FY 2016 Report on Monitoring

Golden-cheeked Warblers (*Setophaga chrysoparia*) on Travis County Tracts of the Balcones Canyonlands Preserve



Photo: Courtesy of Julia Land, June 15, 2013

Travis County

Department of Transportation and Natural Resources

Natural Resources and Environmental Quality Division

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Introduction

In 1990, the U.S. Fish and Wildlife Service (USFWS) listed the golden-cheeked warbler (*Setophaga chrysoparia,* hereafter GCWA) as federally endangered as a result of habitat loss and fragmentation due to suburban development, reservoir construction, and agricultural use (USFWS 1990, Ladd and Gass 1999). The GCWA breeds exclusively in central Texas where suitable oak-juniper woodlands and forest are present (Ladd and Gass 1999, Pulich 1976). In recent decades, development has expanded rapidly westward from the City of Austin, accelerating the loss and fragmentation of GCWA habitat in western Travis County. In 1996, the Balcones Canyonlands Conservation Plan (BCCP) was approved by the USFWS. This 10(a)1(B) permit is jointly held by the City of Austin and Travis County to mitigate for the incidental "take" of habitat due to development and to facilitate the local recovery of the warbler and seven other endangered species (USFWS 1996). The BCCP permit requires a minimum of 30,428 acres of endangered species habitat in western Travis County be set aside as a preserve for these species. This preserve system, the Balcones Canyonlands Preserve (BCP), is managed by an assortment of organizations and government agencies, including Travis County. As of Fiscal Year 2016, Travis County manages 8,861 acres within the BCP. Travis County has been monitoring GCWAs on the BCP and other county-managed properties annually since 1996.

Objectives

Travis County Natural Resources staff focused survey efforts on collecting baseline data on newly acquired preserve lands and taking periodic GCWA abundance measurements to detect trends.

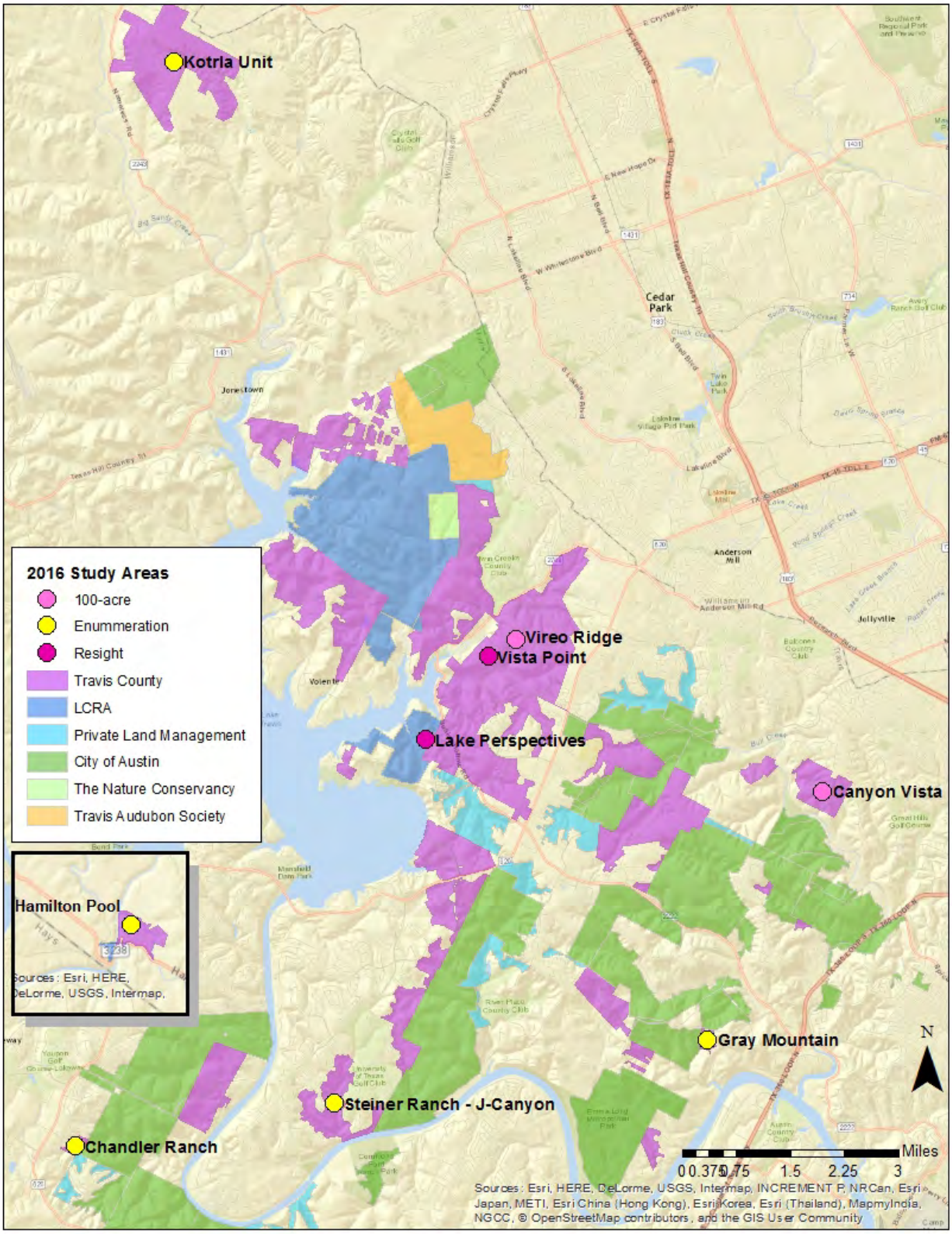
Methods

County staff used territory mapping, a. k. a enumeration, to provide a rough estimate of abundance, occupancy, distribution and territory density. Enumeration efforts on Travis County-managed properties are typically carried out every 4-5 years or more often should development or unusual activity be planned for areas adjacent to a particular tract. All observations (visual and auditory) of male, female, and juvenile warblers were plotted on hard-copy digital orthophoto maps. For each observation, sex, age, presence of a mate, and number of fledglings observed were recorded. Song type and counter singing were also noted. Avian locations and demographic data were later recorded in an ArcGIS 10 (ESRI, Inc., Redlands, California) geodatabase using a spatial reference of NAD 1983/UTM 14N. Birds that were observed with a female, attending a nest, or with fledglings were considered territorial. Birds that were observed on at least three occasions separated by at least seven days were considered territorial as well. Territories were differentiated as either "Full" with all observations occurring within the study area, "Edge" with some observations outside the study area, or "Off-plot" with no observations occurring within the study area. Due to limitations inherent to territory mapping methods (i.e. differences in observer ability and the stability of exclusive territories of the target species), results of all surveys should be interpreted as approximations.

Enumeration surveys were conducted on the Kotrla Unit, Steiner Ranch Sec. 1 (J-Canyon), Chandler, Gray Mountain and Hamilton Pool. In addition, Travis County Natural Resources staff assisted the City of Austin with data collection as part of a collaborative, on-going viability study. Intensive surveys (100-acre surveys) were conducted at Canyon Vista and Vireo Ridge. County staff and volunteers assisted with re-sighting returning color banded GCWAs at Vista Point and Lake Perspectives/McGregor. The results of the study will be presented in Appendix F by the

City of Austin and in publications by Jennifer Reidy and Frank Thompson (2016). Figure 1 and Table 1 illustrate the survey areas and effort.

Figure 1. 2016 Travis County Survey Sites on the Balcones Canyonlands Preserve



Survey Effort

Seven Travis County staff members and seven volunteers participated in the various GCWA surveys during the 2016 season. Staff surveyed a total of 780.5 hours and volunteers contributed 155.25 hours.

Table 1. 2016 GCWA Survey Effort

Tract	Acreage Surveyed	Survey Dates	Total Survey Hours
Kotrla	950	3/23/16 - 6/8/16	**289.25**
Gray Mountain	25	3/16/16 - 5/25/16	**11**
Chandler	29	3/23/16 - 5/24/16	**18**
J-Canyon	317	3/29/16 - 5/13/16	**21.75**
Hamilton Pool	162	3/25/16 - 5/6/16	**35.25**
Canyon Vista	171	3/15/16 - 6/14/16	**302.75**
Vireo Ridge	171	3/22/16 - 6/1/16	**129.5**
Lake Perspectives	171	3/22/16 - 5/12/16	**82.5**
Vista Point	171	3/21/16 - 5/27/16	**43**
		Total Survey Hours	**933**

Results

To calculate an estimate of territory density, full, edge, and off-plot territories were differentiated based on the boundaries of the survey areas. Edge territories were counted as one-half of a territory. Off-plot territories were not considered in the density calculations. See Table 2 for a summary of the results.

Table 2. 2016 GCWA Enumeration Survey Results

	Abundance	No. of Full Territories	No. of Edge Territories	Modified number of Territories	Territory Density (ac)	Territory Density (ha)
Kotrla Unit	68	56	8	60	0.06	0.026
Gray Mountain	3	0	1	0.5	0.02	0.008
Chandler	2	0	2	1	0.03	0.014
Steiner - J Canyon	4	3	1	3.5	0.01	0.004
Hamilton Pool	4	2	0	2	0.01	0.005

Results per Study Site

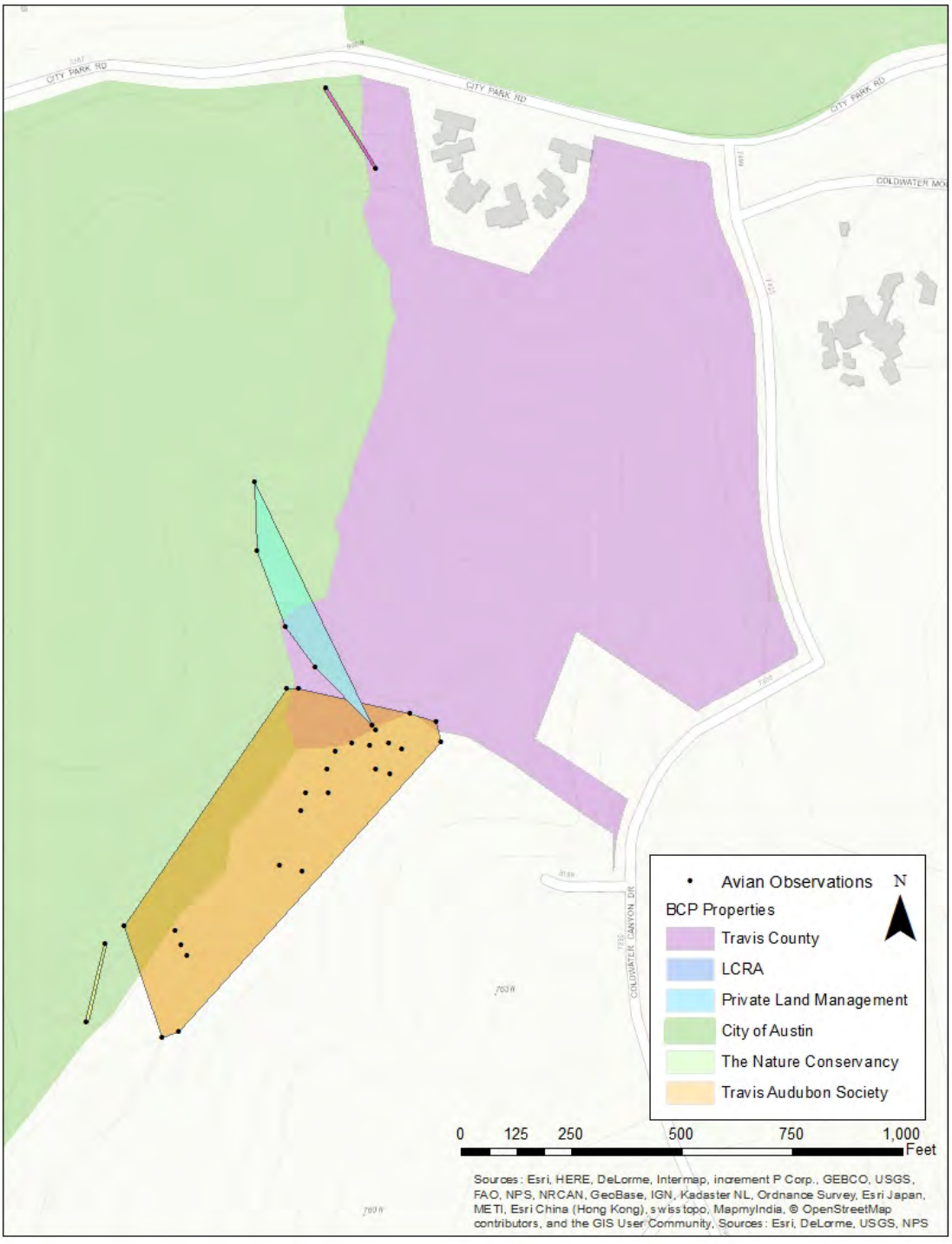
The Kotrla Unit, consists of two tracts –Scott & White and Kotrla, purchased in 2014 and 2015 respectively. The Kotrla Unit is located in the far northwest corner of Travis County and consists of 950 acres of uplands transected east to west by a long canyon. Ashe juniper (*Juniperus ashei*) and live oak (*Quercus virginiana*) dominate the forest along the slopes with the uplands thinning to patchier Ashe juniper and shin oak (*Quercus havardii*). In order to collect baseline GCWA abundance data, the Kotrla Unit was divided into 8 survey plots and surveyed by Travis County staff and volunteers from March 23rd through June 8th. Of the 68 GCWA males observed, 56 had territories established within the study plot and eight had territories that stretched out of the Travis County property. See Figure 2 below.

Figure 2. 2016 Kotrla Unit GCWA Enumeration



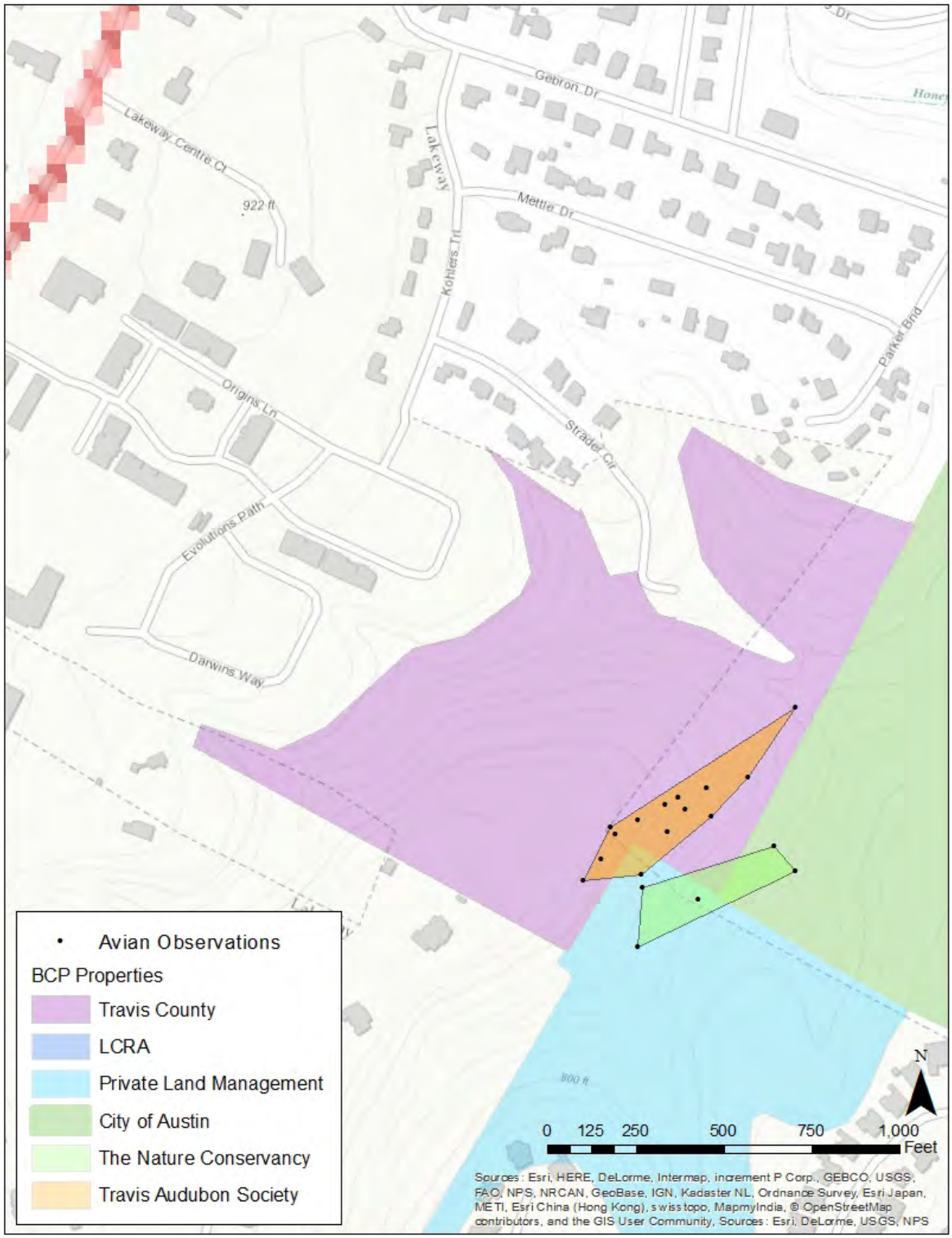
The Gray Mountain tract is a 25 acre tract purchased in 2006. It is located in the North Lake Austin macrosite off City Park Road. The tract supports oak-juniper woodland with southwest facing slopes. The last time the plot was survey was in 2007 when two GCWA males were detected with only one full territory mapped. Similar results were obtained in 2016 with three GCWA males detected on the tract and one edge territory mapped as shown in Figure 3.

Figure 3. 2016 Gray Mountain GCWA Enumeration



The Chandler tract, a 29-acre tract acquired in 2008, is located west of RM 620 near Lakeway. Two intermittent tributaries of Honey Creek run through the tract. The sloping upland area supports mixed oak-juniper woodlands while the riparian zones give way to diverse deciduous vegetation, including Texas madrone (*Arbutus xalapensis*). The Chandler tract was surveyed in 2009 with three GCWA males detected, none of whom established full territories. In 2016, two GCWA males were detected, with two edge territories established as shown in Figure 4.

Figure 4. 2016 Chandler GCWA Enumeration

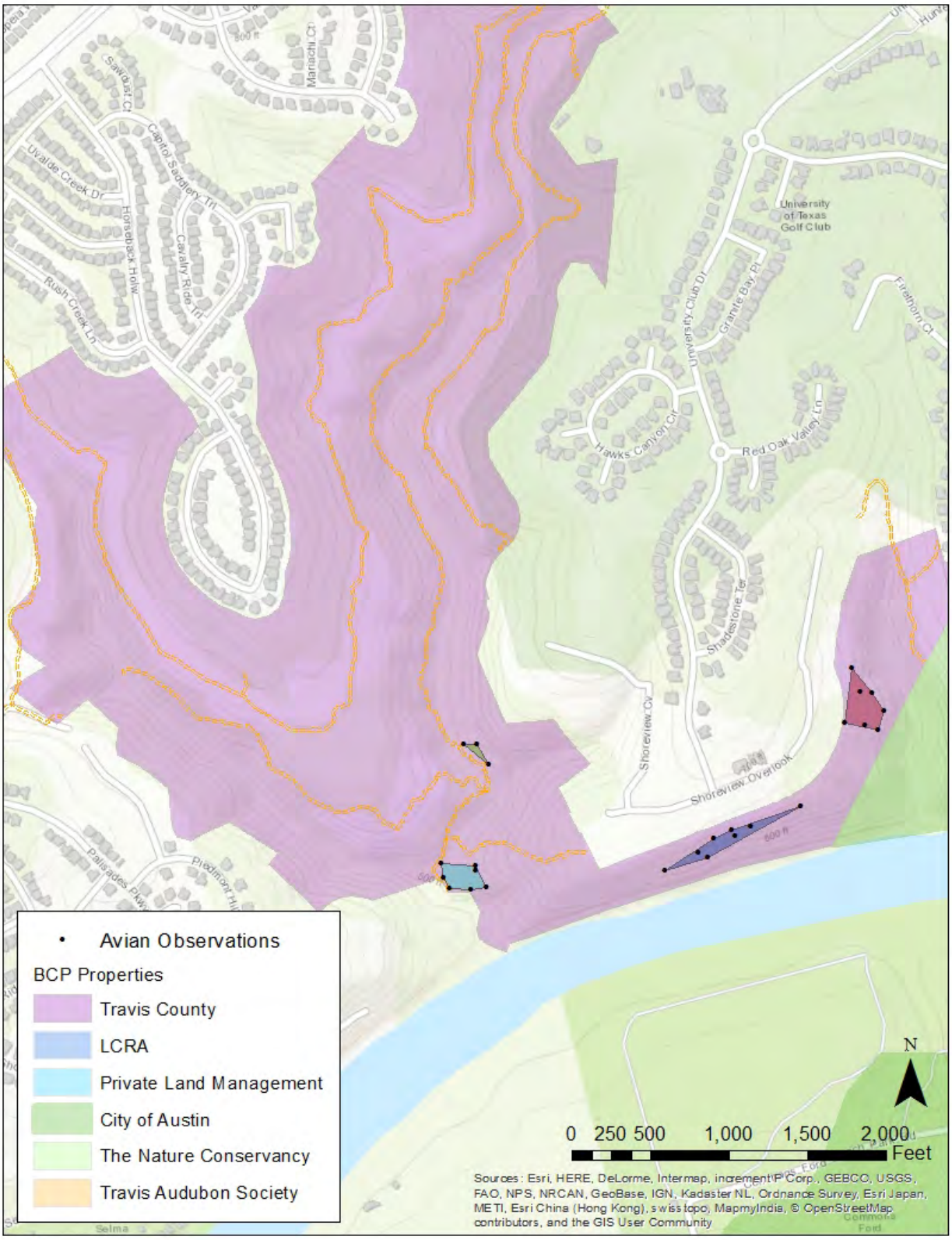


Steiner Ranch Tract 1, referred to informally as “J-Canyon,” is a section of Steiner Ranch Preserve in the North Lake Austin macrosite. Consisting of steep canyons and rocky slopes and bounded by neighborhoods to the north and Ladybird Lake to the south, the tract is mesic along canyon bottoms and xeric in its uplands and eroded slopes. The tract was acquired in 2000 with survey efforts commencing the following year. In the Annual Report of 2001, concerns for the continued viability of GCWA on the preserve were raised due to the level of fragmentation and the potential for detrimental edge effects. It was noted that many of the territories were located outside the preserve in lands slated for development. As the residential areas have been built out, the abundance of GCWA has declined on this tract. In the 2016 survey, four GCWA males were detected with three full territories and one edge territory observed. See Table 3 and Figure 5.

Table 3. Steiner Ranch Section 1 (J-Canyon) GCWA Survey Results 2001 to 2016

Steiner Ranch - J-Canyon	Abundance	No. of Full Territories	No. of Edge Territories	Modified number of Territories	Territory Density (ac)	Territory Density (ha)
2001	24			18	0.03	0.08
2003	23			13	0.04	0.1
2006	17	6	4	8	0.02	0.06
2009	6	6	0	6	0.02	0.05
2012	4	2	2	3	0.03	0.02
2016	4	3	1	3.5	0.01	0.03

Figure 5. 2016 Steiner Ranch (J-Canyon) GCWA Enumeration

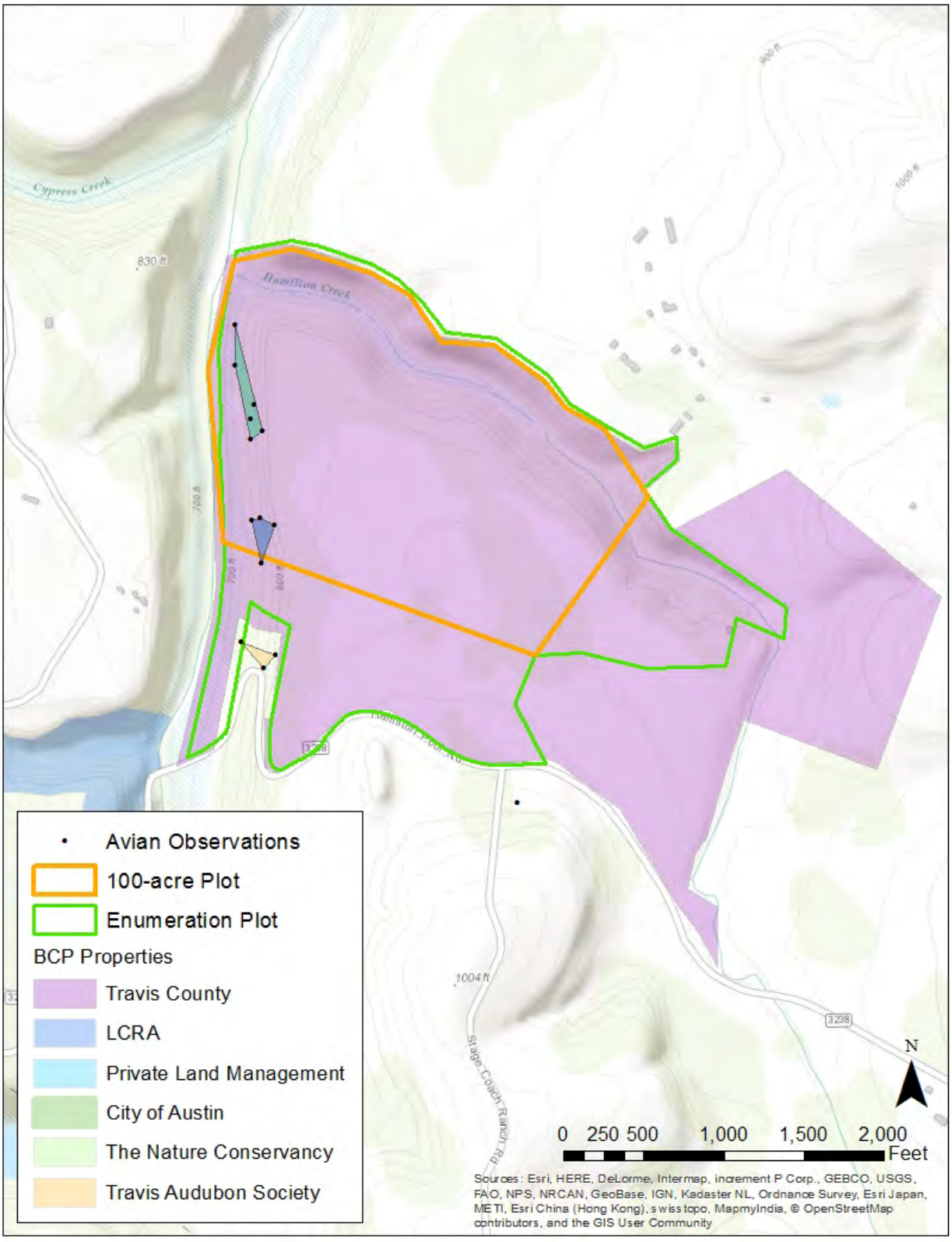


Hamilton Pool is a 232 acre Travis County Park located in far southwestern Travis County near the Hays County boundary in the Pedernales macrosite off Hamilton Pool Road (RM 3238). River and creek terrain supports mixed evergreen-deciduous woodland dominated by Ashe juniper, Nuttall's oak (*Quercus texana*), and cedar elm (*Ulmus crassifolia*). Travis County staff and volunteers have been surveying GCWA annually at Hamilton Pool since 1992 using various protocols over the years. For the past 4 years, staff has surveyed the likely habitat on 162 acres of the property. Table 4 below illustrates a sampling of the survey results. In the 2016 survey, four GCWA males were detected with two full territories observed. See Figure 6 for a map.

Table 4. Hamilton Pool GCWA Survey Results From Selected Years

Hamilton Pool	Abundance	No. of Full Territories	No. of Edge Territories	Modified number of Territories	Territory Density (ac)	Territory Density (ha)
2001 (162 ac)	9	-	-	9	0.07	0.18
2004 (100 ac)		7	9	8		0.19
2007 (100 ac)	13	7	3		8.5	0.21
2010 (100 ac)	15	7	3	8.5	0.25	0.21
2013 (162 ac)	7	4	2	5	0.09	0.08
2014 (162 ac)	14	6	1	6.5	0.11	0.1
2015 (162 ac)	7	3	0	3	0.05	0.02
2016 (162 ac)	4	2	0	2	0.01	0.005

Figure 6. 2016 Hamilton Pool GCWA Enumeration



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