FY 2018 Report on Monitoring Golden-cheeked Warblers (*Setophaga chrysoparia*) on Travis County Tracts of the Balcones Canyonlands Preserve



Photo: Courtesy of Heather Valley

Travis County

Department of Transportation and Natural Resources

Natural Resources and Environmental Quality Division

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Introduction

The Balcones Canyonlands Preserve (BCP) was created in March 1996 to protect the endangered golden-cheeked warbler (*Setophaga chrysoparia*) (GCWA) and seven other federally endangered species. Management of the BCP is carried out by Travis County, the City of Austin, and several other partners. Travis County manages 4,985 hectares (12,319 acres) of the BCP, most of which is GCWA breeding habitat consisting primarily of mature oak-juniper (*Quercus-Juniperus*) forest. Travis County staff annually monitors the GCWA population on select County-managed BCP tracts and Parks. In FY 2018, Travis County Natural Resources staff collected territory and productivity data on intensive monitoring plots as part of a collaborative monitoring program with the City of Austin (Figure 1). In addition, Travis County staff conducted less intensive enumeration surveys on three plots and a presence/absence survey at the Bee Creek Sports Complex. County staff and volunteers surveyed GCWAs for 813.25 hours throughout the 2018 season. See Table 1 for survey effort. City of Austin staff monitored the Wild Basin Preserve intensive monitoring plot.

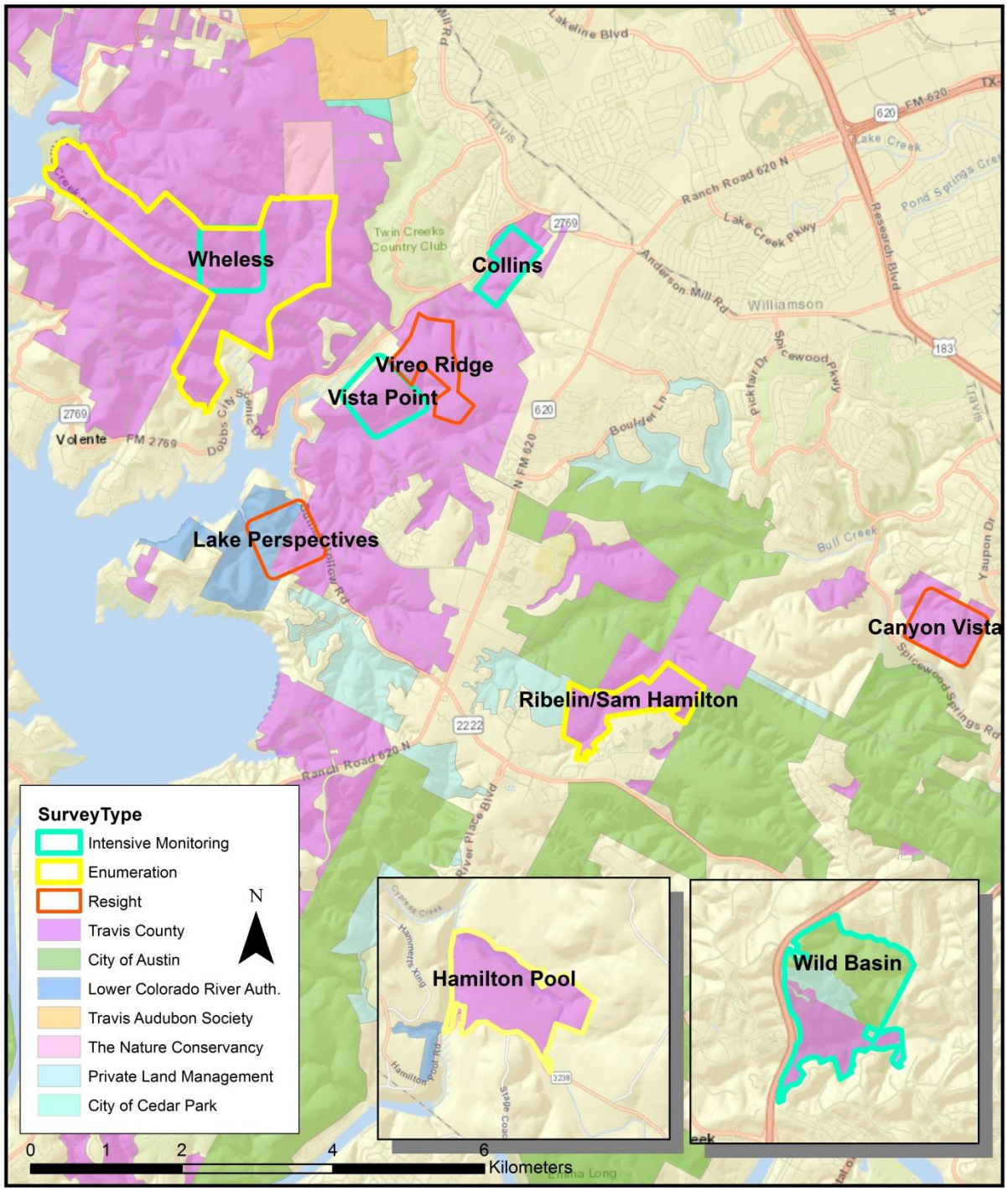
Table 1. 2018 GCWA Survey Effort on Travis County managed lands.

Survey Plot	Survey Type	Acreage Surveyed	Hectares Surveyed	Total Survey Hours
Ribelin/Sam Hamilton East	Enumeration	839	340.0	102.25
Hamilton Pool	Enumeration	166	67.0	20.75
Wheless	Enumeration	907	367.0	193.75
Wheless	Intensive	171	69.0	42.75
Vista Point	Intensive	171	69.0	147.75
Wild Basin*	Intensive	437	177.0	0
Collins	Intensive	100	40.5	240.5
Canyon Vista	Resight	171	69.0	20.25
Vireo Ridge	Resight	125	50.0	14.5
Lake Perspectives	Resight	171	69.0	21
Bee Creek Sports Complex**	Presence/Absence	29	12.0	9.75
TOTAL		3287	1329.5	813.25

* The City of Austin staff conducted surveys on the Wild Basin tract.

**The Bee Creek Sports Complex is not part of the BCP.

Figure 1. 2018 Travis County GCWA Survey Sites on the Balcones Canyonlands Preserve.



Methods and Results

Enumeration Surveys

Territory mapping (enumeration) is a survey method utilized to provide an estimate of abundance, occupancy, distribution and territory density in selected study areas. Weekly observations of GCWAs were recorded for approximately 10 weeks beginning in mid-March. Male GCWA that are observed on at least three occasions separated by at least seven days or observed with a female, attending a nest, or with fledglings are considered territorial. Territories are 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.

Enumeration surveys were conducted on portions of the Wheless tract, portions of the Ribelin and Sam Hamilton East tracts, and portions of Hamilton Pool Preserve and the Martin-Hamilton Pool tract (hereafter referred to as Hamilton Pool). Travis County staff members and volunteers contributed 307.75 hours to enumeration surveys.

Table 2. 2018 GCWA abundance and territory density estimates based on enumeration survey results.

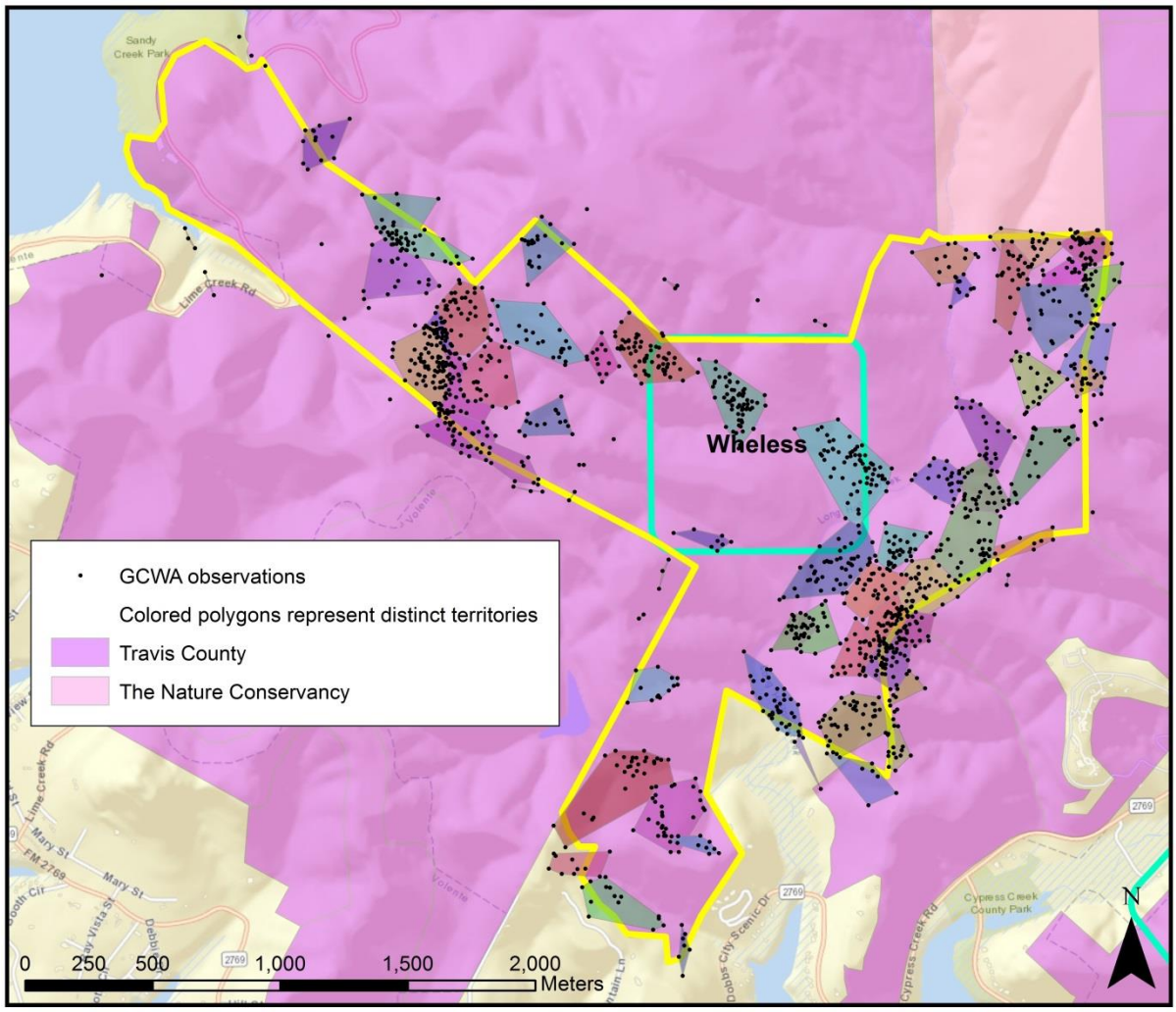
	Abundance	No. of Full Territories	No. of Edge Territories	Modified number of Territories	Territory Density (ac)	Territory Density (ha)
Ribelin/Sam Hamilton East	42	21	11	26.5	0.11	0.28
Hamilton Pool	9	3	2	4	0.02	0.06
Wheless	76	28	27	41.5	0.05	0.11

*Modified territories are the number of full territories plus half of the edge territories.

The Wheless tract is located near the Village of Volente in the Cypress Creek macrosite. The entire Wheless tract consists of 994 hectares (2,456 acres) of closed canopy woodland dominated primarily by Ashe juniper (*Juniperus ashei*) and plateau live oak (*Quercus fusiformis*). Due to staffing constraints, surveys were conducted on 367 hectares (907 acres) of the tract. Of the 76 GCWA males observed, 28 established territories within the Wheless tract and 27 were edge territories. Territory density was calculated at 0.11 GCWA territories per hectare

(Table 2; Figure 2). The additional GCWA males detected were either off-plot or did not meet the qualifications of a territory.

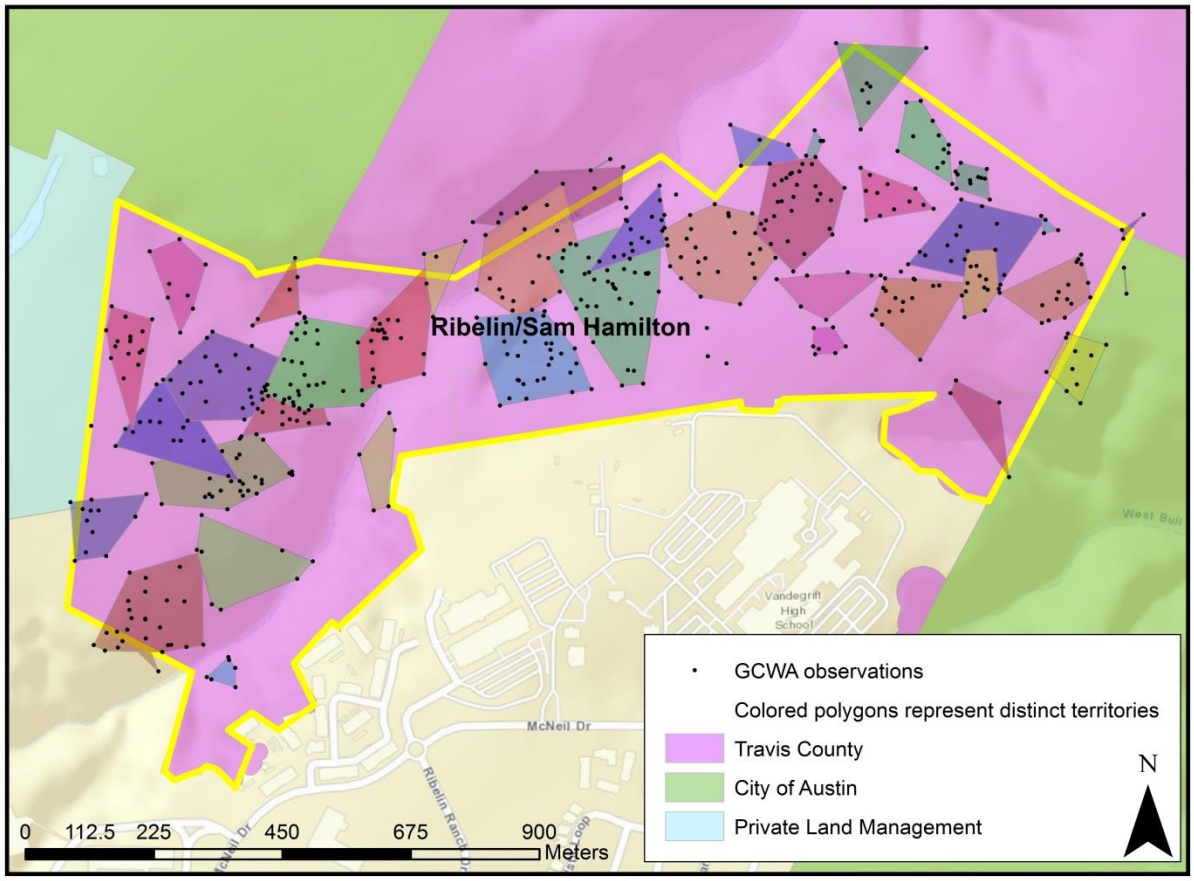
Figure 2. GCWA territories based on the 2018 Wheless enumeration survey.



Ribelin/Sam Hamilton East

The Ribelin/Sam Hamilton East survey included the southern portion of the Ribelin tract and the south western portion of the Sam Hamilton tract comprising 96 hectares (237 acres) in total. It is located in the Upper Bull Creek macrosite. The study area supports oak-juniper woodland on either side of a power line corridor. In 2018, 21 full and 11 edge territories were documented with a density of 0.28 GCWA territories per hectare (Table 2; Figure 3).

Figure 3. GCWA territories based on the 2018 Ribelin/Sam Hamilton East enumeration survey.



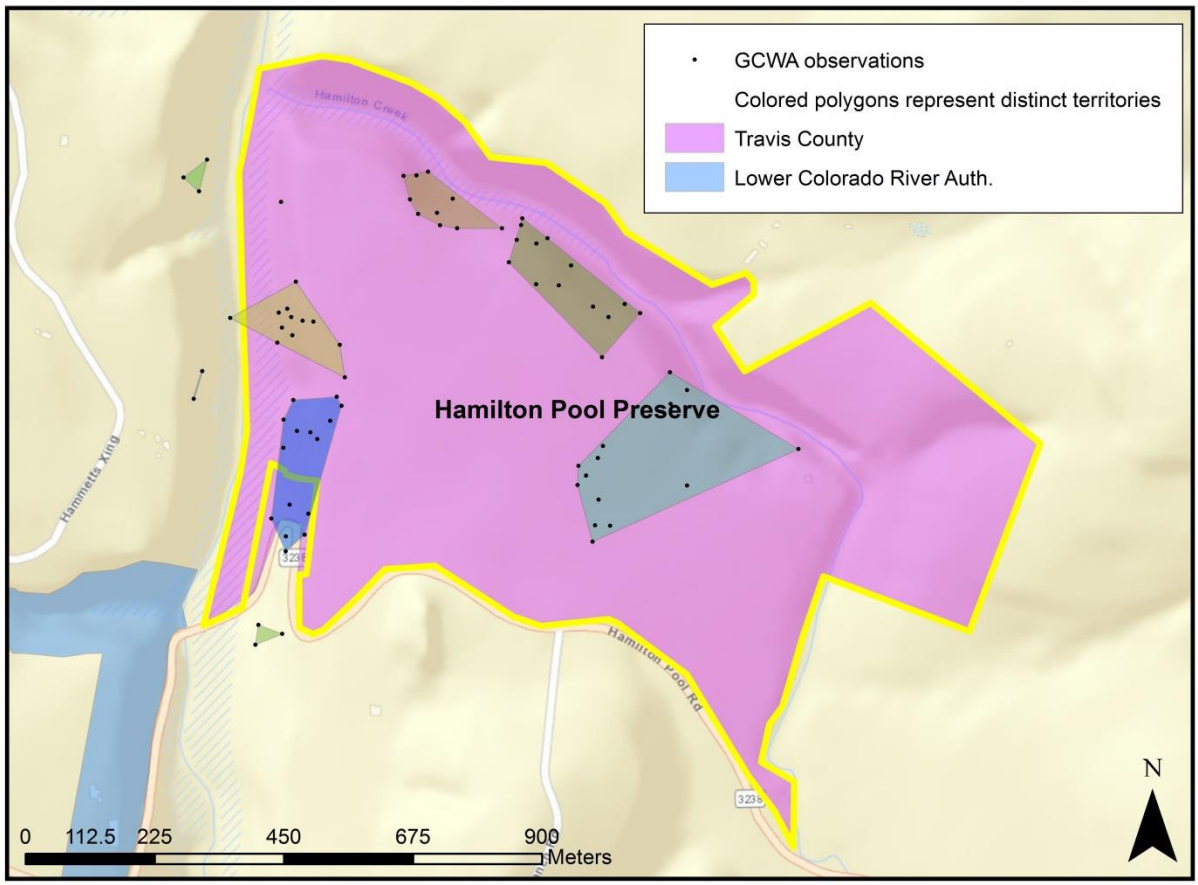
Hamilton Pool

Hamilton Pool Preserve is a 232 acre Travis County Park that is included in the BCP. It is located in far southwestern Travis County in the Pedernales macrosite. The riparian terrain supports mixed evergreen-deciduous woodland dominated by Ashe juniper (*Juniperus ashei*), Texas red oak (*Quercus buckleyi*), and cedar elm (*Ulmus crassifolia*). Travis County staff and volunteers have surveyed GCWA annually at Hamilton Pool since 1992 employing various protocols over the years. For the past five years, Travis County staff has surveyed areas that appear to contain habitat on 66 hectares (162 acres) of the property. In 2017, Travis County acquired the adjacent 1.6 ha Martin-Hamilton Pool tract which was subsequently included in the survey. Table 3 illustrates a sampling of the survey results. In the 2018 survey, nine GCWA males were detected with three full territories and 2 edge territories observed for a density of 0.06 GCWA territories per hectare (Figure 4).

Table 3. 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 (ha)
2001 (66 ha)	9	-	-	9	0.18
2004 (40 ha)		7	9	8	0.19
2007 (40 ha)	13	7	3		0.21
2010 (40 ha)	15	7	3	8.5	0.21
2013 (66 ha)	7	4	2	5	0.08
2014 (66 ha)	14	6	1	6.5	0.1
2015 (66 ha)	7	3	0	3	0.02
2016 (66 ha)	4	2	0	2	0.005
2017 (67 ha)	6	5	0	5	0.07
2018 (67 ha)	9	3	2	4	0.06

Figure 4. GCWA territories based on the 2018 Hamilton Pool enumeration survey.



Intensive Plot Monitoring and Resighting

In coordination with the City of Austin, Travis County Natural Resources staff participated in a BCP-wide monitoring program of established intensive monitoring plots. Intensive monitoring includes data collection of color-banded warblers to estimate territory density, territory size and location, age structure, pairing success, breeding success, productivity and nest survival. Plots have been established across the spectrum of habitat types. In FY 2018, intensive plot monitoring was conducted at Vista Point, Wheless, and Wild Basin Preserve. This year, an additional intensive monitoring plot was established on the Collins tract as part of a tawny crazy ant (TCA; *Nylanderia fulva*) impact study.

Previously established plots that were not intensively monitored in 2018, were treated as resighting plots. These plots were searched for returning color-banded

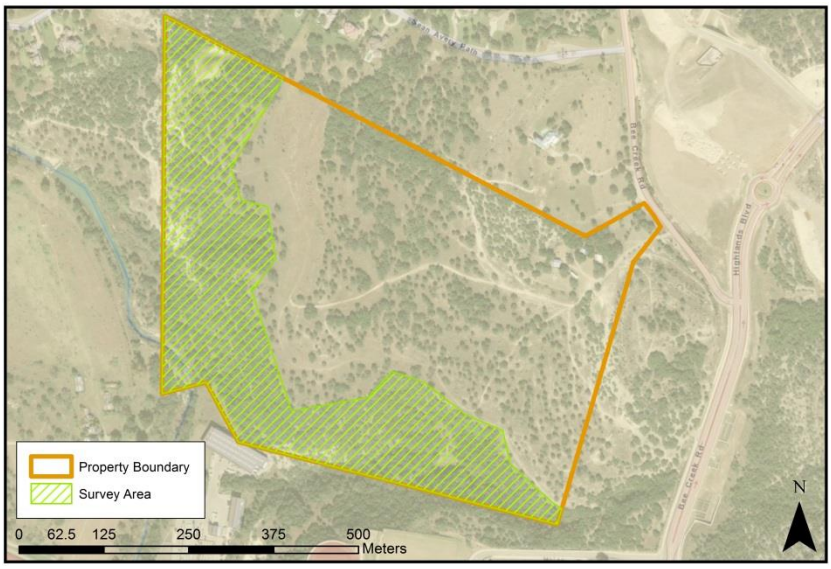
warblers. County staff and volunteers assisted with resighting efforts at Canyon Vista, Vireo Ridge and Lake Perspectives/McGregor.

For a more detailed description of methods and the results of the intensive monitoring program, see "Appendix F – Golden-cheeked Warbler Monitoring Program Balcones Canyonlands Preserve" of the 2018 BCCP Annual Report.

Presence/Absence Survey

Travis County Natural Resources staff conducted GCWA presence/absence surveys at the Bee Creek Sports Complex between 5 April 2018 to 8 May 2018 following U.S Fish and Wildlife Service surveying protocol. This survey effort was to determine if GCWA breeding territories or individuals were present within proposed park boundaries. Surveys occurred on five separate dates within areas of the park that had GCWA potential habitat; approximately 29 acres (see Figure 5). Potential habitat for GCWA includes mature oak-juniper woodlands which were primarily found in and along a canyon on the property. The majority of the park did not contain suitable habitat for GCWA as it was characterized by open grasses and forbs with live oak (*Quercus fusiformis*) mottes and some Ashe juniper (*Juniperus asheii*). Playback (playing a recording of a bird's song) was used intermittently during the last survey in an attempt to increase the probability of GCWA detection. No GCWAs were detected during the 2018 survey efforts.

Figure 5. GCWA Presence/Absence survey of Bee Creek Sports Complex



Ongoing Research

In FY17, TC staff discovered a colony of tawny crazy ants (TCA) while conducting a habitat assessment on a property for potential acquisition. This property is located to the southwest of the Anderson Mill Rd. and N FM 620 intersection, and essentially adjacent to current TC BCP land (Collins and Franklin tracts). TC staff began monitoring the extent of the colony as it expanded into the BCP in July 2017. At this time, TC and COA BCP enlisted the expertise of TCA specialist Dr. Ed LeBrun of UT's Brackenridge Field Lab and entered into a contract to monitor the colony and introduce a host specific microsporidian pathogen (*Myrmecomorba nylanderiae*) for use as a biological control agent (Appendix – S10). Since TCA are arboreal foragers, there is concern that they may negatively impact GCWA prey-base. In response, TC staff began a pilot study examining the composition of the canopy arthropod community to assess what impacts TCA may have, along with an intensive monitoring plot for GCWA within the Collins tract. A more refined version of this project will commence in FY19 and potentially extend an additional 4 years.

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