FY 2025 Report on Monitoring and Management of the Black-capped vireo (*Vireo atricapilla)* on Travis County-managed Tracts of the Balcones Canyonlands Preserve and Parks



Photo: Paul Fushille, Black-capped Vireo nestlings, Kotrla Unit, 2024.

Travis County

Department of Transportation and Natural Resources

Natural Resources & Environmental Quality Division

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INTRODUCTION

This report summarizes black-capped vireo (*Vireo atricapilla*; hereafter BCVI or vireo) monitoring, and habitat management efforts conducted by Travis County Natural Resources staff (Staff) in FY 2025 (October 1, 2024 – September 30, 2025; hereafter FY25). Annual BCVI population data collected on Travis County-managed lands is analyzed to monitor changes in distribution, abundance, and productivity. Monitoring the population helps gauge the effectiveness of habitat restoration projects and prioritize sites for future restoration, as well as provide the U.S. Fish and Wildlife Service (USFWS) with valuable data for post-delisting review.

The BCVI was listed as a federally endangered species in 1987. Habitat loss and nest parasitism by brown-headed cowbirds (*Molothrus ater*) are among the greatest threats to BCVI populations. Primary factors of habitat loss or habitat degradation include urbanization, wildfire suppression and over-browsing from white-tailed deer (*Odocoileus virginianus*) overpopulation. Historically, BCVIs in the United States were found in Kansas, Oklahoma, and Texas during the breeding season (Grzybowski 1995). Presently, the BCVI breeding range includes five counties in Oklahoma, 40 counties in central and south-central Texas, and south into central Coahuila, through Nuevo Leon and into southwestern Tamaulipas, Mexico (USFWS 2016). In 2018, the BCVI was delisted and removed from the endangered species list (USFWS 2018). Regardless of the delisting, Balcones Canyonlands Preserve (BCP) partners are committed to providing continued management and protection to BCVIs occurring on the BCP, as outlined in the Balcones Canyonlands Conservation Plan (USFWS 1996; hereafter BCCP). Obligatory, collective management activities include acquiring and actively managing a minimum of 2,000 acres of vireo habitat on the BCP, monitoring the BCVI population, and controlling cowbirds, if deemed necessary.

In 1996, fewer than 100 individual BCVIs were estimated to occur in Travis County (USFWS 1996). In the early part of the 2000s, the BCVI population estimate in Travis County was fewer than 50 individuals (Wilkins *et al.* 2006). Recent survey data from the BCP managing partners and Travis County portions of the Balcones Canyonlands National Wildlife Refuge reveals that the population, although fluctuating, has increased to over 200 territories. The BCP is considered a Tier 1 locality by the USFWS, which means that the BCP area is likely to have a manageable and resilient population of BCVIs (USFWS 2024).

STUDY SITES

During the 2025 breeding season, BCVI territory surveys were conducted within Travis County BCP tracts on portions of the Jollyville Unit, the Kotrla Unit, and the following BCP properties: the Lucas, Wheless, Ribelin and Volente tracts. Additionally, monitoring occurred in Travis County Parks at both Milton Reimers Ranch Park (Reimers Park) and Pace Bend Park. Secondary locations where BCVIs historically were present, or contain suitable habitat, were checked periodically for presence/absence of BCVIs on other areas. For figures showing the BCP and Parks locations, refer to Travis County NREQ (2023).

Areas occupied by BCVIs throughout the county generally include upland plateaus that give way to irregular, steep slopes, and ravines. Ravines drain into tributaries and creeks that feed into Lake Travis, Lake Austin (Colorado River), or into the Pedernales River. The Travis County soil survey shows that Tarrant soils also occur in level upland areas (USDA 1974). Upland areas are relatively flat and are underlain by the hard-gray limestone of the Edwards formation. Many areas are classified as Karst Zones and several known caves and sinks are scattered throughout the upland areas. Brackett and Tarrant soils are found on steep slopes while riparian soils in drainages are composed primarily of soils of the Volente complex. BCVIs inhabit many of these properties in proximity with the federally listed golden-cheeked warbler (*Setophaga chrysoparia*; hereafter GCWA).

Closed canopy, oak-juniper woodlands, dominate most of the canyons and slopes. Historic harvest of mature Ashe juniper (*Juniperus ashei*) has allowed shrubby, secondary-growth junipers to dominate much the uplands and slopes. Open grasslands are found in some valleys and ridge tops, and riparian vegetation, which contains black walnut (*Juglans nigra*), sycamore (*Platanus occidentalis*), cedar elm (*Ulmus crassifolia*), and oaks (*Quercus* sp.) occur in drainages. Portions of many ridge tops are often dominated with shin oak (*Quercus sinuata*), the signature species dominating most occupied BCVI habitat in Central Texas. Other common woody species include Texas redbuds (*Cercis canadensis* var*. texensis*), grape (*Vitus* sp.), Texas ash (*Fraxinus texensis*), Texas oak (*Quercus buckleyi*) agarita (*Mahonia trifoliolata*), twist leaf yucca (*Yucca rupicola*), wafer ash (*Ptelia trifoliata*), Carolina buckthorn (*Frangula caroliniana*), *Ilex* sp. and sumacs (*Rhus* sp.).

HABITAT RESTORATION

Travis County identifies areas targeted for restoration based on factors such as BCVI occupation, BCVI degraded habitat, GCWA habitat, protected cave locations,

and new land acquisitions. Beginning in FY01, and continuing every winter thereafter, Travis County has conducted BCVI habitat restoration within designated BCVI Habitat Management Areas (HMAs) where known historic vireo occupancy and the necessary components for vireo habitat exist. HMAs can be altered and added as BCVI population data and occupancy is gathered, and land management decisions are made. The cumulative total of mechanically restored habitat on Travis County-managed BCP lands is approximately 227 acres (~91 ha). Combined with the 39.25 acres (~16 ha) burned in 2019-2020 on the Kotrla Unit, the total amount of restored habitat is 259 acres (~105 ha). Additionally, BCVIs have benefited from a prescribed fire program on Travis County Parks that inadvertently created several hundred acres of occupiable habitat. Habitat restoration performed by other agencies prior to Travis County ownership is not reflected in these totals.

Poor quality BCVI habitat can be altered during the non-breeding season through a variety of techniques to create the patchy, early- to mid-successional physiognomy associated with BCVI breeding habitat. By selectively removing undesirable monoculture woody species such as Ashe juniper, the growth and shrubby structure of other woody species can be improved. All restored areas require some form of continued maintenance. Overall, most restored areas have become occupied by BCVIs, highlighting the success of the restoration efforts.

In FY25, Travis County staff revisited areas on the Vireo Ridge tract in the Jollyville Unit, adding 0.25 acres of new habitat. Additionally, a contracted land-clearing company, utilizing chainsaws and a chipper, focused on seven acres in a section of previously unrestored area on the Flying K tract of the Kotrla Unit. Staff assisted in reducing unchipped slash by pile-burning. Prescribed fire was not utilized in FY25 but is being considered in FY26 on the Kotrla Unit.

METHODS

Data Collection

In FY25, territory mapping was used to estimate BCVI abundance and number of individual territories present. The presence of color banded BCVIs allowed identification of individuals in many cases. When band status was unknown or when dealing with unmarked BCVI, conspecific singing, or counter-singing was used to differentiate between males. For details on survey methodology, refer to Travis County NREQ (2024).

Nests were located opportunistically during normal territory mapping surveys. For details on nest monitoring, refer to Travis County NREQ (2024). Fledglings observed being tended by an adult confirmed breeding success within a territory. The total number of fledglings observed at any one time was used as a conservative measure of productivity. The fates of unmonitored, empty nests were usually documented as "undetermined". However, often based on behaviors during the breeding season or the physical nature of the nest, such as one severely damaged, fate may be determined.

BCVIs were surveyed for a total of 968 hours from March 23 (first detection) to September 23, 2025 (last detection). Data can be interpreted as a comprehensive census due to the relatively large amount of time spent monitoring these birds throughout the nesting season.

Banding

To build a long-term demographic data set, the banding program initiated in 2008 as part of a graduate study of avian dispersal, has continued. The original project investigated interpatch dispersal patterns within a fragmented preserve network (Simper 2009). Throughout the survey season, staff update and share data, including banded bird resightings and nest locations, to coordinate banding attempts. In 2025, a total of 37 adult BCVIs were banded (29 males, eight females) on Travis County managed tracts. Additionally, in 2025, 63 nestlings that fledged from 23 nests were banded on Travis County tracts as part of a joint City of Austin-Travis County project to monitor dispersal (City of Austin, 2024). Eleven additional, banded nestlings from three nests were depredated before fledging. In addition to banding nestlings, blood samples were obtained to support the project that will further assess diversity and inbreeding depression. Since 2008, 185 adult BCVIs have been banded on Travis County-managed properties.

Data Analysis

For a detailed description on data analysis see Travis County NREQ (2024). BCVI abundance is defined as the sum of all individual male BCVIs detected at a given study site, regardless of territory status. An individual male was considered to have established a breeding territory if the following behaviors were observed: 1) accompanying a female, 2) tending a nest or fledglings, or 3) singing in the same locality on three separate occasions each separated by at least one week (i.e., six days between observations). In calculating territory numbers, all BCVI territories,

whether they were observed entirely or partially on Travis County property, were considered ‘full’ territories (as opposed to ‘edge’ or partial territories).

Pairing success rate was calculated as the proportion of territories within which a female was observed, or a nest was located (Anders 2000). Productivity data is represented in the following two ways: 1) the total number of fledglings divided by the total number of territories and 2) the total number of fledglings divided by the number of successful territories. A territory was considered successful if at least one fledgling was observed with a territorial male or female or if a monitored nest was deemed successful based on field observations (i.e., presence of dander in the nest). The breeding success rate is the proportion of full territories that successfully fledged young (Koloszar and Becker 2000).

RESULTS

In 2025, BCVI total abundance again reached record highs with 77 males detected throughout Travis County-managed properties. A record 60 territories were established with 57 determined to be paired. Of the 17 unique, non-territorial BCVIs, 11 were “single day” occurrences where individual males were likely passing through the area. Six others were detected on multiple days but failed to establish territories before disappearing. Territorial BCVIs were located on the Jollyville Unit (Figures 1 and 2), the Steiner Ranch and Lucas tracts (Figure 3), the Ribelin tract (Figure 4), the Wheless tract (Figure 5), the Volente tract (Figure 6), the Kotrla Unit area (Figures 7-9), Pace Bend Park (Figure 10) and Reimers Park (Figure 11).

All 60 territories were in areas where recent or historical vegetation management has occurred. Forty-eight territories were established in areas that had some recent form of disturbance either by mechanical restoration, prescribed fire directed by Travis County, or by previous owner vegetation clearing for livestock pasture management. Of these 48 territories, 10 of these were in areas with either historic or recent land-clearing for ranching including one on private property and a second on the Flying-K Conservation Easement. Two territories were utilizing land previously cleared for potential residential development (Volente tract). The six territories located on County parkland were in areas that had been recently burned through the Travis County Park’s prescribed burn program. Four territories were established on powerline corridors that undergo routine clearing.

Since FY23, Travis County core populations, those with at least three territories occupying a proximal area (Unit, tract, or park), have increased. In 2025, the Jollyville

Unit breeding population was comprised of 22 territories, with an additional four non-territorial males that never established territories (Figures 1 and 2). The Kotrla Unit had 18 territories, with an additional two non-territorial males detected (Figures 7-9). The Lucas/Steiner Ranch cluster contained 10 territories, with six non-territorial males (Figure 3). There were four territories and two non-territorial males at Reimers Park (Figure 11). BCVIs were detected again on the Ribelin tract after a three-year absence. Wheless recorded at least one breeding pair for a second consecutive year (Figure 5) and BCVI territories were detected on the Volente tract for the first time in an area once cleared for development (Figure 6).

The Jollyville Unit has historically contained Travis County's largest BCVI numbers and for many years, was Travis County's only protected population. Because of this, data unique to this Unit have regularly been teased out to reflect historic context. Table 1 presents a summary of BCVI data collected during the 2025 breeding season, in addition to data collected by various agencies exclusively on the Jollyville Unit since 1989. This table also indicates total abundance and territories on all Travis County properties (including BCVI detected from Travis County properties on adjacent properties). As the Travis County BCP expanded, territories were discovered off the Jollyville Unit as new, suitable habitat was protected and created.

Table 1. Historical summary of Jollyville Unit and all Travis County BCVI survey data, Travis County, Texas. 1989-2025.

Year Surveyed	Agency*	Jollyville Unit** Abundance	Jollyville Unit** No. Territories	Abundance/ No. Territories (all Travis County lands)
1989, 90	DLS	11	5	n/a
1991	DLS	14	9	n/a
1992	TXDOT	Unknown[1]	Unknown	n/a
1993	TXDOT	25	20	n/a
1994	TXDOT	27	27	n/a
1995	TXDOT	23	23	n/a
1996	SWCA	19-22	15	n/a
1997-99	No Data	Unknown[1]	Unknown	n/a
2000	SWCA	3[2]	Unknown	n/a
2001	Travis County TNR	19	13	19/13
2002	Travis County TNR	21	19	21/19
2003	Travis County TNR	21	20	22/20
2004	Travis County TNR	13	12	13/12

Year Surveyed	Agency*	Jollyville Unit** Abundance	Jollyville Unit** No. Territories	Abundance/ No. Territories (all Travis County lands)
2005	Travis County TNR	12	11	12/11
2006	Travis County TNR	12	9	13/9
2007	Travis County TNR	14	13	18/15
2008	Travis County TNR	15	15	15/15
2009	Travis County TNR	13[3]	11	15/11
2010	Travis County TNR	13	11	13/11
2011	Travis County TNR	9	8	10/9
2012	Travis County TNR	9	8[4]	9/8
2013	Travis County TNR	13	9	15/11
2014	Travis County TNR	14	12	14/12
2015	Travis County TNR	15	13	21/16
2016	Travis County TNR	14	12[4]	19/14
2017	Travis County TNR	6	6	12/9
2018	Travis County TNR	9	9[4]	17/12
2019	Travis County TNR	7	5	22/13
2020	Travis County TNR	14	9	32/22
2021	Travis County TNR	14	11	37/28[5]
2022	Travis County TNR	14	12	36[5]/27
2023	Travis County TNR	15	11	36/28
2024	Travis County TNR	24	21	79/52[5]
2025	Travis County TNR	25	22	77/60[5]

* Sources include DLS (1989-1992), SWCA (1996); Texas Department of Transportation (1992-2005), Travis County NREQ (2006-2023) **Study area is only referred to as "Jollyville Unit" since 2001. [1] Restricted access on the tract. [2] Detected while on brief site visit.

[3] Does not include individual detected on Lake Perspectives tract (now part of the Lake Travis Unit).

[4] One banded male established two separate, unique territories. [5] Includes those added adjacent to Travis County property.

In 2025, Travis County-wide, 57 territories were considered successfully paired. Forty-two territories fledged offspring, yielding at least 121 "hatch year" (HY) individuals. Six territories had two successful broods. On the Jollyville Unit alone, 21 of the 22 territories were considered successfully paired (Table 2). Of these, 17 territories fledged offspring, yielding at least 52 HYs observed in the field (Table 3). Kotrla Unit data are represented in separate tables (Tables 4 and 5) due to this Unit's recent significance to the Travis County overall population.

Table 2. Total abundance, territory number, and pairing success for BCVIs (*Vireo atricapilla*) on Jollyville Unit, Travis County, Texas, March-September 2001-2025.

Year	Abundance	No. Territories	Successfully Paired	Pair Success Rate (%)
2001	18[a]	15[a]	13[a]	86.7[a]
2002	21	19	18	94.7
2003	21	19[a]	14	73.7[a]
2004	13	12	9	75
2005	12	11	8	72.7
2006	11[a]	9	8	88. 9
2007	14	13	12	92.3
2008	15	15	14	93.3
2009	13[b]	11	11	100
2010	13	11	11	100
2011[c]	9	8	8	100
2012	9	8	8	100
2013	13	9	9	100
2014	14	12	11	91.7
2015	15	13	11	84.6
2016	14	12	11	91.7
2017	6	6	6	100
2018	11	9	9	100
2019	7	5	4	80.0
2020	14	9	9	100
2021	14	11	9	81.8
2022	14	12	11	91.7
2023	15	11	10	90.9
2024	24	21	20	95.2
2025	25	22	21	95.5

[a] Adjusted values to reflect BCVI found only on the Jollyville Unit.
[b] The male located at Lake Perspectives (Lake Travis Unit) was not included in this dataset.
[c] The territory located at Lucas-Lake Travis Bluffs (Lake Travis Unit) was not included in this dataset.

Current protocol counts either the number of fledglings directly observed in the field, or the number of nestlings discovered in a nest that is later demonstrated to be successful. We expect observer counts of fledglings to be biased low. 2025 productivity numbers on Jollyville and Kotrla Units are indicated in Tables 3 and 5 measured relative to both successfully breeding territories or all paired territories on Jollyville and Kotrla.

Table 3. Breeding success and productivity for BCVI (*Vireo atricapilla*) territories on Jollyville Unit, Travis County, Texas, March-September 2001-2025.

Year	No. of territories with breeding success[1]	Breeding success rate (%)	No. Fledglings	No. fledglings/ successful territory[2]	No. fledglings/ total no. paired territories[3]
2001	4	26.7*	12	3.0*	0.9*
2002	13*	68.4*	25*	1.9*	1.4*
2003	9	47.4*	16	1.8	1.1
2004	6	50.0	13	2.2	1.4
2005	1	9.1	1	1.0	0.1
2006	8	88.9	15	1.9	1.9
2007	8	61.5	24	3.0	2.0
2008	10	66.7	29	2.9	2.1
2009	7	63.6	12	1.7	1.1
2010	8	72.7	10	1.3	0.9
2011	4	50.0	11	2.8	1.4
2012	7	87.5	21	3.0	2.6
2013	6	66.7	19	3.2	2.1
2014	8	66.7	23	2.9	2.1
2015	7	53.8	30	4.3	2.6
2016	8	66.7	29	3.6	2.4
2017	4	66.7	15	3.8	2.5
2018	4	44.4	15	3.8	1.7
2019	4	80.0	15	3.8	3.8
2020	6	66.7	17	2.8	1.9
2021	6	54.5	26	4.3	2.9
2022	8	66.7	23	2.9	2.1
2023	8	72.7	28	3.5	2.8
2024	14	66.7	49	3.5	2.5
2025	17	73.9	52	3.3	2.5

[1] Represents the number of all territories that fledged at least one young.
[2] Represents the average no. of fledgling from territories with breeding success.
[3] Represents the average no. of fledgling from all successfully paired territories.
* Adjusted values to reflect BCVI found only on the Jollyville Unit.

Table 4. Abundance, territory number, pairing success for BCVIs (*Vireo atricapilla*) on Kotrla Unit area, Travis County, Texas, March-September 2014-2025.

Year	Abundance	No. Territories	Successfully Paired	Pair Success Rate (%)
2014*	1	0	Unknown	n/a
2015	2[1]	1	0	0
2016	2	0	n/a	n/a
2017	1	1	1	100
2018	3	2	2	100
2019	5	2	2	100
2020	7	6[2]	5	83.3
2021	10	8[1]	8	100
2022	13	9	7	77.8
2023	11	11	11	100
2024	30	15[1]	15	100
2025	20	18[3]	16	88.8

*Detected once during pre-ownership site visit; [1] One territory was detected just off Travis County property (Kotrla tract).
[2] One territory polygynous
[3] One territory off Travis County property (Kotrla tract) and one on County-managed Conservation Easement (Flying K CE).

Table 5. Breeding success and productivity for BCVI (*Vireo atricapilla*) territories on Kotrla Unit area, Travis County, Texas, March-September 2016-2025.

Year	No. of territories with breeding success[1]	Breeding success rate (%)	No. Fledglings	No. fledglings/ successful territory[2]	No. fledglings/ total no. paired territories[3]
2014*	Unknown	Unknown	Unknown	Unknown	Unknown
2015	0	0	0	0	0
2016	0	0	0	0	0
2017	1	100	3	3.0	3.0
2018	1	50.0	2	2.0	1.0
2019	2	100	8	4.0	4.0
2020	4	66.7	14	3.5	2.8
2021	2	25.0	5	2.5	0.6
2022	2	22.2	9	4.5	1.2
2023	6	54.5	22	3.7	2.0
2024	8	53.3	22	3.6	1.5
2025	11	61.1	29	3.8	1.8

[1] Represents the number of all territories that fledged at least one young.
[2] Represents the average no. of fledgling from territories with breeding success.
[3] Represents the average no. of fledgling from all successfully paired territories.
* No survey conducted; detected once during a site visit, pre-County ownership.

Nests. Seventy-nine BCVI nests were located in 2025 (Appendix). Of these, 71 nests were monitored until fate was determined. Of the 71 monitored nests, 30 (42.3%)

successfully fledged at least one young. Including all nests (both monitored and unmonitored, n=79), 31 (39.2%) successfully fledged at least one young, with one unmonitored nest successfully fledging two HYs. Forty-eight (60.8%) nests failed, having been either depredated, partially depredated, abandoned and/or parasitized. Of these, one nest was destroyed by heavy rain during the nestling stage. Sixteen nests were parasitized either during the egg or post-fledged stage. No cowbirds fledged in 2025. Newly hatched cowbirds were removed from two nests with both nests eventually being depredated. Three nests where BHCO eggs were addled produced BCVI fledglings. All other parasitized nests were abandoned, depredated or laid in empty nests and accounted for above. When possible, fates were assigned to nests found empty based on nest contents, damage, adult behavior and other field observations.

Timing and behavior indicated that several territories likely had failed early- and late-season nests that were never located. Detailed data regarding nest substrate, height, and orientation were collected post breeding season for each nest found (Appendix).

Color banding and Dispersal. A total of 57 individual, adult BCVIs wearing color bands were observed on Travis County properties in 2025 (Table 6). Of these, 19 were adult males and one an adult female banded in 2024 or a previous year. Of the older (four years or older) returning BCVIs, three were banded in 2019 [now A9Y, 8 and 5Y]; one in 2023 [5Y]; one male in 2023 [A4Y] and one female in 2022 [A4Y]; and one male in 2023 [4Y]. Thirty-seven adult BCVIs were newly banded in 2025 (29 males, 8 females; Table 6). Additionally in 2025, 74 nestlings were color banded. Seventeen of these were depredated from five nests (Table 6).

Table 6. Color banding details for BCVIs (*Vireo atricapilla*) on Travis County properties, 2025.

Location	Color Band Combination	Band Date	Sex	Age
Jollyville Unit	BL/SI:MV/PI	5/28/2019	M	8Y
Jollyville Unit	RD/SI:GR/PI	5/28/2019	M	A9Y
Jollyville Unit	BL/SI:MV/PI	5/28/2019	M	5Y
Jollyville Unit	OR/YE:MV/SI	6/29/2022	F	A4Y
Jollyville Unit	DB/OR:BL/SI	5/12/2023	M	A4Y
Jollyville Unit	OR/SI:RD/RD	6/15/2023	M	4Y
Steiner Ranch	WH/SI:WH/RD	5/25/2022	M	3Y
Pace Bend Park	nb/SI:YE/GR	6/12/2023	M	5Y

Location	Color Band Combination	Band Date	Sex	Age
Jollyville Unit	WH/YE:DB/SI	4/8/2024	M	A3Y
Jollyville Unit	RD/SI:DG/RD	5/21/2024	M	3Y
Jollyville Unit	BL/DG:DG/SI	6/7/2024	M	3Y
Jollyville Unit	RD/SI:RD/GR	6/24/2024	M	3Y
Jollyville Unit	BL/PI:GR/SI	8/30/2024	M	A3Y
Reimers Ranch	DG/SI:BK/OR	4/18/2024	M	3Y
Steiner Ranch	BK/GR:DG/SI*	5/9/2024	M	SY
Lucas/LT Bluffs	DG/YE:DG/SI	4/26/2024	M	A3Y
Lucas/LT Bluffs	BK/SI:BK/MV	6/12/2024	M	ASY
Cortaña- north	BL/BK:GR/SI*	6/20/2024	M	SY
Cortaña- north	nb/SI:MV/DG*	5/4/2024	M	SY
Kotrla	OR/DG:OR/SI	6/12/2024	M	A3Y
Jollyville Unit	YE/SI:MV/GR	7/7/2025	uk	L**
Jollyville Unit	YE/WH:RD/SI	7/7/2025	uk	L
Jollyville Unit	BK/DG:PI/SI	6/27/2025	uk	L
Jollyville Unit	BL/SI:DB/BK	6/27/2025	uk	L
Jollyville Unit	DB/PI:WH/SI	6/27/2025	uk	L
Jollyville Unit	OR/OR:PI/SI	6/27/2025	F	SY
Jollyville Unit	YE/BL:RD/SI	6/27/2025	M	SY
Kotrla Unit	NB/SI:BL/GR	6/17/2025	M	SY
Kotrla Unit	DB/OR:BK/SI	4/22/2025	M	ASY
Kotrla Unit	DG/DG:YE/SI	4/22/2025	M	SY
Kotrla Unit	OR/SI:BK/BK	4/22/2025	M	ASY
Kotrla Unit	YE/SI:MV/OR	4/22/2025	M	ASY
Kotrla Unit	BK/GR:GR/SI	5/12/2025	uk	L
Kotrla Unit	BK/SI:NB/Pi	5/12/2025	uk	L
Kotrla Unit	BK/SI:PI/OR	5/12/2025	uk	L
Kotrla Unit	BK/SI:WH/BL	5/12/2025	uk	L
Kotrla Unit	BL/BK:NB/SI	5/12/2025	uk	L
Kotrla Unit	BL/SI:MV:OR	5/12/2025	uk	L
Kotrla Unit	BL/SI:MV/DB	5/12/2025	uk	L
Kotrla Unit	BK/BL:WH/SI	5/19/2025	uk	L
Kotrla Unit	BK/GR:PI/SI	5/19/2025	F	ASY
Kotrla Unit	BK/PI:MV/SI	5/19/2025	uk	L
Kotrla Unit	PI/SI:DG/BK	5/19/2025	M	ASY
Kotrla Unit	GR/SI:MV/GR	7/3/2025	M	SY
Kotrla Unit	MV/YE:NB/SI	7/10/2025	uk	L
Kotrla Unit	RD/SI:OR/MV	7/10/2025	uk	L
Kotrla Unit	YE/WH:NB/SI	6/2/2025	M	SY
Kotrla Unit	NB/DB:DG/SI	6/17/2025	M	SY
Kotrla Unit	MV/BK:PI/SI	6/24/2025	M	SY

Location	Color Band Combination	Band Date	Sex	Age
Kotrla Unit	MV/SI:NB/GR	7/3/2025	uk	L
Kotrla Unit	OR/SI:DB/DB	7/3/2025	uk	L
Kotrla Unit	RD/OR:DG/SI	7/3/2025	uk	L
Kotrla Unit	RD/SI:GR/BK	7/3/2025	uk	L
Kotrla Unit	YE/DG:DG/SI	7/3/2025	F	SY
Kotrla Unit	YE/SI:RD/DB	7/3/2025	M	SY
Kotrla Unit	GR/BL:WH/SI	7/3/2025	F	ASY
Kotrla Unit	OR/SI:OR/DB	7/3/2025	M	ASY
Kotrla Unit	RD/OR:PI/SI	4/18/2025	M	ASY
Kotrla Unit	DB/GR:BL/SI	4/22/2025	M	ASY
Kotrla Unit	NB/SI:PI/DB	5/16/2025	uk	L
Kotrla Unit	YE/SI:NB/DB	7/3/2025	uk	L
Kotrla Unit	WH/MV:WH/SI	7/16/2025	M	ASY
Lucas/ LT Bluffs	GR/SI:YE/PI	4/15/2025	M	ASY
Lucas/ LT Bluffs	BK/PI:WH/SI	6/16/2025	uk	L
Lucas/ LT Bluffs	NB/DG:OR/SI	7/7/2025	uk	L
Lucas/ LT Bluffs	RD/YE:NB/SI	7/7/2025	uk	L
Pace Bend	RD/SI:RD/MV	6/25/2025	uk	L
Pace Bend	YE/SI:DB/DG	6/25/2025	uk	L
Reimers Ranch	BK/MV:MV/SI	5/12/2025	uk	L
Reimers Ranch	DB/DB:BL/SI	5/12/2025	uk	L
Reimers Ranch	PI/SI:MV/BK	5/12/2025	uk	L
Reimers Ranch	PI/SI:NB/DB	5/12/2025	uk	L
Reimers Ranch	PI/WH:RD/SI	5/12/2025	uk	L
Reimers Ranch	WH/SI:WH/DG	5/12/2025	uk	L
Reimers Ranch	YE/BK:NB/SI	5/12/2025	uk	L
Reimers Ranch	YE/MV:BL/SI	5/12/2025	F	SY
Reimers Ranch	DG/MV:WH/SI	5/28/2025	M	SY
Steiner Ranch	RD/SI:WH/YE	4/15/2025	M	ASY
Steiner Ranch	WH/BK:DG/SI	4/15/2025	F	ASY
Steiner Ranch	WH/SI:DG/GR	4/25/2025	M	ASY
Steiner Ranch	BK/MV:WH/SI	6/2/2025	uk	L
Steiner Ranch	MV/WH:MV/SI	6/2/2025	uk	L
Steiner Ranch	PI/SI:NB/GR	6/2/2025	uk	L
Steiner Ranch	RD/SI:WH/RD	6/2/2025	uk	L
Steiner Ranch	WH/SI:BL/MV	6/2/2025	uk	L
Jollyville Unit	OR/DB:YE/SI	5/9/2025	M	ASY
Jollyville Unit	OR/SI:YE/OR	5/16/2025	M	ASY
Jollyville Unit	BK/DB:DG/SI	6/16/2025	uk	L
Jollyville Unit	BK/SI:BL/WH	6/16/2025	uk	L
Jollyville Unit	BL/YE:PI/SI	6/16/2025	uk	L

Location	Color Band Combination	Band Date	Sex	Age
Jollyville Unit	DB/BL:GR/SI	6/11/2025	uk	L
Jollyville Unit	DG/SI:DB/RD	6/11/2025	uk	L
Jollyville Unit	GR/SI:BK/RD	6/11/2025	uk	L
Jollyville Unit	GR/SI:NB/YE	6/11/2025	uk	L
Jollyville Unit	PI/BL:PI/SI	6/10/2025	F	ASY
Jollyville Unit	GR/SI:YE/RD	6/27/2025	uk	L
Jollyville Unit	MV/SI:DG/RD	6/27/2025	uk	L
Jollyville Unit	RD/RD:WH/SI	6/27/2025	uk	L
Jollyville Unit	PI/BK:DB/SI	5/2/2025	M	SY
Jollyville Unit	PI/SI:MV/YE	5/2/2025	F	SY
Jollyville Unit	DB/GR:OR/SI	5/26/2025	M	SY
Jollyville Unit	NB/SI:OR/PI	5/28/2025	uk	L
Jollyville Unit	PI/OR:MV/SI	5/28/2025	uk	L
Jollyville Unit	WH/DB:YE/SI	5/28/2025	uk	L
Jollyville Unit	WH/WH:BL/SI	5/28/2025	uk	L
Jollyville Unit	BL/PI:RD/SI	6/6/2025	uk	L
Jollyville Unit	GR/SI:GR/WH	6/6/2025	uk	L
Jollyville Unit	MV/SI:PI/DB	6/6/2025	uk	L
Jollyville Unit	WH/OR:PI/SI	6/6/2025	M	SY
Jollyville Unit	WH/YE:DG/SI	5/9/2025	M	ASY
Jollyville Unit	MV/YE:NB/SI	5/22/2025	uk	L
Jollyville Unit	RD/SI:OR/MV	5/22/2025	uk	L
Jollyville Unit	YE/SI:MV/GR	5/22/2025	uk	L
Jollyville Unit	YE/WH:RD/SI	5/22/2025	uk	L
Jollyville Unit	DB/YE:PI/SI	5/28/2025	uk	L
Jollyville Unit	MV/SI:GR/BL	5/28/2025	uk	L
Jollyville Unit	OR/SI:PI/MV	5/28/2025	uk	L
Jollyville Unit	PI/SI:BL/MV	7/25/2025	M	SY
Jollyville Unit	BL/DB:BL/SI	5/9/2025	uk	L
Jollyville Unit	DB/DG:MV/SI	5/9/2025	uk	L
Jollyville Unit	GR/YE:BL/SI	5/9/2025	uk	L
Jollyville Unit	NB/SI:PI/DG	5/9/2025	uk	L
Jollyville Unit	BK/SI:BL/YE	5/12/2025	uk	L
Jollyville Unit	DG/SI:MV/DB	5/12/2025	uk	L
Jollyville Unit	MV/SI:PI/DG	5/12/2025	uk	L
Volente	RD/PI:PI/SI	8/15/2025	M	SY
Wheless	DG/SI:OR/BK	6/20/2025	uk	L
Wheless	DG/YE:DG/SI	6/20/2025	uk	L
Wheless	GR/BK:YE/SI	6/20/2025	uk	L
Wheless	PI/SI:PI/YE	6/28/2025	M	SY

* Banded as nestling in 2024 ** L = nestling

Adult males showed a 35.7% return rate indicating site fidelity (15 of 42 banded males in 2024 observed in 2025; Table 7). All but one banded male from 2024 returned to their same territorial areas in 2025. This one male shifted from the north end of Vireo Ridge in 2024 to the south end in 2025.

Adult females showed a 16.7% return rate (one of six banded females in 2024 observed in 2025; Table 7). The one returning, banded female returned to her same territorial area and nested once with her same 2024 partner before mate-switching. Table 7 summarizes relevant demographic information since 2010.

Prior to 2008 there was no banding program in place, precluding staff from determining return rates, recruitment and associated data. In 2025, of the 32 males newly banded, including two 2024 banded nestlings that were resighted in 2025, 18 were ‘second year’ males, i.e., males in their first reproductive season. All newly banded males established territories.

The proportion of second year males (pSY) has been used as an indicator of recruitment. A minimum pSY value (29%) has been suggested as a measure of a stable population (USFWS 1996). In 2025, the overall pSY, based on marked, territorial males, was 56.3% (18 of 32; Table 7).

Three nestlings (two from the City of Austin Cortaña tract) banded in 2024 returned onto the Travis County BCP as adult males in 2025. In a record BCP dispersal event, a male nestling established a territory on the northwest side of the Kotrla Unit, 21.1 km (~13 miles) away from its 2024 Cortaña natal patch. A second banded nestling dispersed from the Steiner Ranch tract to the Ribelin tract, 4.1 km (~2.5 miles) away. This male established a territory but then moved 3.6 km (~2.25 miles) to the Cortaña tract not far from its natal patch. A third dispersal was from Cortaña to the Lucas tract 660 m (0.4 miles) away. This brings the total to six banded nestlings that returned the following year to a Travis County property in the program’s history. Travis County intends to continue the BCVI banding program alongside the City of Austin’s banding program to better understand the Travis County-area population, genetic health and viability.

Table 7. Proportion of second-year males (pSY) and site fidelity on Travis County surveyed properties, Travis County, Texas. 2010-2025.

Year	pSY	Site Fidelity (males)	Site Fidelity (females)
2010	27.3	70.0	n/a
2011	20.0*	25.0	n/a
2012	28.6*	66.7	50.0
2013	57.1	16.7	100.0
2014	62.5*	42.9	50.0
2015	43.8**	71.4	50.0
2016	71.4	16.7	66.7
2017	20.0*	42.9	n/a
2018	33.3	40.0	n/a
2019	33.3	55.6	n/a
2020	53.8	55.6	n/a
2021	39.1	57.1	33.3
2022	35.3	40.0	n/a
2023	23.8	42.9	100
2024	59.2	65.4	60
2025	56.3	35.7	16.7

* conservative number, at least three (2011), one (2012), two (2014) and one (2017) male were unsuccessfully aged.
** unofficial number based primarily on observations of territorial (n=7 of 16) males and not solely marked BCVIs.

DISCUSSION and FIELD NOTES

2025 posted the highest BCVI abundance and territory numbers since the program's inception (2001). Territory numbers on the Jollyville and Kotrla Units reached record highs for the second consecutive year. The greater Steiner Ranch-Lucas tracts area has also seen an increase in territories. Similarly, areas that had few to no BVCI occupation increased at Pace Bend Park (non-BCP), as well as the Wheless and Volente tracts. The importance of utility corridors for both migration and territorial use continues to be documented, including along the Steiner Ranch corridor and on the Ribelin tract. Overall, BCVIs are occupying most of the areas restored since 2000

throughout the BCP, as well as benefiting from the Travis County's prescribed fire program.

The Kotrla Unit has become a core area for Travis County's BCVI population matching the success of the Jollyville Unit population. Once again, the Kotrla Unit showed an increase in territories as vegetation management, including prescribed fire, has improved the habitat. Breeding success on the Kotrla Unit was above 50% but many nests succumbed to depredation and parasitism. Brown-headed cowbird parasitism continues to be an issue, so trapping effort will continue on or adjacent to this Unit in 2026. With the addition of prescribed fire and the proximity to the large BCVI population providing likely recruitment from the Balcones Canyonlands National Wildlife Refuge, this Unit's BCVI population should continue to grow and flourish. Over the long term, this Unit offers Travis County the opportunity to expand available quality habitat and could become the site of the largest BCVI colony on the BCP.

The rotation of annual prescribed fires has created and maintained many acres of potential BCVI habitat at both Reimers and Pace Bend Park. It is conceivable that Reimers could soon rival any of the Travis County BCP core areas for the largest colony and will continue to be monitored. Pace Bend Park has already had steady occupation for several seasons and shows promise as a future core area due to habitat creation through the Park's prescribed burn program.

What drives changes in BCVI numbers and territory establishment is unclear, but regional population fluctuations, climate, changes in migration patterns through the area, declining connectivity, and changes in quality of habitat are likely factors. Other factors may influence territory distribution, including the intrinsic habitat characteristics of the site, the age structure of the population, overall population density, and habitat restoration activities in protected areas (Grzybowski *et al*. 1994; Anderson and Gutzwiller 1996). The BCP's location on the far eastern edge of the BCVI range also contributes to overall population trends. Regardless, a variety of active habitat restoration measures and future land acquisitions should benefit this species on Travis County-managed properties.

BCVIs tend to be "semi-colonial" and establish territories near other BCVIs. Isolated territories composed of either individual pairs or small clusters are occasionally located. These low-density populations are often difficult to detect as song rates and duration of song bouts can be much lower than in high-density populations of BCVIs.

Understandably, throughout the preserve, these isolated territories might have low detection rates, even in areas where presence/absence or casual surveys are conducted, thus, affecting abundance estimates. As with most years, a unique or several individual males, will establish a territory in an altogether new area or one not utilized for a several year period. Many of these territories are located coincidentally or because of other species survey efforts. Examples of these areas include the territories discovered on the Grandview Hills and Volente tracts located while conducting GCWA surveys.

Travis County is committed to continued research and monitoring of BCVI, particularly on the Jollyville and Kotrla Units, to determine whether they, or any other colony, is a source population or a population sink. Source populations contribute to the general overall population and help to maintain satellite colonies. Population sinks are maintained solely through immigration and contribute nothing to species-wide abundance (Pulliam 1988). Data obtained from continued banding efforts will improve estimates of inter-population connectivity as well as age-specific survival and reproduction. If adequate connectivity with neighboring sub-populations is not maintained, then BCVI numbers on isolated preserve tracts may decline precipitously, leading to local extinctions and deficient levels of colonization. Information regarding productivity and dispersal is limited because it is difficult and slow to obtain. The addition of nestling banding on both Travis County and City of Austin has already provided new insight. Additional survey seasons and continued research will help gauge the effectiveness of habitat restoration projects and prioritize sites for future restoration. Without comprehensive productivity, survivorship, and dispersal information, as well as complimentary data from surrounding properties, we cannot make a definitive statement regarding the role of the BCP within the central Texas portion of the BCVI's range.

Travis County will continue to conduct intensive BCVI monitoring, including annual color banding. Such research could help address many questions concerning the long-term viability of any of the larger colonies and their relationship to other sub-populations in the region. The long-term data sets generated from such studies would facilitate yearly comparisons and improve the accuracy of model-generated population forecasts. Data collected will continue to include the following: abundance, age structure, dispersal patterns, distribution of subpopulations, habitat associations throughout the breeding season, nest success, recruitment, return rates and age-specific measures of productivity and survivorship. Future research should be focused

upon answering questions of immediate relevance to management and continued recovery priorities.

Field Notes.

- A banded male switched territorial areas from 2024 to 2025, moving from the north end of Vireo Ridge to the south end. He was polygynous, pairing with both an unbanded and banded female. At one point he was actively tending to two nests with one successfully fledging two HYs.

- This same banded female had a successful brood earlier in the season with the male she paired with in 2024.

- The polygynous pair had a nestling with an abnormal beak (top bill curved to the side). The nest fledged but it is unclear what the eventual fate will be for this nestling.

- The oldest known male (at least 10 years old) was the first BCVI detected in 2025. He and an eight-year-old male both had successful broods in 2025.

- A color banded male on the Kotrla Unit had two successful nests approximately 7m (22 ft.) from each other on an adjacent private property fence line.

- Three returning, banded HYs from 2024 were discovered on Travis County tracts in 2025. As previously mentioned, one of these HYs dispersed approximately 13 miles from its natal patch.

- One returning, banded HY established a territory on both Travis County and City of Austin BCP tracts.

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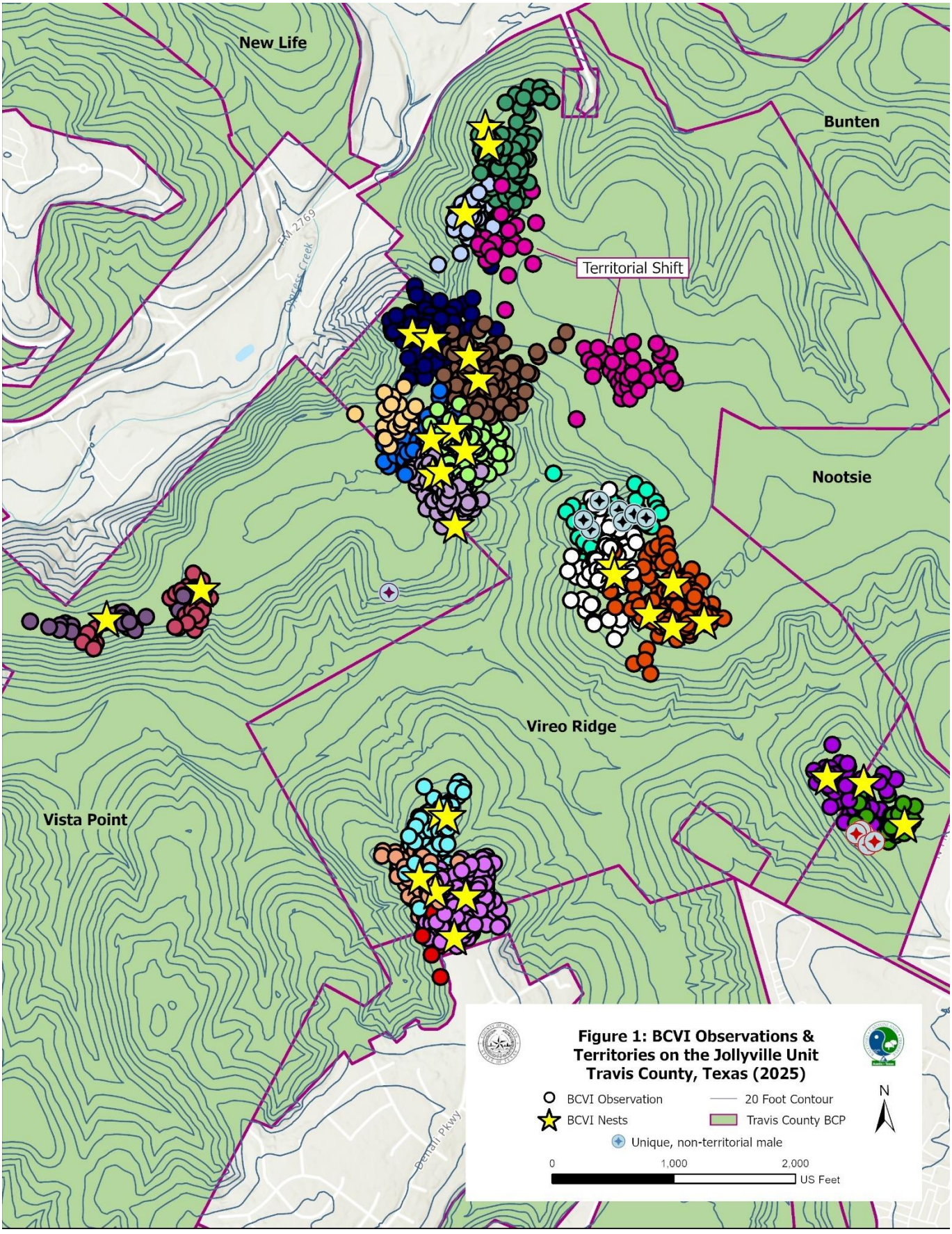
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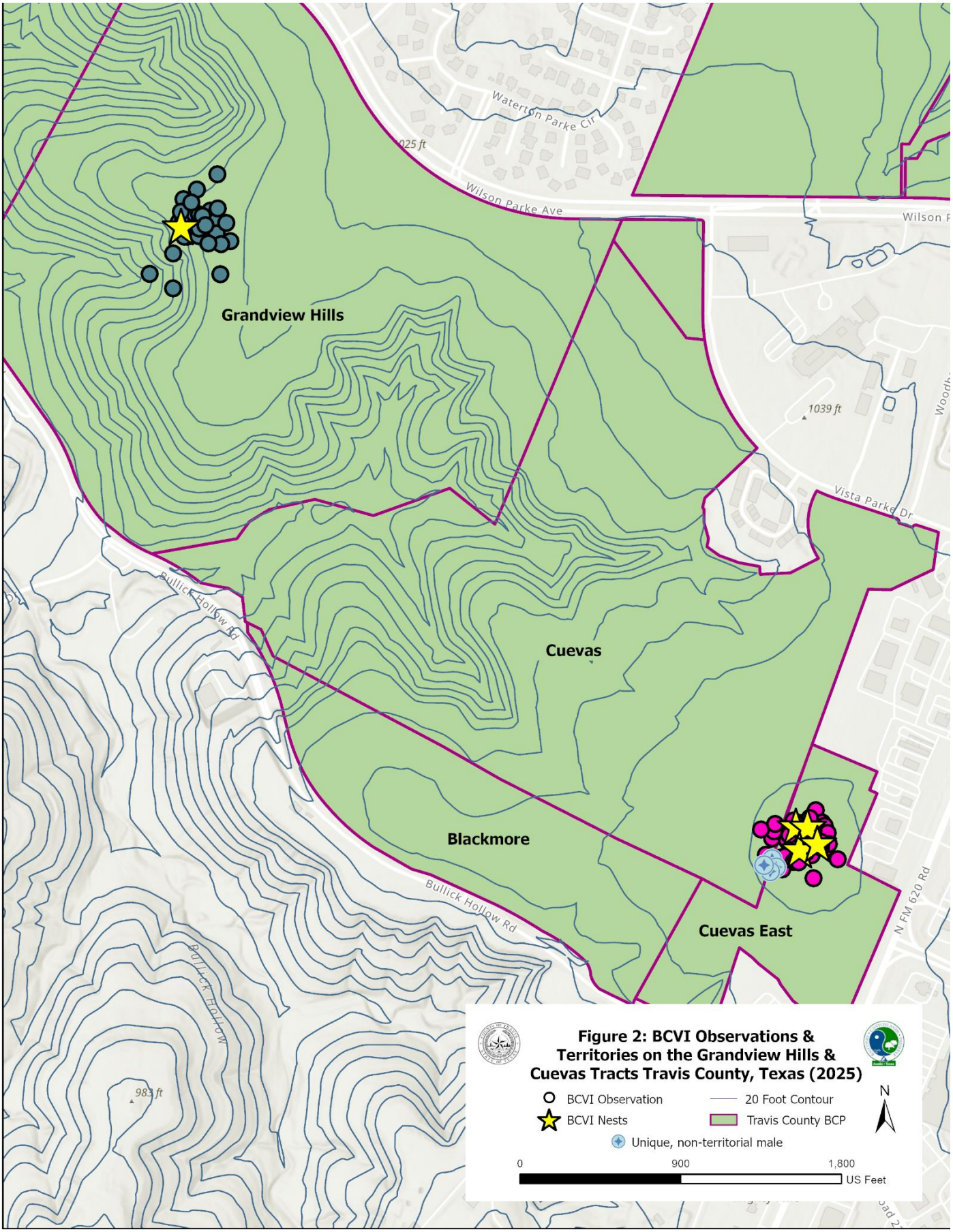
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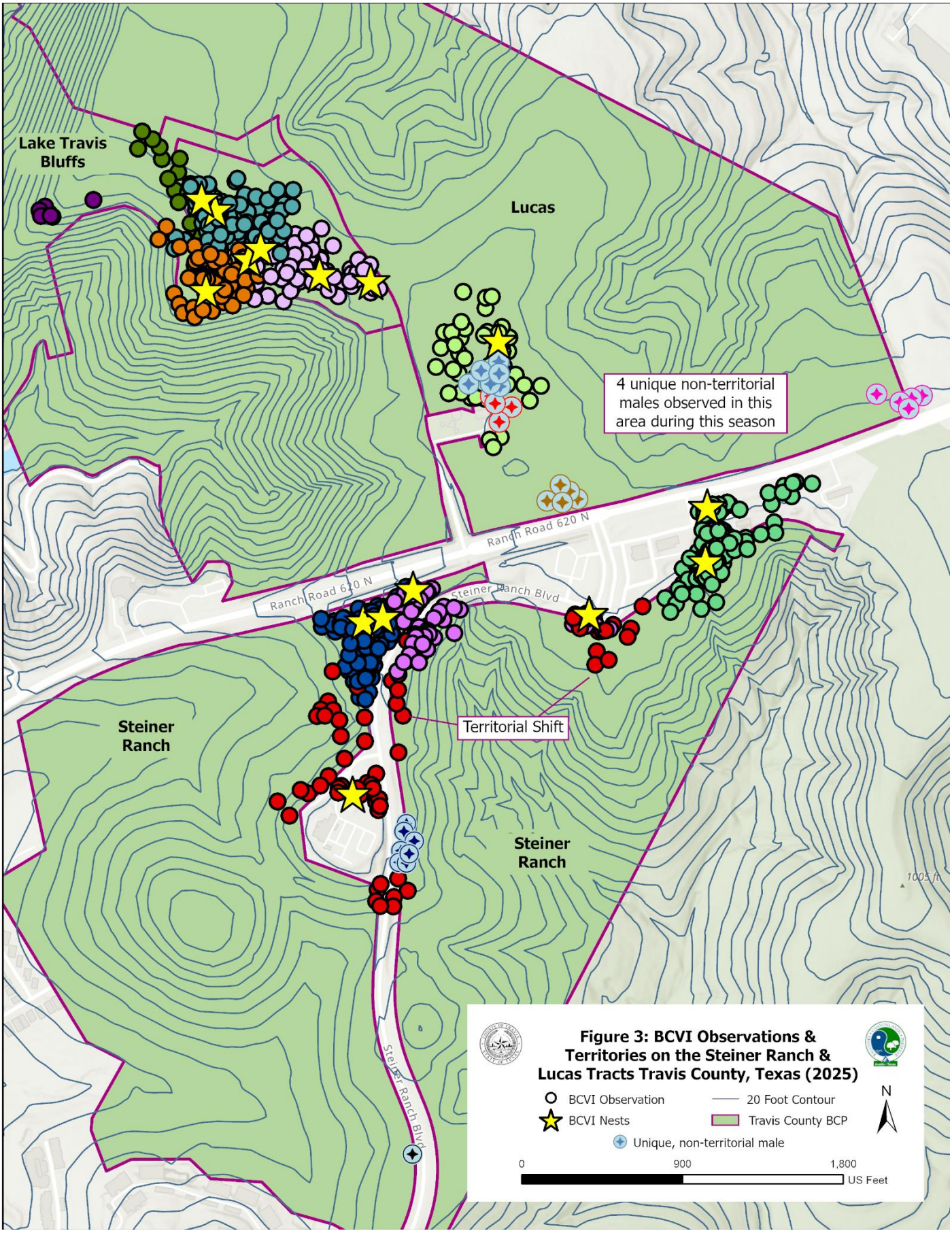
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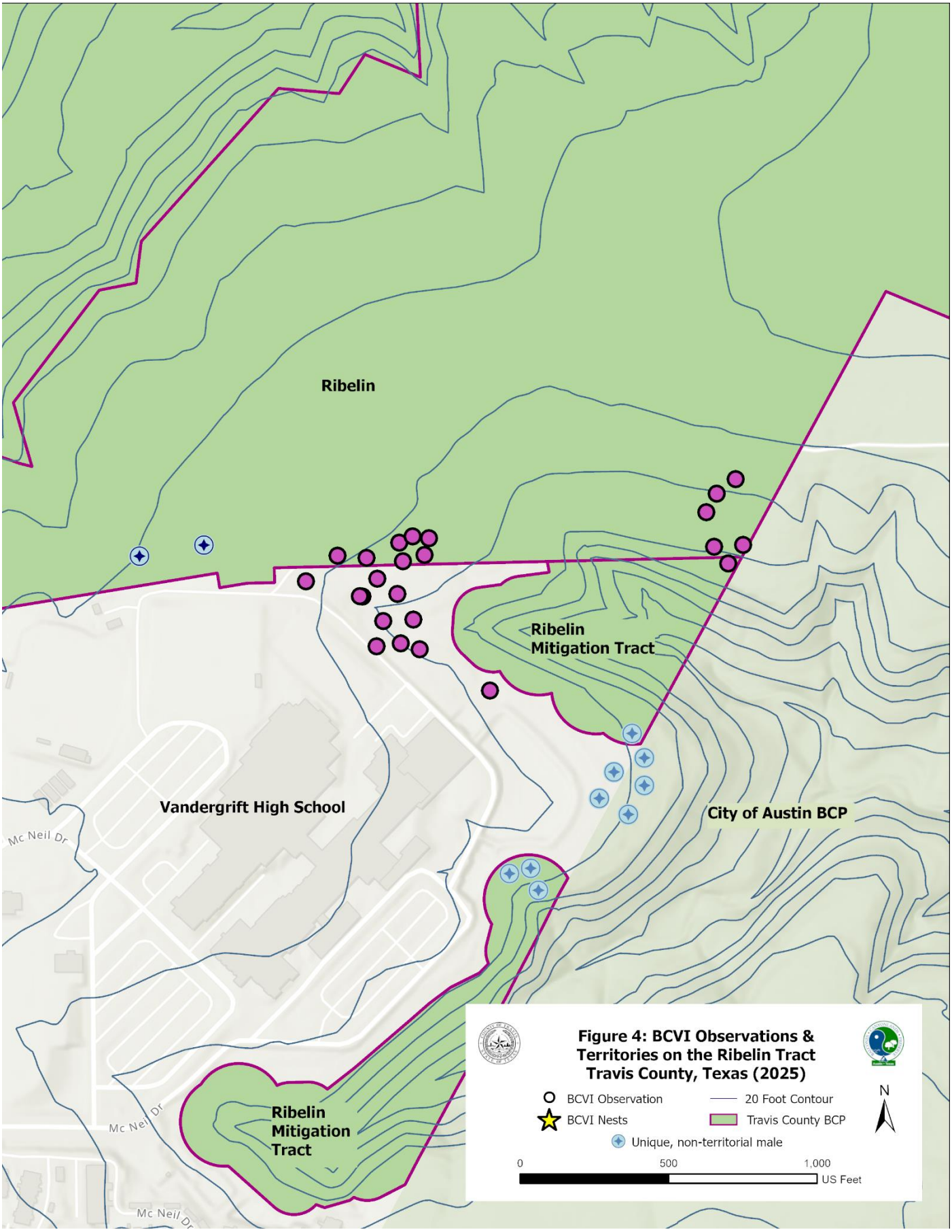
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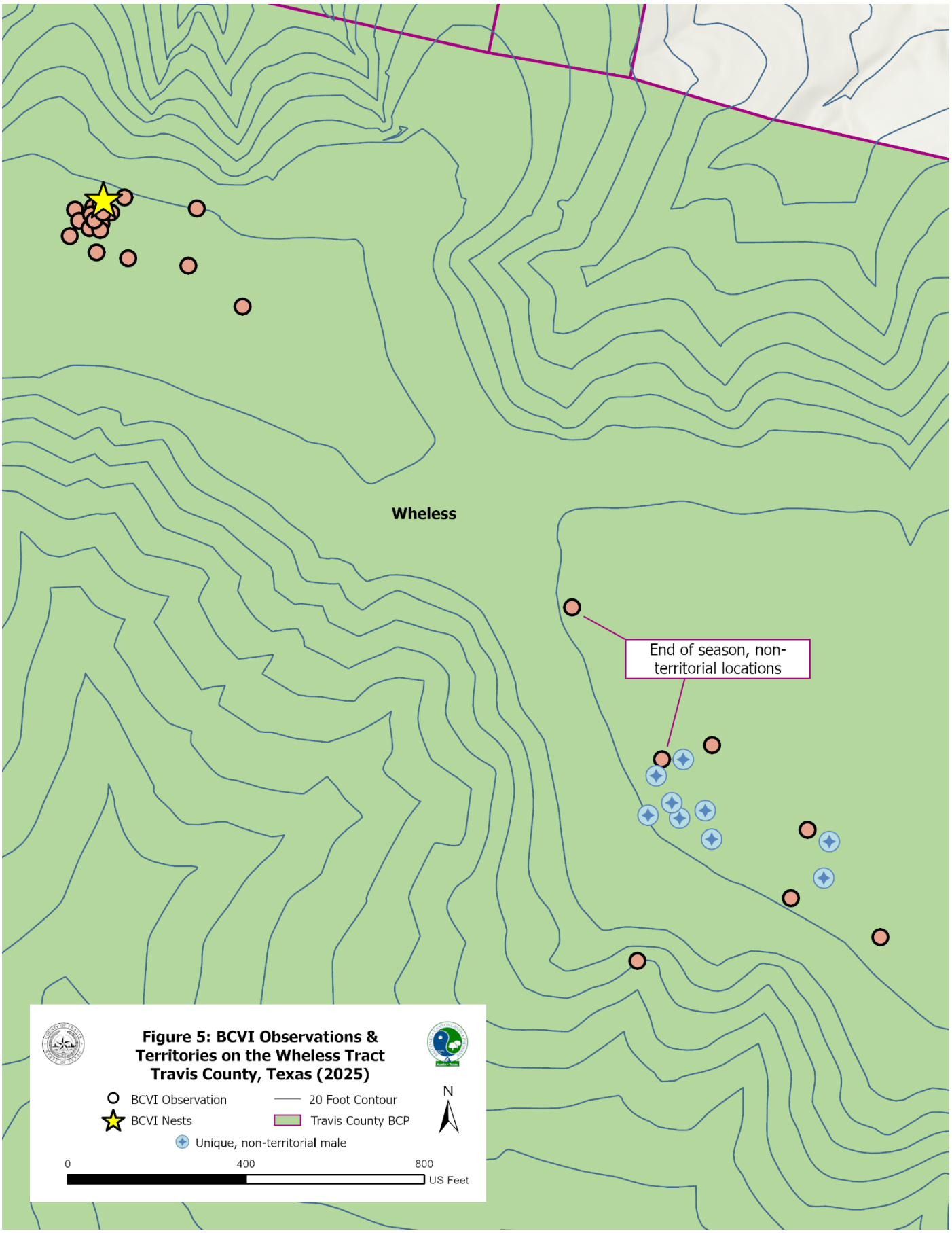
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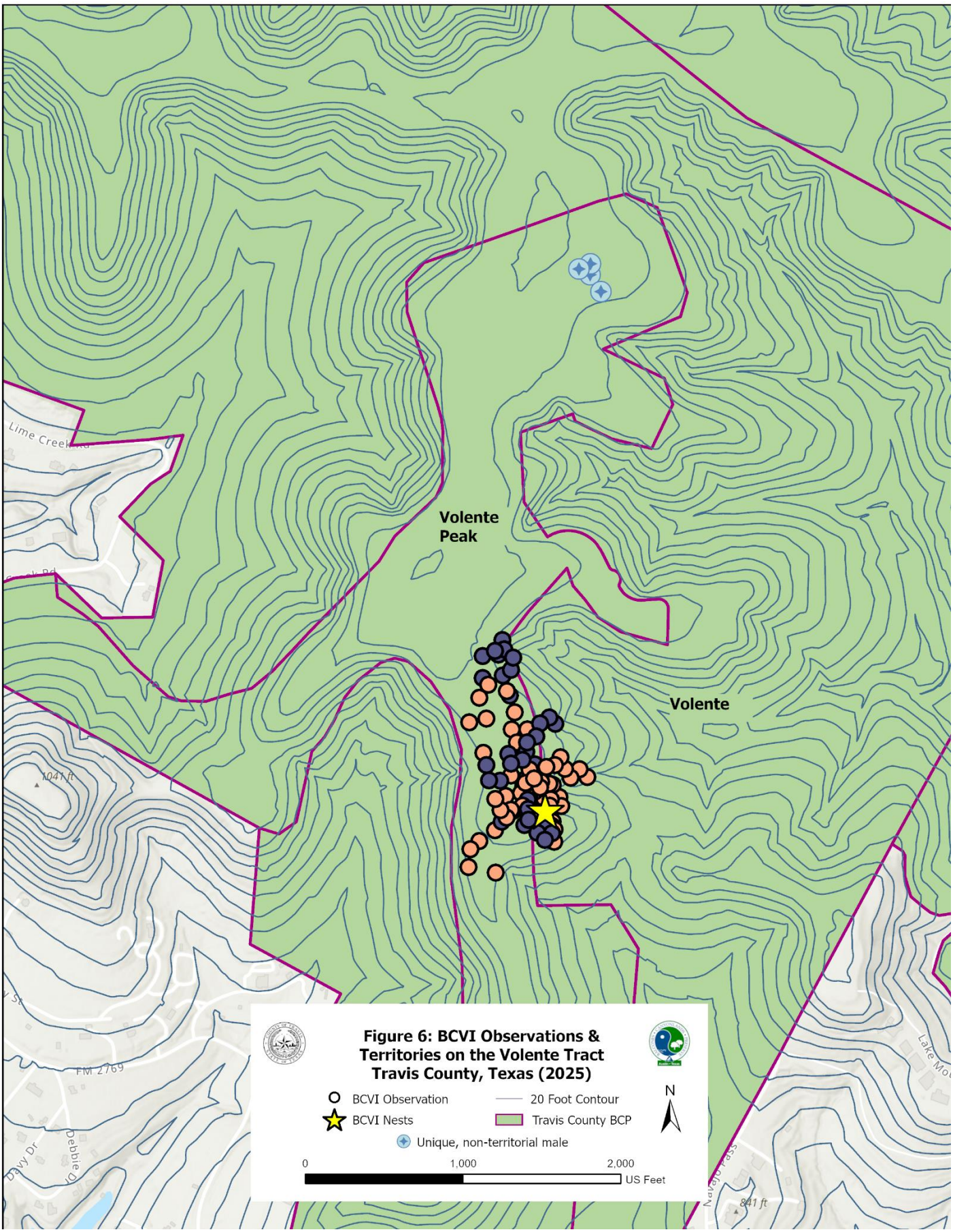

New Life
Bunten
Territorial Shift
Nootsie
Vireo Ridge
Vista Point
FM 2769
Bee Creek
Bernell Pkwy
Figure 1: BCVI Observations & Territories on the Jollyville Unit Travis County, Texas (2025)
BCVI Observation
BCVI Nests
20 Foot Contour
Travis County BCP
Unique, non-territorial male
N
0
1,000
2,000
US Feet

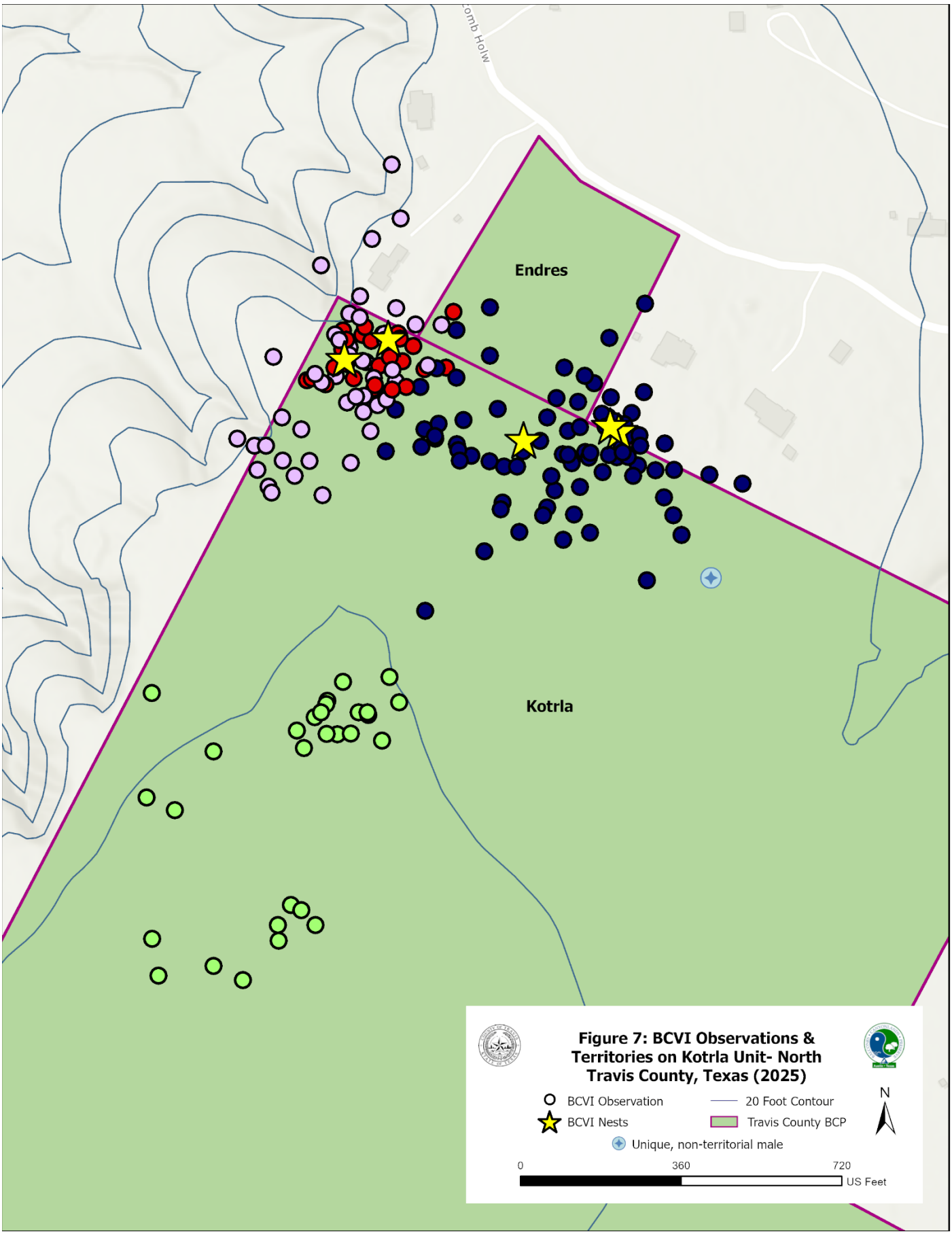

Grandview Hills
Cuevas
Blackmore
Cuevas East
Waterton Parke Cir
Wilson Parke Ave
Vista Parke Dr
Bullick Hollow Rd
N FM 620 Rd
1039 ft
983 ft
Figure 2: BCVI Observations & Territories on the Grandview Hills & Cuevas Tracts Travis County, Texas (2025)
BCVI Observation
BCVI Nests
20 Foot Contour
Travis County BCP
Unique, non-territorial male
N
0
900
1,800
US Feet

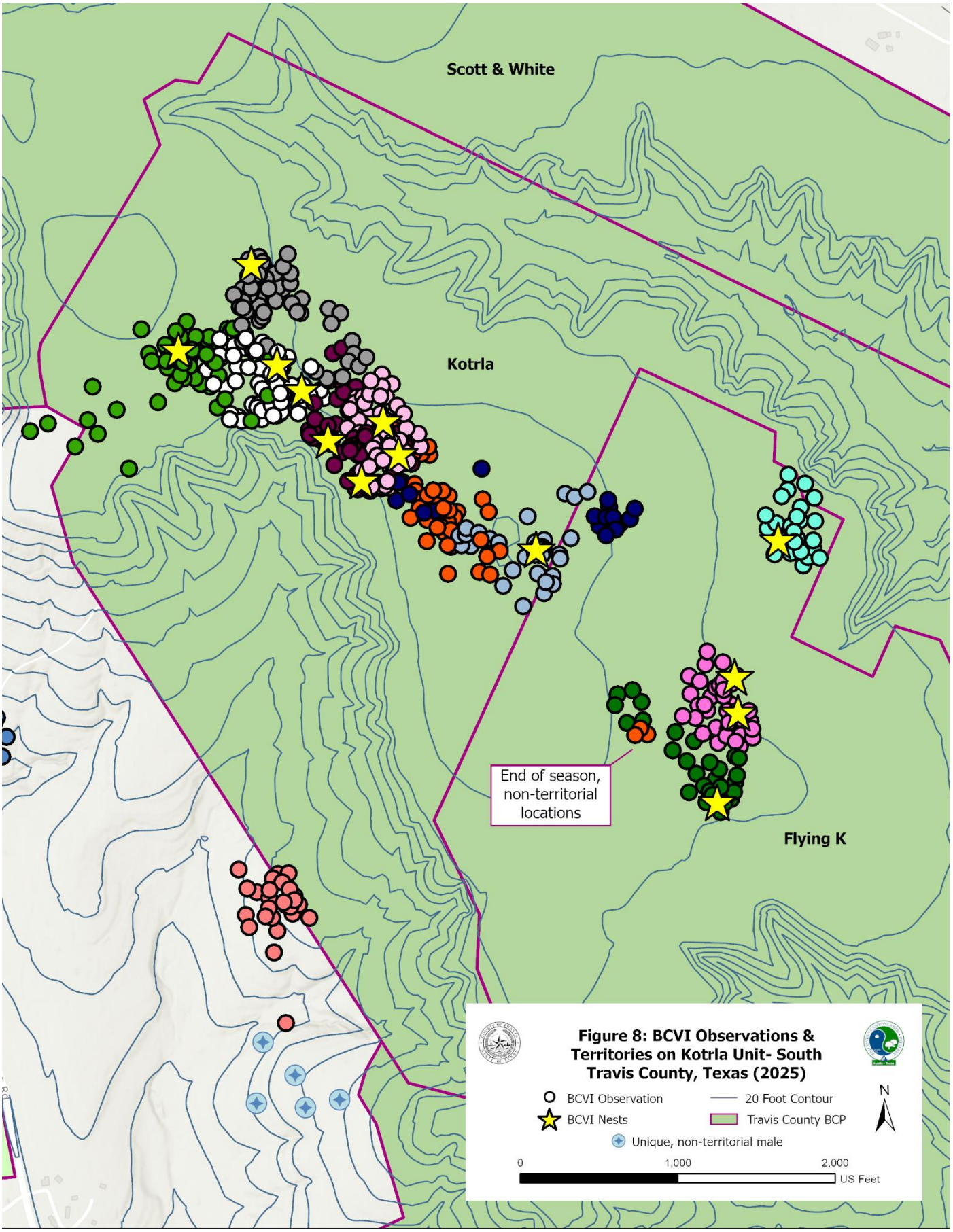

Lake Travis Bluffs
Lucas
4 unique non-territorial males observed in this area during this season
Ranch Road 620 N
Ranch Road 620 N
Steiner Ranch Blvd
Territorial Shift
Steiner Ranch
Steiner Ranch
Steiner Ranch Blvd
1005 ft
Figure 3: BCVI Observations & Territories on the Steiner Ranch & Lucas Tracts Travis County, Texas (2025)
BCVI Observation
BCVI Nests
20 Foot Contour
Travis County BCP
Unique, non-territorial male
N
0
900
1,800
US Feet

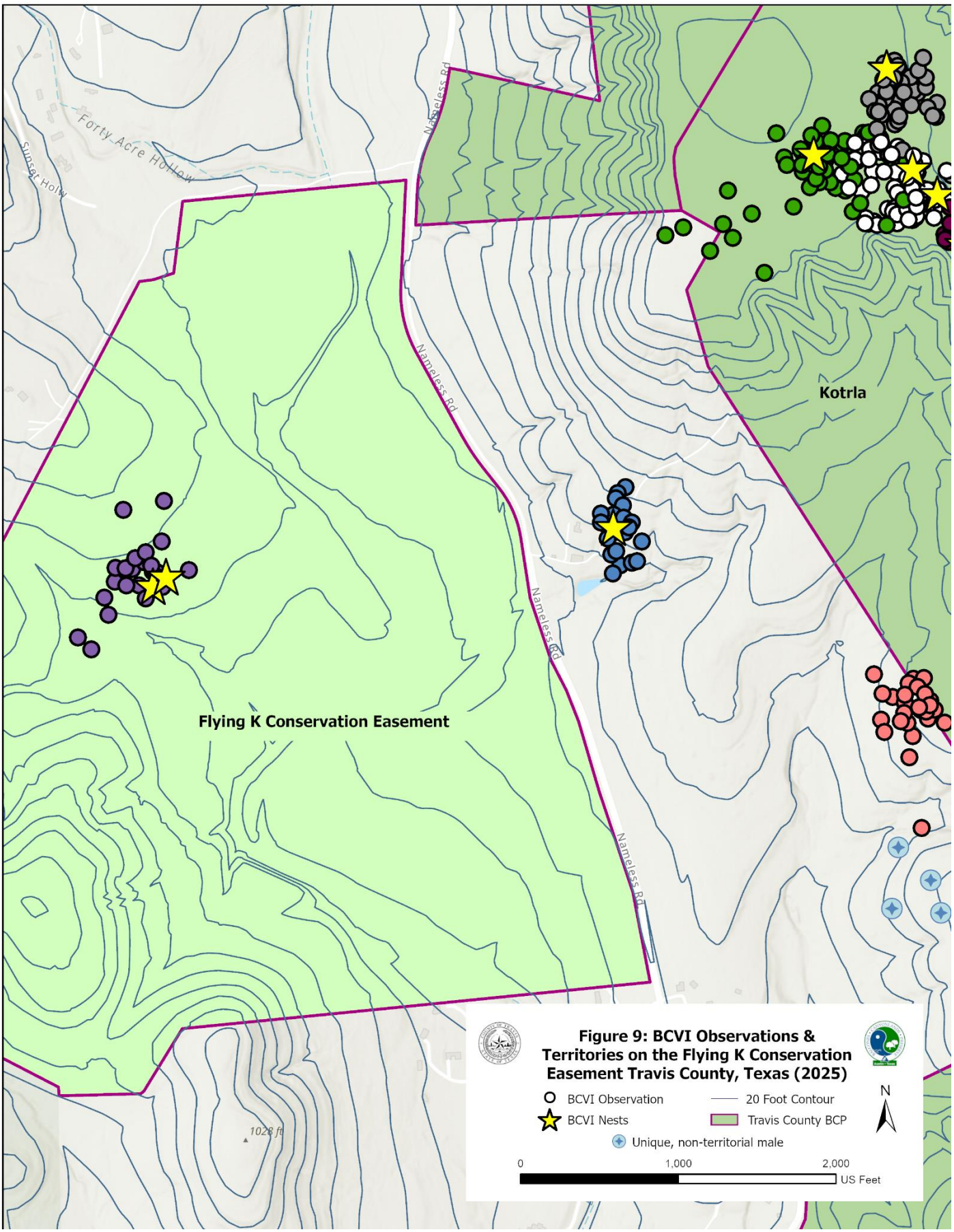

Ribelin
Ribelin
Mitigation Tract
Vandergrift High School
City of Austin BCP
Mc Neil Dr
Mc Neil Dr
Ribelin
Mitigation
Tract
Mc Neil Dr
Figure 4: BCVI Observations &
Territories on the Ribelin Tract
Travis County, Texas (2025)
BCVI Observation
BCVI Nests
20 Foot Contour
Travis County BCP
Unique, non-territorial male
N
0
500
1,000
US Feet

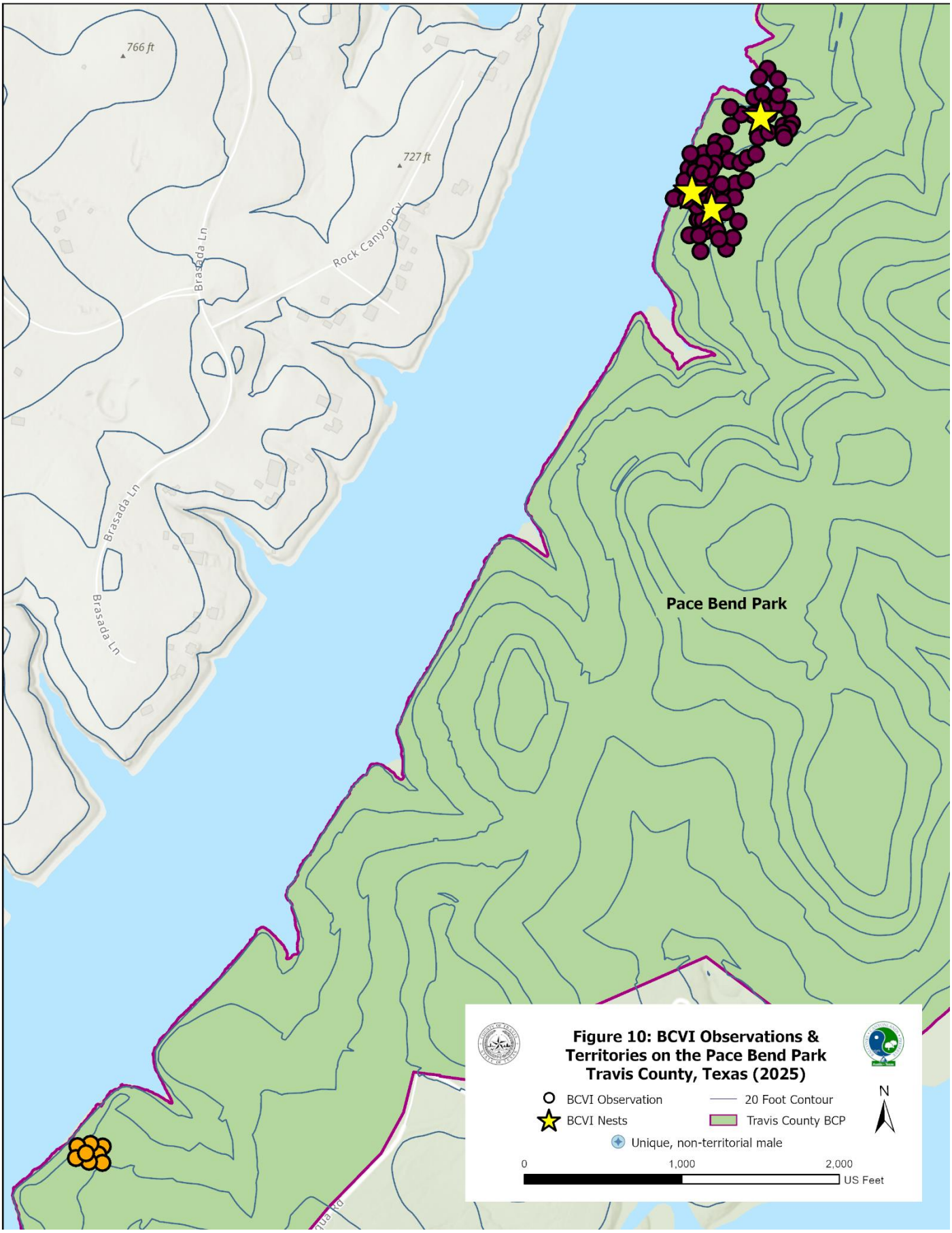

Wheless
End of season, non-territorial locations
Figure 5: BCVI Observations & Territories on the Wheless Tract Travis County, Texas (2025)
BCVI Observation
BCVI Nests
20 Foot Contour
Travis County BCP
Unique, non-territorial male
N
0
400
800
US Feet

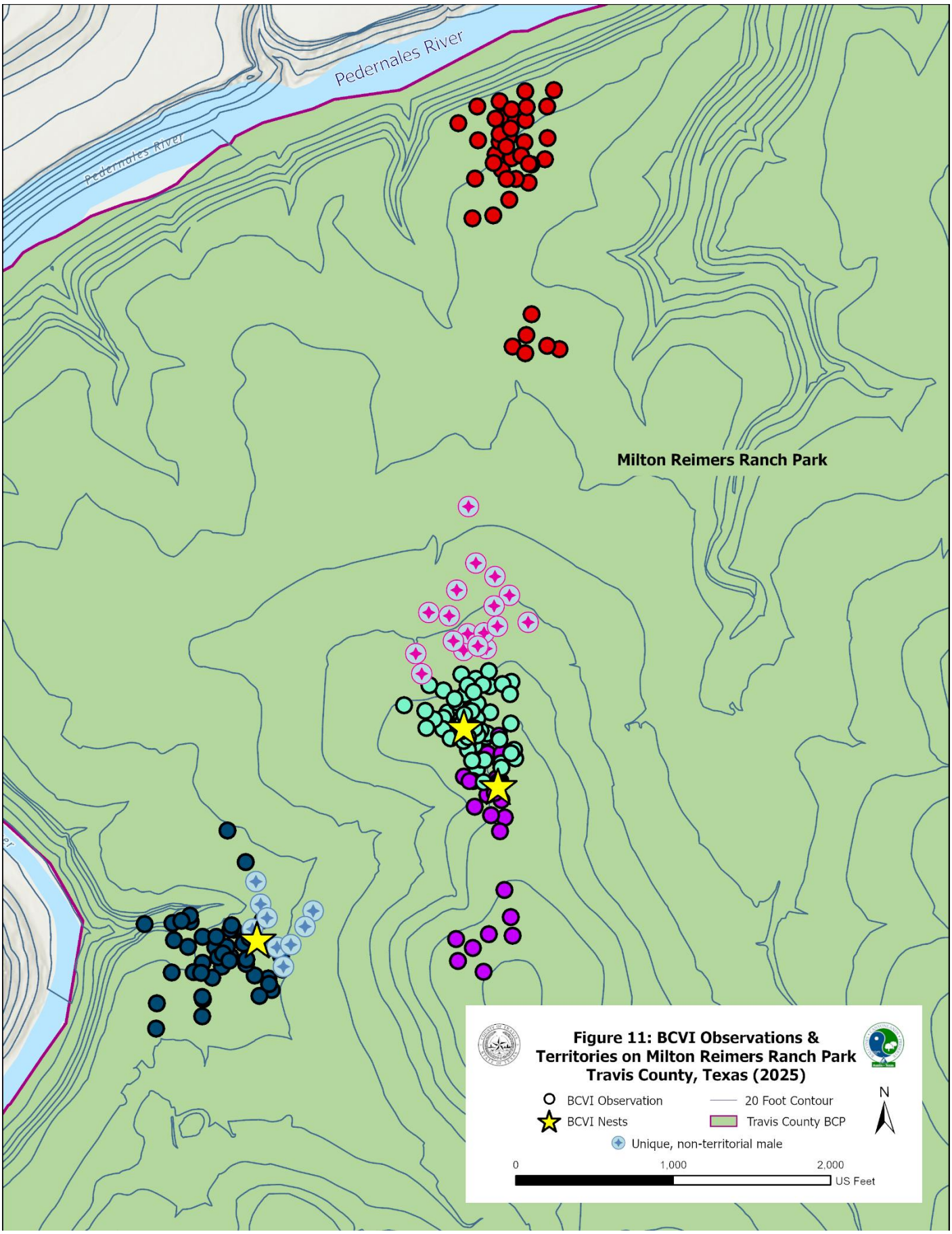

Volente Peak
Volente
Lime Creek Rd
1041 ft
FM 2769
841 ft
Figure 6: BCVI Observations & Territories on the Volente Tract Travis County, Texas (2025)
BCVI Observation
BCVI Nests
20 Foot Contour
Travis County BCP
Unique, non-territorial male
N
0
1,000
2,000
US Feet


Endres
Kotrla
Figure 7: BCVI Observations & Territories on Kotrla Unit- North Travis County, Texas (2025)
BCVI Observation
BCVI Nests
20 Foot Contour
Travis County BCP
Unique, non-territorial male
N
0
360
720
US Feet


Scott & White
Kotrla
Flying K
End of season, non-territorial locations
Figure 8: BCVI Observations & Territories on Kotrla Unit- South Travis County, Texas (2025)
BCVI Observation
BCVI Nests
20 Foot Contour
Travis County BCP
Unique, non-territorial male
N
0
1,000
2,000
US Feet


Forty Acre Hollow
Sunset Holw
Nameless Rd
Nameless Rd
Nameless Rd
Nameless Rd
Kotrla
Flying K Conservation Easement
1028 ft
Figure 9: BCVI Observations & Territories on the Flying K Conservation Easement Travis County, Texas (2025)
BCVI Observation
BCVI Nests
20 Foot Contour
Travis County BCP
Unique, non-territorial male
N
0
1,000
2,000
US Feet


766 ft
727 ft
Brasada Ln
Rock Canyon Cv
Brasada Ln
Brasada Ln
Pace Bend Park
Figure 10: BCVI Observations & Territories on the Pace Bend Park Travis County, Texas (2025)
BCVI Observation
BCVI Nests
20 Foot Contour
Travis County BCP
Unique, non-territorial male
N
0
1,000
2,000
US Feet


Pedernales River
Pedernales River
Milton Reimers Ranch Park
Figure 11: BCVI Observations & Territories on Milton Reimers Ranch Park Travis County, Texas (2025)
BCVI Observation
BCVI Nests
20 Foot Contour
Travis County BCP
Unique, non-territorial male
N
0
1,000
2,000
US Feet

Appendix. 2025 Black-capped vireo nest characteristics

Nest ID	Substrate	Primary Substrate height (~m)	Additional Concealments	Nest height (m)	Distance from stem (m)	Distance from foliar edge (m)	Orientation (degrees)	Nest Fate/ Comments
TikTok_01	Shin oak (*Quercus sinuata)*	6	Ashe juniper (*Juniperus ashei*) Evergreen sumac (*Rhus virens*) Texas ash (*Fraxinus texensis*)	0.79	0.77	0.13	112	Successful; 3 HYs fledged
MystMachine_01	Shin oak	6	Ashe juniper	1.39	0.89	0.24	280	Successful; 4 HYs fledged
MystMachine_02	Shin oak	5	Ashe juniper	1.14	0.75	0.2	39	Failed, depredated
RBoggs_01	Evergreen sumac	5.5	Ashe juniper Live oak (*Quercus fusiformis*)	1.35	1.28	0.35	238	Failed, depredated
RBoggs_02	Shin oak	6	Ashe juniper	1.62	0.87	0.31	215	Failed, abandoned/ parasitized
RBoggs_03	Texas persimmon (*Diospyros texana*)	3	Live oak	1.05	1.07	0.34	200	Failed, depredated/ parasitized
RGP_01	Wafer ash (*Ptelea trifoliata*)	2	Evergreen sumac Shin oak	0.88	0.4	0.36	325	Failed, depredated
RGP_02	Live oak	6	Ashe juniper	1.77	0.43	0.19	162	Failed, depredated
Swiper_01	Shin oak	4	Agarita (*Mahonia trifoliolata)*	0.75	1.35	0.13	350	Failed, depredated
Swiper_02	Shin oak	4	Ashe juniper	1.15	0.79	0.15	96	Failed, depredated
MacNCheese_01	Texas persimmon	5	Ashe juniper	0.8	0.77	0.28	224	Failed, depredated/ parasitized
VR02_01	Shin oak	5.5	Ashe juniper	0.84	0.41	0.28	160	Failed, depredated
VR02_02	Texas persimmon	6	Ashe juniper Live oak	1.41	0.69	0.21	93	Failed, depredated/ abandoned
ChCheeto_01	Texas persimmon	4	Shin oak	0.8	0.62	0.11	22	Failed, abandoned

Nest ID	Substrate	Primary Substrate height (~m)	Additional Concealments	Nest height (m)	Distance from stem (m)	Distance from foliar edge (m)	Orientation (degrees)	Nest Fate/ Comments
ChCheeto_02	Shin oak	6.5	Flameleaf sumac (*Rhus lanceolata)*	0.76	0.8	0.29	221	Failed, depredated
ChCheeto_03	Texas persimmon	6	Flameleaf sumac Live oak	1.19	0.5	0.19	243	Failed, depredated/ abandoned/ parasitized
ChCheeto_04	Texas persimmon	8	Ashe juniper Elbowbush (*Forestiera pubescens*) Cedar elm (*Ulmus crassifolia)*	1.29	0.64	0.15	9	Successful; 4 HYs fledged
Mask_01	Shin oak	3.5	Ashe juniper	1.22	0.36	0.37	40	Successful; 3 HYs fledged
Mask_02	Shin oak	6	Ashe juniper	1.27	1.07	0.2	356	Failed, depredated
Spongebob_01	Shin oak	3	None	1.09	0.84	0.2	30	Failed, depredated
Spongebob_02	Shin oak	4.5	Ashe juniper	1.39	0.13	0.22	280	Successful; 4 HYs fledged
Rango_01	Shin oak	3.5	Texas persimmon	0.55	0.38	0.17	2	Successful; 4 HYs fledged
Bronco_01	Mexican buckeye (*Ungnadia speciosa*)	4	Shin oak	0.89	1.03	0.25	3	Failed, abandoned/ parasitized
Leonardo_01	Shin oak	4	Evergreen sumac Ashe juniper	0.76	1.16	0.32	302	Failed, abandoned/ parasitized
Leonardo_02	Shin oak	6	Ashe juniper	1.26	0.58	0.33	134	Failed, depredated
Leonardo_03	Shin oak	3.5	Ashe juniper Snake apple (*Ibervillea lindheimera)*	0.74	0.23	0.15	69	Successful; 3 HYs fledged
DenaliBuffer_01	Evergreen sumac	3	Live oak Ashe juniper	0.65	0.57	0.46	20	Failed, depredated/ parasitized
DenaliBuffer_02	Live oak	6.5	Ashe juniper	1.46	1.02	0.57	64	Failed, abandoned/ parasitized

Nest ID	Substrate	Primary Substrate height (~m)	Additional Concealments	Nest height (m)	Distance from stem (m)	Distance from foliar edge (m)	Orientation (degrees)	Nest Fate/ Comments
Aquaman_01	Hackberry	8	Ashe juniper Agarita Texas persimmon	1.13	0.4	0.28	330	Failed, depredated
Donatello_01	Texas ash	6	Cedar elm Greenbriar Live oak	0.95	0.12	0.34	244	Failed, depredated
Donatello_02	Shin oak	2.5	Ashe juniper Gum bumelia (*Sideroxylon lanuginosum*)	0.76	0.93	0.23	20	Failed, abandoned
FrLoops_01	Shin oak	1.5	None	0.59	0.24	0.26	18	Successful; 3 HYs fledged
FrLoops_02	Texas red bud	2	Flameleaf sumac	0.535	0.61	0.14	359	Failed, depredated
InvaderZim_01	Shin oak	2.5	Flameleaf sumac	0.65	0.41	0.13	352	Failed, depredated
InvaderZim_02	Shin oak	3.5	Texas persimmon	0.51	0.52	0.33	150	Failed, abandoned
Halloween_01	Texas persimmon	2.5	Texas ash Elbowbush	1.11	0.13	0.24	6	Successful; 3 HYs fledged
Yoda_01	Texas ash	3	Shin oak Ashe juniper	0.73	0.66	0.31	272	Failed, depredated
Peacock_01	Texas persimmon	6	Texas ash Ashe juniper Shin oak	0.57	0.33	0.34	140	Failed, depredated/ parasitized
Peacock_02	Shin oak	6.5	Ashe juniper Green ash	1.07	0.78	0.1	358	Successful; 2 HYs fledged
Peacock_03	Shin oak	3.5	Texas persimmon Ashe juniper	1.06	0.56	0.18	83	Successful; 2 HYs fledged
Firewheel_01	Shin oak	3	Ashe juniper	0.99	1.53	0.23	136	Successful; 1 HY fledge/ partial depredation/ parasitized
Mewtwo_01	Shin oak	4	Texas ash Ashe Juniper	0.85	0.6	0.22	44	Successsful; 1 HY fledged

Nest ID	Substrate	Primary Substrate height (~m)	Additional Concealments	Nest height (m)	Distance from stem (m)	Distance from foliar edge (m)	Orientation (degrees)	Nest Fate/ Comments
FFlinstone_01	Ashe juniper	4	Texas persimmon Flameleaf sumac	1.12	0.15	0.27	178	Successful; 4 HYs fledged
Earth_01	Live oak	4	Ashe juniper	0.72	0.85	0.13	255	Successful ; 2 HYs fledged
BurgKing_01	Texas persimmon	4	Live oak Ashe Juniper	0.73	0.57	0.17	72	Failed, depredated
BurgKing_02	Shin oak	5.5	Ashe juniper Texas persimmon	0.91	0.73	0.26	85	Failed, storm damage
Egg_01	Texas persimmon	8	Ashe juniper	1.16	0.48	0.19	126	Failed, depredated
Huckleberry_01	Shin oak	7	Ashe juniper	0.83	0.64	0.26	290	Successful; 3 HYs fledged
Peeps_01	Mountain laurel (*Dermatophyllum secundiflorum*)	6	Texas oak (*Quercus buckleyi*) Ashe juniper	0.84	0.26	0.17	238	Failed, depredated
Peeps_02	Texas oak	15	Texas ash	1.22	0.67	0.27	167	Successful/ depredated; 1 HY fledged
Shrek_01	Texas ash	4	Shin Oak Grapevine (*Vitis* sp.)	0.86	0.32	0.21	242	Failed, depredated
Shrek_02	Texas ash	6	Texas ash	2.04	0.6	0.22	237	Failed, depredated/ parasitized
Shrek_03	Shin oak	6	None	1.17	0.73	0.19	239	Successful; 2 HYs fledged
Shredder_01	Texas ash	5	Shin oak Greenbriar (*Smilax rofundifolia*)	1.16	0.4	0.12	301	Successful/ depredated and parasitized; 2 HYs fledged
Shredder_02	Texas ash	8	Live oak	1.89	0.94	0.16	140	Successful; 2 HYs fledged
M_langelo_01	Texas persimmon	6	None	1.02	0.81	0.14	110	Successful; 4 HYs fledged
RRUB_01	Live oak	4.5	Gum bumelia Texas persimmon	0.82	1.04	0.2	24	Successful; 4 HYs fledged

Nest ID	Substrate	Primary Substrate height (~m)	Additional Concealments	Nest height (m)	Distance from stem (m)	Distance from foliar edge (m)	Orientation (degrees)	Nest Fate/ Comments
Joker_01	Texas persimmon	3.5	Live Oak Hackberry (*Celtis occidnttalis*)	0.82	0.58	0.26	114	Failed, depredated/ parasitized
Waldo_01	Evergreen sumac	4	Kidneywood (*Eysenhardtia texana*)	0.53	0.8	0.31	89	Failed, depredated
Waldo_02	Shin oak	5	Ashe juniper Kidneywood	0.59	0.25	0.26	270	Successful; 3 HYs fledged
UBStbucks_01	Shin oak	5	Ashe juniper Pink minosa (*Mimosa borealia*) Carolina snailseed (*Cocculus sacrolinus)*	0.25	1.21	0.36	330	Failed, depredated
Keylime_01	Texas persimmon	1.5	Shin oak	0.56	0.64	0.17	52	Successful; 2 HYs fledged
Steakhouse_01	Carolina buckthorn (*Frangula caroliniana*)	6	Poison ivy (*Toxicodendron radicans*) Live oak	1.14	0.56	0.24	180	Successful; 2 HYs fledged
RonaldMcDonald_01	Shin oak	3.5	Silk Tassel (*Garrya wrightii*)	0.81	0.56	0.17	210	Failed, abandoned pre lay
RonaldMcDonald_02	Texas oak	2.5	Shin oak	1	1.05	0.35	29	Failed, abandoned
VR04_01	Live oak	7	Ashe juniper Catclaw (*Acacia roemeriana*)	1.27	0.62	0.19	148	Successful/ partial depredated; 3 HYs fledged
Elliot_01	Ashe juniper	7	Elbowbush Live oak	1.03	0.77	0.14	300	Failed depredated
Raphael_01	Texas persimmon	6.5	Ashe juniper Kidneywood (*Eysenhardtia texana*)	0.84	0.57	0.33	282	Failed, abandoned
Raphael_02	Texas persimmon	4	None	0.9	0.92	0.21	162	Failed, depredated

Nest ID	Substrate	Primary Substrate height (~m)	Additional Concealments	Nest height (m)	Distance from stem (m)	Distance from foliar edge (m)	Orientation (degrees)	Nest Fate/ Comments
Raphael_03	Texas persimmon	6	Ashe juniper	1.05	0.79	0.24	306	Failed, abandoned
Raphael_04	Texas persimmon	3.5	Ashe juniper	1.46	0.88	0,20	160	Successful; 2 HYs fledged
BartStarr_01	Gum bumelia	4	Brasil (*Condalia hookeri*) Kidneywood	0.64	0.51	0.32	342	Failed, depredated/ parasitized
BartStarr_02	Live oak	5.5	Brasil Ashe juniper	1.9	0.86	0.18	350	Failed, depredated/ parasitized
BartStarr_03	Live oak	6	Agarita Texas persimmon	1.15	0.3	0.28	280	Successful; 2 Hys fledged, parasitized
VOUB_01	Texas red bud (*Cercis canadensis* var. *texensis*)	12	Grapevine Texas persimmon Texas oak	0.98	0.68	0.2	50	Successful; 4 HYs fledged
Superman_01	Shin oak	5	Ashe juniper	1.7	0.82	0.21	176	Successful; 3 HYs fledged
PinkPanther_01	Texas ash	4.5	Texas persimmon Ashe juniper	4.5	0.25	0.2	346	Successful; 3 HYs fledged
Thing_01	Texas red bud	7.5	Cedar elm	1.32	1.88	0.29	243	Failed, depredated/ abandoned
Thing_02	Texas red bud	4	Flameleaf sumac Greenbriar	1.21	0.83	0.21	150	Failed, depredated