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Abstract

The Lower Colorado River Authority (LCRA) contracted with Loomis Austin, Inc. (LAI) to perform a territory mapping survey of the golden-cheeked warbler (GCWA) on the Wheless Preserve for the 2002 breeding season. Primary objectives of this study were to provide updated data on GCWA territories on the entire Wheless Preserve and on the two 100-acre plots designated as prime habitat and transitional habitat. Secondary objectives were to obtain data on GCWA reproduction and on the occurrence on the property of brown-headed cowbirds, invasive plant species and rare plant species. In order to complete these objectives, LAI staff made 206 visits to the Wheless Preserve and spent a total of 979 hours on site.

A total of 1,893 GCWA observations (1,757 males, 79 females, 57 juveniles) were recorded, comprising 70 complete and 22 fractional territories on the entire Wheless Preserve. In addition, 1 nest was discovered. A total of 108 GCWA observations (105 males, 3 females, 0 juveniles) were documented on the 100-acre plot designated as prime habitat. A total of 7 GCWA observations (all males) were documented on the 100-acre plot designated as emerging habitat. A total of 40 brown-headed cowbird observations were documented in the study area, found on all parts of the property except for the black-capped vireo management area. Invasive plant species were documented on the property. These included chinaberry (*Melia azedarach*), Chinese tallow (*Sapium sebiferum*), nandina (*Nandina domestica*), tree of heaven (*Ailanthus altissima*), privet (*Ligustrum* sp.), and johnsongrass (*Sorghum halepense)*. No rare plants were encountered in the study area.

The large number of GCWA individuals and territories mapped during this survey indicates the high quality of GCWA habitat on the Wheless Preserve. However, the presence of brown-headed cowbirds and several non-native plant species also indicates the susceptibility of this habitat to be altered by invasive species if left unmanaged. Exotic species removal and future surveys and studies will help to ensure the survival of the GCWA and the LCRA's commitment to maintaining habitat for this endangered species.

1.0 INTRODUCTION AND SURVEY OBJECTIVES

The golden-cheeked warbler (*Dendroica chrysoparia*, GCWA) is a small, migratory songbird endemic to the juniper-oak woodlands of central Texas (Pulich 1976, Ladd and Gass 1999). The U.S. Fish and Wildlife Service (USFWS) listed the golden-cheeked warbler as an endangered species on May 4, 1990. Efforts to maintain populations have focused on conservation of available breeding habitat, which is becoming more fragmented due to urban expansion and land clearing for agricultural activity (USFWS 1992).

In May 1996, the USFWS approved the Balcones Canyonlands Conservation Plan (BCCP), a Habitat Conservation Plan and Incidental Take Permit covering Travis County, Texas. Conservation actions under the BCCP include the establishment and management of the Balcones Canyonlands Preserve (BCP), a multi-agency preserve system that will eventually encompass a minimum of 30,528 acres in western Travis County. The Lower Colorado River Authority owns and manages three tracts in the BCP: Westcave, McGregor, and Wheless.

The LCRA contracted with Loomis Austin, Inc. (LAI) to perform a territory mapping survey of the GCWA on the Wheless Preserve for the 2002 breeding season. Previous GCWA territory data for the entire Wheless Preserve was collected in 1992 by the LCRA and in 1993 by the LCRA, the Texas Department of Transportation, and DLS Associates. In 1992, 27 GCWA territories were mapped and in 1993, 67 GCWA territories were mapped (LCRA 1995).

Recently, GCWA territory mapping on the Wheless Preserve has focused on the 100-acre census blocks established for BCCP GCWA monitoring. The 100-acre plot designated as prime habitat has been monitored yearly since 1997, with results ranging from nine to 12 mapped territories (LCRA 1994, Blanton & Associates, Inc. and Turner, Collie and Braden, Inc. 2001). A new 100-acre transitional habitat plot was designated in January 2002 to replace the transitional plot lost in December 2001 as part of a larger vegetation manipulation area for black-capped vireo (BCVI) habitat creation. The 2002 season was the first monitoring of the new transitional plot; therefore no GCWA territory data had been previously gathered.

Primary objectives of the 2002 survey were to:

1. Provide current, comprehensive data on golden-cheeked warbler territories on the entire Wheless Preserve; and

2. Provide an updated census of GCWAs on the two 100-acre plots designated as prime habitat and transitional habitat.

Secondary objectives were to:

1. Collect any other GCWA information, such as nest locations, productivity, and juvenile dispersal, to the extent feasible during the course of territory mapping activities; and
2. Document the presence of brown-headed cowbirds (*Molothrus ater*, BHCO), rare plant species, and invasive plant species on the property, to the extent feasible during the course of territory mapping activities.

2.0 METHODS AND MATERIALS

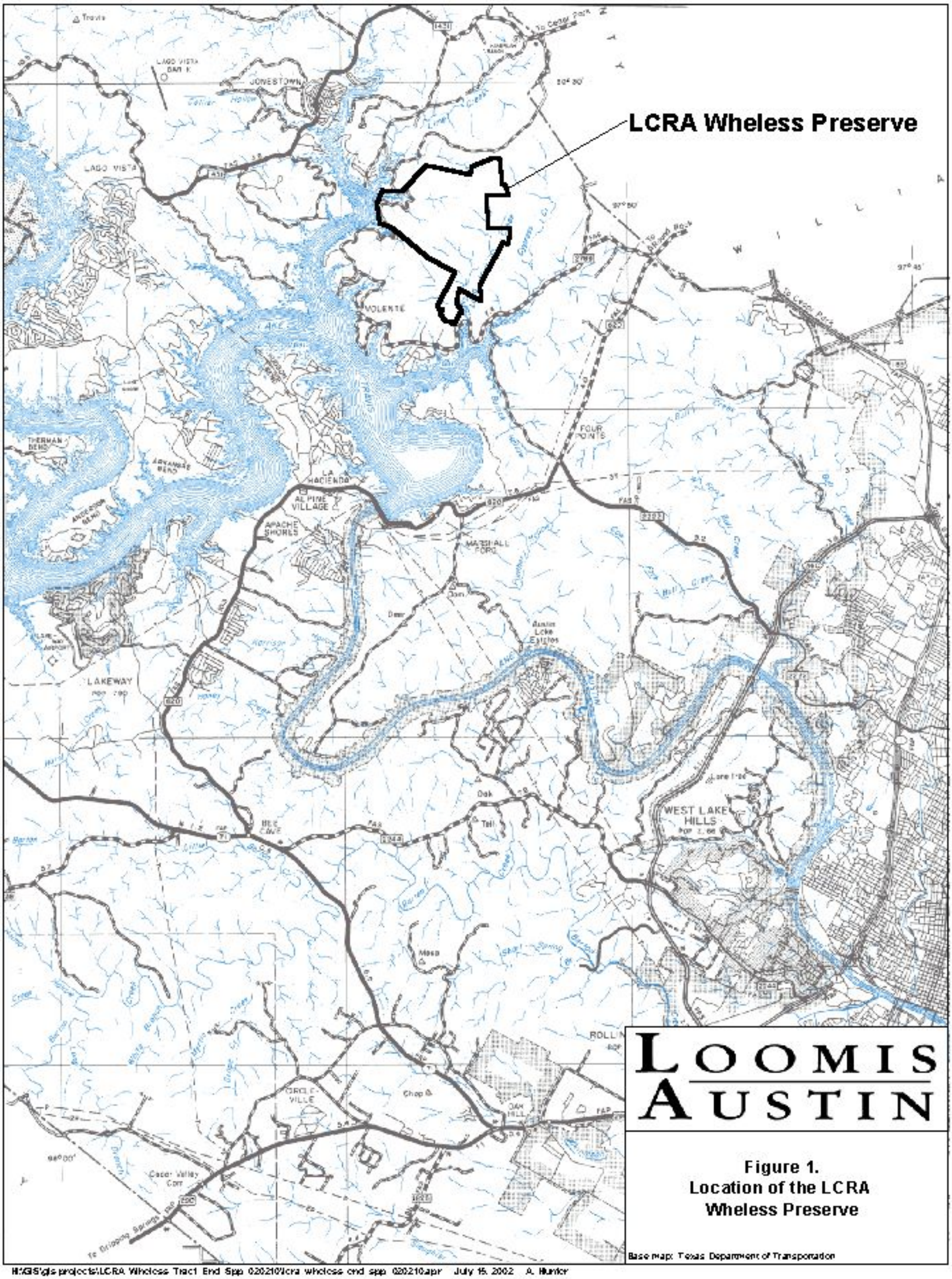
2.1 Study Area

The Wheless Preserve is a 2,317-acre property located off of Lime Creek Road, approximately six miles south of RM1431 in western Travis County, Texas (Figure 1). The property is predominantly undeveloped with the exception of a water tower and an underground water pipeline. The City of Cedar Park holds two easements approximately 2.6 miles in length and 55 feet wide in total to connect the City of Cedar Park to the east to its water supply and treatment plant on the west side of the tract. The access easement for the pipeline is cleared of woody vegetation to its maximum width as an approved infrastructure corridor under the BCCP. The pipeline easement is covered with caliche and cedar mulch and is used by employees of the treatment plant to transport machinery and equipment. Approximately seven miles of unimproved access roads and several unauthorized mountain bike trails are also distributed throughout the property. Sandy Creek Park was not included in the study area.

Approximately 104.5 acres in the northern part of the study area is currently being managed to create black-capped vireo (*Vireo atricapillus*, BCVI) habitat (Figure 2). The BCVI management area was treated in January and February 2002, using a flail mower to remove most woody vegetation.

2.2 Golden-cheeked Warbler Territory Mapping

LAI divided the Wheless Preserve into 16 survey units for time management purposes (Figure 2). Survey units ranged in size from 85 to 267 acres. Two of the survey units are permanent BCP 100-acre GCWA survey plots. Survey unit 14 represents transitional habitat and Unit 16 represents prime habitat.



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Figure 1.
Location of the LCRA Wheless Preserve

Base map: Texas Department of Transportation

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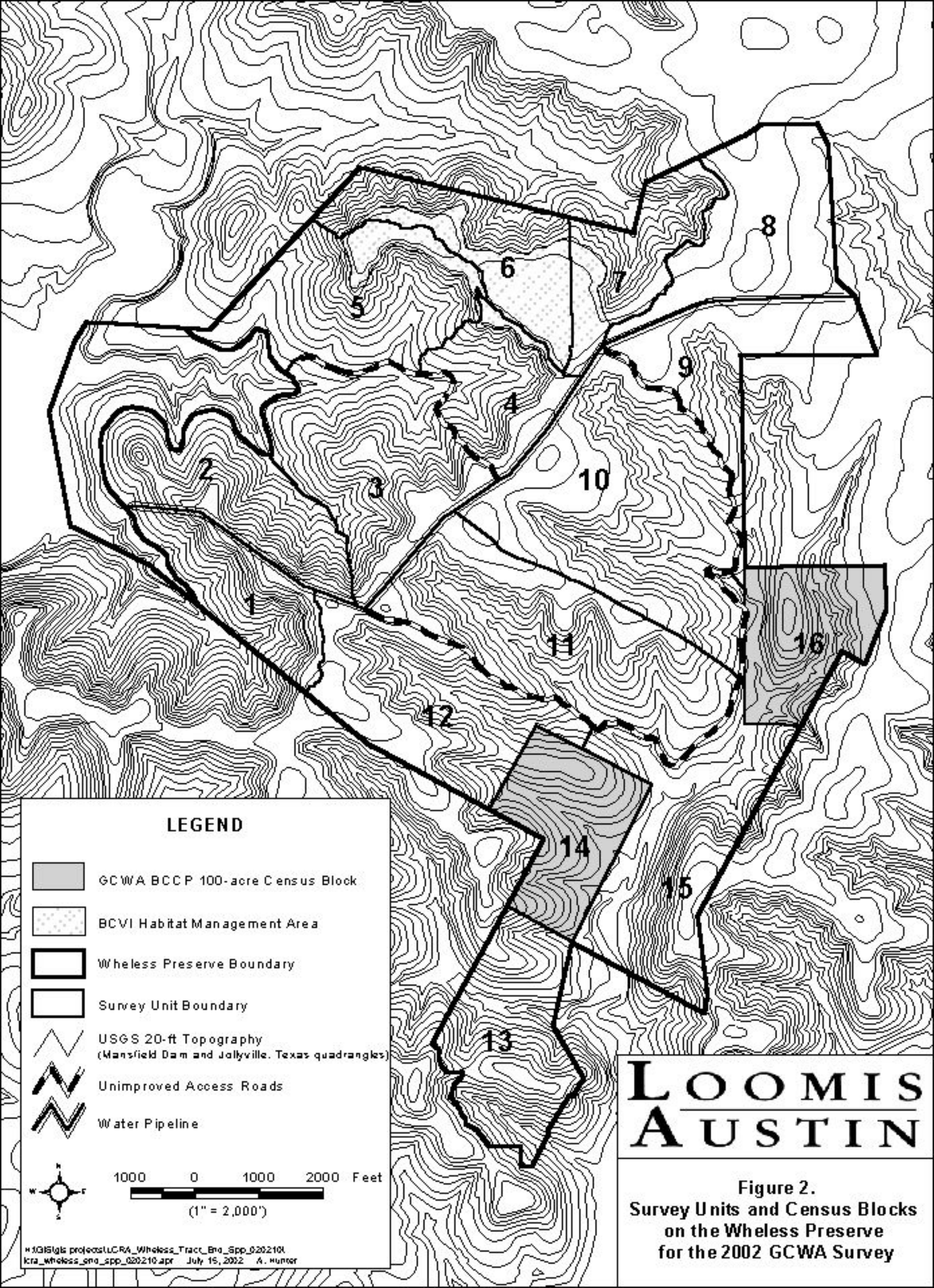


Figure 2.
Survey Units and Census Blocks on the Wheless Preserve for the 2002 GCWA Survey

The 2002 survey of the Wheless Preserve followed standard protocol for GCWA and BCVI territory mapping as required by USFWS endangered species permit conditions, and as described by the International Bird Census Committee (1970) and Bibby et al. (2000). All surveys were conducted between March 15 and May 15 on days when weather was suitable for detecting bird activity. The time, temperature, wind speed, wind direction, and percent cloud cover were recorded at the beginning and of each period of fieldwork in each survey unit (Appendix A).

Table 1. Survey effort on each unit of the Wheless Preserve during the 2002 survey season.

Survey Unit	Size (acres)	No. of Visits	Total Time (hrs.)	Time/Acre (mins.)
1	86	12	39:05	27
2	127	11	40:33	19
3	175	13	78:10	27
4	83	12	50:59	37
5	160	14	44:50	17
6	110	14	44:45	24
7	85	14	42:57	30
8	135	13	47:12	21
9	112	12	44:02	24
10	267	14	93:15	21
11	220	13	78:23	21
12	157	14	78:55	30
13	129	14	49:20	23
14*	103	14	39:05	23
15	179	11	66:01	22
16*	96	11	42:27	26
General	n/a	n/a	99:13	n/a
Total			979:12	

*BCCP 100-acre census block

With the exception of three visits, all surveying commenced within one hour after sunrise. Between 11 and 14 visits were made to each survey unit, totaling 206 visits and at least 979 hours documented (Table 1). LAI surveyed Unit 14 (the LCRA transitional habitat block) 14 times totaling 39 hours of survey effort, and Unit 16 (prime habitat block) 11 times for a total of 42.5 hours of survey effort (Table 1).

All GCWA registrations were mapped in the field on a topographic map at a scale of one inch equals 300 feet, with 20-foot contours. When GCWAs were only detectable audibly, personnel attempted to get a visual confirmation of the individual. When the precise location of a GCWA was determined, individuals were mapped using a handheld Garmin 76 Global Positioning System (GPS) unit. GCWA individuals were observed for banded legs, when possible. No taped bird vocalizations were used to elicit a response from a GCWA during this survey.

Fieldwork was conducted by the following LAI personnel: Clif Ladd (principal investigator), Amanda Hunter, Darren Dodson, Cyndee Baker, Scott Haywood, and Sara Moren.

2.3 Data Analysis

All field observations were compiled into a Geographic Information System (GIS) database using Arcview 3.2. Due to the large number of visits to each survey unit in the study area, the 2002 survey season was divided into two halves for data analysis (March 15–April 14 and April 15–May 15). GCWA territory boundaries were delineated for both halves of the season, following the guidelines of Bibby et al. (2000). Territories were categorized as either being complete (entirely inside the study area boundary), fractional (partially inside the study area boundary), or adjacent (entirely outside the study area boundary). Territories outside the Wheless Preserve were not mapped unless on partnering preserve land and then only documented as incomplete observations. As a deviation from Bibby et al. (2000), territories were considered fractional if at least one GCWA registration in that territory was documented outside of the study area. After territory boundaries were delineated for both halves of the season, the best-fit union of these boundaries was used to delineate territories for the season as a whole. The above criteria were imposed on complete, fractional, and adjacent territories.

As a result of splitting the season in half, there were several instances where a grouping of GCWA observations did not meet one of the assumptions from Bibby et al. (2000) for determining territory boundaries, such as having at least two

registrations at least ten days apart. In these cases, a second category of "cluster" was used to describe the associated registrations.

2.4 Miscellaneous Documentation and Mapping

During the course of the survey season, field personnel made notes on several miscellaneous items. The presence/absence of BHCO was recorded for each survey unit on a daily basis. No attempt was made to estimate BHCO numbers or exact locations. All other bird species observed visually or audibly in the study area were also documented on a daily basis.

Rare plants, in particular bracted twist-flower (*Streptanthus bracteatus*) and canyon mock-orange (*Philadelphus ernestii*), as well as invasive plant species were documented and mapped with a GPS unit, if they were encountered. A partial vegetation list was also compiled representing only those species identified by field personnel during the course of other fieldwork.

3.0 FINDINGS

3.1 General Habitat Description

3.1.1 Wheless Preserve

Habitat on the Wheless Preserve is typical for the eastern edge of the Edward's Plateau, consisting of mesic juniper-oak woodland ravines, upland juniper-oak woodlands, and upland grassy meadows. The canopy layer on the Wheless Preserve is primarily composed of Ashe juniper (*Juniperus ashei*), Spanish oak (*Quercus buckleyi*), plateau live oak (*Quercus fusiformis*), white shin oak (*Quercus sinuata* var*. breviloba*), Texas ash (*Fraxinus texensis*), hackberry (*Celtis laevigata*), and cedar elm (*Ulmus crassifolia*). Dominant understory shrubs include Texas persimmon (*Diospyros texana*), Lindheimer silktassel (*Garrya ovata* ssp. *lindheimeri*), agarito (*Berberis trifoliolata*), American beautyberry (*Callicarpa americana*), possum-haw (*Ilex decidua*), and saw greenbriar (*Smilax bona-nox*). Dominant forbs include heronbill (*Erodium texanum*), golden-eye phlox (*Phlox roemeriana*), upright prairie coneflower (*Ratibida columnaris*), cedar sage (*Salvia roemeriana*), queen's delight (*Stillingia texana*), twoleaf senna (*Senna roemeriana*), and Dakota vervain (*Verbena bipinnatifida*). Dominant cacti include Texas prickly pear (*Opuntia engelmannii*), and lace cactus (*Echinocereus reichenbachii*). Dominant grasses include little bluestem (*Schizachyrium scoparium*) and grama (*Bouteloua* sp.). Several springs and intermittent streams were also located in the

study area. These areas supported aquatic and riparian vegetation, such as southern maidenhair fern (*Adiantum capillus-veneris*), spikerush (*Eleocharis* sp.), and water primrose (*Ludwigia* sp.).

GCWAs on the Wheless Preserve were found primarily in the shaded canyons in closed canopy woodland, particularly associated with wooded drainages, such as those found in survey Units 4, 7, 10, 11, 12, and 15. (Figure 3). These areas typically offer the old-growth and mature regrowth juniper-oak woodlands preferred by the species. GCWAs were also found in areas of dense old-growth junipers with little topographic relief, such as parts of survey units 8, 9, and 10. Survey units 1, 3, 5, and 6 did not support large numbers of GCWAs due to the lack of quality habitat.

3.1.2 Unit 14 (Transitional GCWA Habitat)

Survey Unit 14 is a 100-acre census block for GCWA monitoring, under the BCCP, and is classified as transitional habitat. The upland portions of this plot consist primarily of six to eight foot tall Ashe junipers, with few hardwoods and sparse overhead canopy. The two main drainages found on the plot are limited in extent and contain denser areas of medium-age juniper, interspersed with Spanish oak, agarito and Texas persimmon.

3.1.3 Unit 16 (Prime GCWA Habitat)

Survey Unit 16 is a 100-acre census block for GCWA monitoring, under the BCCP, and is classified as prime habitat. Features of this plot include two upland areas and two large drainages that converge at the southern end of the unit. The drainages, as well as the upland portions of the plot, contain a diverse mix of mature Ashe juniper, Spanish oak, plateau live oak, and white shin oak. Canopy cover is dense and trees are mature enough to provide the habitat necessary for GCWAs.

3.2 Golden-cheeked warbler mapping

3.2.1 Wheless Preserve

A total of 1,893 GCWA observations (1,757 males, 79 females, 57 juveniles) were recorded on the Wheless Preserve for the 2002 breeding season (Figure 3). In addition, one nest was discovered in the southwest drainage of Unit 10 (Figure 4).

A total of 92 GCWA territories and seven clusters were mapped entirely within or partially within the Wheless boundary for the season (Figures 3, 4, and 5; Table 2). Average territory size was 11.6 acres (4.7 ha), slightly larger than the average territory size (4.15 ha) documented at Fort Hood from 1992–1996 (Weinberg, et al.

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Figure 3.
GCWA Observations and Territory Boundaries on the Wheless Preserve in 2002

LEGEND

Survey Dates

- Week 1 (March 18, 2002 - March 24, 2002)
- Week 2 (March 25, 2002 - March 31, 2002)
- Week 3 (April 1, 2002 - April 7, 2002)
- Week 4 (April 8, 2002 - April 14, 2002)
- Week 5 (April 15, 2002 - April 21, 2002)
- Week 6 (April 22, 2002 - April 28, 2002)
- Week 7 (April 29, 2002 - May 5, 2002)
- Week 8 (May 6, 2002 - May 12, 2002)
- Week 9 (May 13, 2002 - May 15, 2002)

GCWA Territories

- Whole Season Territory Boundary
- Early Half-season Territory Boundary
- Late Half-season Territory Boundary
- Cluster of Related Observations

GCWA Observations

- GCWA Male Observation
- GCWA Female Observation
- GCWA Juvenile Observation
- Precise Territorial Observation
- Approximate Territorial Observation
- Observed Movement
- Contemporary Observation
- Aggressive Encounter

Base Maps

- Wheless Preserve Boundary and Survey Units
- USGS 20-ft Topography (Mansfield Dam and Jollyville, Texas quadrangles)

N W E S

400 0 400 800 Feet
(1" = 400')

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LEGEND

Survey Dates

- Week 1 (March 18, 2002 - March 24, 2002)
- Week 2 (March 25, 2002 - March 31, 2002)
- Week 3 (April 1, 2002 - April 7, 2002)
- Week 4 (April 8, 2002 - April 14, 2002)
- Week 5 (April 15, 2002 - April 21, 2002)
- Week 6 (April 22, 2002 - April 28, 2002)
- Week 7 (April 29, 2002 - May 5, 2002)
- Week 8 (May 6, 2002 - May 12, 2002)
- Week 9 (May 13, 2002 - May 15, 2002)

GCWA Territories

- Whole Season Territory Boundary
- Cluster of Related Observations

GCWA Observations

- GCWA Female Observation
- GCWA Juvenile Observation
- GCWA Nest

Base Maps

- Wheless Preserve Boundary and Survey Units
- USGS 20-ft Topography (Mansfield Dam and Joiyville, Texas quadrangles)

N W E S

500 0 500 1000 1500 Feet

(1" = 1,500')

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Figure 4.
GCWA Female and Juvenile Observations and Whole Season Territory Boundaries on the Wheless Preserve in 2002.

1996). When mapped as two separate surveys, territories on the Wheless Preserve exhibited discrete, non-overlapping boundaries (Figure 3). A comparison of the first half of the season with the second half indicated a shift in some territory boundaries over time. As a result, when the season was analyzed as a whole, some overlapping occurred between territories, a situation occasionally observed in adjacent *Dendroica* species' territories (Morse 1976). No banded individuals were observed during this survey. Although no concentrated effort was made to document females or juveniles, survey units 2, 9, 10, and 12 showed greatest recorded activity of these two GCWA classes.

3.2.2 Unit 14 (Transitional GCWA Habitat)

Seven GCWA observations (seven males, no females, no juveniles) were documented on Unit 14 for the 2002 breeding season, comprising three fractional territories and one complete cluster (Figures 3, 4, and 5; Table 2). Each of the three fractional territories had one GCWA observation as part of a territory or a cluster in Unit 14 in the first half of the season (March 15–April 14). No GCWA observations were made in the second half of the season (April 15–May 15) that were grouped into these fractional territories. However, because GCWAs were part of a territory or cluster in the first half of the season, they were considered as part of the fractional territories for the whole season.

3.2.3 Unit 16 (Prime GCWA Habitat)

A total of 108 GCWA observations (105 males, three females, no juveniles) were documented on Unit 16 for the 2002 breeding season, comprising three complete and four fractional territories (Figures 3, 4, and 5; Table 2).

Table 2. Golden-cheeked warbler territories and clusters on the Wheless Preserve.

	Complete		Fractional		Adjacent	
	Territory	Cluster	Territory	Cluster	Territory	Cluster
Wheless	70	6	22	1	5	2
Unit 14	0	1	3	0	2	0
Unit 16	3	0	4	0	0	0

3.3 Miscellaneous documentation and mapping

A total of 40 BHCO observations were documented during the 2002 survey season of the Wheless Preserve (Figure 6). BHCOs were observed on every survey unit except Unit 6. On four occasions, BHCOs were observed near the water tower and on three occasions near the main entrance to the study area.

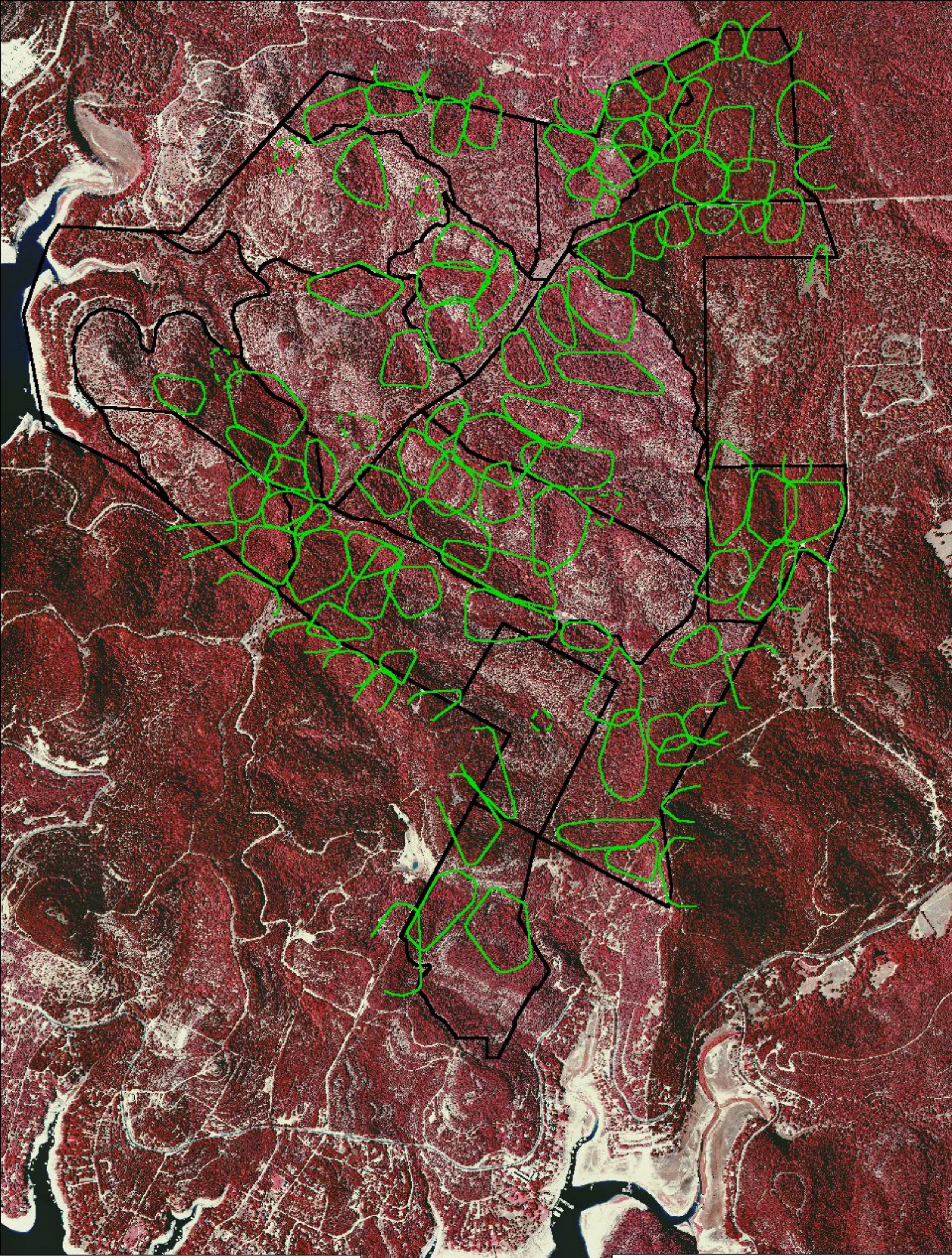
A total of 92 bird species were observed in or flying over the study area, including 15 species of warblers. A compilation of all other bird species observed on the Wheless Preserve is listed in Appendix B.

Several invasive non-native woody plant species were observed. These species included chinaberry (*Melia azedarach*), Chinese tallow (*Sapium sebiferum*), nandina (*Nandina domestica*), tree of heaven (*Ailanthus altissima*), and privet (*Ligustrum* sp.). Individuals or clusters of these species were mapped with a GPS unit as they were encountered (Figure 7). A compilation of all other plant species observed on the Wheless Preserve is listed in Appendix C. No rare plants were encountered in the study area.

4.0 DISCUSSION AND RECOMMENDATIONS

The large number of GCWA territories mapped during the 2002 baseline survey of the Wheless Preserve indicates the high quality of GCWA habitat on this preserve. It also illustrates the quality of data that is generated as a result of this level of survey effort. The following paragraphs provide LAI recommendations for future research and management efforts:

1. Conduct surveys annually on the prime and transitional GCWA habitat blocks, as described in the Balcones Canyonlands Preserve Management Handbook, Tier II-A, Section VII.
2. Perform detailed territory surveying at three to five-year intervals, in order to document trends in GCWA and BCVI habitat use throughout the entire preserve.
3. All surveys should also collect any other GCWA information, such as nest locations, productivity, and juvenile dispersal, to the extent feasible during the course of territory mapping activities.
4. Surveys in all years should use Global Positioning System (GPS) equipment during all fieldwork, consistent with methodology used this year for reproducible, comparable results.


LEGEND
Wheless Preserve Boundary and Survey Units
GCWA Territories
Whole Season Territory Boundary
Cluster of Related Observations
N
W
E
S
500 0 500 1000 1500 Feet
(1" = 1,500')
H:\GIS\gis projects\LCRA_Wheless_Tract_Bnd_Spp_020210\lcra_wheless_bnd_spp_gcwa_maps_020210.apr August 6, 2002 D. Dodson
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Figure 5.
GCWA Territory Boundaries on the Wheless Preserve in 2002
Base map: City of Austin 2000 aerial photos

5. Brown-headed cowbirds (BHCOs) appear to be present during the warbler nesting season in low numbers throughout the Wheless Preserve. BHCOs are known to favor woodland edges for parasitizing host nests (Tewksbury et al. 1999, Thompson et al. 1993). LAI recommends that GCWA habitat be managed to minimize openings in the tree canopy. We also suggest that the LCRA staff review the BHCO problem at the macrosite level with other BCCP partners, with one objective being to examine the value and feasibility of BHCO trapping at strategic locations in the macrosite.
6. Establish vegetation transects throughout several preserve areas to monitor hardwood regeneration, oak wilt, invasive species, and brush species important to BCVI habitat. Periodic surveys should be conducted to determine the relative abundance of hardwood saplings, suitable BCVI habitat species, browse centers, hog damage, and recreational impacts. If the resulting data indicate low numbers of hardwood saplings or regenerating brush species, then remedial measures should be examined, including expanded efforts to control trespass, browsing and wallowing animals (deer and feral hogs), and invasive species (see 7 & 8 below).
7. Examine the possible oak wilt site identified in Figure 7, and take appropriate control actions if the disease is confirmed. If oak wilt is confirmed in the suspected site, investigate the surrounding area for additional oak wilt centers and potential control remedies.
8. Perform spot control of exotic plants identified in Figure 7, using appropriate means for each species. Because our efforts to locate introduced exotics was only a secondary objective of this project, we recommend that additional effort be made to locate and treat other individuals surrounding those identified in Figure 7.
9. Continue monitoring for unauthorized access to prevent further habitat fragmentation, as that may lead to higher incidence of parasitism, depredation, and invasion of exotic species or unwanted brush.
10. The area bordering the Wheless Preserve on the north end is not currently included in the potential BCP system. Consider initiating a conservation easement program for adjacent landowners in that area. Much of the area surrounding the Wheless Preserve is protected in preserves or contains suitable habitat or buffer potential. LAI recommends exploring the feasibility of establishing a conservation easement program with the neighboring landowners. The potential benefits of such a program would include buffering

the Wheless Preserve from potential future development on the north side, and furthering the protection of lands included in the potential BCP to the east. In addition to protecting the Wheless Preserve, these actions would also help complete the Balcones Canyonlands Preserve.

5.0 LITERATURE CITED

American Ornithologists' Union (AOU). 1998. Check-list of North American birds. 7th ed. American Ornithologists' Union, Washington, D.C. 829 pp. (as supplemented through the 43rd supplement, 2002).

Bibby, C. J., N. D. Burgess, D. A. Hill, and S. Mustoe. 2000. Bird census techniques, 2nd ed. Academic Press, London, UK.

Blanton & Associates, Inc. and Turner, Collie & Braden Inc. 2001. Rare bird surveys at the Wheless Tract. Balcones Canyonlands Conservation Plan 2001 Annual Report.

International Bird Census Committee. 1970. An international standard for a mapping method in bird census work, recommended by the International Bird Census Committee. Audubon Field Notes 24(6):722–726.

Ladd, C. G., and L. Gass. 1999. Golden-cheeked warbler (*Dendroica chrysoparia*). The birds of North America, number 420. The Birds of North America, Inc., Philadelphia, PA.

Lower Colorado River Authority. 1994 - 2001. Golden-cheeked warbler data on Wheless Preserve, 1992–2001. Austin, TX.

Morse, D. H. 1976. Variables determining the density and territory size of breeding spruce-woods warblers. In: Morse, D. H., editor. American warblers, an ecological and behavioral perspective. Harvard University Press, Cambridge, MA. Pp. 114–134.

Pulich, W. M. 1976. The Golden-cheeked Warbler: a bioecological study. Texas Parks and Wildlife Dept., Austin.

Tewksbury, J. J., T. E. Martin, S. J. Hejl, T. S. Redman, and F. J. Wheeler. 1999. Cowbirds in a western valley: effects of landscape structure, vegetation and host density. Studies in Avian Biology 18:23–33.

Thompson, F. R., S. K. Robinson, and J. Faaborg. 1993. Biogeographic, landscape, and local constraints on cowbirds: the importance of scale to managing brood parasitism. North American Research Workshop on the Ecology and Management of Cowbirds. November 4–5, 1993, Austin, TX.

U.S. Fish and Wildlife Service. 1992. Golden-cheeked Warbler (*Dendroica chrysoparia*) recovery plan. Albuquerque, NM.

Weinberg, H. J., L. A. Jetté, and J. D. Cornelius. 1996. Field studies of the endangered Black-capped Vireo and Golden-cheeked Warbler, and the cowbird control program on Fort Hood, Texas. Fort Hood Natural Resources Branch, Fort Hood, TX and Natural Resources Assessment and Management Division, USACERL, Champaign, IL.

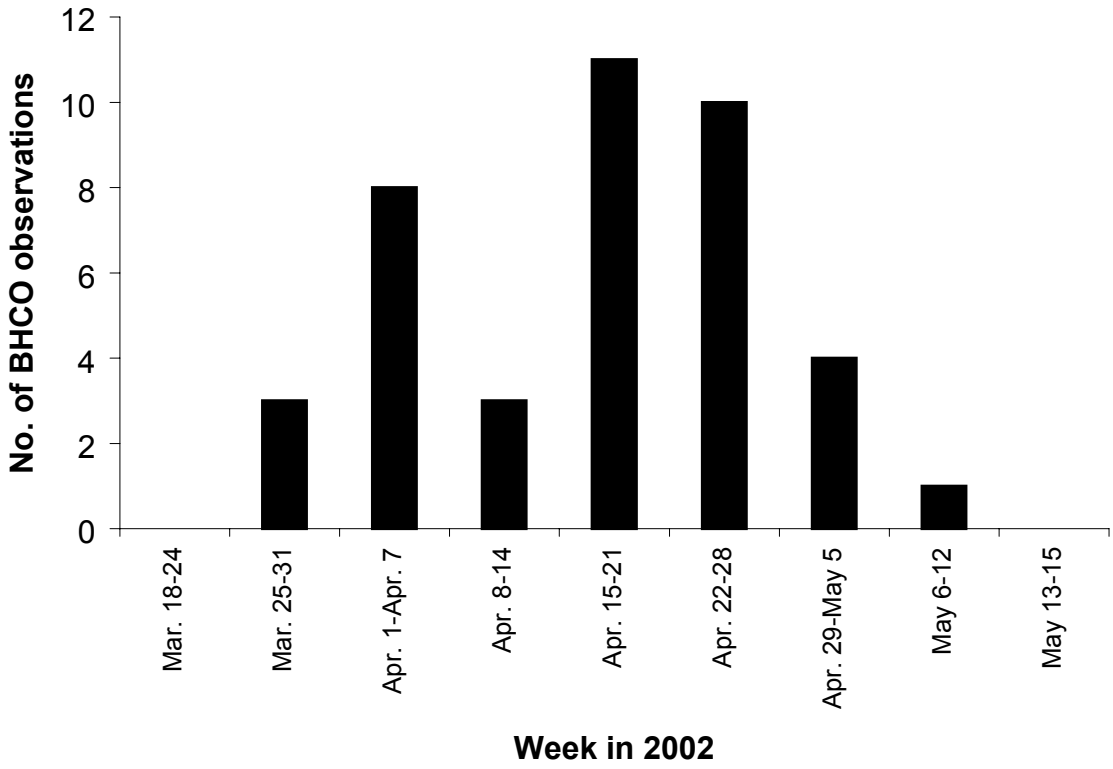


Figure 6. Number of BHCO observations per week on the Wheless Preserve during the 2002 survey season.

LEGEND

- *Ailanthus altissima*
- *Sapium sebiferum*
- *Melia azedarach*
- *Nandina domestica*
- Possible Oak Wilt Center
- Sign of *Sus scrofa*
- Wheless Preserve Boundary
- Survey Unit Boundary
- USGS 20-ft Topography
  (Mansfield Dam and Jollyville, Texas quadrangles)
- Unimproved Access Roads
- Water Pipeline

1000 0 1000 2000 Feet

(1" = 2,000')

H:\GIS\gis projects\LCRA_Wheless_Tract_Bnd_Spp_020210\
lcra_wheless_snd_spp_020210.apr July 15, 2002 A. Hunter

LOOMIS AUSTIN

Figure 7.
Observations of Exotic Plant and Animal Species on the Wheless Preserve in 2002

Appendix A

Survey Effort and Weather Conditions

Appendix A. Survey effort and starting time weather conditions during the 2002 GCWA survey of the Wheless Preserve.

Date	Time			Temp. (°F.)	Wind Speed (mph)	Wind Direction	Cloud Cover (percent)	Personnel	Unit	BHCOs Observed	Comments
	Start	End	Total								
03/20/02	6:40	8:25	1:45	61	calm	calm	100	CL	general	no	hazy
03/20/02	8:25	11:30	3:05	62	5-10	N	>95	CL	4	no	
03/20/02	6:40	8:20	1:40	59	-	-	100	CB	general	no	
03/20/02	8:20	11:30	3:10	61	0-5	N	95	CB	4	no	
03/20/02	6:40	8:25	1:45	60	calm	calm	100	DD	general	no	
03/20/02	8:25	11:30	3:05	62	5-10	N	>95	DD	4	no	
03/20/02	7:00	11:00	4:00	60	0-3	NW	100	AH	16	no	light rain
03/20/02	7:00	11:00	4:00	60	0-3	NW	100	SM	16	no	
03/20/02	7:15	13:15	6:00	56	-	-	100	MG	13 & 14	no	mist
03/20/02	7:30	11:20	3:50	68	5	var.	100	SH	1	no	
03/20/02	11:20	15:40	4:20	53	20	NW	90	SH	2	no	
03/21/02	6:40	7:35	0:55	44	calm	calm	0	CL	general	no	
03/21/02	7:35	12:55	5:20	46	calm	calm	0	CL	5	no	
03/21/02	12:55	13:30	0:35	71	5-10	NW	0	CL	general	no	
03/21/02	6:30	7:27	0:57	49	-	-	0	DD	general	no	
03/21/02	7:27	10:26	2:59	50	-	-	0	DD	8	no	
03/21/02	10:27	12:15	1:48	68	2-5	N	0	DD	7	no	
03/21/02	12:15	13:08	0:53	69	5-7	N	0	DD	general	no	
03/21/02	6:30	7:00	0:30	49	nr	calm	0	CB	general	no	
03/21/02	7:00	11:45	4:45	nr	nr	nr	nr	CB	3	no	
03/21/02	11:45	13:00	1:15	65	0-5	N	0	CB	general	no	
03/21/02	7:25	15:15	7:50	43	5	NNE	0	SH	11	no	
03/22/02	6:45	7:35	0:50	34	0-5	NE	0	CL	general	no	
03/22/02	7:35	14:15	6:40	36	0-5	NE	0	CL	15	no	
03/22/02	14:15	14:40	0:25	56	5-10	SE	10	CL	general	no	
03/22/02	6:30	7:30	1:00	36	2-5	N	1	DD	general	no	
03/22/02	7:30	12:50	5:20	41	5-7	N	1	DD	12	no	
03/22/02	12:50	13:50	1:00	nr	nr	nr	nr	DD	general	no	
03/22/02	6:30	7:20	0:50	41	5-10	N	10	CB	general	no	
03/22/02	7:20	14:00	6:40	nr	nr	nr	nr	CB	10	no	
03/22/02	7:00	12:00	5:00	37	15-20	NE	95	AH	6	no	
03/25/02	6:30	7:30	1:00	66	calm	calm	100	CL	general	no	light mist
03/25/02	7:30	10:44	3:14	66	calm	calm	100	CL	16	no	
03/25/02	10:44	12:00	1:16	56	10-15	NW	100	CL	general	no	
03/25/02	6:45	7:30	0:45	70	0	0	100	SM	general	no	
03/25/02	7:30	10:44	3:14	66	nr	0	100	SM	16	no	
03/25/02	10:44	12:00	1:16	56	10	NW	100	SM	general	no	
03/25/02	6:30	12:00	5:30	66	5	S	100	AH	11	no	drizzle/overcast
03/25/02	6:30	7:15	0:45	70	-	-	100	DD	general	no	drizzling
03/25/02	7:15	12:00	4:45	70	-	-	100	DD	1	no	
03/25/02	6:45	7:30	0:45	65	calm	calm	100	CB	general	yes	
03/25/02	7:30	11:00	3:30	65	calm	calm	100	CB	14	yes	light drizzle

Appendix A. Survey effort and starting time weather conditions during the 2002 GCWA survey of the Wheless Preserve.

Date	Time			Temp. (°F.)	Wind Speed (mph)	Wind Direction	Cloud Cover (percent)	Personnel	Unit	BHCOs Observed	Comments
	Start	End	Total								
03/25/02	11:00	11:55	0:55	nr	nr	nr	nr	CB	general	no	
03/25/02	7:04	13:50	6:46	67	0	-	100	SH	5 & 6	yes	
03/26/02	6:30	7:30	1:00	36	2-5	N	0	DD	general	no	
03/26/02	7:30	15:45	8:15	67	5-10	N	0	DD	15	no	
03/26/02	6:30	7:30	1:00	36	0-5	N	0	CL	general	no	
03/26/02	7:30	10:30	3:00	36	0-5	N	0	CL	14	no	
03/26/02	10:30	14:30	4:00	55	5-10	N	0	CL	13	no	
03/26/02	14:30	15:00	0:30	63	5-10	N	0	CL	14	no	
03/26/02	15:00	16:00	1:00	67	5-10	N	0	CL	general	no	
03/26/02	6:30	7:25	0:55	36	0	calm	0	CB	general	no	
03/26/02	7:25	14:00	6:35	67	0-5	N	0	CB	12	no	
03/26/02	14:00	15:45	1:45	nr	nr	nr	nr	CB	general	no	
03/26/02	6:30	11:30	5:00	42	0-3	N	0	AH	9	no	
03/27/02	6:30	10:30	4:00	32	0	-	15	SM	4	no	
03/27/02	8:34	16:50	8:16	50	8	E	20	SH	7 & 8	no	
03/28/02	6:30	7:30	1:00	58	0-5	S	100	CL	general	no	
03/28/02	7:30	13:10	5:40	58	0-5	S	100	CL	10	no	
03/28/02	13:10	14:00	0:50	84	10-15	SW	0	CL	general	no	
03/28/02	6:15	7:30	1:15	56	0-5	SW	100	DD	general	no	
03/28/02	7:30	13:10	5:40	58	0-5	SW	100	DD	10	no	
03/28/02	13:10	14:00	0:50	84	5-10	SW	0	DD	general	no	
03/28/02	6:30	7:30	1:00	58	0-5	S	100	CB	general	no	
03/28/02	7:30	12:45	5:15	58	0-5	S	100	CB	9	no	
03/29/02	6:25	6:58	0:33	67	0-5	S	100	DD	general	no	
03/29/02	6:58	12:09	5:11	68	0-5	S	100	DD	11	no	
03/29/02	12:09	12:45	0:36	74	5-10	S	100	DD	general	no	
03/29/02	7:15	12:45	5:30	71	5	SSE	100	SH	12	no	
03/29/02	6:30	6:50	0:20	67	0-5	S	100	CB	general	no	humid
03/29/02	6:50	9:30	2:40	nr	nr	nr	nr	CB	6	no	
03/29/02	9:30	12:45	3:15	70	5-10	S	100	CB	5	no	
04/01/02	6:30	6:45	0:15	52	0	0	100	AH	general	no	
04/01/02	6:45	10:00	3:15	nr	nr	nr	nr	AH	1	no	light fog
04/01/02	10:00	14:00	4:00	65	5	S	5	AH	2	yes	
04/01/02	7:17	12:49	5:32	40	0-1	nr	0	SM	13	no	
04/01/02	12:49	13:50	1:01	nr	nr	nr	nr	SM	14	no	
04/01/02	7:15	10:30	3:15	46	0	-	5	SH	5	yes	light fog
04/01/02	10:30	13:50	3:20	nr	nr	nr	nr	SH	6	no	
04/01/02	6:20	7:00	0:40	52	-	-	100	DD	general	no	
04/01/02	7:00	10:10	3:10	54	calm	calm	0	DD	8	no	
04/01/02	10:10	13:23	3:13	72	10-15	S	1	DD	7	no	
04/01/02	13:23	13:34	0:11	72	10-15	S	1	DD	general	no	
04/01/02	6:15	7:15	1:00	45	0	0	0	CL	general	yes	

Appendix A. Survey effort and starting time weather conditions during the 2002 GCWA survey of the Wheless Preserve.

Date	Time			Temp. (°F.)	Wind Speed (mph)	Wind Direction	Cloud Cover (percent)	Personnel	Unit	BHCOs Observed	Comments
	Start	End	Total								
04/01/02	7:15	12:35	5:20	45	0	0	0	CL	3	no	
04/01/02	12:35	13:15	0:40	78	0-5	S	<5	CL	general	no	
04/01/02	6:20	7:15	0:55	45	-	calm	100	CB	general	yes	light fog
04/01/02	7:15	12:35	5:20	nr	nr	nr	nr	CB	3	no	
04/01/02	12:35	13:15	0:40	78	0-5	S	<5	CB	general	no	
04/03/02	6:17	9:51	3:34	46	10-15	N	100	SM	4	no	
04/03/02	6:15	6:55	0:40	55	15-20	N	100	CL	general	no	hazy
04/03/02	6:55	14:15	7:20	55	15-20	N	100	CL	10	no	
04/03/02	14:15	15:00	0:45	63	15-20	N	0	CL	general	no	
04/03/02	7:00	13:10	6:10	54	15-20	N	100	SH	11	no	
04/03/02	6:10	6:50	0:40	57	15-20	N	100	DD	general	no	
04/03/02	6:50	13:15	6:25	57	15-20	N	100	DD	12	no	
04/03/02	13:15	14:30	1:15	63	15-20	N	90	DD	general	no	
04/03/02	7:00	13:00	6:00	57	25	N	100	AH	15	yes	
04/03/02	6:15	6:50	0:35	57	15-20	N	100	CB	general	no	
04/03/02	6:50	8:00	1:10	nr	nr	nr	nr	CB	9	no	
04/03/02	8:00	11:00	3:00	nr	nr	nr	nr	CB	16	no	
04/03/02	11:00	13:00	2:00	nr	nr	nr	nr	CB	9	no	
04/03/02	13:00	14:30	1:30	nr	nr	nr	nr	CB	general	no	
04/04/02	6:15	6:40	0:25	53	2-5	N	100	DD	general	no	
04/04/02	6:40	9:47	3:07	54	2-5	N	100	DD	7	no	
04/04/02	9:47	13:10	3:23	60	5-10	SE	100	DD	8	no	
04/04/02	13:10	13:30	0:20	60	5-10	SE	100	DD	general	no	
04/05/02	6:20	6:46	0:26	56	-	-	100	DD	general	no	
04/05/02	6:46	9:27	2:41	56	2-5	SE	100	DD	1	no	
04/05/02	9:27	12:30	3:03	61	-	-	100	DD	2	no	
04/05/02	12:30	13:00	0:30	63	2-5	S	100	DD	general	no	
04/05/02	6:20	6:45	0:25	56	calm		100	CB	general	no	
04/05/02	6:45	8:00	1:15	nr	nr	nr	nr	CB	14	no	
04/05/02	8:00	11:00	3:00	nr	nr	nr	nr	CB	13	no	
04/05/02	11:00	12:30	1:30	nr	nr	nr	nr	CB	14	no	
04/05/02	12:30	13:00	0:30	nr	nr	nr	nr	CB	general	no	
04/05/02	6:55	14:45	7:50	53	5	ENE	100	SH	10	yes	
04/09/02	7:40	12:15	4:35	48	0	-	0	SH	3	yes	
04/09/02	7:00	8:30	1:30	48	calm	calm	0	CL	5	no	
04/09/02	8:30	13:00	4:30	57	0-5	N	0	CL	6	no	
04/09/02	13:00	14:00	1:00	72	5-10	NW	10	CL	5	no	
04/09/02	7:15	7:30	0:15	53	calm	calm	0	CB	general	no	
04/09/02	7:30	10:45	3:15	nr	nr	nr	nr	CB	8	no	
04/09/02	10:45	13:00	2:15	70	0-5	NE	45	CB	7	no	
04/09/02	13:00	13:30	0:30	nr	nr	nr	nr	CB	general	no	
04/09/02	7:10	7:50	0:40	50	-	-	0	DD	general	no	

Appendix A. Survey effort and starting time weather conditions during the 2002 GCWA survey of the Wheless Preserve.

Date	Time			Temp. (°F.)	Wind Speed (mph)	Wind Direction	Cloud Cover (percent)	Personnel	Unit	BHCOs Observed	Comments
	Start	End	Total								
04/09/02	7:50	13:20	5:30	52	-	-	0	DD	11	no	
04/09/02	13:20	14:00	0:40	72	5-10	NE	10	DD	general	no	
04/10/02	7:50	11:35	3:45	57	0	-	100	SH	1	yes	
04/10/02	11:35	15:25	3:50	70	0	-	100	SH	2	no	
04/10/02	7:15	14:00	6:45	57	0	0	95	AH	3	yes	
04/10/02	7:05	7:27	0:22	48	0-1	SE	50	SM	general	no	
04/10/02	7:27	11:07	3:40	nr	nr	nr	nr	SM	4	no	
04/10/02	11:07	11:17	0:10	nr	nr	nr	nr	SM	general	no	
04/10/02	11:07	11:20	0:13	nr	nr	nr	nr	SM	general	no	
04/10/02	7:15	7:45	0:30	53	0	calm	100	CB	general	no	humid
04/10/02	7:45	10:45	3:00	53	0	calm	100	CB	13	no	
04/10/02	10:45	13:15	2:30	64	0	calm	100	CB	14	no	
04/10/02	13:15	14:00	0:45	nr	nr	nr	nr	CB	general	no	
04/10/02	7:15	7:45	0:30	50	-	-	100	DD	general	no	
04/10/02	7:45	13:30	5:45	52	-	-	100	DD	15	no	
04/10/02	13:30	14:00	0:30	75	-	-	100	DD	general	no	
04/11/02	7:00	8:00	1:00	58	calm	calm	>90	CL	general	no	
04/11/02	8:00	11:37	3:37	59	calm	calm	>90	CL	9	no	
04/11/02	11:37	14:02	2:25	70	0-5	SE	<2	CL	16	no	
04/11/02	14:02	14:45	0:43	75	0-5	SE	<2	CL	9	no	
04/11/02	14:45	15:40	0:55	88	0-5	SE	<5	CL	general	no	
04/11/02	7:10	7:55	0:45	58	-	-	100	DD	general	no	
04/11/02	7:55	14:00	6:05	59	5-7	SE	80	DD	10	no	
04/11/02	14:00	14:30	0:30	85	5-10	SW	1	DD	general	no	
04/11/02	7:10	7:45	0:35	60	0-2	SE	100	CB	general	no	foggy
04/11/02	7:45	10:30	2:45	60	0-5	SE	97	CB	12	no	
04/11/02	10:30	10:40	0:10	nr	nr	nr	nr	CB	general	no	
04/12/02	7:50	12:50	5:00	64	0	-	40	SH	8	no	
04/12/02	12:50	15:50	3:00	nr	nr	nr	nr	SH	7	no	
04/12/02	7:00	7:50	0:50	64	-	-	40	DD	general	no	
04/12/02	7:50	13:20	5:30	65	-	-	30	DD	15	no	
04/12/02	13:20	14:00	0:40	84	5-10	SE	0	DD	general	no	
04/15/02	7:05	7:40	0:35	66	calm	calm	100	CL	general	no	
04/15/02	7:40	11:15	3:35	68	calm	calm	100	CL	1	no	
04/15/02	11:15	14:05	2:50	78	15-20	S	>90	CL	2	no	
04/15/02	7:00	7:15	0:15	67	-	calm	100	CB	general	no	
04/15/02	7:15	13:00	5:45	nr	nr	nr	nr	CB	3	yes	humid
04/15/02	7:30	11:30	4:00	67	0-3	SW	95	AH	5	no	
04/15/02	11:30	14:15	2:45	nr	nr	nr	nr	AH	6	no	
04/15/02	7:45	14:30	6:45	68	5-10	SW	100	SH	11	yes	
04/15/02	7:00	7:45	0:45	68	-	-	100	DD	general	no	
04/15/02	7:45	13:00	5:15	70	-	-	100	DD	12	yes	

Appendix A. Survey effort and starting time weather conditions during the 2002 GCWA survey of the Wheless Preserve.

Date	Time			Temp. (°F.)	Wind Speed (mph)	Wind Direction	Cloud Cover (percent)	Personnel	Unit	BHCOs Observed	Comments
	Start	End	Total								
04/15/02	13:00	13:30	0:30	84	15-25	S	80	DD	general	no	
04/15/02	7:05	7:51	0:46	68	1-5	S	100	SM	general	no	
04/15/02	7:51	11:00	3:09	nr	nr	nr	nr	SM	13	no	
04/15/02	11:00	14:13	3:13	nr	nr	nr	nr	SM	14	no	
04/15/02	14:13	14:30	0:17	nr	nr	nr	nr	SM	general	no	
04/17/02	7:30	11:30	4:00	73	5	SW	95	AH	7	yes	humid
04/17/02	11:30	14:30	3:00	82	15-20	SW	75	AH	8	yes	
04/17/02	7:40	11:25	3:45	71	10	S	80	SH	9	yes	
04/17/02	11:25	13:40	2:15	86	15	S	70	SH	4	no	
04/17/02	7:05	7:45	0:40	72	0-5	S	95	CB	general	no	humid
04/17/02	7:45	13:15	5:30	74	0-5	S	100	CB	15	no	
04/17/02	13:15	14:00	0:45	87	5-10	S	80	CB	general	no	
04/17/02	7:10	7:30	0:20	72	0-5	S	80	DD	general	no	
04/17/02	7:30	13:00	5:30	72	5-10	S	80	DD	10	no	
04/17/02	13:00	13:25	0:25	87	10-20	S	70	DD	general	no	
04/19/02	7:30	11:30	4:00	73	5-10	S	100	AH	16	yes	
04/19/02	7:00	12:20	5:20	70	0-5	S	100	CB	13	yes	humid
04/19/02	12:20	13:30	1:10	nr	nr	nr	nr	CB	14	yes	gusting to 15
04/19/02	13:30	14:45	1:15	86	0-5	S	80	CB	general	no	
04/19/02	6:50	7:40	0:50	68	0-5	S	100	CL	general	yes	
04/19/02	7:40	14:20	6:40	69	0-5	S	100	CL	11	no	
04/19/02	14:20	14:45	0:25	82	0-5	S	>90	CL	general	no	
04/19/02	7:05	7:30	0:25	70	0-5	S	100	DD	general	no	
04/19/02	7:30	11:15	3:45	70	0-5	S	100	DD	4	yes	
04/19/02	11:15	12:00	0:45	75	10-15	S	100	DD	general	no	
04/22/02	7:30	14:30	7:00	76	3	NE	100	AH	10	yes	drizzle/overcast
04/22/02	7:00	7:30	0:30	66	calm	calm	100	CB	general	no	
04/22/02	7:30	13:00	5:30	66	nr	nr	100	CB	3	yes	
04/22/02	6:45	7:30	0:45	66	0-5	N	100	CL	general	no	
04/22/02	7:30	12:28	4:58	66	5-10	N	100	CL	8	yes	
04/22/02	12:28	15:30	3:02	80	0-5	N	>90	CL	7	yes	
04/22/02	15:30	16:00	0:30	84	0-5	NE	>90	CL	general	no	
04/22/02	7:30	13:00	5:30	68	5	NNE	100	SH	2	no	brief light rain
04/22/02	13:00	16:00	3:00	85	5	S	70	SH	1	no	
04/22/02	7:10	7:20	0:10	67	0-5	SE	100	SM	general	no	sprinkling
04/22/02	7:20	13:48	6:28	nr	nr	nr	nr	SM	13 & 14	no	
04/22/02	13:48	14:12	0:24	86	0-10	SE	90	SM	general	no	
04/23/02	7:00	7:15	0:15	67	calm	calm	45	CB	general	no	
04/23/02	7:15	10:30	3:15	68	calm	calm	55	CB	5	no	
04/23/02	10:30	13:30	3:00	nr	nr	nr	nr	CB	6	no	
04/24/02	7:15	14:30	7:15	66	0	0	30	AH	12	no	
04/24/02	7:00	7:20	0:20	66	calm	calm	20	CB	general	no	

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Date	Time			Temp. (°F.)	Wind Speed (mph)	Wind Direction	Cloud Cover (percent)	Personnel	Unit	BHCOs Observed	Comments
	Start	End	Total								
04/24/02	7:20	13:15	5:55	67	0-2	S	15	CB	10	yes	
04/24/02	7:10	11:30	4:20	68	0-5	S	10	SH	3	yes	
04/24/02	6:55	7:15	0:20	66	0-5	S	10	SM	general	no	
04/24/02	7:15	10:57	3:42	nr	nr	nr	nr	SM	4	no	
04/24/02	10:57	11:10	0:13	78	0-10	SW	0	SM	general	no	
04/25/02	7:00	7:15	0:15	62	0-5	NE	100	CB	general	no	light drizzle
04/25/02	7:15	13:00	5:45	62	5-10	NE	100	CB	11	yes	
04/26/02	7:00	12:00	5:00	67	0-3	S	100	AH	4	yes	overcast
04/26/02	6:45	7:20	0:35	68	calm	calm	100	CB	general	no	
04/26/02	7:20	10:00	2:40	69	calm	calm	100	CB	15	no	
04/28/02	7:15	13:00	5:45	73	5-10	S	60	AH	9	yes	
04/29/02	7:00	11:00	4:00	70	0	0	10	AH	2	yes	
04/29/02	11:00	14:00	3:00	85	10	SE	0	AH	1	yes	
04/29/02	7:00	10:00	3:00	69	calm	calm	15	CB	5	no	
04/29/02	10:00	13:00	3:00	nr	nr	nr	nr	CB	6	no	
04/29/02	6:50	7:20	0:30	69	-	-	50	DD	general	no	
04/29/02	7:20	13:20	6:00	70	-	-	40	DD	12	yes	
04/29/02	13:20	13:45	0:25	98	10-15	S	0	DD	general	no	
04/29/02	7:10	11:40	4:30	69	0	-	40	SH	3	no	
04/29/02	6:50	7:15	0:25	69	0-2	nr	1	SM	general	no	humid
04/29/02	7:15	13:52	6:37	nr	nr	nr	nr	SM	11	no	
04/29/02	13:52	14:00	0:08	98	0-5	nr	0	SM	general	no	
04/30/02	7:00	7:15	0:15	69	25	S	85	AH	general	no	
04/30/02	7:15	14:00	6:45	69	25	S	85	AH	12	no	
04/30/02	7:00	7:30	0:30	69	calm	calm	95	CB	general	no	
04/30/02	7:30	8:00	0:30	69	5-10	S	45	CB	14	no	
04/30/02	8:00	11:00	3:00	nr	nr	nr	nr	CB	13	no	gusting to 15
04/30/02	11:00	13:00	2:00	86	5-10	S	2	CB	14	no	
04/30/02	13:00	13:30	0:30	nr	nr	nr	nr	CB	general	no	
04/30/02	6:50	7:15	0:25	70	0-5	S	100	DD	general	no	
04/30/02	7:15	11:05	3:50	70	10-15	S	100	DD	8	no	
04/30/02	11:05	13:20	2:15	82	15-25	S	2	DD	7	no	
04/30/02	13:20	13:35	0:15	96	10-15	S	1	DD	general	no	
05/01/02	7:00	13:45	6:45	70	0-2	S	30	CB	3	no	
05/01/02	7:00	7:30	0:30	70	10	S	50	AH	general	no	
05/01/02	7:30	13:15	5:45	70	10	S	50	AH	15	no	
05/01/02	9:00	11:30	2:30	76	10-15	S	20	CL	13	no	
05/01/02	6:45	7:20	0:35	70	0-5	S	50	DD	general	no	
05/01/02	7:20	9:05	1:45	72	10-15	S	60	DD	9	no	
05/01/02	9:05	11:50	2:45	76	15-20	S	30	DD	16	no	
05/01/02	11:50	13:15	1:25	92	15-25	S	0	DD	9	no	
05/01/02	13:15	13:30	0:15	100	15-25	S	0	DD	general	no	

Appendix A. Survey effort and starting time weather conditions during the 2002 GCWA survey of the Wheless Preserve.

Date	Time			Temp. (°F.)	Wind Speed (mph)	Wind Direction	Cloud Cover (percent)	Personnel	Unit	BHCOs Observed	Comments
	Start	End	Total								
05/01/02	7:10	9:00	1:50	70	10	S	30	SH	5	no	
05/01/02	9:00	12:50	3:50	nr	nr	nr	nr	SH	6	no	
05/01/02	12:50	13:50	1:00	nr	nr	nr	nr	SH	5	no	
05/01/02	6:50	7:15	0:25	70	0-10	S	50	SM	general	no	
05/01/02	7:15	11:35	4:20	nr	nr	nr	nr	SM	4	no	
05/01/02	11:35	11:45	0:10	91	0-10	SW	10	SM	general	no	
05/02/02	6:50	7:20	0:30	73	0	0	80	AH	general	no	humid
05/02/02	7:20	13:30	6:10	73	0	0	80	AH	10	no	
05/02/02	7:10	10:15	3:05	74	calm	calm	40	CB	12	no	humid
05/02/02	6:45	7:15	0:30	74	-	-	90	DD	general	no	
05/02/02	7:15	13:20	6:05	74	-	-	70	DD	11	no	
05/02/02	13:20	13:45	0:25	94	5-10	S	100	DD	general	no	
05/03/02	7:00	7:15	0:15	67	5-8	NW	100	AH	general	no	
05/03/02	7:15	8:50	1:35	67	5-8	NW	100	AH	5	no	
05/03/02	8:50	12:15	3:25	67	10-15	NW	100	AH	6	no	
05/03/02	12:15	14:15	2:00	67	5-10	NW	100	AH	5	no	
05/03/02	7:00	7:25	0:25	67	0-2	N	100	CB	general	no	
05/03/02	7:25	11:00	3:35	nr	nr	nr	nr	CB	2	no	
05/03/02	11:00	12:45	1:45	nr	nr	nr	nr	CB	1	no	
05/03/02	12:45	13:30	0:45	74	calm	calm	100	CB	general	no	light rain
05/03/02	6:30	7:15	0:45	67	0-5	NE	100	CL	general	no	
05/03/02	7:15	11:10	3:55	68	0-5	NE	100	CL	7	yes	
05/03/02	11:10	14:45	3:35	68	0-5	NW	100	CL	8	no	
05/03/02	6:50	7:20	0:30	67	0-5	N	100	DD	general	no	
05/03/02	7:20	13:15	5:55	67	0-5	N	100	DD	10	no	
05/03/02	13:15	13:30	0:15	74	0-5	N	70	DD	general	no	drizzle at 12:00
05/03/02	6:45	7:20	0:35	67	0-2	SE	100	SM	general	no	
05/03/02	14:05	14:43	0:38	86	0-10	SE	5-10	SM	general	no	
05/03/02	7:20	14:05	6:45	nr	nr	nr	nr	SM	13 & 14	no	
05/04/02	6:45	7:10	0:25	64	0-2	S	100	DD	general	no	foggy
05/04/02	7:10	9:41	2:31	65	2-5	S	100	DD	9	no	
05/04/02	9:41	11:58	2:17	74	2-5	S	100	DD	16	no	
05/04/02	11:58	12:45	0:47	79	2-5	S	100	DD	9	no	
05/04/02	12:45	13:15	0:30	86	0-5	S	100	DD	general	no	
05/06/02	7:00	10:45	3:45	75	13	S	100	AH	8	no	
05/06/02	10:45	13:45	3:00	nr	nr	nr	nr	AH	7	no	
05/06/02	6:45	7:00	0:15	nr	nr	nr	nr	CB	general	no	gusting to 15
05/06/02	7:00	13:30	6:30	76	5-10	SE	95	CB	10	no	
05/06/02	6:45	7:15	0:30	75	0-5	S	100	DD	general	no	
05/06/02	7:15	13:30	6:15	76	5-10	S	90	DD	12	no	
05/06/02	13:30	13:45	0:15	94	5-15	S	20	DD	general	no	
05/06/02	7:15	7:48	0:33	75	15-20	S	98	SH	9	no	

Appendix A. Survey effort and starting time weather conditions during the 2002 GCWA survey of the Wheless Preserve.

Date	Time			Temp. (°F.)	Wind Speed (mph)	Wind Direction	Cloud Cover (percent)	Personnel	Unit	BHCOs Observed	Comments
	Start	End	Total								
05/06/02	7:48	12:18	4:30	nr	nr	nr	nr	SH	16	no	
05/06/02	12:18	14:30	2:12	88	15	S	20	SH	9	no	
05/06/02	6:45	7:05	0:20	75	0-10	S	100	SM	general	no	
05/06/02	7:05	11:28	4:23	nr	nr	nr	nr	SM	4	no	
05/06/02	11:28	11:45	0:17	86	0-10	SE	50	SM	general	no	
05/07/02	6:45	7:30	0:45	73	0-2	SE	75	CB	general	no	gusts to 15
05/07/02	7:30	9:30	2:00	74	5-10	SE	90	CB	5	no	
05/07/02	9:30	11:30	2:00	nr	nr	nr	nr	CB	6	no	
05/07/02	11:30	12:00	0:30	85	15-20	S	60	CB	general	no	
05/07/02	6:40	14:00	7:20	73	0-5	SSE	100	CL	3	no	
05/07/02	6:35	7:05	0:30	73	0-3	S	60	DD	general	no	
05/07/02	7:05	9:57	2:52	74	5-10	S	95	DD	1	no	
05/07/02	9:57	12:45	2:48	82	10-15	S	100	DD	2	no	
05/07/02	12:45	13:00	0:15	92	10-15	S	80	DD	general	no	
05/08/02	6:45	12:30	5:45	76	5	S	100	AH	11	no	
05/08/02	7:00	12:30	5:30	76	calm	calm	100	CB	3	no	humid
05/08/02	6:50	7:15	0:25	76	-	-	100	DD	general	no	
05/08/02	7:15	10:10	2:55	76	0-5	S	100	DD	16	no	
05/08/02	10:10	12:30	2:20	84	10-15	S	50	DD	9	no	
05/08/02	12:30	13:00	0:30	92	15-25	S	80	DD	general	no	
05/08/02	7:12	13:27	6:15	75	10-15	S	100	SH	12	yes	
05/08/02	6:40	7:15	0:35	76	0-5	-	80	SM	general	no	humid
05/08/02	7:15	13:12	5:57	nr	nr	nr	nr	SM	15	no	
05/08/02	13:12	13:35	0:23	93	0-10	S	90	SM	general	no	
05/09/02	7:00	15:00	8:00	76	0-3	S	80	AH	13 & 14	no	
05/09/02	6:45	7:00	0:15	75	calm	calm	100	CB	general	no	humid
05/09/02	7:00	10:00	3:00	nr	nr	nr	nr	CB	4	no	
05/09/02	10:00	10:15	0:15	83	5-10	SE	35	CB	general	no	
05/09/02	6:35	7:00	0:25	76	-	-	100	DD	general	no	
05/09/02	7:00	12:45	5:45	77	0-5	S	100	DD	10	no	
05/09/02	12:45	13:20	0:35	95	0-5	S	60	DD	general	no	
05/09/02	6:40	7:00	0:20	75	0-3	S	100	SM	general	no	humid
05/09/02	7:00	13:30	6:30	nr	nr	nr	nr	SM	1 & 2	no	
05/09/02	13:30	13:40	0:10	97	0-5	S	60	SM	general	no	
05/10/02	6:45	12:30	5:45	74	1+	S	100	AH	3	no	
05/10/02	6:30	7:00	0:30	74	0-5	S	75	CB	general	no	humid
05/10/02	7:00	10:00	3:00	nr	nr	nr	nr	CB	7	no	
05/10/02	10:00	13:00	3:00	nr	nr	nr	nr	CB	8	no	
05/10/02	6:40	7:10	0:30	74	-	-	100	DD	general	no	
05/10/02	7:10	8:01	0:51	75	-	-	90	DD	14	no	
05/10/02	8:01	11:15	3:14	77	0-3	S	95	DD	13	no	
05/10/02	11:15	12:45	1:30	83	10-15	S	50	DD	14	no	

Appendix A. Survey effort and starting time weather conditions during the 2002 GCWA survey of the Wheless Preserve.

Date	Time			Temp. (°F.)	Wind Speed (mph)	Wind Direction	Cloud Cover (percent)	Personnel	Unit	BHCOs Observed	Comments
	Start	End	Total								
05/10/02	12:45	13:10	0:25	88	10-15	S	50	DD	general	no	
05/10/02	6:40	7:00	0:20	74	0-3	S	50	SM	general	no	humid
05/10/02	7:00	13:45	6:45	nr	nr	nr	nr	SM	5 & 6	no	
05/10/02	13:45	13:50	0:05	92	0-10	S	50	SM	general	no	
05/11/02	6:30	12:00	5:30	75	20	S	50	AH	12	no	
05/11/02	6:30	7:00	0:30	75	5-10	SE	50	CB	general	no	
05/11/02	7:00	13:00	6:00	nr	nr	nr	nr	CB	3	no	
05/11/02	6:35	7:00	0:25	74	5-10	S	25	DD	general	no	
05/11/02	7:00	7:45	0:45	74	5-10	S	40	DD	5	no	
05/11/02	7:45	10:15	2:30	75	15-20	S	60	DD	6	no	
05/11/02	10:15	11:35	1:20	80	15-25	S	80	DD	5	no	
05/11/02	6:40	7:10	0:30	74	5-10	SE	80	SM	general	no	sprinkling
05/11/02	7:10	11:40	4:30	nr	nr	nr	nr	SM	10	no	
05/11/02	11:40	11:50	0:10	89	5-10	SE	60	SM	general	no	
05/13/02	6:45	7:15	0:30	54	10	N	75	AH	general	no	
05/13/02	7:15	13:30	6:15	54	10	N	75	AH	15	no	
05/13/02	6:45	7:00	0:15	54	0-5	N	65	CB	general	no	
05/13/02	7:00	10:00	3:00	nr	nr	nr	nr	CB	5	no	
05/13/02	10:00	12:00	2:00	nr	nr	nr	nr	CB	6	no	
05/13/02	12:00	13:00	1:00	nr	nr	nr	nr	CB	general	no	
05/13/02	6:40	7:15	0:35	54	0-5	N	75	DD	general	no	
05/13/02	7:15	10:19	3:04	55	0-5	N	75	DD	16	no	
05/13/02	10:19	12:30	2:11	68	5-10	N	75	DD	9	no	
05/13/02	12:30	13:00	0:30	77	-	-	10	DD	general	no	
05/13/02	7:15	13:35	6:20	54	5	NNE	90	SH	11	no	recent light rain
05/13/02	6:40	7:10	0:30	54	5-Jan	N	80	SM	general	no	
05/13/02	7:10	13:07	5:57	nr	nr	nr	nr	SM	13 & 14	no	
05/13/02	13:07	13:25	0:18	77	0-5	NW	0	SM	general	no	
05/14/02	6:30	10:30	4:00	61	0	0	25	AH	4	no	
05/14/02	6:30	6:45	0:15	57	calm	calm	35	CB	general	no	
05/14/02	6:45	13:30	6:45	nr	nr	nr	nr	CB	10	no	
05/14/02	6:35	7:00	0:25	57	-	-	60	DD	general	no	
05/14/02	7:00	13:00	6:00	59	0-3	N	50	DD	12	no	
05/14/02	13:00	13:30	0:30	82	0-7	E	10	DD	general	no	
05/14/02	6:40	6:55	0:15	60	0-2	S	20	SM	general	no	
05/14/02	6:55	13:13	6:18	nr	nr	nr	nr	SM	7 & 8	no	
05/14/02	13:13	13:30	0:17	84	0-3	S	5	SM	general	no	
05/15/02	6:45	13:30	6:45	61	5	nr	25	AH	1 & 2	no	
05/15/02	6:30	7:00	0:30	56	calm	calm	5	CB	general	no	
05/15/02	7:00	11:15	4:15	nr	0-5	S	2	CB	11	no	
05/15/02	8:30	8:45	0:15	64	5-7	S	10	DD	general	no	
05/15/02	8:45	11:50	3:05	64	7-10	S	15	DD	7	no	

Appendix A. Survey effort and starting time weather conditions during the 2002 GCWA survey of the Wheless Preserve.

Date	Time			Temp. (°F.)	Wind Speed (mph)	Wind Direction	Cloud Cover (percent)	Personnel	Unit	BHCOs Observed	Comments
	Start	End	Total								
05/15/02	11:50	12:15	0:25	75	5-10	S	0	DD	general	no	
05/15/02	7:06	14:50	7:44	55	0	-	5	SH	15	no	
05/15/02	6:35	7:05	0:30	55	0-1	S	0	SM	general	no	
05/15/02	7:05	13:11	6:06	nr	nr	nr	nr	SM	9 & 16	no	
05/15/02	13:11	13:30	0:19	88	0-10	S	0	SM	general	no	

Total Field Time: 979:14:00

nr = not recorded

Appendix B

Wheless Preserve Bird Species

Appendix B. Wheless Preserve bird species, March - May 2002.

SCIENTIFIC NAME	COMMON NAME
Pelecanus erythrorhynchos	American white pelican
Phalacrocorax auritus	Double-creasted cormorant
Ardea herodias	Great blue heron
Coragyps atratus	Black vulture
Cathartes aura	Turkey vulture
Anas platyrhynchos	Mallard
Pandion haliaetus	Osprey
Accipiter cooperii	Cooper's hawk
Buteo lineatus	Red-shouldered hawk
Buteo jamaicensis	Red-tailed hawk
Meleagis gallopavo	Wild turkey
Colinus virginianus	Northern bobwhite
Charadrius vociferus	Killdeer
Bartramia longicauda	Upland sandpiper
Larus sp.	Gull sp.
Zenaida asiatica	White-winged dove
Zenaida macroura	Mourning dove
Coccyzus americanus	Yellow-billed cuckoo
Geococcyx californianus	Greater roadrunner
Otus asio	Eastern screech-owl
Bubo virginianus	Great-horned owl
Chordeiles minor	Common nighthawk
Phalaenoptilus nuttallii	Common poorwill
Caprimulgus carolinensis	Chuck-will's-widow
Chaetura pelagia	Chimney swift
Archilochus alexandri	Black-chinned hummingbird
Ceryle alcyon	Belted kingfisher
Picoides scalaris	Ladder-backed woodpecker
Empidonax minimus	Least flycatcher
Sayornis phoebe	Eastern phoebe
Myiarchus cinerascens	Ash-throated flycatcher
Myiarchus crinitus	Great crested flycatcher
Tyrannus verticalis	Western kingbird
Tyrannus forficatus	Scissor-tailed flycatcher
Vireo griseus	White-eyed vireo
Vireo solitarius	Blue-headed vireo
Vireo olivaceus	Red-eyed vireo
Cyanocitta cristata	Blue jay
Aphelocoma californica	Western scrub-jay
Corvus brachyrhynchos	American crow
Corvus corax	Common raven
Progne subis	Purple martin

Appendix B. Wheless Preserve bird species, March - May 2002.

SCIENTIFIC NAME	COMMON NAME
Pelecanus erythrorhynchos	American white pelican
Petrochelidon pyrrhonata	Cliff swallow
Hirundo rustica	Barn swallow
Poecile carolinensis	Carolina chickadee
Baeolophus atricristatus	Black-crested Titmouse
Psaltriparus minimus	Bushtit
Thryothorus ludovicianus	Carolina wren
Thryomanes bewickii	Bewick's wren
Troglodytes aedon	House wren
Regulus calendula	Ruby-crowned kinglet
Polioptila caerulea	Blue-gray gnatcatcher
Catharus ustulatus	Swainson's thrush
Catharus guttatus	Hermit thrush
Turdus migratorius	American robin
Dumetella carolinensis	Gray catbird
Mimus polyglottos	Northern mockingbird
Bombycilla cedrorum	Cedar waxwing
Vermivora celata	Orange-crowned warbler
Vermivora ruficapilla	Nashville warbler
Dendroica petechia	Yellow warbler
Dendroica pensylvanica	Chestnut-sided warbler
Dendroica magnolia	Magnolia warbler
Dendroica coronata	Yellow-rumped warbler
Dendroica virens	Black-throated green warbler
Dendroica chrysoparia	Golden-cheeked warbler
Dendroica fusca	Blackburnian warbler
Mniotilta varia	Black-and-white warbler
Setophaga ruticilla	American redstart
Seiurus aurocapillus	Ovenbird
Seiurus sp.	Waterthrush sp.
Oporornis philadelphia	Mourning warbler
Oporornis tolmiei	Macgillivray's warbler
Piranga rubra	Summer tanager
Pipilo maculatus	Spotted towhee
Aimophila ruficeps	Rufous-crowned sparrow
Spizella passerina	Chipping sparrow
Spizella pusilla	Field sparrow
Chondestes grammacus	Lark sparrow
Melospiza lincolnii	Lincoln's sparrow
Junco hyemalis	Dark-eyed junco
Cardinalis cardinalis	Northern cardinal
Passerina ciris	Painted bunting

Appendix B. Wheless Preserve bird species, March - May 2002.

SCIENTIFIC NAME	COMMON NAME
Pelecanus erythrorhynchos	American white pelican
Spiza americana	Dickcissel
Xanthocephalus xanthocephalus	Yellow-headed blackbird
Quiscalus mexicanus	Great-tailed grackle
Molothrus ater	Brown-headed cowbird
Carpodacus mexicanus	House finch
Carduelis pinus	Pine siskin
Carduelis psaltria	Lesser goldfinch
Carduelis tristis	American goldfinch
Passer domesticus	House sparrow

Taxonomy and nomenclature follows the American Ornithologists' Union 1998 (as supplemented through the 43rd supplement, 2002).

Appendix C

Wheless Preserve Plant Species

Appendix C. Wheless Preserve plant species, March - May 2002.

SCIENTIFIC NAME	COMMON NAME
Grasses	
Andropogon glomeratus	bushy bluestem
Aristida sp.	threeawn
Bothriochloa ischaemum	King Ranch bluestem
Bothriochloa laguroides	silver bluestem
Bouteloua curtipendula	side-oats grama
Bouteloua sp.	grama
Bouteloua rigidiseta	Texas grama
Buchloe dactyloides	buffalograss
Cynodon dactylon	bermudagrass
Eleocharis sp.	spikerush
Erogrotis sp.	lovegrass
Hordeum pusillum	little barley
Muhlenbergia lindheimeri	Lindheimer muhly
Schizachyrium scoparium	little bluestem
Sorghum halepense	johnsongrass
Stipa leucothricha	Texas wintergrass
Tridens sp.	tridens
Forbs	
Achillea millefolium	western yarrow
Adiantum capillus-veneris	southern maidenhair fern
Allium drummondii	Drummond onion
Amsonia ciliata var. filifolia	narrowleaf slimpod
Anemone berlandieri	wind-flower
Asclepias asperula	trailing milkweed
Brazoria scutellarioides	prairie brazoria
Castilleja purpurea var. lindheimeri	prairie paintbrush
Centaurium texense	Lady Bird's centaury
Chaetopappa bellidifolia	dwarf white aster
Chamaesaracha sordida	hairy false nightshade
Chaptalia nutans var. texana	silverpuff
Chrysactinia mexicana	damianita
Cirsium texanum	southern thistle
Clematis texensis	scarlet clematis
Cooperia pedunculata	giant rainlily
Croton sp.	croton
Delphinium sp.	larkspur
Echinocereus reichenbachii	lace cactus
Erigeron sp.	fleabane
Eupatorium sp.	boneset
Erodium texanum	heronbill

Appendix C. Wheless Preserve plant species, March - May 2002.

SCIENTIFIC NAME	COMMON NAME
Evax verna	rabbit-tobacco
Evolvulus sericeus	silky evolvulus
Gaillardia pulchella	Indian blanket
Gaillardia suavis	pincushion daisy
Galphimia angustifolia	narrowleaf thryallis
Gilia incisa	cut-leaf gilia
Hedeoma acinoides	slender hedeoma
Hedeoma drummondii	Drummond hedeoma
Helenium amarum	yellow bitterweed
Helenium quadridentatum	sneezeweed
Hymenopappus scabiosaeus	flattop woolly-white
Indigofera miniata	scarlet pea
Krameria lanceolata	trailing ratany
Lespedeza stuevei	tall bushclover
Lindheimera texana	yellow Texas star
Linum rupestre	rock flax
Lithospermum incisum	narrowleaf groomwell
Lonicera albiflora	white honeysuckle
Ludwigia sp.	water primrose
Lygodesmia texana	Texas skeletonplant
Lythrum ovalifolium	low loosestrife
Marshallia caespitosa	Barbara's buttons
Matelea reticulata	green milkweed vine
Maurandya sp.	snapdragon vine
Melampodium leucanthum	plains blackfoot
Monarda citriodora	lemon beebalm
Nemastylis geminiflora	celestial lily
Nolina lindhermeri	Lindheimer nolina
Nolina texana	sacahuista
Oenothera speciosa	Mexican primrose
Onosmodium helleri	Heller marbleseed
Opuntia engelmannii	Texas prickly pear
Oxalis dillenii	Dillens oxalis
Parthenocissus quinquefolia	Virginia creeper
Passiflora lutea	yellow passionflower
Pediomelum latestipulatum	scurfpea
Phlox roemeriana	golden-eye phlox
Phyla incisa	sawtooth frogfruit
Pinaropappus roseus	white rock-lettuce
Plantago helleri	cedar plantain
Pyrrhopappus multicaulis	manystem false dandelion
Ratibida columnaris	upright prairie coneflower
Salvia roemerana	cedar sage

Appendix C. Wheless Preserve plant species, March - May 2002.

SCIENTIFIC NAME	COMMON NAME
Sarcostemma crispum	wavyleaf twinevine
Schoenocaulon texanum	green lily
Schrankia sp.	sensitive briar
Scutellaria drummondii	Drummond skullcap
Sedum nuttallianum	yellow stonecrop
Senecio obovatus	golden groundsel
Senna roemeriana	twoleaf senna
Sida abutifolia	spreading sida
Solanum elaeagnifolium	silverleaf nightshade
Stillingia texana	queen's delight
Tetragonotheca texana	nerve-ray
Tetraneuris scaposa	slender-stem bitterweed
Thelesperma filifolium	greenthread
Thelesperma simplicifolium	Navajo tea
Thelypteric kunthii	southern shield fern
Thymophylla pentachaeta	common dogweed
Tillandsia recurvata	small ballmoss
Tinantia anomala	false dayflower
Torilis arvensis	hedgeparsley
Toxicodendron radicans	poison-ivy
Triodanis sp.	Venus looking-glass
Valerianella amarella	cornsalad
Verbascum thapsus	flannel mullein
Verbena halei	slender vervain
Verbena bipinnatifida	Dakota vervain
Verbesina virginica	white crown-beard
Vicia ludoviciana	deer pea vetch
Yucca rupicola	Texas yucca
Zexmania hispida	orange zexmania
Zigadenus nuttallii	poison camas
Woody Species	
Acacia roemeriana	catclaw acacia
Ailanthus altissima	tree of heaven
Amorpha roemeriana	Texas amorpha
Arbutus xalapensis	Texas madrone
Baccharis salicina var. neglecta	Roosevelt weed
Berberis swaseyi	Texas barberry
Berberis trifoliolata	agarito
Callicarpa americana	American beautyberry
Celtis reticulata	netleaf hackberry
Cercis canadensis	redbud
Cornus drummondii	roughleaf dogwood

Appendix C. Wheless Preserve plant species, March - May 2002.

SCIENTIFIC NAME	COMMON NAME
Crataegus sp.	hawthorn
Diospyros texana	Texas persimmon
Foresteria pubescens	elbowbush
Fraxinus texensis	Texas ash
Garrya ovata ssp. Lindheimeri	Lindheimer silktassel
Ilex decidua	possum-haw
Juglans microcarpa	little walnut
Juglans nigra	black walnut
Juniperus ashei	Ashe juniper
Ligustrum sp.	privet
Melia azedarach	Chinaberry
Mimosa borealis	fragrant mimosa
Mimosa biuncifera	catclaw
Morus microphylla	Texas mulberry
Nandina domestica	nandina
Platanus occidentalis	American sycamore
Prunus serotina var. eximia	escarpment blackcherry
Ptelea trifoliata	wafer ash
Quercus buckleyi	Spanish oak
Quercus fusiformus	plateau live oak
Quercus macrocarpa	Bur oak
Quercus sinuata	white shin oak
Rhus aromatica	fragrant sumac
Rhus lanceolata	flameleaf sumac
Rhus virens	evergreen sumac
Rubus trivialis	southern dewberry
Salix nigra	black willow
Sapium sebiferum	Chinese tallow
Sophora affinis	Eve's necklace
Sophora secundiflora	Texas mountain laurel
Smilax bona-nox	saw greenbriar
Ulmus crassifolia	cedar elm
Ungnadia speciosa	Mexican buckeye
Viburnum rufidulum	downy viburnum
Vitis Berlandieri	Spanish grape
Vitis monticola	sweet mountain grape
Zanthoxylum clava-herculis	Hercules club

2002 Golden-cheeked Warbler (*Dendroica chrysoparia*) Survey of the Wheless Preserve

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