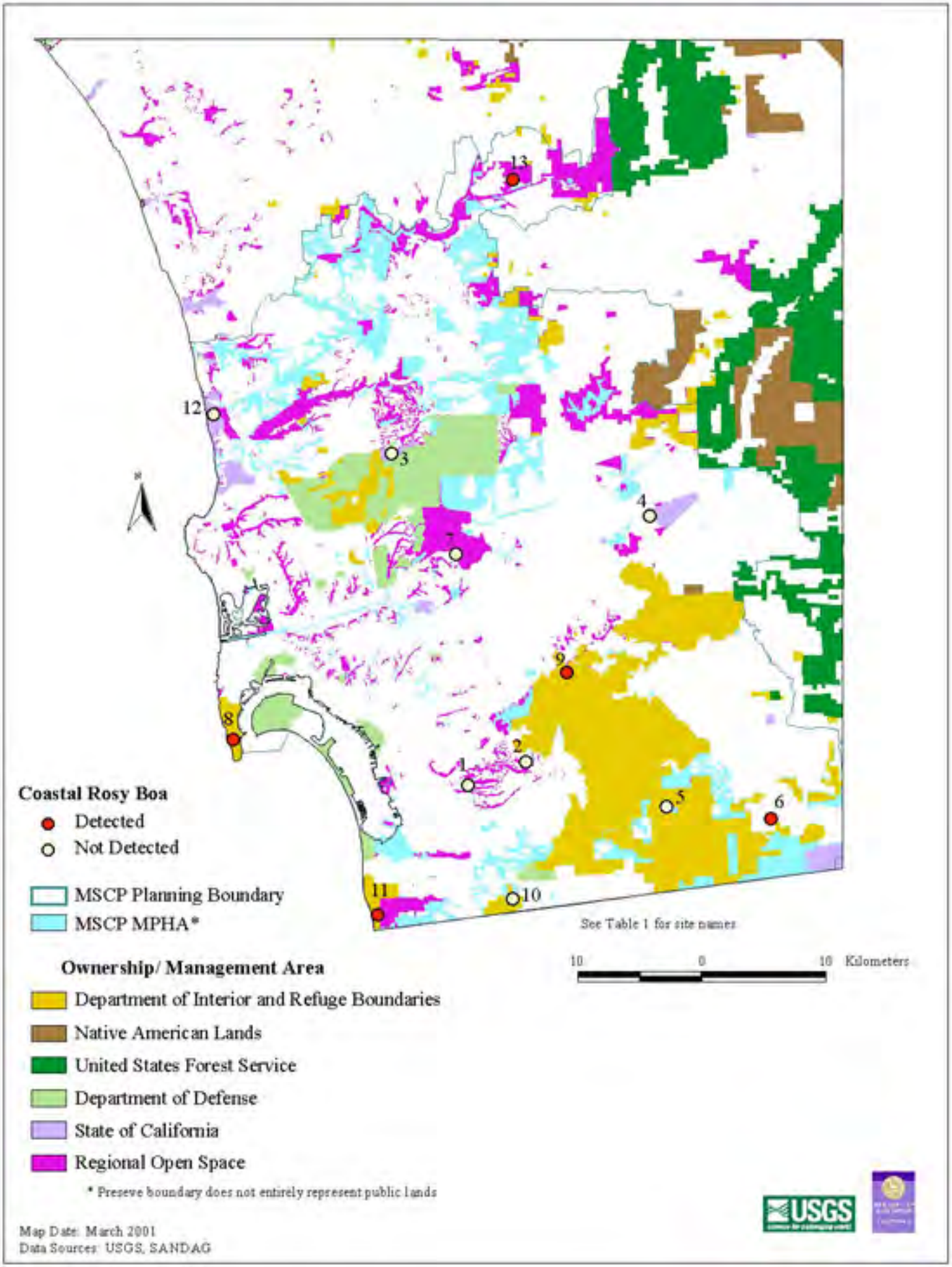


Figure 12. Western ring-necked snake *(Diadophis punctatus)* detections.

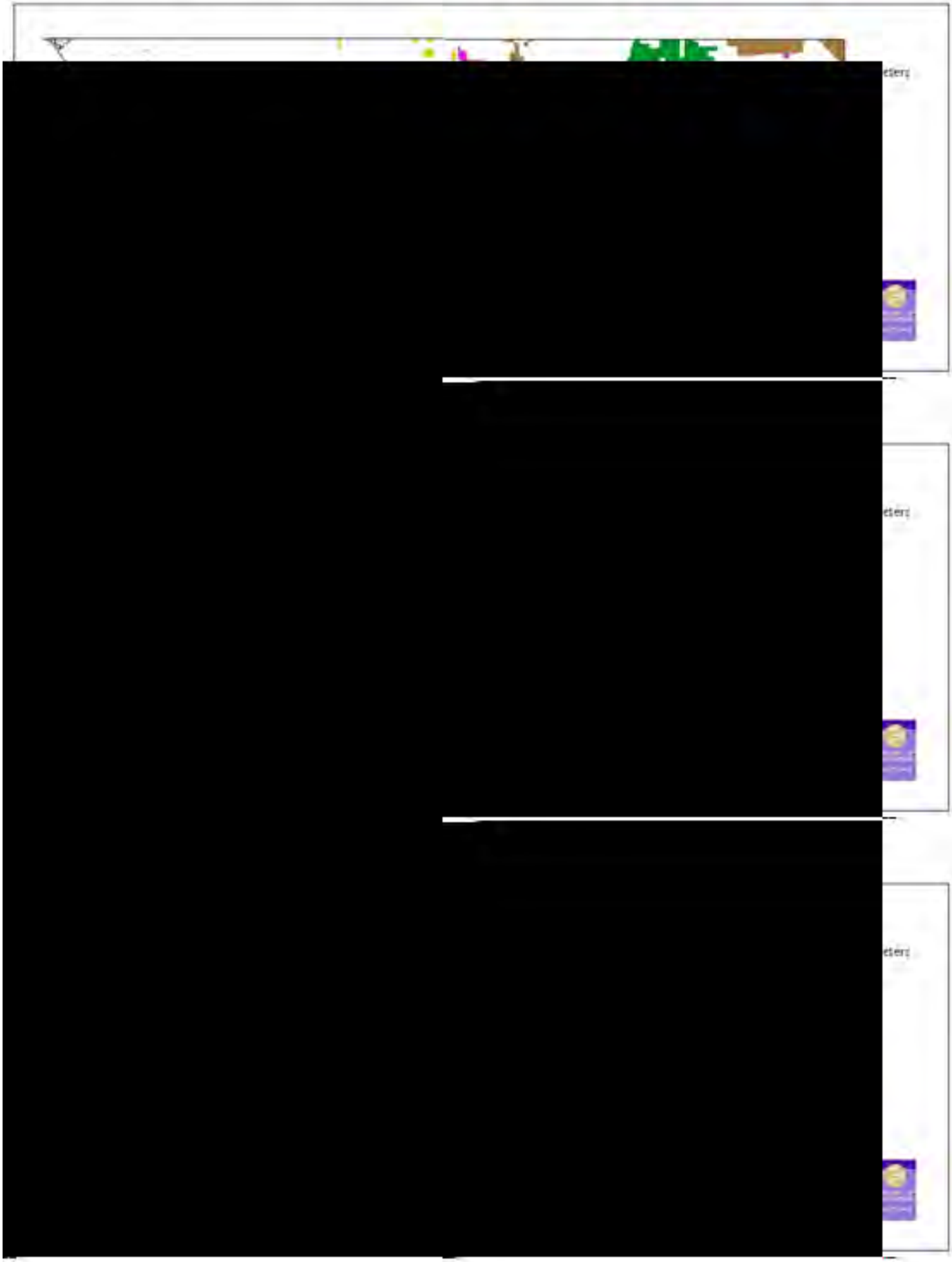


Figure 13. Coast patch-nosed snake *(Salvadora hexalepis)* detections.

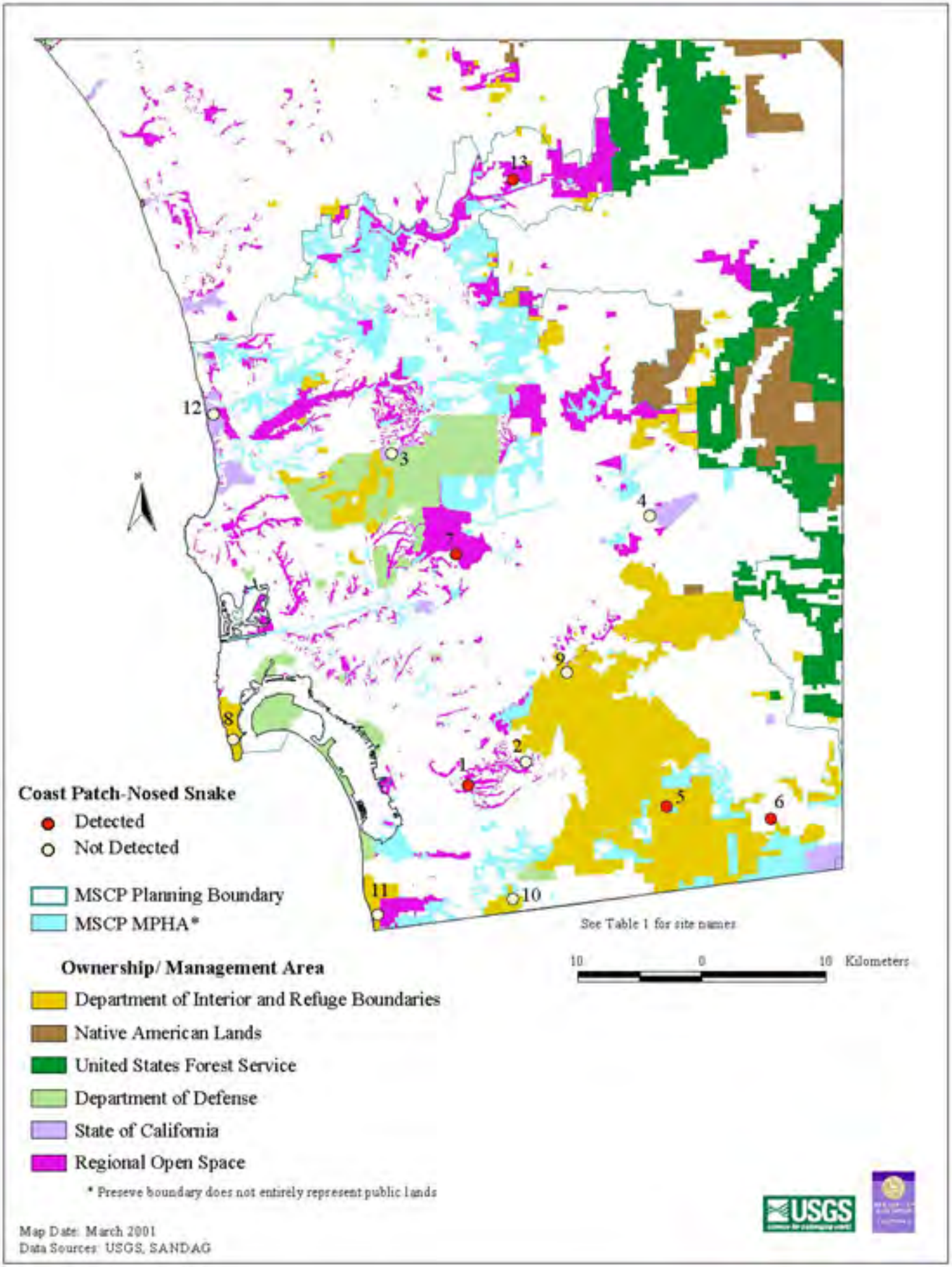


Figure 14. Two-striped garter snake *(Thamnophis hammondii)* detections.

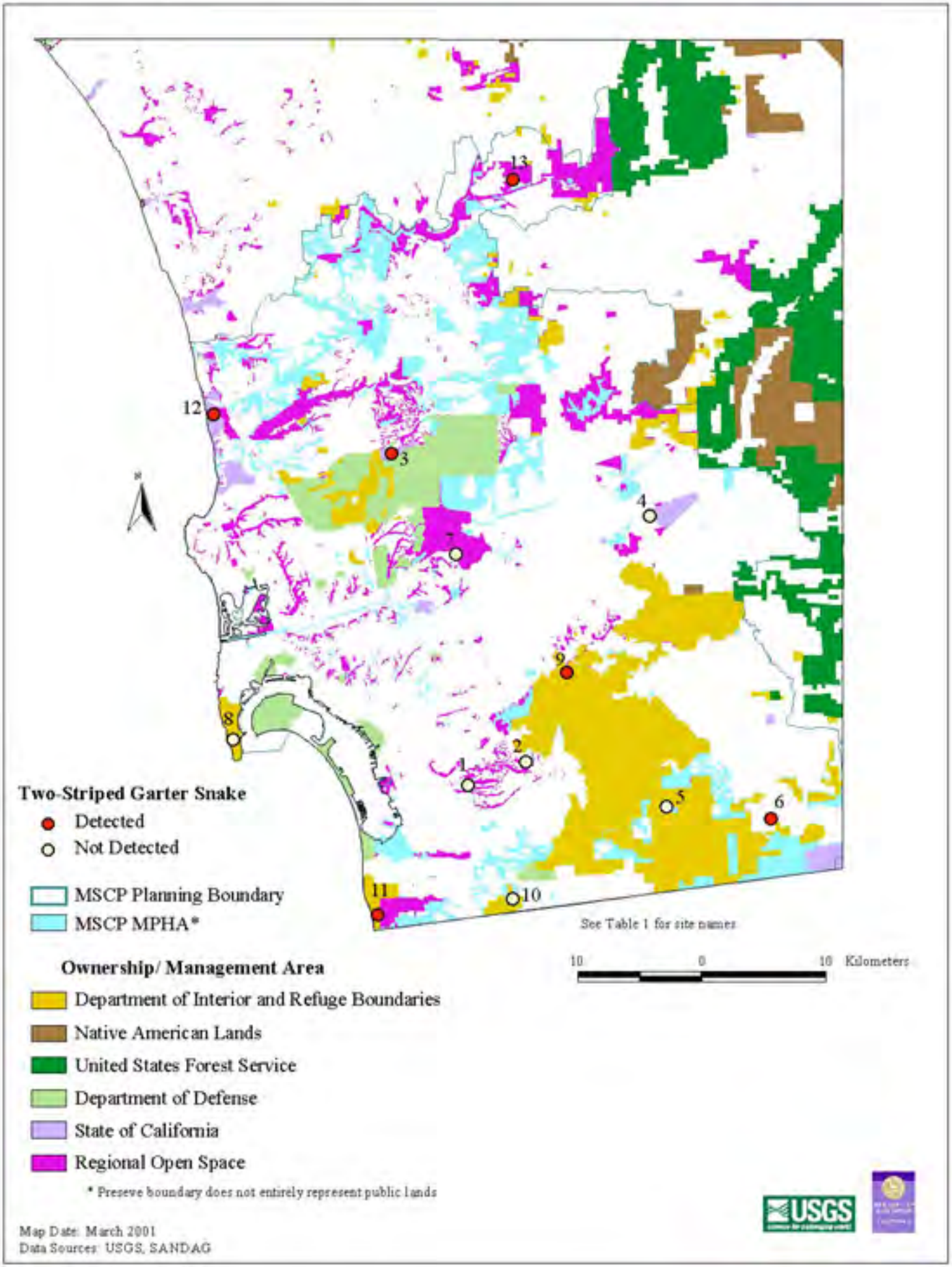
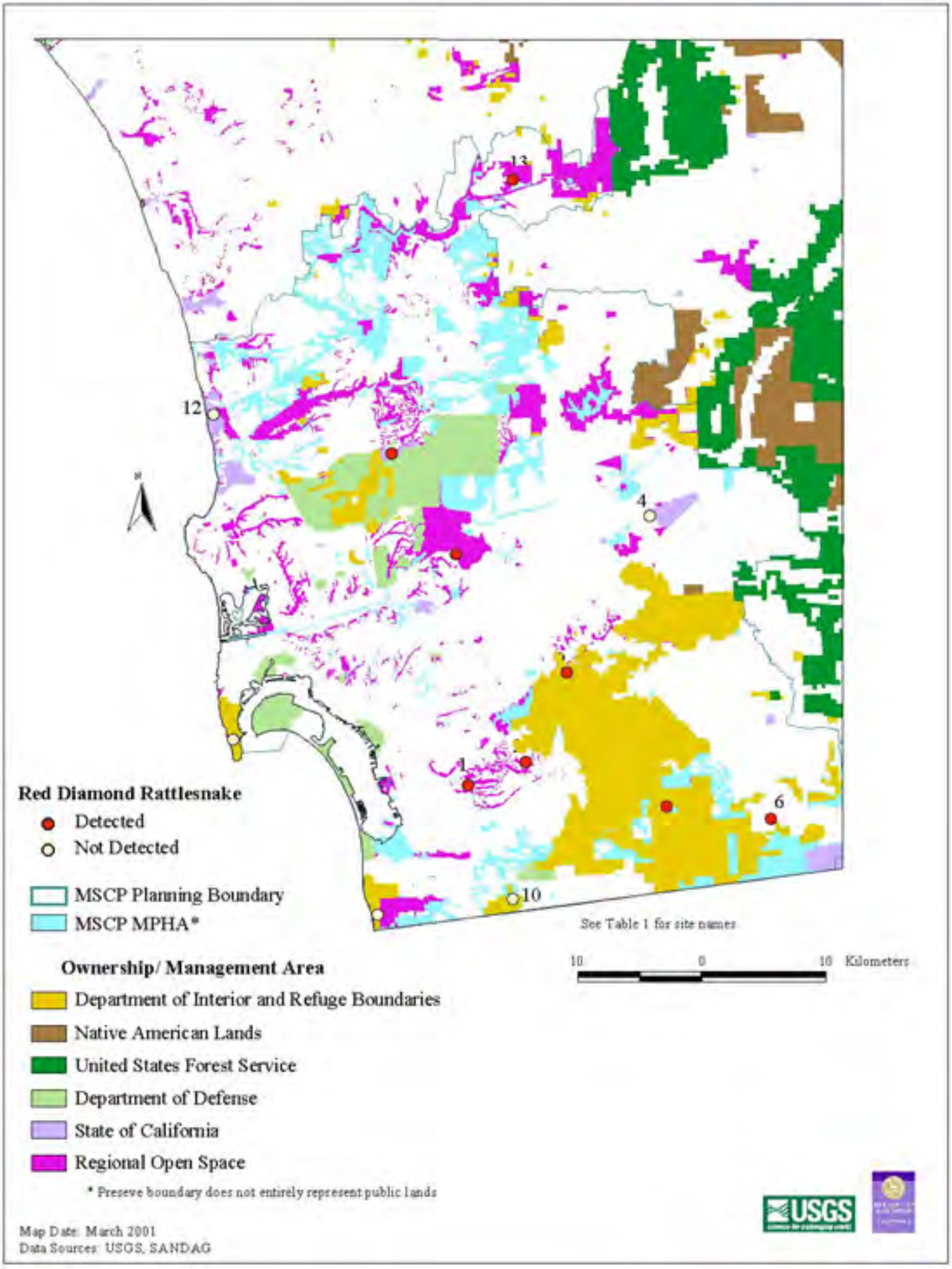


Figure 15. Red diamond rattlesnake *(Crotalus ruber)* detections.



Appendix

San Diego Site Data

Site Name: Chula Vista I

Description: Elevation 88-106 meters. This site is a medium sized fragment withhigh quality maritime succulent scrub and coastal sage scrub with arrays covering 15 hectares. The Rancho del Rey development is currently building houses along the northern border of the site. Slopes are south facing, with minimal impacts from mountain bikers. It is within the MSCP planning area.

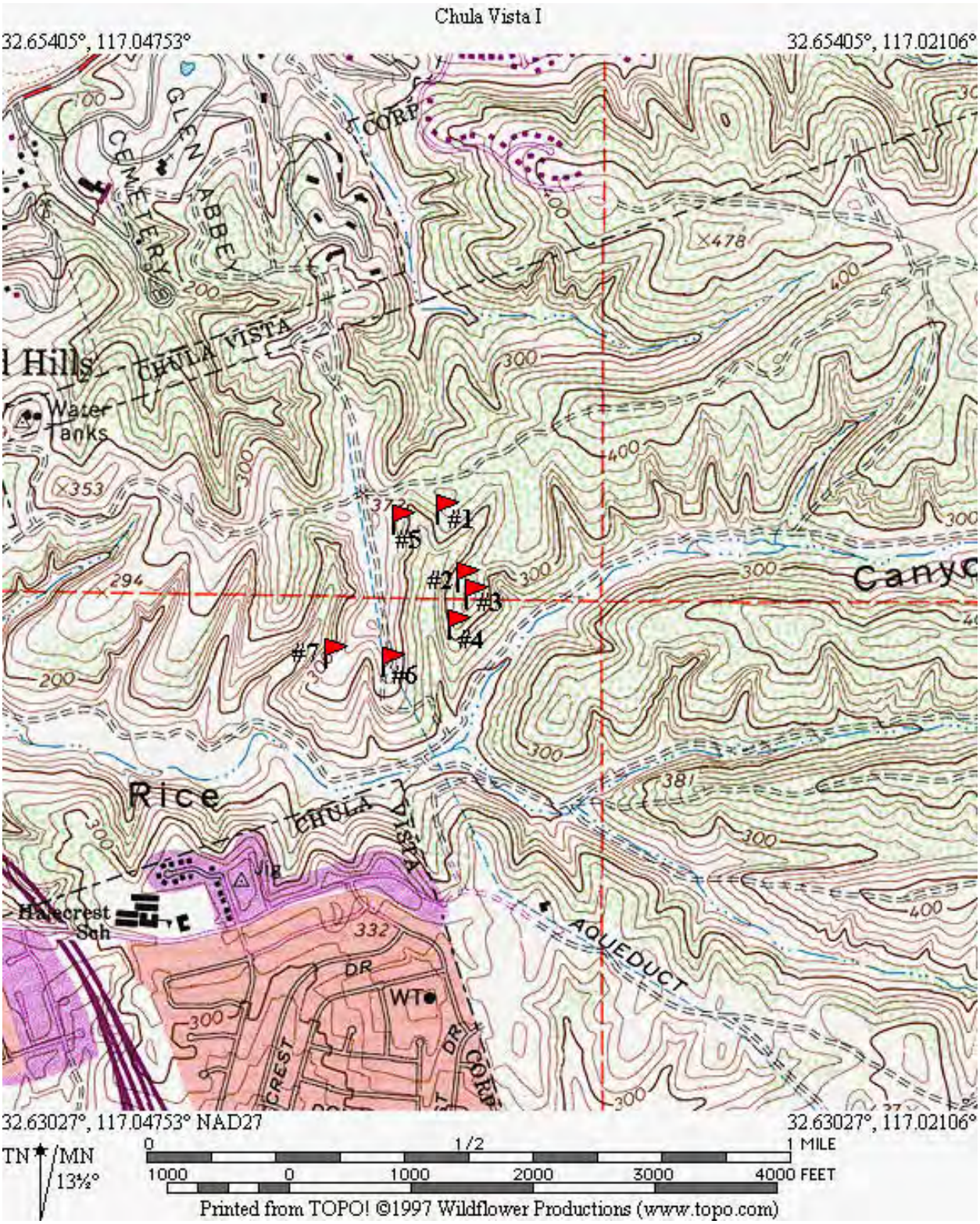
Start dates for Sample Periods:

08/22/1995	01/31/1996	01/07/1997	03/11/1998	02/17/1999	02/17/2000
10/24/1995	04/03/1996	03/10/1997	05/13/1998	04/15/1999	04/26/2000
	06/04/1996	05/13/1997	07/14/1998	07/07/1999	07/18/2000
	08/06/1996	07/15/1997	09/15/1998	09/08/1999	10/03/2000
	10/08/1996	09/23/1997	11/16/1998	11/15/1999	
		11/17/1997			

Location:

Array	Lat. (N)	Lon. (W)	Lat. (N) dec.	Lon. (W) dec.	Elevation (m)	Datum
1	32°38'36.88"	117°02'11.83"	32.6435777	117.0366194	101	NAD 83
2	32°38'31.03"	117°02'09.91"	32.6419528	117.0360861	106	NAD 83
3	32°38'29.66"	117°02'08.87"	32.6415722	117.0357972	102	NAD 83
4	32°38'27.23"	117°02'10.75"	32.6408972	117.0363194	88	NAD 83
5	32°38'35.77"	117°02'16.01"	32.6432694	117.0377806	105	NAD 83
6	32°38'24.34"	117°02'17.25"	32.6400944	117.0381250	94	NAD 83
7	32°38'24.94"	117°02'22.33"	32.6402611	117.0396395	98	NAD 83

Site: Chula Vista I		Arrays							Total
Common Name	Scientific Name	1	2	3	4	5	6	7	
Black-bellied Slender Salamander	*Batrachoseps nigriventris*								
Pacific Slender Salamander	*Batrachoseps pacificus*					1			1
Arboreal Salamander	*Aneides lugubris*								
Monterey Salamander	*Ensatina eschscholtzii*								
Large-Blotched Salamander	*Ensatina klauberi*								
California Newt	*Taricha torosa*								
California Treefrog	*Hyla cadaverina*								
Pacific Treefrog	*Hyla regilla*		1	1					2
Western Toad	*Bufo boreas*								
Arroyo Toad	*Bufo microscaphus*								
Red-Spotted Toad	*Bufo punctatus*								
Red-Legged Frog	*Rana aurora*								
Bullfrog	*Rana catesbeiana*								
African Clawed Frog	*Xenopus laevis*								
Western Spadefoot Toad	*Spea hammondii*								
Western Pond Turtle	*Clemmys marmorata*								
Slider	*Trachemys sp.*								
Coastal Banded Gecko	*Coleonyx variegatus*								
Granite Night Lizard	*Xantusia henshawi*								
Desert Night Lizard	*Xantusia vigilis*								
California Legless Lizard	*Anniella pulchra*								
Southern Alligator Lizard	*Elgaria multicarinatus*	13	12	2	3	7	8	3	48
Gilbert Skink	*Eumeces gilberti*								
Western Skink	*Eumeces skiltonianus*		1				1		2
Orange Throated Whiptail	*Cnemidophorus hyperythrus*	116	33	109	67	101	59	74	559
Western Whiptail	*Cnemidophorus tigris*								
Desert Spiny Lizard	*Sceloporus magister*								
Sagebrush Lizard	*Sceloporus graciosus*								
Western Fence Lizard	*Sceloporus occidentalis*	42	20	25	21	43	25	23	199
Granite Spiny Lizard	*Sceloporus orcutti*								
Side-Blotched Lizard	*Uta stanburiana*	5	4	13	12	8	11	13	66
Coast Horned Lizard	*Phrynosoma coronatum*								
Long-Nosed Leopard Lizard	*Gambelia wislizenii*								
Western Blind Snake	*Leptotyphlops humilis*								
Coastal Rosy Boa	*Charina trivirgata*								
California Glossy Snake	*Arizona elegans*								
Western Yellow-Bellied Racer	*Coluber constrictor*								
Western Ringneck Snake	*Diadophis punctatus*								
Night Snake	*Hypsiglena torquata*								
California Kingsnake	*Lampropeltis getula*			1			2		3
California Mountain Kingsnake	*Lampropeltis zonata*								
Coachwhip/Red Racer	*Masticophis flagellum*	1							1
Striped Racer	*Masticophis lateralis*	4	6	4	5	10	9	1	39
San Diego Gopher Snake	*Pituophis melanoleucus*	1	2	2	1	3	1	1	11
Long-nosed Snake	*Rhinocheilus lecontei*	1			1			1	3
Coast Patch-Nosed Snake	*Salvadora hexalepis*			1		1			2
California Black-Headed Snake	*Tantilla planiceps*								
Two-striped Garter Snake	*Thamnophis hammondii*								
Common Garter Snake	*Thamnophis sirtalis*								
Lyre Snake	*Trimorphodon biscutatus*								
Speckled Rattlesnake	*Crotalus mitchelli*								
Red Diamond Rattlesnake	*Crotalus ruber*		1	3	1			2	7
Southern Pacific Rattlesnake	*Crotalus viridis*					2			2
	Total Individuals	183	80	161	111	176	116	118	945
	Total Species	8	9	10	8	9	8	8	15


Chula Vista I
32.65405°, 117.04753°
32.65405°, 117.02106°
GLEN ABBEY CEMETERY
CHULA VISTA
Water Tanks
#1
#2
#3
#4
#5
#6
#7
Rice
Halecrest Sch
AQUEDUCT
WT
32.63027°, 117.04753° NAD27
32.63027°, 117.02106°
TN
MN
13½°
1/2
1 MILE
1000 0 1000 2000 3000 4000 FEET
Printed from TOPO! ©1997 Wildflower Productions (www.topo.com)

Site Name: Chula Vista II

Description: Elevation 87-158 meters. This site is composed of three different sized fragments. Bonita Long Canyon, has high quqlity maritime succulent scrub, with array coverage of 16 hectares. Salt Creek I has healthy coastal sage scrub, arrays covering 12 hectares. And the third, Otay Tar plant preserve, is mostly grassland at only 0.4 hectares. These three fragments are currently bordered by houses. The majority of the slopes are south facing, and the impacts from people minimal. The fragments are within the MSCP planning area.

Start dates for Sample Periods:

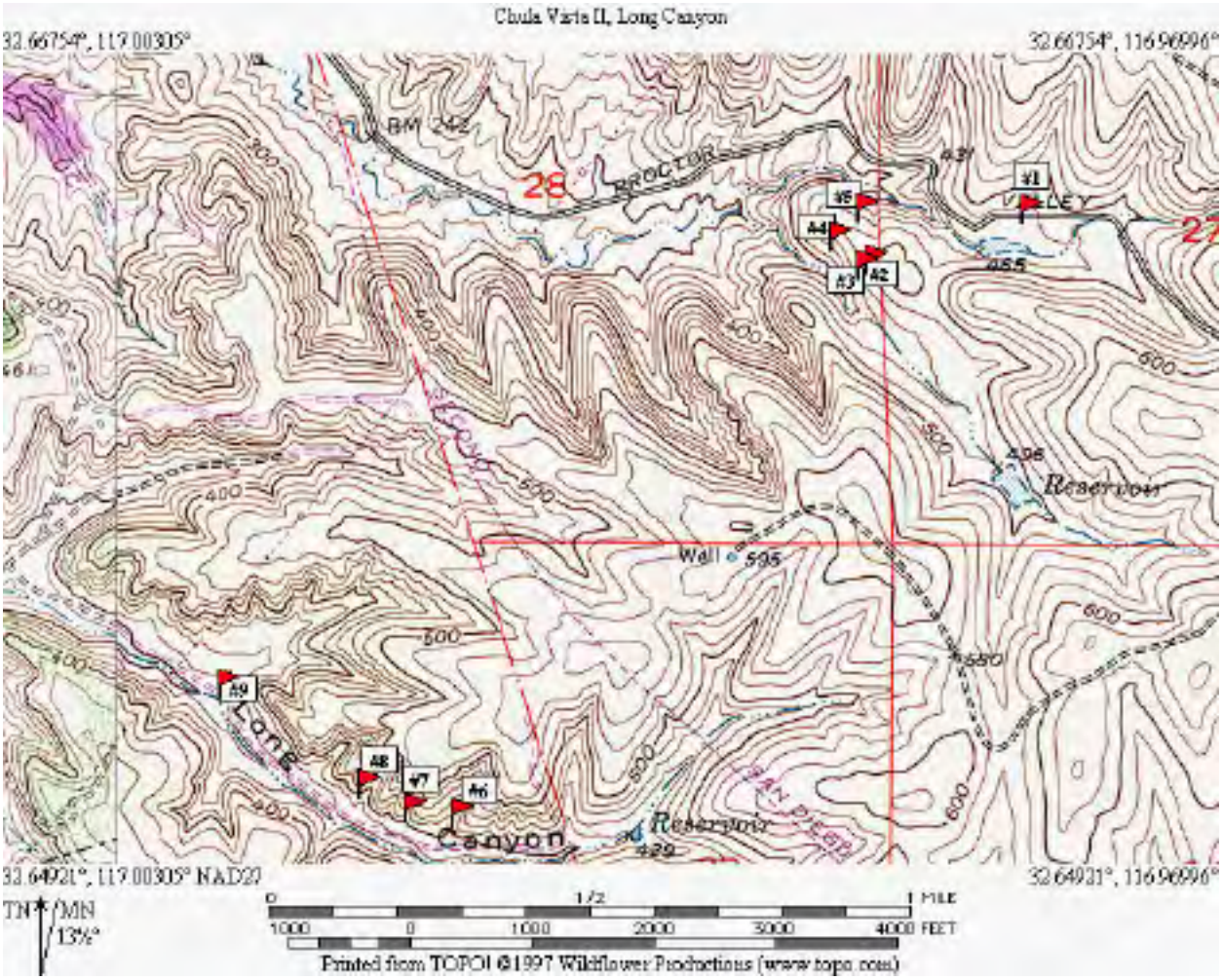
09/12/1995	02/20/1996	01/28/1997	03/10/1998	02/17/1999	02/17/2000
11/13/1995	04/23/1996	04/01/1997	05/13/1998	04/15/1999	04/26/2000
	06/24/1996	06/03/1997	07/14/1998	07/07/1999	07/18/2000
	08/27/1996	08/05/1997	09/15/1998	09/08/1999	10/07/2000
	11/01/1996	10/07/1997	11/16/1998	11/15/1999	
		12/09/1997			

Number of Sample Days: 270

Location:

Array	Lat. (N)	Lon. (W)	Lat. (N) dec.	Lon. (W) dec.	Elevation (m)	Datum
1	32°39'49.12"	116°58'31.23"	32.6636444	116.9753417	157	NAD 83
2	32°39'44.89"	116°58'46.92"	32.6624694	116.9797000	158	NAD 83
3	32°39'44.18"	116°58'47.01"	32.6622722	116.9797250	157	NAD 83
4	32°39'46.98"	116°58'50.14"	32.6630500	116.9805944	152	NAD 83
5	32°39'49.47"	116°58'47.49"	32.6637417	116.9798583	151	NAD 83
6	32°39'00.17"	116°59'27.13"	32.6500472	116.9908694	91	NAD 83
7	32°39'00.60"	116°59'31.61"	32.6501666	116.9921139	90	NAD 83
8	32°39'02.32"	116°59'36.20"	32.6506444	116.9933888	90	NAD 83
9	32°39'10.49"	116°59'49.94"	32.6529139	116.9972056	87	NAD 83

Site: Chula Vista II		Arrays									Total
Common Name	Scientific Name	1	2	3	4	5	6	7	8	9	
Black-bellied Slender Salamander	*Batrachoseps nigriventris*										
Pacific Slender Salamander	*Batrachoseps pacificus*						1				1
Arboreal Salamander	*Aneides lugubris*										
Monterey Salamander	*Ensatina eschscholtzii*										
Large-Blotched Salamander	*Ensatina klauberi*										
California Newt	*Taricha torosa*										
California Treefrog	*Hyla cadaverina*										
Pacific Treefrog	*Hyla regilla*										
Western Toad	*Bufo boreas*										
Arroyo Toad	*Bufo microscaphus*										
Red-Spotted Toad	*Bufo punctatus*										
Red-Legged Frog	*Rana aurora*										
Bullfrog	*Rana catesbeiana*										
African Clawed Frog	*Xenopus laevis*										
Western Spadefoot Toad	*Spea hammondii*			1							1
Western Pond Turtle	*Clemmys marmorata*										
Slider	*Trachemys sp.*										
Coastal Banded Gecko	*Coleonyx variegatus*										
Granite Night Lizard	*Xantusia henshawi*										
Desert Night Lizard	*Xantusia vigilis*										
California Legless Lizard	*Anniella pulchra*										
Southern Alligator Lizard	*Elgaria multicarinatus*	2	1		7	2	5	5	14	9	45
Gilbert Skink	*Eumeces gilberti*										
Western Skink	*Eumeces skiltonianus*	3	4	7	8	8					30
Orange Throated Whiptail	*Cnemidophorus hyperythrus*	3	28	27	4	6	27	20	25	21	161
Western Whiptail	*Cnemidophorus tigris*		12	7	11	1					31
Desert Spiny Lizard	*Sceloporus magister*										
Sagebrush Lizard	*Sceloporus graciosus*										
Western Fence Lizard	*Sceloporus occidentalis*	47	19	13	24	23	27	26	34	29	242
Granite Spiny Lizard	*Sceloporus orcutti*										
Side-Blotched Lizard	*Uta stanburiana*		28	19	16	8	7	12	14	11	115
Coast Horned Lizard	*Phrynosoma coronatum*										
Long-Nosed Leopard Lizard	*Gambelia wislizenii*										
Western Blind Snake	*Leptotyphlops humilis*										
Coastal Rosy Boa	*Charina trivirgata*										
California Glossy Snake	*Arizona elegans*										
Western Yellow-Bellied Racer	*Coluber constrictor*										
Western Ringneck Snake	*Diadophis punctatus*										
Night Snake	*Hypsiglena torquata*		1								1
California Kingsnake	*Lampropeltis getula*	4	4	1	6	4		1	1		21
California Mountain Kingsnake	*Lampropeltis zonata*										
Coachwhip/Red Racer	*Masticophis flagellum*		1	2	3						6
Striped Racer	*Masticophis lateralis*		2	2	5	1	5	4	7	3	29
San Diego Gopher Snake	*Pituophis melanoleucus*	1			1		4	4		1	11
Long-nosed Snake	*Rhinocheilus lecontei*							1		1	2
Coast Patch-Nosed Snake	*Salvadora hexalepis*										
California Black-Headed Snake	*Tantilla planiceps*		1								1
Two-striped Garter Snake	*Thamnophis hammondii*										
Common Garter Snake	*Thamnophis sirtalis*										
Lyre Snake	*Trimorphodon biscutatus*										
Speckled Rattlesnake	*Crotalus mitchelli*										
Red Diamond Rattlesnake	*Crotalus ruber*				1						1
Southern Pacific Rattlesnake	*Crotalus viridis*	1	2		2	1	1		1	2	10
	Total Individuals	61	103	79	88	54	77	73	96	77	708
	Total Species	7	12	9	12	9	8	8	7	8	17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32.66754°, 116.96996°
BM 242
PROCTOR
28
27
VALLEY
Reservoir
Well
535
Lone
Canyon
Reservoir
SAN DIEGO
32.64931°, 117.00305° NAD27
32.64931°, 116.96996°
TN
MN
13°
0
1/2
1 MILE
1000
0
1000
2000
3000
4000 FEET
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Site Name: Elliott Reserve

Description: Elliott Reserve spans several hundred acres and is bordered by Miramar MCAS to the south and Scripps Ranch to the north. The arrays are split between two different parts, some in the west and some in the east, covering a total of 142 hectares. The western arrays are in chamise chaparral with small vernal pools and the vernal meadows, and in general the habitat is flat and mesa like. The eastern arrays are in a canyon dominated by chamise chaparral, with some coastal sage scrub and native grassland. A vernal creek flows through the canyon. The upper end of the site has a eucalyptus grove. This site is within the MSCP planning area.

Start dates for Sample Periods:

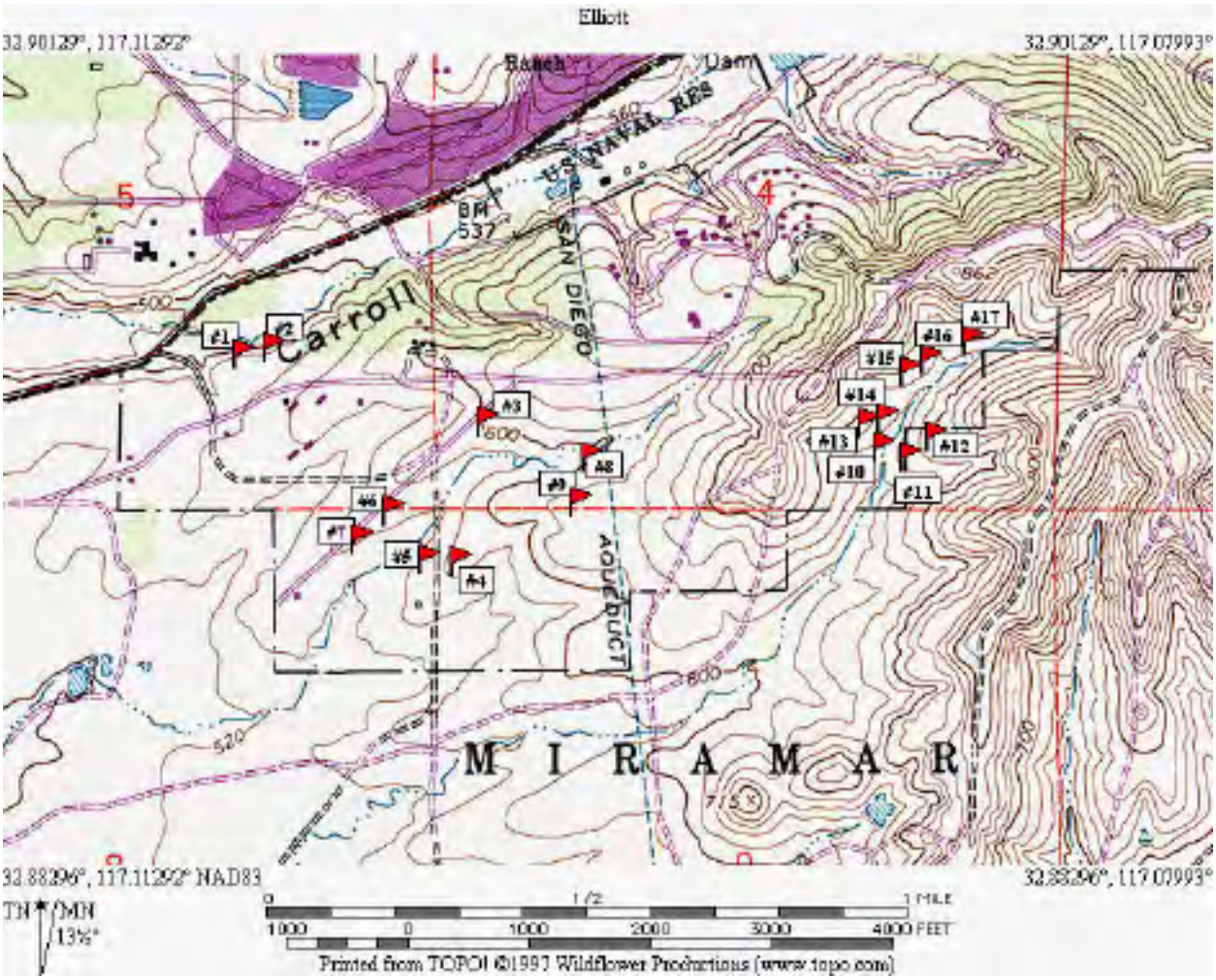
04/22/1995	01/28/1996	01/29/1997	03/11/1998	02/24/1999	02/02/2000
05/11/1995	04/02/1996	04/01/1997	05/13/1998	04/13/1999	04/18/2000
06/11/1995	06/04/1996	06/02/1997	07/14/1998	07/07/1999	06/27/2000
07/11/1995	08/06/1996	08/05/1997	09/15/1998	09/15/1999	09/21/2000
08/22/1995	10/08/1996	10/14/1997	11/16/1998	11/15/1999	11/20/2000
10/24/1995		12/10/1997			

Number of Sample Days: 335

Location:

Array	Lat. (N)	Lon. (W)	Lat. (N) dec.	Lon. (W) dec.	Elevation (m)	Datum
1	32°53'38.96"	117°06'24.01"	32.8941555	117.1066694	168	NAD 83
2	32°53'39.82"	117°06'21.03"	32.8943944	117.1058417	166	NAD 83
3	32°53'33.57"	117°06'00.07"	32.8926583	117.1000194	186	NAD 83
4	32°53'22.28"	117°06'02.43"	32.8895222	117.1006750	183	NAD 83
5	32°53'22.14"	117°06'05.68"	32.8894833	117.1015778	181	NAD 83
6	32°53'26.26"	117°06'09.35"	32.8906278	117.1025972	178	NAD 83
7	32°53'23.92"	117°06'12.29"	32.8899778	117.1034139	176	NAD 83
8	32°53'30.30"	117°05'49.70"	32.8917500	117.0971389	194	NAD 83
9	32°53'27.24"	117°05'50.90"	32.8909000	117.0974722	198	NAD 83
10	32°53'31.54"	117°05'20.81"	32.8920944	117.0891139	203	NAD 83
11	32°53'30.98"	117°05'18.80"	32.8919389	117.0885556	207	NAD 83
12	32°53'32.41"	117°05'16.30"	32.8923361	117.0878611	213	NAD 83
13	32°53'33.49"	117°05'22.66"	32.8926361	117.0896278	210	NAD 83
14	32°53'33.66"	117°05'20.65"	32.8926833	117.0890694	208	NAD 83
15	32°53'37.78"	117°05'18.58"	32.8938278	117.0884944	212	NAD 83
16	32°53'38.67"	117°05'16.50"	32.8940750	117.0879167	212	NAD 83
17	32°53'40.31"	117°05'12.34"	32.8945306	117.0867611	218	NAD 83

Elliott Reserve		Array																	Total
Common Name	Scientific Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Black-bellied Slender Salamander	*Batrachoseps nigriventris*																		
Pacific Slender Salamander	*Batrachoseps pacificus*	7	12	13	6	30	21	26	17	6	9	1	25	14	22	14	4	8	235
Arboreal Salamander	*Aneides lugubris*																		
Monterey Salamander	*Ensatina eschscholtzii*																		
Large-Blotched Salamander	*Ensatina klauberi*																		
California Newt	*Taricha torosa*																		
California Treefrog	*Hyla cadaverina*																		
Pacific Treefrog	*Hyla regilla*	33	27	28	9	12	42	30	38	28	32	12	18	4	6	6	3	18	346
Western Toad	*Bufo boreas*	8	11	49	49	33	35	62	37	37	74	38	19	51	13	9	28	148	701
Arroyo Toad	*Bufo microscaphus*																		
Red-Spotted Toad	*Bufo punctatus*																		
Red-Legged Frog	*Rana aurora*																		
Bullfrog	*Rana catesbeiana*																		
African Clawed Frog	*Xenopus laevis*																		
Western Spadefoot Toad	*Spea hammondii*			1				2			1		1			2			7
Western Pond Turtle	*Clemmys marmorata*																		
Slider	*Trachemys sp.*																		
Coastal Banded Gecko	*Coleonyx variegatus*																		
Granite Night Lizard	*Xantusia henshawi*																		
Desert Night Lizard	*Xantusia vigilis*																		
California Legless Lizard	*Anniella pulchra*																		
Southern Alligator Lizard	*Elgaria multicarinatus*	9	6	11	1		3	5	6	3	12	4	10	5	3	3	5	14	100
Gilbert Skink	*Eumeces gilberti*																		
Western Skink	*Eumeces skiltonianus*	11	12	19	25	18	25	15	23	11	32	13	19	24	37	22	8		314
Orange Throated Whiptail	*Cnemidophorus hyperythrus*	1	11	6			2		1	7	25	70	43	32	44	60	18	42	362
Western Whiptail	*Cnemidophorus tigris*	2		4	1	7	9	5	6	1		1						1	37
Desert Spiny Lizard	*Sceloporus magister*																		
Sagebrush Lizard	*Sceloporus graciosus*																		
Western Fence Lizard	*Sceloporus occidentalis*	75	64	20	28	24	41	22	33	18	20	24	41	30	18	39	35	11	545
Granite Spiny Lizard	*Sceloporus orcutti*																		
Side-Blotched Lizard	*Uta stanburiana*			1							3	1	1	1	2	1		2	12
Coast Horned Lizard	*Phrynosoma coronatum*		1	4	6	3	4	1	6	23	2	3	18	1	5			1	78
Long-Nosed Leopard Lizard	*Gambelia wislizenii*																		
Western Blind Snake	*Leptotyphlops humilis*																		
Coastal Rosy Boa	*Charina trivirgata*																		
California Glossy Snake	*Arizona elegans*																		
Western Yellow-Bellied Racer	*Coluber constrictor*	4	5	7	2		7	2	4	4	7	2		1	1			1	47
Western Ringneck Snake	*Diadophis punctatus*	1	2	1				1	1	1			1		2		1		11
Night Snake	*Hypsiglena torquata*			2		1		4	1		1			2	1	1			13
California Kingsnake	*Lampropeltis getula*	1	1	2	6	5	5	3	5	3	9	5	4	2	5	2	3	2	63
California Mountain Kingsnake	*Lampropeltis zonata*																		
Coachwhip/Red Racer	*Masticophis flagellum*			1						1			1	3					6
Striped Racer	*Masticophis lateralis*	6	1			2	1			1	1	3	8		1	1	2	1	28
San Diego Gopher Snake	*Pituophis melanoleucus*		1	2			1	3		5		1	1					1	15
Long-nosed Snake	*Rhinocheilus lecontei*	1		1		1	1			2			1						7
Coast Patch-Nosed Snake	*Salvadora hexalepis*																		
California Black-Headed Snake	*Tantilla planiceps*	6	1			1	1			1	1								11
Two-striped Garter Snake	*Thamnophis hammondii*	2	3		1	1	1		1	2		1	3			1		2	18
Common Garter Snake	*Thamnophis sirtalis*																		
Lyre Snake	*Trimorphodon biscutatus*																		
Speckled Rattlesnake	*Crotalus mitchelli*																		
Red Diamond Rattlesnake	*Crotalus ruber*														1				1
Southern Pacific Rattlesnake	*Crotalus viridis*		1	3		1		3		2		2		3	1	1		2	19
	Number of Individuals	167	159	175	134	139	199	184	179	156	229	181	214	173	162	162	107	254	2976
	Number of Species	15	16	19	11	14	16	15	14	19	15	16	17	14	16	14	10	15	23


Elliott
32.90129°, 117.11292°
32.90129°, 117.07993°
Ranch
Dam
NAVAL RES
SAN DIEGO
AQUEDUCT
Carroll
M I R A M A R
32.88296°, 117.11292° NAD83
32.88296°, 117.07993°
TN
MN
13½°
1/2
1 MILE
1000 0 1000 2000 3000 4000 FEET
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Site Name: La Cresta

Description: Elevation 250 - 315 meters. The La Cresta study site has an urban edge and is set up with arrays near the edge, in the core area, and in between. Coastal sage scrub accounts for the majority of the plant community at the site, with a small sampling of chaparral interspersed.

Start dates for Sample Periods:

10/14/1999 01/19/2000
03/21/2000
06/21/2000
09/21/2000

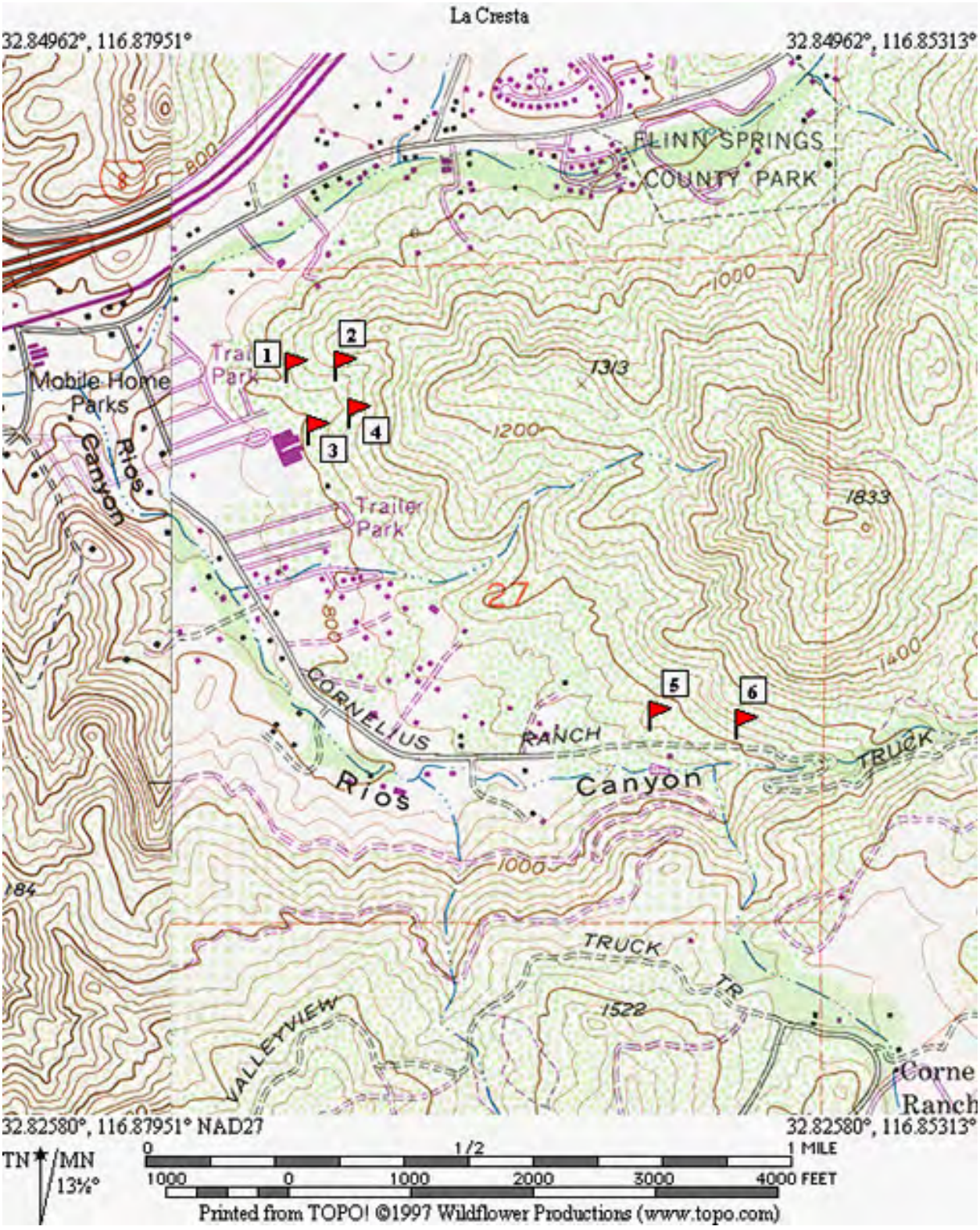
Number of Sample Days: 50

Location:

Array	Lon. (N) dec.	Lat. (W) dec.	Elevation (m)	Datum
1	32.842370	116.872550	256	NAD 83
2	32.842410	116.871170	275	NAD 83
3	32.840880	116.871950	260	NAD 83
4	32.841000	116.870750	295	NAD 83
5	32.834710	116.862900	293	NAD 83
6	32.834330	116.860550	311	NAD 83

Arrays 5 and 6, the interior arrays, have only been sampled during the first two sample periods due to being locked out.

Site: La Cresta		Array Number						
Common Name	Scientific Name	1	2	3	4	5	6	Total
Pacific Slender Salamander	*Batrachoseps pacificus*							
Arboreal Salamander	*Aneides lugubris*							
Monterey Salamander	*Ensatina eschscholtzii*							
California Newt	*Taricha torosa*							
California Treefrog	*Hyla cadaverina*							
Pacific Treefrog	*Hyla regilla*							
Western Toad	*Bufo boreas*		2	1	1			4
Arroyo Toad	*Bufo microscaphus*							
Red-Spotted Toad	*Bufo punctatus*							
Red-Legged Frog	*Rana aurora*							
Bullfrog	*Rana catesbeiana*							
African Clawed Frog	*Xenopus laevis*							
Western Spadefoot Toad	*Spea hammondii*							
Western Pond Turtle	*Clemmys marmorata*							
Slider	*Trachemys sp.*							
Coastal Banded Gecko	*Coleonyx variegatus*	1						1
Granite Night Lizard	*Xantusia henshawi*							
California Legless Lizard	*Anniella pulchra*							
Southern Alligator Lizard	*Elgaria multicarinatus*	1					1	2
Gilbert Skink	*Eumeces gilberti*							
Western Skink	*Eumeces skiltonianus*		5	4	4			13
Orange Throated Whiptail	*Cnemidophorus hyperythrus*	5	8	4	11	3	3	34
Coastal Western Whiptail	*Cnemidophorus tigris*				1	1		2
Desert Spiny Lizard	*Sceloporus magister*							
Western Fence Lizard	*Sceloporus occidentalis*	6	1	4	2	1	1	15
Granite Spiny Lizard	*Sceloporus orcutti*							
Side-Blotched Lizard	*Uta stanburiana*		2			3		5
Coast Horned Lizard	*Phrynosoma coronatum*			1				1
Long-Nosed Leopard Lizard	*Gambelia wislizenii*							
Western Blind Snake	*Leptotyphlops humilis*	7	1	1	2			11
Coastal Rosy Boa	*Charina trivirgata*							
California Glossy Snake	*Arizona elegans*							
Western Yellow-Bellied Racer	*Coluber constrictor*							
Western Ringneck Snake	*Diadophis punctatus*	1						1
Night Snake	*Hypsiglena torquata*							
California Kingsnake	*Lampropeltis getula*			1				1
California Mountain Kingsnake	*Lampropeltis zonata*							
Coachwhip/Red Racer	*Masticophis flagellum*							
Striped Racer	*Masticophis lateralis*	1		1		1		3
San Diego Gopher Snake	*Pituophis melanoleucus*		1		1			2
Long-nosed Snake	*Rhinocheilus lecontei*							
Coast Patch-Nosed Snake	*Salvadora hexalepis*							
California Black-Headed Snake	*Tantilla planiceps*							
Two-striped Garter Snake	*Thamnophis hammondii*							
Common Garter Snake	*Thamnophis sirtalis*							
Lyre Snake	*Trimorphodon biscutatus*							
Speckled Rattlesnake	*Crotalus mitchelli*							
Red Diamond Rattlesnake	*Crotalus exsul*							
Southern Pacific Rattlesnake	*Crotalus viridis*		5					5
	Number of Individuals	22	25	17	22	9	5	100
	Number of Species	7	8	8	7	5	3	15


La Cresta
32.84962°, 116.87951°
32.84962°, 116.85313°
FLINN SPRINGS
COUNTY PARK
800
1000
1313
1200
1833
1400
1
2
3
4
5
6
Mobile Home
Parks
Trailer
Park
Trailer
Park
Canyon
Rios
27
CORNELIUS
RANCH
Rios
Canyon
TRUCK
TRUCK
TR
1522
VALLEYVIEW
184
32.82580°, 116.87951° NAD27
32.82580°, 116.85313°
TN
MN
13½°
0
1/2
1 MILE
1000
0
1000
2000
3000
4000 FEET
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Site Name: Little Cedar Ridge

Description: This study site is within the Otay Mountains. Arrays are on flat to north facing slope. Chamise chaparral is dominant with patches of coastal sage scrub, and the upper region is Tecate cypress forest. Arrays cover approximately 100 hectares. Immigrants have created a major trail system through this study site including encampments near some of the arrays in the forest. Little Cedar Ridge is part of the MSCP planning area.

Start dates for Sample Periods:

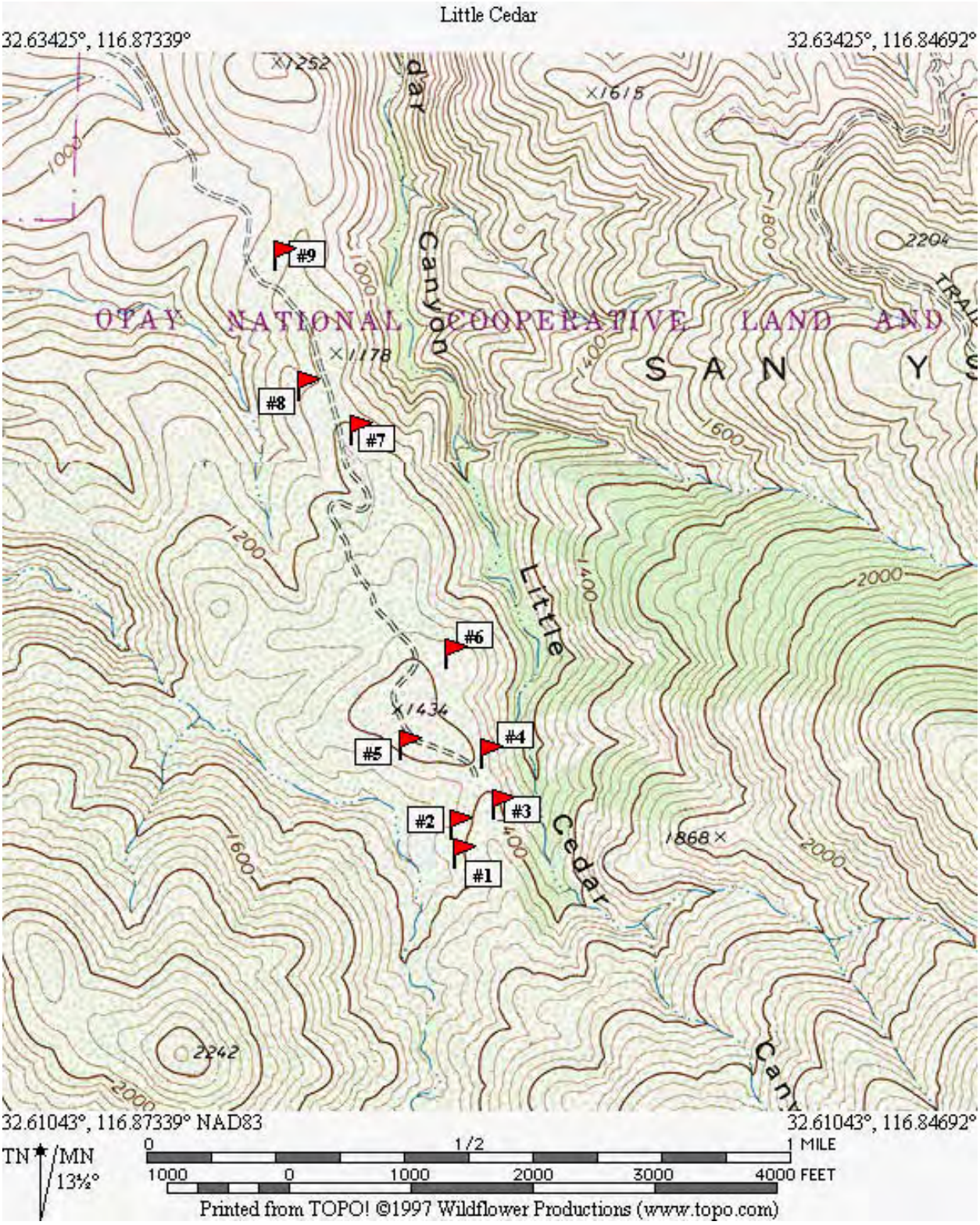
06/12/1995	01/09/1996	02/18/1997	01/28/1998	02/10/1999	01/19/2000
08/01/1995	03/12/1996	04/22/1997	03/31/1998	05/25/1999	03/22/2000
10/03/1995	05/14/1996	06/24/1997	06/02/1998	08/03/1999	05/24/2000
	07/16/1996	09/03/1997	08/11/1998	10/12/1999	08/15/2000
	09/17/1996	10/28/1997	10/13/1998		11/07/2000
	11/18/1996				

Number of Sample Days: 285

Location:

Array	Lat. (N)	Lon. (W)	Lat. (N) dec.	Lon. (W) dec.	Elevation (m)	Datum
1	32°36'57.23"	116°51'37.06"	32.6158972	116.8602944	426	NAD 83
2	32°36'59.31"	116°51'37.42"	32.6164750	116.8603944	443	NAD 83
3	32°37'01.32"	116°51'36.43"	32.6170333	116.8601194	434	NAD 83
4	32°37'05.26"	116°51'37.94"	32.6181278	116.8605389	420	NAD 83
5	32°37'05.83"	116°51'42.32"	32.6182861	116.8617556	421	NAD 83
6	32°37'13.88"	116°51'39.56"	32.6205222	116.8609889	418	NAD 83
7	32°37'30.85"	116°51'48.47"	32.6252361	116.8634639	373	NAD 83
8	32°37'34.76"	116°51'54.02"	32.6263222	116.8650056	351	NAD 83
9	32°37'44.92"	116°51'56.13"	32.6291444	116.8655917	338	NAD 83

Little Cedar		Arrays									Total
Common Name	Scientific Name	1	2	3	4	5	6	7	8	9	
Black-bellied Slender Salamander	*Batrachoseps nigriventris*										
Pacific Slender Salamander	*Batrachoseps pacificus*										
Arboreal Salamander	*Aneides lugubris*										
Monterey Salamander	*Ensatina eschscholtzii*	13	8	10	1		5				37
Large-Blotched Salamander	*Ensatina klauberi*										
California Newt	*Taricha torosa*										
California Treefrog	*Hyla cadaverina*										
Pacific Treefrog	*Hyla regilla*					1					1
Western Toad	*Bufo boreas*										
Arroyo Toad	*Bufo microscaphus*										
Red-Spotted Toad	*Bufo punctatus*										
Red-Legged Frog	*Rana aurora*										
Bullfrog	*Rana catesbeiana*										
African Clawed Frog	*Xenopus laevis*										
Western Spadefoot Toad	*Spea hammondii*										
Western Pond Turtle	*Clemmys marmorata*										
Slider	*Trachemys sp.*										
Coastal Banded Gecko	*Coleonyx variegatus*										
Granite Night Lizard	*Xantusia henshawi*									1	1
Desert Night Lizard	*Xantusia vigilis*										
California Legless Lizard	*Anniella pulchra*										
Southern Alligator Lizard	*Elgaria multicarinatus*	4	5	6	7	7	15	4	2	3	53
Gilbert Skink	*Eumeces gilberti*										
Western Skink	*Eumeces skiltonianus*			10	11	5	5			2	33
Orange Throated Whiptail	*Cnemidophorus hyperythrus*										
Western Whiptail	*Cnemidophorus tigris*	1	1		6	7		1	8	5	29
Desert Spiny Lizard	*Sceloporus magister*										
Sagebrush Lizard	*Sceloporus graciosus*										
Western Fence Lizard	*Sceloporus occidentalis*	30	20	19	11	27	14	40	40	20	221
Granite Spiny Lizard	*Sceloporus orcutti*										
Side-Blotched Lizard	*Uta stanburiana*	1							13		14
Coast Horned Lizard	*Phrynosoma coronatum*	1	1	2		9	2	24	49	6	94
Long-Nosed Leopard Lizard	*Gambelia wislizenii*										
Western Blind Snake	*Leptotyphlops humilis*						1				1
Coastal Rosy Boa	*Charina trivirgata*										
California Glossy Snake	*Arizona elegans*										
Western Yellow-Bellied Racer	*Coluber constrictor*										
Western Ringneck Snake	*Diadophis punctatus*						1	1			2
Night Snake	*Hypsiglena torquata*	2					1				3
California Kingsnake	*Lampropeltis getula*										
California Mountain Kingsnake	*Lampropeltis zonata*										
Coachwhip/Red Racer	*Masticophis flagellum*					3					3
Striped Racer	*Masticophis lateralis*			1	7	4	1	1	3	4	21
San Diego Gopher Snake	*Pituophis melanoleucus*	2	2	2	5	4	6	2	2	2	27
Long-nosed Snake	*Rhinocheilus lecontei*										
Coast Patch-Nosed Snake	*Salvadora hexalepis*				3	1	1				5
California Black-Headed Snake	*Tantilla planiceps*			2	1	3	1				7
Two-striped Garter Snake	*Thamnophis hammondii*										
Common Garter Snake	*Thamnophis sirtalis*										
Lyre Snake	*Trimorphodon biscutatus*							1			1
Speckled Rattlesnake	*Crotalus mitchelli*				2						2
Red Diamond Rattlesnake	*Crotalus ruber*			1							1
Southern Pacific Rattlesnake	*Crotalus viridis*	1					1		1		3
	Total Individuals	55	37	53	54	71	54	74	118	43	559
	Total Species	9	6	9	10	11	13	8	8	8	21


Little Cedar
32.63425°, 116.87339°
32.63425°, 116.84692°
OTAY NATIONAL COOPERATIVE LAND AND
SAN
Canyon
Little
Cedar
#1
#2
#3
#4
#5
#6
#7
#8
#9
1252
1615
1178
1434
1868
2204
2242
32.61043°, 116.87339° NAD83
32.61043°, 116.84692°
TN
MN
13½°
0
1/2
1 MILE
1000
0
1000
2000
3000
4000 FEET
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Description: This study site within the Otay Mountains is within the MSCP planning area. The habitat consists almost entirely coastal sage scrub, with patches of chamise chaparral, and oak woodland. The entire site burned in a fire in the summer of 1996 and has been rebuilt since. The arrays cover 300 hectares.

Start dates for Sample Periods:

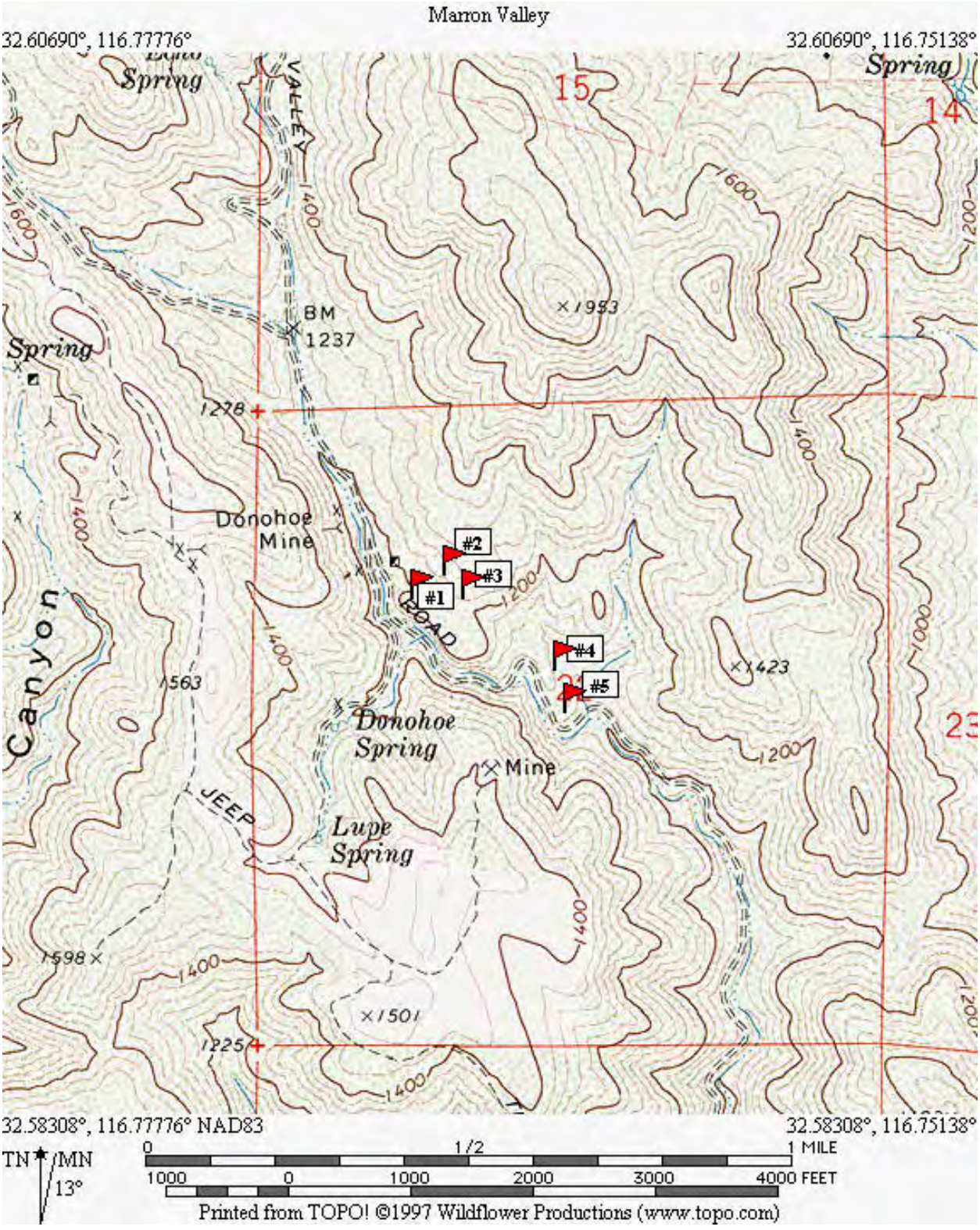
06/11/1995	01/09/1996	02/18/1997	01/27/1998	02/10/1999	01/19/2000
07/11/1995	03/11/1996	04/22/1997	03/30/1998	05/25/1999	03/22/2000
10/03/1995	05/14/1996	06/23/1997	06/02/1998	08/03/1999	05/24/2000
	07/16/1996	09/03/1997	08/11/1998	10/12/1999	08/14/2000
	09/17/1996	10/28/1997	10/13/1998		11/07/2000
	11/17/1996				

Number of Sample Days: 292

Location:

Array	Lat. (N)	Lon. (W)	Lat. (N) dec.	Lon. (W) dec.	Elevation (m)	Datum
1	32°35'40.55"	116°46'00.44"	32.5945972	116.7667889	371	NAD 83
2	32°35'44.11"	116°45'57.88"	32.5955861	116.7660778	387	NAD 83
3	32°35'42.42"	116°45'55.31"	32.5951167	116.7653639	391	NAD 83
4	32°35'42.61"	116°45'48.06"	32.5951694	116.7633500	370	NAD 83
5	32°35'39.35"	116°45'46.23"	32.5942639	116.7628417	369	NAD 83
6	32°37'28.09"	116°46'33.15"	32.6244694	116.7758750	387	NAD 83
7	32°37'34.15"	116°46'32.86"	32.6261528	116.7757944	469	NAD 83
8	32°37'37.75"	116°46'37.17"	32.6271528	116.7769917	469	NAD 83
9	32°37'36.20"	116°46'40.12"	32.6267222	116.7778111	466	NAD 83

Marron Valley Common Name	Scientific Name	1	2	3	4	5	6	7	8	9	Total
Black-bellied Slender Salamander	*Batrachoseps nigriventris*										
Pacific Slender Salamander	*Batrachoseps pacificus*						1		2		3
Arboreal Salamander	*Aneides lugubris*										
Monterey Salamander	*Ensatina eschscholtzii*										
Large-Blotched Salamander	*Ensatina klauberi*										
California Newt	*Taricha torosa*										
California Treefrog	*Hyla cadaverina*				2						2
Pacific Treefrog	*Hyla regilla*						7	9	2	2	20
Western Toad	*Bufo boreas*	3			1		4	1	1		10
Arroyo Toad	*Bufo microscaphus*										
Red-Spotted Toad	*Bufo punctatus*										
Red-Legged Frog	*Rana aurora*										
Bullfrog	*Rana catesbeiana*										
African Clawed Frog	*Xenopus laevis*						174	18			192
Western Spadefoot Toad	*Spea hammondii*					1	20	10	7	3	41
Western Pond Turtle	*Clemmys marmorata*										
Slider	*Trachemys sp.*										
Coastal Banded Gecko	*Coleonyx variegatus*					2					2
Granite Night Lizard	*Xantusia henshawi*							1	1		2
Desert Night Lizard	*Xantusia vigilis*										
California Legless Lizard	*Anniella pulchra*										
Southern Alligator Lizard	*Elgaria multicarinatus*	1	1		1	1	2	1	1		8
Gilbert Skink	*Eumeces gilberti*										
Western Skink	*Eumeces skiltonianus*	5	27	24	31	23	18	22	5	9	164
Orange Throated Whiptail	*Cnemidophorus hyperythrus*										
Western Whiptail	*Cnemidophorus tigris*	57	54	44	30	82	17	30	56	13	383
Desert Spiny Lizard	*Sceloporus magister*										
Sagebrush Lizard	*Sceloporus graciosus*										
Western Fence Lizard	*Sceloporus occidentalis*	23	23	23	23	24	53	63	70	37	339
Granite Spiny Lizard	*Sceloporus orcutti*			1			3				4
Side-Blotched Lizard	*Uta stanburiana*	8	11	7	2	6	34	59	77	55	259
Coast Horned Lizard	*Phrynosoma coronatum*						2	1			3
Long-Nosed Leopard Lizard	*Gambelia wislizenii*										
Western Blind Snake	*Leptotyphlops humilis*			1			2	1	2	5	11
Coastal Rosy Boa	*Charina trivirgata*						1				1
California Glossy Snake	*Arizona elegans*										
Western Yellow-Bellied Racer	*Coluber constrictor*										
Western Ringneck Snake	*Diadophis punctatus*										
Night Snake	*Hypsiglena torquata*										
California Kingsnake	*Lampropeltis getula*			1			3	1	2		7
California Mountain Kingsnake	*Lampropeltis zonata*										
Coachwhip/Red Racer	*Masticophis flagellum*			1		2				1	4
Striped Racer	*Masticophis lateralis*	1		4	3	2	4		1	1	16
San Diego Gopher Snake	*Pituophis melanoleucus*	3	6	4	4	5	3				25
Long-nosed Snake	*Rhinocheilus lecontei*						1	2	1		4
Coast Patch-Nosed Snake	*Salvadora hexalepis*	1	3	1	1					1	7
California Black-Headed Snake	*Tantilla planiceps*							1	2		3
Two-striped Garter Snake	*Thamnophis hammondii*						52	1	1	4	58
Common Garter Snake	*Thamnophis sirtalis*										
Lyre Snake	*Trimorphodon biscutatus*										
Speckled Rattlesnake	*Crotalus mitchelli*				2	1					3
Red Diamond Rattlesnake	*Crotalus ruber*	1								2	3
Southern Pacific Rattlesnake	*Crotalus viridis*		3				2	1	1	2	9
	Total Individuals	103	128	111	100	149	403	222	232	135	1583
	Total Species	10	8	11	11	11	20	17	17	13	28


Marron Valley
32.60690°, 116.77776°
32.60690°, 116.75138°
Spring
Spring
Spring
VALLEY
15
14
1600
1400
1200
BM
1237
×1953
1278
Donohoe
Mine
#1
#2
#3
#4
#5
ROAD
×1423
1563
Canyon
Donohoe
Spring
Mine
JEEP
Lupe
Spring
1598×
×1501
1225
32.58308°, 116.77776° NAD83
32.58308°, 116.75138°
TN
MN
13°
0
1/2
1 MILE
1000
0
1000
2000
3000
4000 FEET
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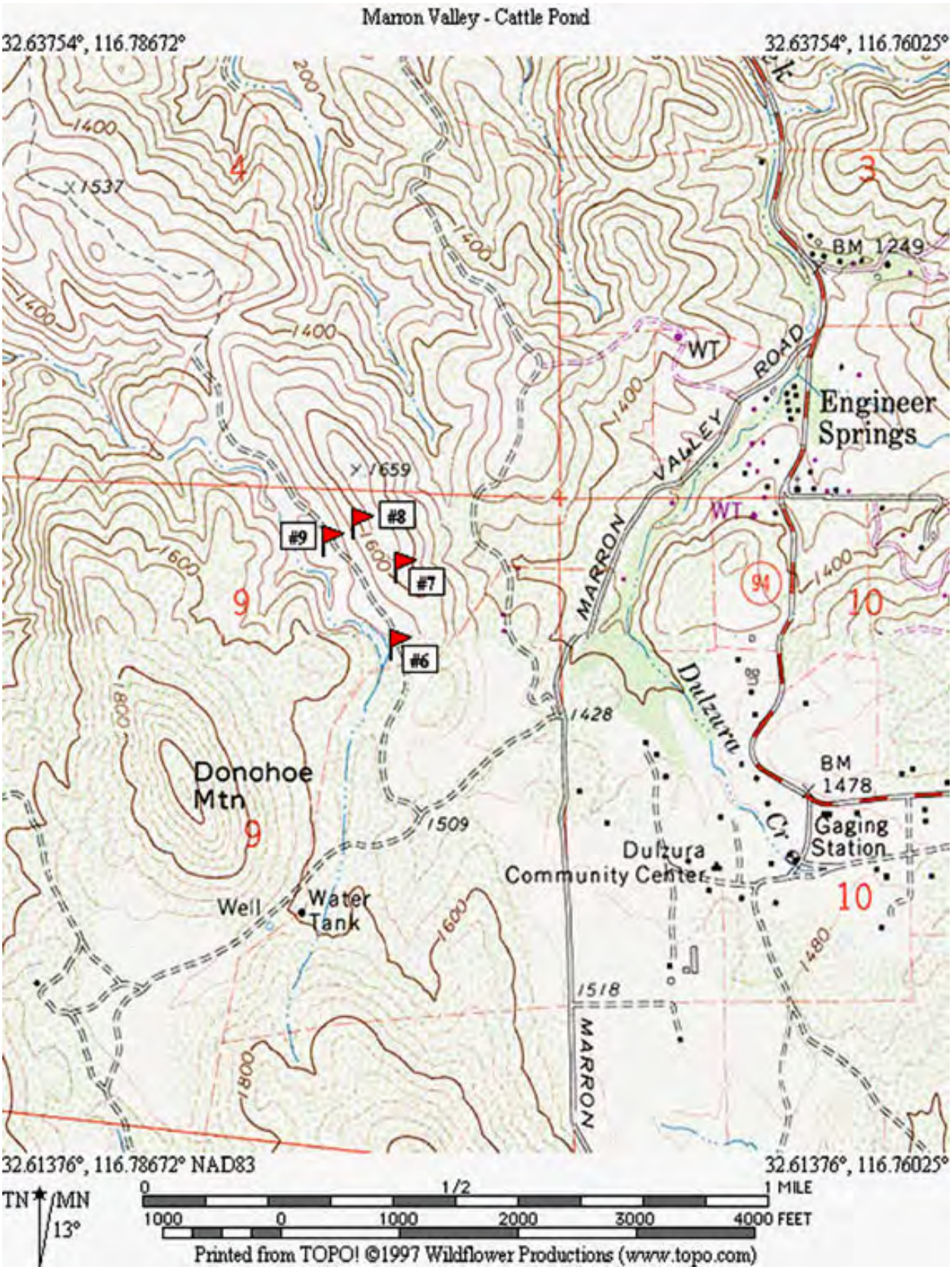
Marron Valley - Cattle Pond
32.63754°, 116.78672°
32.63754°, 116.76025°
1400
1537
1400
1400
1400
1400
1659
1600
1600
1800
1800
1428
1509
1600
1518
1480
BM 1249
WT
ROAD
Engineer Springs
VALLEY
MARRON
WT
94
10
Dulzura Cr.
BM 1478
Gaging Station
Dulzura Community Center
10
Donohoe Mtn
9
9
Well
Water Tank
MARRON
#8
#9
#7
#6
32.61376°, 116.78672° NAD83
32.61376°, 116.76025°
TN
MN
13°
0
1/2
1 MILE
1000
0
1000
2000
3000
4000 FEET
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Site Name: Mission Trails

Description: This study site was designed to sample urban edge with arrays near the edge, in the core area and in between. Coastal sage scrub habitat dominates. There is heavy public usage with many hiking trails.

Start dates for Sample Periods:

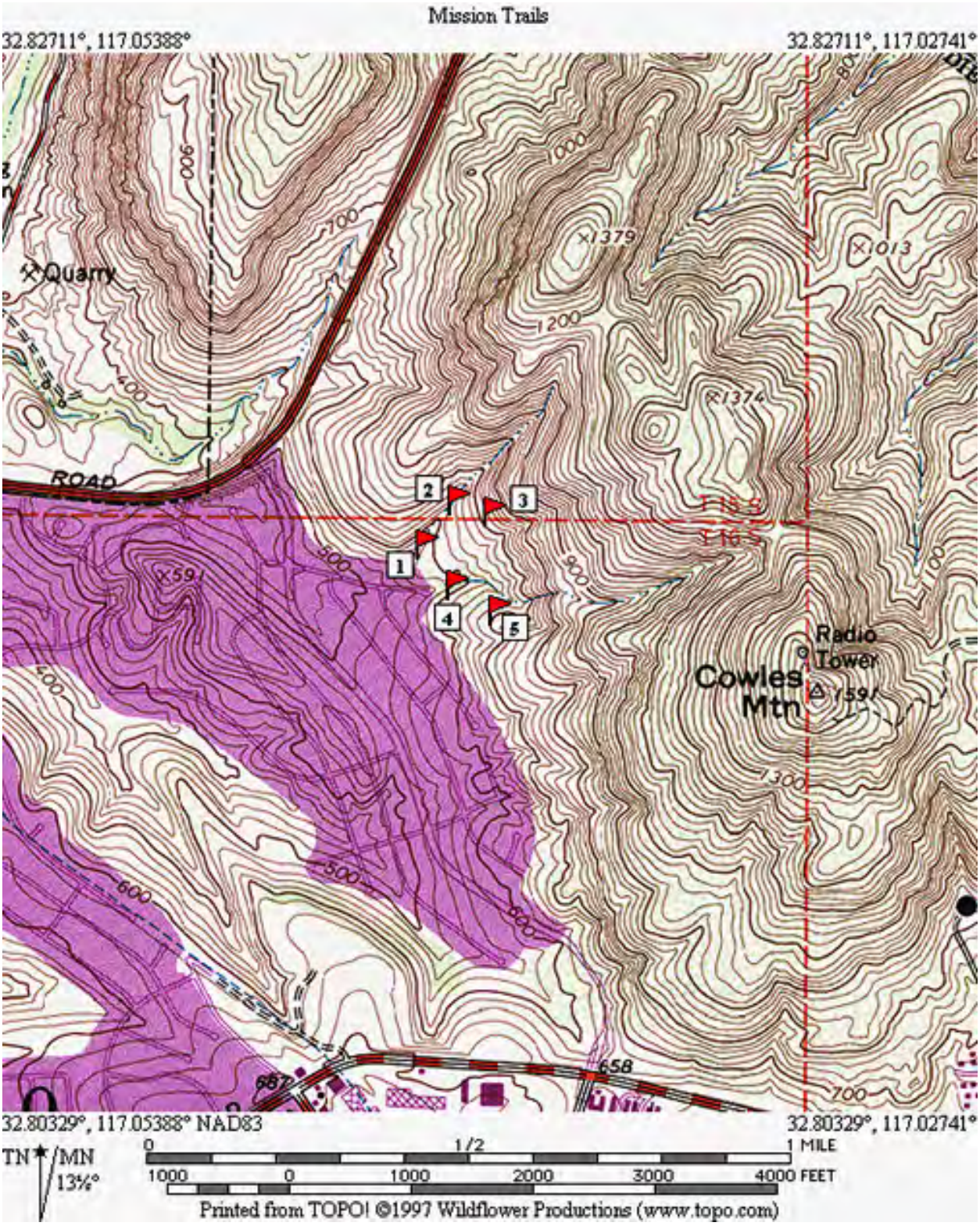
11/15/1999	02/01/2000
	04/17/2000
	06/27/2000
	09/21/2000

Number of Sample Days: 50

Location:

Array	Lon. (N) dec.	Lat. (W) dec.	Elevation (m)	Datum
1	32.81575	117.04269	168	NAD 83
2	32.81677	117.04182	190	NAD 83
3	32.81654	117.04082	213	NAD 83
4	32.81487	117.04190	170	NAD 83
5	32.81427	117.04064	214	NAD 83

Site: Mission Trails		Array Number					
Common Name	Scientific Name	1	2	3	4	5	Total
Pacific Slender Salamander	*Batrachoseps pacificus*						
Arboreal Salamander	*Aneides lugubris*						
Monterey Salamander	*Ensatina eschscholtzii*						
California Newt	*Taricha torosa*						
California Treefrog	*Hyla cadaverina*						
Pacific Treefrog	*Hyla regilla*						
Western Toad	*Bufo boreas*						
Arroyo Toad	*Bufo microscaphus*						
Red-Spotted Toad	*Bufo punctatus*						
Red-Legged Frog	*Rana aurora*						
Bullfrog	*Rana catesbeiana*						
African Clawed Frog	*Xenopus laevis*						
Western Spadefoot Toad	*Spea hammondii*						
Western Pond Turtle	*Clemmys marmorata*						
Slider	*Trachemys sp.*						
Coastal Banded Gecko	*Coleonyx variegatus*						
Granite Night Lizard	*Xantusia henshawi*						
California Legless Lizard	*Anniella pulchra*						
Southern Alligator Lizard	*Elgaria multicarinatus*			2	1	3	6
Gilbert Skink	*Eumeces gilberti*						
Western Skink	*Eumeces skiltonianus*	1		4			5
Orange Throated Whiptail	*Cnemidophorus hyperythrus*	5	9	6	7	14	41
Coastal Western Whiptail	*Cnemidophorus tigris*	11	5	4	9	9	38
Desert Spiny Lizard	*Sceloporus magister*						
Western Fence Lizard	*Sceloporus occidentalis*	4	2	6	7	9	28
Granite Spiny Lizard	*Sceloporus orcutti*			1			1
Side-Blotched Lizard	*Uta stanburiana*	1	2	4	1	11	19
Coast Horned Lizard	*Phrynosoma coronatum*						
Long-Nosed Leopard Lizard	*Gambelia wislizenii*						
Western Blind Snake	*Leptotyphlops humilis*	3	4	2		4	13
Coastal Rosy Boa	*Charina trivirgata*						
California Glossy Snake	*Arizona elegans*						
Western Yellow-Bellied Racer	*Coluber constrictor*						
Western Ringneck Snake	*Diadophis punctatus*						
Night Snake	*Hypsiglena torquata*						
California Kingsnake	*Lampropeltis getula*						
California Mountain Kingsnake	*Lampropeltis zonata*						
Coachwhip/Red Racer	*Masticophis flagellum*						
Striped Racer	*Masticophis lateralis*			1		1	2
San Diego Gopher Snake	*Pituophis melanoleucus*						
Long-nosed Snake	*Rhinocheilus lecontei*						
Coast Patch-Nosed Snake	*Salvadora hexalepis*		1			1	2
California Black-Headed Snake	*Tantilla planiceps*		1		1	4	6
Two-striped Garter Snake	*Thamnophis hammondii*						
Common Garter Snake	*Thamnophis sirtalis*						
Lyre Snake	*Trimorphodon biscutatus*						
Speckled Rattlesnake	*Crotalus mitchelli*						
Red Diamond Rattlesnake	*Crotalus exsul*					1	1
Southern Pacific Rattlesnake	*Crotalus viridis*						
	Number of Individuals	25	24	30	26	57	162
	Number of Species	6	7	9	6	10	12


Mission Trails
32.82711°, 117.05388°
32.82711°, 117.02741°
Quarry
ROAD
1379
1013
1374
T15 S
T16 S
1
2
3
4
5
591
Radio Tower
Cowles Mtn
591
658
32.80329°, 117.05388° NAD83
32.80329°, 117.02741°
TN
MN
13½°
0
1/2
1 MILE
1000
0
1000
2000
3000
4000 FEET
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Site Name: Point Loma Ecological Reserve

Description: This site is a medium size fragment with arrays sampling 116 hectares. This site is isolated from other natural lands by urban and military development. The dominant habitat is maritime succulent scrub, and coastal sage scrub. Some chamise chaparral, grassland and a wash are present also. The Point Loma study site is internally subdivided by roads and buildings, and is highly accessible by people. Point Loma is part of the joint federal partners planning area.

Start dates for Sample Periods:

08/01/1995	02/20/1996	02/18/1997	02/03/1998	01/27/1999	02/09/2000
09/12/1995	04/23/1996	04/22/1997	03/31/1998	04/06/1999	04/05/2000
11/13/1995	06/25/1996	06/24/1997	06/02/1998	06/08/1999	06/06/2000
	08/27/1996	09/03/1997	08/04/1998	08/18/1999	08/29/2000
	10/29/1996	10/28/1997	10/06/1998	11/10/1999	11/10/2000

Number of Sample Days: 280

Location:

Array	Lat. (N)	Lon. (W)	Lat. (N) dec.	Lon. (W) dec.	Elevation (m)	Datum
1	32°40'58.95"	117°14'51.50"	32.6830417	117.2476389	26	NAD 83
2	32°40'19.21"	117°14'39.98"	32.6720028	117.2444389	22	NAD 83
3	32°40'01.43"	117°14'31.69"	32.6670639	117.2421361	22	NAD 83
4	32°40'05.45"	117°14'32.30"	32.6681806	117.2423056	33	NAD 83
5	32°41'45.32"	117°14'34.72"	32.6959222	117.2429778	83	NAD 83
6	32°41'44.19"	117°14'36.38	32.6956083	117.2434389	82	NAD 83
7	32°41'41.64"	117°14'36.85"	32.6949000	117.2435694	90	NAD 83
8	32°42'12.42"	117°15'12.33"	32.7034500	117.2534250	33	NAD 83
9	32°40'26.50"	117°14'38.65"	32.6740278	117.2440694	42	NAD 83
10	32°42'20.65"	117°15'13.37"	32.7057361	117.2537139	35	NAD 83
11	32°41'02.70"	117°14'50.59"	32.6840833	117.2473861	37	NAD 83
12	32°41'01.66"	117°14'52.08"	32.6837944	117.2478000	31	NAD 83
13	32°40'11.55"	117°14'28.15"	32.6698750	117.2411528	109	NAD 83
14	32°40'12.65"	117°14'28.69"	32.6701806	117.2413028	113	NAD 83
15	32°40'08.14"	117°14'17.08"	32.6689278	117.2380778	54	NAD 83
16	32°40'10.05"	117°14'16.91"	32.6694583	117.2380306	55	NAD 83
17	32°40'30.39"	117°14'14.92"	32.6751083	117.2374778	37	NAD 83

Site: Point Loma																			
Common Name	Scientific Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total
Pacific Slender Salamander	*Batrachoseps pacificus*		3				2	8	5	35	2	19	4	1	3		1	3	86
Arboreal Salamander	*Aneides lugubris*																		
Monterey Salamander	*Ensatina eschscholtzii*																		
California Newt	*Taricha torosa*																		
California Treefrog	*Hyla cadaverina*																		
Pacific Treefrog	*Hyla regilla*																		
Western Toad	*Bufo boreas*																		
Arroyo Toad	*Bufo microscaphus*																		
Red-Spotted Toad	*Bufo punctatus*																		
Red-Legged Frog	*Rana aurora*																		
Bullfrog	*Rana catesbeiana*																		
African Clawed Frog	*Xenopus laevis*																		
Western Spadefoot Toad	*Spea hammondii*																		
Western Pond Turtle	*Clemmys marmorata*																		
Slider	*Trachemys sp.*																		
Coastal Banded Gecko	*Coleonyx variegatus*																		
Granite Night Lizard	*Xantusia henshawi*																		
California Legless Lizard	*Anniella pulchra*			1				1											2
Southern Alligator Lizard	*Elgaria multicarinatus*	9	16	24	16	2		6	4	7	7	10	15	22	8	11	5	3	165
Gilbert Skink	*Eumeces gilberti*																		
Western Skink	*Eumeces skiltonianus*																		
Orange Throated Whiptail	*Cnemidophorus hyperythrus*	63	27	145	44	1	1			18	7	2	1	29	53	24	24	11	450
Coastal Western Whiptail	*Cnemidophorus tigris*																		
Desert Spiny Lizard	*Sceloporus magister*																		
Western Fence Lizard	*Sceloporus occidentalis*	17	13	48	40	28	15	30	22	26	12	23	16	52	61	35	35	34	507
Granite Spiny Lizard	*Sceloporus orcutti*																		
Side-Blotched Lizard	*Uta stanburiana*	5	38	33	16	45	61	9	3	1	4	2	2	17	41	38	21	21	357
Coast Horned Lizard	*Phrynosoma coronatum*																		
Long-Nosed Leopard Lizard	*Gambelia wislizenii*																		
Western Blind Snake	*Leptotyphlops humilis*																		
Coastal Rosy Boa	*Charina trivirgata*																		
California Glossy Snake	*Arizona elegans*																		
Western Yellow-Bellied Racer	*Coluber constrictor*																		
Western Ringneck Snake	*Diadophis punctatus*								1	2		2						1	6
Night Snake	*Hypsiglena torquata*																		
California Kingsnake	*Lampropeltis getula*		1	2	1									1					5
California Mountain Kingsnake	*Lampropeltis zonata*																		
Coachwhip/Red Racer	*Masticophis flagellum*																		
Striped Racer	*Masticophis lateralis*	3		3	1	4		3	4	7	5	1	1	3	3	3		1	42
San Diego Gopher Snake	*Pituophis melanoleucus*	1	1	1					1	1							1		6
Long-nosed Snake	*Rhinocheilus lecontei*																		
Coast Patch-Nosed Snake	*Salvadora hexalepis*																		
California Black-Headed Snake	*Tantilla planiceps*																		
Two-striped Garter Snake	*Thamnophis hammondii*																		
Common Garter Snake	*Thamnophis sirtalis*																		
Lyre Snake	*Trimorphodon biscutatus*																		
Speckled Rattlesnake	*Crotalus mitchelli*																		
Red Diamond Rattlesnake	*Crotalus exsul*																		
Southern Pacific Rattlesnake	*Crotalus viridis*					2					1			1		1			5
	Number of Individuals	98	99	258	118	82	79	57	40	97	39	60	39	126	169	112	87	74	1634
	Number of Species	6	7	8	6	6	4	6	7	8	7	7	6	8	6	6	6	7	11


Pt. Loma
32.70354°, 117.25914°
32.70354°, 117.23570°
POINT LOMA
Cabrillo Monument
Fort Rosecrans
National Cemetery
Sewage Disposal
Visitor Center
CABRILLO
Old Lighthouse
Salt Water Conversion Plant
Radio Tower
US COAST GUARD RESERVATION
Lighthouse
32.66421°, 117.25914° NAD83
32.66421°, 117.23570°
TN
MN
13½°
1/2
MILE
1000
0
1000
2000
3000
4000 FEET
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Site Name: San Diego National Wildlife Refuge

Description: This site spans 95 hectares at the northern edge of the San Diego National Wildlife Refuge, a continuous large tract of land. The habitat is primarily south facing coastal sage scrub with some north facing chaparral. These slopes are divided by the Sweetwater River and associated riparian forest, although this habitat type is not being sampled. There is substantial human usage of the site including mountain bikers, joggers, and hikers. This site is part of the MSCP planning area.

Start dates for Sample Periods:

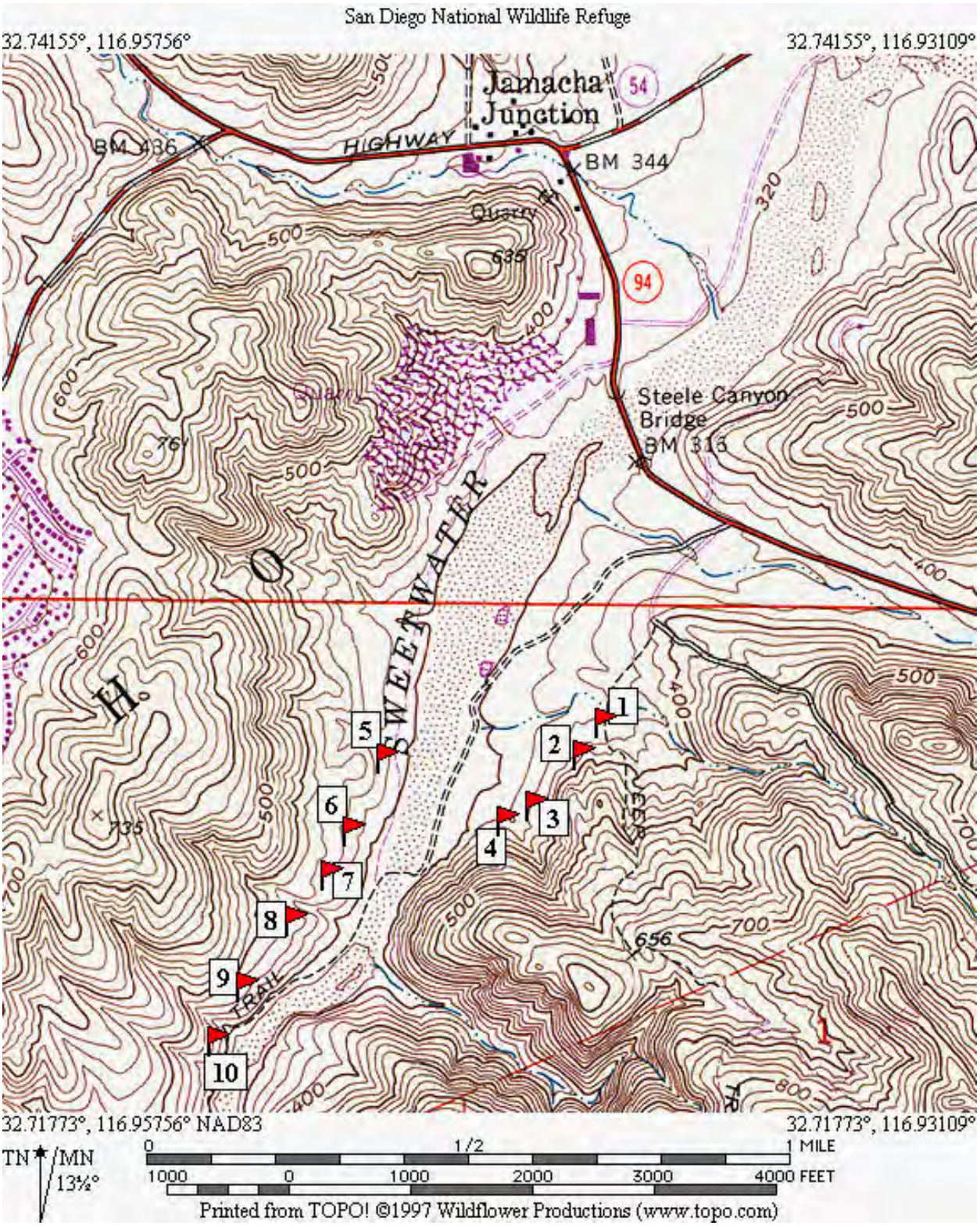
06/11/1995	02/19/1996	01/28/1997	03/10/1998	03/04/1999	02/23/2000
08/01/1995	04/23/1996	04/01/1997	05/12/1998	05/03/1999	04/19/2000
10/03/1995	06/24/1996	06/02/1997	07/13/1998	07/21/1999	06/21/2000
	08/26/1996	08/05/1997	09/14/1998	09/28/1999	09/20/2000
	10/29/1996	10/07/1997	11/16/1998	11/30/1999	
		12/09/1997			

Number of Sample Days: 285

Location:

Array	Lat. (N)	Lon. (W)	Lat. (N) dec.	Lon. (W) dec.	Elevation (m)	Datum
1	32°43'34.33"	116°56'29.36"	32.7262028	116.9414889	103	NAD 83
2	32°43'31.65"	116°56'33.01"	32.7254583	116.9425028	106	NAD 83
3	32°43'29.98"	116°56'35.55"	32.7249944	116.9432083	100	NAD 83
4	32°43'29.05"	116°56'37.20"	32.7247361	116.9436667	96	NAD 83
5	32°43'31.22"	116°56'50.64"	32.7253389	116.9474000	197	NAD 83
6	32°43'25.21"	116°56'53.98"	32.7236694	116.9483278	103	NAD 83
7	32°43'21.93"	116°56'56.10"	32.7227583	116.9489167	104	NAD 83
8	32°43'17.98"	116°56'55.89"	32.7216611	116.9488583	90	NAD 83
9	32°43'16.31"	116°56'57.47"	32.7211972	116.9492972	91	NAD 83
10	32°43'13.81"	116°57'00.44"	32.7205028	116.9501222	90	NAD 83

Site: San Diego NWR Common Name	Scientific Name	1	2	3	4	5	6	7	8	9	10	Total
Pacific Slender Salamander	*Batrachoseps pacificus*											
Arboreal Salamander	*Aneides lugubris*				1		3	9		3	3	19
Monterey Salamander	*Ensatina eschscholtzii*											
California Newt	*Taricha torosa*											
California Treefrog	*Hyla cadaverina*											
Pacific Treefrog	*Hyla regilla*	4	5	3	1			1			1	15
Western Toad	*Bufo boreas*					1						1
Arroyo Toad	*Bufo microscaphus*											
Red-Spotted Toad	*Bufo punctatus*											
Red-Legged Frog	*Rana aurora*											
Bullfrog	*Rana catesbeiana*											
African Clawed Frog	*Xenopus laevis*								1			1
Western Spadefoot Toad	*Spea hammondii*	2	3	8		8			1			22
Western Pond Turtle	*Clemmys marmorata*											
Slider	*Trachemys sp.*											
Coastal Banded Gecko	*Coleonyx variegatus*											
Granite Night Lizard	*Xantusia henshawi*		1									1
California Legless Lizard	*Anniella pulchra*		1	1			1			1		4
Southern Alligator Lizard	*Elgaria multicarinatus*	7	6	4	10	3	6	4	12	4	3	59
Gilbert Skink	*Eumeces gilberti*											
Western Skink	*Eumeces skiltonianus*	21	21	27	20	42	32	29	25	13	18	248
Orange Throated Whiptail	*Cnemidophorus hyperythrus*	35	17	85	1	1	3	19	10	7	2	180
Coastal Western Whiptail	*Cnemidophorus tigris*	2	9	9		7	5	5	5	18	22	82
Desert Spiny Lizard	*Sceloporus magister*		1									1
Western Fence Lizard	*Sceloporus occidentalis*	15	19	16	14	36	32	30	18	16	16	212
Granite Spiny Lizard	*Sceloporus orcutti*		1	1			2			1	2	7
Side-Blotched Lizard	*Uta stanburiana*					4		2		6	3	15
Coast Horned Lizard	*Phrynosoma coronatum*		2	4		9		10	12	30	18	85
Long-Nosed Leopard Lizard	*Gambelia wislizenii*											
Western Blind Snake	*Leptotyphlops humilis*	5	5	7	2			2				21
Coastal Rosy Boa	*Charina trivirgata*							1	2			3
California Glossy Snake	*Arizona elegans*											
Western Yellow-Bellied Racer	*Coluber constrictor*											
Western Ringneck Snake	*Diadophis punctatus*		3	1	1		3	5	2		1	16
Night Snake	*Hypsiglena torquata*			1					1	2		4
California Kingsnake	*Lampropeltis getula*		1	1	1	7	1	1	2	1	3	18
California Mountain Kingsnake	*Lampropeltis zonata*											
Coachwhip/Red Racer	*Masticophis flagellum*			1		1			3			5
Striped Racer	*Masticophis lateralis*	6	4	7	3	7	6	10	9	7	2	61
San Diego Gopher Snake	*Pituophis melanoleucus*	1	3		1	2	1	2	9		2	21
Long-nosed Snake	*Rhinocheilus lecontei*			2	1	2		3		1	1	10
Coast Patch-Nosed Snake	*Salvadora hexalepis*											
California Black-Headed Snake	*Tantilla planiceps*		1	1	1	7	2	1				13
Two-striped Garter Snake	*Thamnophis hammondii*				1							1
Common Garter Snake	*Thamnophis sirtalis*											
Lyre Snake	*Trimorphodon biscutatus*											
Speckled Rattlesnake	*Crotalus mitchelli*											
Red Diamond Rattlesnake	*Crotalus exsul*		3				1	2	2			8
Southern Pacific Rattlesnake	*Crotalus viridis*	3	3	3	4	1	1	1		1		17
	Number of Individuals	101	109	182	63	138	99	137	114	111	97	1151
	Number of Species	11	20	19	15	16	15	19	16	15	15	29


San Diego National Wildlife Refuge
32.74155°, 116.95756°
32.74155°, 116.93109°
Jamacha Junction
54
HIGHWAY
BM 436
BM 344
Quarry
635
94
320
500
400
600
76'
Steele Canyon Bridge
BM 316
SWEETWATER
H.
735
656
700
800
TRAIL
1
2
3
4
5
6
7
8
9
10
32.71773°, 116.95756° NAD83
32.71773°, 116.93109°
TN
MN
13½°
0
1/2
1 MILE
1000
0
1000
2000
3000
4000 FEET
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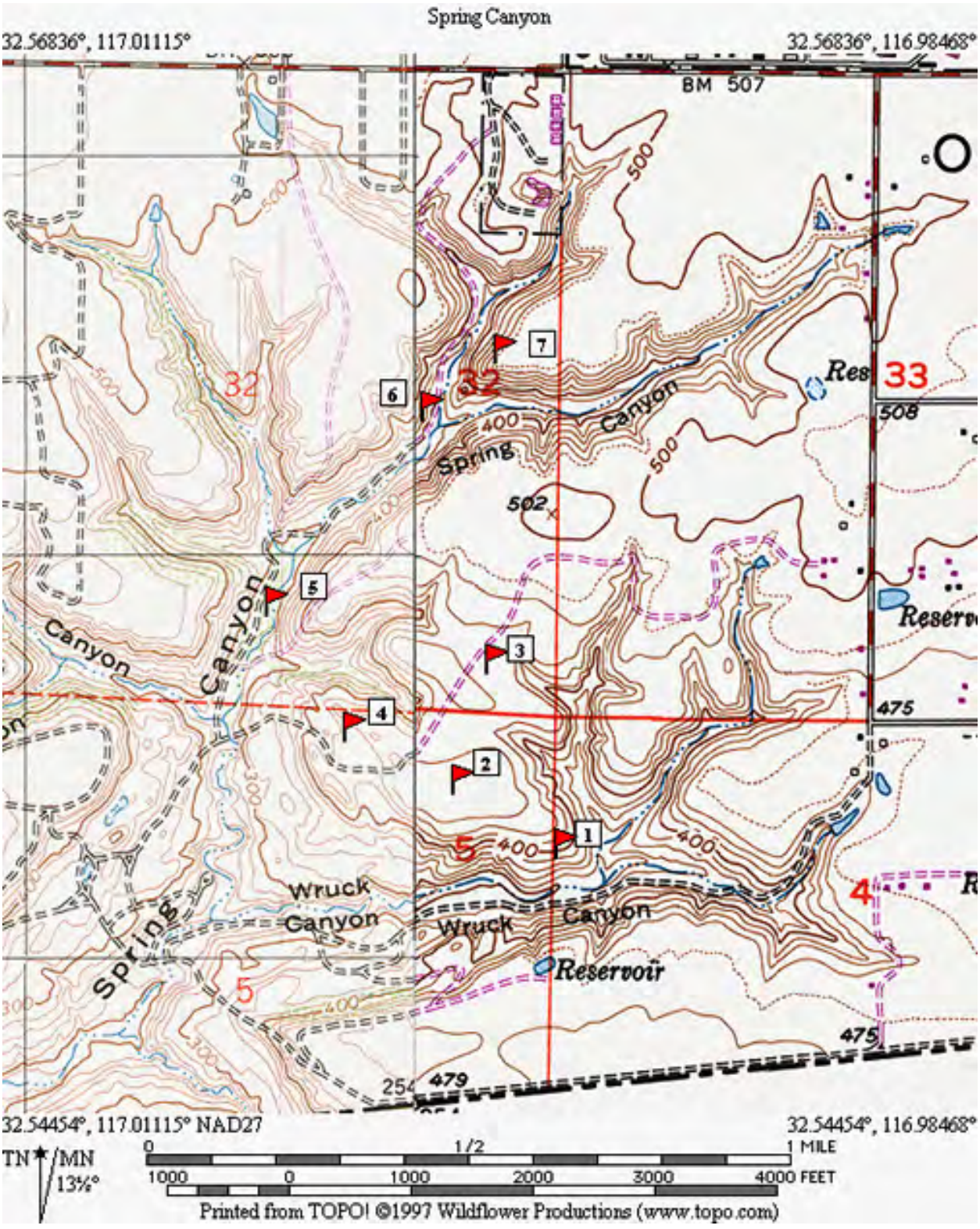
Site Name:	Spring Canyon			
Description:	Elevation 100 - 150 meters. Habitat at this study site consists mostly of coastal sage scrub, vernal pool habitat, and a unique mix of Jojoba and cliff-spurge in a maritime succulent scrub habitat. This site has a long history of disturbance from off road vehicle usage both recreational and by Border Patrol. There is moderate grazing by goats, however, there are areas with intact vernal pools and coastal scrub.			
Start dates for Sample Periods:				
	11/01/1995	02/02/1996		
		03/27/1996		
		05/29/1996		
		09/05/1996		
		11/13/1996		
Number of Sample Days:		60		
Location:				
Array	**Lat. (N) dec.**	**Lon. (W) dec.**	**Elevation (m)**	**Datum**
1	32.55039	116.99690	100	NAD83
2	32.55154	116.99984	150	NAD83
3	32.55458	116.99883	138	NAD83
4	32.55306	117.00255	134	NAD83
5	32.55577	117.00485	108	NAD83
6	32.56011	117.00057	107	NAD83
7	32.56156	116.99828	130	NAD83

Site: Spring Canyon		Array Number							
Common Name	Scientific Name	1	2	3	4	5	6	7	Total
Pacific Slender Salamander	*Batrachoseps pacificus*								
Arboreal Salamander	*Aneides lugubris*								
Monterey Salamander	*Ensatina eschscholtzii*								
California Newt	*Taricha torosa*								
California Treefrog	*Hyla cadaverina*								
Pacific Treefrog	*Hyla regilla*								
Western Toad	*Bufo boreas*								
Arroyo Toad	*Bufo microscaphus*								
Red-Spotted Toad	*Bufo punctatus*								
Red-Legged Frog	*Rana aurora*								
Bullfrog	*Rana catesbeiana*								
African Clawed Frog	*Xenopus laevis*								
Western Spadefoot Toad	*Spea hammondii*	1		1	4	1			7
Western Pond Turtle	*Clemmys marmorata*								
Slider	*Trachemys sp.*								
Coastal Banded Gecko	*Coleonyx variegatus*								
Granite Night Lizard	*Xantusia henshawi*								
California Legless Lizard	*Anniella pulchra*								
Southern Alligator Lizard	*Elgaria multicarinatus*			2		5	1		8
Gilbert Skink	*Eumeces gilberti*								
Western Skink	*Eumeces skiltonianus*		1	5				1	7
Orange Throated Whiptail	*Cnemidophorus hyperythru*	12		3	1	1	45	13	76
Coastal Western Whiptail	*Cnemidophorus tigris*								
Desert Spiny Lizard	*Sceloporus magister*								
Western Fence Lizard	*Sceloporus occidentalis*	7		4	3	2	3	11	30
Granite Spiny Lizard	*Sceloporus orcutti*								
Side-Blotched Lizard	*Uta stanburiana*	7	2		3	3	3	3	21
Coast Horned Lizard	*Phrynosoma coronatum*						1	1	2
Long-Nosed Leopard Lizard	*Gambelia wislizenii*								
Western Blind Snake	*Leptotyphlops humilis*							1	1
Coastal Rosy Boa	*Charina trivirgata*								
California Glossy Snake	*Arizona elegans*								
Western Yellow-Bellied Racer	*Coluber constrictor*								
Western Ringneck Snake	*Diadophis punctatus*								
Night Snake	*Hypsiglena torquata*								
California Kingsnake	*Lampropeltis getula*			1		1	2		4
California Mountain Kingsnake	*Lampropeltis zonata*								
Coachwhip/Red Racer	*Masticophis flagellum*								
Striped Racer	*Masticophis lateralis*					1	1		2
San Diego Gopher Snake	*Pituophis melanoleucus*		1						1
Long-nosed Snake	*Rhinocheilus lecontei*							1	1
Coast Patch-Nosed Snake	*Salvadora hexalepis*								
California Black-Headed Snake	*Tantilla planiceps*				1			3	4
Two-striped Garter Snake	*Thamnophis hammondii*								
Common Garter Snake	*Thamnophis sirtalis*								
Lyre Snake	*Trimorphodon biscutatus*								
Speckled Rattlesnake	*Crotalus mitchelli*								
Red Diamond Rattlesnake	*Crotalus exsul*								
Southern Pacific Rattlesnake	*Crotalus viridis*	1	1					1	3
	Number of Individuals	28	5	16	12	14	56	35	167
	Number of Species	5	4	6	5	7	7	9	14


Spring Canyon
32.56836°, 117.01115°
32.56836°, 116.98468°
BM 507
500
32
33
508
400
Spring
Canyon
502
Canyon
Canyon
Reserv
475
300
Wruck
Canyon
Spring
Wruck
Canyon
Reservoir
479
32.54454°, 117.01115° NAD27
32.54454°, 116.98468°
TN
MN
13½°
0
1/2
1 MILE
1000
0
1000
2000
3000
4000 FEET
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Site Name: Tijuana Estuary National Wildlife Refuge

Description: This site is an interesting fragment with representatives of several rare habitat types. Of particular interest is the dune habitat and the maritime succulent scrub on the small coastal mesas. Also present are salt marsh and coastal sage scrub. There is substatnital human foot traffic throughout the study site. This site is bordered to the north and south by urban development, the southern boundary being the international border. Military and agricultural development border the site to the east. Arrays cover 310 hectares.

Start dates for Sample Periods:

03/11/1997	02/05/1998	02/02/1999	02/03/2000
05/13/1997	04/07/1998	03/23/1999	03/28/2000
07/15/1997	06/01/1998	06/08/1999	05/30/2000
09/23/1997	08/04/1998	08/18/1999	09/07/2000
11/16/1997	10/06/1998	11/02/1999	
12/23/1997			

Number of Sample Days: 200

Array	Lat. (N) dec.	Lon. (W) dec.	Elevation (m)	Datum
1	32.5503478	117.1261375	1	NAD83
2	32.5479604	117.1249015	1	NAD83
3	32.5457875	117.1243691	2	NAD83
4	32.5422119	117.1234424	3	NAD83
5	32.5407665	117.1237969	2	NAD83
6	32.535075	117.1171042	20	NAD83
7	32.5351217	117.1191163	17	NAD83
8	32.5350532	117.1179519	20	NAD83
9	32.5391011	117.109126	21	NAD83
10	32.5384142	117.1076438	55	NAD83
11	32.5378235	117.1073918	50	NAD83
12	32.5602968	117.1263128	3	NAD83
13	32.559886	117.1244742	2	NAD83
14	32.5609874	117.1242619	3	NAD83
15	32.5616498	117.1257403	6	NAD83

Site: Tijuana Estuary NWR																	
Common Name	Scientific Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Pacific Slender Salamander	*Batrachoseps pacificus*						2			1							3
Arboreal Salamander	*Aneides lugubris*																
Monterey Salamander	*Ensatina eschscholtzii*																
California Newt	*Taricha torosa*																
California Treefrog	*Hyla cadaverina*																
Pacific Treefrog	*Hyla regilla*			2	3					2	2		6		1	15	31
Western Toad	*Bufo boreas*																
Arroyo Toad	*Bufo microscaphus*																
Red-Spotted Toad	*Bufo punctatus*																
Red-Legged Frog	*Rana aurora*																
Bullfrog	*Rana catesbeiana*																
African Clawed Frog	*Xenopus laevis*																
Western Spadefoot Toad	*Spea hammondii*		2														2
Western Pond Turtle	*Clemmys marmorata*																
Slider	*Trachemys sp.*																
Coastal Banded Gecko	*Coleonyx variegatus*																
Granite Night Lizard	*Xantusia henshawi*																
California Legless Lizard	*Anniella pulchra*				1	4	1		2			1		2		1	12
Southern Alligator Lizard	*Elgaria multicarinatus*						4	13	9	11	4	1	10	2	6	6	66
Gilbert Skink	*Eumeces gilberti*																
Western Skink	*Eumeces skiltonianus*					1	10	21	16	29	19	26	17	19	15	22	196
Orange Throated Whiptail	*Cnemidophorus hyperythrus*				1	3	78	51	57	218	110	147					665
Coastal Western Whiptail	*Cnemidophorus tigris*																
Desert Spiny Lizard	*Sceloporus magister*																
Western Fence Lizard	*Sceloporus occidentalis*	1	3	1	2		55	19	33	108	23	25	42	68	55	76	511
Granite Spiny Lizard	*Sceloporus orcutti*																
Side-Blotched Lizard	*Uta stanburiana*	18	28	71	85	71	21	11	21	39	33	50				2	450
Coast Horned Lizard	*Phrynosoma coronatum*	23	7	43	1	19							2				95
Long-Nosed Leopard Lizard	*Gambelia wislizenii*																
Western Blind Snake	*Leptotyphlops humilis*									11	3						14
Coastal Rosy Boa	*Charina trivirgata*																
California Glossy Snake	*Arizona elegans*																
Western Yellow-Bellied Racer	*Coluber constrictor*																
Western Ringneck Snake	*Diadophis punctatus*									1							1
Night Snake	*Hypsiglena torquata*									1		1					2
California Kingsnake	*Lampropeltis getula*	1					1	1		5	4		3	3	4	2	24
California Mountain Kingsnake	*Lampropeltis zonata*																
Coachwhip/Red Racer	*Masticophis flagellum*			2		6		1	1				6	4	2		22
Striped Racer	*Masticophis lateralis*						2	1	5		2	1					11
San Diego Gopher Snake	*Pituophis melanoleucus*		2		2				1	2			4		1		12
Long-nosed Snake	*Rhinocheilus lecontei*																
Coast Patch-Nosed Snake	*Salvadora hexalepis*																
California Black-Headed Snake	*Tantilla planiceps*																
Two-striped Garter Snake	*Thamnophis hammondii*														2		2
Common Garter Snake	*Thamnophis sirtalis*																
Lyre Snake	*Trimorphodon biscutatus*																
Speckled Rattlesnake	*Crotalus mitchelli*																
Red Diamond Rattlesnake	*Crotalus exsul*																
Southern Pacific Rattlesnake	*Crotalus viridis*									2	1					1	4
	Number of Individuals	43	42	119	95	104	174	118	145	430	201	252	90	98	86	125	2123
	Number of Species	4	5	5	7	6	9	8	9	13	10	8	8	6	8	8	19


Tijuana Estuary
32.56662°, 117.13790°
32.56662°, 117.10261°
Gravel Pit
IMPERIAL BEACH
NAVAL AIR STATION
Roberts Park
Oneonta
Waste
CORPORATE
CORPORATE
T.18 S.
T.19 S.
IMPERIAL BEACH
SAN DIEGO
Tijua
Border Field
BORDER FIELD
NAVAL RESERVATION
MONUMENT
Well
Goat
Canyo
Raymer
UNITED STATES
MEXICO
32.53366°, 117.13790° NAD83
32.53366°, 117.10261°
TN
MN
13½°
1/2
1 MILE
1000 0 1000 2000 3000 4000 FEET
Printed from TOPO! ©1997 Wildflower Productions (www.topo.com)

Site Name: New Torrey Pines

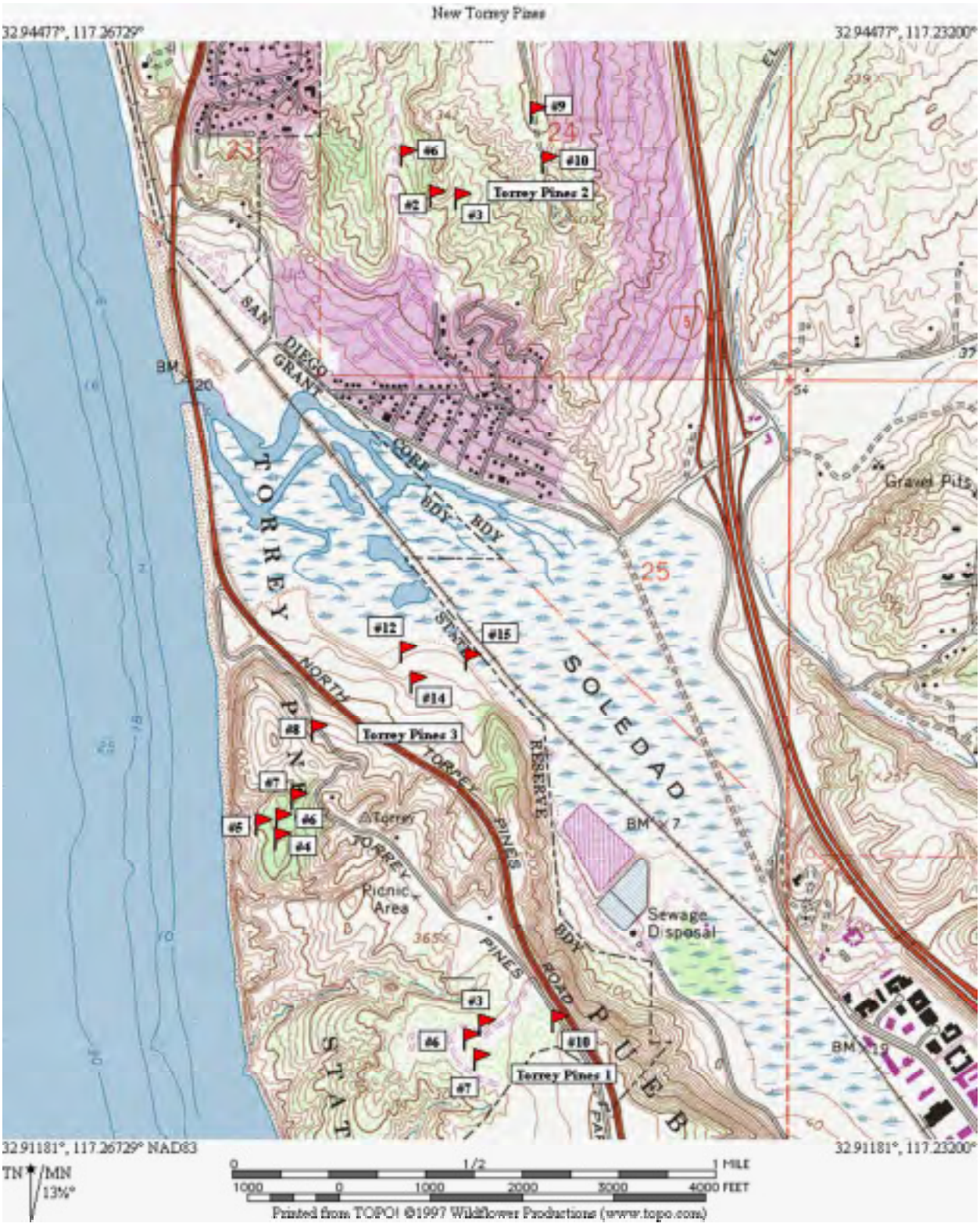
Description: This study site originally consisted of Torrey Pines I, Torrey Pines II, and Torrey Pines III, haveing been combined and reduced in number to from 35 to 17 arrays. Torrey Pines I is represented by four arrays, Torrey Pines II by five arrays, and Torrey Pines III with eight arrays. The New Torrey Pines site data continues after the three former sites. The habitat is a mix of coastal sage scrub, maritime succulent scrub, chaparral, and Torrey pine woodland.

Number of Sample Days: 70

Location:

Array	Lat. (N)	Lon. (W)	Lat. (N) dec.	Lon. (W) dec.	Elevation (m)	Datum
TP 1-3	32°54'53.58"	117°15'00.04"	32.9148833	117.2500111	98	NAD 83
TP 1-6	32°54'52.15"	117°15'02.26"	32.9144861	117.2506278	101	NAD 83
TP 1-7	32°54'49.98"	117°15'00.83"	32.9138833	117.2502306	101	NAD 83
TP 1-10	32°54'54.17"	117°14'51.15"	32.9150472	117.2475417	104	NAD 83
TP 2-2	32°56'23.32"	117°15'06.64"	32.9398111	117.2518444	62	NAD 83
TP 2-3	32°56'23.09"	117°15'03.31"	32.9397472	117.2509194	69	NAD 83
TP 2-6	32°56'27.79"	117°15'10.45"	32.9410528	117.2529028	73	NAD 83
TP 2-9	32°56'32.42"	117°14'53.69"	32.9423389	117.2482472	120	NAD 83
TP 2-10	32°56'26.95"	117°14'51.92"	32.9408194	117.2477556	122	NAD 83
TP 3-4	32°55'14.05"	117°15'26.87"	32.9205694	117.2574639	62	NAD 83
TP 3-5	32°55'15.37"	117°15'29.31"	32.9209361	117.2581417	44	NAD 83
TP 3-6	32°55'15.78"	117°15'26.76"	32.9210500	117.2574333	54	NAD 83
TP 3-7	32°55'18.18"	117°15'24.62"	32.9217167	117.2568389	59	NAD 83
TP 3-8	32°55'25.77"	117°15'21.89"	32.9238250	117.2560806	70	NAD 83
TP 3-12	32°55'33.95"	117°15'10.41"	32.9260972	117.2528917	12	NAD 83
TP 3-14	32°55'30.80"	117°15'09.13"	32.9252222	117.2525361	23	NAD 83
TP 3-15	32°55'33.19"	117°15'02.08"	32.9258861	117.2505778	11	NAD 83

Site: New Torrey Pines		TPI				TPII					TPIII								
Common Name		3	6	7	10	2	3	6	9	10	4	5	6	7	8	12	14	15	Total
Black-bellied Slender Salamande	*Batrachoseps nigriventris*																		
Pacific Slender Salamander	*Batrachoseps pacificus*	2	1		5	2					2			16	8				36
Arboreal Salamander	*Aneides lugubris*	3	1								1			2					7
Monterey Salamander	*Ensatina escholtzi*																		
Large-Blotched Salamander	*E. escholtzi klauberina*																		
California Newt	*Taricha torosa*																		
California Treefrog	*Hyla cadaverina*																		
Pacific Treefrog	*Hyla regilla*	1			3														4
Western Toad	*Bufo boreas*																		
Arroyo Toad	*Bufo microscaphus*																		
Red-Spotted Toad	*Bufo punctatus*																		
Red-Legged Frog	*Rana aurora*																		
Bullfrog	*Rana catesbeiana*																		
African Clawed Frog	*Xenopus laevis*																		
Western Spadefoot Toad	*Scaphiopus hammondii*																		
Western Pond Turtle	*Clemmys marmorata*																		
Slider	*Trachemys sp.*																		
Western Banded Gecko	*Coleonyx variegatus*																		
Granite Night Lizard	*Xantusia henshawi*																		
Desert Night Lizard	*Xantusia vigilis*																		
California Legless Lizard	*Anniella pulchra*																		
Southern Alligator Lizard	*Elgaria multicarinatus*				2	2	3	2		2	1	2		2	3	2	7	2	32
Gilbert Skink	*Eumeces gilberti*																		
Western Skink	*Eumeces skiltonianus*		1					3		2						5	4	7	22
Coastal Western Whiptail	*Cnemidophorus hyperythrus*	1	7	6	5	17	17	9	14	13	9	17	11	3			2	1	133
Western Whiptail	*Cnemidophorus tigris*	1	2	2	1											1			7
Desert Spiny Lizard	*Sceloporus magister*																		
Sagebrush Lizard	*Sceloporus graciosus*																		
Western Fence Lizard	*Sceloporus occidentalis*	13	10	4	10	16	12	11	12	13	17	3	16	17	4	15	8	1	184
Granite Spiny Lizard	*Sceloporus orcutti*																		
Side-Blotched Lizard	*Uta stansburiana*	3	5	12	11	17	11	6	12		15	22	5						120
Coast Horned Lizard	*Phrynosoma coronatum*						2		1	3									6
Long-Nosed Leopard Lizard	*Gambelia wislizenii*																		
Western Blind Snake	*Leptotyphlops humilis*																		
Rosy Boa	*Lichanura trivirgata*																		
Glossy Snake	*Arizona elegans*																		
Yellow-Bellied Racer	*Coluber constrictor*																		
Western Ringneck Snake	*Diadophis punctatus*				1														1
Night Snake	*Hypsiglena torquata*			1					1				2						4
California Kingsnake	*Lampropeltis getulus*			1						1									2
California Mountain Kingsnake	*Lampropeltis zonata*																		
Coachwhip/Red Racer	*Masticophis flagellum*																		
Striped Racer	*Masticophis lateralis*				2	2			1	1		2		2		3			13
San Diego Gopher Snake	*Pituophis melanoleucas*																		
Long-nosed Snake	*Rhinocheilus lecontei*																		
Coast Patch-Nosed Snake	*Salvadora hexalepis*																		
California Black-Headed Snake	*Tantilla planiceps*																		
Two-striped Garter Snake	*Thamnophis hammondii*																		
Common Garter Snake	*Thamnophis sirtalis*																		
Lyre Snake	*Trimorphodon biscutatus*																		
Speckled Rattlesnake	*Crotalus mitchellii*																		
Red Diamond Rattlesnake	*Crotalus ruber*																		
Southern Pacific Rattlesnake	*Crotalus viridis*					1					1	1				1	1		5
	Number of Individuals	24	27	26	40	57	45	31	41	35	46	47	34	42	15	27	22	11	577
	Number of Species	7	7	6	9	7	5	5	6	7	7	6	4	6	3	6	5	4	15


New Torrey Pines
32.94477°, 117.26729°
32.94477°, 117.23200°
Torrey Pines 2
Torrey Pines 3
Torrey Pines 1
SAN DIEGO GRANT
CORP BDY
STATE RESERVE
NORTH TORREY PINES ROAD
SOLEDAD
Gravel Pits
Picnic Area
Sewage Disposal
BM 20
BM 7
BM 19
32.91181°, 117.26729° NAD83
32.91181°, 117.23200°
TN 13¾°
1 MILE
4000 FEET
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Site Name: Torrey Pines I

Array	Lat. (N)	Lon. (W)	Lat. (N) dec.	Lon. (W) dec.	Elevation (m)	Datum
1	32°54'58.19"	117°14'54.86"	32.9161639	117.2485722	107	NAD 83
2	32°54'58.30"	117°14'58.58"	32.9161944	117.2496056	93	NAD 83
3	32°54'53.58"	117°15'00.04"	32.9148833	117.2500111	98	NAD 83
4	32°54'54.35"	117°15'04.07"	32.9150972	117.2511306	99	NAD 83
5	32°54'53.67"	117°15'06.58"	32.9149083	117.2518278	97	NAD 83
6	32°54'52.15"	117°15'02.26"	32.9144861	117.2506278	101	NAD 83
7	32°54'49.98"	117°15'00.83"	32.9138833	117.2502306	101	NAD 83
8	32°54'48.82"	117°15'01.83"	32.9135611	117.2505083	92	NAD 83
9	32°54'48.97"	117°14'57.23"	32.9136028	117.2492306	99	NAD 83
10	32°54'54.17"	117°14'51.15"	32.9150472	117.2475417	104	NAD 83

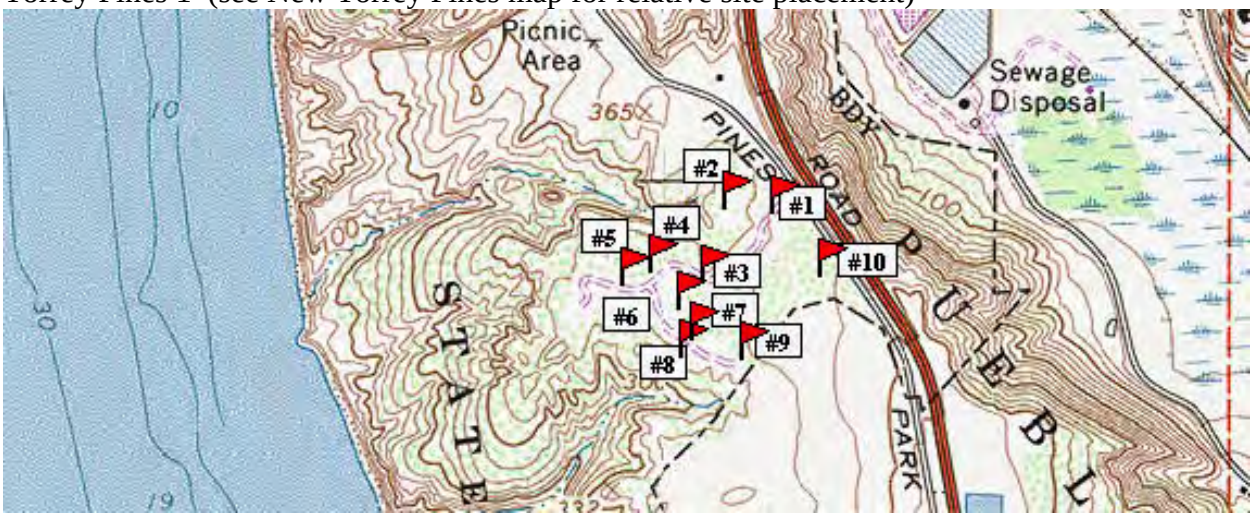
Site Name: Torrey Pines II

Array	Lat. (N)	Lon. (W)	Lat. (N) dec.	Lon. (W) dec.	Elevation (m)	Datum
1	32°56'21.66"	117°15'08.17"	32.9393500	117.2522694	54	NAD 83
2	32°56'23.32"	117°15'06.64"	32.9398111	117.2518444	62	NAD 83
3	32°56'23.09"	117°15'03.31"	32.9397472	117.2509194	69	NAD 83
4	32°56'29.11"	117°15'01.63"	32.9414194	117.2504528	85	NAD 83
5	32°56'24.92"	117°15'10.33"	32.9402556	117.2528694	62	NAD 83
6	32°56'27.79"	117°15'10.45"	32.9410528	117.2529028	73	NAD 83
7	32°56'39.09"	117°15'11.60"	32.9441917	117.2532222	90	NAD 83
8	32°56'35.88"	117°15'09.00"	32.9433000	117.2525000	90	NAD 83
9	32°56'32.42"	117°14'53.69"	32.9423389	117.2482472	120	NAD 83
10	32°56'26.95"	117°14'51.92"	32.9408194	117.2477556	122	NAD 83

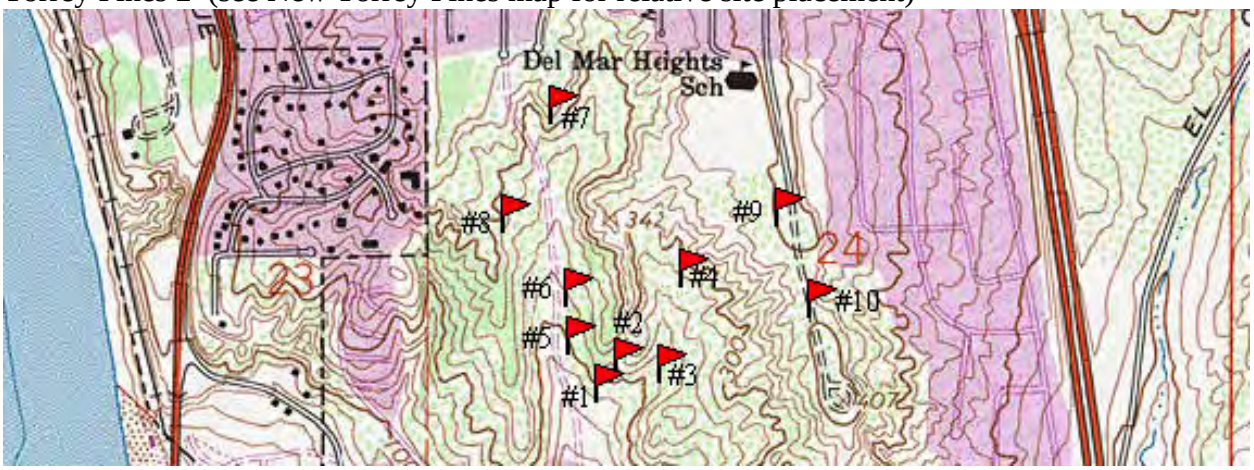
Site Name: Torrey Pines III

Array	Lat. (N)	Lon. (W)	Lat. (N) dec.	Lon. (W) dec.	Elevation (m)	Datum
1	32°55'13.99"	117°15'23.80"	32.9205528	117.2566111	66	NAD 83
2	32°55'14.93"	117°15'24.71"	32.9208139	117.2568639	66	NAD 83
3	32°55'11.83"	117°15'29.40"	32.9199528	117.2581667	61	NAD 83
4	32°55'14.05"	117°15'26.87"	32.9205694	117.2574639	62	NAD 83
5	32°55'15.37"	117°15'29.31"	32.9209361	117.2581417	44	NAD 83
6	32°55'15.78"	117°15'26.76"	32.92105	117.2574333	54	NAD 83
7	32°55'18.18"	117°15'24.62"	32.9217167	117.2568389	59	NAD 83
8	32°55'25.77"	117°15'21.89"	32.923825	117.2560806	70	NAD 83
9	32°55'28.15"	117°15'24.70"	32.9244861	117.2568611	26	NAD 83
10	32°55'29.82"	117°15'26.72"	32.92495	117.2574222	71	NAD 83
11	32°55'37.31"	117°15'22.64"	32.9270306	117.2562889	16	NAD 83
12	32°55'33.95"	117°15'10.41"	32.9260972	117.2528917	12	NAD 83
13	32°55'31.06"	117°15'06.46"	32.9252944	117.2517944	20	NAD 83
14	32°55'30.80"	117°15'09.13"	32.9252222	117.2525361	23	NAD 83
15	32°55'33.19"	117°15'02.08"	32.9258861	117.2505778	11	NAD 83

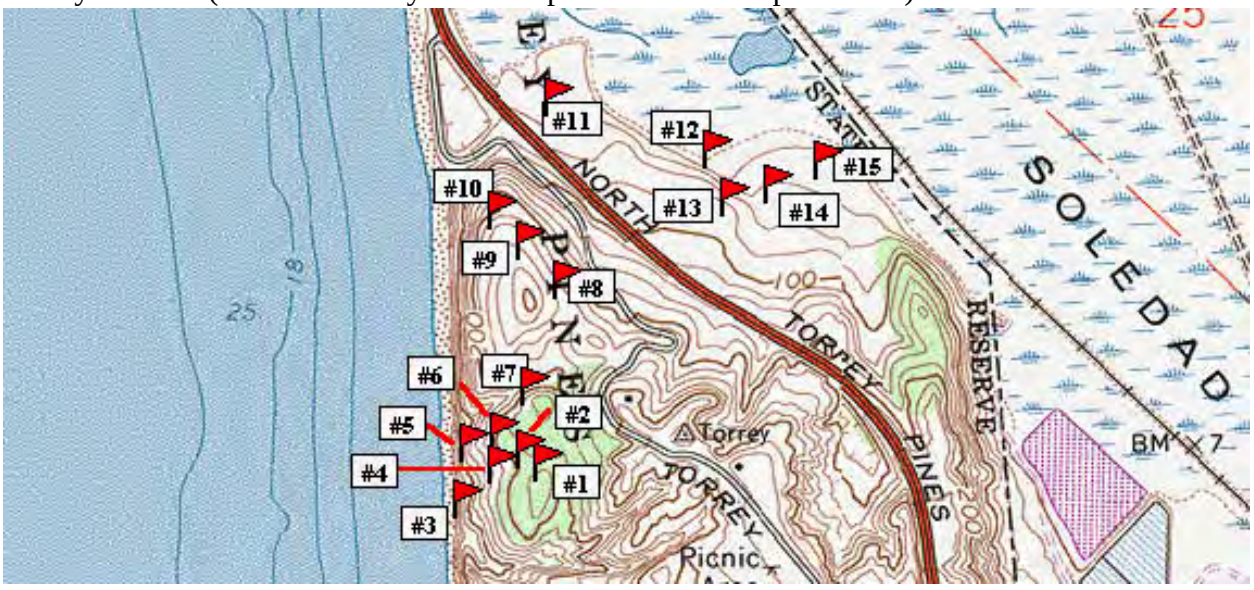
Torrey Pines 1 (see New Torrey Pines map for relative site placement)



Torrey Pines 2 (see New Torrey Pines map for relative site placement)



Torrey Pines 3 (see New Torrey Pines map for relative site placement)



Site: Torrey Pines 1		Array										
Common Name	Scientific Name	1	2	3	4	5	6	7	8	9	10	Total
Black-bellied Slender Salamande	*Batrachoseps nigriventris*											
Pacific Slender Salamander	*Batrachoseps pacificus*	4		9		2	1		1	2	7	26
Arboreal Salamander	*Aneides lugubris*	1		1	1				1			4
Monterey Salamander	*Ensatina escholtzi*											
Large-Blotched Salamander	*E. escholtzi klauberina*											
California Newt	*Taricha torosa*											
California Treefrog	*Hyla cadaverina*											
Pacific Treefrog	*Hyla regilla*	1		2	1	3	1				2	10
Western Toad	*Bufo boreas*											
Arroyo Toad	*Bufo microscaphus*											
Red-Spotted Toad	*Bufo punctatus*											
Red-Legged Frog	*Rana aurora*											
Bullfrog	*Rana catesbeiana*											
African Clawed Frog	*Xenopus laevis*											
Western Spadefoot Toad	*Spea hammondii*											
Western Pond Turtle	*Clemmys marmorata*											
Slider	*Trachemys sp.*											
Western Banded Gecko	*Coleonyx variegatus*											
Granite Night Lizard	*Xantusia henshawi*											
Desert Night Lizard	*Xantusia vigilis*											
California Legless Lizard	*Anniella pulchra*											
Southern Alligator Lizard	*Elgaria multicarinatus*	1	2	1	1	7	12	3	3	1	9	40
Gilbert Skink	*Eumeces gilberti*											
Western Skink	*Eumeces skiltonianus*					1				1		2
Coastal Western Whiptail	*Cnemidophorus hyperythrus*	22	20	6	13	23	17	21	11	14	17	164
Western Whiptail	*Cnemidophorus tigris*	3		1	1	3	10			2	12	32
Desert Spiny Lizard	*Sceloporus magister*											
Sagebrush Lizard	*Sceloporus graciosus*											
Western Fence Lizard	*Sceloporus occidentalis*	19	26	31	19	29	21	14	29	19	36	243
Granite Spiny Lizard	*Sceloporus orcutti*											
Side-Blotched Lizard	*Uta stansburiana*	15	4	3	16	22	12	22	17	17	9	137
Coast Horned Lizard	*Phrynosoma coronatum*	1					1				2	4
Long-Nosed Leopard Lizard	*Gambelia wislizenii*											
Western Blind Snake	*Leptotyphlops humilis*											
Rosy Boa	*Charina trivirgata*											
Glossy Snake	*Arizona elegans*											
Yellow-Bellied Racer	*Coluber constrictor*											
Western Ringneck Snake	*Diadophis punctatus*											
Night Snake	*Hypsiglena torquata*					1		2			1	4
California Kingsnake	*Lampropeltis getulus*			1								1
California Mountain Kingsnake	*Lampropeltis zonata*											
Coachwhip/Red Racer	*Masticophis flagellum*											
Striped Racer	*Masticophis lateralis*	2	6	1	2	2	3	2	1	1	2	22
San Diego Gopher Snake	*Pituophis melanoleucas*				1	1			2		1	5
Long-nosed Snake	*Rhinocheilus lecontei*											
Coast Patch-Nosed Snake	*Salvadora hexalepis*											
California Black-Headed Snake	*Tantilla planiceps*											
Two-striped Garter Snake	*Thamnophis hammondii*											
Common Garter Snake	*Thamnophis sirtalis*											
Lyre Snake	*Trimorphodon biscutatus*											
Speckled Rattlesnake	*Crotalus mitchellii*											
Red Diamond Rattlesnake	*Crotalus ruber*											
Southern Pacific Rattlesnake	*Crotalus viridis*									1	1	2
	Total Individuals:	69	58	56	55	94	78	64	65	58	99	696
	Total Species:	10	5	10	9	11	9	6	8	9	12	15

Site: Torrey Pines 2 Common Name	Scientific Name	1	2	3	4	5	6	7	8	9	10	Total
Black-bellied Slender Salamande	*Batrachoseps nigriventris*											
Pacific Slender Salamander	*Batrachoseps pacificus*	1	11	4	15	6		29	2		4	72
Arboreal Salamander	*Aneides lugubris*					1		1				2
Monterey Salamander	*Ensatina escholtzi*											
Large-Blotched Salamander	*E. escholtzi klauberina*											
California Newt	*Taricha torosa*											
California Treefrog	*Hyla cadaverina*											
Pacific Treefrog	*Hyla regilla*											
Western Toad	*Bufo boreas*											
Arroyo Toad	*Bufo microscaphus*											
Red-Spotted Toad	*Bufo punctatus*											
Red-Legged Frog	*Rana aurora*											
Bullfrog	*Rana catesbeiana*											
African Clawed Frog	*Xenopus laevis*											
Western Spadefoot Toad	*Spea hammondii*											
Western Pond Turtle	*Clemmys marmorata*											
Slider	*Trachemys sp.*											
Western Banded Gecko	*Coleonyx variegatus*											
Granite Night Lizard	*Xantusia henshawi*											
Desert Night Lizard	*Xantusia vigilis*											
California Legless Lizard	*Anniella pulchra*											
Southern Alligator Lizard	*Elgaria multicarinatus*	15	12	5	20	8	9	14	7	5	3	98
Gilbert Skink	*Eumeces gilberti*											
Western Skink	*Eumeces skiltonianus*						6	7	4			17
Coastal Western Whiptail	*Cnemidophorus hyperythrus*	9	37	14	7	27	26	2	11	27	35	195
Western Whiptail	*Cnemidophorus tigris*											
Desert Spiny Lizard	*Sceloporus magister*											
Sagebrush Lizard	*Sceloporus graciosus*											
Western Fence Lizard	*Sceloporus occidentalis*	34	15	22	37	26	29	25	34	38	32	292
Granite Spiny Lizard	*Sceloporus orcutti*											
Side-Blotched Lizard	*Uta stansburiana*	27	32	14	12	35	9	2	31	13	9	184
Coast Horned Lizard	*Phrynosoma coronatum*	1	2	11	6					5	5	30
Long-Nosed Leopard Lizard	*Gambelia wislizenii*											
Western Blind Snake	*Leptotyphlops humilis*											
Rosy Boa	*Charina trivirgata*											
Glossy Snake	*Arizona elegans*											
Yellow-Bellied Racer	*Coluber constrictor*											
Western Ringneck Snake	*Diadophis punctatus*	1	1		1	4	1	1	4			13
Night Snake	*Hypsiglena torquata*						1					1
California Kingsnake	*Lampropeltis getulus*		1		1		3			1		6
California Mountain Kingsnake	*Lampropeltis zonata*											
Coachwhip/Red Racer	*Masticophis flagellum*											
Striped Racer	*Masticophis lateralis*	5	2	2	2	1	3		3	2	1	21
San Diego Gopher Snake	*Pituophis melanoleucas*	1										1
Long-nosed Snake	*Rhinocheilus lecontei*											
Coast Patch-Nosed Snake	*Salvadora hexalepis*											
California Black-Headed Snake	*Tantilla planiceps*											
Two-striped Garter Snake	*Thamnophis hammondii*											
Common Garter Snake	*Thamnophis sirtalis*											
Lyre Snake	*Trimorphodon biscutatus*											
Speckled Rattlesnake	*Crotalus mitchellii*											
Red Diamond Rattlesnake	*Crotalus ruber*											
Southern Pacific Rattlesnake	*Crotalus viridis*		1		1	1						3
	Number of Individuals	94	114	72	102	109	87	81	96	91	89	935
	Number of Species	9	10	7	10	9	9	8	8	7	7	14

Site: Torrey Pines 3																	
Common Name	Scientific Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Black-bellied Slender Salamander	*Batrachoseps nigriventris*																
Pacific Slender Salamander	*Batrachoseps pacificus*	2	3	3	4			18	31	4	3						68
Arboreal Salamander	*Aneides lugubris*				1			2	2								5
Monterey Salamander	*Ensatina escholtzi*																
Large-Blotched Salamander	*E. escholtzi klauberina*																
California Newt	*Taricha torosa*																
California Treefrog	*Hyla cadaverina*																
Pacific Treefrog	*Hyla regilla*							1					1				2
Western Toad	*Bufo boreas*														1	1	2
Arroyo Toad	*Bufo microscaphus*																
Red-Spotted Toad	*Bufo punctatus*																
Red-Legged Frog	*Rana aurora*																
Bullfrog	*Rana catesbeiana*																
African Clawed Frog	*Xenopus laevis*																
Western Spadefoot Toad	*Spea hammondii*																
Western Pond Turtle	*Clemmys marmorata*																
Slider	*Trachemys sp.*																
Western Banded Gecko	*Coleonyx variegatus*																
Granite Night Lizard	*Xantusia henshawi*																
Desert Night Lizard	*Xantusia vigilis*																
California Legless Lizard	*Anniella pulchra*					1											1
Southern Alligator Lizard	*Elgaria multicarinatus*	10	3	5	2	12	9	5	13	7	15	10	11	11	19	23	155
Gilbert Skink	*Eumeces gilberti*																
Western Skink	*Eumeces skiltonianus*	1		1						1		1	6	1	7	15	33
Coastal Western Whiptail	*Cnemidophorus hyperythrus*	19	4	12	15	24	24	14	1	3	1		1		1	1	120
Western Whiptail	*Cnemidophorus tigris*											4	2		1	8	15
Desert Spiny Lizard	*Sceloporus magister*																
Sagebrush Lizard	*Sceloporus graciosus*																
Western Fence Lizard	*Sceloporus occidentalis*	33	51	25	31	14	28	42	10	24	14	17	30	19	16	10	364
Granite Spiny Lizard	*Sceloporus orcutti*																
Side-Blotched Lizard	*Uta stansburiana*	15	13	28	1	31	12	13									113
Coast Horned Lizard	*Phrynosoma coronatum*																
Long-Nosed Leopard Lizard	*Gambelia wislizenii*																
Western Blind Snake	*Leptotyphlops humilis*																
Rosy Boa	*Charina trivirgata*																
Glossy Snake	*Arizona elegans*																
Yellow-Bellied Racer	*Coluber constrictor*														1	1	2
Western Ringneck Snake	*Diadophis punctatus*											1			1		2
Night Snake	*Hypsiglena torquata*			2													2
California Kingsnake	*Lampropeltis getulus*																
California Mountain Kingsnake	*Lampropeltis zonata*																
Coachwhip/Red Racer	*Masticophis flagellum*																
Striped Racer	*Masticophis lateralis*	4	4	4		4	2	3	1	2	1	3	5	3	1	5	42
San Diego Gopher Snake	*Pituophis melanoleucas*	1	1		2	5		3		1		1	2	2			18
Long-nosed Snake	*Rhinocheilus lecontei*																
Coast Patch-Nosed Snake	*Salvadora hexalepis*																
California Black-Headed Snake	*Tantilla planiceps*																
Two-striped Garter Snake	*Thamnophis hammondii*												1				1
Common Garter Snake	*Thamnophis sirtalis*																
Lyre Snake	*Trimorphodon biscutatus*																
Speckled Rattlesnake	*Crotalus mitchellii*																
Red Diamond Rattlesnake	*Crotalus ruber*																
Southern Pacific Rattlesnake	*Crotalus viridis*	1	1	1	1	1		1	1		1	2	1	1	2		14
	Number of Individuals	86	80	81	57	92	75	102	59	42	35	39	60	37	50	64	959
	Number of Species	9	8	9	8	8	5	10	7	7	6	8	10	6	10	8	18

Site Name: Wild Animal Park

Description: This site is located on the only unburned edge of the huge Guejito fire of 1993. The habitat is almost entirely coastal sage scrub except where grassland is growing in some of the burn area. The 20 arrays sample approximately 113 hectares. There is little human traffic, and this site is part of the MSCP planning area.

Start dates for Sample Periods:

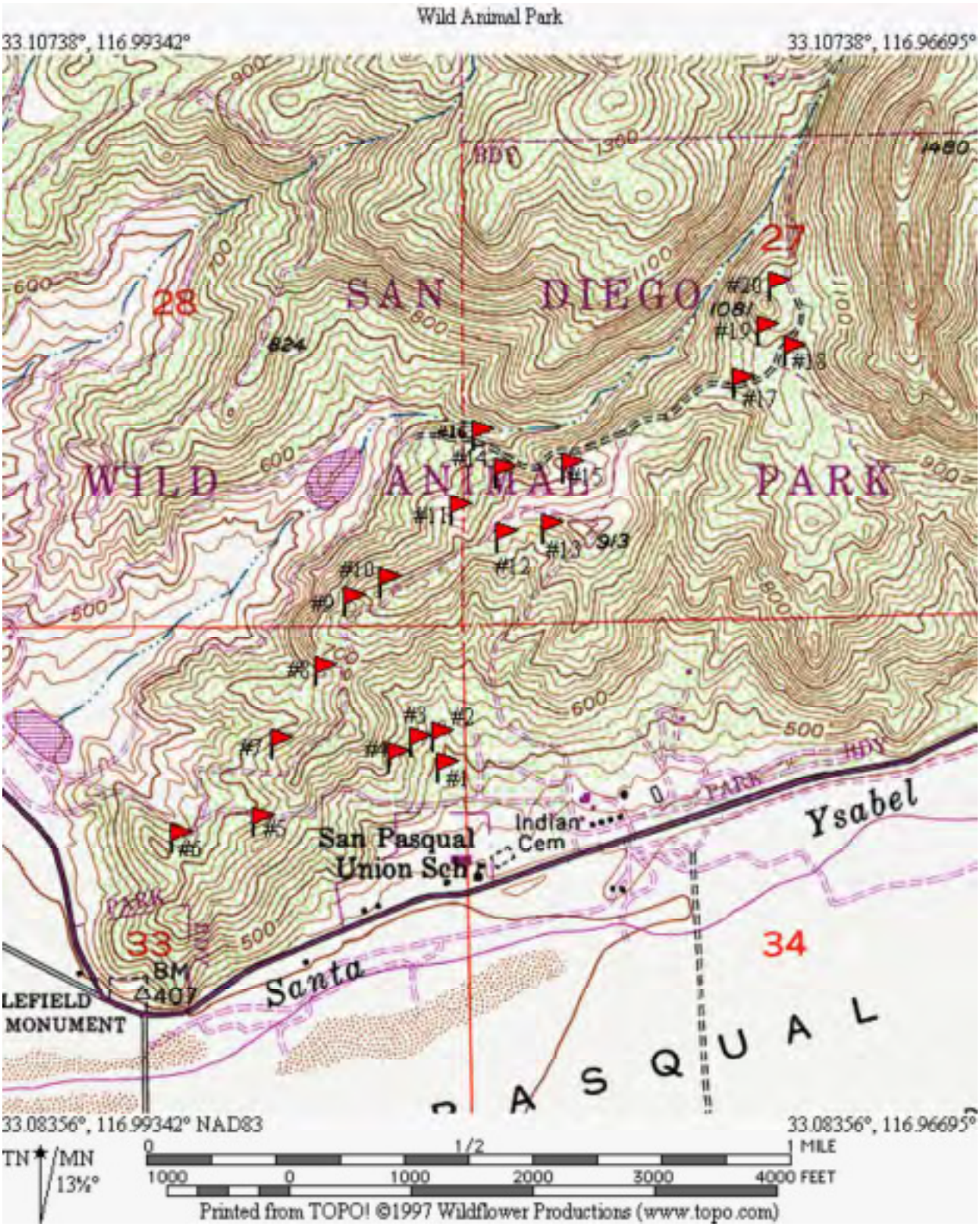
05/11/1995	01/09/1996	02/19/1997	02/19/1998	03/02/1999	01/20/2000
06/11/1995	03/12/1996	04/22/1997	04/20/1998	05/11/1999	03/14/2000
08/01/1995	05/14/1996	06/24/1997	06/23/1998	07/28/1999	05/16/2000
10/03/1995	07/15/1996	09/03/1997	08/25/1998	10/12/1999	08/03/2000
	09/17/1996	10/27/1997	10/27/1998		10/20/2000
	11/18/1996				

Number of Sample Days: 305

Location:

Array	Lat. (N)	Lon. (W)	Lat. (N) dec.	Lon. (W) dec.	Elevation (m)	Datum
1	33°05'27.60"	116°58'54.05"	33.0910000	116.9816806	141	NAD 83
2	33°05'29.90"	116°58'54.48"	33.0916389	116.9818000	146	NAD 83
3	33°05'29.52"	116°58'56.68"	33.0915333	116.9824111	162	NAD 83
4	33°05'28.37"	116°58'58.75"	33.0912139	116.9829861	173	NAD 83
5	33°05'23.40"	116°59'12.06"	33.0898333	116.9866833	201	NAD 83
6	33°05'21.52"	116°59'19.94"	33.0893111	116.9888722	177	NAD 83
7	33°05'29.65"	116°59'10.27"	33.0915694	116.9861861	194	NAD 83
8	33°05'35.57"	116°59'05.90"	33.0932139	116.9849722	191	NAD 83
9	33°05'40.97"	116°59'03.00	33.0947139	116.9841667	237	NAD 83
10	33°05'42.58"	116°58'59.55"	33.0951611	116.9832083	247	NAD 83
11	33°05'48.44"	116°58'52.63"	33.0967889	116.9812861	236	NAD 83
12	33°05'46.07"	116°58'48.18"	33.0961306	116.9800500	242	NAD 83
13	33°05'47.06"	116°58'43.57"	33.0964056	116.9787694	254	NAD 83
14	33°05'51.38"	116°58'48.41"	33.0976056	116.9801139	248	NAD 83
15	33°05'51.68"	116°58'41.68"	33.0976889	116.9782444	254	NAD 83
16	33°05'52.57"	116°58'47.37"	33.0979361	116.9798250	254	NAD 83
17	33°05'58.73"	116°58'24.97"	33.0996472	116.9736028	255	NAD 83
18	33°06'01.52"	116°58'20.05"	33.1004222	116.9722361	254	NAD 83
19	33°06'03.00"	116°58'22.61"	33.1008333	116.9729472	255	NAD 83
20	33°06'06.59"	116°58'21.48"	33.1018306	116.9726333	255	NAD 83

Site: Wild Animal Park Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
Black-bellied Slender Salamander																					
Pacific Slender Salamander	6		1		6	1	1	1	1	3			2	3			3		1	1	30
Arboreal Salamander																					
Monterey Salamander																				1	1
Large-Blotched Salamander																					
California Newt																					
California Treefrog																					
Pacific Treefrog			2										2	1							5
Western Toad	9	5		4		5	4	4	1	2	1	1				1		2	3		42
Arroyo Toad																					
Red-Spotted Toad																					
Red-Legged Frog																					
Bullfrog																					
African Clawed Frog																					
Western Spadefoot Toad									1	2	1	1				2	3	1	5	1	17
Western Pond Turtle																					
Slider																					
Western Banded Gecko							5		2	2	3	4	4	1	1		4				26
Granite Night Lizard					1	1		1	7	1						1	1		2		15
Desert Night Lizard																					
California Legless Lizard		1	3		1	1		1	2							1	1				11
Southern Alligator Lizard		1	1		5	2	1	5	7	6	3	2	2	4	7	4	1	1			52
Gilbert Skink	2	2	2	1		1	6	43	13	7	6	2	1	3	6	1	5	4	10	11	126
Western Skink	5	2	1	2	1	4	5	18	24	17	9	5	3	6	29	12	7	26	8	17	201
Coastal Western Whiptail	237	168	164	276	136	280	163	91	158	173	106	187	136	111	92	73	181	86	185	156	3159
Western Whiptail	3				7	1					1	16	32	6	7	17	28	26	56	32	232
Desert Spiny Lizard																					
Sagebrush Lizard																					
Western Fence Lizard	7	7	5	4	5	4	1	7	2	5	14	12	20	18	59	18	64	72	54	49	427
Granite Spiny Lizard	3	1				2	2	3	14	2	1		1	2	1	1	30	4			67
Side-Blotched Lizard	9	7	7	13	1	2	7	4	17	9	1	19	32	3	14	8	41	8	60	23	285
Coast Horned Lizard	1	3	5	26	3		1		2	8	7	31	6	3	4	2	2	5	16	8	133
Long-Nosed Leopard Lizard																					
Western Blind Snake	4	3	3	2		6	12			4			2	1	1		1	1	4	1	45
Rosy Boa			1	1	1				1						1		2	1			8
Glossy Snake																					
Yellow-Bellied Racer																					
Western Ringneck Snake		1					1	3	1				1								7
Night Snake									1												1
California Kingsnake	2	2		1		3	1	2	4	1	4	1	1	2	6		3	3	2	2	40
California Mountain Kingsnake																					
Coachwhip/Red Racer	1					1			1										2		5
Striped Racer	10	7	2	6	3	6	7	7	6	8	9	2	7	2	5	7	4	1	10	8	117
San Diego Gopher Snake	1	2		2		1	2	2	2	3	1		1	1	1	1	2	4	1	1	28
Long-nosed Snake							2	2						1			1		2	4	12
Coast Patch-Nosed Snake	1		1	1	2					1	2	3	5	4	1		5	1	3	2	32
California Black-Headed Snake						6		6	2	3			2		1						20
Two-striped Garter Snake											1										1
Common Garter Snake																					
Lyre Snake								1													1
Speckled Rattlesnake										1							1				2
Red Diamond Rattlesnake	1	1	1	1	3	2		1	6			2		1	1	2	3		1	4	30
Southern Pacific Rattlesnake							1			1								2	1	3	8
Number of Captures:	302	213	199	341	175	329	222	202	275	259	170	288	260	173	237	151	393	248	426	325	5188
Number of Species:	17	16	15	14	14	19	18	19	23	21	17	15	19	19	18	16	23	18	20	18	33


Wild Animal Park
33.10738°, 116.99342°
33.10738°, 116.96695°
SAN DIEGO
WILD ANIMAL PARK
28
27
33
34
#1
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San Pasqual Union Sch
Indian Cem
Ysabel
Santa
PARK
BM 2407
LEFIELD MONUMENT
33.08356°, 116.99342° NAD83
33.08356°, 116.96695°
TN 13¾° MN
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1000 0 1000 2000 3000 4000 FEET
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