

2017 Golden-cheeked Warbler Report

Westcave Preserve
Travis County, Texas

Prepared by: Dawn Houston, Westcave Preserve
Prepared for: LCRA Natural Resource Conservation

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Contents

Introduction 1
Purpose 1
Golden-cheeked Warbler Life History Summary 2
Study Area 3
Methods 4
Results 4
Summary 6
Literature Cited 8

List of Tables

Table 1: Number of Detections per Site 4

List of Figures

Figure 1: Territories During 2017 Survey ..... **Error! Bookmark not defined.**

List of Appendices

Appendix A: Avian Species Observed on 2017 Survey

Appendix B: Field Data Submission to U.S. Fish and Wildlife Service

Introduction

Westcave Preserve is a 76-acre preserve owned by the Lower Colorado River Authority (LCRA) and operated by the non-profit Westcave Outdoor Discovery Center. A portion of Westcave Preserve is part of the greater Balcones Canyonlands Preserve System, which was established and is operated by the Balcones Canyonlands Conservation Plan (BCCP), a regional multispecies habitat conservation plan, involving multiple governing entities, including LCRA. The BCCP also serves as a vehicle for U.S. Fish and Wildlife Service (USFWS) to issue permits to these entities under Section 10(a)(1)(B) of the Endangered Species Act.

Westcave Preserve is located near the western boundary of Travis County on Hamilton Pool Road, along the western bank of the Pedernales River. Originally, the preserve consisted of 28.85 acres of high quality breeding habitat for the endangered Golden-cheeked Warbler (*Setophaga chrysoparia*) (GCWA). In 2008 and 2011, additional acreage surrounding the original property was purchased to serve as a buffer to protect water quality and expand the area of the preserve.

Purpose

The purpose of this report is to present the findings of the 2017 Golden-cheeked Warbler survey at Westcave Preserve. The overall goal of this effort is to track the status of GCWA over time with specific goals to determine density and productivity for each survey year.

Territory mapping surveys were conducted encompassing the entire preserve as one survey unit, allowing a continuum of habitat use designation. LCRA previously conducted presence/absence surveys, dividing the original portion of the property, designated as the “preserve” and the recently acquired tract, designated as the “uplands”.

Survey methodology followed territory mapping protocol (Williamson 1964; Marchant 1983; Bibby, et al. 2000) where all breeding GCWA males were identified and territory boundaries were determined. This survey methodology adheres to and surpasses the USFWS recommended minimum procedures for determining the presence/absence of Golden-cheeked Warblers outlined in LCRAs federal Fish and Wildlife permit (Permit No. TE800900-0, issued 5 April 2011) and USFWS Section 10(a)(1)(A) Scientific Permit Requirements for Conducting Presence/Absence Surveys and Habitat Assessments for Endangered Golden-cheeked Warblers (FWS 2010). Territory mapping will enable Westcave Preserve to monitor populations long-term and provide guidance for future land management decisions.

Golden-cheeked Warbler Life History Summary

Description: The GCWA is a medium-sized (approx. 12-13 centimeters [cm] length) insectivorous passerine. Breeding adult males have black on the forehead, crown, nape, and back. The cheeks are a bright golden yellow, interrupted by a black eyeline. The throat and upper breast are black, which continues as streaking along the sides and flanks. The remaining underparts are white. The wings are black with two distinct white wing-bars. Adult females are similar in coloration, but are comparatively duller; the crown and back are olive-green with some black streaking (Oberholser 1974, Pulich 1976, Ladd and Gass 1999).

Range: The GCWA is the only bird species with a breeding range confined to Texas, specifically isolated to south-central areas of the state. Historically, this species nested in approximately 41 of Texas' 254 counties; however, current confirmed breeding records are restricted to 33 Texas counties (Pulich 1976, USFWS 1995, Ladd and Gass 1999, Lockwood and Freeman 2014). Currently, the species is found from Young and Palo Pinto counties, south through the eastern and south-central parts of the Edwards Plateau to Edwards and Kinney counties, and Val Verde County (Lockwood and Freeman 2014, USFWS 2013). GCWAs winter in pine and pine-oak woodlands in the highlands of southern Mexico, Guatemala, Honduras, Nicaragua and are a rare visitor to Costa Rica, Panama, and the western edge of Belize (Ladd and Gass 1999, James and Komar 2006, avibase 2016).

Habitat: GCWA habitat consists of old-growth and mature regrowth juniper-oak woodlands with a high percentage of canopy cover in limestone hills and canyons on Central Texas (Pulich 1976, Ladd 1985, Wahlet al. 1990, USFWS 1992).

An essential component for GCWA breeding habitat, however, is Ashe Juniper. When mature, Ashe Junipers develop shredding strips of bark used by GCWA's as the primary nesting substrate (Pulich 1976, Kroll 1980 and Gass 1999).

The woodlands also consist of various species of oaks (*Quercus* spp.), such as Texas red oak (*Quercus buckleyi*) and plateau live oak (*Quercus fusiformis*). Other common tree species throughout nesting range include cedar elm (*Ulmus crassifolia*), walnut (*Juglans* spp.), hackberry (*Celtis* spp.), and Texas ash (*Fraxinus texensis*); less common tree species are escarpment black cherry (*Prunus serotina*), sycamore (*Platanus occidentalis*), American elm (*U. americana*), coma (*Bumelia lanuginosa*), redbud (*Cercis canadensis*), and rough-leaf dogwood (*Cornus drummondii*). Common undergrowth shrubs are Texas persimmon (*Diospyros texana*), agarito (*Berberis trifoliolata*), elbow bush (*Forestiera pubescens*), Texas mountain laurel (*Sophora secundiflora*), possum-haw (*Ilex decidua*), evergreen sumac (*Rhus virens*), and polecat bush (*R. aromatic* (Ladd 1985, Sexton 1987, Bearmore 1994).

On wintering grounds, GCWAs select for pine-oak woodlands that are ≥1,100 m in

elevation (Monroe 1968, Rappole et al. 2000).

Status: On 4 May 1990, USFWS published an emergency listing of the GCWA as endangered (55 FR 18844), as well as a proposed rule to formally list the GCWA as endangered. On 27 December 1990, the USFWS published the final rule for listing the GCWA as endangered (55 FR 53153). In 2015 a petition was submitted to USFWS to delist the GCWA from the Endangered Species Act. USFWS found the petition did not present substantial information that warranted delisting the GCWA and declared it would take no further action on the petition. The Texas Parks and Wildlife Department (TPWD) also lists the species as endangered. No critical habitat has been designated for the species.

Threats: Species endemism and habitat loss due to agricultural use, brush control and land development are the primary threats to GCWA viability and have been the major factors attributed to population declines (Wahl et al. 1990, FWS 1992, Ladd and Gass 1999). Indirect effects of habitat disturbance, such as brown-headed cowbird parasitism and increased predator populations, have further negatively impacted populations (Wahl et al. 1990). Environmental factors such as climate change and drought may contribute to Ashe juniper die-off effecting essential breeding habitat components.

Study Area

Due to the relatively small size of Westcave Preserve, the survey area includes the entire preserve with emphasize placed on breeding habitat along canyon slopes, adjacent woodlands and the abutting uplands.

Description: Westcave Preserve is comprised of a unique matrix of habitats found on the Edwards Plateau, supporting a diversity of native and endemic plant and animal species. The Preserve contains native grass and forb prairie, live oak savannah and old growth Ashe juniper-live oak woodlands and features a spring fed creek with a grotto and cave.

Riparian habitat is found surrounding the grotto and along the creek bottom with mesic woodlands on adjacent slopes leading to the Pedernales River and following along the river edge. Mature hardwoods such as Bald cypress (*Taxodium distichum*), Sycamore (*Platanus occidentalis*), cedar elm (*Ulmus crassifolia*) and a various oak sp. (*Quercus sp*.) are found in this area while midstory species consists of Ashe Juniper (*Juniper ashei*), Mountain Laurel (*Sophora secundiflora*), Mexican buckeye (*Ungnadia speciosa)* and oak species. Understory species consists of a diverse plant community, which include, silk tassel (*Garrya ovate)*, American beautyberry (*Callicarpa Americana*) spicebush (*Lindera* benzoin) and redbay (*Persea borbonia*). Extending out from the canyon rims toward the upland area, dense stands of woodlands dominate with mature Ashe Juniper and Escarpment live oak.

The upland portion of the preserve consists of grassland savannah and native grassland/forb prairie. In the grassland savannah areas, Escarpment live oaks

(*Quercus fuisformis*) are interspersed with native grasses such as little blue stem (*Schizachyrium scoparium*) and grama species (*Bouteloua sp*). Wildflowers, forbs, yucca species and prickly pear (*Opuntia sp.*) are also found in the open grassy areas. Prairie restoration efforts are currently underway in the upland grassland area south of the creek to promote a diverse growth of native grasses and forbs. In winter of 2016, brush management, prescribed fire and reseeding measures were employed for this project.

Methods

Territory mapping surveys for GCWAs were performed by avian researcher, Dawn Houston, following the protocol as described in Bibby *et. al*. 2000. All surveys were completed within the GCWA survey season, 15 March to 1 June, adhering to USFWS survey guidelines. Ten site visits were completed to designate GCWA territories and determine nest success. All areas of the preserve were surveyed with an emphasis placed on canyon slopes and adjacent woodlands in the uplands area. All GCWA detections were recorded and corresponding behavior was noted.

In conjunction with territory mapping, the preserve collaborated with the City of Austin in adherence to the long-term monitoring plan to obtain the most accurate estimate of return rates, dispersal and survival of GCWAs on the BCP by color banding territorial males. GCWAs were visually detected to confirm banding status, color combinations and geographical positioning on a weekly basis beginning 21 April, 2017 and continued until the end of the survey season, 1 June, 2017.

Results

Observations: Sixty-seven observations were recorded during 10 site visits from 28 March to 31 May 2017. Additional data were collected with each observation including, date/time of detection, type of observation, sex and coordinates. Survey efforts hours totaled approximately 35 hours.

Table 1: Number of Detections per Site Visit

Site Visit Date	28 March	30 March	3 April	14 April	18 April	26 April	8 May	16 May	23 May	31 May
Number of Detections	1	3	12	4	6	9	10	10	5	6

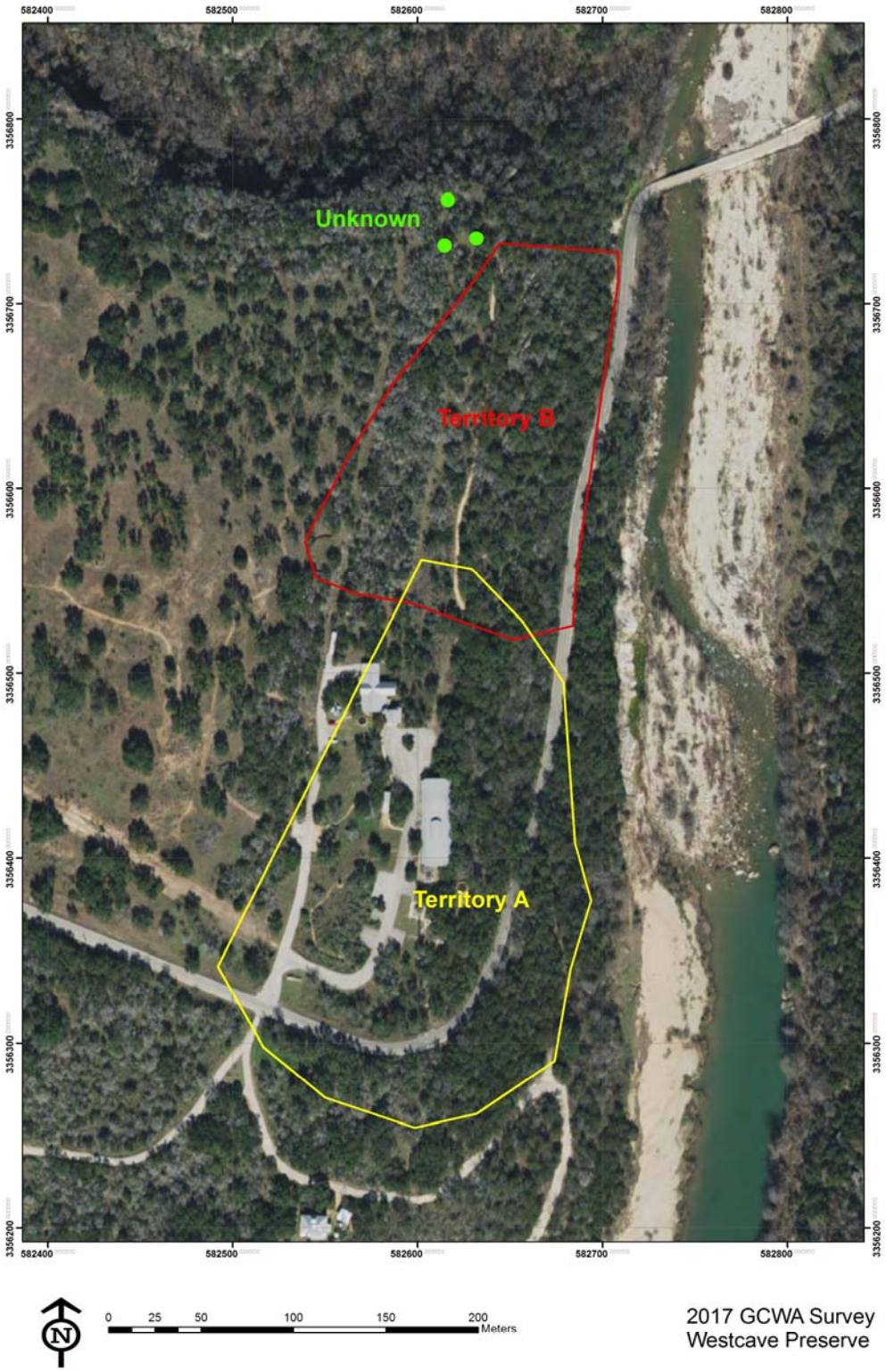


Figure 2: Territories and Nest Location Observed During 2017 Surveys

Territories: On 28 March 2017, two males were detected defending territories at

the preserves eastern boundary along the Pederenales River canyon. The southern and northern territories are designated as Territory A (TA) and Territory B (TB), respectfully.

A female GCWA was first detected in TA on 28 March and was observed on subsequent surveys until 16 May.

TB was last detected 2 May 2017 and was unpaired during the breeding season.

Unknown Detections: On 31 May, an unbanded second year GCWA male was detected on the northern portion of TB's former territory.

Color Banding/Resighting: City of Austin biologist, John Chenoweth, color banded TA on 21 April 2017 with color combination yellow/silver and black/green. TA was aged as an after second year bird. TB was banded on 27 April 2017 with white/dark blue and orange/silver color combination and aged as a second year bird. Banded males were resighted weekly, visually confirming color combinations.

Fledglings: TA produced a successful territory. Although the nest was not found, TA and paired female displayed nest building and nestling tending behaviors throughout the breeding season. On 31 May, TA was observed feeding 3 fledglings.

Incidental Observations: TB was observed utilizing the water feature at the bird blind on 18 April.

Summary

Westcave Preserve provides the essential components for breeding GCWA habitat, however, due to it's restricted patch size, it is an area of low abundance. During the 2017 GCWA breeding season, 2 territories were established within the preserve, which is consistent with previous years' abundance data.

TA, a territory occupied by an after second year male, successfully paired and produced 3 fledglings. TB, occupied by a second year male, remained unpaired throughout the breeding season and did not produce young. These findings are congruent with various studies, showing that younger birds have decreased pairing and fledging success compared to older birds (Sæther 1990; Martin 1995; Lozano et al. 1996). Furthermore, a study investigating age structure dynamics of GCWAs in low abundance areas found that younger males showed a particularly strong disadvantage to older conspecifics by failing to attract mates at all, within study sites (Pruett 2014).

TB was last detected 2 May and may have discontinued defending its territory due to failure of attracting a mate. However, Westcave Preserve continued to provide habitat for young GCWAs dispersing along the Pedernales River corridor. At least one young unbanded GCWA was detected along the southern slope of the Heinz Branch Creek, formerly occupied by TB.

Although high quality habitat is limited to canyon slopes along the creek and Pedernales River and is a low abundance area, Westcave Preserve continues to successfully support breeding GCWAs within the Pedernales River riparian corridor and provide foraging and dispersal habitat to young GCWAs on their summer grounds.

Land management efforts are currently allowing regrowth of woody vegetation to expand from the upland woodlands around the canyon into a portion of the upland savannah to allow for more GCWA habitat.

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Appendix A: Avian Species Observed During 2017 Survey

Common Name	Scientific Name
Great Blue Heron	*Ardea Herodias*
Black-bellied Whistling Duck	*Dendrocygna bicolor*
Black Vulture	*Coragyps atratus*
Turkey Vulture	*Cathartes aura*
Osprey	*Pandion haliaetus*
Mississippi Kite	*Ictinia mississippiensis*
Cooper's Hawk	*Accipiter cooperii*
Red-tailed Hawk	*Buteo jamaicensis*
Red-shouldered Hawk	*Buteo lineatus*
Crested Caracara	Caracara *cheriway*
Wild Turkey	*Meleagris gallopavo*
Northern Bobwhite	*Colinus virginianus*
Killdeer	*Charadrius vociferus*
White-winged Dove	*Zenaida asiatica*
Mourning Dove	*Zenaida macroura*
Inca Dove	*Columbina inca*
Yellow-billed Cuckoo	*Coccyzus americanus*
Eastern Screech-Owl	*Megascops asio*
Greater Roadrunner	*Geococcyx californianus*
Chimney Swift	*Chaetura pelagica*
Black-chinned Hummingbird	*Archilochus alexandri*
Ruby-throated Hummingbird	*Archilochus colubris*
Downy Woodpecker	*Picoides pubescens*
Ladder-backed Woodpecker	*Picoides scalaris*
Golden-fronted Woodpecker	*Melanerpes aurifrons*
Scissor-tailed Flycatcher	*Tyrannus forficatus*
Acadian Flycatcher	*Empidonax virescens*
Eastern Phoebe	*Sayornis phoebe*
Great-crested Flycatcher	*Myiarchus crinitus*
Ash-throated Flycatcher	*Myiarchus cinerascens*
Vermillion Flycatcher	*Pyrocephalis rubinus*
Western Kingbird	*Tyrannus verticalis*
Loggerhead Shrike	*Lanius ludovicians*
Yellow-throated Vireo	*Vireo flavifrons*
Blue-headed Vireo	*Vireo solitarius*
White-eyed Vireo	*Vireo griseus*
Red-eyed Vireo	*Vireo olivaceus*
Woodhouse’s Scrub-Jay	*Aphelocoma woodhouseii*
Common Raven	*Corus corax*
Barn Swallow	*Hirundo rustica*
Purple Martin	*Progne subis*
Carolina Chickadee	*Poecile carolinensis*
Black-crested Titmouse	*Baeolophus atricristatus*
Canyon Wren	*Catherpes mexicanus*
Carolina Wren	*Thryothorus ludovicianus*
Bewick's Wren	*Thryomanes bewickii*
Verdin	*Auriparus flaviceps*

Ruby-crowned Kinglet	*Regulus calendula*
Blue-gray Gnatcatcher	*Poliopila caerulea*
Eastern Bluebird	*Sialia sialis*
Hermit Thrush	*Catharus guttatus*
Northern Mockingbird	*Mimus polyglottos*
Cedar Waxwing	*Bombycilla cedrorum*
Wilson's Warbler	*Cardellina pusilla*
Common Yellowthroat	*Geothlypis trichas*
Black-and-white Warbler	*Mniotilta varia*
Louisiana Waterthrush	*Paresia motacilla*
Nashville Warbler	*Oreothlypis ruficapilla*
Orange-crowned Warbler	*Oreothlypis celata*
Tennessee Warbler	*Oreothlypis peregrina*
Northern Parula	*Setophaga americana*
MagnoliaWarbler	*Setophaga magnolia*
Yellow Warbler	*Setophaga petechia*
Golden-cheeked Warbler	*Setophaga chrysoparia*
Lark Sparrow	*Chondestes grammacus*
Rufous-crowned Sparrow	*Aimophila ruficeps*
Chipping Sparrow	*Spizella passerina*
Field Sparrow	*Spizella pusilla*
Lincoln Sparrow	*Melospiza lincolnii*
Vesper Sparrow	*Pooecetes gramineus*
Spotted Towhee	*Pipilo maculatus*
Canyon Towhee	*Melozone fusca*
Summer Tanager	*Piranga rubra*
Northern Cardinal	*Cardinalis cardinalis*
Indigo Bunting	*Passerina cyanea*
Painted Bunting	*Passerina ciris*
Red-winged Blackbird	*Agelaius phoeniceus*
Brown-headed Cowbird	*Molothrus ater*
House Finch	*Haemorhous mexicanus*
Lesser Goldfinch	*Spinus psaltria*

Appendix B: Field Data Submission to U.S. Fish and Wildlife Service

Name	Property Name	Survey Name	Species	Territory	Type	Date	Year	Time	ObservationType	POINT_X	POINT_Y	Latidude	Longitude
B1	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	28 March	2017	1050	Visual	582647.18	3356710.77	30.3394	-98.1402
B2	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	28 March	2017	1051	Visual	582693.54	3356718.70	30.3395	-98.1397
B3	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	28 March	2017	1053	Visual	582680.20	3356706.32	30.3394	-98.1398
A1	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	28 March	2017	0735	Visual	582610.99	3356347.23	30.3361	-98.1406
B4	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	28 March	2017	0829	Visual	582646.58	3356536.99	30.3379	-98.1402
B5	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	30 March	2017	0714	Visual	582635.90	3356541.53	30.3379	-98.1403
B6	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	30 March	2017	0720	Visual	582635.90	3356589.81	30.3383	-98.1403
B7	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	30 March	2017	0723	Visual	582645.82	3356648.68	30.3389	-98.1402
B8	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	30 March	2017	0726	Visual	582652.77	3356696.31	30.3393	-98.1401
B9	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	3 April	2017	0825	Visual	582635.24	3356521.68	30.3377	-98.1403
B10	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	3 April	2017	0827	Visual	582635.24	3356566.99	30.3381	-98.1403
A2	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	3 April	2017	0950	Visual	582624.66	3356359.62	30.3363	-98.1404
A3	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	3 April	2017	0952	Visual	582676.58	3356392.70	30.3366	-98.1399
A4	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	3 April	2017	0844	Visual	582652.44	3356513.41	30.3376	-98.1401
B11	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	14 April	2017	0801	Visual	582650.79	3356671.17	30.3391	-98.1401
B12	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	14 April	2017	0815	Visual	582642.85	3356616.27	30.3386	-98.1402
B13	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	14 April	2017	0820	Visual	582632.93	3356555.75	30.3380	-98.1403
A5	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	14 April	2017	0820	Visual	582646.82	3356523.01	30.3377	-98.1402
A6	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	14 April	2017	0824	Visual	582637.89	3356477.70	30.3373	-98.1403
A7	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	14 April	2017	0827	Visual	582632.26	3356439.00	30.3370	-98.1403
A8	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	14 April	2017	0833	Visual	582628.30	3356419.82	30.3368	-98.1404
B14	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	18 April	2017	0800	Visual	582652.77	3356529.62	30.3378	-98.1401
A9	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	18 April	2017	0800	Visual	582652.77	3356521.68	30.3377	-98.1401
B15	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	18 April	2017	0945	Visual	582554.87	3356567.32	30.3381	-98.1411
B16	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	21 April	2017	0751	Visual	582652.11	3356720.45	30.3395	-98.1401
B17	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	21 April	2017	0755	Visual	582651.12	3356705.57	30.3394	-98.1401
B18	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	21 April	2017	0800	Visual	582672.94	3356700.28	30.3393	-98.1399
A10	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	21 April	2017	0900	Visual	582621.35	3356354.33	30.3362	-98.1405
A11	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	21 April	2017	0910	Visual	582666.99	3356339.78	30.3361	-98.1400
A12	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	21 April	2017	0914	Visual	582677.24	3356370.54	30.3364	-98.1399
A13	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	21 April	2017	0930	Visual	582643.51	3356391.71	30.3365	-98.1402
B19	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	26 April	2017	0800	Visual	582642.19	3356527.64	30.3378	-98.1402
B20	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	26 April	2017	0807	Visual	582672.94	3356543.18	30.3379	-98.1399
B21	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	26 April	2017	0813	Visual	582643.84	3356567.98	30.3381	-98.1402

Name	Property Name	Survey Name	Species	Territory	Type	Date	Year	Time	Observation Type	POINT_X	POINT_Y	Latidude	Longitude
B22	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	26 April	2017	0820	Visual	582628.30	3356574.27	30.3382	-98.1404
A14	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	26 April	2017	0745	Visual	582637.23	3356509.11	30.3376	-98.1403
B23	Westcave Preserve	Westcave GCWA 2017	GCWA	B	daily	2 May	2017	0745	Visual	582652.11	3356683.08	30.3392	-98.1401
A15	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	8 May	2017	1021	Visual	582513.20	3356339.45	30.3361	-98.1416
A16	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	8 May	2017	0940	Visual	582609.11	3356492.58	30.3375	-98.1406
A17	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	8 May	2017	0946	Visual	582624.00	3356439.00	30.3370	-98.1404
A18	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	8 May	2017	1020	Visual	582653.47	3356291.66	30.3356	-98.1401
A19	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	8 May	2017	1023	Visual	582606.90	3356266.26	30.3354	-98.1406
A20	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	8 May	2017	1026	Visual	582549.75	3356287.43	30.3356	-98.1412
A21	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	28 March	2017	0737	Visual	582602.73	3356341.51	30.3361	-98.1407
A22	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	16 May	2017	1015	Visual	582632.26	3356501.51	30.3375	-98.1403
A23	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	16 May	2017	1026	Visual	582632.60	3356489.27	30.3374	-98.1403
A24	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	23 May	2017	1100	Visual	582631.27	3356477.03	30.3373	-98.1403
A25	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	23 May	2017	1108	Visual	582624.00	3356492.58	30.3375	-98.1404
C1	Westcave Preserve	Westcave GCWA 2017	GCWA	C	daily	31 May	2017	0750	Visual	582616.49	3356756.13	30.3398	-98.1405
C2	Westcave Preserve	Westcave GCWA 2017	GCWA	C	daily	31 May	2017	0752	Visual	582614.72	3356731.25	30.3396	-98.1405
C3	Westcave Preserve	Westcave GCWA 2017	GCWA	C	daily	31 May	2017	0753	Visual	582632.04	3356735.25	30.3396	-98.1403
A26	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	31 May	2017	0750	Visual	582628.96	3356525.65	30.3378	-98.1404
A27	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	31 May	2017	0750	Visual	582627.63	3356548.80	30.3380	-98.1404
A28	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	31 May	2017	0750	Visual	582614.07	3356549.79	30.3380	-98.1405
A29	Westcave Preserve	Westcave GCWA 2017	GCWA	A	daily	31 May	2017	0750	Visual	582629.29	3356539.87	30.3379	-98.1404