2010 ANNUAL WILDLIFE MONITORING REPORT
for the
KERN WATER BANK

SUBMITTED TO:

KERN WATER BANK AUTHORITY

PREPARED BY:

svb
south valley biology consulting llc

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Submitted to:

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Table of Contents

List of Figures

1.0 INTRODUCTION

This report documents the results of the 2010 annual wildlife monitoring activities conducted at the Kern Water Bank (KWB). On behalf of the Kern Water Bank Authority (KWBA), biologists from South Valley Biology Consulting LLC (SVB) conducted all monitoring activities.

As identified in the KWBA Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) (Section IV-6), the annual and bi-annual monitoring consisted of the following activities:

- San Joaquin kit fox (*Vulpes macrotis mutica*) monitoring

  Nighttime spotlighting surveys to document the presence of San Joaquin kit fox, its predators and competitors, such as coyote (*Canis latrans*), red fox (*Vulpes vulpes*), and bobcat (*Lynx* rufus*),* as well as several other nocturnal animals on the KWB.

- Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*) monitoring

  Trapping surveys on two established trapping grids to assess known population areas of Tipton kangaroo rats on the KWB.

- San Joaquin woollythreads (*Monolopia congdonii*) and other rare plant species monitoring

2.0 SAN JOAQUIN KIT FOX MONITORING

2.1 Introduction

San Joaquin kit fox monitoring at the KWB in 2010 consisted of nighttime spotlighting surveys conducted on an established route located throughout the KWB. These surveys are conducted annually in an effort to provide an index of San Joaquin kit fox presence. Data collected from the surveys have proven useful in supplying insights into the densities of not only kit foxes, but also their predator and competitor species within the boundaries of the KWB. The main predator/competitor species for the San Joaquin kit fox on the KWB is the coyote and bobcat. Another species that is occasionally observed on the KWB is the red fox, although no red foxes have been observed during the nighttime spotlighting surveys for several years now. American badger (*Taxidea taxus*) is also occasionally observed on the KWB.

2.2 Methodology

Lesser-travelled areas of the established nighttime spotlighting route are routinely driven and sometimes walked during daylight hours prior to conducting the nighttime spotlighting surveys as a precautionary measure. This was done once again in 2010, primarily for safety reasons, but also to help identify areas where more suitable habitats for San Joaquin kit fox are located. Only minor hazards were observed and no significant obstructions were encountered. Therefore, no alterations to the established spotlighting route were required. Figure 1 provides an illustration of the 2010 survey route.

Nighttime spotlighting surveys were conducted for six nights during the evening hours. Surveys commenced at or immediately after dusk and most surveys generally took about 3 to 4 hours to complete. Survey dates included September 7th, November 9th, 10th, 19th, and 26th, and December 28th. Because the established survey route is just over 50 miles in length, it was divided into roughly two equidistant portions totaling approximately 25 miles each (Figure 1). The East Route consisted of all portions lying east of Enos Lane (a.k.a. Highway 43) and an approximately 6-mile stretch lying west of Interstate 5 and south of the Kern River. The other route, referred to as the West Route, encompassed all remaining portions of the established route that lie west of Enos Lane. Both routes were surveyed equally over the six nights, yielding approximately 150 miles of nighttime spotlighting surveys conducted during this survey effort on the KWB in 2010.

Two biologists conducted the surveys while travelling in a vehicle at approximately 5-10 miles per hour. Each biologist used a 3-million candlepower hand-held spotlight to observe wildlife. Double counting of observations was avoided by both observers maintaining a constant communication while surveying. Observations of all animal species were recorded onto standardized field data sheets. The data sheets were later compiled into a Microsoft Access® database. All San Joaquin kit fox observations and observations of kit fox predator and competitor species, such as coyote and bobcat were recorded onto a field map at the time of the survey and then compiled into the database at a later date.

2.3 Results

Results from the nighttime spotlighting surveys are presented in Figure 2. The locations of San Joaquin kit fox and competitor/predator species observations are presented in Figure 1.

No San Joaquin kit fox observations were made during the 2010 spotlighting surveys.

A total of 46 coyote observations were made during the surveys. All observations were of adults. Most observations consisted of a single individual (33 observations), with the remaining 13 observations consisting of from 2 to 4 individuals in a single group (Figure 1).

Four bobcat observations were made during the 2010 nighttime spotlighting surveys. All observations were of lone adults.

Other notable mammalian species observed during the 2010 nighttime spotlighting surveys were: 575 desert cottontails (*Sylvilagus audubonii*), 177 black-tailed jackrabbits (*Lepus californicus*), 565 kangaroo rats (*Dipodomys* ssp.), 2 raccoons (*Procyon lotor*), and 5 striped skunks (*Mephitis mephitis*).

A total of 25 barn owls (*Tyto alba*), 5 great horned owls (*Bubo virginianus*), and 7 burrowing owls (*Athene cunicularia*) were observed throughout the KWB during the 2010 nighttime spotlighting surveys. Several other bird species including American coot (*Fulica* americana*),* American white pelican (*Pelecanus erythrorhynchos*), black-crowned night heron (*Nycticorax nycticorax*), California quail (*Callipepla californica*), great egret (*Casmerodius albus*), snowy egret (*Egretta thula*), killdeer (*Charadrius vociferus),* loggerhead shrike (*Lanius ludovicianus*), and lesser nighthawk (*Chordeiles acutipennis*), were also observed during the surveys.

2.4 Discussion

No problems or difficulties with the surveys were encountered in 2010. Views were unobstructed and no changes in methodologies of the nighttime spotlighting surveys were required. In general, the 2010 results were much different than what was observed in 2009, with significantly higher numbers of most species reported. Rainfall was significantly higher during the 2010 season and the responding vegetation provided a much higher seed crop for granivores and other prey species (e.g., the 565 kangaroo rat observations were among the highest ever reported on the KWB). Successful predators such as coyotes were able to exploit the abundant prey and increase their numbers. Unfortunately, a similar increase in kit fox observations was not observed.

The coyote population exploded in 2010 to surpass the all-time high number of observations made in 2006 (Quad Knopf 2007). In 2006, 39 coyote observations were made during the nighttime spotlighting surveys, while in 2010 46 observations were made. Additionally, only 25 coyote observations were reported in 2009 (SVB 2010); therefore, the 46 observations in 2010 represents an 84% increase in just one year. The coyote is a very highly adaptable canid and is also a known predator of kit fox. Kit foxes are not commonly observed on the KWB, but they are observed occasionally in the compatible habitat and conservation bank lands on the KWB. Such a high population of coyotes undoubtedly puts pressures on kit foxes in the form of both increases predation and competition for prey.

Bobcats are not numerous at the KWB but they are seen every year during the nighttime spotlighting surveys and also during other monitoring activities. Areas along the KWB Canal and other areas along the Kern River continue to be where most observations are made. Habitat conditions in those areas are very suitable for this species.

3.0 TIPTON KANGAROO RAT MONITORING

3.1 Introduction

Tipton kangaroo rat monitoring at the KWB consists of annual trapping surveys conducted at two permanently established trapping grids. The Strand Grid is located in the northwest ¼ of Section 7, Township 30 South, Range 26 East, and the Taft Highway Grid is located in the northeast ¼ of Section 36, Township 30 South, Range 25 East (Figure 1).

The Taft Highway Grid was not trapped in 2010. The HCP/NCCP specifies that the grids are to be located in areas that are known to support Tipton kangaroo rats. In fact, there is some question as to when the last Tipton kangaroo rat was trapped at the Taft Highway Grid. Prior discussions with USFWS and CDFG concerning the rationale of continuing trapping at the Taft Highway Grid have led to a consensus that it may be better to look elsewhere on the KWB for establishing a permanent trapping grid to monitor Tipton kangaroo rats. SVB conducted an investigative trapping effort in an area known as the Southeast Area of the KWB (i.e., the northwest 1/4 of Section 33, Township 30 South, Range 26 East), in habitat that we considered to be among the most promising to support Tipton kangaroo rats.

3.2 Methodology

The Strand Grid is a standard 110-meter by 110-meter, 144 station, small mammal trapping grid. Each grid consists of twelve equidistant rows, spaced 10 meters apart. Monitoring efforts at the grid consisted of four successive nights of trapping. Trapping was conducted on September 28th, 29th, and 30th, and October 1st. This technique yielded a total of 288 trap nights.

A Sherman live trap was placed at each trap location and was baited using a millet-based seed mix. A wadded paper towel was also included in each trap in an effort to provide insulation material for the captured animals. The traps were baited and set in the evening and checked prior to sunrise the following morning. Two biologists worked independently on separate trap rows and checked 72 traps each morning. This technique was utilized in an effort to help reduce the handling time and minimize stress to the captured animals. Each captured animal was identified to species and their weight, age and sex were also recorded onto a standardized data sheet. After all data were collected and recorded, the animal was temporarily marked on its abdomen with a non-toxic ink marker prior to being released.

Investigative trapping at the proposed new grid location in the Southeast Area consisted of identifying high quality habitat with an abundance of suitably-sized burrows, tail drags, and scat that would indicate a high potential for Tipton kangaroo rat presence. Once a site was chosen, trapping was planned to be conducted for four successive

nights or until at least one Tipton kangaroo rat was captured, whichever occurred first. A total of 64 traps were set and baited the first night on September 7th.

3.3 Results

Results from the 2010 Tipton kangaroo rat monitoring are summarized in Figure 3.

No Tipton kangaroo rats were captured at the Strand Grid in 2010. Other animals trapped at the Strand Grid were as follows: A total of 78 individual Heermann's kangaroo rats (*Dipodomys heermanni*), one Tulare grasshopper mouse (*Onychomys torridus tularensis*), and 16 deer mice (*Peromyscus maniculatus*).

As has been done in prior years, no attempt to handle deer mice was made, all individuals were released immediately after identification. Therefore, it should be noted that the 16 total deer mice captured also includes recaptures.

The investigative trapping effort at the Southeast Area yielded 7 Tipton kangaroo rats on only the first night. Since this was an investigative effort to determine a suitable new grid location, no further trapping was conducted and a permanent trapping grid was established at the location (Figure 1).

3.4 Discussion

The Tipton kangaroo rat population at the Strand Grid has always been very small in number and it is not uncommon to catch no individuals at this grid. The four individuals trapped at the Strand Grid in 2009 were the most ever recorded (SVB 2010); however, no Tipton kangaroo rats were trapped in 2008, or 2007 and only two individuals were trapped in 2006 (Quad Knopf 2007).

The Heermann's kangaroo rat population at the Strand Grid has experienced increases over the past three season beginning in 2008 when 22 individuals were trapped, then 37 individuals in 2009, to 78 trapped in 2010. The livestock grazing program at KWB is designed to help control excessive growth of annual non-native herbaceous species and prevent areas from becoming so densely vegetated that kangaroo rats are unable to survive. The program has had a positive effect on kangaroo rats at KWB by opening up areas and making them more suitable for foraging and movement. It would appear that at the Strand Grid, at least to this point, Heermann's kangaroo rats have been better able to take advantage of the improved conditions. It is hoped that if favorable precipitation levels continue and abundant seed is available, the Tipton kangaroo rat population may be able to make some gains as well. However, if the Heermann's kangaroo rat population continues to grow, that would likely have an increasingly negative effect on the Tipton kangaroo rat population.

The investigative trapping effort at the Southeast Area in 2010 was successful in determining a more suitable location for long-term population monitoring index trapping of Tipton kangaroo rats than what has been done at the Taft Highway Grid. Establishing

a permanent grid at that location and abandoning the Taft Highway Grid will allow KWBA to meet their HCP/NCCP criterion of monitoring for Tipton kangaroo rats at two permanently established grids known to support this species. This new grid is identified on Figure 1 and will be referred to as the Southeast Area Grid in subsequent annual monitoring reports.

4.0 SENSITIVE HABITAT BOTANICAL MONITORING

Four special-status plant species are known to occur at the KWB. These are: Hoover's woolly-star (*Eriastrum hooveri*), San Joaquin woollythreads (*Monolopia congdonii*), recurved larkspur (*Delphinium recurvatum*), and slough thistle (*Cirsium crassicaule*). In addition, the KWB contains habitat for several other special-status plant species (see KWBA HCP/NCCP, Volume II, Section III-1).

The only listed plant species known from the KWB is San Joaquin woollythreads. San Joaquin woollythreads is an annual species that is known to be highly dependent upon adequate precipitation for germination and growth (USFWS 1998). For the 2009 – 2010 rain year (October 1, 2009 – September 30, 2010) in the Bakersfield area, the total precipitation was approximately 109% of normal (7.09 inches). Three occurrences of San Joaquin woollythreads have been found within the sensitive habitats and compatible habitats sectors at the KWB. All three occurrences are monitored annually by conducting site visits during the blooming period (typically late February to early April) and collecting basic data such as the number of individual plants, vigor and phenological stage at the time of the site visit. All three occurrences fluctuate widely from year to year, in terms of the number of individual plants, based upon the amount and timing of precipitation. One occurrence, located in the northwest ¼ of Section 7 (Figure 1), consisted of approximately 50 healthy and vigorous plants observed in 2010. A second occurrence located approx. 1/4 mile to the north, also in the northwest 1/4 of Section 7, exhibited approximately 250 healthy and vigorous plants that produced abundant flowers in 2010.

Attempts to identify additional populations of San Joaquin woollythreads will be made in subsequent years when precipitation amount and distribution is favorable for this species. Particularly suitable areas appropriate for surveys are the River Area, Southeast Area, and the Strand Area, where soils are sandy loamy in texture.

One occurrence of recurved larkspur is located in one of the Sensitive Habitat areas of the KWB in the southern ½ of Section 36, north of Taft Highway, west of Interstate 5, just west of the Alejandro Canal. The site is located on a crude oil pipeline right-of-way, under electrical transmission lines, in clay soils with alkali sink scrub vegetation. Approximately 75 plants were observed on several occasions during March and April 2010. A second occurrence, probably best considered as a part of the same occurrence described above, was also found in 2010 on the east side of the Alejandro Canal. Approximately 100 plants were observed in April 2010 scattered over a large area from the fence line at the Alejandro Canal, eastward to Interstate 5.

Hoover's woolly-star is known from many locations on the KWB. 2010 appeared to be a very favorable year for this species as numerous occurrences with large numbers of healthy plants were observed on several occasions in April 2010. The largest populations of this species were observed in the Southeast Area, just south of the Ten Section Oil Field.

Horn's milk-vetch (*Astragalus hornii* var. *hormii*) was observed in some of the recharge basins and canals on the KWB in 2009 and some plants were also observed in 2010. However, it did not appear as widespread in 2010 on the KWB, with most plants only being observed in a few of the recharge basins. The recharge basins and ditches can support this species and attempts to more accurately identify specific basins and water conveyances on the KWB where this plant is found should be conducted in the first and second seasons following the conclusion of a recharge cycle. Surveys should be conducted in the summer and early fall when the species is readily identifiable and easily visible, as its large size and light-colored flowers contrast well with other surrounding vegetation, making it visible from fairly long distances.

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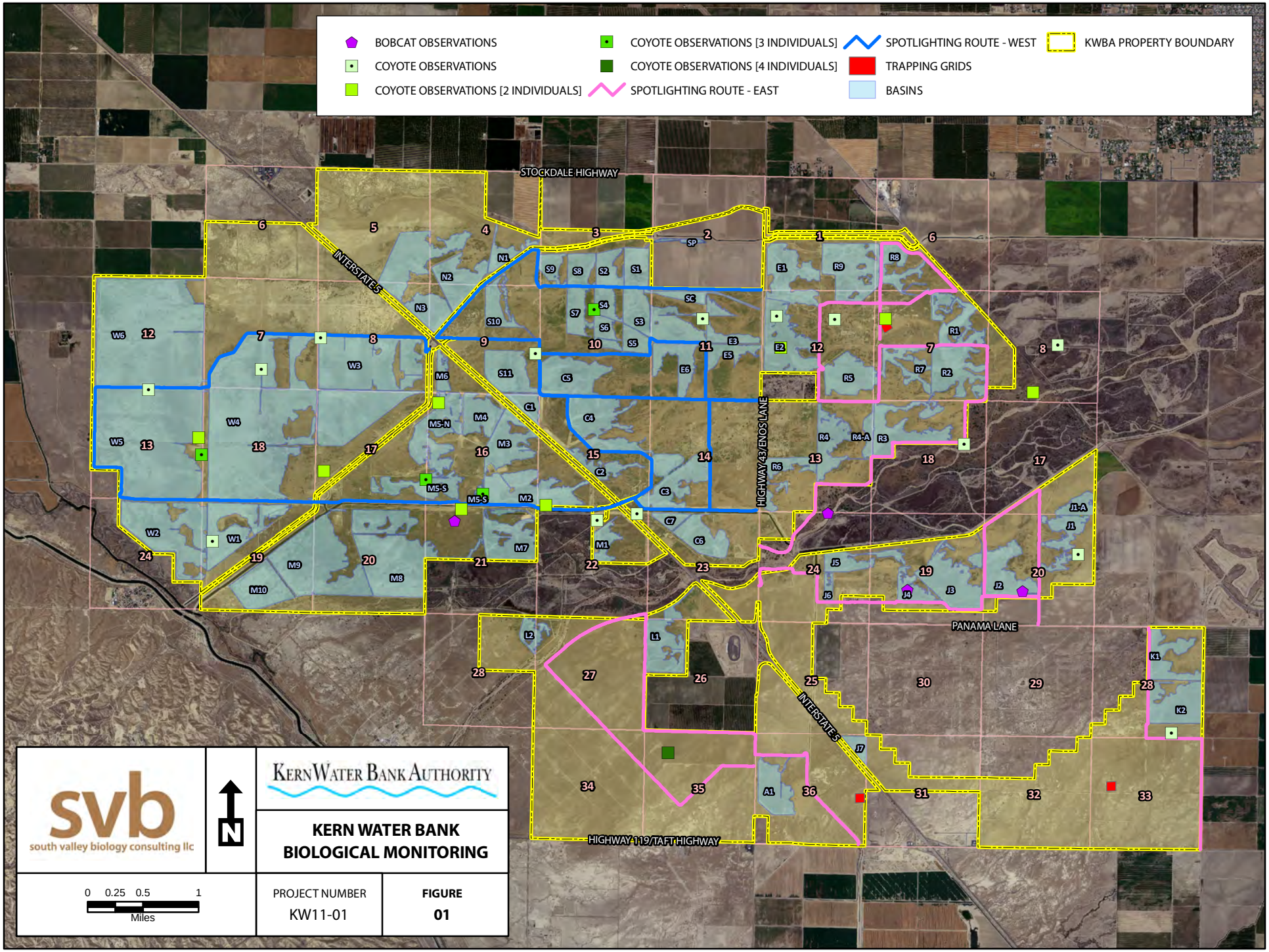
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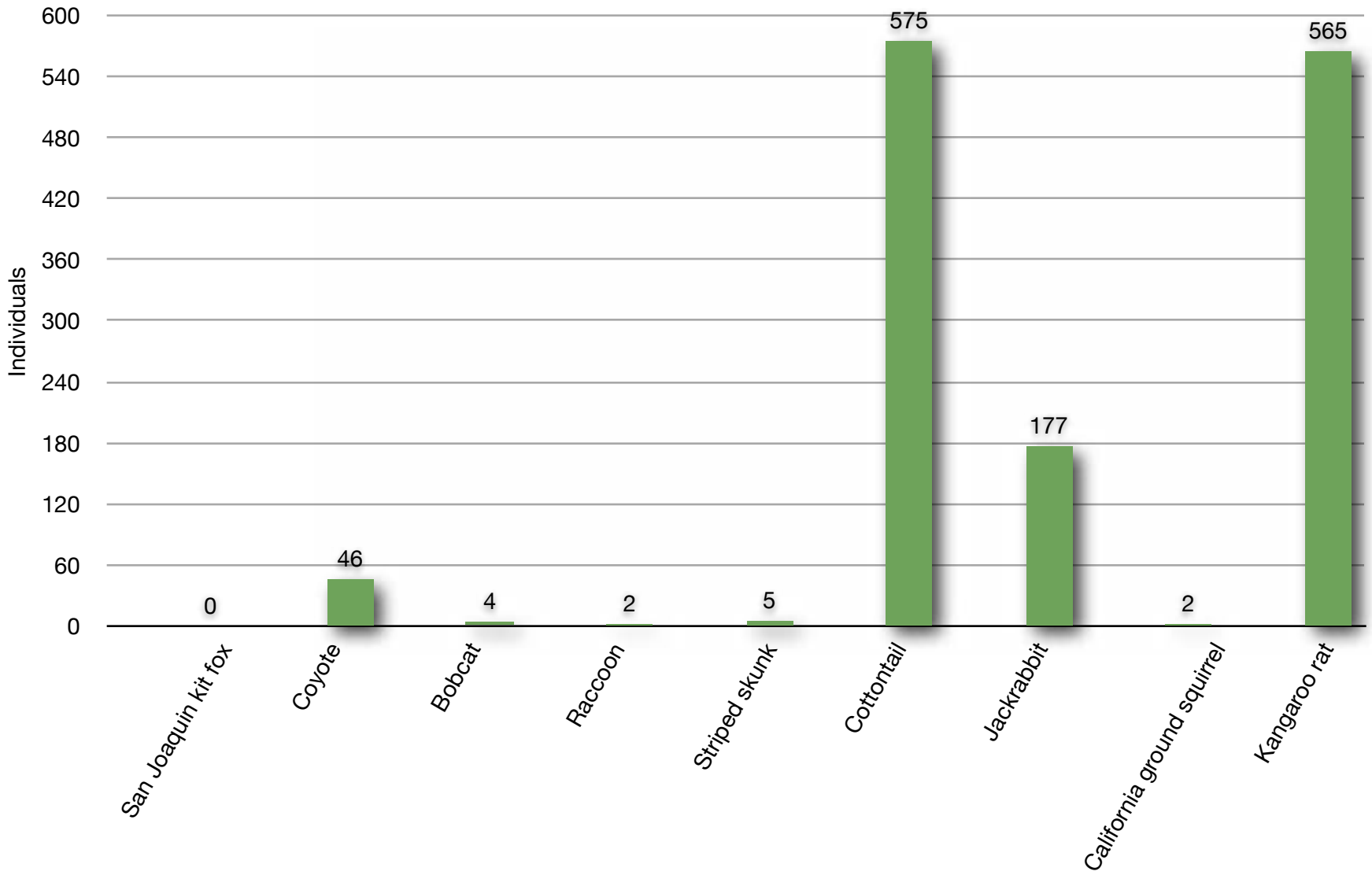

Figure 2. Nighttime spotlighting survey results 2010.

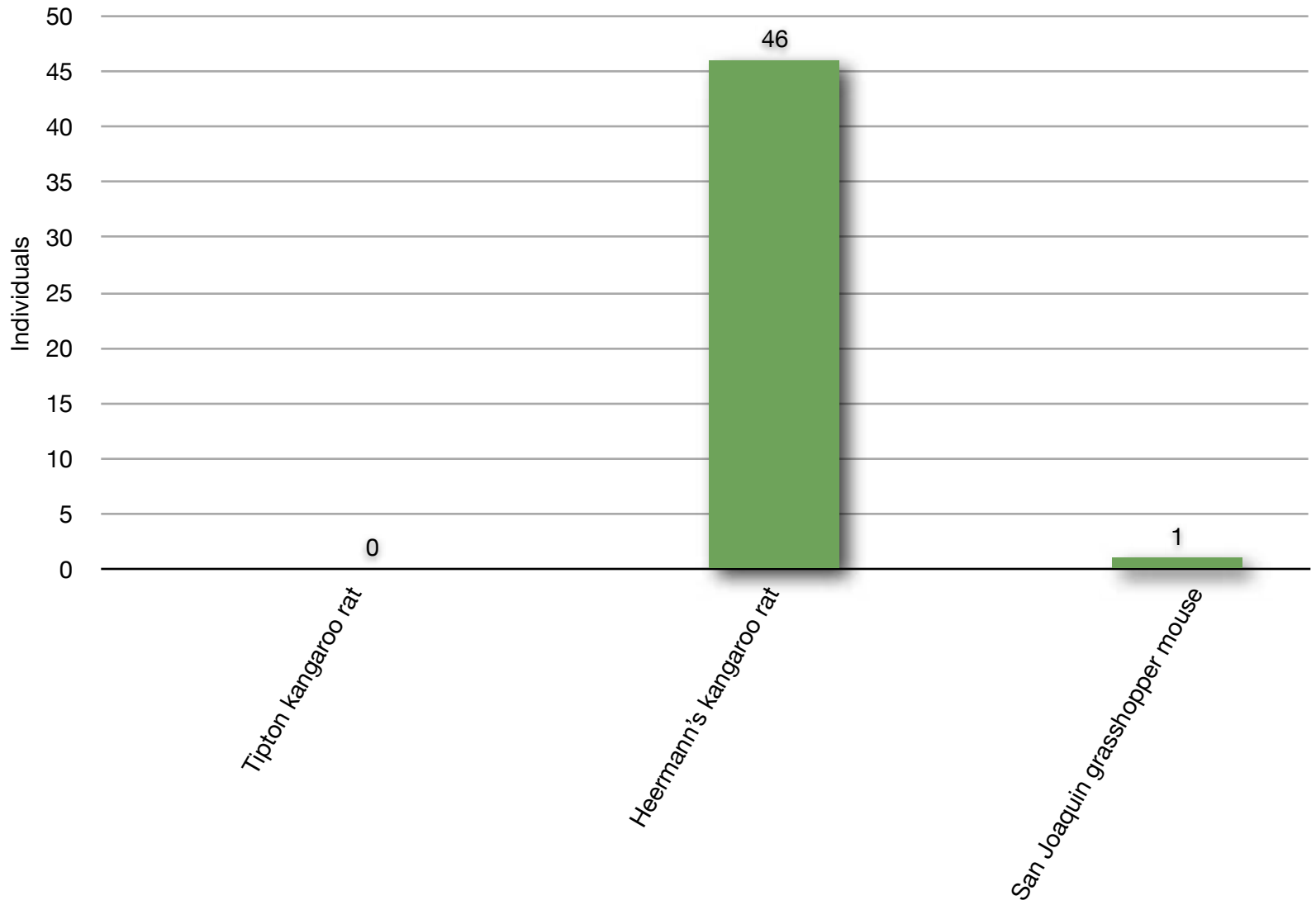

Figure 3. Tipton kangaroo rat monitoring results 2010.