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Cover Figure: Rose-throated Becard. Photo Dania Sanchez.

Frontispiece. Members of a Flock of at Least 24 Red Crossbills at the Terrace Cemetery in Post, Texas. Photo credit Jason Leifester

BULLETIN OF THE

TEXAS ORNITHOLOGICAL SOCIETY

TEXAS STATEWIDE SUMMARY OF RED CROSSBILL (*LOXIA CURVIROSTRA*) RECORDS FROM 2017 THROUGH JUNE 2024

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ABSTRACT.—The Red Crossbill (*Loxia curvirostra*) occurs in Texas as a rare resident in the Guadalupe and Davis Mountains of the Trans-Pecos ecoregion. Otherwise it occurs only as an irruptive visitor primarily during the fall, winter and spring months in the northern two-thirds of the state. Researchers have identified eleven distinctive Red Crossbill forms in North America based on the structure of their flight calls. Each of these "call types" occupies a core range in North America. Red Crossbills depend on various conifer seeds as a primary food source, and during years of poor seed production can be driven out of their core range in search of food. This is when Red Crossbills may enter Texas in numbers. We summarized Red Crossbill reports throughout Texas from 2017 through June 2024. This time period includes three incursions where their numbers spiked. Most Red Crossbill reports (99.2 %) were obtained from online eBird checklists. A statewide total of 963 reports from 224 locations across 62 counties was obtained. Seven of the ten Gould ecoregions of Texas reported Red Crossbills. The Trans-Pecos ecoregion had the most locations (48.6%) followed by the High Plains (20.5%). Red Crossbill call type was confirmed for 87 (9%) of the 963 reports. Call types 1 through 5 were identified with the most common being type 2. Various conifer cone seeds accounted for 75.9% of foraging.

INTRODUCTION

The Red Crossbill (*Loxia curvirostra*) is a Holarctic seed-eating finch with a high degree of vocal variation of flight calls. The complex biology and wanderings of the species made attempts to delineate subspecies difficult, especially since the species, due to its vocal variation of flight calls, nomadic behaviors, and at times overlapping ranges, does not really fit the definition of subspecies, which are usually defined occurring allopatrically. Groth (1993b) summarizes efforts to do so. Rather than assigning populations to subspecies, researchers began to identify Red Crossbills based on the structure of their flight calls (Groth 1993b). In North America, eleven distinctive forms have been identified based primarily on flight call and to a lesser extent bill morphology (Groth 1993b, Irwin 2010, Young and Spahr 2017, Young et al. 2024). Bill depth and palate structure differ among the forms and correspond to the species of conifer seed typically foraged upon (Benkman 1993, 2003; Groth 1993b). Different call types may represent cryptic species with vocal differences great enough to provide the basis for reproductive isolation (Groth 1993b). Multiple Red Crossbill forms may nest in the same area simultaneously while maintaining call type cohesion, providing further evidence of reproductive isolation from one another (Groth 1993a, Smith and Benkman 2007). Cassia Crossbill (*Loxia sinesciuris*) is the first call type

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(formerly type 9) in North America to be formally recognized as a distinct species (Benkman et al. 2009, Benkman and Porter 2018). It is a year-round resident in the South Hills and Albion Mountains in southern Idaho. Eleven call types remain in the Red Crossbill complex of North America with the recent description of type 12 (Young et al. 2024).

Red Crossbill breeding and movements are erratic and appear to be dependent on conifer seed crops (Reinikainen 1937, Bock and Lepthien 1976, Benkman 1990). During times of poor seed production within their core North American range, crossbills may wander widely in search of food. Past irruptive movements have reached into the northern two-thirds of Texas (Lockwood and Freeman 2014). Schaefer (1998) reported ten first-county records for Red Crossbill in the Texas Piney Woods ecoregion during a significant invasion in 1996-1997. Another Texas invasion occurred during the winter of 2011-2012 with crossbills reaching as far east as Kaufman County in the Blackland Prairie ecoregion (Lockwood and Freeman 2014).

Here we present a Texas statewide summary of a major Red Crossbill invasion that began in October 2017 and lasted well into May 2018. Fewer, but regular, sightings continued through August 2022. This was followed by two consecutive incursions from October 2022 through May 2023 and September 2023 through May 2024.

METHODS

We obtained all Texas Red Crossbill reports submitted to eBird for the years 2017 through June 2024. Additionally, a handful of reports were submitted by observers outside of eBird. The number of reports at a given location was highly variable. Thus, we summarized Red Crossbill "locations" rather than "reports".

Ten vegetational ecoregions within Texas have been delineated by Gould et al. (1960) and later modified by the Texas Parks and Wildlife Department (Fig. 1). We determined the number of Red Crossbill locations and the number of confirmed call types reported for each ecoregion. When multiple recordings were submitted for the same location during the same time frame (eg. same incursion), each confirmed call type for that location was counted only once. Call types confirmed at the same location, but during different time frames, were counted again for each time frame. All submitted sound recordings of Red Crossbill flight calls were confirmed by experts from the Finch Research Network.

We summarized all reports of Red Crossbill foraging observations. Only written descriptions or photographs of direct foraging observations were counted. If multiple eBird lists contained similar foraging observations from the same location, day, and time, then they were considered to be the same observation and counted only once. If similar foraging observations were reported at the same location and day, but without overlap in the time of observation, then they were considered independent observations, and both were counted. We combined observations of foraging on species of the genera *Thuja* (arborvitae) and *Cupressus* (cypress) due to a few instances of suspected plant identification error by observers.

RESULTS

Nearly all Red Crossbill reports (99.2%) contributing to this summary were obtained from online eBird checklists. A statewide total of 963 reports from 224 locations across 62 counties are included. The monthly number of locations where Red Crossbills were reported throughout Texas from 2017 through June 2024 is shown in Figure 2. Observers reported Red Crossbills in seven of the ten vegetational ecoregions of Texas (Fig. 3). From 2017 through June 2024, the Trans-Pecos ecoregion produced the greatest number of locations (48.6%) followed by the High Plains (20.5%), Cross Timbers (10.7%), Edwards Plateau (9.4%), Piney Woods (4.5%), Rolling Plains (4.5%), and Blackland Prairie (1.8%). The number of Red Crossbill locations during the three incursions are summarized for each ecoregion in Table 1.

Red Crossbill call type was confirmed for only 87 (9%) of the 963 reports. Eight of those reports included recordings with multiple call types, resulting in a total of 96 confirmations among five different call types. After subtracting multiple recordings of the same call type from the same location and time frame, 54 confirmations remain among five different call types (Table 2). The most common was type 2 (74.1%) followed by type 4 (16.7%), type 1 (3.7%), type 5 (3.7%), and type 3 (1.8%).

We gathered 124 foraging observations among the 963 Red Crossbill reports (Table 3). Cone seeds of various pine (*Pinus*) species accounted for 44.4% of observations.

Figure 1. Gould Ecoregions of Texas.

DISCUSSION

Three incursions of Red Crossbills in Texas (October 2017 through May 2018, October 2022 through May 2023, and September 2023 through May 2024) are presumably the result of poor conifer seed crops in the western United States and Canada. The core ranges of Red Crossbill types 2 through 5 are in the Rocky Mountains and Pacific Northwest. Not surprisingly, the Trans-Pecos and High Plains ecoregions, located in western and northwestern Texas, produced the greatest number of Red Crossbill location records. This has also been the pattern with past incursions. The October 2017 to May 2018 incursion was widespread in Texas with locations coming from seven of the ten vegetational ecoregions. The October 2022 to May 2023 and September 2023 to May 2024 incursions were less widespread, seemingly missing the Piney Woods ecoregion, with the vast majority of locations coming from the Trans-Pecos. We know of no positive Red Crossbill sightings from the Gulf Prairies, South Texas Plains, and Post Oak Savanah ecoregions during 2017 through June 2024 though they undoubtedly occurred at least in the Post Oak Savanah due to its proximity to ecoregions with numerous records. It is unknown if the relatively few Red Crossbill location records from June 2018 through September 2022 pertain to

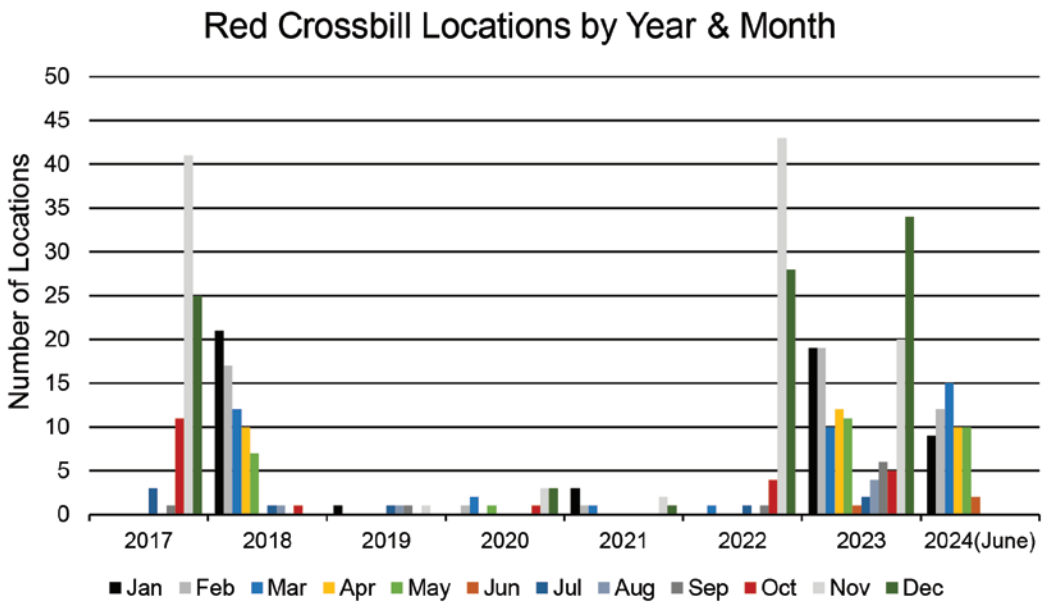

Figure 2. Number of Red Crossbill locations by year and month from 2017 through June 2024.

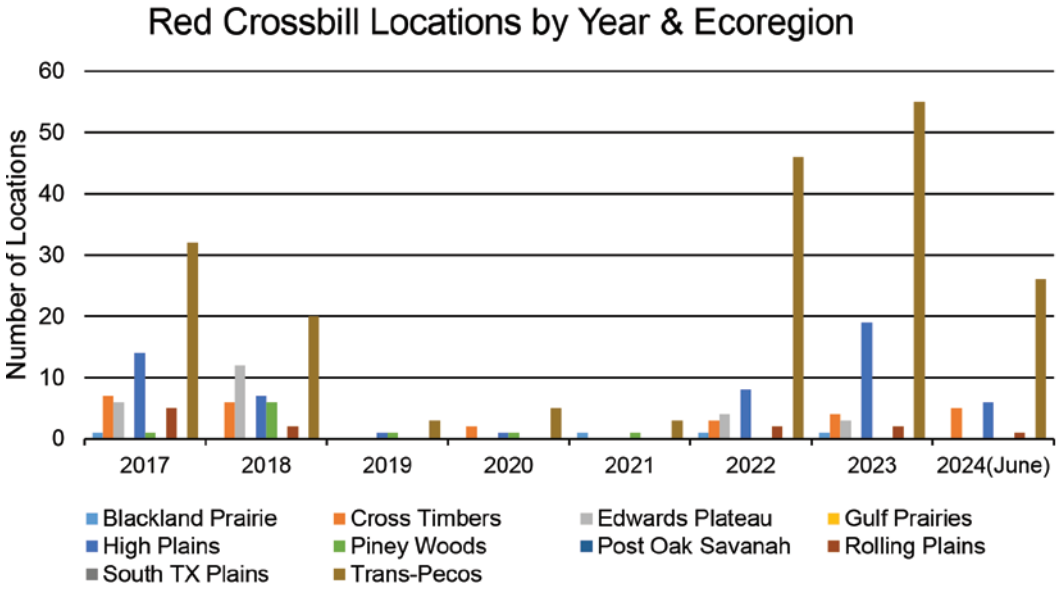

Figure 3. Number of Red Crossbill locations by year in each vegetational ecoregion from 2017 through June 2024.

lingering birds from the 2017-2018 incursion, or if they represent a low-level influx of new birds, or perhaps both. Red Crossbill is a rare resident in the Guadalupe and Davis Mountains of the Trans-Pecos (Lockwood and Freeman 2014). Therefore, some records from those mountain ranges may pertain to resident birds. During field work for the 1987-1992 Texas Breeding Bird Atlas project, observers found evidence of confirmed breeding for Red Crossbills in the Guadalupe Mountains and probable breeding in the Davis Mountains (Tweit 2005).

Flight call types 2 through 5 were confirmed

Table 1. Red Crossbill locations by ecoregion during three incursions.

	Number of Locations (% of Total) for each Incursion		
Ecoregion	Oct. 2017 – May 2018	Oct. 2022 – May 2023	Sept. 2023 – May 2024
Trans Pecos	39 (38.6%)	63 (70%)	53 (66.2%)
High Plains	20 (19.8%)	13 (14.5%)	18 (22.5%)
Cross Timbers	12 (11.9%)	6 (6.7%)	6 (7.5%)
Edwards Plateau	15 (14.9%)	4 (4.4%)	2 (2.5%)
Rolling Plains	7 (6.9%)	2 (2.2%)	1 (1.3%)
Piney Woods	7 (6.9%)	0	0
Blackland Prairie	1 (1%)	2 (2.2%)	0
Gulf Prairies	0	0	0
Post Oak Savanah	0	0	0
South Texas Plains	0	0	0
TOTALS	101(100%)	90 (100%)	80 (100%)

Table 2. Number of individual Red Crossbill flight call types confirmed from 2017 through June 2024 within the listed Texas ecoregions.

Ecoregion	Flight Call Type	# IndividualsAB
Blackland Prairie	2	1
Cross Timbers	1	1
Cross Timbers	2	2
Cross Timbers	4	1
Edwards Plateau	2	3
High Plains	2	6
High Plains	3	1
High Plains	4	2
High Plains	5	1
Piney Woods	1	1
Piney Woods	2	2
Piney Woods	4	2
Piney Woods	5	1
Rolling Plains	2	1
Rolling Plains	4	1
Trans-Pecos	2	25
Trans-Pecos	4	3

[A]Recordings of flight call types were confirmed by the Finch Research Network.
[B]Each call type was counted only once when multiple recordings were submitted for a given location and time frame.

during the 2017-2018 incursion. The state's two confirmed type 5 calls came from the High Plains (Lubbock County) and Piney Woods (Houston County), and the single confirmed type 3 came from the High Plains (Lubbock County) during this time. The 2022-2023 incursion was less diverse with only type 2 having been confirmed. Interestingly, the state's first record for call type 1 of the Appalachian

region came from the Piney Woods (Montgomery County) during February 2021. Types 2 and 4 were also confirmed at the same site during that time. During the 2023-2024 incursion, most confirmed calls were type 2 followed by fewer type 4, and the second state record for call type 1 was obtained in the Cross Timbers (Denton County). Observers are gradually realizing the importance of obtaining recordings of Red Crossbill flight calls when possible. Prior to 2017, only a few type 2 calls were submitted to eBird for Texas. Call types 1, and 3 through 5, were confirmed in the state for the first time during the 2017 to June 2024 time period. Still, few Red Crossbill vocal recordings were submitted to eBird during that time relative to the 963 sightings. We encourage observers to obtain and submit Red Crossbill recordings regardless of the quality. This will aid in determining movement patterns of the various call types within Texas.

Red Crossbills usually foraged on the cone seeds of planted pines and ornamental arborvitae and cypress trees in the far western and northwestern parts of the state, often located in residential areas, parks, and cemeteries. Cone seeds of native pines, primarily loblolly pine (*Pinus taeda*), were used in the eastern portion of the state. Red Crossbills also foraged on pecan nuts in the Edwards Plateau and High Plains, and on baldcypress cones in the Edwards Plateau. There is a single report from the Edwards Plateau (Kendall County) of crossbills foraging in ball moss (*Tillandsia recurvata*) growing on baldcypress limbs. It is unknown if they were feeding directly on the ball moss or something else found within the moss clumps. We have five reports in the month of March, two in the Cross Timbers and three in the Trans-Pecos, of crossbills feeding on leaf buds of unidentified hardwood trees. A similar foraging event was reported from the High Plains during late January. A seventh report came from the Cross Timbers (Mills County) during early April where an observer reported crossbills foraging on cedar elm (*Ulmus crassifolia*) leaf buds. There is one early April report of crossbills feeding on the flowers of an unidentified ash (*Fraxinus*) species in the Trans-Pecos (El Paso County), and a single late December report of feeding on the dry seed heads of a species of sunflower in the genus *Helianthus* in the High Plains (Hansford County). Two reports of Red Crossbills eating Texas madrone (*Arbutus xalapensis*) fruits came from the area of the Pine Springs Visitors Center, Guadalupe Mountains National Park, Culberson County. Both reports were from the month of November, one in 2017 and one in 2022.

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We thank all who submitted reports to eBird for their contribution to a better understanding of Red

Table 3. Red Crossbill foraging observations in Texas from 2017 through June 2024.

Foraging Substrata	# Observations	% Total Observations
Unidentified Pine (*Pinus*) Species Cones	38	30.9
Arborvitae (Thuja) and Cypress (*Cupressus*) Cones	32	26.0
Loblolly Pine (*Pinus taeda*) Cones	14	11.4
Pecan Tree (*Carya illinoinensis*) Nuts	14	11.4
Baldcypress (*Taxidium distichum*) Cones	6	4.9
Unidentified Hardwoods (Leaf Buds)	5	4.1
Sunflower Seeds (Feeders)	5	4.1
Ponderosa Pine (*Pinus ponderosa*) Cones	2	1.6
Texas Madrone (*Arbutus xalapensis*) Fruit	2	1.6
Cedar Elm (*Ulmus crassifolia*) Leaf Buds	1	0.8
Shortleaf Pine (*Pinus echinata*) Cones	1	0.8
Douglas-fir (*Pseudotsuga menziesii*) Cones	1	0.8
Unidentified Ash Tree Species (Flowers)	1	0.8
Helianthus sp. (Dry Seed Heads)	1	0.8
TOTALS	124	100

Crossbill movements and behavior within Texas. Matthew Buckingham (USDI, Fish and Wildlife Service) and Howard Williamson (retired USDA, Forest Service, Southern Research Station) assisted with plant identification from foraging photos submitted to eBird. We also thank Texas Parks and Wildlife Department for permission to use their Gould Ecoregions of Texas map. This paper was written and prepared in part by a U.S. Government employee on official time, and therefore it is in the public domain and not subject to copyright. This research was supported in part by the USDA Forest Service. The perspectives, findings, and conclusions in this publication are those of the authors and should not be construed to represent any official U.S. Department of Agriculture or U.S. Government determination or policy.

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SEQUENCES AND VARIATION OF FLIGHT FEATHER MOLT OF WHITE-TAILED HAWKS (*GERANOAETUS ALBICAUDATUS*) BY AGE CLASS IN SOUTH TEXAS

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ABSTRACT—White-tailed Hawks (*Geranoaetus albicaudatus*) exhibit delayed maturation, and as a result, have four age-related plumages: Juvenile, Basic II, Basic III, and Definitive Basic (Adult). Variation in the number of replaced primaries and secondaries during each of their annual molts has not been described previously. I captured 934 individuals for banding in south Texas from 2003 to 2020, primarily at harvested sugar cane fields, but also along roadsides. I took 452 photographs and made 156 molt diagrams of these hawks**.** Pyle (2008) discusses differences of the age-related plumages and summarizes molt, but I found no sexual difference in their annual flight feather molt. Hawks were sexed based on Discriminate Function (Clark and Hull 2024). Herein I describe differences in molt and show variation in the molt of their remiges and rectrices for each of their age and sex classes, as not all flight feathers are replaced annually.

KEY WORDS*: White-tailed Hawk*, Geranoaetus albicaudatus*, Flight feather molt variation, ageing by molt, banding*.

White-tailed Hawks (*Geranoaetus albicaudatus =Buteo albocaudatus*) are breeding residents in southeastern Texas; their breeding range extends from there to southern Argentina (Farquhar 2020). In Texas, they belong to the subspecies *G. a. hypospodius*, which extends southward throughout Central America; the other two subspecies occur in northern, *G. a. colonus*, and southern, *G. a. albicaudatus*, South America (Farquhar 2020). White-tailed Hawks exhibit delayed plumage maturation (Newton 1979) and, as a result have three predefinitive plumages before reaching Definitive Basic (adult) plumage: Juvenile, Basic II, and Basic III (Clark and Wheeler 1989, 2001). See Edelstam (1984) for a description of the annual flight feather molt in Accipitrid raptors. Detailed knowledge of the variation of retained flight feathers in the population is important and gives us a better understanding of the annual molt cycles in this species. Pyle (2008) discusses differences in these age-related plumages and summarizes molt, but I found no reports of studies of sexual differences in their annual flight feather molt. Herein I present molt data collected from 157 captured White-tailed Hawks in south Texas in winter from 2003 to 2020 and show the distinctive molt pattern in the remiges for each of the four age classes, a as well as some variation within older hawks. White-tailed Hawks can be accurately aged by the status of remige molt.

STUDY AREA

I captured White-tailed Hawks in the three southmost counties of Texas: Willacy, Hidalgo, and Cameron (Lat 26° Long -97°), primarily in recently harvested sugar cane fields. They are well-known to congregate in tens to hundreds at active prairie fires to prey upon fleeing small mammals (mostly rodents; Stevenson and Meitzen 1946, Tewes 1984). They are also attracted to sugar canes fields when these were burned prior to harvesting and later in larger number as the fields are harvested. This exposes plentiful numbers of rodents and other prey that had been burned or run over during the cane harvest. Other scavengers, especially Turkey Vultures (*Carthartes aura*) and Crested Caracaras (*Caracara cheriway*) arrive in the fields at this time, and White-tailed Hawks pirate the carrion from them and each other, as well as prey on live animals that are now exposed due to loss of cover.

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METHODS

From 2003 to 2020, I captured White-tailed Hawks for banding on Bal-chatri traps (Bloom et al. 2007), using lures consisting of domestic mice *Mus musculus*, House Sparrows *Passer domesticus*, gerbils *Gerbillis* sp., Rock Pigeons *Columba livia*, or domestic Ring-necked Turtle Doves (Barbary Doves) *Streptopilia risorii*. Almost all hawks were captured at harvested sugar cane fields, but some were captured along roadways, and a few were captured at a prairie fire. I used the molt and plumage terminology advocated by Clark and Pyle (2015) based on an earlier treatment by Humprey and Parkes (1959) that had been adapted by Howell et al. (2003). I took photos of a large sample (n = 452) of the hawks in hand from the front and back with one wing extended. I made molt diagrams of the remiges and rectrices of all hawks that had undergone flight feather molt. I recorded molt diagrams for a sample (n = 157) of hawks of each age class except juvenile, indicating, for each rectrix and remex, whether each feather was new (fresh and unworn), old (faded and worn) or growing, and whether each old feather was juvenile or not. I assigned age according to plumage (Wheeler and Clark 2001) and the status of molt (Clark 2004). Hawks were sexed using a discriminate function using wing chord, culmen, and hallux measurements and by some plumage traits and measurements (Clark and Hull *et al*. In press). For each age class, I recorded the variation in number and placement of replaced flight feathers. All fieldwork was conducted under the authorization of federal and state banding permits (Federal Bird Banding Permit no. 09289 and Texas Scientific Permit no. SPR-0702-226).

RESULTS

I captured and banded 934 (489 males, 445 females) White-tailed Hawks from 2002 until 2021, mainly in late autumn and winter (November-March). The number captured by sex of each age-class are shown in Table 1 (See S1 for raw data). Numbers captured by month of each age-class are shown in Table 2, most (903 of 934; 97%) were captured between November and March. The majority (863 of 934; 92%) hawks were captured in sugar canes fields after harvesting, some (60 of 934; 6%) were captured alongside roadways, and a few (11 of 934; 1%) were caught at a single prairie fire.

Molt.—The vast majority of White-tailed Hawks showed no active molt from November to February. I created 157 molt diagrams for 74 Basic II (38 males and 30 females), 30 Basic III (14 males and 16 females), and 53 adults (23 males and 30 females).

Juveniles.— Almost all juveniles in photographs taken from October to March (n = 184) showed no molt of the flight feathers (Fig. 1), except for a few cases of adventitiously replaced feathers.

Table 1. White-tailed Hawks captured and banded in south Texas by age and sex (n=934: 489 males, 445 females).

Age/Sex	Males	Females	Total
Juveniles	278	255	533
Basic II	104	77	181
Basic III	27	27	54
Adult	80	86	166
TOTAL	489	445	934

Table 2. Distribution of captures by age and month in south Texas.

	Month												
Age/	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL
Juvenile	114	70	39	6	0	2	0	0	1	3	124	174	533
Basic II	59	17	11	1	0	1	1	1	0	1	32	56	181
Basic III	34	4	2	0	0	0	0	0	1	0	6	8	54
Adult	78	20	7	2	0	0	3	2	3	3	9	39	166
TOTAL	285	111	59	9	0	3	4	3	5	7	171	277	934

Figure 1. Juvenile White-tailed Hawk captured for banding in south Texas. Remiges show no molt; all primaries and secondaries are the same color and uniform in coloration and wear. Usually show pale markings on side of head and white areas on underparts. Jan. 2017.

All but five juveniles showed preformative molt of body feathers (Pyle 2005a, Clark and Pyle 2015), but no other molt. Technically, they are thus in formative plumage (Farquhar 2020, Clark and Pyle 2015). Four females without formative feathers were captured on 4 February 2006, 23 December 2007, 28 December 2008, and 14 January 2010. One male without formative molt was captured on 23 December 2007. One female captured was in fresh juvenile plumage on 24 February 2008, indicating recently fledged. Five hawks captured in March and April of various years had begun the second prebasic molt, having replaced one or two inner primaries. All juveniles looked like the illustrations for this age class in Clark & Wheeler (2001) (Fig. 1).

Basic II.—Almost all second plumage hawks, as shown in photographs and molt diagrams, showed little or no active molt from October to March. Basic II plumage is characterized by one wave of primary molt progressing from P1 to variably P6, P7, P8, or P9, with P10 retained juvenile (Fig. 2). The number of primaries replaced on the right wing in the second prebasic molt is shown in Table 3 and varied from six to all 10. Only 11 of 83 (13%: 6 males and 5 females) hawks had replaced all 10 primaries. More than half (58%; 43 of 74) of these had completely molted all their secondaries, with 68% (26 of 38) of males doing so, compared to 47% (17 of 336) of females (Table 4). One male had retained five juvenile secondaries. Nine of 74 (14%) Basic II hawks showed asymmetry in primary molt: five of 38 (13%) males and eleven of 36 (31%) females. Sixteen of 74 (22%) Basic II hawks showed asymmetry in secondary molt: five of 38 (13%) males, and 11 of 36 (31%) females. Asymmetry in primary molt between wings was only just in one feather. Whereas asymmetry in secondary molt involved one or two feathers (Fig. 2).

Two (2%) of 104 White-tailed Hawks (64 males, 50 females) in Basic II plumage had retained two juvenile tail feathers (Fig. 3a). Thirty-five (34%) of these had molted all twelve rectrices one time (Fig. 3b). The other 67 (64%) hawks had replaced from one to five rectrices a second time. This unusual replacement of some rectrices a second time during

Figure 2. Basic II White-tailed Hawk, outer two primaries (P9-10) are old retained juvenile. Inner eight primaries are new. All secondaries are new. Variation in flight feathers replaced by sex are shown in Tables 3 and 4. Head is now all dark, and underparts show more extensive white, compared to juveniles. March 2016.

Table 3. Variation in number of primaries molted on the right wing by Basic II White-tailed Hawks during the 2nd pre-basic molt by sex (n=74: 38 males, 36 females). From six to 10 primaries are replaced.

Remiges	Number	Males	Females	Total
Primaries	All 10	6	4	10
	P1-9	16	13	29
	P1-8	11	13	24
	P1-7	3	6	9
	P1-6	2	0	2
TOTAL	38	36	74	

Table 4. Variation in the number of secondaries on the right wing molted by Basic II White-tailed Hawks during the 2nd pre-basic molt by sex (n=74; 38 males, 36 females). From zero to five secondaries are retained.

Secondaries Retained	Males	Females	Total
All 10 replaced	26	17	43
S4	1	9	10
S9	1	2	3
S8-9	1	1	2
S4, 8-9	1	2	3
S4, 8	4	3	7
S4, 9	3	1	4
S4, 7-9	0	1	1
S3-4, 7-10	1	0	1
TOTAL	38	36	74

Figure 3. Variation in rectrix molt of White-tailed Hawks during the second prebasic molt. 3a. All rectrices replaced once except for R5 pair, which are retained juvenile. Nov. 2016. 3b. All rectrices replaced once. Jan. 2010.

the second pre-basic molt is being reported separately (Clark in press). All Basic II hawks looked like the illustrations in Clark & Wheeler (2001) (Fig. 4).

Basic III. — Third plumage hawks are exemplified by having two waves of primary molt, with wave 1 to P10, which were always new, wave 2 from P1 to P5 or P6, and some older feathers from P5 to P9 (Fig. 4, Table 5), as well as plumage characters described in Clark and Wheeler (1989, 2001). Variation in the location of primaries not replaced in their third pre-basic molt is shown in Table 5. Ten of 30 (33%) Basic III hawks (5 of 14 males (39%), 5 of 16 females (31%)) showed asymmetrical primary molt, with one feather difference. All Basic III hawks looked like the illustrations in Clark & Wheeler (2001).

Figure 4. Basic III White-tailed Hawk. Two waves of primary molt (Stauffelmauser). Wave 1 at P9-10, wave 2 to P1-5, and old primaries at P7-8. Variation in the location of retained primaries by sex is shown in Table 6. All secondaries are new. Note slate head and dark throat. January 2017.

Table 5. Variation in the location of retained primaries of Basic III White-tailed Hawks on the right wing after the third prebasic molt by sex (n= 30: 14 males, 16 females). All retained primaries were between P6 and P9.

Retained primaries	Males	Females	Total
P9	3	2	5
P8	2	1	3
P7-9	3	2	5
P8-9	3	3	6
P6-8	0	3	3
P7-8	2	5	7
P6	1	0	1
Total	14	16	30

Figure 5. Adult White-tailed Hawk from south Texas. Four waves of primary molt. Wave 1 at P10, wave 2 at P 8, wave 3 at P6, and wave 4 at P4. Adults can show from two to four primary wave molts. Note gray head, white throat, and relatively unmarked underparts. Feb. 2018.

Definitive Basic (Adult). Adults usually show three waves of primary molt (Fig. 5), but 13 of 52 (25%) hawks (7 males and 6 females) showed only two waves, usually with P10 old (contra Basic III), and 2 (3%) showed four waves (2 male and 1 female) (Table 6). Molt patterns during the second, third, and definitive prebasic molts are thus typical of other large accipitrid raptors that undergo Staffelmauser (stepwise or wave molt) molting patterns (Clark 2004, Pyle 2005b), Earlier in the paper, that all adults looked like the illustrations in Clark & Wheeler (2001) (Fig. 5).

Sexual differences. I found no differences in the number of replaced feathers by sex for Basic II (Tables 3 and 4), Basic III (Table 5), and adult White-tailed Hawks (Table 6).

DISCUSSION

This is the first published study showing the progression of flight feather replacement by age

Table 6. Number of primary waves (Staufflemauser) of Adult White-tailed Hawks by sex (n=52: 23 males, 30 females). All showed from two to four waves.

Primary waves	Males	Females	Total
Two	7	6	13
Three	15	23	38
Four	1	1	2
Total	23	30	53

class in White-tailed Hawks, including the variation in number of flight feathers for each molt cycle from second prebasic to definitive basic. Most studies of this molt in Accipitrid raptors are based on small sample sizes (Table 1, Pyle 2005b). However, some studies, for example, Newton and Marquiss (1982) and Zuberogoitia et al. (2023), had sample sizes of more than 100. Pyle (2008) discusses differences of the age-related plumages and summarizes molt, but based on a small sample size.

Although the plumages of each age class of White-tailed Hawks are accurately described in Clark and Wheeler (2001), the stage of molt can corroborate this ageing. Most unusual was the second replacement of rectrices in many White-tailed Hawks during the second prebasic molt. This is reported elsewhere (Clark in press).

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SUPPLEMENTAL MATERIAL

Supplemental data file S1. Measurement data for the sample of 934 White-tailed Hawks banded.

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A GRAY HAWK'S RESPONSE TO WILDFIRE IN SANTA ANA NATIONAL WILDLIFE REFUGE

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ABSTRACT.—Disturbances, such as fire, play a significant role in shaping ecosystems worldwide, however anthropogenic pressures have modified environments and disturbance regimes, presenting unique challenges for wildlife. We investigated the response of a male Gray Hawk (*Buteo plagiatus*) to a wildfire event within its core territory in the Santa Ana National Wildlife Refuge in the Lower Rio Grande Valley of south Texas. Contrary to our expectations, the hawk remained within its home range throughout the fire and after the fire was extinguished, exhibiting resilience to an uncommon disturbance. Utilizing GPS tracking data, we analyzed the hawk's movements before, during, and after the wildfire, revealing minimal changes in home range size and distribution. Our findings highlight the importance of understanding species-specific responses to wildfires in increasingly altered ecosystems and underscore the need for further research to inform conservation strategies in the face of changing disturbance regimes and habitat dynamics.

Fire has shaped ecosystems around the world for millions of years, playing a crucial role in maintaining biodiversity and habitat structure (Bond and Keeley 2005). Rare and declining species, such as the Red-cockaded Woodpecker (*Leuconotopicus borealis*) and Kirtland's Warbler (*Setophaga kirtlandii*), have become dependent on regularly occurring fires to create and maintain their habitats (Kepler et al. 1996; Gilliam and Platt 1999; Lucash et al. 2022). Carnivorous raptors have even been documented exploiting fire events to capture prey more easily, a phenomenon coined "pyric-carnivory," and has been observed in species like the Swainson's Hawk (*Buteo swainsoni*; Hovick et al. 2017; Caven et al. 2023) and White-tailed Hawk (*Geranoaetus albicaudatus*; Stevenson and Meitzen 1946; Caven et al. 2023). Though fire can be beneficial, altering historical fire regimes can harm native wildlife. This is the case where invasive cheatgrass (*Bromus tectorum*) has increased fuel loads in the western United States, altering regional fire regimes and leading to the destruction of Greater Sage-Grouse (*Centrocercus urophasianus*) habitat (Kelly et al. 2020).

While many shrub species found within the South Texas Brushlands ecoregion exhibit fire-tolerant adaptations, non-cropland fire is modernly uncommon within the Lower Rio Grande Valley of Texas (Jahrsdoerfer and Leslie 1988). Little quantitative information exists about the historic prevalence of fire within the Lower Rio Grande Valley, however fire was common and used as a management tool by indigenous groups throughout the Gulf Coast Prairies region, sculpting a vegetation community described in the early 1800's as "alternate woodland and prairie" (Lehmann 1965, Stambaugh et al. 2014). The riparian corridor of the Lower Rio Grande Valley has experienced significant changes with the addition of dams and an increased demand for water with increasing

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anthropogenic development. Flood control structures have limited overbanking/flooding along the Rio Grande, nearly eliminating this disturbance process from the riparian corridor. Coupled with increasing temperatures from global climate change and increased fuel loads with invasive guinea grass (*Megathyrsus maximus*; Texas Invasives 2024), there is increased potential for wildfires (Ellis 2001).

On 05 September 2023 at approximately 1800, a wildfire ignited in the southeast portion of Santa Ana National Wildlife Refuge in the Lower Rio Grande Valley of Texas. The fire was entirely extinguished by 1200 on 18 September 2023 and burned an estimated 158.6 hectares. The wildfire, characterized by its relatively fast-moving nature, intensified notably in areas where the grass (primarily invasive guinea grass) was dense, resulting in even hotter temperatures. Some trees in these dense grass areas were consumed by the intense flames, though overall, apparent tree mortality was relatively minimal. The western portion of the burn area included the territory of a male Gray Hawk (*Buteo plagiatus*) equipped with a satellite transmitter as part of ongoing research in the Lower Rio Grande Valley of Texas (Fig. 1).

The Gray Hawk is a Species of Greatest Conservation Need in Texas, where it was listed as threatened in 1977 (J. Evans, personal communication). Given its threatened status, this rare event presented an opportunity to study the Gray Hawk's response to a wildfire within the core of its territory. We predicted the hawk would vacate the area during the fire and potentially shift its home range to avoid the affected area.

METHODS

The study was conducted at Santa Ana National Wildlife Refuge in Hidalgo County within the Lower Rio Grande Valley. This area features an elevation gradient from 8.5 to 114.6 meters (Texas Almanac 2019) and a mean annual precipitation of 572.9 mm (1895–2024; NOAA 2024). Mean temperatures range from 15.1 °C in January to 29.8 °C in July (NOAA 2024). The native vegetation includes mid-delta thorn forest and mid-valley riparian woodland, although land conversion has resulted in a significant loss of native vegetation

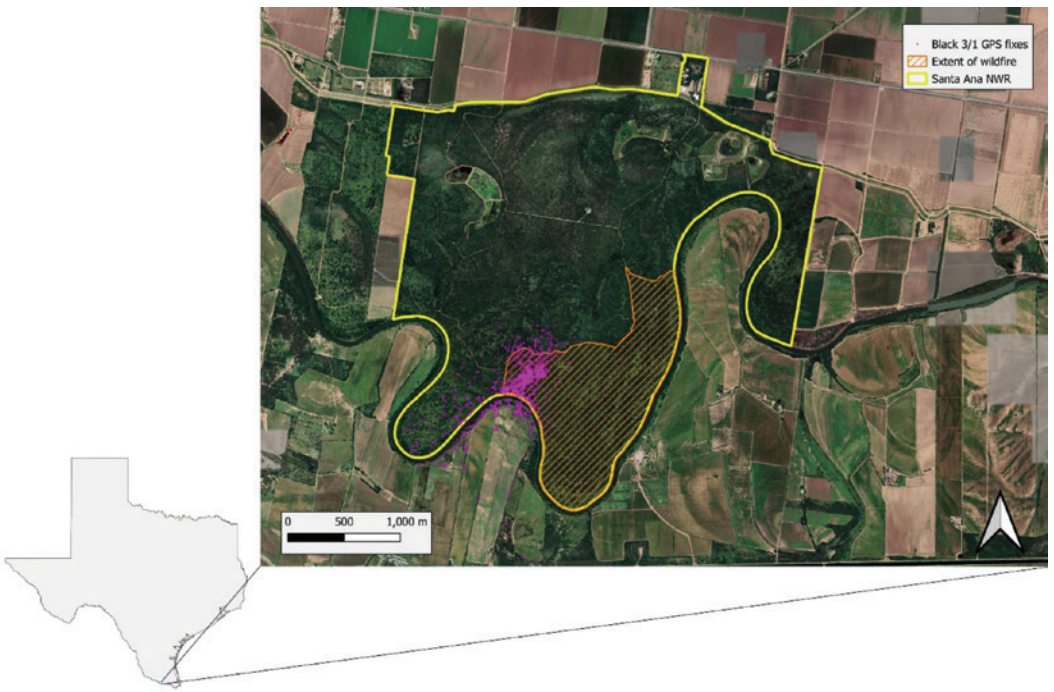

Figure 1. Map showing the study area of Santa Ana National Wildlife Refuge and its location in south Texas. The map displays GPS locations of an adult male Gray Hawk (*Buteo plagiatus*) and the extent of a wildfire that occurred within the hawk's home range.

(Jahrsdoerfer and Leslie 1988; Lombardi et al. 2020; Veals et al. 2022).

On 11 August 2020, we captured the male Gray Hawk using a bal-chatri trap with nooses made from 13.6 kg monofilament fishing line (Bub 1991). The hawk was banded with a US Geological Survey aluminum band and a black aluminum color band coded 3/1 (Acraft Sign & Nameplate Co. Ltd., Edmonton, Alberta, Canada). We attached a 10-g OrniTrack-10 solar-powered GPS-GSM 3G transmitter (Ornitela, UAB, Vilnius, Lithuania) using a backpack harness (Stewart and Millsap 2022). The transmitter recorded GPS locations at 30-minute intervals during the day when the battery charge was ≥75%, reducing the frequency as the battery level dropped.

We monitored the hawk's movements using the OrniTrack Control Panel (https://cpanel.

Glosendas.net/), and periodically downloaded and mapped the data using QGIS version 3.30.3 (QGIS.org 2023). Data were categorized into three periods: one month before the wildfire (1 August 2023 to 5 September 2023; n = 35 days), during the wildfire (2042 on 5 September 2023 to 1028 on 18 September 2023; n = 12.5 days), and after the wildfire (18 September 2023 to 23 October 2023; n = 35 days). Seasonal variation in movement patterns may also impact home range sizes, therefore we examined these same before and after time periods in 2022 for comparison.

To capture the extent of the hawk's movements in each of these periods, we created 95% utilization distributions using an autocorrelated kernel density estimator, along with 95% confidence intervals for these estimates (Fleming et al. 2015, Silva et al. 2021). GPS locations obtained at these intervals are autocorrelated, so an assumption of independence is not valid. The autocorrelated kernel density estimator accommodates autocorrelated data and small sample sizes (Silva et al. 2021). We conducted these analyses using the ctmm: Continuous-Time Movement Modeling package with R version 4.3.0 (R Core Team 2023) within the Rstudio integrated development environment (Posit Software 2023), and mapping using QGIS.

RESULTS

Throughout the wildfire, the Gray Hawk remained within its home range. The 95% confidence intervals for the home range during the fire overlapped with those from before and after the fire, though there was no overlap between the pre- and post-fire home range estimates. The 2022 home ranges during the same time periods were similar to those in 2023 (Table 1). The number of locations used to estimate home ranges varied, with the period during the wildfire including 20-30% fewer locations than the other two periods.

DISCUSSION

Our prediction that the Gray Hawk would vacate its territory during the fire was not supported. There was significant overlap between the three 95% utilization distributions (Fig. 2), and the

Table 1. The resulting home ranges sizes in hectares using an autocorrelated kernel density estimator for one adult male Gray Hawk (*Buteo plagiatus*). Home ranges were calculated prior to, during, and after a wildfire that occurred in fall of 2023 in Santa Ana National Wildlife Refuge in south Texas and calculated during the same time period in 2022 for comparison.

	Gray Hawk home range size (hectares)		
Time period	Low	Estimated	High
Before the wildfire (35 days, n = 115)	71.7	91.1	112.7
During the wildfire (12.5 days, n = 35)	96.7	144.8	202.3
After the wildfire (35 days, n = 151)	119.7	143.5	169.4
1 Aug to 5 Sep, 2022 (35 days, n = 216)	70.8	84.1.	98.6
18 Sep to 23 Oct, 2022 (35 days, n = 143)	101.4	124.9	150.9

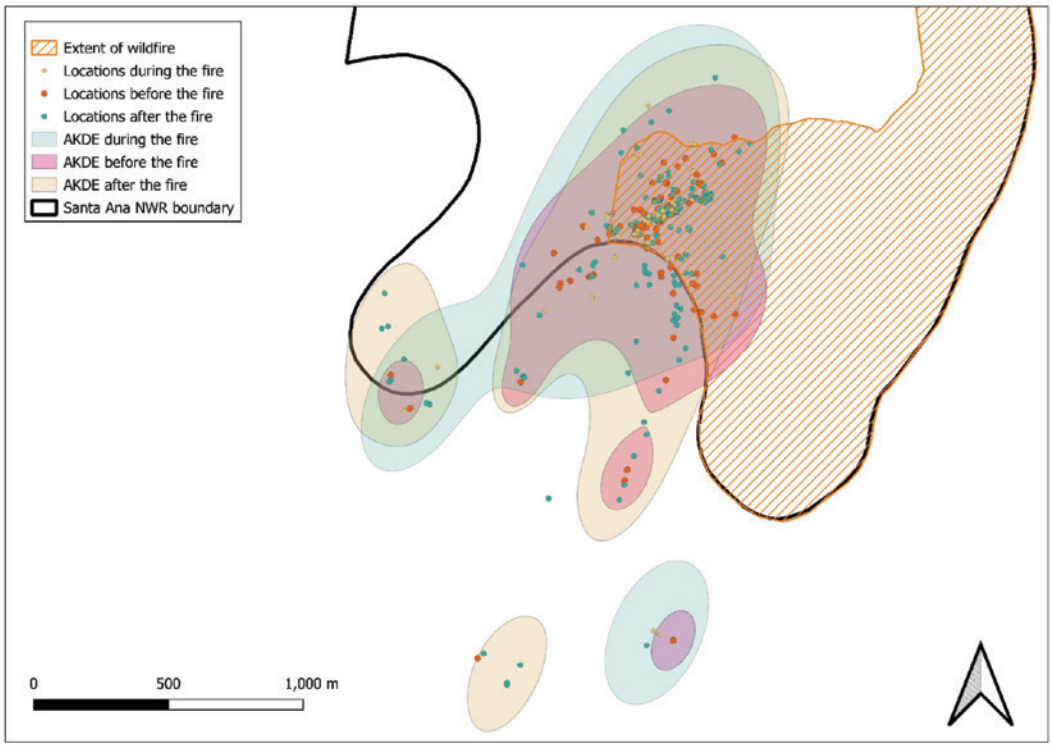

Figure 2. Map showing the GPS fixes and home range estimates for one adult male Gray Hawk (*Buteo plagiatus*) prior to, during, and after a wildfire that occurred in fall of 2023 in Santa Ana National Wildlife Refuge in south Texas.

hawk remained within the core of its home range throughout and after the wildfire, indicating significant resilience. Interestingly, the during-fire 95% utilization distribution was the largest at 144.8 hectares, despite being based on only 35 locations. This larger utilization distribution is likely due to the smaller number of locations used, where only one or two points were excluded to create the 95% utilization distribution. This could result in an overestimation of the area used during the fire due to the reduced sample size.

The estimated home range after the fire increased by 57.5% compared to before the fire. Similarly, in 2022, the estimated home ranges during the same time periods increased by 48.5%. Given the comparable increases in home range size between these periods, we believe the changes are more likely associated with their phenology during the post-breeding period, when young have likely dispersed (Stewart et al. 2023), rather than being a result of the 2023 wildfire reducing prey availability or altering habitat in the area.

The minimal damage to trees in the burned area likely contributed to the hawk's stability. The fire possibly drove small animals like rodents and lizards from cover, leading to a potential increase in prey that the hawk took advantage of. These factors together may have allowed the hawk to maintain its home range without significant disruption. However, invasive guinea grass increases fuel loads and should be managed to avoid the risk of an increase in fire frequency and severity (Ellis 2001).

In conclusion, our study provides valuable insights into the response of a Gray Hawk to a wildfire within its core territory, shedding light on the dynamics between avian species and fire in a non-fire-dependent ecosystem. Contrary to our initial prediction, the hawk exhibited resilience, remaining within its established home range throughout and after the wildfire. Our findings underscore the importance of understanding species-specific responses to disturbances such as wildfires, especially in altered communities where novel disturbances may become more common.

Further research is needed to explore the ecological consequences of wildfires in such regions, which will be crucial for informing conservation and management strategies in the context of changing fire regimes and habitat dynamics.

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HISTORY OF THE CAROLINA PARAKEET IN TEXAS

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ABSTRACT.—The Carolina Parakeet (*Conuropsis carolinensis*, Fig. 1), the only psittacid native to the United States, formerly ranged from eastern Nebraska, Iowa, southeastern Wisconsin, Ohio, Pennsylvania, and New Jersey south to southern Oklahoma and the Gulf States including Texas (A.O.U. 1998). The western subspecies occurring throughout the Mississippi drainage and Texas was commonly referred to as the 'Louisiana' Parakeet (*Conuropsis carolinensis ludovicianu*s).

The Carolina Parakeet was most often seen in small flocks in the tops of large trees bordering rivers and swamps. Their flight was swift and undulating and they called frequently while in flight. Cavities in trees were used both for roosting and nesting. The fruits and seeds of various plants were eaten but the seeds of the cocklebur were their favorite. They were also fond of salt and frequently visited salt outcrops and saline springs. This paper brings together all known observations and records of the Carolina Parakeet in Texas, as well as providing comments on those individuals who gathered and provided the information.

FIRST REPORT OF THE CAROLINA PARAKEET

A flock of brilliantly colored Carolina Parakeets could hardly have been overlooked by even inexperienced observers. However, the journals and travel accounts of the Spanish missionaries and explorers reveal no mention of parakeets, although other less conspicuous species are often noted (Casto 2002). The Spaniards would certainly have been acquainted with parrots having seen them in Mexico and Central America. It therefore remains unknown why they failed to mention the parakeets which were in east Texas.

The first known mention of the Carolina Parakeet in Texas was made by Théodore Marie Parvie, a Frenchman who visited Nacogdoches in February 1830 (Klier 2000). Pavie's recollection of this visit contains the following observations:

> *"The territory around Nacogdoches is pleasant; the riverbanks are covered with lovely magnolias on which small parrots like to perch. Sometimes there are such a lot of them that the branches droop to the ground, and they [the parrots] are literally more numerous than the leaves. These small parrots can be approached rather easily and, once their wings are clipped, it is easy to tame them. One finds them in almost all of the Mexican homes" (Klier 2000, pp. 205-206).*

The fact that parakeets were tamed and kept in "almost all" Mexican homes suggests that the relationship of the local citizens and the parakeets was amicable and longstanding. This positive relationship changed over the next decade with Kennedy (1841) describing the species as "gay, clamorous, and pilfering" undoubtedly referring to the habit of Carolina Parakeets feeding on fruit and field crops (Bent 1940).

Figure 1. Illustration of the Carolina Parakeet by Chester Albert Reed on the cover of the May 1923 issue of The Oologist.

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REPORTS FROM 1836-1897

Several of the records of the Carolina Parakeet prior to 1850 state only that the species occurred in the State of Texas, e.g., Holley 1836, Edward 1836, Kennedy 1841 and McKinley 1964. An exception was the report of Frederic Benjamin Page (1845) who saw "noisy parroquets along the Neches River" in Angelina County. The sightings of Woodhouse during 1849-1850 were made along unidentified streams in eastern Texas (Woodhouse 1853). However, specific locations are given for many of the sighting made in later years (Table 1).

Table 1. Historical records of the Carolina Parakeet in Texas

DATE	LOCALITY	COMMENTS AND REFERENCES
1830	Nacogdoches County	Very numerous during February 1830 (T. M. Pavie in Klier 2000).
1836	State of Texas	Mention of the "beautiful paroquet" (Holley 1836)
1836	State of Texas	Notes occurrence of green paroquets (Edward 1836)
1841	State of Texas	Mention of "gay, clamorous, and pilfering paroquet" (Kennedy 1841)
1844	State of Texas	Two specimens in Geneva Mus, 'd'Histoire Naturelle, acquired from M. Merle (McKinley 1964)
1844?	Angelina County	"Parroquets" seen along Neches River (Page 1845)
1849-1850	Eastern Texas	Numerous along large streams in eastern Texas (Woodhouse 1853, Casto & Tomer 1999)
1850	Harrison County	Flock of ca. 50 seen winter 1850-1851 (Askew 1912, 1939)
1850s	Van Zandt County	Plentiful, flocks of 20 to 60 birds, would often light on roofs of dwellings and barns (Manning 1919).
1850s	Colorado County	Seen by "Mr. Chadoin" [Thomas Chadoin] along the Colorado River (Oberholser 1974)
1863	Lavaca County	Several seen by M. K. Mitchell; one taken fall of 1863 (Oberholser 1974)
1860s	Mitchell County	McKinley (1964, p. 71) confused the sightings by "Mr. Chadoin" on the Colorado River in Colorado County with the name of the informant, J. D. Mitchell. Parakeets were never seen in Mitchell County, Texas.
1870	Jefferson County	Flocks of 20-30 seen in fall by Mark Weiss prior to 1870. Lingered for a while before going south, stayed mostly in the tops of tall trees (Oberholser 1974)
1870	Jasper County	Flocks of 20-30 seen in fall by Mark Weiss prior to 1870. Lingered for a while before going south, stayed mostly in the tops of tall trees (Oberholser 1974)
1870	Grayson County	Said by Joshua Gorham to be common around the town of Preston (Oberholser 1974)
1870s	Tyler County	E. F. Pope (b. 1870) saw a flock of several hundred, the birds were destructive to corn and believed to nest in Tyler County (Baker 1956, McKinley 1964, Casto 2008)
1874	State of Texas	List of wildlife including the parakeet and other birds (Anon.1874)
1874	Montague County	Seen by Cris Meadows flying over between 1874 and 1877 (Oberholser 1974)
1875	Polk County	Arrived mid-summer, remained until autumn, partial to corn in the milk stage and killed on sight, none seen after 1875 (M. T. Hickman in Baker 1956 and McKinley 1964)
1881	Southeastern Texas	Gives a harsh, grating squall in its rapid flight, seen in small numbers but never singly, dashing through and around the tops of trees (Roberts 1881)

Table 1. (*Continued*).

DATE	LOCALITY	COMMENTS AND REFERENCES
1885	Brownwood County	Hundreds seen during the summer. This record is invalid. Parakeets have never been seen in Brownwood County (Casto 2022).
1886	Red River County	Resident and breeding prior to 1887 (Davis 1887)
1888	Lamar County	Many seen in woods near Paris (E. C. Davis in Oberholser 1974)
1888	Fannin County	A common resident on the Red River north of Bonham by Henry F. Peters (McKinley 1964, Oberholser 1974)
1890	Bowie County	Occurred regularly on the Red River north of New Boston until about 1890 (Oberholser 1974).
1890s	Cameron County	Skins offered for sale. Poor specimens $2.50, best $5.00. Origin of skins unknown (Frank B. Armstrong, n.d.)
1891	Lamar County	Wounded bird in cage seen at Paris on 22 October 1891 (E. C. Davis in Oberholser 1974).
1891	Cameron County	Questionable visitor south of Brownsville (Wm. Lloyd in McKinley 1964). Considered hypothetical by Griscom and Crosby (1926)
1894	Cooke County	Parakeets no longer seen in this area (Ragsdale 1894)
1895	Nueces County	Specimen taken at Ebony Woods, five miles east of Corpus Christi, mounted by J. M. Priour, others seen near Corpus (Bailey & Bailey 1900, Oberholser 1974)
1897	Bowie County	Last Carolina Parakeet killed in Texas (Oberholser 1974). The source of Oberholser's information unknown.
? - ?	Brownsville, TX	Adult male, American Mus. Nat. History, No. 360051, collected by G. Loucke. Location considered doubtful by Jonathon Dwight because the specimen was not properly labeled. Collection date not given (McKinley 1964).
? - ?	Texas	Juvenile bird, collection of F. V. Massena, 3rd Duke of Rivoli, Academy of Natural Sciences of Philadelphia, No. 24274. Collector & date not given (De Schauensee 1941, McKinley 1964)

EYE WITNESS ACCOUNTS AND RECOLLECTIONS

Henry Garrison Askew (1845-1918) was a veteran of the Civil War, as well as an accountant and statistician in the railroad and banking industries and a founding member of the Texas Historical Association. He remembered seeing parakeets as a young boy in Harrison County during the winter of 1850-1851. This childhood memory remained dormant for years and it was not until 1912 that his parakeet story was published in the Fort Worth and El Paso newspapers (Askew 1912). Following his death, his daughter, Susan [Mrs. Alfred W. Oliphant], submitted a copy of the newspaper article to the Texas Historical Association that was later reprinted in the Southwestern Historical Quarterly.

"…it was in the winter time –snow was on the ground – possibly the winter of 1850-1851 or the winter before. My father was a practicing lawyer in Marshall, Texas, and having some business in Shreveport, La., about 43 miles distant, he traveled there by buggy – taking me with him. It was on this trip, in the eastern part of Harrison County that we encountered a flock of parroquets, about fifty in number, as well as I can recollect, sitting on, or making short flights about, the branches of some trees by the roadside. Their gaudy plumage attracted my attention and possibly their chattering poise also. My father informed me what they were but I do not remember whether he said he had ever seen any of them before. They did not seem to be much distracted at our

appearance on the scene, that is they did not fly away. My father drove on and I have never seen any more parroquets in Texas or heard of anyone seeing them in this state, except in cages. Some professed ornithologists believe that I am mistaken in this matter on account of my age, 4 or 5 years, at the time, but my recollection of the green birds, with yellow and red about their heads, is more vivid than it is of many sights witnessed long afterward" (Askew 1939).

Askew's recollection represents the only report of parakeets in Harrison County. It is likely that his observations took place on or around 30 December 1850 when a heavy snow fall was reported at Baton Rouge, Louisiana, and that an inch of snow had fallen as far south as Houston (Anon. 1851a, 1851b). Parakeets were fairly abundant in eastern Texas from the 1850s through the 1870s and it is difficult to reconcile Askew's statement that he had never heard of anyone else seeing them in Texas. Askew was a collector of stamps and coins and his valuable collection of mollusk shells was donated to the University of Texas (Anon. 1918).

Edwin C. Davis, an egg-collector from Gainesville, Texas, was the first to publish a first-hand account of the Carolina Parakeet based on the testimony of Samuel Eugene Watson (1847-1904), a well-known planter in Red River County (Brown 1988). According to Watson there were a great many parakeets resident and breeding in that area. They were very destructive to orchards and it was almost impossible to drive them away in the fall. Watson further related he had been told they roosted by holding on with their bills and that they were fond of the seeds of cockleburs (*Xanthium* spp.) which they extracted from the spiny fruit. He had personally observed this feeding behavior in parakeets that he kept in cages (Davis 1887).

Watson's report of the roosting behavior of parakeets was accurate on one point. The birds normally roosted in hollow trees but, when there was not enough room for all of them, those who could not enter the hollow would cling to the outside bark of the trunk using their claws and the tip of their beak (Audubon cited in Bent 1940). It was widely-known that cockleburs were their favorite food. The burr was picked up by the beak and delivered to one foot. The end of the burr was cut off with the sharp end of the lower beak and the two seeds were extracted with the assistance of the tongue. So great was their destruction of the cockleburs that the parakeets were held in high regard by many farmers (Butler 1892). The seeds of cockleburs are toxic to domestic livestock and humans. However, Carolina Parakeets were able to eat them without suffering ill effects. The fondness of Carolina Parakeets for the seeds of cockleburs is shown in John James Audubon's painting of seven birds feeding on the seeds of this troublesome weed. This beautiful illustration was reproduced on the cover of the December 2022 issue of the Bulletin of the Texas Ornithological Society.

Harry Oberholser, author of The Bird Life of Texas, attempted a reconstruction of the history of the Carolina Parakeet in Texas. His work involved a review of the literature, as well as interviewing old-timers for their remembrances. One of his trusted sources was Joseph Daniel Mitchell (1848-1922, Fig. 2), a rancher in Calhoun County who later moved to Victoria where he retired and devoted his life to the study of natural history (Anon. 1922). Mitchell's interest in natural history was inherited from his mother "a brilliant woman who was greatly interested and versed in natural history" (Anon. 1932). For more than forty years, Mitchell corresponded with and sent specimens to the U. S. Department of Agriculture and the Smithsonian Institution (Burke 1978, Roell 2024). Mitchell's reputation among government scientists in Washington, D. C., was such that any individual, whether an entomologist, ornithologist, ichthyologist or botanist, seeking information on the natural history of Texas was advised to visit J. D. Mitchell in Victoria, Texas (Hunter 1922).

Mitchell informed Oberholser that his mother, Mary Kerr Mitchell (1822-1884) had seen parakeets in Lavaca County and that one had been taken in the fall of 1863. The information from Mitchell is found in a letter in the Fish and Wildlife file to Oberholser dated 1914 (McKinley 1964). Although J. D. Mitchell never personally saw a parakeet, he is known to have collected birds' eggs and provided Oberholser (1974) with pre-1900 dates for the nesting of Sandhill Cranes, Whooping Cranes, Brown Pelicans, Common Ravens and American Redstarts on the Texas coast, as well as the occurrence of Passenger Pigeons in Lavaca County during 1864 and Calhoun County in 1874.

Mitchell also told Oberholser that "Mr. Chadoin" had seen parakeets along the Colorado River in Colorado County during the 1850s. This individual was Thomas Chadoin (1804-1869), sometimes

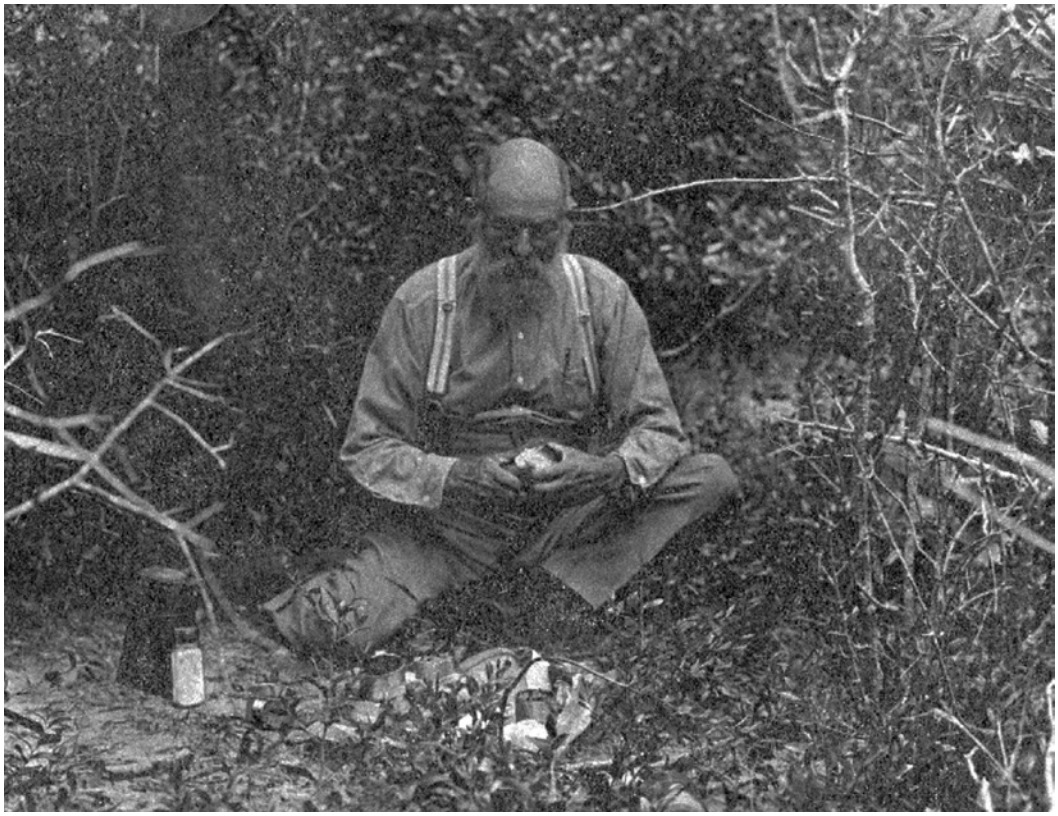

Figure 2. Joseph Daniel Mitchell eating his lunch at a motte of Sweet Bay shrubs in Calhoun County, Texas, on 24 May 1916. Photograph courtesy of Victoria Regional History Center, UHV Library. The Sweet Bay is also known as the Bay Laurel (*Laurus nobilis*).

spelled Chaudoin, who came to Texas in 1829 as a settler in Stephen F. Austin's Colony where he received a certificate for one league (4,425 acres) and one labor (177 acres) on the eastern side of the Lavaca River. Chadoin was a participant in the 1832 Battle of Velasco where he was wounded in his right arm. He was a rancher and blacksmith, as well as serving as county commissioner and road overseer in Lavaca County. Factual and legendary details of Chadoin's life are found in Foster (2013) and Foster (2022). Mitchell's account of Chadoin's sighting was later confused by McKinley (1964) who believed that Chadoin had seen parakeets along the Colorado River in Mitchell County rather than in Colorado County. Parakeets have never been seen in Mitchell County.

A first-hand account was obtained by Oberholser from Mark P. Weiss (1842-1910), a merchant and lumberman, who was born at Weiss's Bluff in Jasper County and later moved to Beaumont in Jefferson County. Weiss stated that parakeets arrived in the fall in flocks of 20 to 30 or more in both Jasper and Jefferson counties in the years prior to 1870. Weiss was told that the parakeets ate cockleburs but he had seen them only in the tops of high trees. He did not think that they nested in the area.

Joshua Gorham (1846-1896), a pioneer settler and farmer in Cooke County, Texas, is credited by Oberholser as reporting parakeets being common around the town of Preston on the Red River in Grayson County. Gorham died four years before Oberholser arrived in Texas and Oberholser's information was undoubtedly obtained from the notes of the Gainesville naturalist, George Henry Ragsdale. Ragsdale died in 1895 but his natural history notes were retained by his daughter, Elizabeth, who provided Oberholser with access (Casto 1980). The occurrence of parakeets in this

area during the early days is also noted in A History of Grayson County, Texas (Lucas and Hall 1936).

Cris Meadows is cited by Oberholser as seeing parakeets flying over Montague County between 1874 and 1877, the last years of their sighting coinciding with a dramatic increase in the population of Montague County from 890 persons in 1870 to 11,257 in 1880. Nothing is known of Meadow's age, occupation or how Oberholser obtained information from Meadows.

Henry Francis Peters (1825-1911) was born in England and came to United States in 1849. He served in the Confederate army during 1863 and later worked at various times as a gunsmith and market hunter of plume birds. His main contribution to ornithology was his work as the station observer at Bonham for the Mississippi Valley Migration Study of 1884-1885 (Cooke 1888, Casto 1992). Peters reported that parakeets were common north of Bonham in Fannin County. This directive would place them in the vicinity of the community of Sowells Bluff on the Red River 13 miles due north of Bonham. Oberholser probably obtained this information from the archived reports that Peters sent to W. W. Cooke who was the director of the migration study.

Additional first-hand accounts were obtained by Rollin H. Baker (1916-2007) of Michigan State University and Curtis J. Hesse (1905-1945), curator of the museum at Texas A&M College. Their work, done between 1940 and 1942, involved interviews with older residents who could recall seeing parakeets or what their parents, grandparents, or others had told them about this species (Baker 1956). Only two people, M. B. Hickman and Floyd Pope, actually remembered seeing the birds.

M. B. Hickman said that parakeets were common in eastern Texas before the Civil War. No one knew where they came from. The flocks came to Polk County in midsummer and remained until autumn. None were seen after 1875. The birds were partial to corn in the milk stage and damaged the fields severely. The birds were killed on sight and scarecrows were erected to drive them away (Baker 1956).

There was no one named M. B. Hickman living in Polk County prior to the Civil War. Baker correctly identified Hickman as being born in 1841 and living in the community of Corrigan. However, Hickman's middle initial is in error. The informant was M. T. [Mastin Thomas] Hickman (1841-1945). "Uncle Tom," as Mastin was affectionately known, was born in Newton County in 1841 and moved with his family in 1847 to Polk County where he grew up hunting and fishing. He served as a sergeant in the Civil War and was widely known for his knowledge of the history of Polk County, as well as being a farmer, member of the masonic lodge, justice of the peace, tax assessor, postmaster, saloon owner and a featured person in "Ripley's Believe it or Not" (Anon. 1945). "Uncle Tom" Hickman remained active and of sound mind until his death at age 103. He was considered to be a reliable authority on the occurrence of the Carolina Parakeet in Polk County.

Edmond Floyd Pope (1870-1952) was born near the community of Mobile in Tyler County, Texas. As a small boy he remembered seeing hundreds of parakeets and was told by his parents that they had been even more abundant in earlier days. The birds were most abundant when the corn began to ripen and they were very destructive to the developing ears. Pope believed that the parakeets nested in Tyler County. Floyd Pope is remembered today by most ornithologists for his activities as an egg collector and his conservation efforts (Casto 2008).

DEPREDATION ON ORCHARDS, CORN AND PEAS

Only a few records have been found of depredations by Carolina Parakeets in Texas. S. E. Watson noted that they were very destructive to orchards in Red River County and that it was almost impossible to drive them away (Davis 1887). An extensive review of the literature has, however, found no additional records of their depredations on orchards, an absence which is puzzling since the culture of fruit trees such as peaches, figs, apples, plums and oranges was common in eastern Texas beginning as early as 1820 and extending through 1850 and the years beyond (Geiser 1945). M. T. Hickman and E. F. Pope both recalled that parakeets were very destructive to corn and attempts were made to drive them away or to shoot them (Baker 1956). Wentworth Manning (1847-1921) observed that parakeets in Van Zandt County would sometimes feed in pea fields (Manning 1919). Carolina Parakeets had an affinity for salt obtained from salt licks and saline springs (Oberholser 1974). However, no report has been found of their use of this mineral even though salt licks and saline springs were present in Van Zandt County,

Anderson County and other locations within their known range in Texas.

SPECIMENS OF CAROLINA PARAKEETS

Five specimens of the Carolina Parakeet have been collected in Texas. The first two specimens, dated 1844, were acquired from M. Merle and are in the Museum of Natural History in Geneva, Switzerland (McKinley 1964).The collector and location in Texas where the birds were taken is unknown.

The third specimen, an adult male *Conuropsis carolinensis carolinensis*, collected at Brownsville, Texas, by G. Loucke at an unknown date is now in the American Museum of Natural History (ANMH #360051). Jonathon Dwight considered this record to be doubtful since the specimen was not properly labeled (McKinley 1964). Griscom and Crosby (1926) considered the Carolina Parakeet hypothetical in Cameron County based on Dwight's assessment that the specimen was not correctly labeled.

The fourth specimen, a juvenile *Conuropsis carolinensis ludovicianus*, collected in Texas is part of the collection of Francois Victor Massena, 3rd Duke of Rivoli, at the Academy of Natural Sciences of Philadelphia, No. 24274. The Rivoli collection was purchased by Dr. Thomas B. Wilson in 1846. The collector and date of collection is not known.

The fifth specimen was taken on an unknown date by the son of John Marion Priour at Ebony Woods [a grove of ebony trees?] five miles east of Corpus Christi in Nueces County. The collector was most likely Priour's oldest son, John Warren Priour (1878-1965). The bird was mounted and later seen at Priour's residence by Vernon and Florence M. Bailey (1900). Priour's collection was later dispersed and the location of the mounted bird is unknown if, indeed, it is still in existence (McKinley 1964).

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BEHAVIORAL EFFECTS OF A TOTAL SOLAR ECLIPSE ON BREEDING HOUSE SPARROWS

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ABSTRACT. — Solar eclipses offer a rare disruption to daily light cycles, which may have behavioral effects on birds. Previous studies have described birds showing crepuscular or nocturnal behavior in response to a solar eclipse. On April 8, 2024, a solar eclipse occurred across the United States, which lasted for approximately 2 hours and 40 minutes with 54.4 seconds of totality at our study site in Stephenville, TX. Our objective was to investigate the effects of a total solar eclipse on the behavior of a colony of House Sparrows (*Passer domesticus*). We predicted that House Sparrows would spend more time in their nest boxes and reduce feeding rates in response to the solar eclipse. We used video cameras to record House Sparrows at nest boxes during incubation ($n = 4$) and nestling periods ($n = 3$) for 3 hours centered on eclipse totality. We compared behaviors of adult males and females before, during, and after the eclipse. Only incubating females increased the time spent in the nest boxes during and after the eclipse. Behaviors of males and of females during the nestling period had no consistent behavioral response to the eclipse, suggesting that House Sparrows show different individual behavioral responses to a total solar eclipse.

Light is a strong stimulus for many organisms. Unusual events, such as a solar eclipse, provide a rare disruption to the predictable daily light cycle. The effects of a total solar eclipse on animal behavior has been documented for hundreds of years (Wheeler et al. 1935). The infrequency of these celestial events renders them novel to any animals that encounter them. Many diurnal birds have been documented showing crepuscular or nocturnal behaviors during the period of totality (Tramer 2000, Platt and Rainwater 2018, Hartstone-Rose et al. 2020). The reduction in diurnal bird activity has been observed physically and through remote sensing using radar (Van Doren et al. 2017, Nilsson et al. 2018). However, some studies of bird behavior during eclipses have shown an increase in activity during a solar eclipse, contradicting these assumptions (DeNiro et al. 2023). Even during the same solar event, members of the same species of bird have exhibited different behavioral responses (Wheeler et al. 1935, Dimitar et al. 2001).

On April 8, 2024, a total solar eclipse occurred across the United States. The "Great North American Eclipse" caused a renewed interest into the effects of a total solar eclipse on animal behavior. Many popular news outlets published articles on the potential effects of the eclipse on animal behavior (Chasan 2024, Treisman 2024, Vargo 2024). NASA conducted a community science project to collect auditory data to investigate the effects of the eclipse on animal behavior (Eclipse Soundscapes). Our objective was to investigate the effects of a total solar eclipse on the behavior of House Sparrows (*Passer domesticus*) in a breeding colony in Stephenville, Texas during the Great North American Eclipse. The House Sparrow is a diurnal songbird, that breeds in Texas from March to August. We predicted that House Sparrows will exhibit roosting behavior, spending more time in nest boxes, which will disrupt feeding of nestlings during and after the eclipse.

METHODS

We set up nest boxes to establish a breeding colony of House Sparrows at the Southwest Regional Dairy Center (32° 22'N, 98° 20'W) in Stephenville, Texas in 2022. Boxes are mounted at approximately 3 m above the ground on various

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structures at the dairy. We monitor boxes during the breeding season (Mar–Aug). In Stephenville, the eclipse on April 8, 2024 lasted approximately 2 hours and 40 minutes, with approximately 54.4 seconds of eclipse totality occurring at 13:39 hours Central Standard Time (Eclipse.org, 2024). We used Canon Vixia HF R800 video cameras to record sparrow behavior before, during, and after the eclipse. We placed cameras at nest boxes with eggs (n = 4) and nestlings (n = 3). We set the cameras 1–2 m away from the nest box. We manually started the recordings approximately 90 minutes before eclipse totality and ended approximately 90 minutes after eclipse totality. We analyzed the videos using Behavioral Observation Research Interactive Software (BORIS, Friard and Gamba 2016) This software is used to record animal behaviors and timestamps, allowing us to calculate the intervals the sparrows remained in the nest box and feeding rate. During video processing, we recorded the sex of the parent, arrival and departure time from the nest, time spent in the nest, and food deliveries to nestlings. We divided the recordings into three 60-minute periods defined as before, during, and after the eclipse, with the during period centered on totality For nest boxes where birds were incubating, we compared the percent time spent in the box by sex across the three periods. For nest boxes with nestlings, we compared the feeding rate (food deliveries/hour) across the three periods. Given the small sample size, we did not compare the time spent by adult House Sparrows in boxes or feeding rates statistically and will report our results using descriptive statistics.

RESULTS

For nests with eggs, all 4 females showed a slight increased proportion of time spent in the nest boxes during and after the eclipse (Fig. 1). However, three incubating males did not show a consistent trend (Fig. 2), and, for one box, the male never visited the nest. Females that were rearing nestlings did not show a consistent change in feeding rate between the three periods (Fig. 3) nor a consistent change in time spent in the box, although one female was not recorded returning to the nest box following the eclipse and later returned to the box after the end of filming (Fig. 4). We did not see males visiting nest boxes to feed young during our observations, thus we did not evaluate their behavior.

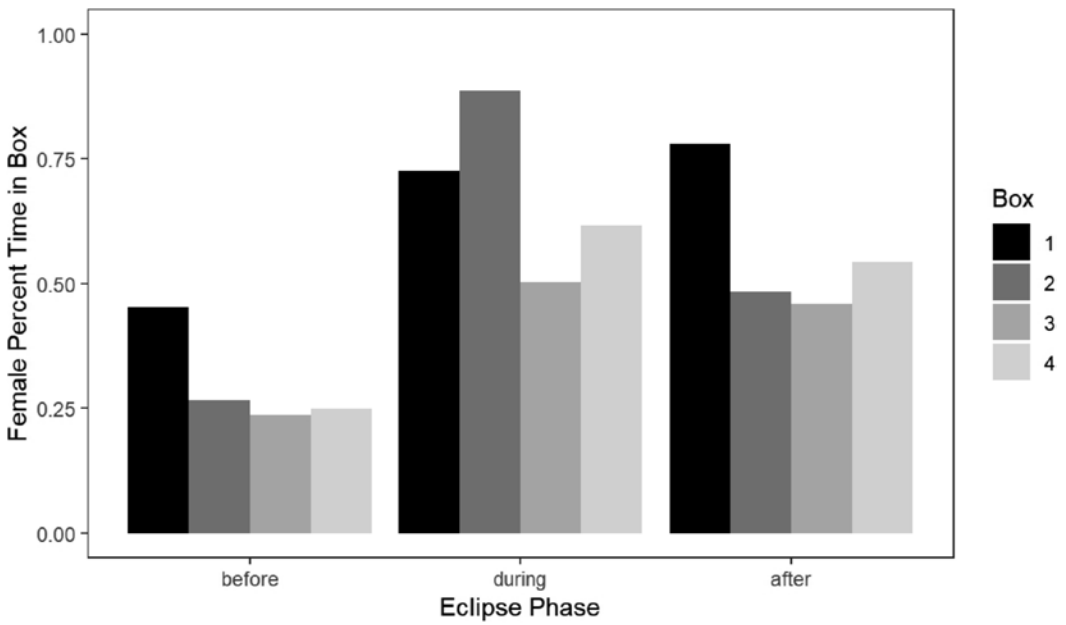

Figure 1. Percent of time spent in nest boxes during incubation by female House Sparrows at the Southwest Regional Dairy in Stephenville, TX during the total solar eclipse on April 8, 2024.

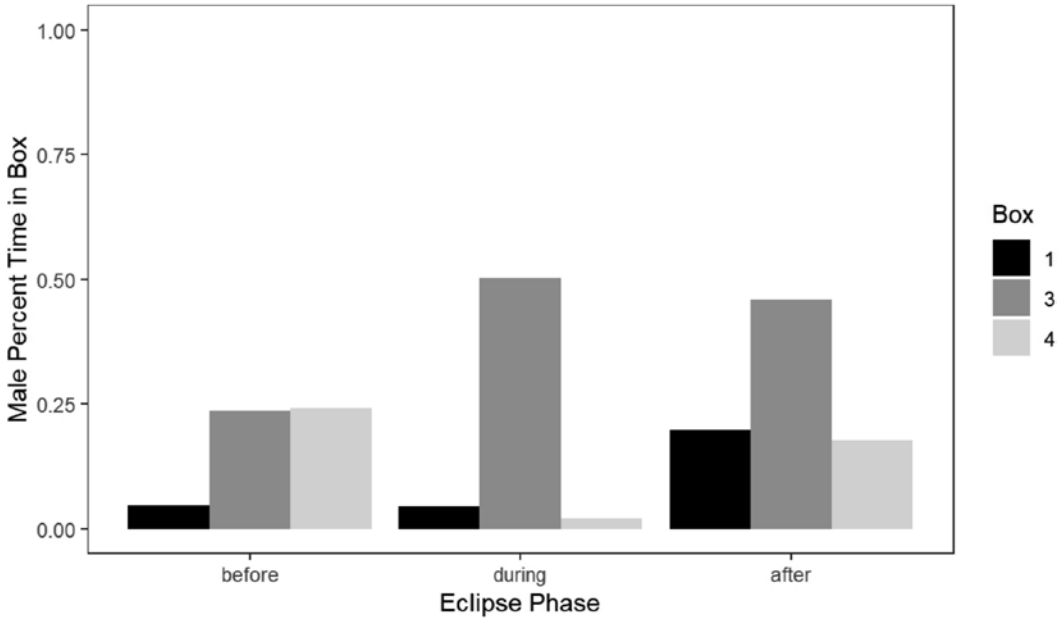

Figure 2, Percent of time spent in nest boxes during incubation by male House Sparrows at the Southwest Regional Dairy in Stephenville, TX during the total solar eclipse on April 8, 2024.

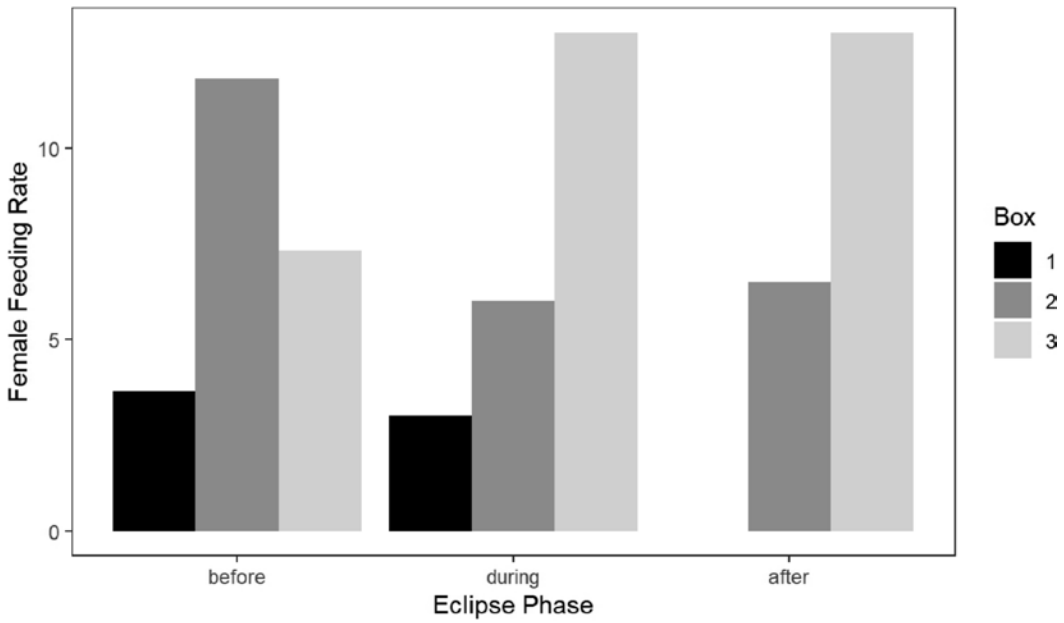

Figure 3. Feeding rates for three female House Sparrows rearing nestlings before, during, and after the total solar eclipse on April 8, 2024 at the Southwest Regional Dairy in Stephenville, TX.

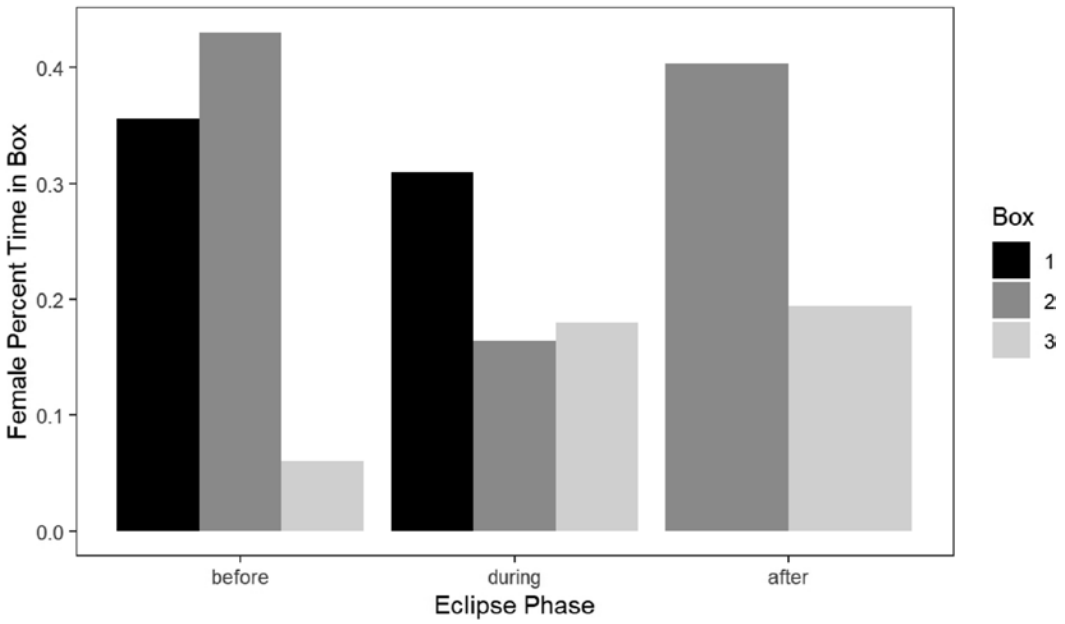

Figure 4. Percent time spent in nest boxes for three female House Sparrows rearing nestlings before, during, and after the total eclipse on April 8, 2024 at the Southwest Regional Dairy in Stephenville, TX.

DISCUSSION

Our hypothesis that sparrows would spend more time in the nest boxes in response to the eclipse was weakly supported by incubating females. Our hypothesis that feeding rates would be disrupted was not supported, as there was no consistent change in feeding rates in response to the eclipse. These results are similar to previous research that has shown different intraspecific responses to the same total solar eclipse event (Wheeler et al. 1935). Perhaps females raising young had a different response compared to incubating females because the nestlings' begging behavior provided a stronger behavioral stimulus than the eclipse. As opposed to incubation, where a parent spends a certain amount of time on the nest to maintain optimal temperatures, nestling rearing requires parents to venture from the nest to acquire food to sustain nestlings' rapid growth., further opportunistic studies during unusual cosmic and weather events could be useful to gather additional information on bird behavior during solar eclipses

ACKNOWLEDGEMENTS

We thank the Southwest Regional Dairy and Tarleton State University for allowing the use of their facilities. We thank Samuel Lane, Jordan Morgan, Grace Hurta, and Ashley Bratten for assisting with field work and video processing, and all members of our research team who have contributed to the overall success of ongoing sparrow research. Funding for this project was provided by the National Science Foundation (NSF, IOS grant number 1845974 to Britt Heidinger) and the Texas Ornithological Society.

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NOTES ON SCOTERS (*MELANITTA SP.*) ALONG THE UPPER TEXAS COAST

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ABSTRACT-Documentation of arctic and sub-arctic birds found outside of their traditional range can help to better understand species distributions. Natural history and distribution data can be acquired by salvaging and preserving museum specimens, which serve as a voucher record of species occurrence in a new or under-reported region. We report the first specimen records of Black (*Melanitta americana*) and White-winged (*M. deglandi*) Scoters from Texas, and also document predation of a Black Scoter by a Bald Eagle (*Haliaeetus leucocephalus*) along the upper Texas coast.

Species of arctic and sub-arctic birds have been documented migrating beyond their typical destinations to more southern regions for the winter (Egevang et al 2010; Gratto-Trevor et al. 2006). This has been documented with Holarctic waterfowl, including both Black (*Melanitta americana*) and White-winged Scoters (*M. deglandi*), during winter and spring (e.g., Fielder and Friesz 1982; Kelley and Major 2020). Both species of scoters typically winter closer to their spring ranges, making records of these species outside of the traditional range noteworthy (Bond et al. 2007). Some historic reports and specimen records from southern states during winter have also been noted (e.g., Atkeson 1961; Bailey 1925; Hoffman and Bancroft 1984). However, there are no specimen records of either species from Texas (Vertnet search, https://vertnet.org 22 July 2024), which would represent relevant data regarding their distribution and migration patterns.

Several studies have identified predators of Surf and White-winged Scoters (c.f., Anderson et al. 2012), and these species are also regularly hunted by humans (HMNS VO collection). In contrast, relatively little has been recorded about predators of Black Scoters (Bordage and Savard 2020). In Iceland, Bengston (1972) identified Gyrfalcons (*Falco rusticolus*) predating adult Black Scoters, and Common ravens (*Corvus corax*) and Mink (*Mustela vison*) predating their eggs and ducklings.

Herein we report the first study specimens of Black and White-winged Scoters from the state of Texas. We also report the first documentation of Black Scoter predation by a Bald Eagle (*Haliaeetus leucocephalus*).

Figures 1a, b: Specimens of Black Scoters collected from Galveston (male left, VO 4194) and Brazoria (female right, VO 4452) Counties, Texas. Photo by T. McSweeny.

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METHODS

Two recent specimens of Black Scoters and one specimen of a White-winged Scoter from the upper Texas Coast were salvaged by wildlife rehabilitator Dana Simon and provided to the Houston Museum of Natural Science (HMNS). These specimens were prepared as study skins by Sabrina Dahlgren and TM, and standard associated data were collected and recorded. All three specimens were accessioned and archived into the permanent collection at HMNS.

SN recorded a Black Scoter predated by a Bald Eagle using a digital Nikon D7200 camera with a Sigma 150-600 telephoto lens, on 19 December 2022 at Baytown Nature Center (Baytown, Harris County, Texas, USA). Weather conditions were 8°C, overcast with infrequent light rain; chilly, wet, noticeably breezy (26.5 mph). All records are archived within the museum's kEMU database.

RESULTS

Scoter specimen data

The first Black Scoter specimen (VO 4194, Fig. 1a) was found in Galveston (Galveston Co., Texas) on 9 April 2020. VO 4194 weighed 545 g and was an adult (skull completely ossified) male (left testicle = 8 x 2 mm, right = 7 x 1.5 mm) with no traces of subcutaneous fat. During preparation the stomach was dissected, finding one closed *Donax variabilis* clam from a prior meal. However, the severe lack of fat verified emaciation.

The second Black Scoter specimen (VO 4452, Fig. 1b) was found on Follet's Beach, Surfside (Brazoria Co., Texas) on 26 December 2023. VO 4452 weighed 560 g and was a subadult (determined by plumage; skull completely ossified) male with first year coloration on plumage and mandible, and no traces of subcutaneous fat. During preparation the stomach was dissected and empty. The remains of lice (*Holomenopon sp*. and *Anaticola sp*.) were found on this specimen.

The White-winged Scoter (VO 4453, Fig. 2) was found near the Brazos River, Freeport (Brazoria Co., Texas) on 7 December 2023. VO 4453 weighed 845 g and was an adult (skull completely ossified) female with no subcutaneous fat. During preparation the stomach was dissected, finding 1.7 g of sand and pebbles. The lack of fat may be evidence of emaciation, and symptoms of aspergillosis presented within the body of the specimen in the form of a white mass within the lungs and white fungal spores in the lower abdomen.

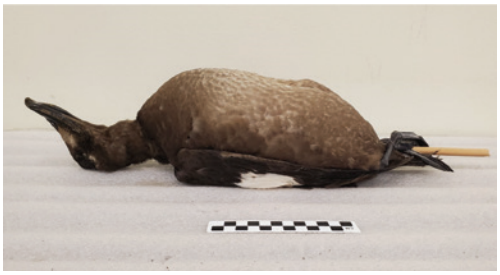

Figure 2. Specimen of White-winged Scoter female collected from Brazoria County, Texas (VO 4453). Photo by T. McSweeny.

Black Scoter predation by a Bald Eagle

Two adult (male and female) Black Scoters were observed at Baytown Nature Center on 19 December 2022 by SN, Elizabeth Kanaly and Shannon Elizondo ([the observing] party). The pair of scoters was reported four days prior, with the first report of the female on December 15. The male scoter was predated by a Bald Eagle (*Haliaeetus leucocephalus*), which we describe as follows:

Arriving at 13:05 hrs, the party located the female resting and feeding on the water's surface, but not the male. The party scanned Burnett Bay and finally located the male to the east, approximately 200 m away and 80 m from the shore. Within 10 sec an adult Bald Eagle flew in from the south, quickly flew down and seized the male scoter. The eagle brought the scoter to a nearby tree and commenced feeding.

The party drove closer to the feeding perch for closer observation. There were some signs of movement by the scoter, which was still alive. Within one min the eagle took flight again, grasping the scoter in its talons (Fig. 3a) and carrying it 175 m south to a tree in a more wooded area. At this site it consumed the scoter, scattering feathers around the area (Fig. 3b). After five min, the party left the eagle as it continued feeding.

DISCUSSION

Although one Black Scoter (VO 4194) and the White-winged Scoter did have some matter in their stomachs, indicating that the birds were attempting to find and consume food, it was not enough to prevent mortality. Emaciation of all specimens reported herein was likely due to being sick and starving. Aspergillosis results from the exposure of an animal to toxic spores via consumption of food or inhalation from the environment (Leishangthem et al. 2015).

Figures 3 a, b. Bald Eagle seizing and consuming an adult male Black Scoter at the Baytown Nature Center (Harris Co., Texas). Photo by S. Nelson.

This disease has been previously reported in multiple species of wild birds, including various types of aquatic birds (Rosen 1964). It is possible that the White-winged Scoter was exposed to Aspergillosis spores while migrating, possibly exacerbated by the bird's emaciation (Melo et al. 2020).

As far as we can determine the three scoter specimens represent the first study specimens for the state of Texas (USA). Collecting and recording occurrences of bird specimens outside their traditional range is essential for documenting their distribution and seasonal behavior (Fall, 1973). This is especially noteworthy for species traditionally found in Arctic and Nearctic regions, as this can provide data and support for behavioral shifts due to global warming (Cox 1985; Jahn and Cueto 2012). Specimens provide additional information on the mortality risks and effects of cross-continental migration as they relate to a bird's health (e.g., presence of emaciation), which is noteworthy (Myers et al. 1990).

While Bald Eagles have been recorded predating Surf and White-winged Scoters in Washington state (e.g. Watson 2002), this appears to be novel documentation of Bald Eagles predating Black Scoters. Community-science driven data are of significant value for bolstering our knowledge of species biology and natural history (Callaghan and Brooks 2020). As evidenced herein, our knowledge of Black Scoter natural history was enhanced through community-science observations.

Continued monitoring of the upper Gulf Coast for extra-limital range records will permit a better understanding of vagrancy and migratory behavior (Lees and Gilroy 2022, Ozsanlav-Harris et al. 2023). Similarly, community-science observations are of value to help fill gaps of knowledge in species biology, and it is imperative that these cooperative efforts continue (Sullivan et al. 2009).

ACKNOWLEDGEMENTS

We would like to thank Dana Simon for providing us with the scoter specimens, Sabrina Dahlgren for preparing VO 4194, and Lacey Restemyer for identifying the parasite remains found on VO 4452. Additionally, we would like to thank Elizabeth Kanaly and Shannon Elizondo for accompanying SN during the predation event.

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SHORT COMMUNICATIONS

NESTING OF ROSE-THROATED BECARDS (*PACHYRAMPHUS AGLAIAE*) IN SOUTHERN TEXAS IN 2024

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The Lower Rio Grande Valley (LRGV) of southern Texas and northeastern Mexico is home to a diverse bird community including several widespread tropical species that reach the northern limit of their range in the region (Brush 2000). Some tropical and subtropical species have undergone a northward range expansion, establishing breeding populations in the LRGV within the last century. Such species include Altamira Oriole (*Icterus gularis*), Clay-colored Thrush (*Turdus grayi*), Gray Hawk (*Buteo plagiatus*), and others that are now uncommon to common breeders in the region (Brush and Cantu 1998; Brush 2005; Stewart et al. 2023). Other species such as Tropical Parula (*Setophaga pitiayumi*), Red-billed Pigeon (*Patagioenas flavirostris*), and Rose-throated Becard (*Pachyramphus aglaiae*) have declined or are perhaps no longer breeding in the region likely due to the loss and deterioration of tall, riparian forest (Brush and Cantu 1998; Brush 2005).

The Rose-throated Becard (hereafter becard) has been recorded breeding in the United States in both southeastern Arizona and the LRGV in Texas. In Arizona, becards were first recorded nesting along the Santa Cruz River in the late 1940s (Lisowsky 2021). Becards nested in a few locations in Arizona for short periods of time, especially near Sonoita and Arivaca Creeks. Currently, becards are successfully breeding again along the Santa Cruz River, with 19 nests confirmed from 2016 to 2021 (Lisowsky 2021).

Becard nesting in southern Texas has been similarly sporadic. While they were not reported by early ornithologists, becards did nest in small numbers in the LRGV from the 1940s to the 1990s in Hidalgo and Cameron Counties (Davis 1945; Sutton 1949; Brush 2000; Brush 2005). The last known successful nest was in 1972, at Anzalduas County Park (Brush 2005). During 1994 to 1996, Brush and Cantu (1998) found no nests or individuals at a formerly used area in Santa Ana National Wildlife Refuge. A survey of 3 former nesting areas conducted by Brush (2000) in 1999 found only 2 nests. These nests, at Anzalduas County Park, were both unsuccessful (Brush 2000). Since 2000, breeding season reports of becards in the LRGV are sporadic and often consist of single birds. Lone females have been found building and attending nests in Santa Ana National Wildlife Refuge in 2002, 2003, and 2006 (Marsden 2002; McCullick 2003; Nickel 2006). Similarly, a lone female built a nest at Estero Llano Grande State Park in 2012 (J. Yochum pers. comm.). In 2000, a lone male displayed on a few occasions at Anzalduas County Park in an area where a pair had nested the previous year.

Becards have been considered rare winter visitors in the Starr County stretch of the Rio Grande, near Salineño (Brush 2005). In May of 2023, a vocal adult male and female becard were observed near Salineño, the timing of which indicates they may have been attempting to nest in the area (R. Rodriguez pers. comm.; Z. Johnson per. comm.). While breeding season records usually consist of single birds and are sporadic, observations of becards during the nonbreeding season are an almost annual occurrence in the region. A recent rise in observations of becards in the breeding season in south Texas might indicate an increase or perhaps a range expansion of the species into the region.

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In March of 2024, 4 becard nests were found along the Rio Grande River in Starr County (Z. Johnson pers. comm.; T. Hibbits, pers. comm.). All nests were attended by a male and female pair of becards, which were often very vocal. Nests were either well-formed and apparently complete, or still under construction. All 4 nests were found along an approximately 5 km stretch of the river in open riparian forest. Nests in this area were all found in Mexican Ash trees (*Fraxinus berlandieriana*) and placed at the end of a branch above an open area 6 to 12 meters high (Figure 1). The area was revisited on 14 June, and 3 complete nests were seen. Four becards were observed on that date, though there was no evidence of occupied nests or juveniles. The area was visited again on 20 July, and 6 becards were observed. Of the 6 individuals, all but one were observed in areas where nests had been found earlier in the year. Additionally, 2 hatch year birds were observed, which could indicate successful breeding in the area.

In May of 2024, a pair of becards was found constructing a nest about 200 meters from the Rio Grande in western Hidalgo County near the city of La Joya. This nest was in the early stages of construction when it was discovered on 10 May and appeared to be completed by 27 May (Figure 2). The female was observed collecting nesting material and adding it to the nest during the first observation and both individuals were very vocal throughout the process. While both birds were observed on 27 May, only the male was observed on 01 June. The male was vocal and was perched in a vigilant posture, chasing off other birds that landed near the nest. It is possible the female was within the nest incubating on that visit. On 08

Figure 2. Male Rose-throated Becard near recently completed nest in Hidalgo County on 27 May, 2024.

Figure 1. Rose-throated Becard nest in a Mexican Ash in Starr County, TX.

Figure 3. Rose-throated Becard nest in Hidalgo County on 16 June, 2024. The nest was found still connected to the branch, which had fallen to the ground perhaps in a storm.

June, only the female was observed near the nest. On 16 June, the branch the nest was on was found on the ground with the nest still attached. The nest was constructed on a branch of a dead tepehuaje (*Leucaena pulverulenta*) and the limb had fallen, possibly during a storm. Two eggs were found inside the nest and no becards were observed in the area on that day.

The discovery of 5 Rose-throated Becard nests in the LRGV represents the most observed for this species in Texas since at least the 1970s. While 2 of these nests failed, the outcome of the other 3 nests is unknown, and at least one may have been successful. The presence of nesting becards in Starr County represents a shift from historical nesting locations for the species in the LRGV. During the same time, no nesting or territorial becards have been reported from former nesting areas in Hidalgo County. Brush (2005) mentioned the presence of apparently suitable habitat along the Rio Grande in Starr County. Indeed, the habitat along the river from Falcon Dam to the town of Fronton is made up of mature riparian forests dominated by Black Willow (*Salix nigra*) and Mexican Ash. There are several islands and sloughs which periodically flood when water is let out of Falcon Dam, creating a narrow strip of riparian forest along the river. Other predominantly tropical species such as Brown Jay (*Psilorhinus morio*), Gray Hawk, Altamira Oriole, Red-billed Pigeon, and Hook-billed Kite (*Chondrohierax uncinatus*) are also found in this riparian corridor during the breeding season.

Becards nesting in Starr County in 2024 initiated nest building in March or perhaps even February. This is earlier than accounts of becards nesting further east in Hidalgo County, which have been recorded in May through July (Brush 2000). Similarly, becards nesting in Arizona have been observed building nests in April and May (Lisowsky 2021). A search of 451 images on the Macaulay Library of Rose-throated Becards in the United States during the month of March show no nests other than those from Starr County in 2024 (https://www.macaulaylibrary.org/). Interestingly, the nest in Hidalgo County in 2024 was in the early stages of construction on 10 May. The earlier onset of nesting by becards in Starr County in 2024 may indicate flexibility in the timing of nesting. This may improve the odds of a successful nesting attempt by avoiding having chicks and fledglings in the hottest months when temperatures regularly surpass 38 degrees Celsius.

The high number of breeding attempts of Rose-throated Becards in the Lower Rio Grande Valley in 2024 could indicate a northward expansion or attempted range re-occupation by the species into Texas. Annual field work must be conducted in suitable habitat in the LRGV to determine the outcome of nesting attempts and whether Rose-throated Becards continue to nest in the region in the future.

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GRAY HAWKS REUSING OLD NESTS, JUST NOT THEIR OWN

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Our research on the Gray Hawk (*Buteo plagiatus*) in the Lower Rio Grande Valley of south Texas since December 2019 has led us to discover more than 100 occupied nests. Many of these were newly constructed nests, but some were nests reused from the previous year. Prior to the 2024 breeding season, we assumed the birds reusing a nest were reusing their nest from the previous year and found nothing in the literature to suggest otherwise.

In April 2024, we discovered two female Gray Hawks that were each using a nest a different female had used the year before. Both females were color-marked individuals that had replaced the breeding female in those territories. According to Glinski (1998), the male delivers most of the twigs for the nest while the female provides the nest lining material, and the male's involvement in the construction or refurbishment of a nest could explain why they reused this nest. However, in one of these territories both the male and female were replaced by a new pair in between breeding seasons. The new pair found what remained of the previous pair's nest, refurbished it, and used it for the breeding season.

One previous study of Gray Hawks in Arizona described pairs reusing nests from previous years, with 12 instances of a nest reused in consecutive years and 4 instances of nests reused 3 years in a row, though there is no information on whether it was the same birds reusing their own nest from previous years (Bibles 1999). Given that Gray Hawks have also been observed reusing nests built and used by Cooper's Hawks (*Accipiter cooperii*) and Zone-tailed Hawks (*Buteo albonotatus*) — with one observation each — it is noteworthy that there is also a record of a female Gray Hawk reusing the nest of the bird she replaced during the breeding season (Bibles et al. 2020). These observations further illustrate the variability in nest reuse behavior. Bibles (1999) suggested that the presence of different breeding adults in a territory could drive the construction of a new nest, which we might have expected. However, our findings that Gray Hawks reuse nests from previous years, including those not their own, along with literature suggesting they may also use nests of other species, indicate that their nest reuse behavior is likely more flexible and opportunistic than previously thought.

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A CASE OF MONORCHISM IN A SPECIMEN OF ORCHARD ORIOLE (*ICTERUS SPURIUS*) FROM HOUSTON

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Monorchism is a rare natural phenomenon in which an adult male only develops a single testicle. This condition has been reported in domestic and wild vertebrates (Parks et al., 1989; Bester, 2023). Recorded cases of monorchism presented in birds are limited (Kurkure et al, 2006), making any occurrences of the condition in bird specimens noteworthy.

The Houston Museum of Natural Science's Vertebrate Zoology Collection received a salvaged Orchard Oriole (*Icterus spurius*) specimen from the Houston Audubon Society, found in downtown Houston (Harris County, Texas) on 23 April 2023. It was prepared as a study skin by TM and accessioned into the collection with the catalog number HMNS.VO 4407.

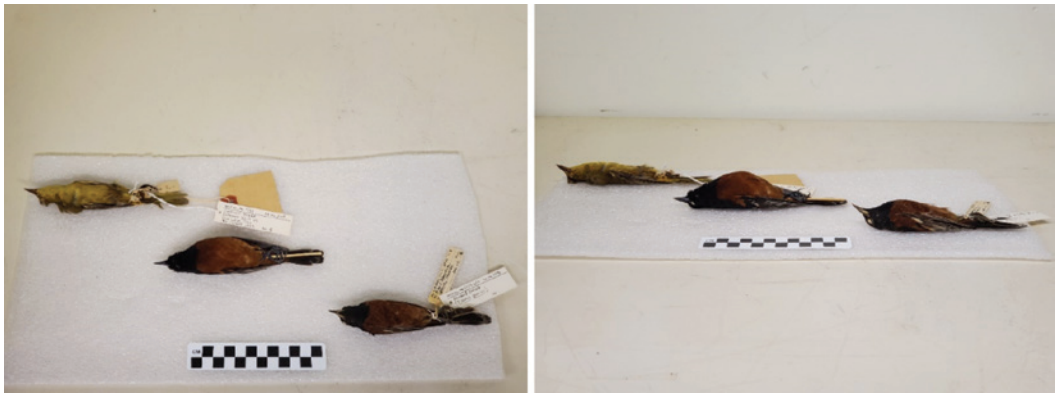
The specimen presented as an adult male (skull completely ossified) and had mass of 20 g with moderate subcutaneous fat. During preparation the stomach was dissected but was empty. It is assumed that the ultimate cause of death of the specimen was collision with a building, as its neck showed evidence of severe trauma, and it was found in a part of the city with multi-story towers.

Following the removal of the carcass during specimen preparation, the abdomen was opened to collect measurements of the testes. The left testicle was present, measuring 3.30 x 4.57 mm. However, the right testicle was missing, and there did not appear to be any damage to this section of the body (Figs. 1a, b). The right testicle was not found near any other part of the body, so it was not lost during the removal of organs.

The specimen had no external features or color patterns found on adult female orchard orioles, nor were ovaries or ovum present in the body

Figures 1 a and b: Images of the oriole carcass, showing the lack of a right testicle within the pelvic region.

[1]E-Mail:



Figures 2 a and b: Image of the male orchard oriole specimen (VO 4407) from above (2a) and the side (2b). The specimen is in the center, compared with another male (VO 1446) in the bottom right corner and a female specimen (VO 644) in the top left corner.

(Figs. 2a, b), expressing a pattern only found in adult male feathers (Dickerman and Warner, 1962). This removes the possibility that the specimen represents a case of either bilateral gynandromorphy (Murillo et al. 2023) or hermaphroditism (Mikulas and Brooks, 2014). The lack of female gonad structures provides support that the specimen does not represent an example of an intersex bird (Storey et al., 1969). The lack of female features and organs and the presence of a confirmed testicle supports that this specimen represents a case of monorchism, as it is similar to other cases of the condition in other species of animals (Will et al., 2005).

Monorchism has been identified in birds, having been reported in domestic guineafowl (Kurkure et al., 2006), so the condition occurring in a non-domestic bird species is not unexpected. However, the literature has an extremely limited number of records on the occurrence of monorchism in non-human animals, thus it is difficult to determine how common this condition is in wild birds. DMB has overseen the preparation of ~4000 avian specimens at HMNS, and this specimen is the first monorchid, estimating a rate of at least 1/4000. It also appears to be the first record of this condition in an Orchard oriole, and possibly the first reported condition in a wild bird. It is essential to collect more data to determine the scope of this condition in wild birds, and to identify other species in which it occurs.

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SEASONAL STATUS OF WHITE-EYED VIREOS IN THE LOWER RIO GRANDE VALLEY, TEXAS

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White-eyed Vireos (*Vireo griseus*) are common breeders in dense thickets and similar habitats across the eastern and central USA, including much of Texas. They are partially migratory, wintering south to southern Mexico, Cuba, and northern Central America. The subspecies *V. g. micrus* (hereafter *micrus*) is a permanent resident in southern Texas and northeastern Mexico (Oberholser 1974). The migratory subspecies *V. g. griseus* (hereafter *griseus*) breeds across much of the eastern and central USA but has been recorded in southern Texas in its non-breeding season (Oberholser 1974, Hopp 2022).

The species' migration statewide is from mid-March to mid-May and late August to late October, and the breeding season runs from March to mid-July, with a peak in May and June. The seasonal status of the two White-eyed Vireo subspecies in southern Texas has not been studied. Our goal was to determine their seasonal status in the Lower Rio Grande Valley of Texas. We employed bird-banding in our study, because these subspecies can best be identified by wing measurements (Pyle 1997; Remsen et al. 1996).

Within the subtropical Lower Rio Grande Valley, White-eyed Vireos are most common in areas with a dense shrub/understory layer (Brush 2005). We chose two study sites containing such habitat: 1) the Arroyo Colorado unit of Las Palomas Wildlife Management Area (ARUN), a 318-ha tract managed by the Texas Parks and Wildlife Department, at 26.32° N, 97.52° W in Cameron County, Texas, and 2) Quinta Mazatlan (QMAZ), an 8-ha urban woodland managed by the City of McAllen, at 26.18° N, 98.23° W, in McAllen, Hidalgo Co., Texas. ARUN contains thorn-forest, riparian woodland, and scrub along the Arroyo Colorado, a distributary of the Rio Grande. QMAZ contains thorn forest, thornscrub, and open woodland surrounded by urban development.

We captured White-eyed Vireos with 2-m long, 33-mm mesh mist-nets opportunistically as part of a general banding program; there was no attempt to preferentially capture them. During 2004-2023, MHC banded at ARUN for 27,951.9 net-hours, averaging 1,387.6 net hours per year. During 2007-2023, MHC and subpermittee Catherine C. Brush banded at QMAZ, for a total of 4,394.1 net-hours, averaging 258.5 net-hours per year. Birds were classed as *micrus* if primary 5 was greater or equal in length compared to primary 8, and as *griseus* if primary 5 was shorter than primary 8 (Pyle 1997). We determined age, sex, mass, wing length, tail length, and eye color when possible, since they can be useful in determining subspecies as well.

We banded 278 birds between 2004 and 2023: 243 at ARUN (0.99 birds / 100 net-hours) and 35 at QMAZ (0.80 birds / 100 net-hours). Of the 237 birds for which we obtained the needed wing measurements, 73.0% were *micrus* and 27.0% were *griseus*. Subspecific proportions were similar at ARUN and QMAZ ($X^2 = 1.08$, $P > 0.05$; Table 1). At the two sites, similar percentages of the 237 birds were recaptured at least once: 22.8% at ARUN, and 22.6% at QMAZ ($X^2 = 0.001$, $P > 0.977$). Based on these results, we combined the two study sites for further analysis.

Birds identified as *micrus* were banded regularly throughout the year, with no more than 16% of the 237 total in any one month (Table 2). We captured 75% of the 64 *griseus* during April, September, and October, compared to 24.3% of *micrus* then. We banded 38.4% of *micrus* during May-July, compared to 4.7% of *griseus*. We banded 23.7% of *micrus* in December-February, compared to 4.7% of *griseus*.

Micrus individuals were significantly smaller than *griseus* (Table 3). *Micrus* wing length averaged 2.4 mm and tail length averaged 1.2 mm shorter than *griseus*. *Micrus averaged* 1.0 g lighter than *griseus*. Although slight, these differences were significant.

Iris color varied widely. No first-year birds had white eyes. For adults (in at least their second

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Table 1. Number of White-eyed Vireos identified to subspecies at our two study sites in the Lower Rio Grande Valley of Texas. See text for statistical significance.

Location	Number (%) *micrus*	Number (%) *griseus*	Total banded
QMAZ	25 (80.6%)	6 (19.4%)	31
ARUN	148 (71.8%)	58 (28.2%)	206
TOTAL	173 (73.0%)	64 (27.0%)	237

Table 2. Overall number of White-eyed Vireos identified to subspecies by month at our study sites, Lower Rio Grande Valley, Texas. A total of 173 were identified as *micrus* and 64 as *griseus*.

	Jan	Feb	Mar	Apr	May	Jun
griseus	2	0	6	20	3	0
micrus	24	11	8	19	24	27
	Jul	Aug	Sep	Oct	Nov	Dec
griseus	0	0	10	18	4	1
micrus	16	8	11	12	7	6

Table 3. Wing lengths, tail lengths, and mass of White-eyed Vireo subspecies banded at our study sites in the Lower Rio Grande Valley of Texas. Data are presented as mean ± standard deviation, with sample sizes in parentheses. Kruskal-Wallis (KW) tests were used to determine statistical significance of differences between subspecies.

Subspecies	Wing length (mm)	Tail length (mm)	Mass (g)
micrus	57.3+2.90 (160)	45.0+2.52 (158)	10.8+0.99 (158)
griseus	59.7+2.44 (58)	46.2+2.16 (58)	11.8+0.99 (58)
KW results	32.3 P < 0.001	9.3 P = 0.002	27.89 P < 0.001

year), 69% of *griseus* had gray or grayish eyes and 27.27% had white eyes, compared to 77.8% and 22.15%, respectively, of *micrus* (X^2 = 14.42, P = 0.013). Most *griseus* were more brightly colored than *micrus*, but we could not quantify this apparent difference.

Of birds identified to subspecies, 27.1% (47) of *micrus* were recaptured at least once, compared to 10.9% (7) of *griseus* (X^2 = 6.995, df = 1, P = 0.008). Most birds were recaptured less than one year after they were banded, often in the same month. Fifteen of the 47 recaptured *micrus* (31.9%) were recaptured more than one year after they were banded. This was not statistically different than the 2 of 7 (28.6%) recaptured *griseus* recaptured more than one year later (X^2 = 0.032, df = 1, P = 0.859).

Data supported the idea that the two main subspecies occur regularly in the Valley: permanent resident *V. g. micrus* and migratory *V. g. griseus*. As expected, *micrus* were found year-round, with fairly even distribution and recaptures throughout the year. Although we expected more *griseus* to be banded in winter, most were banded or recaptured in fall or spring migration periods. These birds may have wintered farther south in tropical habitats (Rappole and Warner 1980, Greenberg et al. 1993). As expected, site fidelity appears to be higher in the resident *micrus* subspecies but also occurs to some extent in migratory *griseus*.

Thanks to Catherine C. Brush for assisting MHC in banding at Quinta Mazatlan and to all other field assistants. We thank the site managers at Quinta Mazatlan and the Texas Parks and Wildlife Department's Arroyo Colorado unit for permission to carry out our research at the study sites. All birds were banded under state permit SPR-0703-14 and federal permit 22758.

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DIET OF COOPER'S HAWKS AT AN URBAN NEST IN LOUISIANA, USA

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Cooper's Hawk (Astur cooperii; formerly Accipiter cooperii) is a medium-sized raptor that occurs throughout the conterminous United States, and which since the 1970s has become increasingly common in urban habitats (Rosenfield et al. 2024). Cooper's Hawk is now considered the most common "backyard breeding raptor" in the United States (Rosenfield et al. 2024), and nest densities in some urban areas are among the highest reported (Rosenfield et al. 1995, Boal and Mannan 1998). The breeding biology and diet of the Cooper's Hawk has been well-studied in the northern and western parts of its distribution (Rosenfield et al. 2024 and references therein). However, comparatively little research has been conducted on Cooper's Hawks in the southeastern United States, and many aspects of its ecology within this region remain poorly known (Vukovich and Kilgo 2009, Millsap et al. 2013). We here report on the diet of a nesting pair of Cooper's Hawks and their offspring in an urban habitat of East Baton Rouge Parish, Louisiana, USA.

Our observations were made in a residential neighborhood near the Webb Memorial Golf Course (30° 25´ N; 91° 08´ W) within the municipal limits of Baton Rouge. This residential area (developed 1950–1955) is described in greater detail elsewhere (Platt and Rainwater 2022, Leggio et al. 2024), but in general is characterized by spacious homesites, planted shrubbery, and numerous mature deciduous and coniferous trees. After locating an active Cooper's Hawk nest (see below), we began daily monitoring of the ground beneath the nest and adjacent trees for prey remains. We located additional plucking posts (sensu Estes and Mannan 2003) by noting the presence of prey remains and on occasion, adult hawks, and thereafter also began daily monitoring of these locations. We removed prey remains whenever found to avoid potential double counting during subsequent searches (Errington 1932). We tentatively identified prey items based on our knowledge of the local avifauna and later confirmed these identifications

using the Feather Atlas Identification Tool of the US Fish and Wildlife Service Forensic Laboratory (https://fws.gov/lab/featheratlas/idtool.php). The body mass of each prey item was estimated using values provided by Millsap et al. (2013) and Schwertner et al. (2020). We also made opportunistic observations of Cooper's Hawks (adults and juveniles) consuming prey and in two instances, capturing prey. In each case, we attempted to visually identify prey using binoculars (8 mm × 42 mm).

We found the nest on 30 Mar 2020 after noticing an adult Cooper's Hawk fly from the crown of a mature southern live oak (Quercus virginiana) in the front yard of a residence on Ormandy Drive (Figure 1). The nest was constructed in the upper crown of the tree, approximately 14 m above-ground. An eggshell was found beneath the nest on 10 May 2020, the presence of four fledglings was confirmed on 7 Jun 2020, and the young birds were observed flying the following day. One juvenile was observed on the ground, unable to fly, and dragging a wing on 29 Jun 2020 and not observed thereafter. We assume this bird most likely sustained a broken wing as the result an accidental collision (e.g., Deem et al. 1998). The adult and juvenile hawks were frequently encountered in the vicinity of the residence until observations were terminated when SGP departed Baton Rouge on 9 Aug 2020.

Figure 1. Adult Copper's Hawk at a nest constructed in the crown of a southern live oak in a residential area of Baton Rouge, Louisiana (1 May 2020).

During this period (30 Mar to 9 Aug 2020), we recorded 43 prey items taken by the Cooper's Hawks (Table 1). We located the remains of 33 prey, observed hawks killing prey (Blue Jays Cyanocitta cristata) on two occasions, and plucking, consuming, and transporting prey on eight occasions. Of the latter, we were able to identify only one species (fledgling Blue Jay);

Table 1. Number, body mass, and total biomass of prey (N = 43) consumed by Cooper's Hawks associated with a nest in Baton Rouge, East Baton Rouge Parish, Louisiana, USA (30 Mar to 9 Aug 2020). Number of prey items followed by percent occurrence in parentheses. Body mass of prey from Millsap et al. (2013) and Schwertner et al. (2020). Total biomass for each species calculated by multiplying mean body mass by the number of prey items. Percent occurrence of total biomass (total biomass for each species divided by 3588 g) follows in parentheses. NA = Not applicable.

Prey	**Number (%)**	**Mass (g)**	**Total Biomass (g)**
American Robin (Turdus migratorius)	2 (4.6)	77	154 (4.3)
Blue Jay (Cyanocitta cristata)	9 (20.9)	87	783 (21.8)
Chuck-will's-widow (Antrostomus carolinensis)	1 (2.3)	120	120 (3.3)
Mourning Dove (Zenaida macroura)	11 (25.5)	119	1309 (36.4)
Northern Cardinal (Cardinalis cardinalis)	2 (4.6)	45	90 (2.5)
Northern Flicker (Colaptes auratus)	2 (4.6)	132	264 (7.3)
Northern Mockingbird (Mimus polyglottos)	4 (9.3)	49	196 (5.4)
Red-headed Woodpecker (Melanerpes erythrocephalus)	1 (2.3)	72	72 (2.0)
White-winged Dove (Zenaida asiatica)	4 (9.3)	150	600 (16.7)
Birds (unidentified)	7 (16.2)	NA	NA
Total prey biomass			3588

the remaining seven prey items appeared to be nestling birds, but these could not be reliably identified to species. The 36 identified prey items consisted of nine bird species with average body masses ranging from 45 to 150 g (Table 1). White-winged Doves (Zenaida asiatica) were the largest prey recorded. The mean ± 1SD body mass of the 36 identified prey items was 99.6 ± 32.1g. Mourning Doves (Zenaida macroura) and Blue Jays constituted over half (55.5%) of the identified prey items. In terms of biomass, Mourning Doves and Blue Jays comprised almost two-thirds of the diet (58.3%), followed by White-winged Doves (16.7%).

Our results are consistent with other studies which found that birds are the predominant prey (up to 90%) of Cooper's Hawks (Millsap et al. 2013). And similar to our findings, the dominance of a few prey species appears typical of most other dietary studies of Cooper's Hawks (reviewed by Millsap et al. 2013). With the exception of Chuck-will's-widow (Antrostomus carolinensis), the prey we recorded are species commonly encountered in urban habitats of Baton Rouge (SG Platt unpubl. data) and have frequently been reported as prey of Cooper's Hawks (Rosenfield et al. 2024 and references therein). Other researchers also report that doves (Columbidae), especially Mourning Doves and White-winged Doves, are a significant component of Cooper's Hawks' diet in urban habitats (Mannan and Boal 2000, Roth and Lima 2003, Estes and Mannan 2003). Blue Jays are likewise reported in most dietary studies of nesting Cooper's Hawks (Rosenfield et al. 2024) and are often among the prey most frequently taken (Toland 1985, Layne 1986, Millsap et al. 2013).

We recovered the remains of a single Chuck-will's-widow taken as prey by Cooper's Hawks during our study. We heard a Chuck-will's-widow vocalizing ca. 2035 h CST on 29 May 2020 and found the remains (presumably of the same bird) the following afternoon. This observation is particularly noteworthy because while seasonally common in upland forests of southeastern Louisiana, this is the first Chuck-will's-widow encountered by SGP in > 40 years of observation within urban habitats of south Baton Rouge. We are aware of only two previous reports of predation on Chuck-will's-widow by Cooper's Hawks; Layne (1986) and Millsap et al. (2013) found the remains of one and two Chuck-will's-widow, respectively, at nests of Cooper's Hawks in Florida.

We found no evidence of gray squirrel (Sciurus carolinensis) predation by Cooper's Hawks during our study. This is somewhat surprising given that gray squirrels are 1) abundant in urban habitats of Baton Rouge (SG Platt pers. obs.) and 2) reported in most dietary studies of Cooper's Hawks (Rosenfield et al. 2024 and references therein). That said, we observed what appeared to be a failed predation attempt on a squirrel by two juvenile hawks (9 Jul 2020), and an adult Cooper's Hawk was seen dismantling a squirrel drey (Feb 2020), presumably in search of prey (C. M. Leggio pers. comm.). These observations strongly suggest that Cooper's Hawks in our study area are likely to at least occasionally prey on gray squirrels. Others have suggested the abundance of avian prey in urban habitats enables Cooper's Hawks to maintain high rates of survival and reproductive output with minimal use of mammalian prey (Roth et al. 2008, Millsap et al. 2013).

Lastly, we conclude with an important caveat regarding potential bias in our study. According to Bielefeldt et al. (1992), the collection of prey remains from the vicinity of Cooper's Hawk nests overestimates the contribution of birds to the diet because these items are both persistent and conspicuous and thus, more likely to be detected than the remains of other prey taxa (e.g., reptiles and mammals). While we acknowledge the potential for bias when interpreting our results, we nonetheless feel confident that birds comprised the majority of prey in our study and the contribution of other prey taxa to the diet was minimal. However, from the standpoint of biomass, our approach undoubtedly underestimated the contribution of nestling birds to the diet because nestlings are rarely accounted for when only prey remains are sampled (Millsap et al. 2013). This appears to be the case in our study; we found no remains of nestling birds and only recorded these items when we observed hawks plucking or transporting them. Direct observations of prey deliveries to the nest would be required to adequately address this

source of bias (Bielefeldt et al. 1992, Estes and Mannan 2003).

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TEXAS BIRD RECORDS COMMITTEE REPORT FOR 2024

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The Texas Bird Records Committee (hereafter "TBRC" or "committee") of the Texas Ornithological Society requests and reviews documentation on any record of a TBRC Review List species (see TBRC web page at http://www.texasbirdrecordscommittee.org). Annual reports of the committee's activities have appeared in the Bulletin of the Texas Ornithological Society since 1984. For more information about the Texas Ornithological Society or the TBRC, please visit www.texasbirds.org. The committee reached a final decision on 171 records during 2024: 159 records of 61 species were accepted and 12 records of 11 species were not accepted, an acceptance rate of 93.0% for this report. A total of 326 observers submitted documentation (to the TBRC or to other entities) that was reviewed by the committee during 2024.

The TBRC accepted 4 first state records in 2024: Tufted Duck, Yellow-footed Gull, Gray-collared Becard, and Southern Lapwing. In addition, Cory's Shearwater was split into Cory's Shearwater and Scopoli's Shearwater. The three state additions plus the one split bring the official Texas State List to 671 species in good standing. This total does not include the 2 species on the Presumptive Species List, nor the 2 species on the Supplemental List.

In addition to the review of previously undocumented species, any committee member may request that a record of any species be reviewed. The committee requests written descriptions as well as photographs, video, and audio recordings if available. Information concerning a Review List species may be submitted to the committee secretary, Clayton Leopold (email: clayton.leopold.12@gmail.com). Guidelines for preparing rare bird documentation can be found in Dittmann and Lasley (1992) How To Document Rare Birds. Online submission forms can be found at https://www.texasbirdrecordscommittee.org/home/forms.

The records in this report are arranged taxonomically following the AOS Check-list of North American Birds (AOU 1998) through the 65th supplement (Chesser et al. 2024). A number in parentheses after the species name represents the total number of accepted records in Texas for that species at the end of 2024. Species added to the Review List because of population declines or dwindling occurrence in recent years do not have the total number of accepted records denoted as there are many documented records that were not subjected to review (e.g. Brown Jay, Pinyon Jay, Tamaulipas Crow, and Evening Grosbeak). All observers who submitted written documentation or photographs/recordings of accepted records are acknowledged by initials. If known, the initials of those who discovered a particular bird are in boldface but only if the discoverer(s) submitted supporting documentation. The TBRC file number of each accepted record will follow the observers' initials. Specimen records are denoted with an asterisk (*) followed by the institution where the specimen is housed and the catalog number. The information in each account is usually based on the information provided in the original submitted documentation; however, in some cases this information has been supplemented with a full range of dates the bird was present if that information was made available to the TBRC. All locations in italics are counties. Please note that the county designations of offshore records are used only as a reference to the nearest point of land.

TBRC Membership—Members of the TBRC during 2024 who participated in decisions listed in this report were: Tony Frank, Chair; Keith Arnold, Academician; Eric Carpenter, Secretary (until

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Oct 2024); Clayton Leopold, Secretary (since Oct 2024); Sheridan Coffey, Greg Cook, Mel Cooksey, Steve Glover, Matt Heindel, Jesse Huth, Arman Moreno, and Willie Sekula.

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Additional Abbreviations – AOS = American Ornithologists' Society; AOU = American Ornithologists' Union; BBNP = Big Bend National Park; GMNP - Guadalupe Mountains National Park; NP = National Park; NWR = National Wildlife Refuge; SHS = State Historic Site; SNA = State Natural Area; SP = State Park; WMA = Wildlife Management Area.

ACCEPTED RECORDS

Brant (*Branta bernicla*) (41). One at Lubbock, Lubbock on 5 December 2023 (**JC**; 2023-157). Two at Lorenzo, Crosby on 9 February 2024 (**ML**; 2024-13)

Eurasian Wigeon (*Mareca penelope*) (68). One at Anahuac NWR, Chambers on 20 October - 4 November 2023 (**TF**, WE, SB; 2023-98). One at Lewis Lake, Burnet on 16 November 2023 - 17 February 2024 (**DW**, SL, BW, RR; 2023-109)

Tufted Duck (*Aythya fuligula*) (1). One near Snook, Burleson on 23 January 2021 (**CM**; 2023-172). This represents the first documented record for Texas.

American Flamingo (*Phoenicopterus ruber*) (18). Three at Port Aransas, Nueces on 21 October - 14 December 2023 (MO, JS, RP, SL, JM, MC, MA, KT, JP; 2023-99). Two at Laguna Atascosa, Cameron on 22 October - 11 November 2023 (**EF**, MBS, KC, RD, LK; 2023-127). One at Port Aransas, Nueces on 20 April - 12 December 2024 (**BS**, MC, TVL, JS, AJ, SC, JG, PM, LW; 2024-60). Four at Bayou Vista, Galveston on 14-27 June 2024 (**HH**, ZTH, CL, DC; 2024-80).

Red-necked Grebe (*Podiceps grisegena*) (36). One at Bailey's Fish Camp, Old River Cove, Orange on 1 January 2023 (**JW**; 2023-03).

Ruddy Ground Dove (*Columbina talpacoti*) (32). One at Buffalo Springs Lake, Lubbock, Lubbock on 17 November 2023 (**SA**, **WO**; 2023-134).

Mangrove Cuckoo (*Coccyzus minor*) (17). One at South Padre Island, Cameron on 2-11 May 2024 (DS, MBS, AM, TH, MH, BP; 2024-40).

Mexican Violetear (*Colibri thalassinus*) (104). One at South Padre Island, Cameron on 7-15 April 2024 (**NW**, DP, VS, RS, TM, RoR, SS; 2024-38). One at South Padre Island, Cameron on 2-3 May 2024 (**RR**, MBS, CT; 2024-39). One at Spring Branch, Comal on 5 May 2024 (**SuS**; 2024-41). One at South Padre Island, Cameron on 10 May 2024 (**DJ**; 2024-58).

Costa's Hummingbird (*Calypte costae*) (55). One at El Paso, El Paso on 16-23 December 2018 (JK; 2024-73). One at El Paso, El Paso on 18 December 2018 - 8 February 2019 (**BZ**; 2019-13). One at El Paso, El Paso on 1-13 November 2020 (**JK**; 2024-74). One at Alpine, Brewster on 26 October 2022 (**CO**; 2022-89).

White-eared Hummingbird (*Basilinna leucotis*) (49). One west of Fort Davis, Jeff Davis on 4-10 July 2023 (**BM**; 2023-142).

Common Crane (*Grus grus*) (4). One at Dimmit, Castro on 17-18 December 2023 (**CW**, BrZ; 2023-159).

Southern Lapwing (*Vanellus chilensis*) (1). One southwest of Mercedes, Hidalgo on 13-20 April 2024 (MC, JS, JoM, DS, RL, AS; 2024-29). This represents the first documented record for Texas.

Bar-tailed Godwit (*Limosa lapponica*) (3). One at Portland/Sunset Lake, Nueces/San Patricio on 5 October 2023 - 20 February 2024 (**SkC**, JM, MiA, TF, SL, JS, PF, DoS, GF, StC, SH, StL; 2023-93).

Purple Sandpiper (*Calidris maritima*) (32). One at Sylvan Beach, La Porte, Harris/Chambers on 17-19 December 2023 (SR, CTL, TF; 2023-160). One at Texas City Dike, Galveston on 14 March - 3 May 2024 (**CY**, MiA, JS, SL, ZD, BO; 2024-20).

Red Phalarope (*Phalaropus fulicarius*) (59). One west of Hereford, Deaf Smith on 13 October 2023 (**WC**; 2023-130). One at Lake Somerville, Washington on 11 November 2023 (**JMa**; 2023-131).

Long-tailed Jaeger (*Stercorarius longicaudus*) (32). One at west Houston, Harris on 24 August 2022 (**KS**; 2024-71). One ~82 miles southeast of Port Aransas, Nueces on 14 September 2024 (**JS**, **CT**, **SkC**, **JOB**; 2024-90).

Yellow-footed Gull (*Larus livens*) (1). One at Southeast Park, Amarillo, Randall on 2 November 2023 - 30 January 2024 (**JA**, DoS, SSm, JS, SL, GH, TF, PF, JM, MC, RP, BF; 2023-124). This represents the first documented record for Texas.

Great Black-backed Gull (*Larus marinus*) (66). One at Ash Lake, Harris on 5 February 2024 (**CTL**, **LS**, **SR**; 2024-15). One at Old River/Channelview, Harris on 24 February 2024 (**LS**; 2024-17).

Brown Noddy (*Anous stolidus*) (29). One at Port Aransas jetty, Nueces on 1-25 October 2023 (**FW**, AO, FB, ShH; 2023-88). One at Packery Channel Jetty, Nueces on 26 May 2024 (**AO**; 2024-66).

Black Noddy (*Anous minutus*) (5). One at Port Aransas jetties, Nueces/Aransas on 26 April - 14 May 2024 (**JiM**, DS, JS, TF, PF, MC, SL, GC, DF; 2024-31).

Arctic Tern (*Sterna paradisaea*) (15). One at Bolivar Flats, Galveston on 9 May 2024 (**JBS**; 2024-87). One at South Padre Island, Cameron on 14 May 2024 (**JL**; 2024-47). One at Horizon City, El Paso on 9 June 2024 (**EW**; 2024-68). Up to three at North Padre Island, Kenedy/Kleberg/Nueces on 29 June - 27 August 2024 (**CJ**, **MC**, **SuH**, JS, WS, MD, CD, TD, AO; 2024-64).

Elegant Tern (*Thalasseus elegans*) (15). One at Padre Island NS, Kleberg on 25 July 2024 (**TL**; 2024-83).

Red-billed Tropicbird (*Phaethon aethereus*) (17). One at South Padre Island, Cameron on 27 October 2023 (**JL**; 2023-137). One at at least 3 miles offshore, east of Port Aransas jetty, Aransas on 14 May 2024 (**MaD**, JM; 2024-84).

Yellow-billed Loon (*Gavia adamsii*) (9). One at Lake Nasworthy, Tom Green on 16 January 2024 (**KeT**, ChD; 2024-08).

Leach's Storm-Petrel (*Hydrobates leucorhoa*) (44). One ~78 miles east-southeast of Port Aransas, Nueces on 23 February 2024 (**SK**; 2024-22).

Wedge-tailed Shearwater (*Ardenna pacifica*) (2). One ~34 miles southeast of Mustang Island, Nueces on 23 October 2023 (**JM**; 2023-101).

Sooty Shearwater (*Ardenna grisea*) (26). Two at Port Aransas jetty, Nueces on 6 May 2024 (**GA**; 2024-43). One at Padre Island NS, Kleberg on 29 June 2024 (CJ; 2024-81). One at Port Aransas Jetty, Nueces on 1 July 2024 (**JS**, **WT**; 2024-75).

Great Shearwater (*Ardenna gravis*) (47). One at Mustang Island, Nueces on 25 October 2023 (**AO**; 2023-138). One at Mustang Island, Nueces on 26 October 2023 (**AO**; 2023-139). One along beach, south of Port Aransas, Nueces on 27 October 2023 (JM; 2023-102). One along beach, south of Port Aransas, Nueces on 27 October 2023 (**JM**; 2023-103). One ~6 miles southeast of East Beach, Galveston on 25 June 2024 (**ShC**; 2024-79).

Manx Shearwater (*Puffinus puffinus*) (16). One at Mustang Island, Nueces on 26 October 2023 (**AO**; 2023-136).

Red-footed Booby (*Sula sula*) (13). One ~198 nautical miles southeast of Brazos River mouth, Brazoria on 2 February 2024 (**AM**; 2024-11). One ~42 miles southeast of Port Aransas, Nueces on 16 June 2024 (**KH**, JM; 2024-85).

Bare-throated Tiger-Heron (*Tigrisoma mexicanum*) (3). One at Santa Margarita Ranch & Salineno, Starr on 12 November 2023 - 18 March 2024 (**JH**, **ZJ**, **MM**, JS, TF, PF, JM, RP, DT, SW, ScS, DB, CN, GR; 2023-123).

Crane Hawk (*Geranospiza caerulescens*) (2). One at Salineno, Starr on 29 January - 11 March 2024 (**GaH**, JM, DoS, CB, CP, AT; 2024-10).

Roadside Hawk (*Rupornis magnirostris*) (16). One at Resaca de la Palma SP, Cameron on 7 November 2023 - 23 March 2024 (**SF**, RP, ME, MBS, SL, DoS, GaR, StC, DB, JB; 2023-107). One at Bentsen SP, Hidalgo on 9 November - 28 December 2023 (**BC**, RD, CJ; 2023-154). One at La Gloria tract of LRGV NWR , Cameron on 7 December 2023 (**StB**; 2023-120). One south of Resaca de la Palma SP, Cameron on 13 January - 15 March 2024 (**TH**, EF, MiC; 2024-04). One south of Lasara, Willacy on 4 March 2024 (**SD**; 2024-18).

Short-tailed Hawk (*Buteo brachyurus*) (78). One to two at Bentsen-Rio Grande SP, Hidalgo on 2 September - 19 October 2022 (**JF**, **RR**, JoK; 2022-67). One at Davis Mountains Preserve, Jeff Davis on 28 July 2023 (**NN**; 2023-144). One north of Leakey, Real on 23 March 2024 (**NN**; 2024-34). One at Santa Margarita Ranch, Starr on 29 March 2024 (**ToM**; 2024-35). One at Santa Margarita Ranch, Starr on 3 April 2024 (**DN**, **LM**, **ReR**; 2024-36). One west of Cedar Park, Travis on 5 April 2024 (**BC**; 2024-26).

Mottled Owl (*Strix virgata*) (3). One at Santa Margarita Ranch, Starr on 18 November 2023 - 31 December 2024 (**SiK**, JS, TF, PF, JM, RP, TH, DJ, ChT, ZJ; 2023-122). This bird was still present when this report was written.

Northern Saw-whet Owl (*Aegolius acadicus*) (41). One west of Fort Davis, Jeff Davis on 13 May - 23 October 2022 (**BM**, JM, RP, JS; 2022-36). One at Tobe Canyon, DMP, Jeff Davis on 2-15 June 2024 (**RK**, SL, LiW, JD; 2024-62).

Gray-collared Becard (*Pachyramphus major*) (1). One at Resaca de la Palma SP, Cameron on 25 November 2023 - 23 March 2024 (**BN**, JM, JS, RP, TF, PF, MBS, GH, SL, DoS, BoF, JiK, JaC, DaC; 2023-112). This represents the first documented record for Texas.

Rose-throated Becard (*Pachyramphus aglaiae*) (98). One to two at Bentsen-Rio Grande SP, Hidalgo on 13 November 2021 - 16 April 2022 (LiS, RP, PH, RR, JN, ChP, ChL, RW, DA, RS, SuW, TK; 2021-111). One at National Butterfly Center, Mission, Hidalgo on 13 May 2022 (**RR**; 2023-169). One at Bentsen-Rio Grande SP, Hidalgo on 8 November 2022 - 9 March 2023 (**GM**, EE, AM, DoS, SSm, JoD; 2023-152). Two at Salineno, Starr on 12 November 2022 (**CG**, **AR**; 2023-125). One at Santa Ana NWR, Hidalgo on 27 December 2022 (**JoH**, **MaH**; 2023-146). Up to four at Santa Margarita Ranch, Starr on 11 March 2023 - 5 October 2024 (**JS**, RT, CC, TF, PF, RP, RR, JeH, GG, CC, JaA, MS, CoD, AH, WiC, JR; 2023-19). One at Santa Ana NWR, Hidalgo on 7 April 2023 (**DK**; 2023-147). One at National Butterfly Center, Mission, Hidalgo on 3 September 2023 (ZD; 2023-150). One at Resaca de la Palma SP, Cameron on 10 November 2023 - 23 April 2024 (MiS, JS, MBS, AM, MiA, RhR; 2023-121). One at Bentsen-Rio Grande SP, Hidalgo on 2 December 2023 - 4 April 2024 (TE, ClB, NaN, ReR; 2023-162). Up to four at Salineno, Starr on 16 February - 5 October 2024 (**MR**, MBS, EA, MuS, ChB, ED, LH, JR; 2023-128). Up to six at islands/areas between Santa Margarita Ranch and Salineno, Starr on 11 March - 20 July 2024 (**TH**, **JS**, RR; 2024-91). One at Estero Llano Grande SP, Hidalgo on 15-23 March 2024 (JY, ErD, TS; 2024-19). Two at Lincoln Park, Brownsville, Cameron on 22 March 2024 (**PaF**, **CrW**, **KW**; 2024-21). Two southwest of La Joya, Hidalgo on 10 May - 8 June 2024 (**MSt**, EF; 2024-59). Rose-throated Becard was removed from the Review List during the TBRC's 2024 Annual Meeting.

Dusky-capped Flycatcher (Lawrence's) (*Myiarchus tuberculifer* [lawrenceii group]) (41). Up to four at Santa Margarita Ranch, Starr on 9 November 2023 - 16 March 2024 (**RR**, KR, JM, DT, HS, GW, SiK; 2023-163). One at Lake Alice, Jim Wells on 22 November - 9 December 2023 (**RR**, SkC, MSt; 2023-158). One to two at Santa Ana NWR, Hidalgo on 23 November 2023 - 9 February 2024 (**NW**, MBS, BW, MN, JR, MaS, HoS, DG; 2023-129). One at National Butterfly Center, Mission, Hidalgo on 24-25 November 2023 (**RR**, JiH, PP, SHe; 2023-156). One at Resaca de la Palma SP, Cameron on 25 November 2023 - 24 March 2024 (**JL**, RP, MBS, EE, EC, DrS; 2023-149). One at Salineno, Starr on 15 December 2023 - 16 March 2024 (**NC**, TP, RB, RoB, MiS, AT, CTL, DD, MHo, AlT, KyH; 2023-170). One at Arroyo Colorado Unit, Las Palomas WMA, Cameron on 17 December 2023 - 18 February 2024 (**AuH**, JaG, EF; 2023-171). One at La Sal Veija, Willacy on 13-14 January 2024 (**CW**, **RoW**, EF; 2024-05). One west of Santa Maria, Hidalgo on 5 February 2024 (**EF**; 2024-25). Dusky-capped Flycatcher (Lawrence's) was removed from the Review List B during the TBRC's 2024 Annual Meeting.

Nutting's Flycatcher (*Myiarchus nuttingi*) (3). One to two at Santa Elena Canyon, Brewster on 22 October - 28 December 2023 (**NW**, **DO**, JS, WT,

SL, PS, TF, PF, MBS, GH, CW, MiS, JeC; 2023-106). One at Mustang Island, Nueces on 27-28 April 2024 (**AM**, MC, CT, WS; 2024-46).

Sulphur-bellied Flycatcher (*Myiodynastes luteiventris*) (40). One at Anahuac NWR, Chambers on 19 April 2024 (**MiN**; 2024-51).

Piratic Flycatcher (*Legatus leucophaius*) (10). One at Sylvan Rodriguez Park, Houston, Harris on 28-29 April 2024 (**ScB**, JS, TF, PF, SL, CTL; 2024-32). One at Quintana, Brazoria on 21 May 2024 (**DaS**, TF; 2024-49).

Thick-billed Kingbird (*Tyrannus crassirostris*) (23). One at Rio Grande Village, Big Bend NP, Brewster on 26 May 2024 (**KM**; 2024-86).

Gray Kingbird (*Tyrannus dominicensis*) (21). One at Skillern Tract, Anahuac NWR, Chambers on 29 April 2024 (DSh; 2024-55). One at Quintana, Brazoria on 18 May 2024 (**GA**; 2024-63).

Fork-tailed Flycatcher (*Tyrannus savana*) (58). One at San Benito Wetlands, Cameron on 15 October - 13 November 2022 (MBS, RP, EF, JeB, AL, NH, JeW, KD; 2022-90). One north of Bayview, Cameron on 21-22 December 2022 (**MT**, BiP; 2023-167).

Greater Pewee (*Contopus pertinax*) (45). One at Bear Creek Park, Houston, Harris on 19 October 2023 - 27 March 2024 (**BF**, TF, ET, JaR, DH, KeS; 2023-100). One at El Paso, El Paso on 18 November 2023 (**JoG**, OJ; 2023-110). One at Canyon Lake, Comal on 14-26 December 2023 (**RM**, WS, BN, BrW; 2023-161). One at Jeronimo Banco tract of LRGV NWR, Cameron on 3 January 2024 (**StB**; 2024-01). One at El Paso, El Paso on 18 May 2024 (**JK**, **JoG**; 2024-65). One at Boot Canyon, Big Bend NP, Brewster on 14-17 June 2024 (**TA**, **JaP**, AT, CB; 2024-78).

Black-whiskered Vireo (*Vireo altiloquus*) (58). One at High Island, Galveston on 26 June 2023 (**WE**, CaC, BA; 2023-143). One at Hooks Woods, High Island, Galveston on 11-22 April 2024 (**RC**, JS, AM, DM; 2024-33). One at Mustang Island, Nueces on 17 April 2024 (**GA**, SkC; 2024-28). One at Sabine Woods, Jefferson on 4-6 May 2024 (TH, DaS; 2024-56). One at Port Aransas, Nueces on 9 May 2024 (CS; 2024-57). One at Anahuac NWR, Chambers on 11 May 2024 (**BF**; 2024-48). One at Galveston Is. SP, Galveston on 29 May - 3 June 2024 (DeS, SR, DC; 2024-67). One to two at Bolivar Peninsula, Galveston on 22 June - 14 July 2024 (**WE**, CTL, GY; 2024-82). One at Houston Arboretum, Harris on 17-27 August 2024 (**NR**, RiR, ChP, CTL; 2024-89). One at Pollywog Ponds, Nueces on 22 August 2024 (**JR**; 2024-88).

Brown Jay (*Cyanocorax morio*) (7). Five at Santa Margarita Ranch & Salineno, Starr on 3 March 2023 - 31 December 2024 (**RR**, JS, RoC, LL, CT, EH, MBS, JeK, GrH, DE, ChT, ZJ; 2023-20). This group of birds was still present when this report was written.

Varied Thrush (*Ixoreus naevius*) (59). One at Tobe Canyon, Davis Mountains Preserve, Jeff Davis on 18 November 2023 (; 2023-132). One at Dell City, Hudspeth on 24 November 2023 (**WS**, **AB**; 2023-133). One at Amarillo, Randall on 6 February - 24 March 2024 (**DoS**, **SSm**; 2024-12).

Evening Grosbeak (*Coccothraustes vespertinus*) (58). One at Duncanville, Dallas on 20-21 November 2023 (CD, MD; 2023-135).

Pine Grosbeak (*Pinicola enucleator*) (7). One at Lake Palo Duro, Hansford on 25 November 2023 - 8 January 2024 (**GC**, **SG**, SL, DoS, JS, MBS, GH, JM, RP, RhR, EA; 2023-111).

(Slate-colored) Fox Sparrow (*Passerella iliaca* [schistacea Group]) (7). One at Baylor Lake, Childress on 22 November 2020 (**GC**; 2020-129).

Golden-crowned Sparrow (*Zonotrichia atricapilla*) (54). One at Palo Duro Canyon, Randall on 11 December 2023 - 13 January 2024 (**ShD**, **PH**, JRi, AM, RF; 2023-126). One at McKinney, Collin on 14 January - 28 February 2024 (**MV**, MCa, MP; 2024-07). One at South Llano River SP, Kimble on 7 April 2024 (**NS**; 2024-27).

Crescent-chested Warbler (*Oreothlypis superciliosa*) (3). One at Pine Canyon, Brewster on 25 April 2024 (**DaM**; 2024-53).

Connecticut Warbler (*Oporornis agilis*) (13). One at Rockport, Aransas on 8 May 2024 (**RRy**; 2024-45).

Fan-tailed Warbler (*Basileuterus lachrymosus*) (2). One at UT Rio Grande Valley, Brownsville, Cameron on 5 January - 19 April 2024 (**EF**, MC, JS, RP, DoS, RyM, JeD, FP, MY; 2024-02).

Golden-crowned Warbler (*Basileuterus culicivorus*) (40). One at Hugh Ramsey Park, Harlingen, Cameron on 13 September 2023 - 23 March 2024 (**JBr**, JM, RP, MBS, RaM, ToF, JGi, TC, CoT, CPa; 2023-104). One at Frontera, Hidalgo on 16 September 2023 - 1 March 2024 (**AV**, IP, JaGi, DoS, ED, DDK; 2023-165). One at Resaca de la Palma SP, Cameron on 26 November 2023 (**RR**, BW, CJ; 2023-155). One at Santa Margarita Ranch, Starr on 26 November 2023 (TH; 2023-168). One at Slaughter Park, Laredo, Webb on 24 December 2023 - 14 January 2024 (SG, SC, DaP; 2023-151). One at McAllen, Hidalgo on 22 April 2024 (**RR**, JGl; 2024-52).

Slate-throated Redstart (*Myioborus miniatus*) (21). One at Boot Canyon, Big Bend NP, Brewster on 3-12 May 2024 (**JeP**, NG; 2024-42).

Flame-colored Tanager (*Piranga bidentata*) (20). One at Quinta Mazatlan, Hidalgo on 12 April 2024 (DJ, MW, RL; 2024-37). One at PInnacles Trail, Chisos Mountains, Brewster on 26 April 2024 (**NW**; 2024-54). One at Mustang Island, Nueces on 11-14 May 2024 (**SC**, **MaR**, WS, AK; 2024-44).

Crimson-collared Grosbeak (*Periporphyrus celaeno*) (66). One at Sabal Palm, Cameron on 14 May 2023 (**GRh**; 2023-67). One at Frontera, Hidalgo on 2 December 2023 - 26 April 2024 (JBr, FC, JHa, AM, DoS, JGu, JT; 2023-164). One at Estero Llano Grande SP, Hidalgo on 30 December 2023 - 17 April 2024 (**KaD**, ChC, AL; 2023-166). One at Santa Ana NWR, Hidalgo on 14 June 2024 (DJ; 2024-69).

Blue Bunting (*Cyanocompsa parellina*) (73). One to two at Bentsen-Rio Grande SP, Hidalgo on 3 December 2020 - 8 February 2021 (**ErC**, **JuB**, JMo, KyM, WE, JS, AdJ, TaM; 2020-122). One at Frontera, Hidalgo on 27 February - 4 April 2021 (**CyM**, CoJ, KJ; 2021-44). One at Resaca de la Palma SP, Cameron on 1-3 March 2023 (**WM**, LA; 2023-148). One at Estero Llano Grande SP, Hidalgo on 27 October - 6 November 2023 (**NW**, JBr, NeH, JM, LB; 2023-153). One at Resaca de la Palma SP, Cameron on 7-9 November 2023 (NW, RP; 2023-108). One at San Antonio, Bexar on 14 January - 12 March 2024 (**KB**, **AnB**, GrF; 2024-06). One at Laguna Atascosa NWR, Cameron on 19-25 February 2024 (**KeB**, HA, DaS; 2024-16). One at Sabal Palm, Cameron on 6-18 April 2024 (**EF**, HP, MyP, BJP; 2024-50).

NOT ACCEPTED

A number of factors may contribute to a record being denied acceptance. It is quite uncommon for a record to not be accepted due to a bird being obviously misidentified. More commonly, a record is not accepted because the material submitted was incomplete, insufficient, superficial, or just too vague to properly document the reported occurrence while eliminating all other similar species. Also, written documentation or descriptions prepared entirely from memory weeks, months, or years after a sighting are seldom voted on favorably. It is important that the simple act of not accepting a particular record should by no means indicate that the TBRC or any of its members feel the record did not occur as reported. The non-acceptance of any record simply reflects the opinion of the TBRC that the documentation, as submitted, did not meet the rigorous standards appropriate for adding data to the formal historical record. The TBRC makes every effort to be as fair and objective as possible regarding each record. If the committee is unsure about any particular record, it prefers to err on the conservative side and not accept a good record rather than validate a bad one. All records, whether accepted or not, remain on file and can be re-submitted to the committee if additional substantive material is presented.

Brant (*Branta bernicla*). One at Lubbock, Lubbock on 22 January 2024 (2024-14).

Garganey (*Spatula querquedula*). One at Falcon State Park, Starr on 10 February 2024 (2024-24).

Slaty-backed Gull (*Larus schistisagus*). One at Ash Lake, Harris/Chambers on 12 February 2024 (2024-23).

Red-billed Tropicbird (*Phaethon aethereus*). One at Indianola, Calhoun on 20 June 2024 (2024-70).

Sooty Shearwater (*Ardenna grisea*). One at Pelican Island, Calhoun on 23 May 2024 (2024-72).

Short-tailed Hawk (*Buteo brachyurus*). One at Del Rio, Val Verde on 6 April 2023 (2023-77). One west of Liberty Hill, Williamson on 25 April 2024 (2024-30).

Cattle Tyrant (*Machetornis rixosa*). One at Corpus Christi, Nueces on 18 September - 4 May 2024 (2023-105). Provenance questionable.

White-rumped Swallow (*Tachycineta leucorrhoa*). One at South Padre Island, Cameron on 3 April 2022 (2023-97).

Redpoll (*Acanthis flammea*). One at The Woodlands, Montgomery on 16 January 2024 (2024-09).

Rufous-capped Warbler (*Basileuterus rufifrons*). One at Salineno, Starr on 16 August 2023 (2023-113).

Blue Bunting (Cyanocompsa parellina). One at Estero Llano Grande SP, Hidalgo on 13 April 2023 (2023-145).

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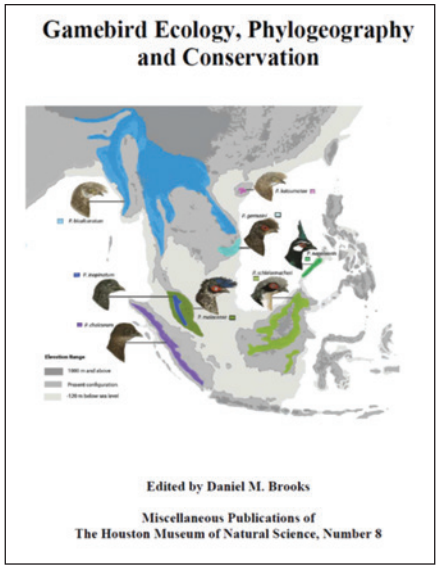

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