



Baker Sanctuary

2011 - 2012 Annual Report

(October 1st, 2011 - September 30th, 2012)

prepared for the

Balcones Canyonlands Preserve

By

Christopher Murray, Baker Sanctuary Steward

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Introduction

Baker Sanctuary is owned by Travis Audubon Society with approximately 682 acres managed as part of the Balcones Canyonlands Preserve (BCP). Approximately nine additional acres along the northwest boundary (Ruth Frederickson Tract) were purchased by Travis Audubon in 2007 and have not been added to the BCP. Straddling Lime Creek Road, the sanctuary is within the Cypress Creek Macrosite and adjacent to several other BCP tracts including: the City of Austin's Austin Simon and Lime Creek tracts to the northeast; and the Lower Colorado River Authority's Wheless tract, The Nature Conservancy's Lehmann tract, and the City of Cedar Park's waterline tract to the south (**Appendix A**). A recent BCP purchase by Travis County touches the sanctuary's southwestern boundary. The sanctuary features densely wooded uplands, slopes and canyons dominated by mature oak-juniper woodlands with occasional pockets of open and semi-open grasslands that are being encroached by juniper.

Golden-cheeked Warbler Surveys

This season, the annual 100-acre survey saw its second year of participation with the City of Austin as a partner in a five year study to determine Golden-cheeked Warbler (GCWA) population viability and habitat suitability in the Balcones Canyonlands Preserve (BCP), for details see the complete report in **Appendix B**. Based on compiled observations, including patterns of movement, re-sighting of color banded individuals, counter-singing, and the presence of females and fledglings, it is estimated that eight Golden-cheeked Warbler males established territories substantially within plot boundaries (full), four males occupied territories partially within the plot (edge), and four males held territories directly adjacent to the plot (out) yielding an adjusted total of 10 territories for the 100-acre plot area.

The 2012 season yielded a marginally lower territory density compared to the 10.5 adjusted total for the 2011 season, and much lower when compared to territory density reported in the past. One way to interpret the data is that territory density has greatly decreased from a high of 24 territories in 2006 to the current level of approximately 10 territories which has been documented over the last three seasons. In that time central Texas has experienced two significant drought events, so it is a reasonable assumption that the resultant lack of available water and prey items would have a negative impact on the GCWA population. However, as mentioned in the 2011 100-acre report, it is difficult to compare survey data prior to the 2011 survey due to significant changes in protocol, namely the addition of color-banded individuals, the practice of splitting the plot between two observers, and an increase in time spent in the field. From 2006-2010 approximately 60 hours were spent in the field per survey, a number that leaped to 150 hours in 2011, and more than doubled to 327 hours invested in 2012. Therefore, another way to interpret the data is that prior surveys, without the benefits previously mentioned, were estimating GCWA territory density at an artificially high level. The fact that only 17 fledglings were detected in the 2006 and 2007 surveys seems to support that argument; however the 2010

survey, also without the benefit of color-banded individuals, estimated only ten territories, the same amount as determined in the augmented 2011 and 2012 surveys. A conservative analysis of the data would suggest reality lies somewhere in between, that territory density in some of the older surveys may have been artificially high but the population was negatively affected by drought and territory density has since declined to its present level. The next three years of surveys should shed more light on the issue, assuming color-banding and survey efforts remain comparable to the prior two seasons.

In addition to the traditional 100-acre survey, the Baker Sanctuary Headquarters Plot, located roughly 100 meters north of the Baker steward's trailer and encompassing open areas to the north and south of Lime Creek Road, was again surveyed using USFWS presence/absence methodology. The goal of this survey is to collect more data on the patterns of Golden-cheeked Warbler use associated with the open areas to the north of Lime Creek Road as well as the smaller clearings to the south of Lime Creek Road where the steward's residence and parking lot are currently located. Results from the presence/absence survey seem to mirror landscape use that was documented the prior two seasons, for details see the complete report in **Appendix C**.

Deer Management

Baker Sanctuary was closed from October 23rd, 2011 – January 15th, 2012 for the annual White-tailed Deer management hunt. Seven primary hunters hunting at sites 3, 5, 10, 11, 12, 13, and 14 (**Figure 1**) harvested a total of twelve deer (eight bucks and 4 does) during 258 hours of hunt effort, nearly equaling the average harvest of thirteen deer per season over the prior ten recorded seasons; **Figure 2** summarizes yearly take data. The Sanctuary will be closed for the 2012-2013 season from October 29th, 2012 – January 20th, 2013.

The Hatfield Tract is a 50 acre parcel deeded to the Travis Audubon in 1986 with the following stipulation: “it will never lease any portion of the property for hunting or trapping purposes”; as a result, no hunting took place on this tract during the 2009 – 2010 hunting season.

Vegetation Management

Ashe Juniper (*Juniperus ashei*) was trimmed from all trails when it impeded the movement of hikers or posed a safety hazard. In addition to the routine maintenance of the trail system, an access lane running down the length of the Lime Creek Road fence has begun to be cut to aid in ensuring fence integrity. In an effort to keep the canopy intact as possible, vegetation was removed sparingly and consisted mostly of trimming branches rather than removing trees; to date approximately 57 cubic yards of material has been removed, mulched, and repurposed.

The 2011 drought caused significant tree mortality throughout Baker Sanctuary. A conservative estimate from aerial photographs places the amount of dieback around 10-15%, with a significant amount located in the eastern end of the preserve. To help prevent wildfires that may originate in the long grasses found adjacent to Lime Creek Road from entering the forest canopy, approximately 174 cubic yards of ladder fuels in the form of drought killed juniper were removed from the roadside and mulched. Most material was completely removed but several larger snags were left in place following the trimming of all lower branches up to five feet off the ground.

Beginning in May, Central Texas Leaf-katydids (*Paracyrtophyllus robustus*) reached 'outbreak' status in Travis County as well as approximately ten other counties in the area. Infesting the entire sanctuary, the katydids noticeably thinned the canopies of several species of oak and it is possible they may have caused the mortality of some individual oaks already stressed by the 2011 drought.

Baker Sanctuary is composed mainly of dense mature oak-juniper woodlands interspersed with pockets of open and semi-open grasslands; there are nine Fire Behavior Prediction System (FBPS) fuel models that correspond with the habitats within Balcones Canyonland Preserve and a fire management plan based upon these prediction systems is located in the Baker Sanctuary headquarters and available to assist the steward in monitoring for fire safety and response readiness. The Baker Sanctuary is also equipped with a wildfire calldown list and basic wildfire response tools to help better expedite early response to wildfires.

Cowbird Trapping

Travis Audubon operated two Brown-headed Cowbird traps from April 3rd through May 30th of the 2012 season; TAS1 is located on the south side of Lime Creek Road near the steward's trailer and TAS2 in the open area near hunt site 11. TAS1 captured eight adult females and ten adult males. Non-targets captured were one House Sparrow and one House Finch which were released unharmed. TAS2 did not capture any birds. Captured Brown-headed Cowbirds were dispatched with the help of a Euthanization chamber containing a small amount of dry ice.

Exotics Control

With the wet spring, Malta Star-thistle (*Centaurea melitensis*) was back with a vengeance. Coming up as a veritable carpet in the Baker Cabin area, two applications of glyphosphate were applied in March. Six gallons of 25% glyphosphate (at 4.5 ounces/gallon) were applied to the north and northeast of the cabin and seventeen gallons of 41% glyphosphate (at six ounces per gallon) were applied to the south and east of the cabin as well as to the south and west of Baker cemetery. An additional 4.2 cubic yards

of star-thistle were hand-pulled from the Lime Creek roadside, steward's residence, main parking lot, and a small clearing 30 meters south of the steward's trailer. While the majority of the infestation is concentrated in the Baker Cabin and steward's residence area, a substantial population was discovered in the clearing approximately 160 meters to the northeast of the steward's trailer as well as smaller populations scattered throughout the open area to the north of Lime Creek Road.

The Tree-of-heaven (*Ailanthus altissima*) grove discovered in 2010 in a drainage on the northern end of the sanctuary that feeds into Harris Creek is still being actively monitored and treated. Over the last year, 1239 Tree-of-heaven saplings were hand pulled, many of which were root re-sprouts from trees treated with Arsenal the previous year. In addition to the hand-pulled saplings, 28 larger trees were stump cut and treated with a total of 80 ml of 10% Arsenal solution. In the same area, fifteen Chinaberrys (*Melia azedarach*), some re-sprouts from the two trees treated in 2010, were manually removed. The area will continue to be monitored and treated until both invasive plant species have been eradicated.

A much smaller, discrete population of Tree-of-heaven was discovered in the southern portion of the west branch of the North Trail, approximately 150 meters from the *Ailanthus* grove previously mentioned. Eleven saplings were removed manually and four larger trees were stump cut and treated with a total of 20 ml of the 10% Arsenal solution. This area will continue to be monitored and treated until eradication is complete.

The 18 mid-sized Jujube (*Ziziphus zizyphus*) removed from the Baker Cabin area last year have since re-sprouted vigorously from suckers. The labor intensive process of digging up the roots has begun with the removal of 350 suckers, approximately a third of the visible population. In addition to the Baker Cabin infestation, a substantial population of Jujube was discovered approximately 300 meters to the southwest of the steward's residence. Consisting of numerous, mature 30 to 40 foot trees, effective removal will be a substantial undertaking, especially in light of their propensity to re-sprout as suckers.

Other invasive plants were removed when encountered throughout the sanctuary, including Johnsongrass (*Sorghum halepense*) near the steward's residence, 667 Common Mullein (*Verbascum thapsus*) in the Baker Cabin area, and seven medium-sized Common Figs (*Ficus carica*) scattered throughout the southern portion of the sanctuary.

Research

During the spring of 2012, volunteers installed and collected data on 39 of 40 long-term vegetation monitoring plots scattered throughout the entire sanctuary (**Figure 3**). Data

from plot nine was not collected. The survey was performed to collect information on the presence of plant species and their abundance, the ages of certain woody vegetation, and the physical environment. By developing a baseline assessment as well as a long-term monitoring protocol (**Appendix D**), the effects of restoration and land management activities will be more clearly discernable. Information from these surveys can also be used to determine the success of exotic species removal, provide information regarding Golden-cheeked Warbler habitat, and locate both endangered species and non-native invasives which may occur on the property. Data from this year's survey has not yet been analyzed.

In an effort to achieve a more complete understanding of the composition, distribution, and density of all avian species found on the sanctuary, the fixed-radius point count methodology proposed by Hutto *et al.* (1986) has been adopted. On May 20th, the second annual count was performed (**Table 1**) and utilized extant vegetation monitoring plots (**Figure 3**) as point count stations, with the exception of points 9, 35, 38, 39, and 40 which were excluded due to their proximity to neighboring stations. In addition to the 35 aforementioned plots, decommissioned vegetation plot nine (UTM 14R608505, 3373087) and the Ruth Frederickson station (UTM 14R607422, 3374262) were utilized for a total of 37 point count stations.

Education and Outreach

Not including organized events such as guided hikes and TAS activities, Baker Sanctuary experienced a total of 239 visitations. Of those visitations, 187 were by TAS members and 52 were by non-members. A total of 487.5 volunteer hours were logged at Baker Sanctuary on a variety of activities (see below).

October: Leading guided hikes and Youth Nature Camp.

November: Searching for Treezilla.

December: Clearing a low-water crossing and trail maintenance.

January: Fence maintenance.

February: Trail assessment, fence maintenance, native garden improvements, installing vegetation monitoring plots.

March: Removing invasive species, Youth Nature Camp, and leading a guided hike.

April: Removing invasive species, improving structural integrity of the Stone Barn, and collecting vegetation plot data.

May: Native garden improvements and point counts (see **Appendix E** for current bird list).

June: Native garden improvements and collecting vegetation plot data.

July: No volunteer activity.

August: Native garden improvements, Baker Core Team meeting, assisting with 100-acre survey data analysis, Friends of Baker meeting, trail maintenance, and removing invasive species.

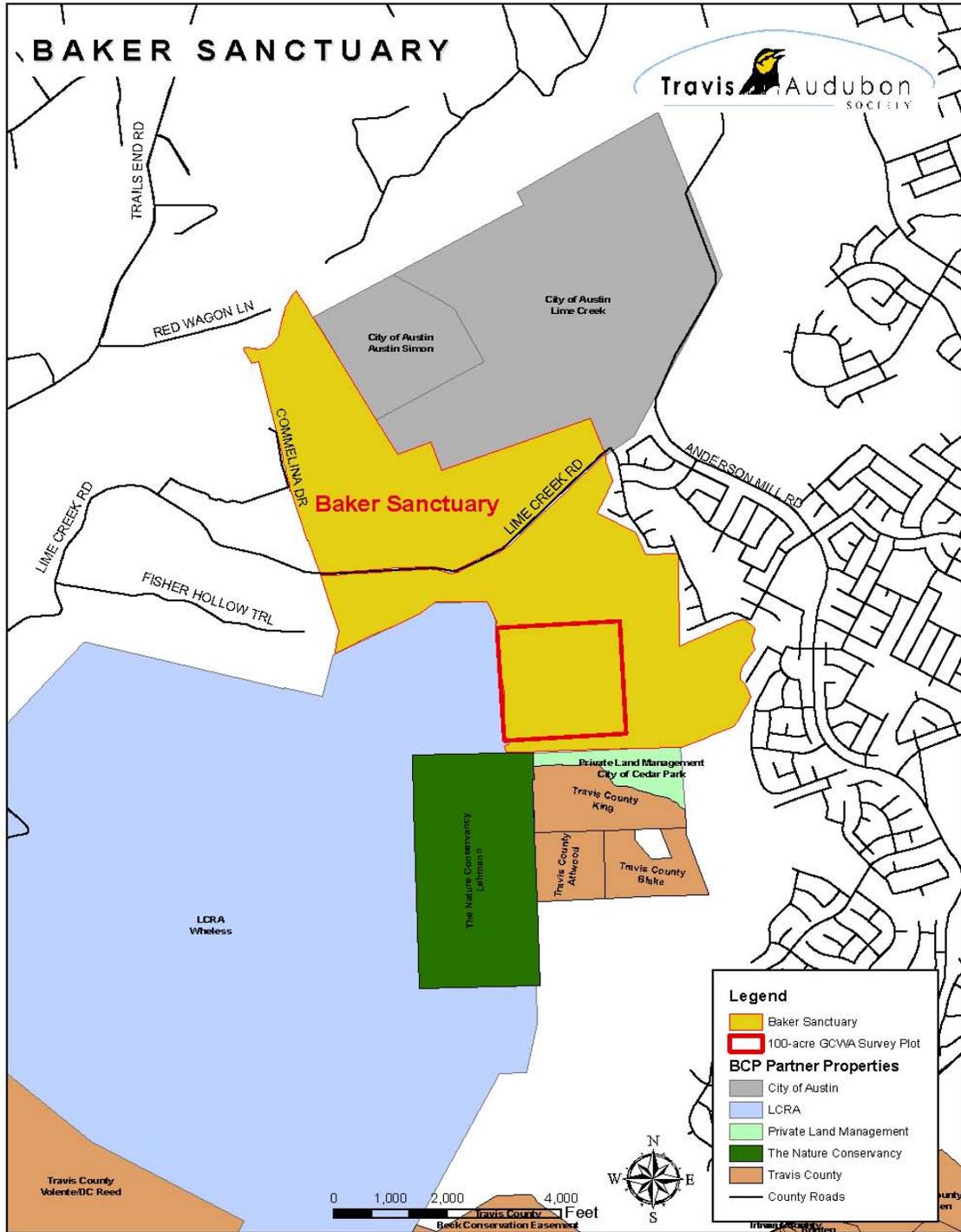
September: Leading guided hikes and Baker Core Team meeting.

The Youth Nature Camp program now consists of two sessions, one in March that focuses on Neotropical migrants, with emphasis on the Golden-cheeked Warbler, and one in October that focuses on orienteering and cavity nesting avifauna. Offered free of charge to local students, the camps typically experience an average of 20 students per session.

Other activities to enhance community involvement and knowledge of Baker Sanctuary and the BCP mission included mailing an informational letter to adjacent home owners, presenting at the UT Nova forum in October and April with a subsequent guided hike, presenting at LISD's Life Science Institute, presenting to approximately 500 fifth grade students at local elementary schools, leading guided hikes for a Brownie and Boy Scout troop, presenting to LISD's science teacher leaders, and partnering with Deer Creek Elementary to offer a six session Hiking Club for approximately 15 students during the fall.

Appendix A

Map of Baker Sanctuary and BCP partner properties



Travis Audubon Properties, Baker Sanctuary, C. Masey 11-18-09

Appendix B

**RESULTS OF THE GOLDEN-CHEEKED WARBLER SURVEY
FOR THE BAKER SANCTUARY 100-ACRE PLOT
SPRING 2012
TRAVIS COUNTY, TEXAS**

Prepared for:

Travis Audubon Society
3710 Cedar St., Box 5
Austin, Texas 78705

Prepared by:

Christopher Murray
Baker Steward
12219 Lime Creek Road
Leander, TX 78641

September 2012

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**Results of the Golden-cheeked Warbler Survey
for the Baker Sanctuary 100-acre Plot
Spring 2012**

This season, the annual 100-acre survey saw its second year of participation with the City of Austin as a partner in a five year study to determine Golden-cheeked Warbler (*Setophaga chrysoparia*) population viability and habitat suitability in the Balcones Canyonlands Preserve (BCP). In accordance with the protocol adopted by BCP partners at the beginning of the viability and habitat suitability study last season, small crews continued to mist net and band males in addition to spot-mapping territories and searching for and monitoring nests. Captured birds were again aged into one of two categories based on plumage characteristics, second year (SY) or after second year (ASY). Second year birds fledged the previous breeding season whereas ASY birds are on their third season, at the least. While not specifically targeted, if females or juvenile Golden-cheeked Warblers (GCWA) were netted they were also banded. During the 2012 season, 9 males and 1 female were captured and banded for a two season total of 23 banded individuals (**Table 1**).

For the 2012 survey, US Forest Service (USFS) seasonal employee Caitlin Winters and I split survey duties during the season, allowing for an increase in overall survey time to more accurately document territories and locate nests as well as to determine breeding productivity. To accommodate two observers, each week the plot was split in half with each observer responsible for their assigned section. The assigned section was rotated every week, effectively allowing each observer to survey the entire plot throughout the course of a month. For example, if the first week I surveyed the northern section, Caitlin would cover the southern section. The following week I would survey the eastern section and Caitlin the western, and so on, rotating through the plot in a clockwise fashion. When splitting the plot in half, no hard line was set as a boundary, rather each observer estimated where the halfway mark was located and used discretion if a GCWA needed to be pursued over the imaginary dividing line. By splitting coverage in this fashion, observer bias should be lessened and a more accurate picture of territory distribution realized. In addition to covering the traditional 100-acres, the 100 meter buffer zone surrounding the plot was again routinely searched in an effort to detect additional banded males.

Beginning on March 12th and continuing through June 7th, one half of the study plot was formally surveyed by Murray and the other half by Winters each week with an additional two visits per week by Winters to specifically search for and monitor nests. In total, 326.5 hours were invested in monitoring the Baker 100-acre plot for the 2012 season, a 42% increase over last year and the most intensive survey to date. All surveys were conducted following the protocol outlined in the BCP Land Manager's Handbook. Locations of individual Golden-cheeked Warblers were mapped by hand in the field and GPS coordinates obtained for all detections. Due to the presence of color banded individuals, visual confirmation of GCWAs was attempted whenever possible. Movements, counter-singing by males, and color bands were documented and used to distinguish individuals and identify territory boundaries. Observations of females, nests, and fledglings were also documented. All survey observations were compiled and analyzed to obtain an estimate of established male territories within the plot as well as the buffer zone.

In an effort to consistently analyze the number of territories present in the 100-acre plot regardless of season or observer, a method to enumerate territories was adopted. To be classified as an 'edge' territory a GCWA must have a minimum of three observations points inside and outside the plot during at least two survey sessions. Otherwise, the GCWA will be designated as 'full' or 'out' depending on where the majority of the observations occur. Full territories will be enumerated as 1.0, edge territories 0.5, and out territories as zero. Based on compiled observations, including patterns of movement, re-sighting of color banded individuals, counter-singing, and the presence of females and fledglings, it is estimated that eight Golden-cheeked Warbler males established territories substantially within plot boundaries (full), four males occupied territories partially within the plot (edge), and four males held territories directly adjacent to the plot (out) yielding an adjusted total of 10 territories for the 100-acre plot (**Table 2**) area. While the presence of color banded GCWAs has eliminated some of the guesswork involved with attributing territories to males, some individuals remain unbanded. In the instances where males were not banded, territories were assigned in a conservative fashion to avoid overstating the number of territories associated with the plot.

For the first time since the 100-acre survey was initiated in 1999, females were detected with all the singing males and almost all nests were discovered and monitored. Prior to 2011 and the launch of the viability and habitat suitability project, nest searching and monitoring were conducted but the focus was on determining the density and distribution of territories, a time-consuming task when birds are not color banded. With the addition of personnel (and a great deal of skill by Caitlin Winters) and a substantial increase in the time spent in the field, a more accurate picture of fecundity has begun to emerge along with valuable data illuminating nest site preferences. For the 17 nests discovered during the 2012 survey, average nest tree height was 9.47 meters, average nest tree diameter at breast height was 24.35 cm, and average nest height was 7.28 meters. Nine nests were placed in Ashe Juniper (*Juniperus ashei*), three in Cedar Elm (*Ulmus crassifolia*), three in Plateau Live Oak (*Quercus fusiformis*), and one each in Shin Oak (*Quercus sinuata*), and a walnut (*Juglans* sp) (**Table 3**).

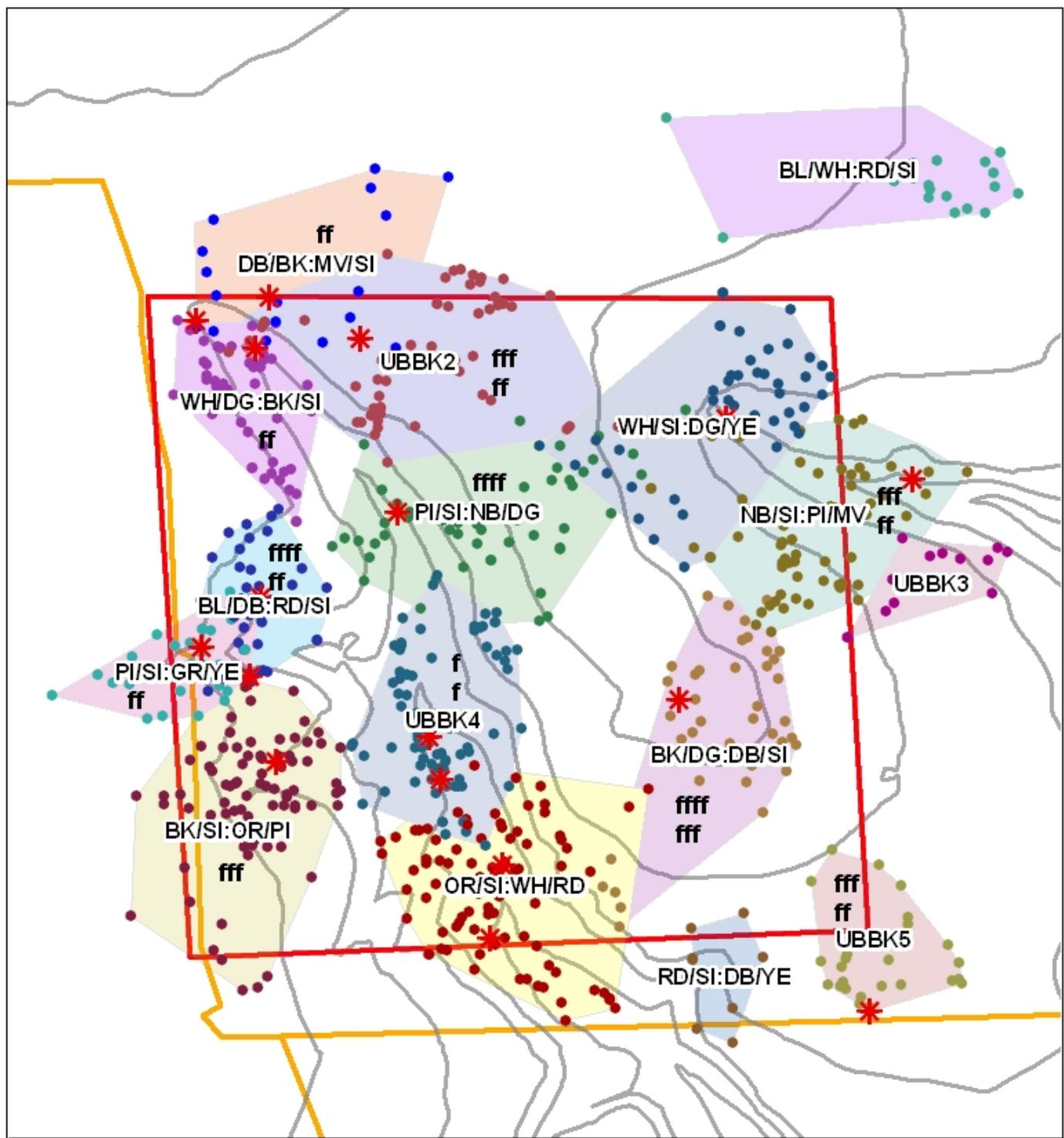
The 2012 season yielded an adjusted total of ten territories present in and around the 100-acre plot, marginally lower than the 10.5 adjusted total for the 2011 season, and much lower when compared to territory density reported in the past (**Table 4**). One way to interpret the data is that territory density has greatly decreased from a high of 24 territories in 2006 to the current level of approximately 10 territories which has been documented over the last three seasons. In that time central Texas has experienced two significant drought events, so it is a reasonable assumption that the resultant lack of available water and prey items would have a negative impact on the GCWA population. However, as mentioned in the 2011 100-acre report, it is difficult to compare survey data prior to the 2011 survey due to significant changes in protocol, namely the addition of color-banded individuals, the practice of splitting the plot between two observers, and an increase in time spent in the field. From 2006-2010 approximately 60 hours were spent in the field per survey, a number that leaped to 150 hours in 2011, and more than doubled to 327 hours invested in 2012. Therefore, another way to interpret the data is that prior surveys, without the benefits previously mentioned, were estimating GCWA territory density at an artificially high level. The fact that only 17 fledglings were detected in the 2006 and 2007 surveys seems to support that argument; however the 2010 survey, also without the benefit of color-banded individuals, estimated only ten territories, the same amount as determined in the augmented 2011 and 2012 surveys. A

conservative analysis of the data would suggest reality lies somewhere in between, that territory density in some of the older surveys may have been artificially high but the population was negatively affected by drought and territory density has since declined to its present level. The next three years of surveys should shed more light on the issue, assuming color-banding and survey efforts remain comparable to the prior two seasons.

The map on page 4 displays locations of all Golden-cheeked Warbler observations and estimated territory boundaries for 2012. Polygons surrounding the observations represent approximate boundaries of male territories, with each territory identified by color band combinations or an unbanded designation. Presence of a female Golden-cheeked Warbler, number of fledglings (**f**), and nest location (red asterisk) are indicated within each territory. Due to Caitlin Winters' diligence in finding and monitoring nests, not only are nest locations displayed on the map but six incidences of GCWAs raising two broods were observed, indicated by the **f** symbol displayed in stacked rows in the appropriate polygon; for instance, BK/DB:DB/SI fledged a brood of four as well as a brood of three fledglings. In addition to clarifying territory and fecundity data, the presence of color-banded individuals also allows recognition of males returning to the plot from previous seasons. The 2012 survey saw three banded individuals (DB/BK:MV/SI, NB/SI:PI/MV, RD/SI:DB/YE) return to the 100-acre plot area from the 2011 season.

Table 5 lists the 51 bird species detected in or near the 100-acre plot during the 2012 surveys. In addition to Golden-cheeked Warblers, species detected on most surveys included Turkey Vulture, Mourning Dove, Greater Roadrunner, Ladder-backed Woodpecker, Western Scrub-jay, Carolina Chickadee, Black-crested Titmouse, Bewick's Wren, Blue-gray Gnatcatcher, Black-and-white Warbler, Northern Cardinal, and Common Grackle. Passing migrants included Nashville Warbler, Magnolia Warbler, Black-throated Green Warbler, and American Redstart. Commonly seen birds presumed to be nesting in or near the plot included Painted Bunting, Yellow-billed Cuckoo, Summer Tanager, Great Horned Owl, Northern Mockingbird, White-eyed Vireo, and White-winged Dove. Brown-headed Cowbirds were detected only once during the surveys.

Other animals detected during the survey include Eastern Fox Squirrel (*Sciurus niger*), Rock Squirrel (*Citellus variegatus*), and Gray Fox (*Urocyon cinereoargenteus*).



**Baker Sanctuary
Golden-cheeked Warbler 100-acre Plot 2012**

- GCWA territorial male observation
- f GCWA fledgling observed in territory
- * GCWA nest

- GCWA territory
- 100-acre plot boundary
- Baker Sanctuary boundary

Contours = 20'



0 125 250 500 Feet

Surveyors:
Christopher Murray and Caitlin Winters

Table 1. GCWA individuals banded during the 2011- 2012 Baker Sanctuary 100-acre surveys.

Date Banded	Combo	UTM- easting	UTM- northing	Sex	Age
3/21/2011	MV/SI:NB/YE	608592	3372177	M	SY
3/21/2011	MV/BL:PI/SI	608562	3372050	M	ASY
3/21/2011	OR/OR:DG/SI	608782	3372118	M	SY
3/21/2011	BK/YE:DG/SI	608662	3371918	M	SY
3/21/2011	YE/DG:DB/SI	609077	3372089	M	ASY
3/21/2011	DB/BK:MV/SI	608949	3372688	M	ASY
3/21/2011	RD/SI:BK/DG	608949	3372688	F	ASY
3/30/2011	NB/SI:PI/MV	609134	3372328	M	ASY
4/27/2011	WH/SI:OR/BL	608699	3372373	M	SY
5/9/2011	NB/MV:GR/SI	608606	3372329	M	SY
5/9/2011	WH/BK:WH/SI	608582	3372040	M	SY
5/9/2011	OR/SI:MV/DG	608582	3372040	F	ASY
5/9/2011	RD/SI:DB/YE	608842	3371939	M	ASY
3/14/2012	BL/DB:RD/SI	608600	3372362	M	ASY
3/14/2012	BK/SI:OR/PI	608549	3372107	M	ASY
3/14/2012	BL/WH:RD/SI	609212	3372594	M	SY
3/23/2012	BK/DG:DB/SI	609128	3372113	M	SY
3/23/2012	WH/SI:DG/YE	609044	3372468	M	SY
3/23/2012	RD/SI:BL/PI	608907	3372627	F	ASY
3/30/2012	WH/DG:BK/SI	608541	3372481	M	SY
4/7/2012	OR/SI:WH/RD	608907	337056	M	SY
4/7/2012	PI/SI:GR/YE	608535	3372162	M	SY
4/11/2012	PI/SI:NB/DG	608774	3372341	M	ASY

Table 2. Designation of Golden-cheeked Warbler territory status and number of females and fledglings detected per territory for the 2012 Baker Sanctuary 100-acre survey.

GCWA Designation	Territory Status	Female Detected	Number of Fledglings Detected
UBBK4	Full	Yes	2*
WH/DG:BK/SI	Full	Yes	2
PI/SI:NB/DG	Full	Yes	4
BL/DB:RD/SI	Full	Yes	6*
BK/SI:OR/PI	Full	Yes	3
OR/SI:WH/RD	Full	Yes	0
WH/SI:DG/YE	Full	Yes	0
BK/DG:DB/SI	Full	Yes	7*
UBBK2	Edge	Yes	5*
PI/SI:GR/YE	Edge	Yes	2
DB/BK:MV/SI	Edge	Yes	2
NB/SI:PI/MV	Edge	Yes	5*
UBBK3	Out	Yes	2
UBBK5	Out	Yes	5*
BL/WH:RD/SI	Out	Yes	0
RD/SI:DB/YE	Out	Yes	0

* Total fledglings produced in two broods.

Table 3. Nest tree data for Golden-cheeked Warbler nests discovered during the Baker Sanctuary 100-acre survey, 2012.

Nest ID	Nest Tree Height (m)	Nest Height (m)	Nest Tree DBH (cm)	Nest Tree Species
04CP12	4.9	3.3	20.5	Ashe Juniper
05CP12	11.2	8.6	32	Plateau Live Oak
06CP12	11.5	9.9	21	Cedar Elm
08CP12	11.3	9.1	29	Cedar Elm
09CP12	9.2	6.0	20	Plateau Live Oak
10CP12	16.6	8.3	41	Shin Oak
11CP12	9.8	7.8	29	Walnut
12CP12	11.0	9.0	29	Ashe Juniper
13CP12	7.6	7.0	17	Ashe Juniper
14CP12	12.5	11.3	28	Plateau Live Oak
15CP12	8.9	6.5	21	Ashe Juniper
16CP12	9.5	7.6	22.5	Ashe Juniper
17CP12	5.7	5.5	19	Ashe Juniper
18CP12	5.8	4.5	10.5	Ashe Juniper
20CP12	8.5	6.5	28.5	Ashe Juniper
21CP12	7.4	5.4	17	Ashe Juniper
22CP12	9.6	7.4	29	Cedar Elm

Table 4. Adjusted total of Golden-cheeked Warbler territories, females and fledglings detected during Baker Sanctuary 100-acre plot surveys, 2006 - 2012.

Survey Date	Territories (full/edge)	Females	Fledglings
2006	24 (22/4)	18	17
2007	23.5 (20/7)	8	17
2008	17.5 (14/7)	10	16
2009	16 (14/4)	6	7
2010	10 (9/2)	6	11
2011	10.5 (6/9)	9	21
2012	10 (8/4)	12	38

Table 5. Bird species detected in the Baker Sanctuary 100-acre plot during the 2012 Golden-cheeked Warbler surveys.

SPECIES	Week of:										WEEKS DETECTED
	3/19	3/26	4/2	4/9	4/16	4/23	4/30	5/7	5/14	5/21	
Northern Bobwhite				X	X	X	X			X	5
Turkey Vulture	X	X		X	X	X	X			X	7
Red-shouldered Hawk		X		X		X					3
Red-tailed Hawk	X										1
Wild Turkey		X				X	X				3
White-winged Dove	X	X		X	X						4
Mourning Dove	X	X	X	X	X	X	X	X		X	9
Yellow-billed Cuckoo							X	X	X	X	4
Greater Roadrunner	X	X	X	X		X	X		X	X	8
Great Horned Owl	X		X								2
Chuck-will's-widow				X	X						2
Chimney Swift	X			X		X		X	X		5

SPECIES	Week of:										WEEKS DETECTED
	3/19	3/26	4/2	4/9	4/16	4/23	4/30	5/7	5/14	5/21	
Golden-fronted Woodpecker				X							1
Ladder-backed Woodpecker	X	X	X	X	X	X	X				7
<i>Empidonax</i> sp.							X		X		2
Eastern Phoebe									X		1
Great Crested Flycatcher						X					1
Ash-throated Flycatcher			X		X	X		X	X		5
White-eyed Vireo	X		X		X	X			X		5
Red-eyed Vireo							X		X	X	3
Blue Jay				X		X					2
Western Scrub-Jay	X	X	X	X	X	X	X	X	X	X	10
American Crow		X	X								2
Carolina Chickadee	X	X	X		X	X	X	X	X	X	9
Black-crested Titmouse	X	X	X	X	X	X	X	X	X	X	10
Carolina Wren	X	X									2
Bewick's Wren	X		X		X	X		X	X	X	7
Blue-gray Gnatcatcher		X	X	X	X	X	X	X	X	X	9
Ruby-crowned Kinglet	X	X									2
Cedar Waxwing		X									1
Eastern Bluebird			X								1
Hermit Thrush			X		X				X		3
American Robin		X	X	X			X			X	5
Northern Mockingbird				X	X	X	X		X		5
Nashville Warbler					X	X	X	X	X		5
Magnolia Warbler									X		1
Yellow-rumped Warbler	X	X									2
Golden-cheeked Warbler	X	X	X	X	X	X	X	X	X	X	10
Black-throated Green Warbler							X		X		2

SPECIES	Week of:										WEEKS DETECTED
	3/19	3/26	4/2	4/9	4/16	4/23	4/30	5/7	5/14	5/21	
Black-and-white Warbler	X	X	X	X	X	X	X	X	X		9
American Redstart									X		1
Summer Tanager						X	X		X	X	4
Northern Cardinal	X	X	X	X	X	X	X	X	X	X	10
Dickcissel							X				1
Blue Grosbeak							X				1
Painted Bunting									X	X	2
Indigo Bunting					X						1
Common Grackle	X				X	X	X	X	X	X	7
Brown-headed Cowbird		X									1
House Finch									X		1
Lesser Goldfinch									X		1
TOTAL SPECIES	20	21	18	19	21	24	24	14	27	17	51

Acknowledgements: Special thanks to Cynthia Sperry for helping to verify data and assisting in creating the final 2012 GCWA survey map. Cynthia was always available to answer questions and her expertise and professionalism was a great help in the completion of this report.

Appendix C

**Golden-cheeked Warbler Survey
Baker Sanctuary Headquarters Plot
Spring 2012**

Prepared for Travis Audubon Society

by

Christopher Murray, Baker Sanctuary Steward

Summary: Utilizing the U.S. Fish and Wildlife Service (FWS) minimum procedures for determining the presence or absence of Golden-cheeked Warblers (*Setophaga chrysoparia*), the approximately 100-acre Baker Sanctuary Headquarters plot was surveyed in the spring of 2012 for the Travis Audubon Society. Golden-cheeked Warblers were detected on every visit to the site with the greatest concentration of detections occurring in the northeast portion of the plot.

Background: The Golden-cheeked Warbler (GCWA) is a medium-sized wood warbler whose winter range encompasses southern Mexico through Central America. During the breeding season (early March through mid-July), this neo-tropical migrant nests exclusively in central Texas, giving it the distinction of being the only endemic nesting bird known for the state (Ladd and Gass 1999). Preferred habitat for GCWA is old-growth or mature regrowth juniper-oak woodlands associated with the canyons and hills typical of the Hill Country (Ladd and Gass 1999). Shredded bark from mature Ashe Juniper (*Juniperus ashei*) is bound together with cobwebs and used as a scaffold to support the construction of the remainder of the nest. Breeding season typically lasts from March through early July with the occasional second brood (Ladd and Gass 1999). Trees commonly found in nesting habitat include Ashe Juniper, Plateau Live Oak (*Quercus fusiformis*), Spanish Oak (*Q. buckleyi*), and Shin Oak (*Q. sinuata*) among others. Foraging primarily in the upper canopy of the dominant tree species, GCWA capture a variety of arthropod prey, including soft-bodied caterpillars, insects, and spiders (Ladd and Gass 1999). Departing early for their wintering grounds compared with many neo-tropical migrants, most GCWAs begin their journey south by mid-July. FWS listed this species as endangered in 1990 (Ladd and Gass 1999).

Methodology: Adhering to the FWS standards for determining presence or absence of GCWA, the following conditions were met for the Baker Headquarters Plot survey.

1. Surveys were conducted between March 15 and June 1st with 60% of the surveys being conducted prior to May 15th.
2. All surveys were completed within seven hours of sunrise.
3. Surveys were not conducted in unfavorable weather conditions.
4. The site was visited five times with no more than one visit in any five day period.
5. Since the site consisted of 100 acres, four hours were spent on site for each survey.

During each site visit, the entire 100 acres were hiked, systematically working from north to south or vice versa depending on the start location. Since the site is split in half by Lime Creek Road, which is fenced with barbed wire on either side, one half of the site was surveyed for two hours and the other half for the remaining two hours. To minimize the possible influence of time of day on detection rates, the start location was rotated for each visit. When a GCWA was detected an effort was made to follow the individual for several locations to more accurately represent GCWA utilization of the area.

Results: Located in northern Travis County, the Baker Sanctuary Headquarters Plot totals approximately 100 acres and straddles Lime Creek Road. On the north side of Lime Creek Road, approximately 20 acres consist of grassland punctuated with oaks and Ashe juniper trees, singly and in a clumped distribution. The northeast portion of the plot contains Baker Cabin, the Jackie Arnold Education Center pavilion, a historic cemetery, and a parking lot. On the south side of Lime Creek Road, approximately 5 acres of forest opening hosts the sanctuary steward's residence, a parking lot, and an old stone barn. The lot on the south side is the primary parking area for Travis Audubon members who frequent the sanctuary to hike and bird watch. Extensive hiking trails are found running throughout both sides of the site.

The forest community is dominated by mature Ashe Juniper with Plateau Live Oak the next most common species. Spanish Oak, Shin Oak, and the occasional Cedar Elm (*Ulmus crassifolia*) also contribute to the overstory. The understory is fairly sparse and typically composed of Agarita (*Berberis trifoliata*), Texas Persimmon (*Diospyros texana*), Twist Leaf Yucca (*Yucca rupicola*), and the occasional Pink Mimosa (*Mimosa borealis*), among other species.

The open areas have a clumped distribution of Ashe Juniper, Plateau Live Oak, and Cedar Elm interspersed primarily by invasive King Ranch Bluestem (*Bothriochloa ischaemum*) with smaller pockets of non-native Bermudagrass (*Cynodon dactylon*) and native Little Bluestem (*Schizachyrium scoparium*). Agarita, Texas Persimmon, Prickly Pear (*Opuntia* sp.), and Tasajillo (*Opuntia leptocaulis*) can also be found in the open areas.

Golden-cheeked Warblers were detected on all the surveys throughout the study period (Table 1) and their locations marked and plotted with a Garmin GPS 76 (Figure 1). When a GCWA was detected, an effort was made to record several locations for each bird to develop a more accurate understanding of their use of the landscape. Therefore, the map in Figure 1 is a compilation of multiple sightings for individual birds. Due to the nature of the survey, it is difficult to say much regarding GCWA distribution but it is interesting to note the northeast corner, as in the 2011 survey, again had the greatest number of detections. The southeast portion of the plot had the least amount of detections, possibly due to a large patch of drought-induced tree mortality from the previous summer. Two observations were made of GCWA in the open area, one using a large, lone Ashe Juniper as a singing and foraging perch and another utilizing a roadside patch of trees, mostly oaks and juniper, as an area in which to countersing with a male across the road (Figure 1). Fecundity seemed to be relatively higher in 2012 with fledglings being detected during four of the five surveys compared to a single detection the prior season (Figure 1). Due to the constraints of the survey, it is not possible to give a definitive number of fledglings present but a conservative analysis would suggest that at least four breeding pairs successfully fledged young on the study plot.

Table 2 is a summary of all bird species detected during the survey.

Literature Cited:

Ladd, C. and L. Gass. 1999. Golden-cheeked Warbler (*Dendroica chrysoparia*).
In The Birds of North America, No. 420 (A. Poole and F. Gill, eds.). The
 Birds of North America, Inc., Philadelphia, Pennsylvania, USA.

Table 1. Survey conditions and GCWA detections for the 2012 Baker Sanctuary Headquarters 100-acre survey.

Date	Start/End	Average Temperature (°F)	Average Wind Speed (mph)	Average % Cloud Cover	GCWA Detections
6 April 2012	7:30 AM/11:30 AM	67	2	25	17
20 April 2012	7:30 AM/11:30 AM	68	3	88	18
27 April 2012	7:30 AM/11:30 AM	72	9	75	12
11 May 2012	7:00 AM/11:00 AM	67	1	90	21
18 May 2012	7:00 AM/11:00 AM	75	3	0	5

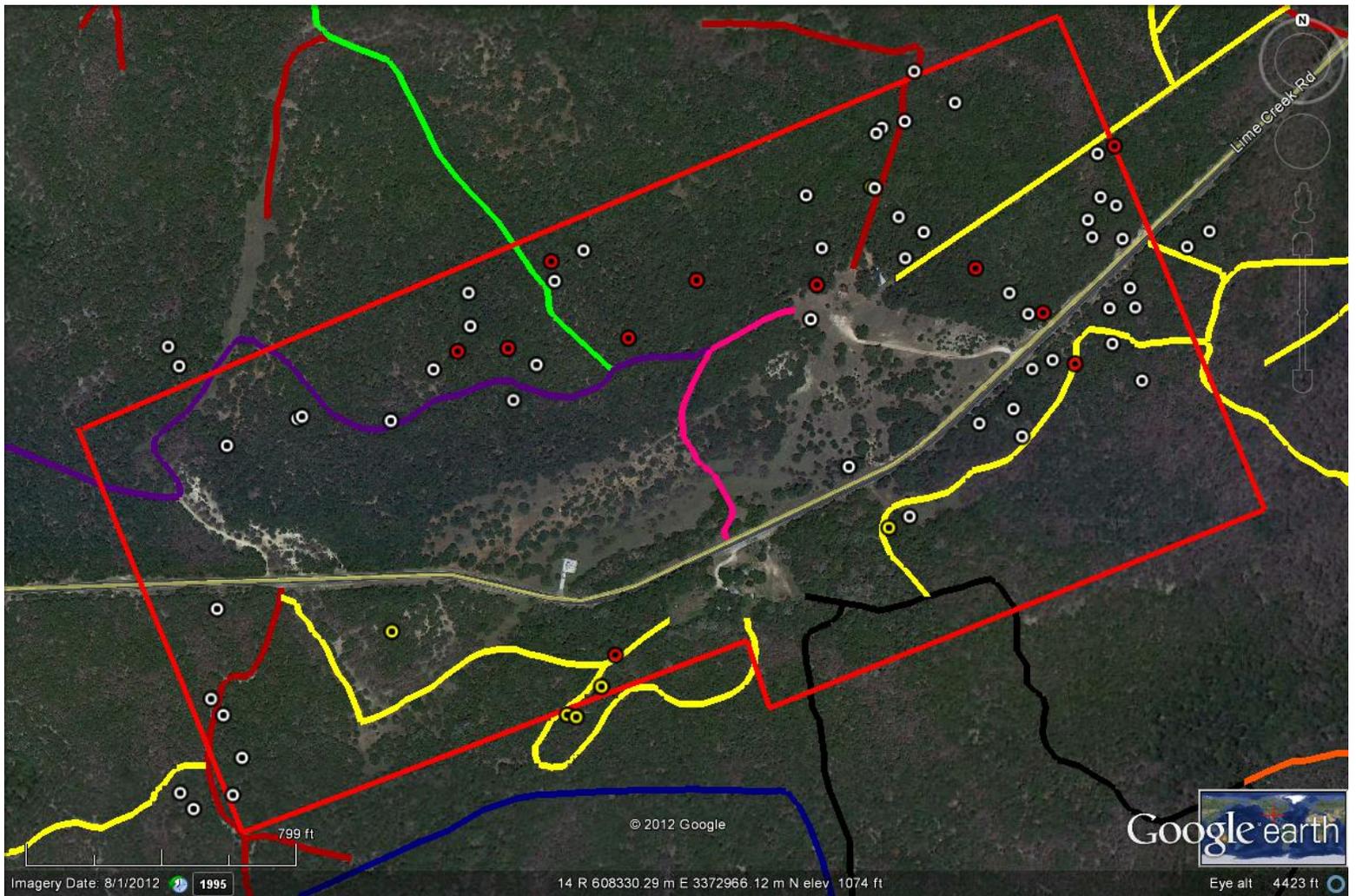
Table 2. Bird species detected during the 2012 Baker Sanctuary Headquarters 100-acre survey.

SPECIES	6 April	20 April	27 April	11 May	18 May	DAYS COUNTED
Red-shouldered Hawk	X	X	-	-	-	2
Turkey Vulture	-	-	X	X	X	3
Wild Turkey	-	-	-	-	X	1
Northern Bobwhite	-	-	X	-	-	1
Killdeer	X	-	-	-	-	1
Mourning Dove	X	X	X	X	X	5
White-winged Dove	X	X	X	X	X	5
Yellow-billed Cuckoo	-	-	-	X	X	2
Greater Roadrunner	-	X	-	X	X	3
Ladder-backed Woodpecker	-	-	-	X	X	2
Chimney Swift	-	X	X	X	-	3

SPECIES	6 April	20 April	27 April	11 May	18 May	DAYS COUNTED
Empidonax sp.	-	-	-	X	X	2
Eastern Phoebe	-	-	-	X	X	2
Great Crested Flycatcher	-	-	-	-	X	1
Ash-throated Flycatcher	X	X	-	-	-	2
Blue-headed Vireo	X	-	-	-	-	1
Red-eyed Vireo	-	-	-	-	X	1
Western Scrub-jay	X	X	X	X	-	4
American Crow	X	-	-	-	-	1
Black-crested Titmouse	X	X	X	X	X	5
Carolina Chickadee	X	-	X	X	X	4
Carolina Wren	-	-	-	-	X	1
Bewick's Wren	X	X	X	X	X	5
Ruby-crowned Kinglet	X	X	-	-	-	2
Blue-gray Gnatcatcher	X	X	X	X	X	5
American Robin	X	-	-	-	-	1
Northern Mockingbird	X	X	X	X	X	5
Nashville Warbler	-	X	X	X	-	3
Yellow-rumped Warbler	-	X	-	-	-	1
Blackburnian Warbler	-	-	-	-	X	1
Black-throated Green Warbler	-	-	-	X	-	1
Golden-cheeked Warbler	X	X	X	X	X	5
Wilson's Warbler	-	-	-	X	X	2
Summer Tanager	-	-	X	X	X	3
Field Sparrow	X	X	X	-	X	4
Northern Cardinal	X	X	-	X	X	4
Painted Bunting	-	-	X	X	X	3
Common	-	X	X	X	X	4

SPECIES	6 April	20 April	27 April	11 May	18 May	DAYS COUNTED
Grackle						
Lesser Goldfinch	-	X	-	X	X	3
House Finch	-	-	-	X	-	1
TOTAL SPECIES	18	19	17	25	26	40

Figure 1. GCWA detections during the 2012 Baker Sanctuary Headquarters 100-acre survey.



Key

Detections:	Trails:
<p>White circles = GCWA male detections Yellow circles = GCWA female detections Red circles = GCWA fledgling detections</p>	<p>Red = Hunting leases (non-public) Yellow = Non-public roads & trails Black = Baker Springs Trail (public) Pink = Baker Cabin Trail (public) Purple = Old Quarry Trail (public) Green = North Trail (public)</p>

Appendix D

Terrestrial Vegetation Monitoring Permanent Long-Term Monitoring Plots

Goals and Objectives:

For the Baker Management Team to be able to make sensible management decisions, they will need to know how plant communities change over time, as well as information on the presence of plant species and their abundance, the ages of certain woody vegetation, and the physical environment. These monitoring efforts should also help discover natural indicators which will assist with providing warning signs of declines in ecosystem quality. Indicators may include the detection of new invasive species or the decline of certain native species. Early detection from long term monitoring will allow managers to respond with timely and appropriate action before resolutions are economically or ecologically arduous.

Questions:

- How is plant community diversity changing over time?
- How are plant communities responding to anthropogenic (land management) and natural disturbances (invasive species)?

Variables to be monitored:

Species distribution, abundance, and size structure of certain plant species as well as disturbance (presence or absence) and cover.

Supply list:

GPS	Sunscreen
Data Sheets	Bug spray
Conduit (rebar)	
Mallet	
Compass	
Hand lens	
Map	
Clipboards	
Pencils	
Dbh tape	
100ft or 30m measuring tape (6)	
Meter sticks (12-16)	
Clippers	
Pin flags	
Flagging	
Protocol	
Guidelines for taking dbh	
Plant ID guides	
6 – m2 quadrats	

Site Selection:

Monitoring sites will be stratified based on land cover (i.e., grassland, evergreen shrubland, cold deciduous forest, broadleaf evergreen forest, coniferous).

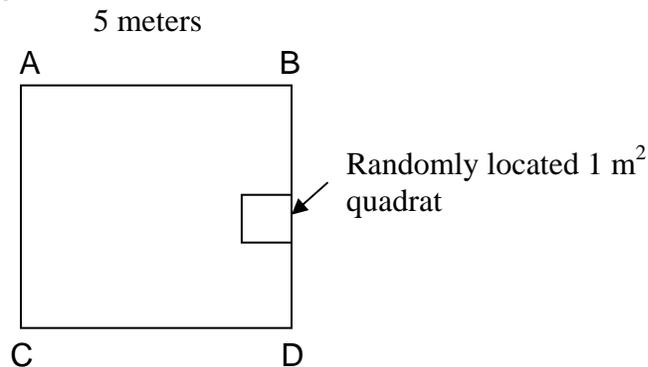
Method:

Similar in design to the FIA data collection method.

5 m² quadrats with one 1m² quadrat nested within.

Shrub and tree species dbh only is collected within the entire 5 meter plot.

Species and abundance data for all species is collected within the smaller 1 m² quadrats.



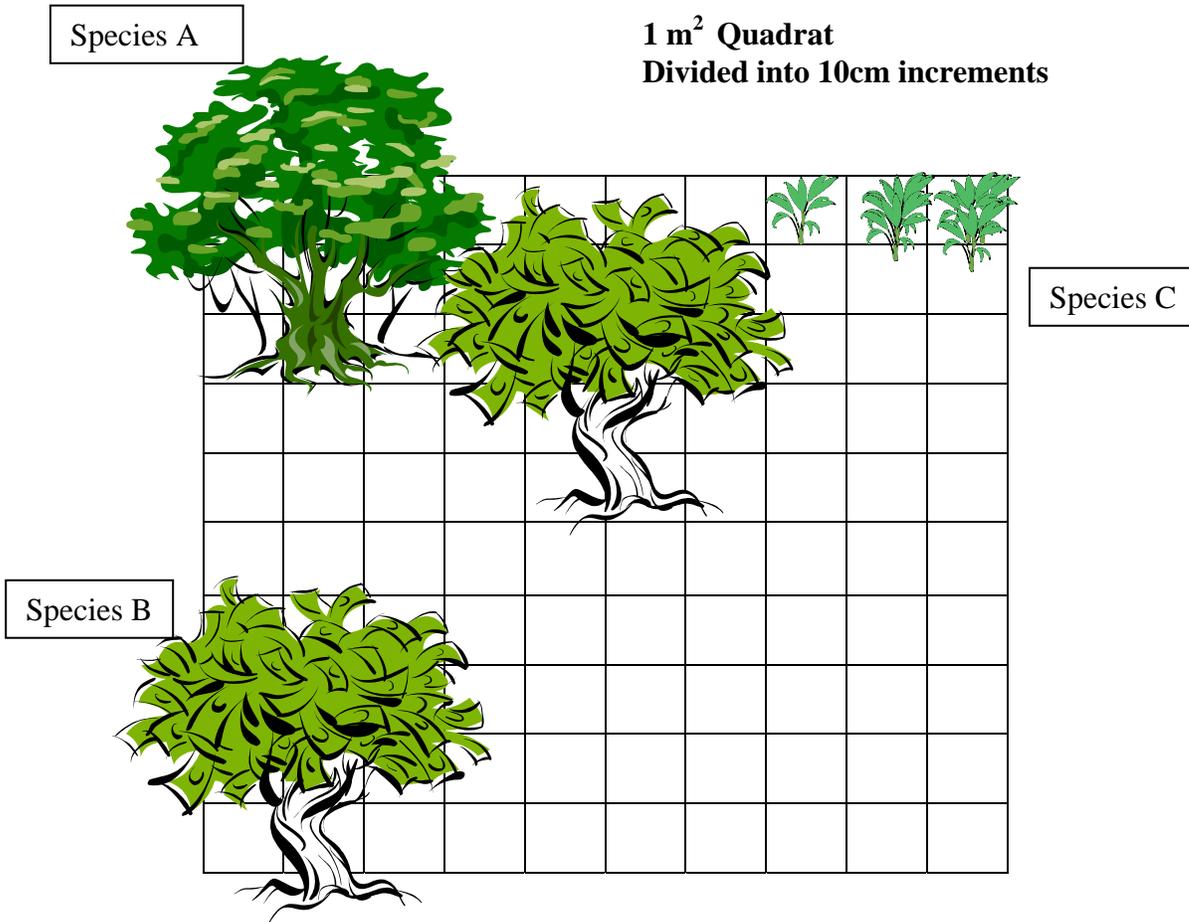
A. Data Collection Protocol- 5 m² Quadrats

1. Record the date, study area, plot number, and GPS coordinates of the monument(s)
2. Identify each woody species above knee height located in the canopy (data on seedlings and subshrubs will be collected in the subplots) list these species in the species column on the data sheet.
3. Collect DBH data on all woody species over 5 cm DBH and record the data. On the spread sheet. Note living or dead in the notes column for each individual.
4. Count the number of stems for each species under 5cm DBH. Only count those above 10cm in height.
5. Record observations of disturbance or herbivory within plot.

B. Data Collection Protocol -1 m²

1. Subplot locations should be indicated with pin flags at all 4 corners. Place pvc quadrat over subplot. Record the date, study area, and subplot # on the subplot data sheet.
2. Identify all species located within the plot. List any unknown species and describe them in the notes field.

3. Visually estimate abundance/cover for each plant species to the nearest 1%. Species with foliar cover <1% were recorded by first dividing each 10 cm x 10 cm square in which they occurred in quarters, and then counting the number of quarters occupied. Species with cover <0.25% were arbitrarily recorded as 0.1%.
4. Visually estimate the amount of litter and bare ground located within each plot and list on data sheet.
5. Record observations of disturbance or herbivory within subplot in the notes row.



Site/Species	001_1N	001_2E		
Species A	10%			
Species B	24%			
Species C	3%			
Litter	0%			
Bare ground	17%			
Notes	No disturbance			

Appendix E

Baker Sanctuary Bird List Current as of 10/24/2012

Pelecanidae

1. American White Pelican (*Pelecanus erythrorhynchos*): Fly over

Phalacrocoracidae

2. Double-crested Cormorant (*Phalacrocorax auritus*): Fly over

Ardeidae

3. Yellow-crowned Night-heron (*Nyctanassa violacea*): pond
4. Green Heron (*Butorides virescens*): Fly over & pond
5. Great Blue Heron (*Ardea Herodias*): Fly over & pond

Threskiornithidae

6. White-faced Ibis (*Plegadis chihi*): Fly over

Cathartidae

7. Turkey Vulture (*Cathartes aura*)
8. Black Vulture (*Coragyps atratus*)

Accipitridae

9. Osprey (*Pandion haliaetus*): Fly over
10. Mississippi Kite (*Ictinia mississippiensis*)
11. Bald Eagle (*Haliaeetus leucocephalus*)
12. Sharp-shinned Hawk (*Accipter striatus*)
13. Cooper's Hawk (*Accipter cooperii*)
14. Red-shouldered Hawk (*Buteo lineatus*)
15. Broad-winged Hawk (*Buteo platypterus*)
16. Swainson's Hawk (*Buteo swainsoni*)
17. Red-tailed Hawk (*Buteo jamaicensis*)

Falconidae

18. Crested Caracara (*Caracara plancus*)
19. American Kestrel (*Falco sparverius*)

Phasianidae

20. Wild Turkey (*Meleagris gallopavo*)

Odontophoridae

21. Northern Bobwhite (*Colinus virginianus*)

Gruidae

22. Sandhill Crane (*Grus canadensis*): Fly over

Charadriidae

23. Killdeer (*Charadrius vociferous*)

Scolopacidae

24. Upland Sandpiper (*Bartramia longicauda*)

Laridae

25. Ring-billed Gull (*Larus delawarensis*)

Columbidae

26. Rock Dove (*Columba livia*)

27. White-winged Dove (*Zenaida asiatica*)

28. Mourning Dove (*Zenaida macroura*)

29. Eurasian Collared-dove (*Streptopelia chinensis*)

30. Inca Dove (*Columbina inca*)

Cuculidae

31. Yellow-billed Cuckoo (*Coccyzus americanus*)

32. Greater Roadrunner (*Geococcyx californianus*)

Tytonidae

33. Barn Owl (*Tyto alba*)

Strigidae

34. Eastern Screech-owl (*Megascops asio*)

35. Great Horned Owl (*Bubo virginianus*)

Caprimulgidae

36. Common Nighthawk (*Chordeiles minor*)

37. Common Poorwill (*Phalaenoptilus nuttallii*)

38. Chuck-will's-widow (*Caprimulgus carolinensis*)

Apodidae

39. Chimney Swift (*Chaetura pelagic*)

Trochilidae

40. Ruby-throated Hummingbird (*Archilochus colubris*)

41. Black-chinned Hummingbird (*Archilochus alexandri*)

42. Rufous Hummingbird (*Selasphorus rufus*)

Picidae

43. Golden-fronted Woodpecker (*Melanerpes aurifrons*)

44. Northern Flicker (*Colaptes auratus*)

45. Red-bellied Woodpecker (*Melanerpes carolinus*)

46. Ladder-backed Woodpecker (*Picoides scalaris*)

47. Downy Woodpecker (*Picoides pubescens*)

Tyrannidae

48. Eastern Wood-pewee (*Contopus virens*)

49. Least Flycatcher (*Empidonax minimus*)

50. Eastern Phoebe (*Sayornis phoebe*)

51. Ash-throated Flycatcher (*Myiarchus cinerascens*)

52. Great Crested Flycatcher (*Myiarchus crinitus*)

53. Western Kingbird (*Tyrannus verticalis*)

54. Scissor-tailed Flycatcher (*Tyrannus forficatus*)

Laniidae

55. Loggerhead Shrike (*Lanius ludovicianus*)

Vireonidae

56. White-eyed Vireo (*Vireo griseus*)

57. Hutton's Vireo (*Vireo huttoni*)

58. Blue-headed Vireo (*Vireo solitaries*)

59. Red-eyed Vireo (*Vireo olivaceus*)

Corvidae

- 60. Blue Jay (*Cyanocitta cristata*)
- 61. Western Scrub-jay (*Aphelocoma californica*)
- 62. American Crow (*Corvus brachyrhynchos*)
- 63. Common Raven (*Corvus corax*)

Hirundinidae

- 64. Purple Martin (*Progne subis*): Fly over
- 65. Cliff Swallow (*Petrochelidon pyrrhonota*)
- 66. Barn Swallow (*Hirundo rustica*): Fly over

Paridae

- 67. Carolina Chickadee (*Poecile carolinensis*)
- 68. Tufted Titmouse (*Baeolophus bicolor*)
- 69. Black-crested Titmouse (*Baeolophus atricristatus*)

Aegithalidae

- 70. Bushtit (*Psaltriparus minimus*)

Sittidae

- 71. Red-breasted Nuthatch (*Sitta canadensis*)
- 72. White-breasted Nuthatch (*Sitta carolinensis*)

Certhiidae

- 73. Brown Creeper (*Certhia americana*)

Troglodytidae

- 74. Carolina Wren (*Thryothorus ludovicianus*)
- 75. House Wren (*Troglodytes aedon*)
- 76. Bewick's Wren (*Thryomanes bewickii*)
- 77. Canyon Wren (*Catherpes mexicanus*)

Regulidae

- 78. Golden-crowned Kinglet (*Regulus satrapa*)
- 79. Ruby-crowned Kinglet (*Regulus calendula*)

Sylviidae

- 80. Blue-gray Gnatcatcher (*Polioptila caerulea*)

Turdidae

- 81. Eastern Bluebird (*Sialia sialis*)
- 82. Hermit Thrush (*Catharus guttatus*)
- 83. American Robin (*Turdus migratorius*)
- 84. European Starling (*Sturnus vulgaris*): Fly over

Mimidae

- 85. Gray Catbird (*Dumetella carolinensis*)
- 86. Northern Mockingbird (*Mimus polyglottos*)

Bombycillidae

- 87. Cedar Waxwing (*Bombycilla cedrorum*)

Parulidae

- 88. Tennessee Warbler (*Vermivora peregrina*)
- 89. Orange-crowned Warbler (*Vermivora celata*)
- 90. Nashville Warbler (*Vermivora ruficapilla*)
- 91. Chestnut-sided Warbler (*Dendroica pensylvanica*)
- 92. Magnolia Warbler (*Dendroica magnolia*)
- 93. Yellow-rumped Warbler (*Dendroica coronata*)
- 94. Golden-cheeked Warbler (*Dendroica chrysoparia*)
- 95. Black-throated Green Warbler (*Dendroica virens*)
- 96. Pine Warbler (*Dendroica pinus*)
- 97. Yellow Warbler (*Dendroica petechia*)
- 98. Blackburnian Warbler (*Dendroica fusca*)
- 99. Black-and-white Warbler (*Mniotilta varia*)
- 100. American Redstart (*Setophaga ruticilla*)
- 101. Wilson's Warbler (*Wilsonia pusilla*)
- 102. Canada Warbler (*Wilsonia canadensis*)
- 103. Yellow-breasted Chat (*Icteria virens*)

Thraupidae

104. Summer Tanager (*Piranga rubra*)

Emberizidae

105. Green-tailed Towhee (*Pipilo chlorurus*)
106. Spotted Towhee (*Pipilo maculates*)
107. Rufous-crowned Sparrow (*Aimophilo carpalis*)
108. Chipping Sparrow (*Spizella passerina*)
109. Lark Sparrow (*Chondestes grammacus*)
110. Field Sparrow (*Spizella pusilla*)
111. Fox Sparrow (*Passerella iliaca*)
112. Savannah Sparrow (*Passerculus sandwichensis*)
113. Lincoln's Sparrow (*Melospiza lincolni*)
114. White-throated Sparrow (*Zonotrichia albicollis*)
115. White-crowned Sparrow (*Zonotrichia leucophrys*)
116. Dark-eyed Junco (*Junco hyemalis*)

Cardinalidae

117. Northern Cardinal (*Cardinalis cardinalis*)
118. Pyrrhuloxia (*Cardinalis sinuatus*)
119. Blue Grosbeak (*Passerina caerulea*)
120. Lazuli Bunting (*Passerina amoena*)
121. Indigo Bunting (*Passerina cyanea*)
122. Painted Bunting (*Passerina ciris*)
123. Dickcissel (*Spiza americana*)

Icteridae

124. Eastern Meadowlark (*Sturnella magna*)
125. Red-winged Blackbird (*Agelaius phoeniceus*)
126. Common Grackle (*Quiscalus quiscula*)

- 127. Great-tailed Grackle (*Quiscalus mexicanus*)
- 128. Bronzed Cowbird (*Molothrus aeneus*)
- 129. Brown-headed Cowbird (*Molothrus ater*)
- 130. Orchard Oriole (*Icterus spurius*)
- 131. Baltimore Oriole (*Icterus galbula*)

Fringillidae

- 132. House Finch (*Carpodacus mexicanus*)
- 133. Pine Siskin (*Carduelis pinus*)
- 134. Lesser Goldfinch (*Carduelis psaltria*)
- 135. American Goldfinch (*Carduelis tristis*)

Passeridae

- 136. House Sparrow (*Passer domesticus*)

Figure 1. Map of White-tailed Deer hunt sites at Baker Sanctuary.

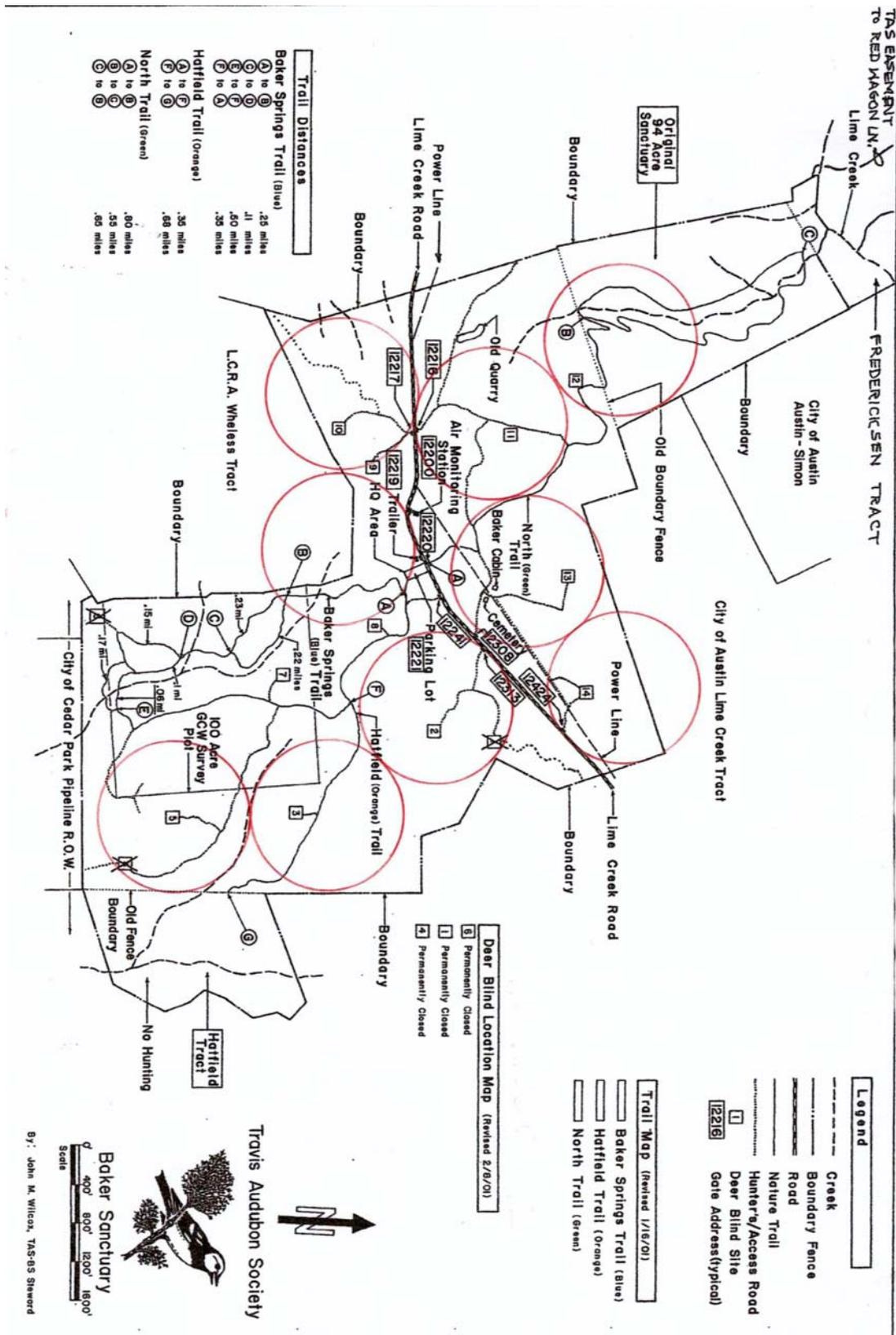


Figure 2. Summary of White-tailed Deer Harvest from 2000-2011. Juvenile deer are a year or less in age.

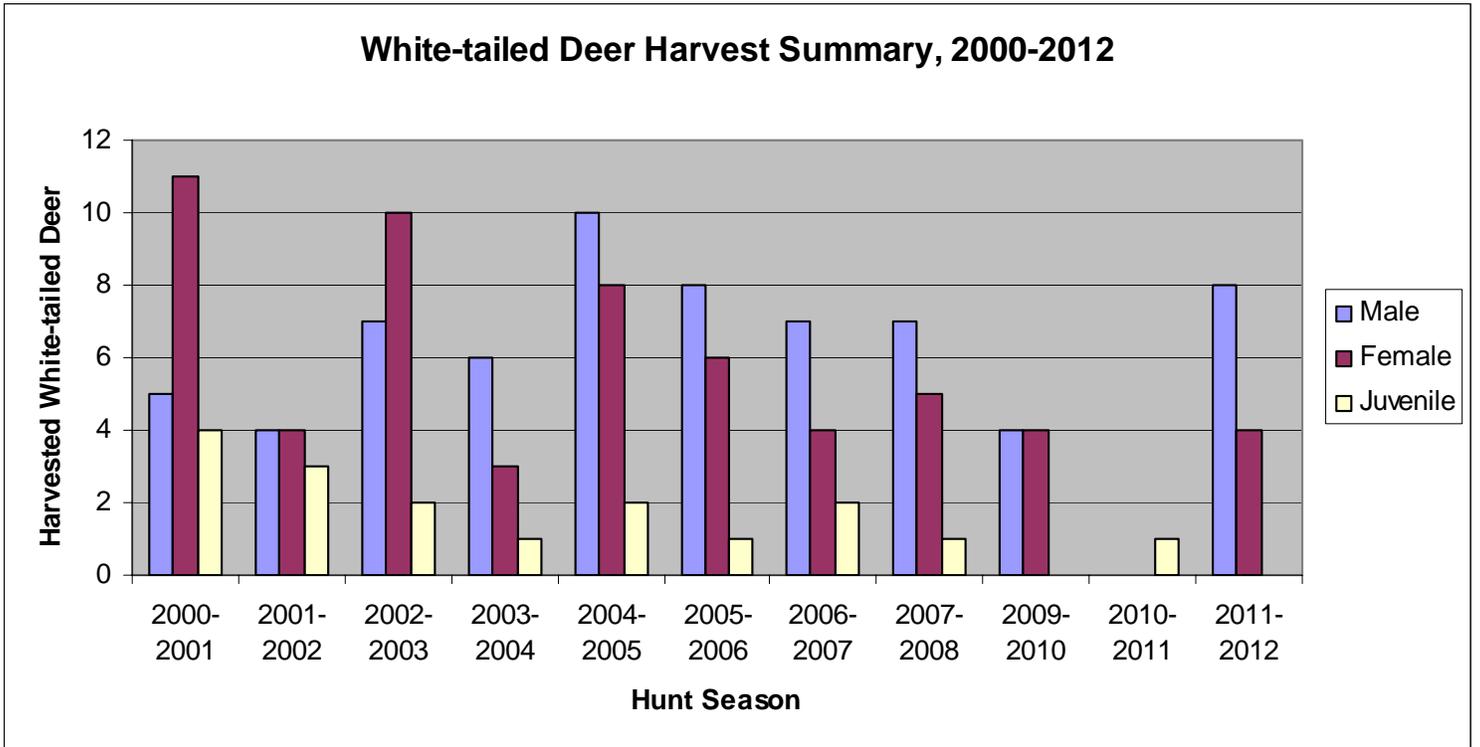


Figure 3. Map of long-term monitoring plots for vegetation communities at Baker Sanctuary.

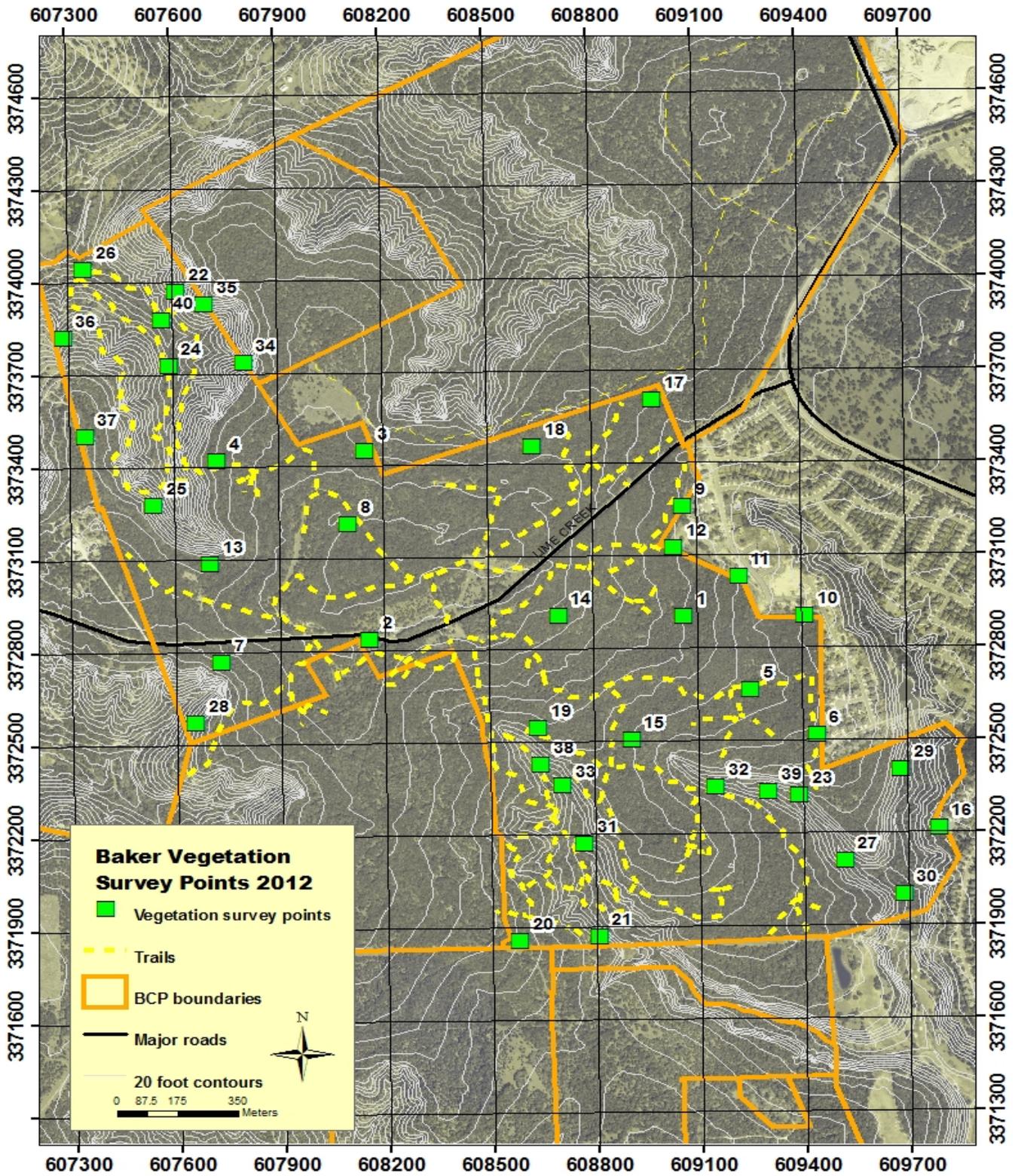


Table 1. Results of the May 20th, 2012 Baker Sanctuary point count survey.

Common Name	Scientific Name	Number Observed	Mean ¹	Frequency (%) ² (25 yd radius)	Frequency (%) ³ (unlimited radius)
Carolina Chickadee	<i>Poecile carolinensis</i>	24	0.65	35	51
Blue-gray Gnatcatcher	<i>Poliptila caerulea</i>	22	0.59	43	46
Northern Cardinal	<i>Cardinalis cardinalis</i>	20	0.54	35	73
Black-crested Titmouse	<i>Baeolophus atricristatus</i>	15	0.41	32	54
Golden-cheeked Warbler	<i>Setophaga chrysoparia</i>	13	0.35	24	35
Bewick's Wren	<i>Thryomanes bewickii</i>	9	0.24	22	43
Painted Bunting	<i>Passerina ciris</i>	7	0.19	16	51
House Finch	<i>Carpodacus mexicanus</i>	7	0.19	8	11
Northern Mockingbird	<i>Mimus polyglottos</i>	6	0.16	14	24
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	5	0.14	14	41
Common Grackle	<i>Quiscalus quiscula</i>	5	0.14	5	14
Black-and-white Warbler	<i>Mniotilta varia</i>	4	0.11	11	11
Mourning Dove	<i>Zenaida macroura</i>	4	0.11	8	54
Ladder-backed Woodpecker	<i>Picoides scalaris</i>	4	0.11	11	16
Summer Tanager	<i>Piranga rubra</i>	3	0.08	8	35
Lesser Goldfinch	<i>Carduelis psaltria</i>	3	0.08	5	16
Great-tailed Grackle	<i>Quiscalus mexicanus</i>	3	0.08	3	3
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	3	0.08	5	5
Red-eyed Vireo	<i>Vireo olivaceus</i>	2	0.05	5	8
Western Scrub-jay	<i>Aphelocoma californica</i>	2	0.05	5	16
Field Sparrow	<i>Spizella pusilla</i>	2	0.05	3	5
House Sparrow	<i>Passer domesticus</i>	2	0.05	5	5
Blue Jay	<i>Cyanocitta cristata</i>	2	0.05	5	19
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	2	0.05	5	8
Blackburnian Warbler	<i>Dendroica fusca</i>	2	0.05	3	3
White-eyed Vireo	<i>Vireo griseus</i>	1	0.03	3	8
Wild Turkey	<i>Meleagris gallopavo</i>	1	0.03	3	16
White-winged Dove	<i>Zenaida asiatica</i>	1	0.03	3	24
Dickcissel	<i>Spiza americana</i>	1	0.03	3	3
Carolina Wren	<i>Thryothorus ludovicianus</i>	1	0.03	3	3
Least Flycatcher	<i>Empidonax minimus</i>	1	0.03	3	3
Northern Bobwhite	<i>Colinus virginianus</i>	0	0.00	0	16
Greater Roadrunner	<i>Geococcyx californianus</i>	0	0.00	0	16
Turkey Vulture	<i>Cathartes aura</i>	0	0.00	0	3
Eastern Phoebe	<i>Sayornis phoebe</i>	0	0.00	0	5
Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>	0	0.00	0	5
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	0	0.00	0	3
American Crow	<i>Corvus brachyrhynchos</i>	0	0.00	0	5
Western Kingbird	<i>Tyrannus verticalis</i>	0	0.00	0	3
Purple Martin	<i>Progne subis</i>	0	0.00	0	8
Chimney Swift	<i>Chaetura pelagica</i>	0	0.00	0	5
Blue Grosbeak	<i>Guiraca caerulea</i>	0	0.00	0	3
Red-shouldered Hawk	<i>Buteo lineatus</i>	0	0.00	0	3

Empidonax spp		0	0.00	0	3
Total		177			
Total Number of Points	37				
¹ Mean number of individuals observed within the survey radius of each point.					
² Percentage of total points where species was observed within the survey radius.					
³ Percentage of total points where species was observed regardless of radius.					