Section 6 (Texas Traditional) Report Review

Form emailed to FWS S6 coordinator (mm/dd/yyyy): 10/4/2012

TPWD signature date on report: 9/28/2012

Project Title:
Breeding Ecology and Population Status of the Black-capped Vireo in Mexico: filling critical information gaps.

Final or Interim Report? Interim

Grant #: TX E-128-R

Reviewer Station: Arlington ESFO

Lead station concurs with the following comments: NA (reviewer from lead station)

Interim Report (check one):

- ☐ Acceptable (no comments)
- ☐ Needs revision prior to final report (see comments below)
- ☒ Incomplete (see comments below)

Final Report (check one):

- ☐ Acceptable (no comments)
- ☐ Needs revision (see comments below)
- ☐ Incomplete (see comments below)

Comments:

This is the second interim report for this three-year project (2011 – 2013); the first report indicated the study did not begin due to failure to obtain the necessary contract between the two universities coordinating the project. The project was then restructured to compress field work to two breeding seasons (2012-2013) in Mexico. The current report indicates 23 male black-capped vireo were detected over a large study area (five 80 x 80 kilometer survey areas) and only four nests identified. The report states that abundance data was not collected due to "environmental conditions" prohibiting point counts. This should have been noted under the "significant deviations" section.

We have concerns that the project may fail to meet its objective – "*To quantify the breeding ecology, population status, habitat conditions, and threats for the black-capped vireo in Mexico over 3 years*." From the information submitted thus far, it does not appear that the data could be used to quantify population status or breeding ecology. Further, very little information is provided on habitat conditions, especially on vegetation cover, tree density and ground cover, as described in the original proposal. This leaves the majority of data to be gathered in the single remaining season of the study in order to meet the stated objective.

Previous studies in the black-capped vireo breeding range in Mexico have indicated there may be a substantial population present and in much higher densities than have been documented in the U.S. portion of the species' range. Thus, the Fish and Wildlife Service is hopeful that this project could provide much needed information from this region. Based on the progress so far (no data collected first year and minimal data collected second year), it appears unlikely that the project will provide any significant information related to the status and distribution in portions of northern Mexico. If all project tasks can be accomplished in 2013, there may be a subset of information that could be generated that addresses the objective.

INTERIM REPORT

As Required by

THE ENDANGERED SPECIES PROGRAM

TEXAS

Grant No. TX E-128-R

Endangered and Threatened Species Conservation

Breeding Ecology and Population Status of the Black-capped Vireo in México: filling critical information gaps.

Prepared by:

Mario Guerrero
Melanie Colon

Carter Smith
Executive Director

Clayton Wolf
Division Director, Wildlife

28 September 2012

INTERIM REPORT

STATE: ____Texas_____ **GRANT NUMBER:** ___E – 128-R___

GRANT TITLE: Breeding Ecology and Population Status of the Black-capped Vireo in México: filling critical information gaps.

REPORTING PERIOD: ____1 Sep 2011 to 30 Sep 2012

OBJECTIVE(S):

To quantify the breeding ecology, population status, habitat conditions, and threats for the black-capped vireo in Mexico over 3 years.

Segment Objectives:

Task 1. Date of approval of funding to March 2011. Develop list of initial land areas to include in sampling.

Task 2. Annually Mar-Aug. Initiate field sampling of locations identified in Task 1.

Task 2.1. At each location (habitat patch) identified in Task 1 we will conduct an initial assessment of the presence or absence of vireos using visual and auditory cues, as well as through the use of song playback as necessary.

Task 2.2. At a subset of locations where birds were found to be present (Task 2.1) we will quantify bird abundance.

Task 2.3. At a subset of locations used for density estimation (Task 2.2) we will locate nests and monitor nesting behavior and success.

Task 2.4. Conduct habitat assessment of all locations surveyed at the patch, territory, and nest scale; locations where no birds were detected will be included.

Task 3. Sep-Dec 2011. Data will be entered into databases and analyzed. Analyses will include a listing of sampling locations, size, habitat conditions (overall, territory, nest site), results of breeding attempts (e.g., successful-unsuccessful, cause of failure), and other observations recorded (e.g., cowbird activity, status of other threats).

Task 4. Jan-Mar 2012. Based on analyses of 2011 data, we will re-evaluate and improve the criteria we used for identifying potential vireo habitat; based on 2011 sampling we will be able to analyze data at the patch, territory, and nest scales. We will then use the same sampling procedure (Task 1) to identify a new set of locations to visit in 2012 field season.

Task 5. Mar-Aug 2012. Conduct the same field sampling procedures listed above for Task 2 (including 2.1 to 2.4).

Task 6. Sep-Dec 2012. Conduct the same summaries and analyses as listed for Task 3, above.

Tasks 7 and 8: Repeat Tasks 4 and 5, respectively, for 2013.

Task 9. Sep-Dec 2013. All study results will be summarized, the appropriate statistical, genetic, and isotope analyses applied, and a final report produced.

Significant Deviation: None.

Summary of Progress: Please see Attachment A.

Location: Coahuila, Nuevo Leon, Tamaulipas, Mexico

Cost: ___Costs were not available at time of this report.__

Prepared by: _Craig Farquhar_____ **Date:** _28 September 2012

Approved by: _____ **Date:**___28 September 2012 ___
C. Craig Farquhar

ATTACHMENT A

REPORT OF TAMU and UANL SECTION 6 ACTIVITIES, 2012

Project Title: Breeding ecology and population status of the black-capped vireo in Mexico: filling critical information gaps

Principal Investigators: Dr. Michael L. Morrison[1], Dr. José Ignacio González Rojas[2], Dr. Neal Wilkins[3]

Researchers and Graduate Students: Mario Gonzalez[2,5], Melanie Colón[1,5], Tiffany McFarland[4]

TABLE OF CONTENTS

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REPORT OF TAMU AND UANL SECTION 6 ACTIVITIES, 2012

1. PROJECT INTRODUCTION AND OVERVIEW

The black-capped vireo (*Vireo atricapilla;* hereafter vireo) was listed as endangered by the USFWS in 1987 and SEMARNAT in 2010. Major threats to the species include habitat loss from development and grazing and lowered productivity resulting from of cowbird parasitism and nest predation (Ratzlaff 1987, Grzybowski 1986, Tazik 1988, Cimprich 2004). A recent survey of literature and unpublished data indicated that fewer than 7,000 breeding males likely exist across the current range in Texas, Oklahoma, and Mexico (Wilkins et al. 2006). Although the numbers of birds may have increased in several core breeding locations in the US, the overall population remains critically low and concentrated in these few locations. Focused research has been ongoing in Texas and Oklahoma at a few locations, and management (primarily cowbird trapping and some habitat manipulation) is underway on several state and some private properties. However, a gap in knowledge exists concerning the vireo population in the under studied western portion of the vireos' range in Texas and across the border in northern Mexico (Ratzlaff 1987, Farquhar and Gonzalez 2005, Wilkins *et al*. 2006).

The project discussed herein is aimed at quantifying the breeding ecology, population status, habitat conditions, and threats for the vireos in northern Mexico. This research will enable us to provide quantitative assessments of the numbers of birds present, their breeding status, primary threats, and rigorous descriptions of habitat conditions. The overall goal of this study is to substantially expand our knowledge of the vireo in under surveyed areas by filling critical gaps in our knowledge, which will provide a more thorough understanding of the condition of the species overall and provide guidance for recovery in the U.S.

2. SIGNIFICANT DEVIATIONS

Due to contracting difficulties between our two universities and beyond our control, no field work was conducted in Mexico in 2011. Rather, we coordinated with Dr. Craig Farquhar to compress field objectives in Mexico into 2012 and 2013 sampling. Information regarding methods and activities conducted in 2012 is detailed below.

3. METHODS

Survey areas

In 2011, we compiled historic vireo detection locations as well as more recent detection information collected from 2002 to 2009 throughout northern Mexico. Using these locations and a combination of remote sensing imagery, digital elevation maps, and on-the-ground knowledge we conservatively delineated potential vireo habitat. We used this analysis to identify general target sampling locations for 2012 and 2013 sampling. In 2012, we refined these survey areas using ecological niche models (Guerrero et al. 2012) to select five 80 km x 80 km sampling blocks (Map 1). These included two blocks in Coahuila (Monclova and La Paila), one block in Nuevo Leon (Pacachos), one block in Tamaulipas (Jaumave), and two blocks in San Luis Potosí (Rio Verde and San Luis Potosí). All subsequent field work in these areas was conducted by the Universidad Autónoma de Nuevo León.

Block surveys

Block surveys represent a sort of "statewide" survey method in which we attempted to cover a wide area with basic survey methods. We conducted all surveys at locations along/near roadsides within the blocks during daylight hours. At each location, we conducted standard five minute point counts and recorded all vireos or cowbirds seen or heard. We also collected information regarding vegetative structure as part of a general habitat assessment.

Nest Searching and Territory Monitoring

Nest searching and territory monitoring activities were limited to a focal area within the La Paila block characterized by three canyons named locally: El Sotolar Canyon, La Luz Canyon, and El Fresno Canyon. The first has eight kilometers of accessible depth, of which seven kilometers offer potential breeding habitat. It has steep walls (35° to 65° slope), is 1200-2000 meters above sea level (masl), and varies in width from 60 meters to 100 meters at the bottom. La Luz Canyon is 24 km long in which approximately 11 km represent potential breeding habitat. The canyon has steep walls (35° to 90° slope), is 1200-2000 masl, and varies in width from 60 meters to 320 meters at the bottom. The third canyon is 26 kilometers long, approximately half of which represents potential breeding habitat. The canyon has steep walls (35° to 90° slope), is 1200-2000 masl, and varies in width from 60 meters to 320 meters at the bottom (Figure 1). We obtained a permit to work in this area from individuals and local authorities at Ejido Paloma.

We followed singing males and marked territory points using a handheld GPS and located nests using a combination of systematic searches and behavioral cues (e.g., song, adult food carry). Once found, we recorded the location of the nest and monitored it regularly, noting both the contents and adult behavior. Additionally, we monitored some nests with a point shot camera (Canon Power Shot A800) or a sport cam (Kodal ZX5), and we set up bait station cameras at several non-nest sites within the three canyons to document potential predators in these areas. We baited stations with oatmeal, peanut butter, or hotdogs. Cameras were left active for two months.

Abundance

We initially planned to conduct point counts in some of the areas selected for more intensive monitoring (i.e., nest searching and monitoring). However, due to the environmental conditions in Sierra de Paila, we were unable to conduct traditional grid based point counts is year. This task will be reevaluated in 2013 depending on the locations selected for nest searching and territory monitoring.

4. RESULTS

Block surveys

We conducted surveys in the Monclova block (Map 2) from March 27 to 30 and also from April 14 to 15. The survey included areas in the mountains of La Gloria, El Mercado, La Purisma. We first surveyed the Chilpitin Canyon in the Sierra de la Gloria, where the slopes are dominated by Baretta (*Helietta parvifolia*) and where the general vegetative structure represents potential vireo breeding habitat. However, we did not confirm the presence of vireos in the area. The canyon was suffering from drought conditions limiting the availability of cover, food, and water (Figures 2 and 3). El Mercado has an eastern facing slop and is characterized by scrub elements such as Mezquite (*Prosopis glandulosa*), Chaparro Prieto (*Acacia farnesiana*), Chapote (*Dyospiros texana*). The area was extremely dry, and we did not detect vireos (Figures 4 and 5). We surveyed a local ranch (El Lantriscal) in the Bocatoche mediation canyon in the Sierra La Purisma area. In 2011, this area was affected by wildfires (Figure 6), and non-burned areas were heavily grazed and dominated by Chaparro Prieto (Figure 7), leaving it unsuitable for vireos at present. We also visited Zacatita, near the northwestern end of the sierra, seven kilometers south of Sacramento, Coahuila. This area is lower in elevation and is characterized by desert scrub vegetation and oak forest patches surrounded by chaparral at its peaks. Though the peaks looked like potential vireo habitat, we were unable to survey them (Figures 8 and 9). Although we were unable to detect vireos in the Sierra La Purisma, we believe there are a number of areas with favorable conditions, specifically in the western-central areas. Additional efforts in these areas will require obtaining landowner information and permission to access properties.

We surveyed the La Paila block (Map 3) on April 12 en route to Cedral. There we identified six vireos over five kilometers dominated by *Gocnathia hypoleuca, A. farnesiana, Rhus virens,* and *Quercus spp.* The area, similar to Sierra La Gloria, was dry with limited leaf cover and no flowers (Figures 10 and 11). On April 15, we conducted block-type surveys in a locality in the Sierra de San Marcos y Pinos

between the La Paila and Monclova blocks (Map 4). We detected a singing male vireo that appeared to be defending a territory. The male was found seven kilometers southeast of a 1983 detection referred to in Marshall et al. (1985). The area is comprised of overgrazed scrub at lower elevations, scrub oak at middle elevations, and oak-pine patches at the top of the mountain. Like others, the area had little foliage or flowering plants, most likely to the land of rain and overall dryness of the landscape (Figures 12-17).

On May 5-7, we surveyed the Jaumauve block (Map 5). The boundaries are complex in this area, but we use the local names Sierra Los Treinta and Sierra Mocha for reference. In Sierra Los Treinta, we detected four singing males on the road to Miquihuana Palmillas. The birds were found in scrub habitat dominated by *H. parvifolia*, with conditions suitable for breeding birds (e.g., humidity levels, flowering plants, and insects). North of the Sierra Mocha, on the stretch of Capulín Bustamante, we detected 12 singing males in an area with a diverse floristic community including *Juniperus spp.*, *Quercus spp.*, *Acacia spp.*, *Dasylirion spp*., and *Rhus spp.* (Figure 18). These locations were previously described in Farquhar-Gonzalez (2005). A lone male was also detected in the Capulín, on the Tula road – Bustamante Jaumave, in a dry stream with abundant vegetation (Figure 19). On May 11-12, we visited the surveyed in the northeastern mountains of the Picachos block (Map 6). The canyons faced northwest and were dominated by *Fraxinus greggii* and *Gieletta parvifolia*. Again, we observed drought conditions that did not favor breeding birds, and no vireos were detected (Figures 20-22).

In June, we visited both blocks in San Luis Potosí. These blocks did not suffer from the drought conditions observed in the northern blocks. We surveyed several areas in the Rio Verde block (Map 7) on June 5 including Sierra El Tablon, Sierra La Noria, and others. We did not detect vireos in either Sierra La Noria or El Tablon, despite favorable vegetative conditions (Figures 23 and 24). North of these locations we observed similarly potential habitat dominated by *Juniperus spp. and H.parvifolia*, but again did not detect vireos (Figure 25 and 26). On June 6, we visited the San Luis Potosí block (Map 8), which includes the Sierra San Miguelito and Cerro Potosi, but did not detect vireos. The vegetation is dominated by oaks (*Quercus spp.*), and there is little to no viable vehicle access in some areas (Figures 27 and 28).

Nest searching and territory monitoring

We observed singing by territorial males in early April and May, but we not detect females or young at this time to indicate the start of breeding. We believe this was likely due to the lack of rain and overall drought conditions observed across much of the range, given that most of the vegetation lacked leaf cover and had delayed flowering stages, thus limiting the amount of cover and food available to birds. Delayed breeding has been observed in various locations in Texas due to drought conditions similar to those observed this year in Mexico (*pers. obs.* M. Colón, *pers. obs.* L. Pomara). This year's rains began the last week of May. With the rains, the landscape became greener, plants began to flower, and the availability of insects likely increased.

We began nest searching and territory mapping on June 16, and first started to signs of breeding June 23, when we observed both fledglings (Figures 29 and 30) and females carrying food in their beaks. In total, we located four nests (Figure 31, Tables 1 and 2), of which 2 fledged young. In addition, we monitored 14 territories ranging from 1-3.5 ha (Figure 32). Data regarding vegetation at the nest, territory, and patch scale are still being collected (as of September 26, 2012) and will be presented in our next report (Figures 33 and 34).

We occasionally observed potential predators in the survey area (we consider cowbirds separately in the paragraph below). We noted one snake (*Coluber scotti*) observed at nest height (~1.5 m) approximately 6 m away from an abandoned nest (Figure 35). We also observed several bird species that may be potential predators including common raven, red-tailed hawk, Swaison's hawk, Mexican jay, northern roadrunner, whiskered screech-owl, horned owl, common black hawk, and northern harrier (Figure 36). Jays, hawks, and roadrunners have previously been recorded as predators of vireo nests in Texas (Conkling et al. 2012). In addition to visual observations, we recorded a single striped skunk (*Mephitis mephitis*; Figure 37) at our camera bait stations. We have not observed skunks as nest predators

in Texas, though we have similarly recorded them at bait station cameras in breeding areas (*pers. obs.* M. Colón). The level of threat posed by skunks is unknown.

We did observed brown-headed and bronzed cowbirds (Figure 38) in our study area. However, their abundance was low. It total we detected a total of six cowbirds (4 bronzed, 2 brown-headed) over the course of four months. The cowbirds were restricted to the entrances of canyons in open areas and desert scrub. None of the nests we monitored had been parasitized by cowbirds, and the degree to which cowbird parasitism is poses a threat to vireo reproduction in this area and in other parts of Mexico needs to be further investigated. Note, we also detected cowbirds in other parts of the Paila block as well as in the Picachos block during block surveys.

Threats and Conservation

Given the steep slopes in the vireo breeding areas surveyed, we believe the area is unattractive for large-scale economic activities that may affect vireo reproduction or survival. However, we did observed small-scale activities that have the potential to impact the vireo population in the La Paila region. The main economic activity is small-scale cattle ranching. During the months of June to September, fewer than 10 animals are kept and moved through El Solotar Canyon. Twenty and 40 head are kept in La Luz and El Fresno Canyons, respectively. We have observed these animals feeding on shrub species that are potential nest substrates for vireos at heights that could disturb or even destroy vireo nests (Figure 39).

The Sierra de Paila also has a mining history, which in recent decades has explored many canyons for minerals without any company developing an important mining area. North of the entrance to the El Fresno Canyon lies an area where one company once extracted stone materials, but it is no longer in operation (Figure 40). A dolomite mining project in the northern portion of the Sierra de la Paila was not approved by federal environmental authorities (SEMARNAT 2010), but could affect potential vireo habitat if approved in the future.

La Sierra de la Paila is a Priority Terrestrial Region (RTP-79) in the system of the National Commission for the use and Knowledge of Biodiversity (CONABIO) belonging to the Ministry of Environment and Natural Resources (SEMARNAT). According to CONABIO (Arriaga et al. 2000), Priority Terrestrial Regions correspond to "stable temporary physical units from the environmental point of view on the mainland of the country, highlighted by the presence of a rich ecosystem and specific and the presence of endemics comparatively higher than in the rest of the country, as well as a significant biological integrity and a real opportunity for conservation." This category designation emphasizes the nation's interests in learning about and conserving the natural resources in the Sierra de la Paila. The area is not currently part of the national system of protected areas (SINANP). However, in 2011, CONABIO initiated a pilot program to fund universities and civil organizations for the study and inventory of biodiversity in Priority Terrestrial Regions across this country, and this program is expected to continue over the next few years.

5. PROJECT MANAGEMENT

In Mexico, project management is being overseen by Mario Guerrero. He has served as the point of communication for UANL, managed all field work, and prepared the maps, figures, and provided all information presented in this report. In Texas, project management is being overseen by Melanie Colón. She has been the point of communication for TAMU, coordinated all of the preparation work including the development of maps, protocols, and databases, and assisted in the preparation of this report.

6. LITERATURE CITED

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Ratzlaff A. 1987. Endangered and threatened wildlife and plants: determination of the black capped vireo to be an endangered species. Federal Register 52: 37420-37423.

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7. TABLES

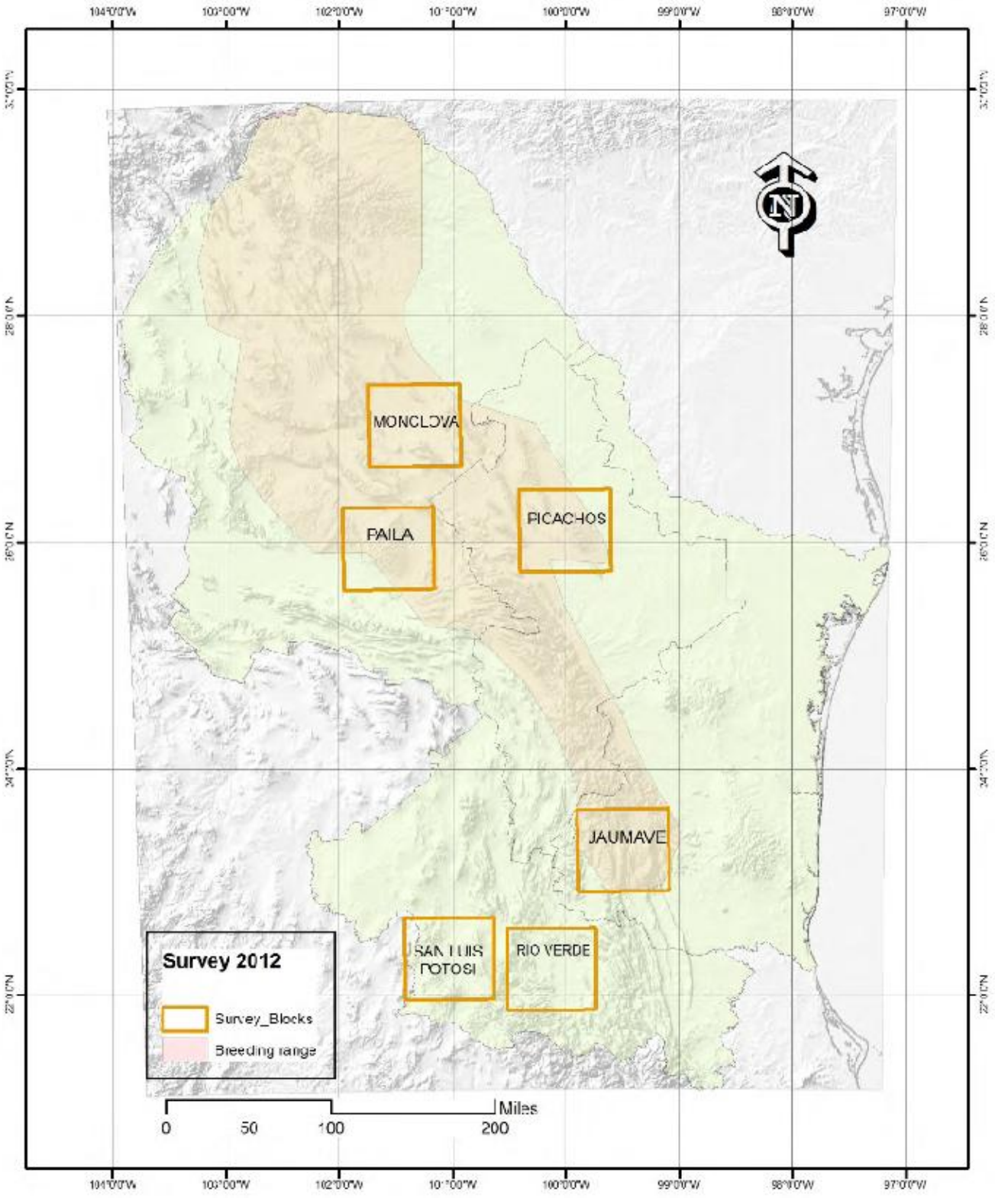
Nest #	Nest substrate	Date found	Date fledged/failed	Outcome
1	Acacia berlandieri	July 9	July 23	Depredated
2	Quercus invaginata	July 11	August 5	Fledged 1 young
3	Rhus virens	July 19	August 9	Fledged 4 young
4	Pistacia texana	July 21	July 27	Depredated

Table 1. Nest phenology in Sierra de la Paila.

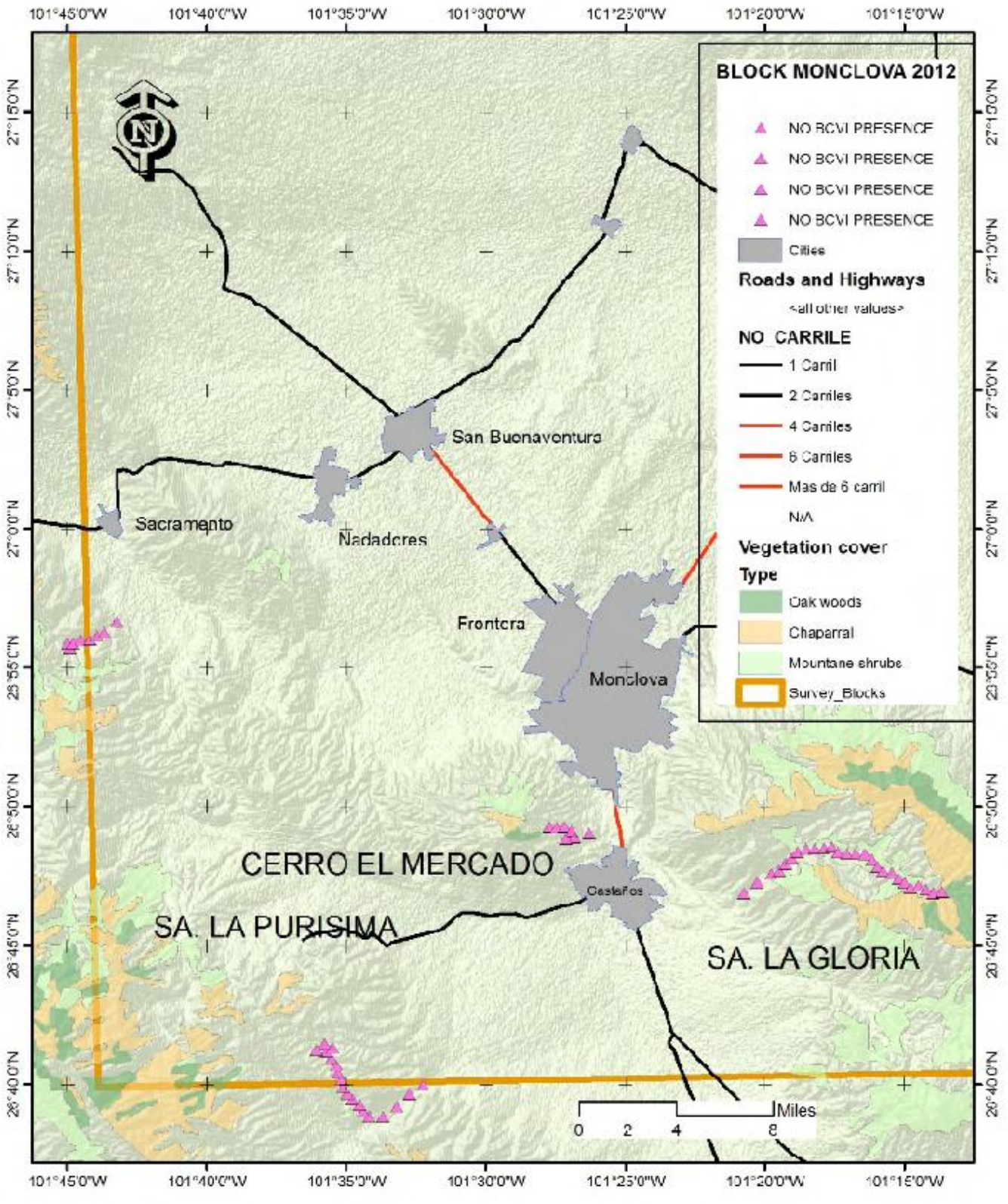
Nest #	X Point	Y Point
1	-101.4331	26.01461
2	-101.4899	26.03612
3	-101.44351	26.01154
4	-101.43713	26.0132

Table 2. GPS locations of nests found in Sierra de la Paila (WGS 1984 UTM 14N).

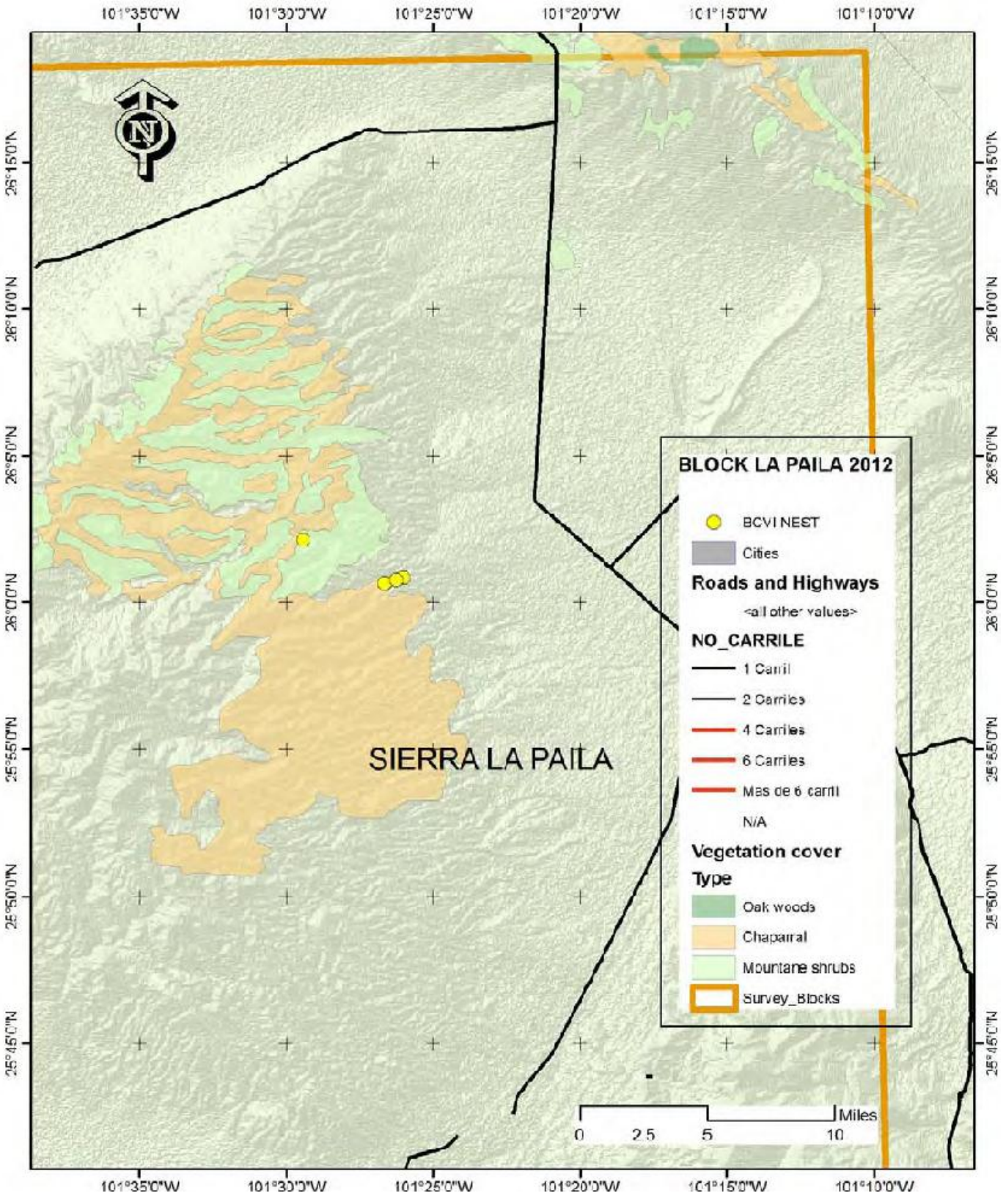
8. MAPS



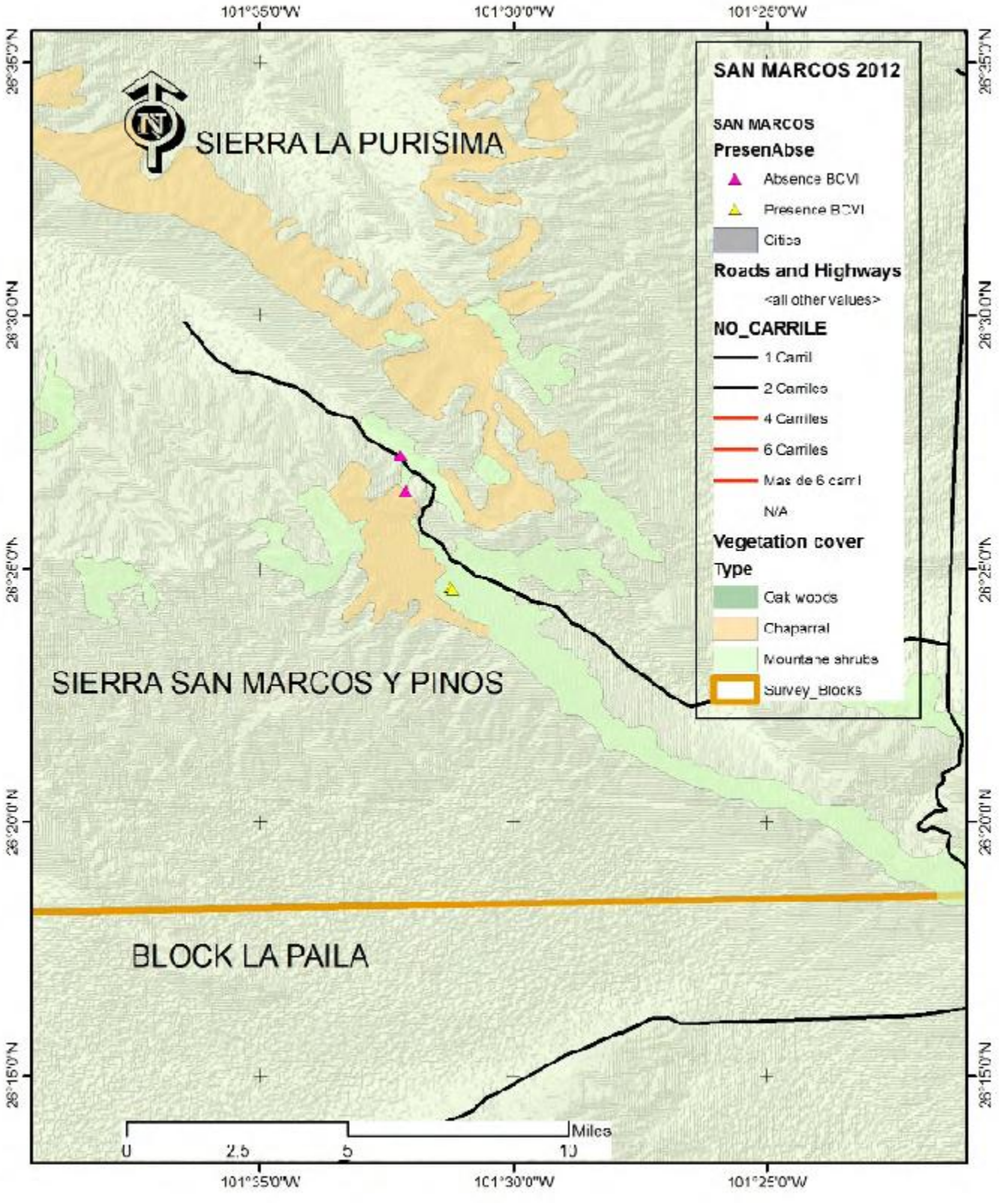
Map 1. Survey blocks.



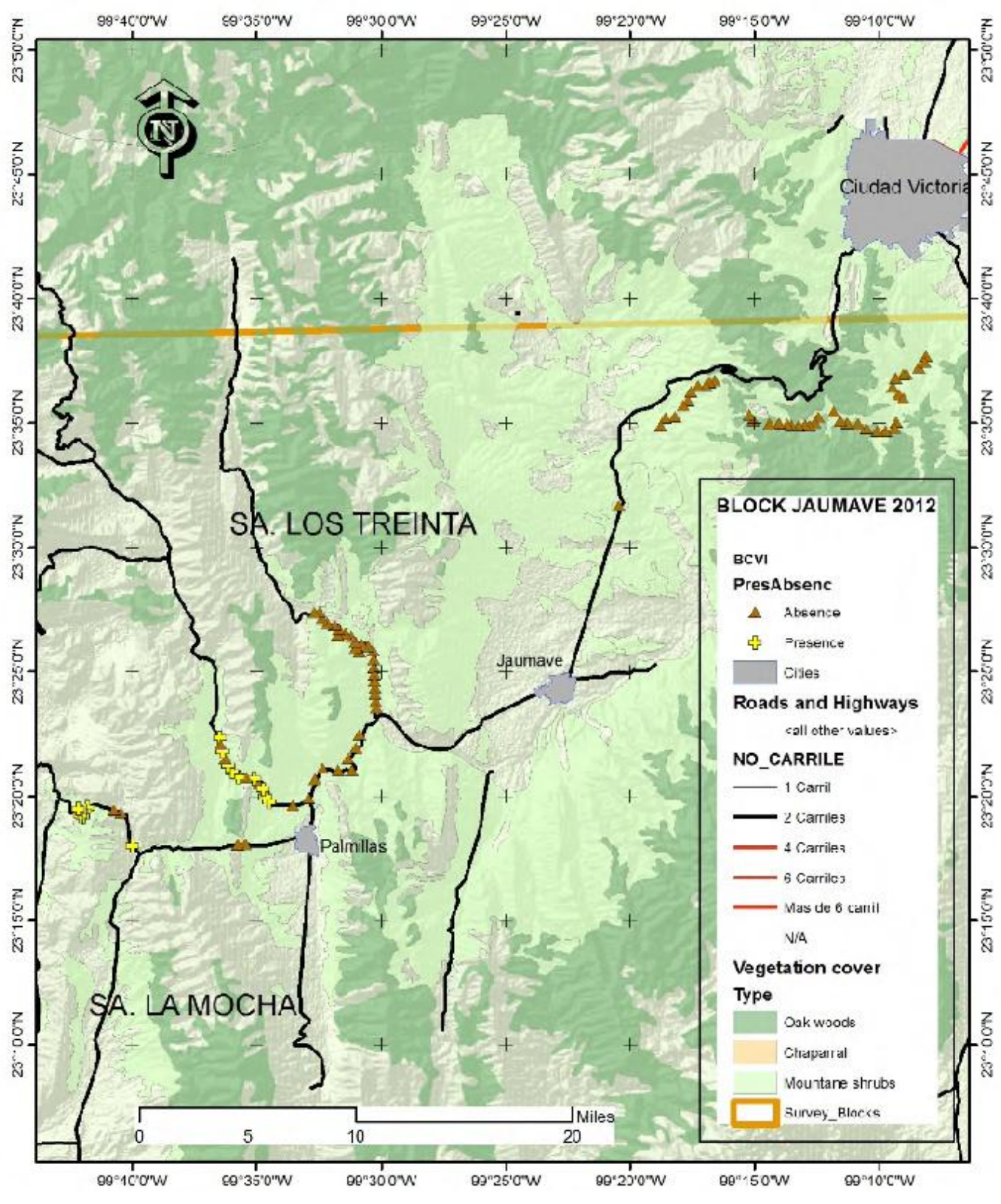
Map 2. Monclova block.



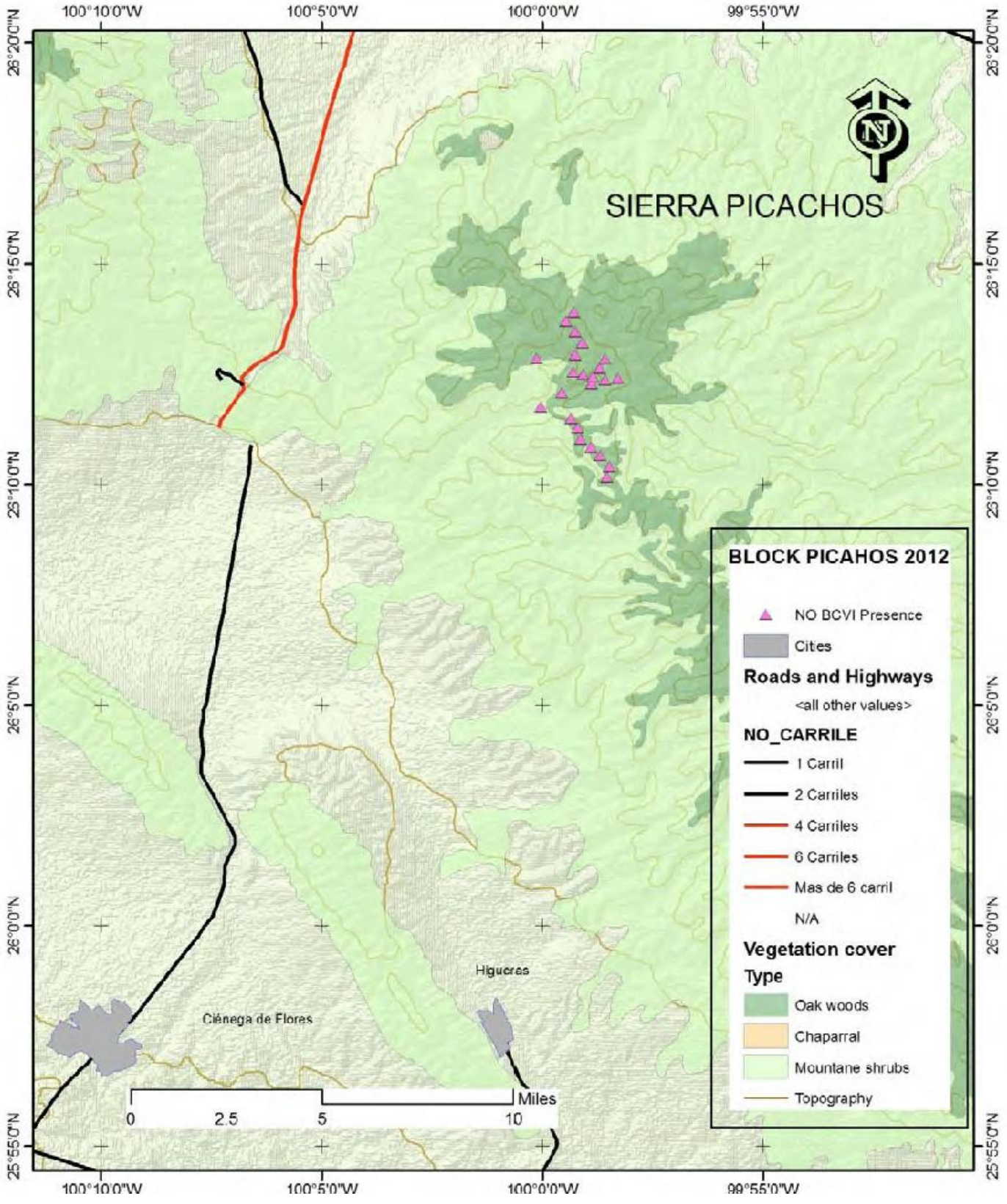
Map 3. Paila block.



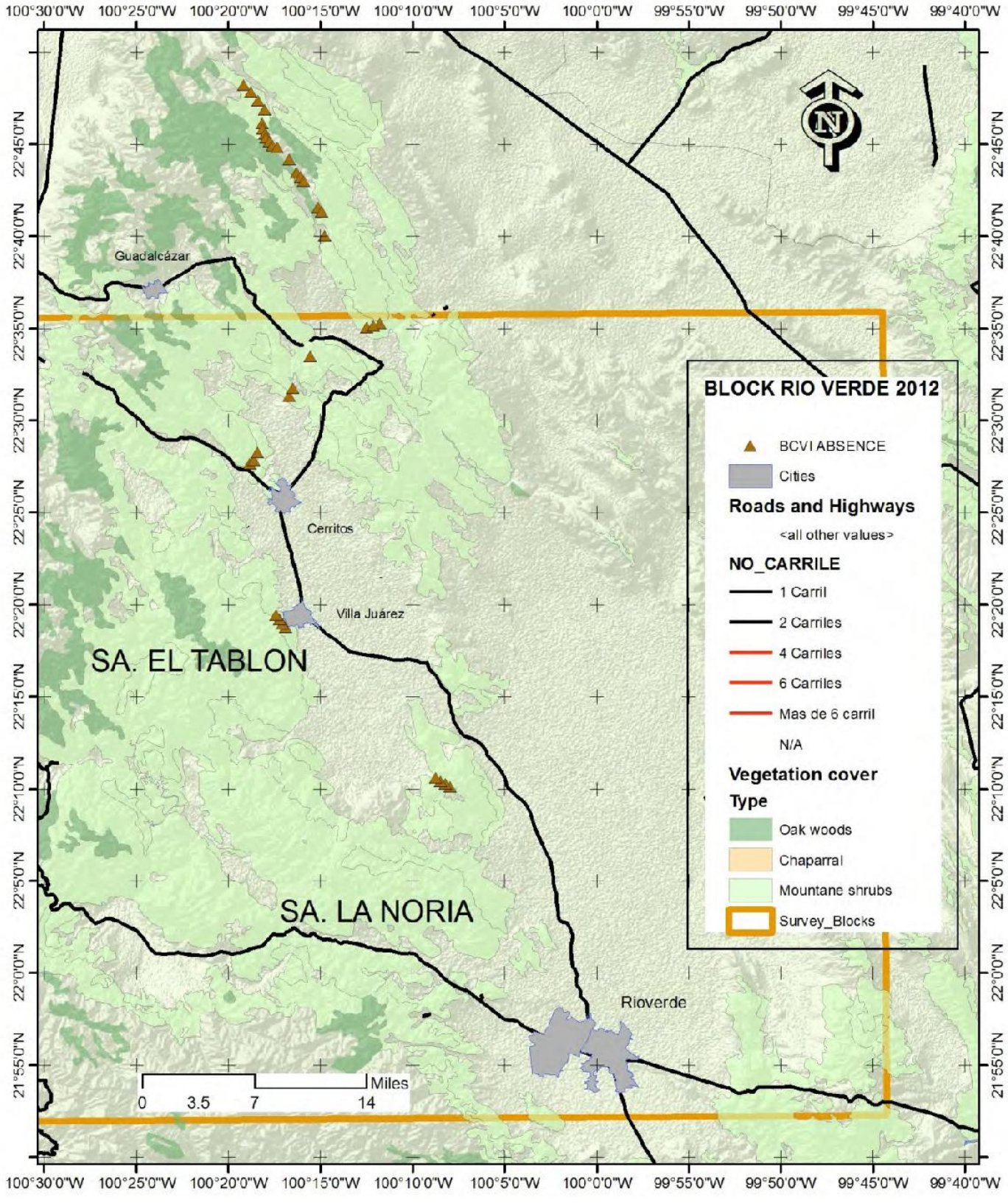
Map 4. Sierra San Marcos y Pinos.



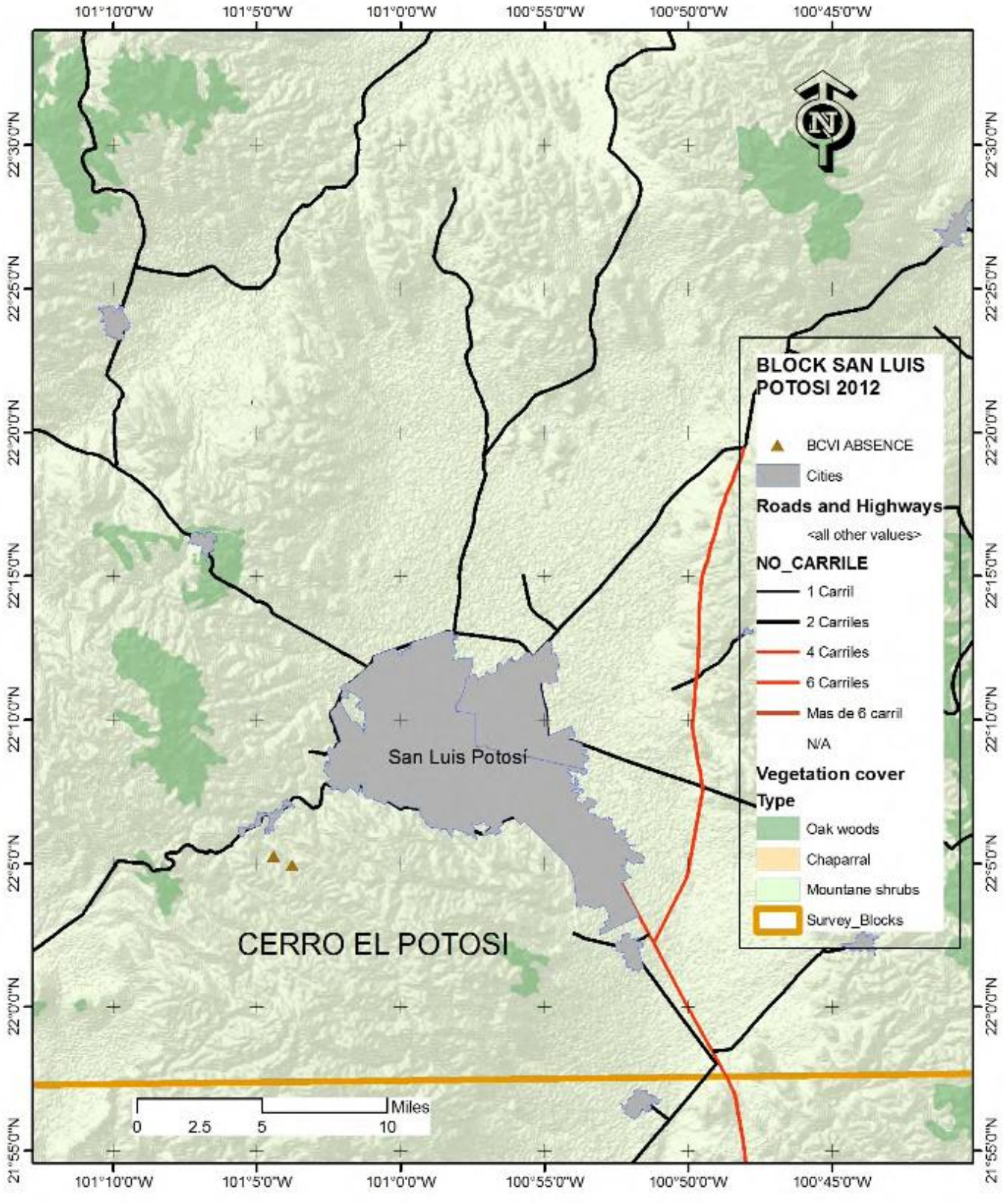
Map 5. Jaumauve block.



Map 6. Picachos block.



Map 7. Rio Verde block.



Map 8. San Luis Potosí block.

9. FIGURES

Figure 1. Sierra de la Paila survey area. Canyons from left (south) to right (north): El Sotolar, La Luz, El Fresno.

Figure 2. Chiltipin Canyon in Sierra la Gloria

Figure 3. Vegetation at Chiltipin Sierra la Gloria

Figure 4. View since Cerro el Mercado to Castaños, Coah.

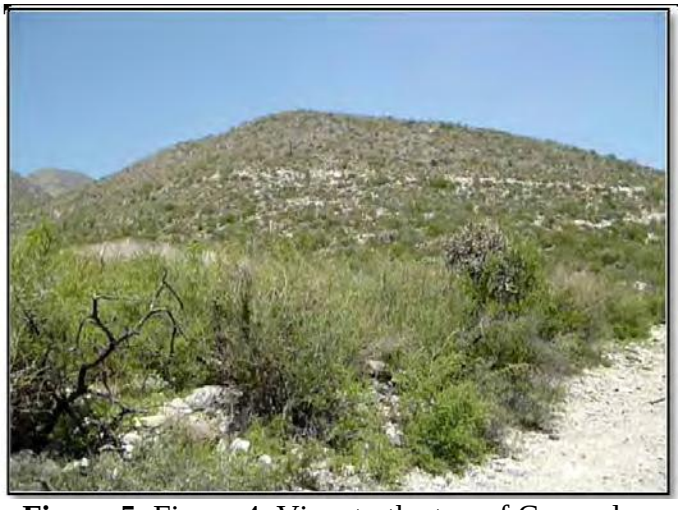


Figure 5. Figure 4. View to the top of Cerro el Mercado

Figure 6. Area affected by a wildfire in Lantriscal Ranch

Figure 7. Natural area in Lantriscal Ranch

Figure 8. Mountains surrounding the area Zacatita.

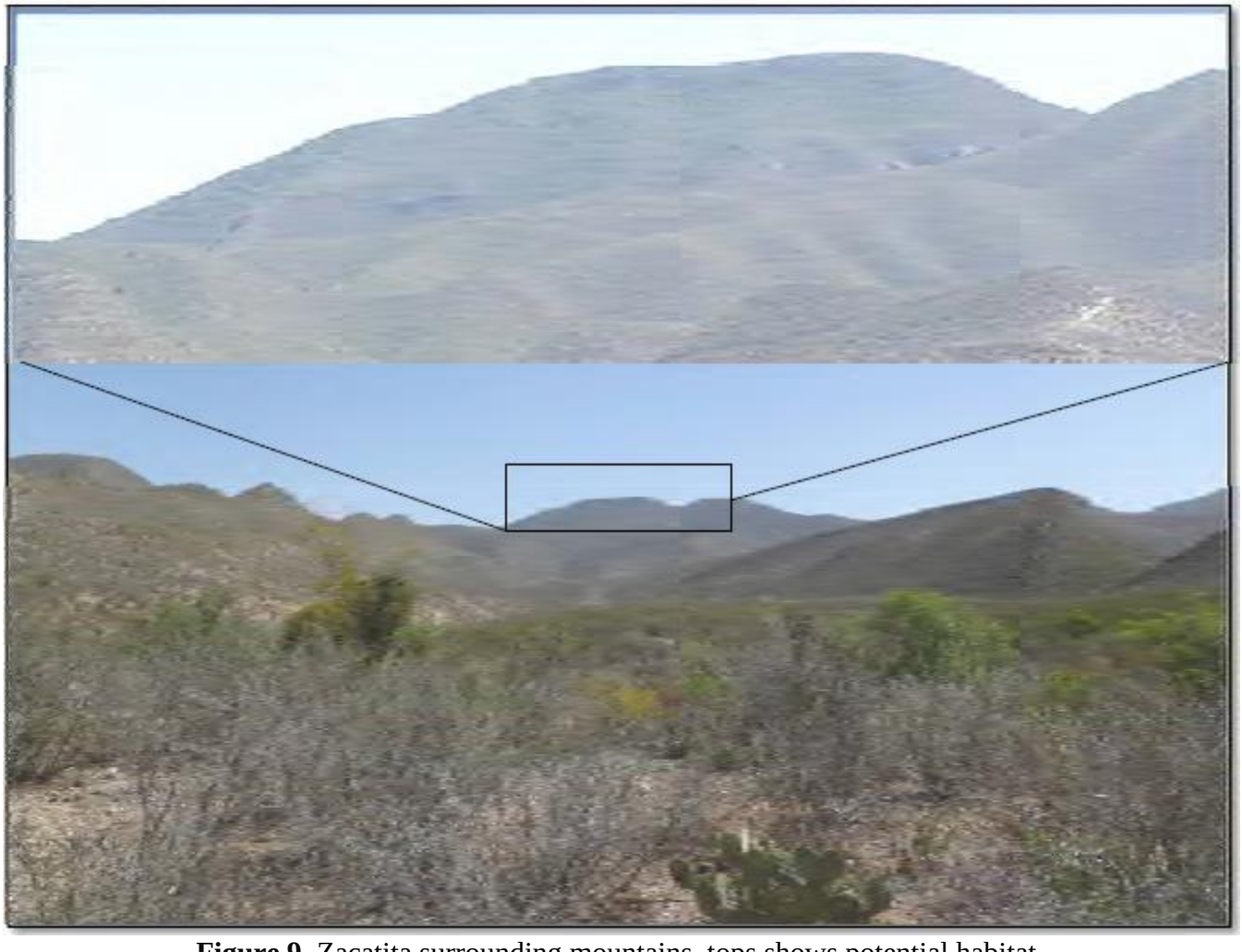


Figure 9. Zacatita surrounding mountains, tops shows potential habitat.

Figure 10. Canyon hill at Sierra La Paila.

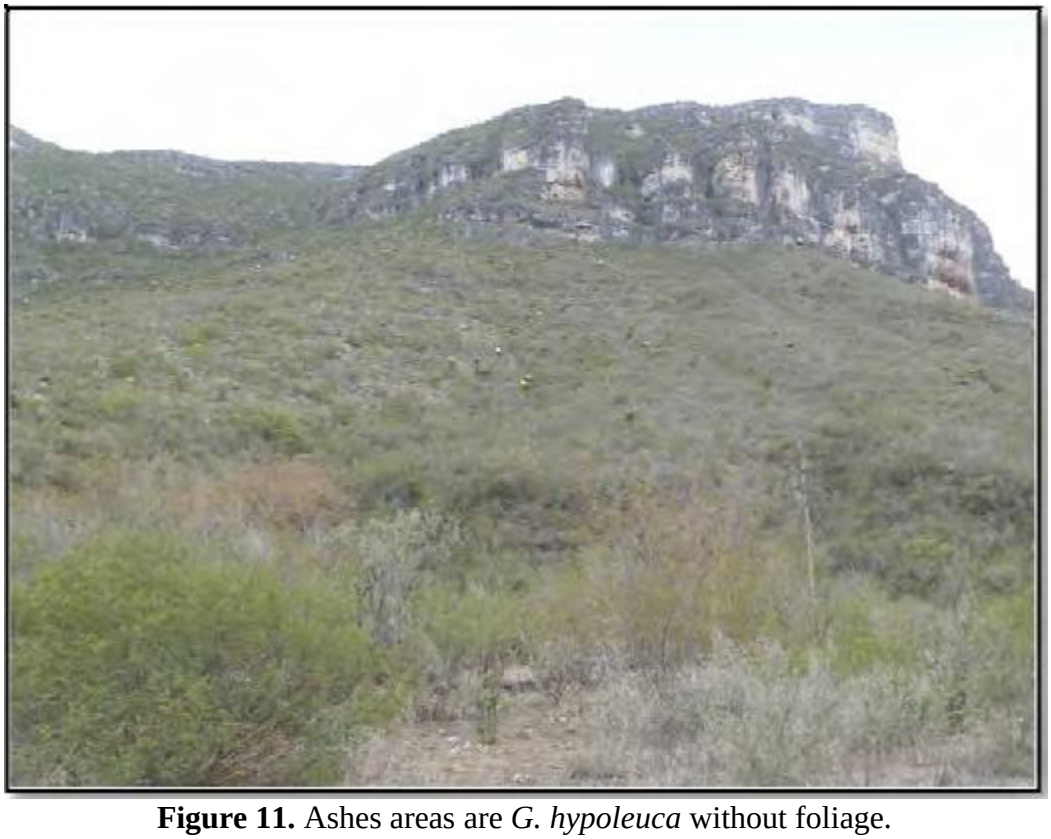


Figure 11. Ashes areas are *G. hypoleuca* without foliage.

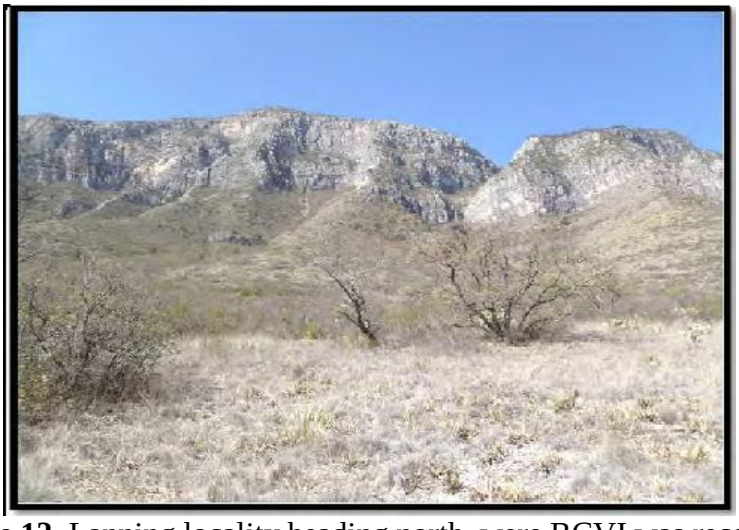


Figure 12. Lanning locality heading north, were BCVI was recorded.

Figure 13. Base of San Marcos heading East

Figure 14. Base of San Marcos heading West

Figure 15. Base of San Marcos heading South, showing Sierra La Purisima

Figure 16. Black-capped vireo at San Marcos base near Tanque de Noria

Figure 17. Black-capped vireo on *Quercus spp*. branch.

Figure 18. Highway to Bustamante on curves.

Figure 19. BCVI record at El Capulin.

Figure 20. Sierra Picachos top mountain and hills.

Figure 21. Mountain shrubs at canyons hills.

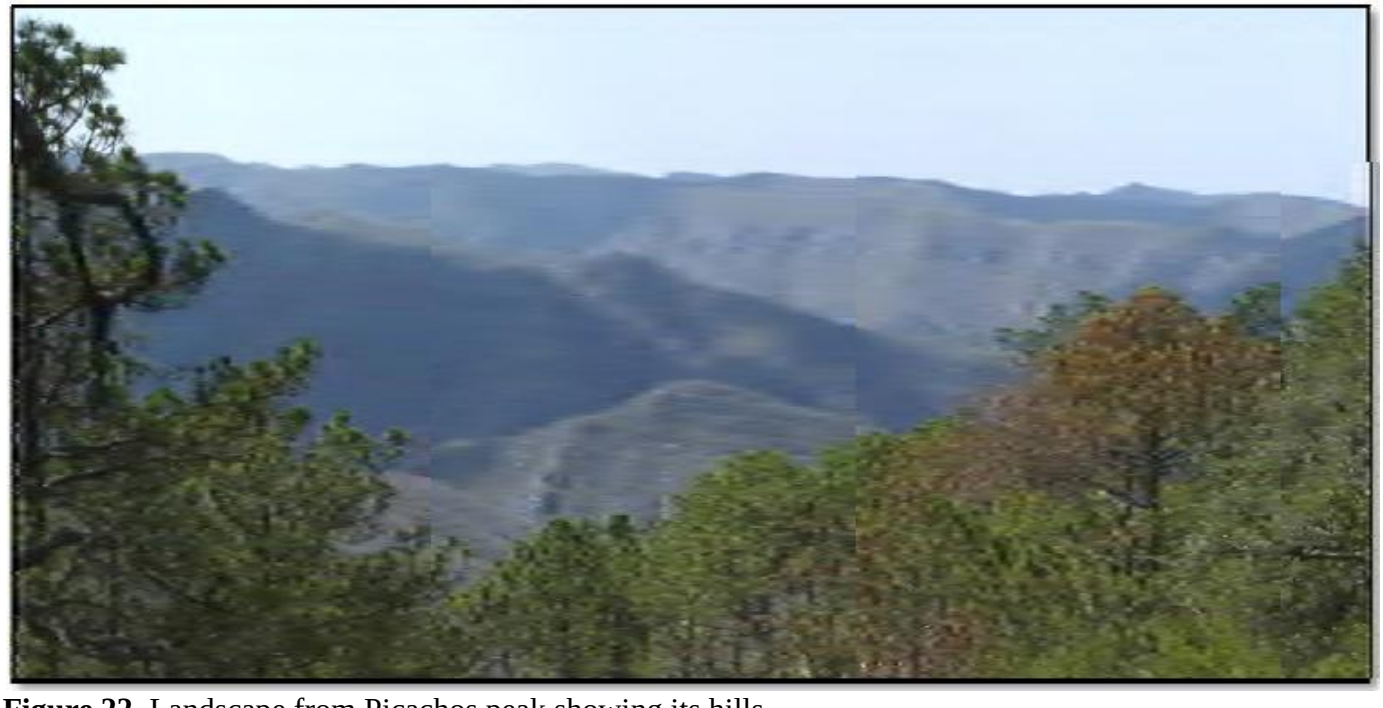


Figure 22. Landscape from Picachos peak showing its hills.

Figure 23. Bushes at hill highway Rio Verde - V. Juarez.

Figure 24. Bushes at highway Cerritos - Tula.

Figure 25. Canyon south Amoles, SLP.

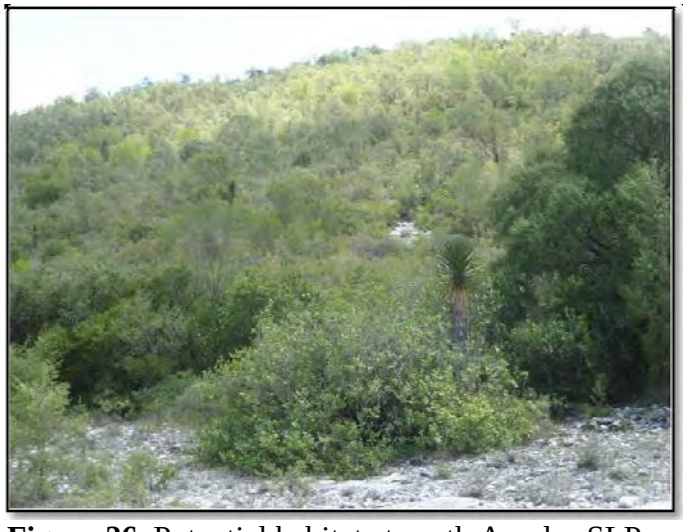


Figure 26. Potential habitat at south Amoles SLP.

Figure 27. Landscape at sierra El Potosí.

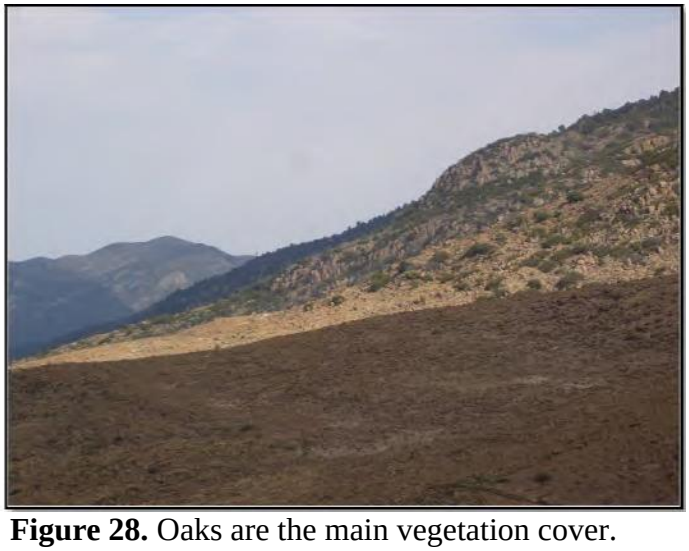


Figure 28. Oaks are the main vegetation cover.

Figure 29. Juvenile black-capped vireo at La Paila.

Figure 30. Fledging black-capped vireo on Sotolar canyon

Figure 31. Nests found at Sierra de Paila, upper left clockwise: 1) *Pistacia texana* (El Fresno); 2) *Rhus virens* (La Luz); 3) *Quercus invaginata* (La Luz); 4) *Acacia farnesiana* (La Luz).

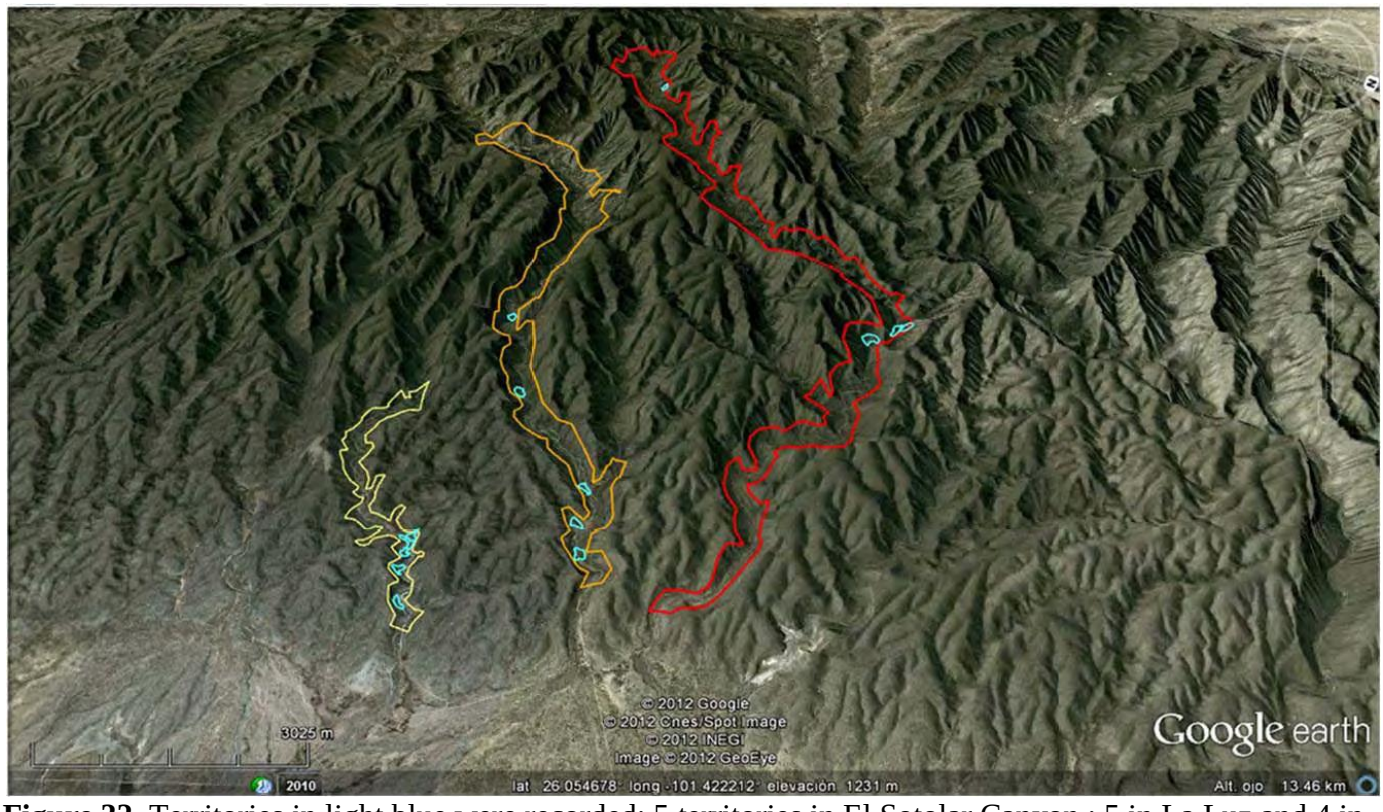


Figure 32. Territories in light blue were recorded: 5 territories in El Sotolar Canyon ; 5 in La Luz and 4 in El Fresno Canyon.

Figure 33. Researcher collecting vegetation data

Figure 34. Measuring nest visual obstruction

Figure 35. Researcher on nest searching activity.

Figure 37. Skunk (*Mephitis mephitis*) on La Luz Canyon, one found dead in El Sotolar.

Figure 36. Different birds of prey recorded at La Paila in its three canyons.

Figure 38. Bronzed cowbird from Picahos block.

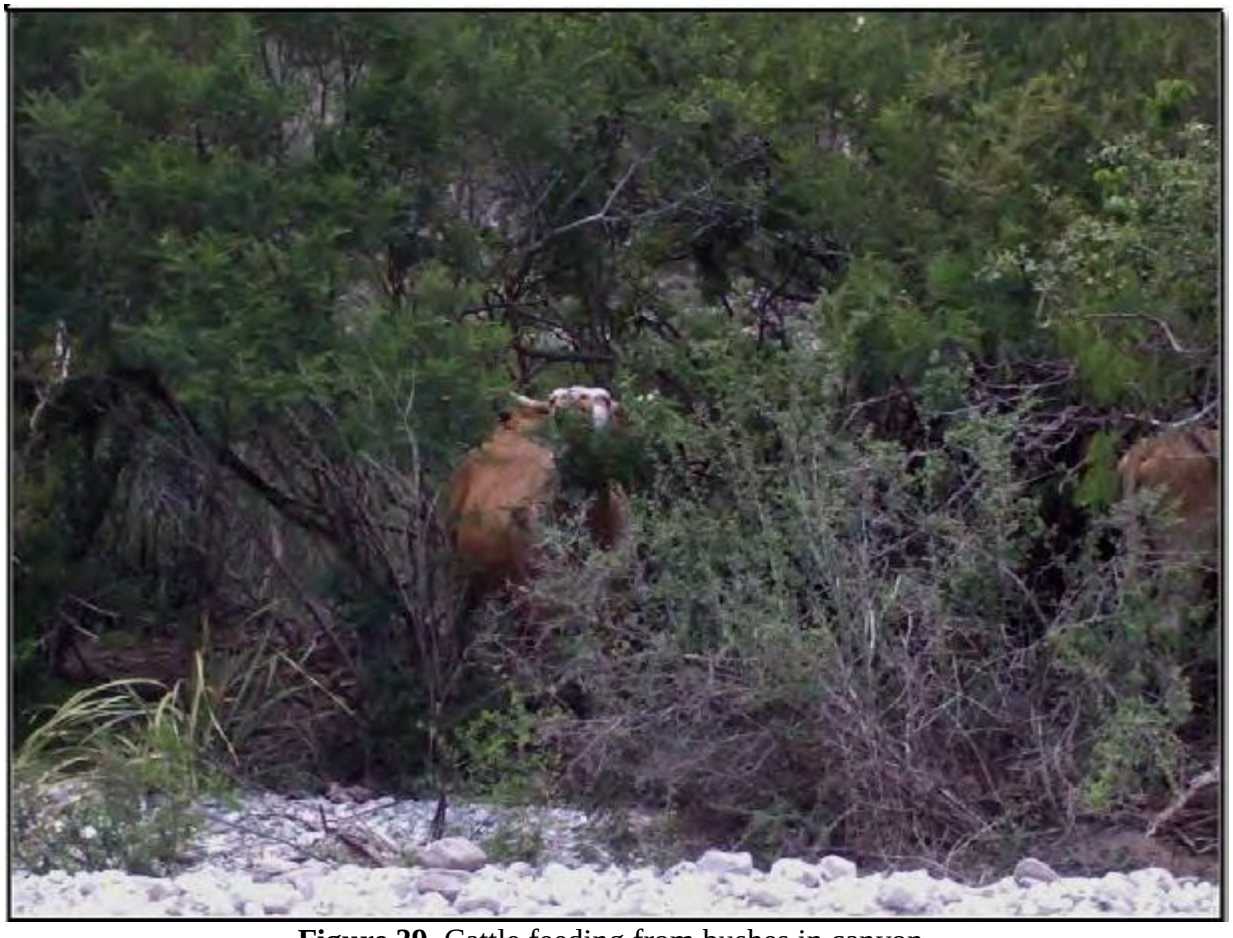


Figure 39. Cattle feeding from bushes in canyon.

Figure 40. Mined area next north of El Fresno Canyon.