Golden-cheeked Warbler Range-wide Survey
2018 Permit Report
Permit #Mueller-20180301

Prepared for

Travis County

Prepared by

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Project Background

This report summarizes results of surveys by U.S. Fish and Wildlife Service and American Bird Conservancy of golden-cheeked warblers (hereafter warbler) on lands managed by Travis County in spring 2018. The objectives of this project are to (1) delineate potential warbler habitat throughout the breeding range using multispectral imagery, (2) develop a fine-grain species distribution model using avian point count surveys throughout potential habitat, and (3) quantify population estimates for the entire species and all areas of conservation interest. The general approach of this project is to extend the methods of Sesnie et al. (2016) from Balcones Canyonlands National Wildlife Refuge to additional accessible lands throughout the 35-county primary breeding range in the Edwards Plateau and Cross Timbers ecoregions. Woody canopy cover will be classified as juniper, non-juniper, or none from aerial color-infrared imagery at a 1-m^2 resolution. Point count surveys for warblers were conducted in spring 2018. A suite of potential predictors of detectability and density will be evaluated. The resultant density model will be used to map predicted warbler densities across the breeding range and to estimate the total population size as well as population sizes for smaller areas of conservation interest.

Methods

We conducted point count surveys for warblers from 26 March 2018 to 5 May 2018. We sampled points in the morning, from 15 minutes before sunrise to 4 hours after sunrise. We did not conduct surveys during high winds (>12 miles per hour), rain, or if fog reduced visibility to ≤100 m. If these conditions were encountered, we waited until the weather improved or canceled the sampling for the day and rescheduled. When approaching the sampling location, we noted if any warblers within 100 m of the survey point were flushed, flew away, or retreated. We then recorded field conditions of wind speed, cloud cover, and any natural or anthropogenic noise that may have affected detectability. We also examined aerial imagery (NAIP 2016) of the 100-m radius around the survey point to evaluate if any changes had occurred between the time the imagery was captured and the survey was conducted. After we recorded field conditions, we began a 5-minute survey, recording detections of all singing male warblers, distance and bearing to singing warblers at initial detection, and time (minute:second) at the initial detection. We

estimated distances to the nearest 1 m. We used laser rangefinders (Nikon Prostaff) to estimate distances where possible and walked out to warblers within 100 m if still singing at the end of the survey to obtain distances using a GPS (Garmin GPSMap 64s); we measured bearings to the nearest degree using a compass (Silva Ranger). We did not record visual detections of warblers that were unaccompanied by song or other detections that were unaccompanied by song (e.g. chips) to avoid erroneously recording female warblers. This is important because the detectability of female warblers is much different than singing males, and singing males are the only population segment that has high detectability.

Summary

Under scientific study permit number *Mueller-20180301*, we were permitted access to Travis County Balcones Canyonlands Preserve (BCP) properties for the purpose of conducting point county surveys for warblers. We surveyed 5 Travis County BCP macrosites from 4 April 2018 to 5 May 2018. We sampled a total of 139 points (Table 1). We detected 91 singing male warblers at 74 points (Tables 1 and 2).

Point placement and survey intensity varied on a site-by-site basis and should not be viewed as a representation of the population present at that site. We have provided maps of each macrosite surveyed and locations of warblers based on distance and bearing measurements taken at each survey point (Figures 1–5). We clipped warbler locations to each macrosite boundary so that warblers detected from Travis County BCP property, but occurring outside of property boundaries are not displayed.

Crew leaders on this project were Joshua Harris and Bryan Baird who coordinated access and oversaw compliance with established protocols and procedures.

Macrosite Summary

Bull Creek

We surveyed the Bull Creek macrosite on 17–18 April and 2 May 2018. We sampled a total of 22 points and detected 14 singing male warblers (Table 1; Figure 1).

Cypress Creek

We surveyed the Cypress Creek macrosite on 9–12 April, 18 April, 3 May, and 5 May 2018. We sampled a total of 87 points and detected 62 singing male warblers (Table 1; Figure 2).

Lake Travis

We surveyed the Lake Travis macrosite on 30 April 2018. We sampled a total of 13 points and detected 10 singing male warblers (Table 1; Figure 3).

North Lake Austin

We surveyed the North Lake Austin macrosite on 4 April, 20 April, 30 April, 3 May, and 5 May 2018. We sampled a total of 15 points and detected 5 singing male warblers (Table 1; Figure 4).

South Lake Austin

We surveyed the South Lake Austin macrosite on 1–2 May 2018. We sampled a total of 2 points and detected 0 singing male warblers (Table 1; Figure 5).

Literature Cited

Sesnie, S.E., Mueller, J.M., Lehnen, S.E., Rowin, S.M., Reidy, J.L., Thompson III, F.R. 2016. Airborne laser altimetry and multispectral imagery for modeling golden-cheeked warbler (Setophaga chrysoparia) density. Ecosphere 7 (3): e01220. 10.1002/ecs2.1220

Tables and Figures

Table 1. Total points sampled and total singing male golden-cheeked warblers detected on Travis County Balcones Canyonlands Preserve lands during United States Fish and Wildlife Service range-wide golden-cheeked warbler survey, 26 March – 5 May 2018.

Macrosite	Points Sampled	GCWA Detected
Bull Creek	22	14
Cypress Creek	87	62
Lake Travis	13	10
North Lake Austin	15	5
South Lake Austin	2	0
Total	139	91

Table 2. Locations of singing male golden-cheeked warbler detections (n = 139) on Travis County Balcones Canyonlands Preserve lands during United States Fish and Wildlife Service range-wide golden-cheeked warbler survey, 26 March – 5 May 2018.

Macrosite	Point Number	Distance	Bearing
Bull Creek	868	102	208
	871	53	194
	872	84	72
	946	17	230
	952	120	190
	953	43	147
		54	234
	956	70	88
		21	300
	958	153	168
	962	54	146
	965	161	162
		38	46
	973	48	98
Cypress Creek	691	51	150
	692	32	219
	693	48	250
	694	37	70
	712	92	62
	713	54	283
	714	28	330
	715	59	274
	721	19	20
	722	14	232
	724	67	287
	725	18	51
	726	48	206
		65	176
	730	57	353
		48	330
	1026	103	120
	1027	74	69
	1027	49	258
	1031	59	288
		34	236
	1032	24	12

Table 2. Continued.

Macrosite	Point Number	Distance	Bearing
Cypress Creek (continued)	1033	66	164
	1037	45	46
	1042	38	321
	1081	31	141
	1134	47	358
		135	348
	1135	182	310
	1136	33	7
	1137	36	196
	1139	104	40
		119	182
		68	282
	1140	39	138
		53	204
	1142	148	328
	1145	82	218
	1150	52	45
	1152	53	298
	1156	109	260
	1157	103	130
	1158	127	288
	1159	19	208
	1160	81	114
	1161	80	162
	1162	53	226
	1164	89	305
		71	5
	1165	51	268
	1168	68	244
	1169	65	305
	1170	112	177
	1171	66	296
	1176	47	290
	1178	77	53
	1179	36	222
	1181	171	126
	1183	97	252
	1184	13	272

Table 2. Continued.

Macrosite	Point Number	Distance	Bearing
Cypress Creek (continued)	1186	17	92
		162	194
Lake Travis	1187	83	80
	1190	54	58
	1191	172	354
	1193	35	184
	1194	57	230
		34	138
	1196	67	78
		10	254
	1197	48	342
		112	142
North Lake Austin	806	3	94
	817	34	159
		18	11
	844	66	7
	1074	103	138

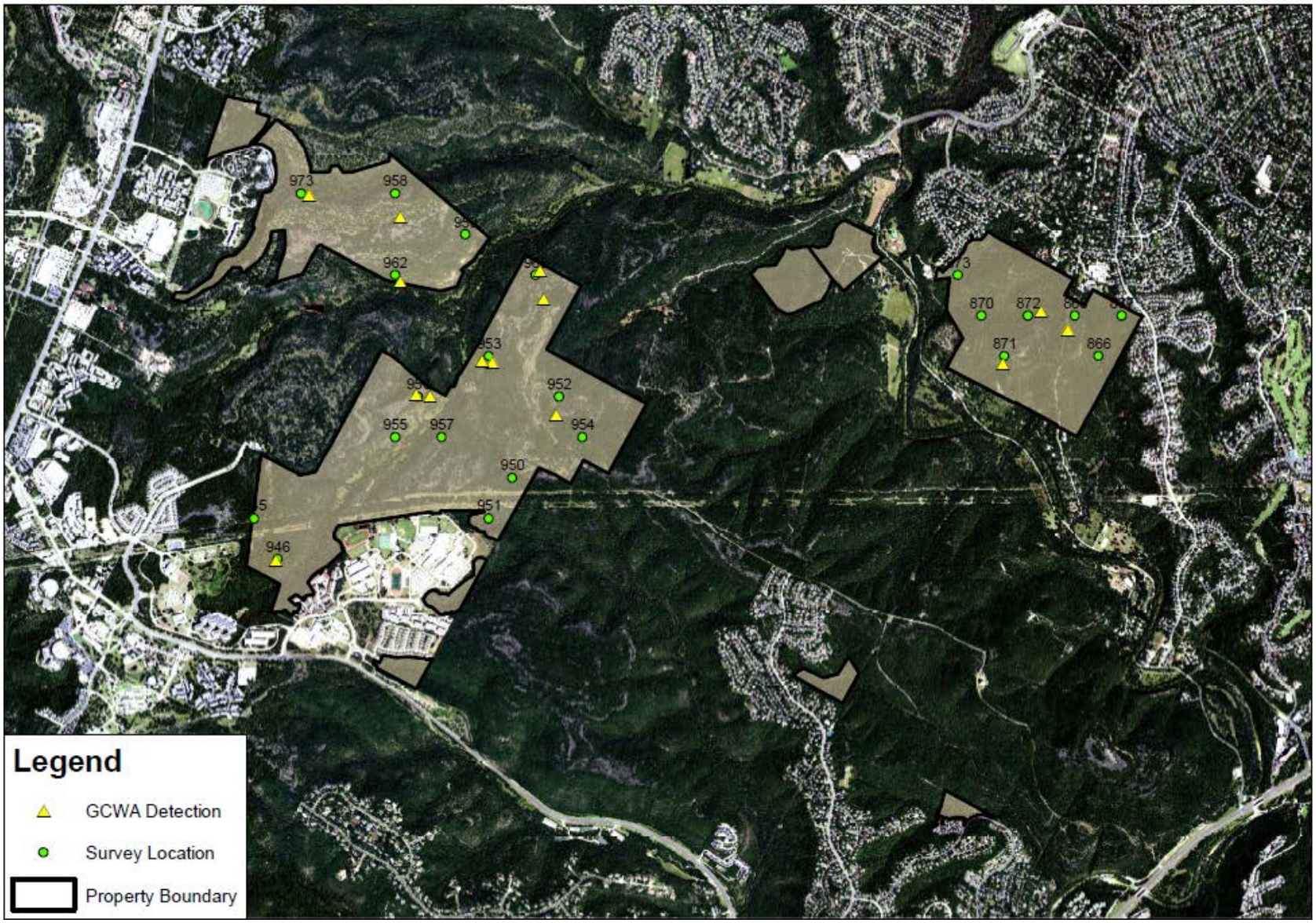

Figure 1. Sampling locations and singing male golden-cheeked warblers (GCWA) detected on Travis County's Bull Creek macrosite during United States Fish and Wildlife Service range-wide surveys 26 March – 5 May 2018.

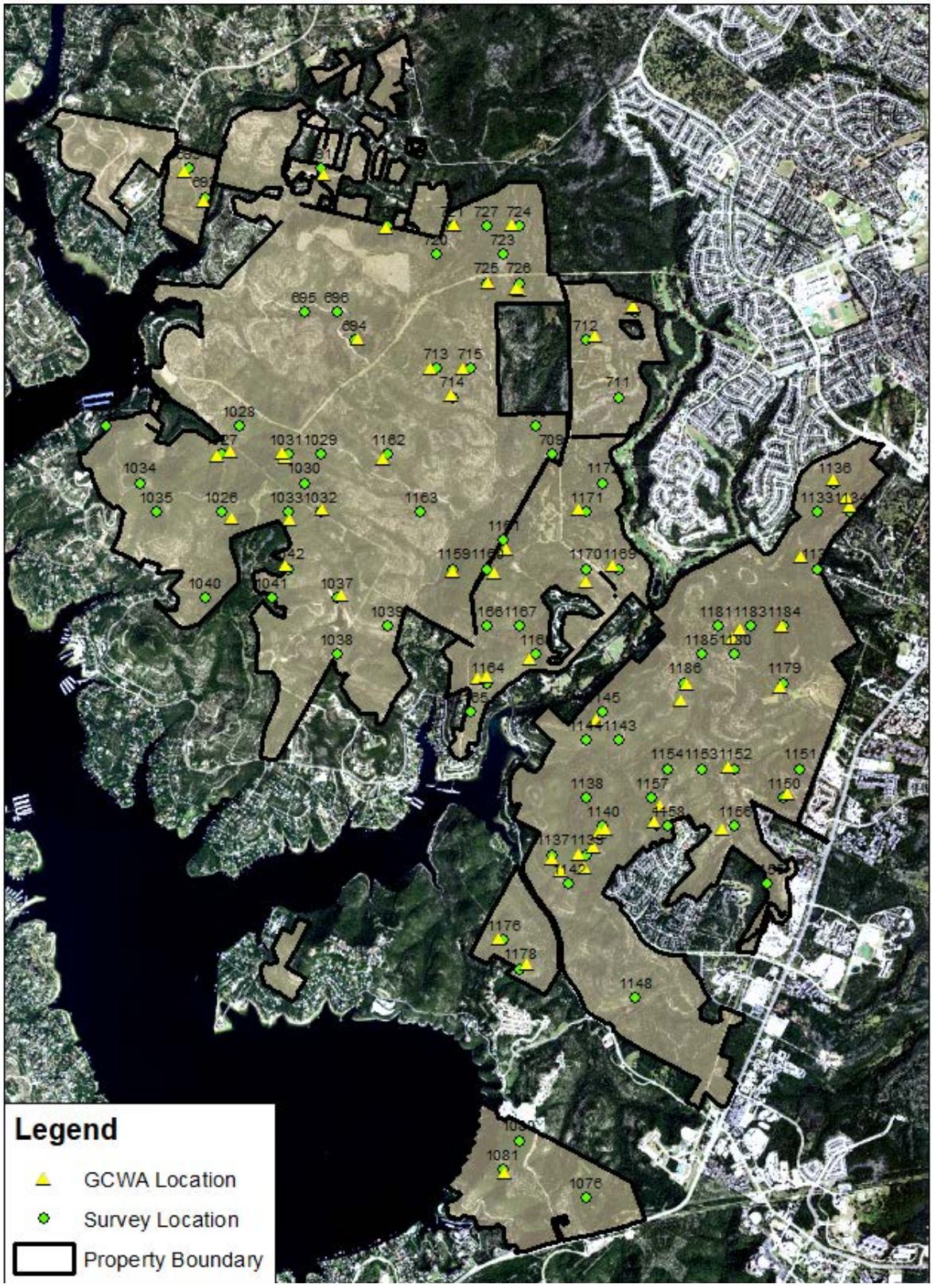

Figure 2. Sampling locations and singing male golden-cheeked warblers (GCWA) detected on Travis County's Cypress Creek macrosite during United States Fish and Wildlife Service range-wide surveys 26 March – 5 May 2018.



Figure 3. Sampling locations and singing male golden-cheeked warblers (GCWA) detected on Travis County's Lake Travis macrosite during United States Fish and Wildlife Service range-wide surveys 26 March – 5 May 2018.

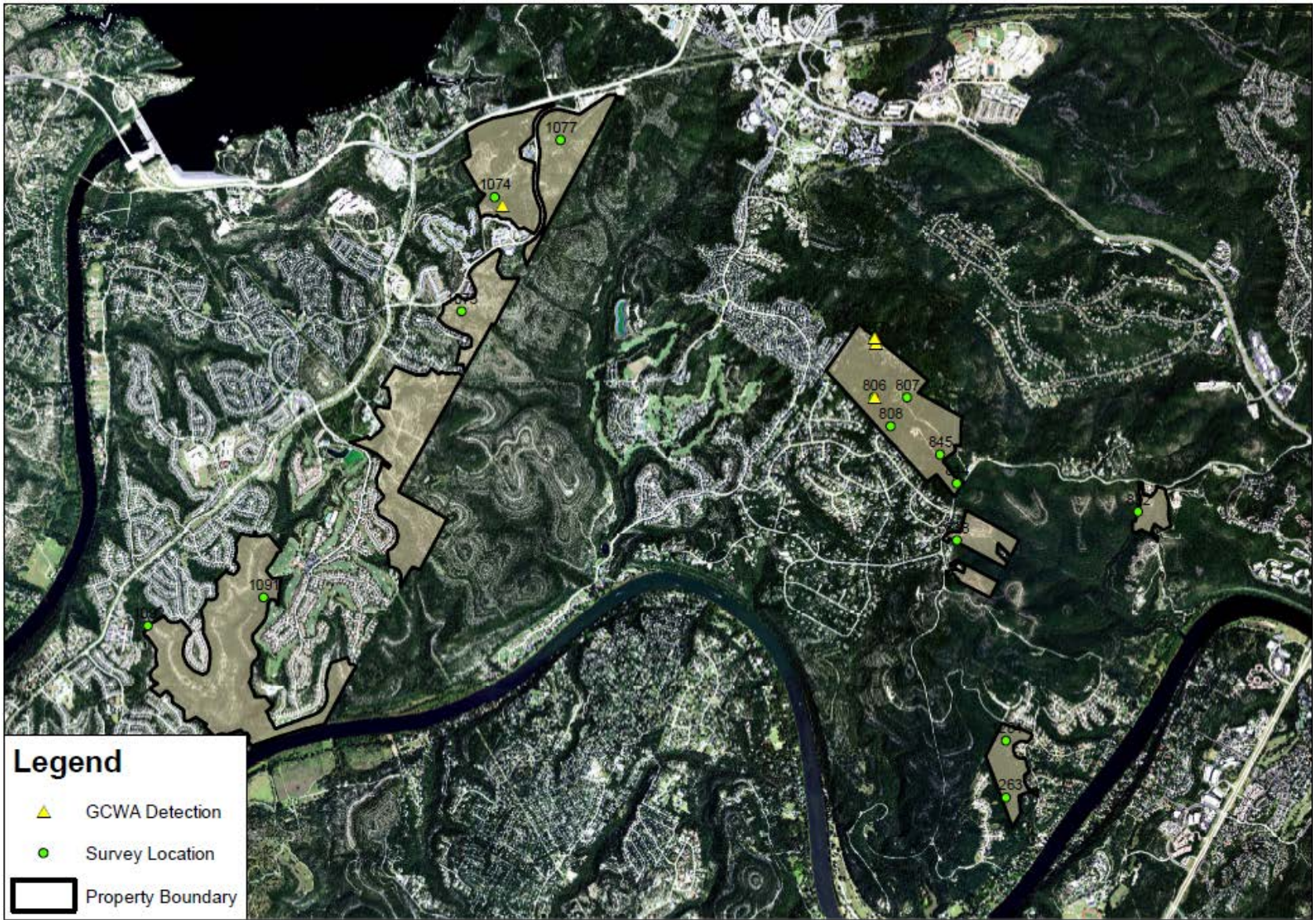

Figure 4. Sampling locations and singing male golden-cheeked warblers (GCWA) detected on Travis County's North Lake Austin macrosite during United States Fish and Wildlife Service range-wide surveys 26 March – 5 May 2018.



Figure 5. Sampling locations and singing male golden-cheeked warblers (GCWA) detected on Travis County's South Lake Austin macrosite during United States Fish and Wildlife Service range-wide surveys 26 March – 5 May 2018.