

**Western Riverside County
Multiple Species Habitat Conservation Plan (MSHCP)
Biological Monitoring Program**

Nocturnal Lizard Survey Report 2008



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NOTE TO READER:

This report is an account of survey activities undertaken by the Biological Monitoring Program for the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The MSHCP was permitted in June 2004. The Biological Monitoring Program monitors the distribution and status of the 146 Covered Species within the Conservation Area to provide information to Permittees, land managers, the public, the California Department of Fish and Game, and the U.S. Fish and Wildlife Service. Monitoring Program activities are guided by the MSHCP species objectives for each Covered Species, the information needs identified in MSHCP Section 5.3 or elsewhere in the document, and the information needs of the Permittees.

We would like to acknowledge the land managers in the MSHCP Plan Area, who in the interest of conservation and stewardship facilitate Monitoring Program activities on the lands for which they are responsible. A list of the lands where this year's data collection activities were conducted is included in Section 7.0 of the Western Riverside County Regional Conservation Authority (RCA) Annual Report to the Wildlife Agencies.

Partnering organizations and individuals contributing data to our projects are acknowledged in the text of appropriate reports. We would especially like to acknowledge the Santa Ana Watershed Association, the Center for Natural Lands Management, and the Orange County Water District for their willingness to initiate or modify their data collection to complement our survey efforts in 2008.

While we have made every effort to accurately represent our data and results, it should be recognized that our database is still under development. Any reader who would like to make further use of the information or data provided in this report should contact the Monitoring Program to ensure that they have access to the best available or most current data. All Monitoring Program data, including original datasheets and digital datasets are stored in the Monitoring Program office in downtown Riverside, CA.

The primary authors of this report were the 2008 Herpetology Program Lead, Robert Packard and Staff Biologist, Sinlan Poo. If there are any questions about the information provided in this report, please contact the Monitoring Program Administrator. If you have questions about the MSHCP, please contact the Executive Director of the RCA. For further information on the MSHCP and the RCA, go to www.wrc-rca.org.

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INTRODUCTION

Nocturnal lizard survey efforts focused on the 2 covered nocturnal lizard species in the Plan Area: the granite night lizard (*Xantusia henshawi henshawi*; “XAHE”) and the San Diego banded gecko (*Coleonyx variegatus abbotti*; “COVA”). The species objective for both species is to maintain (once every 8 years) the continued use of 75 percent of the listed Core Areas (Dudek and Associates 2003).

Surveys in 2008 focused on documenting presence of XAHE and COVA within their Core Areas and other areas with potentially suitable habitat in the Conservation Area. The species objectives, suitable habitat, and MSHCP-identified Core Areas for each species are described under each species section below. The following were the overall survey goals for 2008:

Survey Goals:

- A) Document presence of XAHE and COVA in as many species-specific Core Areas and potential habitats as possible (Table 1).
- B) Train personnel in nocturnal lizard survey procedures and refine protocol to optimize methods for future surveys.
- C) Provide data to land managers about the distribution of XAHE and COVA in the Conservation Area for use in management decisions.

Granite Night Lizard (*Xantusia henshawi henshawi*)

The granite night lizard is a California species of special concern. It is typically associated with areas of massive rocks, rock outcrops, and flaking granite, primarily within chaparral vegetation (Lee 1973, 1975), but can also be found in desert and woodland (Zeiner et al 1988).

Within the Plan Area, XAHE is known to inhabit areas around San Jacinto, Sage, Winchester, and Cactus Valley. The species objectives for XAHE require the conservation of 9 Core Areas in the MSHCP Conservation Area: 1) Lake Skinner-Diamond Valley Lake, 2) San Jacinto Wildlife Area-Lake Perris, 3) Badlands, 4) Potrero Valley, 5) Banning Bench, 6) Sage/Vail Lake/Wilson Valley, 7) Agua Tibia Mountains, 8) San Jacinto Mountains, and 9) Anza Valley.

San Diego Banded Gecko (*Coleonyx variegatus abbotti*)

The San Diego banded gecko is a state species of special concern. It is a microhabitat generalist and occurs in a wide variety of sage scrub and chaparral vegetation communities where suitable cover exists. In these areas it is associated with granite outcrops and boulder fields containing ground debris.

The species objectives for COVA require the conservation of 7 Core Areas and linkages between Core Areas in the MSHCP Conservation Area: 1) San Jacinto foothills, 2) Lake Skinner-Diamond Valley Lake, 3) Lake Mathews-Estelle Mountain, 4) San

Table 1. Core Area designation by species (denoted with ‘X’) and whether area was surveyed in 2008. When a species was found within one of the surveyed locations, the box is shaded.

| Survey Areas | XAHE | COVA | # of Grids Surveyed |
|---------------------------------------|------|----------------|---------------------|
| Agua Tibia Mountains | X | - | 1 |
| Anza Valley | X | - | 7 |
| Badlands | X | X | 9 |
| Banning Bench | X | - | 2 |
| Lake Mathews-Estelle Mountain | - | X | 1 |
| Lake Skinner-Diamond Valley Lake | X | X | 7 |
| Potrero Valley | X | - | 5 |
| Sage/Vail Lake/Wilson Valley/Aguanga | X | X | 8 |
| San Jacinto Foothills | - | X | 2 |
| San Jacinto Wildlife Area-Lake Perris | X | X ^b | 7 |
| San Jacinto Mountains | X | - | 2 |
| Santa Ana Mountains | - | X | 0 |
| Box Springs ^a | - | - | 3 |
| Lakeview Mountains ^a | - | - | 2 |
| Motte/Rimrock ^a | - | - | 2 |
| Paloma Valley/Hogbacks ^a | - | c | 0 |

^a Not a listed Core Area for either species

^b Species record from Santa Ana Watershed Association herp array surveys

^c Species record from diurnal reptile surveys

Jacinto Wildlife Area-Lake Perris, 5) Badlands, 6) Santa Ana Mountains, and 7) Sage/Vail Lake.

METHODS

Protocol Development

We based our survey protocol (Appendix A) on an internally-developed diurnal reptile survey protocol. That protocol was modified from visual encounter survey methods detailed in Crump and Scott (1994). Our protocol focused on documenting the presence of Covered Species in their respective Core Areas.

Personnel and Training

Crew members were trained by the Herpetology Program Lead on survey techniques and species identification. Training consisted of in-house field study of the local reptile fauna, using identification materials developed by Monitoring Program staff along with local and national field guides. All crew were also trained in the field by the

Herpetology Program Lead and other trained staff. Monitoring Program biologists and Santa Ana Watershed Association (SAWA) volunteers conducting nocturnal lizard surveys in 2008 included the following:

- Robert Packard, Herpetology Program Lead (Regional Conservation Authority)
- Masanori Abe (Regional Conservation Authority)
- Betsy Dionne (Regional Conservation Authority)
- Ariana Malone (Regional Conservation Authority)
- Sinlan Poo (Regional Conservation Authority)
- Rika Setsuda (California Department of Fish and Game)
- Jonathan Reinig (California Department of Fish and Game)
- Nathan Zalik (Regional Conservation Authority)
- Michael Zerwekh (Regional Conservation Authority)
- Melody Aimar (Santa Ana Watershed Association Volunteer)
- Allyson Beckman (Santa Ana Watershed Association Volunteer)
- Jill Coumoutso (Santa Ana Watershed Association Volunteer)
- Nicole Peltier (Santa Ana Watershed Association Volunteer)
- Terry Reeser (Santa Ana Watershed Association Volunteer)

Survey Methods

Survey activities were primarily focused on Core Areas for the 2 target species. We divided the Plan Area into 250-m × 250-m plots using ArcGIS (ESRI 2006) and used Google Earth to locate large rock outcrops within the Conservation Area. At least 2 surveyors simultaneously conducted nocturnal visual encounter surveys (using head lamps, flash lights, and high-intensity discharge bicycle lights manufactured by Nite Rider Technical Lighting Systems in San Diego, CA) between approximately 1700 h and 2300 h within selected plots. Survey activities were focused on large rock outcrops with crevices and/or flaking granite slabs within each plot.

We conducted surveys between 27 August and 10 December 2008. For each plot surveyed, we recorded the date, observer, location, plot number, and general weather description. In addition, at the start and end of each survey, we recorded the ambient air temperature and average wind speed. When possible, we identified all reptile species and recorded observations for each individual Covered Species encountered. For non-covered species, we only recorded habitat and behavioral observations for the first encounter of each life stage (i.e., juvenile, adult) but noted the number of individuals of each life stage seen within a plot. Survey time per site varied from 27 minutes to 2 hours and 20 minutes, averaging 1.2 hours, according to the habitat conditions and the presence and abundance of Covered Species. Detailed survey methods can be found in the *Western Riverside County MSHCP Biological Monitoring Program Protocol for Nocturnal Lizard Species 2008* (Appendix A).

RESULTS

We conducted 55 nocturnal lizard surveys in 10 Core Areas and 4 additional areas with suitable habitat in 2008 (Table 1). This included surveys in all Core Areas for XAHE and 6 of 7 Core Areas for COVA. A total of 129 XAHE were detected in 6 of 9 Core Areas (67%) and 2 non-core areas (Figure 1), while 5 COVA were detected in 2 of 7 Core Areas (29%) and 2 non-core areas (Figure 2). Two of the reported COVA detections were made during separate survey activities. Due to access limitations in U.S Forest Service Wilderness Areas, the survey in the Agua Tibia Mountains was conducted during daylight hours. A total of 189 reptiles of 8 different species were detected.

DISCUSSION

The 2008 nocturnal lizard survey efforts by the Monitoring Program focused on locating XAHE and COVA in their respective Core Areas and in other areas with suitable habitat within the Conservation Area. The methods used (nocturnal visual encounter surveys) were fairly simple, and these methods proved very effective at locating XAHE, but not COVA. Other methods, such as distributing and checking artificial cover, may be more appropriate for surveying for COVA.

We surveyed all 9 Core Areas and 4 non-Core Areas for XAHE, and observed it in 6 Core Areas and one non-core area (Figure 1). XAHE was not found in the Banning Bench, Badlands, or Lake Skinner Core Areas. The species objective was not met for XAHE, as 1 more occupied Core Area is needed to meet the 75% threshold of the objective. Two of the Core Areas where they were not found, the Badlands and the Banning Bench, have little or no appropriate habitat for XAHE and should be reconsidered as Core Areas for this species. The Banning Bench area is also out of the species's known range (Lovich 2001). Other areas such as the Lakeview Mountains have suitable habitat where XAHE were found in good numbers (25 in 2 plots). Also, the large Core Area of Sage/Wilson Valley/Vail Lake should include the Aguanga area and areas to the east including Iron Springs, Beauty Mountain, and Anza Borrego Desert State Park (Santa Rosa Mountains Core). These areas should be considered for inclusion as Core Areas for XAHE, as they have abundant rock outcrops, are in the center of the species's range, and are surrounded by areas with XAHE detections. The Southwestern Riverside County Multiple Species Reserve (MSR) around Lake Skinner is also a Core Area, and has large areas of suitable habitat, but no XAHE were found during 4 nights covering 7 plots. USGS-operated herp arrays in 3 different areas at the MSR in 1995 and 1996 were also unsuccessful in locating XAHE in this region (Fisher and Case 1999). According to some range maps (Lovich 2001), the MSR is out of the species's range. There is appropriate habitat between the MSR and other areas that XAHE inhabit, so the reason for not detecting them here is unknown. Surveys were also done in non-core areas that are just outside of the species's reported range, yet have suitable habitat. These areas include the Box Springs and Motte Rimrock Preserves. No XAHE were found in these areas.

Fig 1. Granite night lizard (XAHE) detections in 2008.

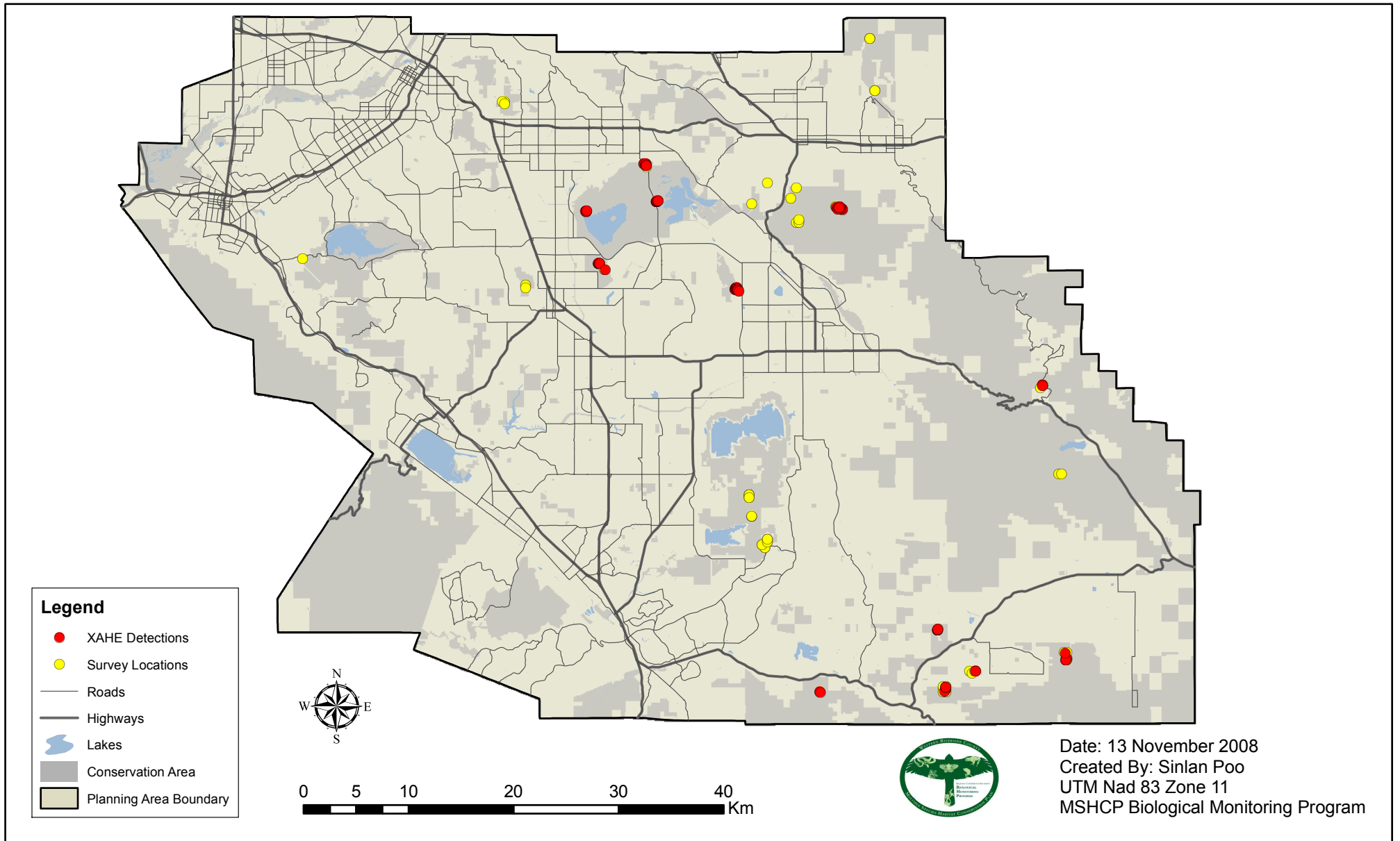
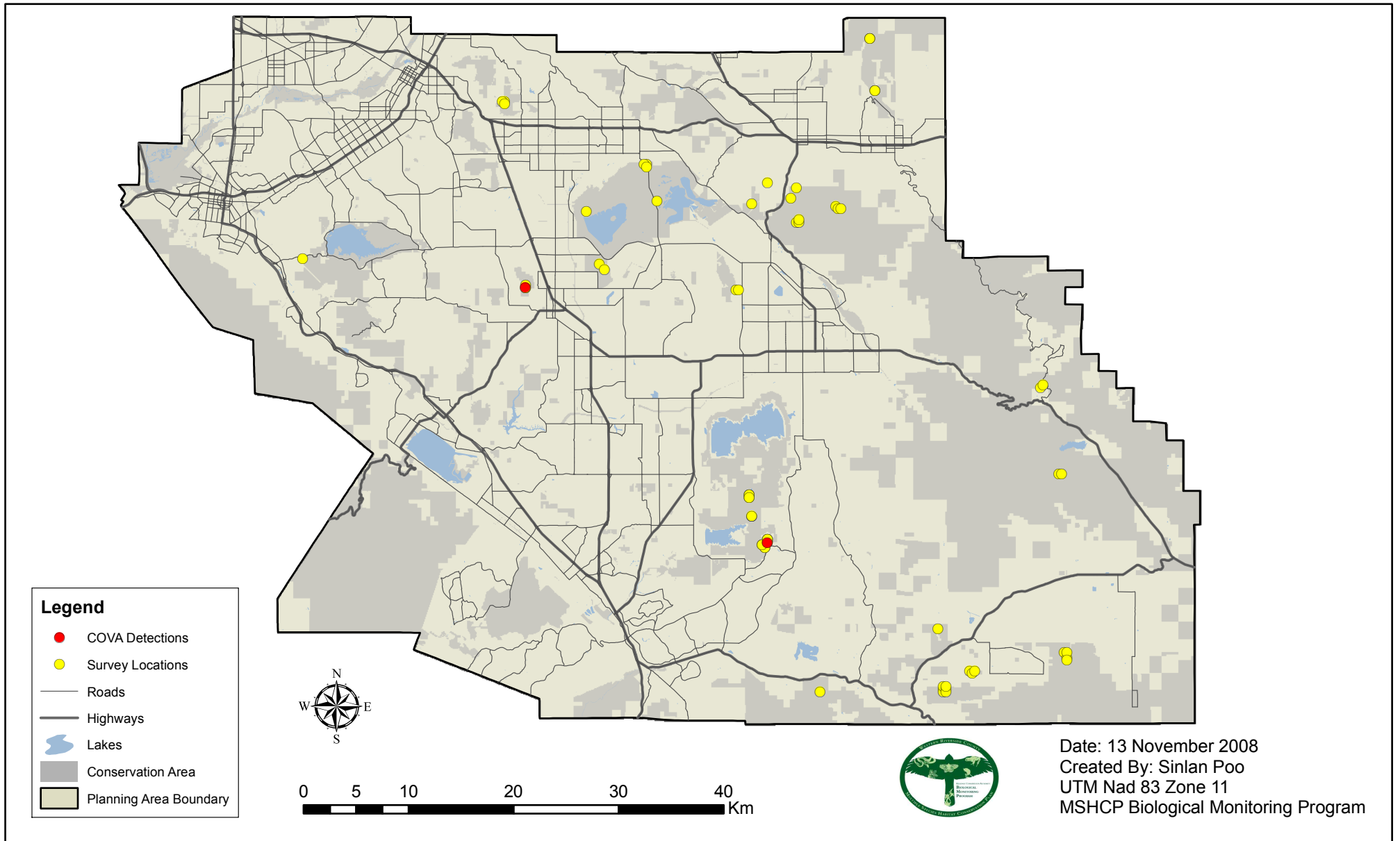


Fig 2. San Diego Banded Gecko (COVA) detections in 2008.



Generally, when present, XAHE are not difficult to find at night. In areas where they are known to occur, and in proper habitat, they are usually found within the first 30 minutes of searching a plot. In these cases, many (10-25) individuals will usually be found within each plot. Thus we feel that our survey strategy for 2008 surveys was appropriate for this species.

We surveyed 6 of 7 Core Areas for COVA, as well as 3 non-core areas. COVA were found in 2 Core Areas and 2 non-core areas (Figure 2). The species objective was not met, with only 28.6 percent of Core Areas found to be occupied. COVA were found only twice during nocturnal surveys, with just 2 individuals detected. One additional COVA was detected at Lake Perris in a herp array operated by the Santa Ana Watershed Association, while another at the Paloma Valley/Hogbacks Core Area was found during our diurnal terrestrial herp surveys. Most authors cite rock outcrops (which were abundant in our survey areas) as the preferred habitat of COVA; therefore, the fact that so few COVA were found in these areas is unexplained.

Recommendations for Future Surveys

Surveys for both COVA and XAHE species should continue in order to more precisely describe these species' ranges and to determine if they reside in Core Areas in which they have not yet been found. Surveys for XAHE should also be done in non-core areas in appropriate habitat to find areas to replace those Core Areas where there is little appropriate habitat. If time and personnel are available, standardized surveys should be done, especially for COVA, to determine distribution, abundance, behavior patterns, and habitat preferences. A presence/absence analysis should also be done that includes a detection probability estimate.

Behavioral observations by our crew indicate that some of the literature on XAHE may be misleading, if not erroneous. Our surveys were not designed to study behavior patterns, but we feel that more work needs to be done in this area. With over 120 observations we feel that some references about their ecology (e.g., diurnality, habitat use, etc.) should be reexamined.

Alternative survey methods are probably more appropriate for locating COVA, as we had little success detecting them during nocturnal surveys. Herp arrays have proven a useful tool for finding COVA (Fisher and Case 1999), but require a more substantial investment in personnel and equipment. Using artificial cover may be a less labor-intensive and more cost-effective method of surveying for this species.

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Appendix A. Western Riverside County MSHCP Biological Monitoring Program Protocol for Nocturnal Lizard Species 2008.

Goals: To locate granite night lizard (*Xantusia henshawi henshawi*) and San Diego banded gecko (*Coleonyx variegatus abbotti*) in MSHCP Core Areas and other areas with suitable habitat in the MSHCP Conservation Area.

Potential locations should be scouted for large rock outcrops with crevices and/or flaking granite slabs. This can be facilitated by checking the rock layer in ArcGis on the m:drive, Google Earth, or by visual assessments. Make sure you determine that the grid is in the MSHCP access area. Take GPS waypoints of all potential locations. Download grid points to your GPS unit before leaving the office.

One should arrive at the location well before dusk to scout out potential rock outcrops and to determine the layouts of the grids you choose to survey. Surveys must be done by at least two people for every grid square. Participants should stay within earshot of one another and carry portable radios. When at the location, navigate to one of the corner points of the grid you wish to monitor. Determine the best way to navigate through the grid, staying in appropriate habitat.

Surveys should start at local sunset with temperatures above 10 degrees C. At the start of the survey take weather data, including start time, sky code, moon phase, wind average and maximum in km/hr, and temperature in degrees C. Also record location, grid number, and observers.

Use NiteRider TM HID lights while surveying. Flashlights and headlamps can also be helpful while surveying. Search slowly and carefully on rock surfaces for the eye shine of lizards. Keep the NiteRider light as close as possible to eye level to facilitate seeing the eye shine. If no lizards are found on the rock surfaces examine all cracks and crevices of the outcrop for lizards and/or snakes. Do not break off or try to lift any rock slabs from the outcrop or the ground. This could potentially destroy the habitat/home of these rock obligates. Record all species of reptile found. Take a GPS waypoint for all locations of Covered Species and record all information for every individual. For all non-covered species, record the number seen inside the grid square for each age class, but for all of the other information only record it for the FIRST animal encountered. Any reptile skins found should be carefully removed and put into a plastic sampling bag to be brought back to the office for identification. A GPS waypoint should be taken for all skins found.

If possible, photograph any Covered Species or unusual specimens. Download the photos at Projects\Herps\Nocturnal Lizards\NoctLizardPhotos. Label the photos with date, photographer initials, and photo file number (ex. 20081125_RHP_362). Don't forget the jpg. If there is more than one photo of the same species in the same grid just add a number to the species code, e.g. COVA1_ etc.

In Notes record any unusual behaviors or physical irregularities of the reptiles, moonrise/set if applicable, condition of the habitat, disturbance, mammals, amphibians etc. seen, or Covered Species seen outside the time or area of the grid square.

When the grid survey is complete, record the end time, temperature, moon phase and wind speed again. Continue surveys for at least three hours after local sunset or until local temperatures fall below 10 degrees C.

Potential dangers:

Walking through grass/scrub/chaparral at night can be dangerous due to the difficulty in seeing any rattlesnakes. Snake gaiters, a strong headlamp or flashlight, and a good degree of caution are highly recommended. When checking crevices you should make sure to check for snakes/spiders/etc. both on the ground and in the crevices before getting too close. Black Widows (*Latrodectus* sp.) are nocturnal, and often use the rock crevices to build their webs. Be especially careful when searching these crevices. Gloves are recommended.

Some of the rock outcrops we will be surveying are quite large and on steep slopes, and one can easily lose one's perspective at night. Always scan the area before surveying, and use caution and common sense when climbing on or around large boulders. If the outcrop appears too dangerous in any way, do not conduct surveys there.

Please stay in earshot of your partner(s) and determine a meeting place/point to meet at the end of the survey. Make sure to take the Motorola portable radios, and keep them turned on in case you get separated. Take a GPS waypoint of the vehicle to facilitate your return.

When you return to the office, you must call your crew leader to confirm that you have returned safely, or, if there are two groups out, at least one person must wait for the last crew out to return.

Equipment:

- | | |
|---|--------------------|
| MOAB NiteRider HID lights (Make sure batteries are charged) | Maps |
| Flashlights | Species code sheet |
| Extra batteries | Sampling bags |
| Snake gaiters (Highly recommended!) | Field Guides |
| Snakestick (Optional) | Pen/Pencil |
| GPS unit (with grid points downloaded) | Food, water, etc. |
| Camera | Clipboard |
| Kestrel | Gloves |
| Datasheets | Portable radios |