



SPRING 2013 SURVEY REPORT
GOLDEN-CHEEKED WARBLER (*Setophaga chrysoparia*)
WESTCAVE PRESERVE
TRAVIS COUNTY, TEXAS

Prepared by:

Jennifer Leeper (LCRA Environmental Affairs)

Cartography by:

LCRA Surveying and Mapping

Prepared for:

LCRA Natural Resource Conservation

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1.0 INTRODUCTION

LCRA owns and is in a partnership with Westcave Preserve Corporation who manages the 71.809-acre Westcave Preserve, which is part of the larger Balcones Canyonlands Preserve (BCP) system. The BCP is a system of preserves associated with the Balcones Canyonlands Conservation Plan (BCCP), a regional habitat conservation plan (HCP) of which LCRA is a partner. Westcave Preserve is located about 30 miles west of Austin off of Hamilton Pool Road in far southwestern Travis County, Texas (see Figures 1 and 2). The original Westcave Preserve is 28.85 acres of which almost all is considered high quality habitat for the endangered Golden-cheeked Warbler (*Setophaga chrysoparia*). In 2008, LCRA acquired an additional 8.94 acres of land adjoining the LCRA Westcave Preserve just to the north of the tract to protect and preserve Westcave's ecological diversity and protect the grotto. In 2011, 34.02 additional acres to the west of the preserve were purchased to further protect the preserve.

The purpose of this report is to present the results of LCRA's spring 2013 Golden-cheeked Warbler (GCWA) presence/absence surveys within the 28.85 acre original property boundary of Westcave Preserve as well as the additional 42.96 acres adjacent to the preserve. The original Westcave Preserve will be referred to as "preserve" and the additional property acquired to help protect the preserve will be referred to as "acquired property" for the remainder of this report. The survey protocols adhere to the U.S. Fish and Wildlife Service's (FWS) recommended minimum procedures for determining the presence/absence of Golden-cheeked Warblers, as outlined in LCRA's Federal Fish and Wildlife Permit (Permit No. TE800900-0, issued 5 April 2011) and *USFWS Section 10(a)(1)(A) Scientific Permit Requirements for Conducting Presence/Absence Surveys and Habitat Assessments for Endangered Golden-cheeked Warblers* (FWS 2010). Section 2.0 of this report presents biological information about the GCWA, while Section 3.0 presents descriptions of the study area plot. Section 4.0 describes the methods LCRA employed to perform the 2013 surveys, and Section 5.0 provides a discussion of the findings of the presence/absence survey.

2.0 BIOLOGICAL BACKGROUND

2.1 GOLDEN-CHEEKED WARBLER (*Setophaga chrysoparia*)

Description: The GCWA is a medium-sized (approx. 12-13 cm length) insectivorous songbird. Breeding adult males have black on the forehead, crown, nape, and back. The cheeks are a bright golden yellow, interrupted by a black eyeline. The throat and upper breast are black, which continues as streaking along the sides and flanks. The remaining underparts are white. The wings are black with two distinct white wing-bars. Adult females are similar in coloration, but are comparatively duller; the crown and back are olive-green with some black streaking (Oberholser 1974, Pulich 1976, Ladd and Gass 1999).

Range: The GCWA is the only bird species that nests exclusively within the state's boundaries. Data indicate the species historically nested in 41 of Texas' 254 counties; however, current

confirmed breeding records exist from approximately 30 Texas counties (Pulich 1976, FWS 1995, Texas Ornithological Society (TOS) 1995, Lasley et al. 1997, Ladd and Gass 1999, Lockwood and Freeman 2004). Currently, the species is a rare to locally common summer resident from Young and Palo Pinto counties, south through the eastern and south-central parts of the Edwards Plateau to Edwards and Kinney counties, and Val Verde County (Lockwood and Freeman 2004, FWS 2013). GCWAs winter in pine and pine-oak woodlands in the highlands of southern Mexico, Guatemala, Honduras, and Nicaragua (Ladd and Gass 1999).

Habitat: Most GCWA arrive on their breeding grounds in early to mid-March. GCWA breeding habitat consists of mature oak-juniper woodlands in the Edwards Plateau, Lampasas Cut-Plain, and Llano Uplift regions, and to a lesser extent on portions of the Comanche Plateau, Western Cross Timbers, and North-Central Prairies (Ladd and Gass 1999; Lockwood and Freeman 2004). Ashe juniper (*Juniperus ashei*) and various oaks, such as Texas red oak (*Quercus buckleyi*) and plateau live oak (*Quercus fusiformis*), are the dominant tree species throughout the GCWA's breeding range. Other common canopy constituents may include post oak (*Quercus stellata*), Lacey oak (*Quercus laceyi*), Durand oak (*Quercus sinuata* var. *breviloba*), cedar elm (*Ulmus crassifolia*), walnut (*Juglans* spp.), Escarpment black cherry (*Prunus serotina* var. *eximia*), hackberry (*Celtis* spp.), Texas ash (*Fraxinus texensis*), and sycamore (*Platanus occidentalis*) (Ladd 1985, Ladd and Gass 1999).

GCWA use the shredding bark of mature Ashe junipers to construct nests and, therefore, require some mature juniper in their nesting habitat. Nonetheless, GCWA may occur in areas with little juniper provided that other key components of their habitat are present. Preferred woodlands typically have a moderate to high density of mature trees and a dense canopy cover in the middle and upper layers (FWS 1992, Ladd and Gass 1999). GCWA typically occur in areas containing steep slopes, such as canyons and draws, as well as adjacent ridgetops, but may occur elsewhere provided suitable habitat is present (Pulich 1976, Ladd and Gass 1999).

Status: On 4 May 1990, FWS published an emergency listing of the GCWA as endangered (55 FR 18844), as well as a proposed rule to formally list the GCWA as endangered. On 27 December 1990, FWS published the final rule for listing as endangered (55 FR 53153). The Texas Parks and Wildlife Department (TPWD) also lists the species as endangered. No critical habitat has been designated for the species.

Threats: Most researchers conclude that the population decline of the GCWA is a result of various factors related to habitat reduction and fragmentation (Wahl et al. 1990, FWS 1992, Ladd and Gass 1999). Oberholser (1974) discussed three main causes for the decline in suitable habitat: (1) land clearing for agricultural use; (2) land development; and (3) reservoir construction. While reservoir construction in the GCWA's range is no longer a primary threat, land clearing for agricultural use, brush control, and land development continue to threaten habitat for the species. In addition, nest parasitism by Brown-headed Cowbird (*Molothrus ater*) has likely contributed to the GCWA's population decline (Pulich 1976, FWS 1992, Ladd and Gass 1999). Additional factors, such as the spread of oak wilt, climate change, and drought may contribute to existing adverse effects.

2.2 PRESENCE IN GENERAL AREA

The presence of GCWA within the preserve property boundary is well documented. GCWA were found during every site visit for the 2002 and 2007 surveys LCRA conducted within the preserve. Surveys had not previously been conducted within the newly acquired property.

3.0 STUDY AREA

LCRA personnel conducted a survey within this area during spring 2013 (Figures 3 and 4):

- Preserve: Listening points T1 through T6; approximately 29 acres, most of which is high quality suitable habitat.
- Acquired Property: Listening points A1 through A8 as well as B1, C1 and D1; approximately 43 acres, most of which is not suitable habitat or transitional habitat.

3.1 PRESERVE

Westcave Preserve is very unique place where the arid savannah of the Edwards Plateau meets a limestone canyon leading to a spring-fed waterfall and cave formations. The preserve has two distinct ecosystems featuring grasslands scattered with wildflower meadows, Ashe junipers and various oak species bordering the limestone canyon which has a diverse number of plant species. The dominant species include various oak species (Texas red oak, plateau live oak, shin oak and chinkapin oak), Ashe juniper, bald cypress (*Taxodium distichum*), cedar elm (*Ulmus crassifolia*) and other woody species. Common midstory species include Ashe juniper, various oaks, Texas mountain laurel (*Sophora secundiflora*), Texas persimmon (*Diospyros texana*) and Mexican buckeye (*Ungnadia speciosa*). A high diversity of forbs, grasses and vines construct the understory vegetation. Dominant vegetation along the uplands include Ashe juniper, plateau live oak and Texas persimmon in mottes interspersed with open areas that include vegetation such as little bluestem (*Schizachyrium scoparium*), prickly pear (*Opuntia* sp.) and various forbs. The canopy cover is over 90 percent for the majority of the preserve.

3.2 ACQUIRED PROPERTY

The newly acquired properties surrounding the preserve are predominantly grassland with little to no canopy cover with the exception of the hillside just north of the preserve and west of the Pedernales River. The dominant vegetation found in the preserve continues through this section of the acquired property. Dominant vegetation on the majority of the acquired property is plateau live oak with open areas that include vegetation such as little bluestem, prickly pear, twist-leaf yucca (*Yucca rupicola*), and various wildflowers, grasses, and forbs.

4.0 METHODOLOGY

LCRA performed the presence/absence surveys in accordance with the procedures outlined by FWS (2010 and 2011). Current FWS survey protocol establishes the GCWA survey season as 15 March to 1 June, with a requirement of no less than 60 percent of surveys conducted prior to 15 May. LCRA conducted its initial survey of Westcave Preserve on 27 March 2013, with subsequent surveys on 11 April, 23 April, 8 May, and 22 May (Tables 1-3). During each of these five visits, LCRA staff surveyed both areas. No two surveys within a particular habitat area occurred within a five-day period. Biologists played digital recordings of GCWA vocalizations to elicit responses from the target species on the newly acquired lands during the fifth visit. To establish a survey route, LCRA staff identified 6 listening points within the original preserve and 11 listening points within the newly acquired property, all of which were visited on each of the five survey days. These listening points are situated evenly along the trail of the preserve and in a grid like pattern for the acquired property. Together these listening points cover the entire survey area. Figures 3 and 4 depict the patterns used to determine listening points. Listening points occur approximately 300 feet apart, which represents the average maximum distance for audible detection of the species. LCRA staff visited each point, recording any observation within a five-minute interval. Incidental observations between points were also recorded. For each visit, LCRA staff varied the order of the points and routes between the points, in an effort to prevent time bias of any specific point.

LCRA performed surveys using the spot-mapping method, as described by the International Bird Census Committee (IBCC) (1970). Biologists used aerial photography and U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles (Hammetts Crossing, Texas quadrangles) and recorded field observations with a handheld Global Positioning System (GPS) unit.

5.0 RESULTS

LCRA staff conducted GCWA surveys within the preserve on 27 March 2013, with subsequent surveys on 11 April, 23 April, 8 May, and 22 May. This effort included five (5) survey days totaling approximately 19.4 survey hours. Figures 3 and 4 depict the locations of observed GCWAs, with individual observations represented by either an actual or estimated location. Tables 2 present data about each observation, including date/time of observation, species, sex, type of observation, and coordinates.

5.1 PRESERVE

Survey 1 – 27 March: During the initial survey of the preserve, LCRA staff recorded three (3) detections of GCWA, all adult males. A male GCWA was heard singing “A-Song” from the trail. It is believed that the same male was then detected in an Ashe juniper tree. An actual point of the GCWAs location was recorded. Approximately 10 minutes later LCRA staff recorded a male GCWA singing “A-song” at listening point T2. At listening point T4 LCRA staff detected a male GCWA singing “A-Song.”

Survey 2 – 11 April: The second survey of the preserve produced four (4) detections of GCWA. A male GCWA was heard singing “A-song” from listening point T3. Approximately 30 minutes later, LCRA staff heard another male GCWA singing “A-Song” along the trail. LCRA staff continued south on the trail and detected a male GCWA singing “A-Song” and a female GCWA chipping and foraging on insects in a plateau live oak. The female then flew across the trail to the west. A Brown-headed Cowbird was seen with the male and female GCWA.

Survey 3 – 23 April: LCRA staff recorded a single GCWA detection during the third survey of the preserve. LCRA staff was at listening point T2 when a male GCWA was heard singing “A-Song.”

Survey 4 – 8 May: During the fourth survey of the preserve, LCRA staff recorded two (2) detections of GCWA. A male GCWA was detected singing “B-Song” in a plateau live oak from the trail. Approximately 15 minutes later, another male GCWA was heard singing “B-Song” near listening point T2.

Survey 5 – 22 May: The fifth and final survey of the preserve produced six (6) GCWA detections. During the final visit, LCRA staff heard a male GCWA singing “B-Song” just south of listening point T1. Approximately 5 minutes later, LCRA staff heard “A-Song”, “B-Song” and chipping from the trail in the canyon toward the Pedernales River. Six minutes later, a male GCWA was detected from the observation deck foraging in the trees. A male GCWA singing “A-song” was heard approximately 8 minutes later just northeast of the learning center. A male GCWA was detected singing “B-Song” along the trail near listening point T2. The male GCWA foraged in an Ashe juniper and then flew across the trail to a shin oak.

LCRA staff recorded multiple GCWA on all five (5) visits, totaling 16 observations. LCRA staff did not locate any nests during the 2013 survey.

5.2 ACQUIRED PROPERTY

LCRA staff conducted GCWA surveys within the newly acquired property on 27 March 2013, with subsequent surveys on 11 April, 23 April, 8 May, and 22 May 2013. This effort included five (5) survey days totaling approximately 19.4 survey hours. Figures 3 and 4 depict the locations and of observed GCWAs, with individual observations represented by either an actual or estimated location. Table 3 presents data about each observation, including date/time of observation, species, sex, type of observation, and coordinates.

Survey 1 – 27 March: During the initial survey of the acquired property, LCRA staff recorded two (2) detections of GCWA, all adult males. Detections were of individual GCWA singing from within the preserve. All vocalizations observed during this visit represented the male “A-Song.”

Survey 2 – 11 April: During the second survey of the acquired property, LCRA staff recorded zero (0) detections of GCWA.

Survey 3 – 23 April: During the third survey of the acquired property, LCRA staff recorded zero (0) detections of GCWA.

Survey 4 – 8 May: During the fourth survey of the acquired property, LCRA staff recorded zero (0) detections of GCWA.

Survey 5 – 22 May: The fifth and final survey of the acquired property produced three (3) GCWA detections. During this final visit, LCRA staff played digital recordings of GCWA songs at every listening point on the acquired property. At listening point A8, the digital recording produced a call back response from a male warbler singing “B-Song” from the preserve. At listening point D1, two male GCWA were heard counter singing “A-song” in the canyon. One is believed to have been on the hillside just east of the Pedernales River and the other on the side of the hillside just west of the river. The digital recording produced a call back response from the male GCWA on the west side of the river. The recording caused the GCWA on the west side of the canyon to sing “A-song” and fly to the top of a tree at the top of the hillside near listening point D1.

LCRA staff recorded GCWA at two of the five visits, totaling five (5) observations. Individual GCWA observations recorded within the study area are GCWA heard at the edge of the preserve and along the hillside to the west of the Pedernales River.

6.0 SUMMARY

Figures 3 and 4 present the locations of GCWA sightings within the preserve and acquired property during spring 2013. Table 4 presents additional bird species that LCRA staff recorded within the study area during the 2013 survey period.

6.1 PRESERVE

LCRA staff recorded 16 observations of GCWA during the preserve survey. Three additional detections were made in the preserve from the acquired property. LCRA staff observed both male and female GCWAs within the preserve portion of the study area, providing evidence of presence within the areas surveyed. Although nests were not found due to the survey being restricted to the trail, it is almost certain that GCWA are nesting in the preserve since male GCWAs were observed singing “B-Song” and seen with female GCWA in high quality habitat.

The survey results indicate that GCWA occupy a majority of the preserve.

6.2 ACQUIRED PROPERTY

LCRA staff recorded 5 observations of GCWA during the acquired property; however, three of the five detections were in the preserve and heard from the acquired property. LCRA staff observed only male GCWAs within the acquired property portion of the study area which was along the hillsides of the Pedernales River just north of the preserve.

The survey results indicate that GCWA occupy the area where the male GCWAs were detected just north of the preserve. This area is considered high quality habitat and is most likely utilized by GCWA being that it is connected to the preserve. The rest of the acquired property is unlikely to support GCWA. There is little to no canopy cover and this area does not meet the basic requirements for GCWA habitat.

7.0 LITERATURE CITED

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ATTACHMENTS

TABLE 1. SURVEY TIME/WEATHER DATA – SPRING 2013

Survey	Surveyors ¹	Date	Time (Begin)	Time (End)	Temp (F°) (Begin)	Temp (F°) (End)	Wind Speed (Min)	Wind Speed (Max)	Precipitation
1	JL	03/27/2013	0720	1100	37	65	3	15	None
2	JL	04/11/2013	0715	1120	45	60	5	8	None
3	JL	04/23/2013	0657	1040	68	70	3	10	Sprinkle
4	JL	05/08/2013	0628	1018	67	69	0	10	None
5	JL	05/22/2013	0635	1041	58	79	0	8	None

¹JL-Jennifer Leeper

TABLE 2. PRESERVE SURVEY OBSERVATION DATA – SPRING 2013

Date	Surveyors ¹	Time	Species	Sex	Observation Type	Location Type	Observer Latitude	Observer Longitude	Bird Latitude	Bird Longitude
03/27/2013	JL	0734	GCWA	Male	Auditory	Estimated	30.337509	-98.140626	30.337104	-98.140536
03/27/2013	JL	0739	GCWA	Male	Visual	Actual			30.337699	-98.140351
03/27/2013	JL	0750	GCWA	Male	Auditory	Estimated	30.338785	-98.14032	30.338684	-98.140212
03/27/2013	JL	0806	GCWA	Male	Visual	Estimated	30.340318	-98.14019	30.340386	-98.140201
04/11/2013	JL	1017	GCWA	Male	Auditory	Estimated	30.339648	-98.140117	30.339399	-98.139642
04/11/2013	JL	1057	GCWA	Male	Auditory	Estimated	30.336971	-98.140124	30.33692	-98.140071
04/11/2013	JL	1111	GCWA	Male	Visual	Actual			30.338222	-98.140378
04/11/2013	JL	1111	GCWA	Female	Visual	Actual			30.338222	-98.140378
04/23/2013	JL	0808	GCWA	Male	Auditory	Estimated	30.337918	-98.140512	30.338271	-98.140236
05/08/2013	JL	0639	GCWA	Male	Visual	Actual			30.337599	-98.1404
05/08/2013	JL	0652	GCWA	Male	Auditory	Estimated	30.338659	-98.140356	30.338739	-98.140269
05/22/2013	JL	0655	GCWA	Male	Auditory	Estimated	30.337693	-98.140423	30.337438	-98.140305
05/22/2013	JL	0701	GCWA	Male	Auditory	Estimated	30.338128	-98.140217	30.338234	-98.140013
05/22/2013	JL	0707	GCWA	Male	Visual	Estimated	30.338099	-98.14021	30.338081	-98.140151
05/22/2013	JL	0715	GCWA	Male	Auditory	Estimated	30.337108	-98.140397	30.337117	-98.140271
05/22/2013	JL	0949	GCWA	Male	Visual	Actual			30.338725	-98.140405
05/22/2013	JL	0958	GCWA	Male	Auditory	Estimated	30.339693	-98.140102	30.339998	-98.139585

¹JL-Jennifer Leeper

TABLE 3. ACQUIRED PROPERTY SURVEY OBSERVATION DATA – SPRING 2013

Date	Surveyors ¹	Time	Species	Sex	Observation Type	Location Type	Observer Latitude	Observer Longitude	Bird Latitude	Bird Longitude
03/27/2013	JL	1042	GCWA	Male	Auditory	Estimated	30.339015	-98.14118	30.339458	-98.140474
03/27/2013	JL	1054	GCWA	Male	Auditory	Estimated	30.338057	-98.14126	30.337483	-98.140577
05/22/2013	JL	0749	GCWA ²	Male	Auditory	Estimated	30.3392	-98.1411	30.339494	-98.140297
05/22/2013	JL	0837	GCWA ²	Both	Auditory	Estimated	30.341618	-98.139493	30.341254	-98.13155
05/22/2013	JL	0842	GCWA ²	Male	Visual	Estimated	30.341464	-98.139561	30.341485	-98.139502

¹JL-Jennifer Leeper

²Tape played to solicit response.

TABLE 4. AVIAN SPECIES OBSERVED – SPRING 2013

Common Name¹	Scientific Name¹
Wild Turkey	<i>Meleagris gallopavo</i>
Black Vulture	<i>Coragyps atratus</i>
Turkey Vulture	<i>Cathartes aura</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
White-winged Dove	<i>Zenaida asiatica</i>
Mourning Dove	<i>Zenaida macroura</i>
Common Ground-Dove	<i>Columbina passerina</i>
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>
Greater Roadrunner	<i>Geococcyx californianus</i>
Chimney Swift	<i>Chaetura pelagica</i>
Black-chinned Hummingbird	<i>Archilochus alexandri</i>
Ladder-backed Woodpecker	<i>Picoides scalaris</i>
Acadian Flycatcher	<i>Empidonax virescens</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>
White-eyed Vireo	<i>Vireo griseus</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>
Western Scrub-Jay	<i>Aphelocoma californica</i>
Common Raven	<i>Corvus corax</i>
Purple Martin	<i>Progne subis</i>
Carolina Chickadee	<i>Poecile carolinensis</i>
Black-crested Titmouse	<i>Baeolophus atricristatus</i>
Canyon Wren	<i>Catherpes mexicanus</i>
Carolina Wren	<i>Thryothorus ludovicianus</i>
Bewick's Wren	<i>Thryomanes bewickii</i>
Golden-crowned Kinglet	<i>Regulus satrapa</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>
Eastern Bluebird	<i>Sialia sialis</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>
Louisiana Waterthrush	<i>Parkesia motacilla</i>
Nashville Warbler	<i>Oreothlypis ruficapilla</i>
Northern Parula	<i>Setophaga americana</i>
Golden-cheeked Warbler	<i>Setophaga chrysoparia</i>
Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>
Field Sparrow	<i>Spizella pusilla</i>
Lark Sparrow	<i>Chondestes grammacus</i>
Summer Tanager	<i>Piranga rubra</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
Painted Bunting	<i>Passerina ciris</i>

Brown-headed Cowbird

Molothrus ater

House Finch

Haemorhous mexicanus

Lesser Goldfinch

Spinus psaltria

¹Taxonomy and nomenclature follow AOU 1998, 2000, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, and 2012

FIGURE 1. GENERAL LOCATION OF WESTCAVE PRESERVE

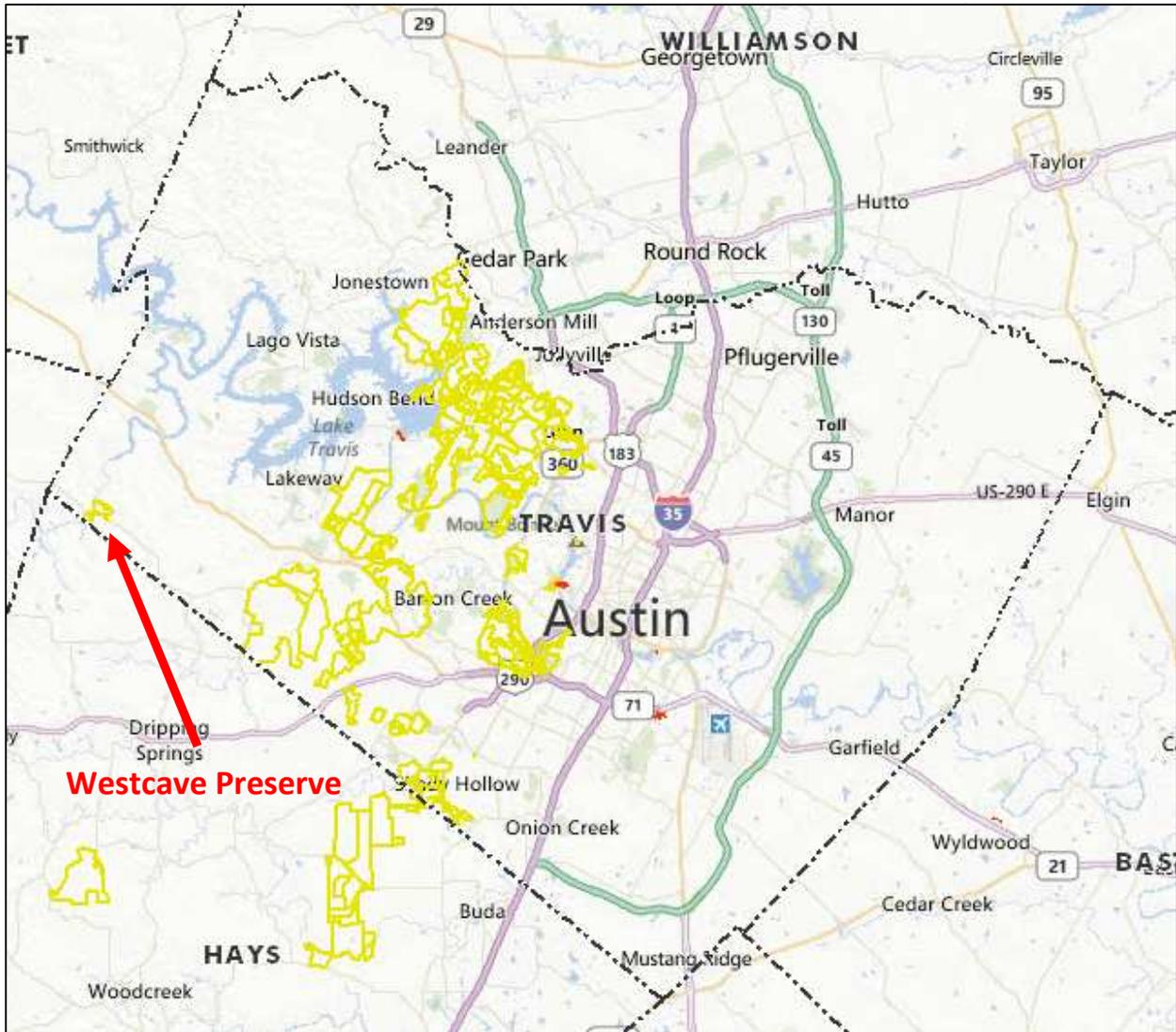
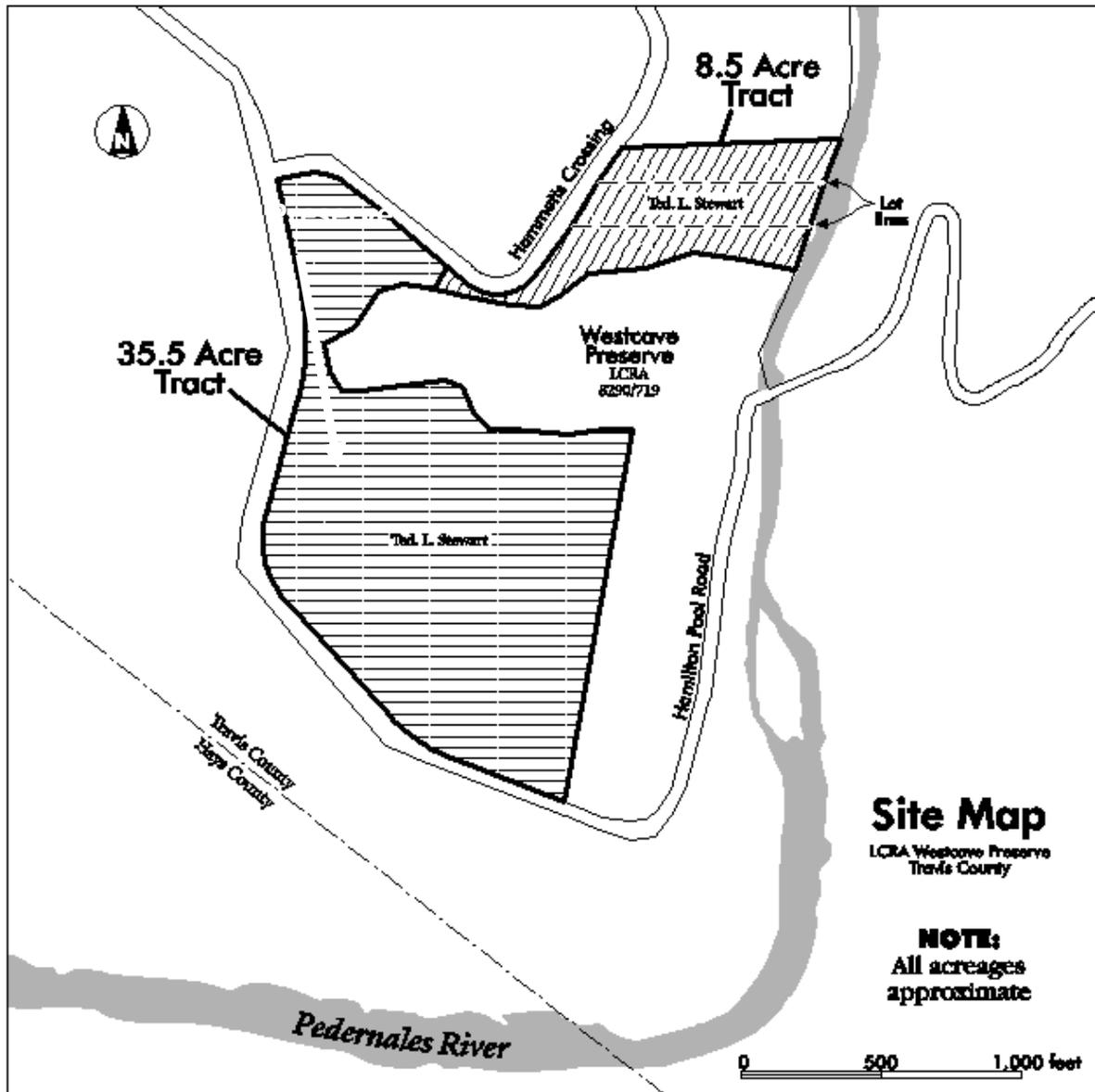


FIGURE 2. PROPERTY BOUNDARY OF WESTCAVE PRESERVE AND ACQUIRED PROPERTY



The shaded area is the “acquired property.”

FIGURE 4. TOPOGRAPHIC MAP WITH 2013 WESTCAVE GCWA OBSERVATIONS

