BULLETIN

OF THE

TEXAS ORNITHOLOGICAL SOCIETY

Vol. 56 No. 1–2 December 2023

Texas Ornithological Society

www.texasbirds.org

THE TEXAS ORNITHOLOGICAL SOCIETY

2023 OFFICERS

BYRON STONE
PRESIDENT

ROMEY SWANSON
VICE-PRESIDENT

SUSAN FOSTER
SECRETARY

LORRIE MATHERS
TREASURER

JACK EITNIEAR
PUBLICATIONS EDITOR

MEMBERSHIP

Any person interested in the birds of Texas is encouraged to become a member of the Texas Ornithological Society. Individual membership rates are $35.00 per year, $5.00 or more each month at the Sustaining level, $15.00 Student, Family $50.00, $400.00 Life, Organizational $25.00, and Life: $400.00 or Life w/ Spouse/Partner: $500.00. These memberships include print versions of ***Texas Birds Annual***, and digital access to the ***Bulletin of the Texas Ornithological Society*** and ***TOS News***. To become a member mail check or money order in U.S. funds with complete name and address to: Texas Ornithological Society Memberships, 11101-9 Leopard Sq., PMB 1039, Corpus Christi, Texas 78410. Memberships can also be obtained by consulting www.texasbirds.org

PUBLICATIONS

The ***Bulletin of the Texas Ornithological Society*** is an annual[1] journal devoted to the biology and conservation of the birds that occur in Texas and adjacent areas. Membership includes digital access to the ***Bulletin***. Guidelines for authors can be found at http://texasbirds.org/publications/bulletins/guidelinesForAuthors.pdf Hardcopies of the publication can be purchased by contacting the editor.

Texas Birds Annual (TBA) is published each year and includes new birding areas, recent media, vagrants and noteworthy birds from the previous year, articles on bird conservation issues and species profiles. Membership includes a print copy of the *TBA*.

TOS News is a tri-annual full color electronic newsletter produced by TOS. The newsletter is no longer a membership benefit but "open access" on our webpage at www.texasbirds.org.

Occasional Publication Series is published on an irregular basis on scientific works too long for publication in the *Bulletin*. When published it is provided free to all members as an extra benefit of membership during the year of publication. The series can be downloaded at www.Texasbirds.org

Submissions to all publications should be e-mailed to the editor (jclintoneitniear@gmail.com).

Changes of address and queries about memberships or missing copies: E-mail: TOSmember@yahoo.com or submit in writing to the address above.

Additional copies of publications can be obtained by contacting the editor.

PERMISSION TO COPY

The Texas Ornithological Society hereby grants permission to copy articles (in whole or in part) appearing in ***The Bulletin of the Texas Ornithological Society (Bulletin) and Texas Birds Annual (TBA)*** for personal use, or educational and/or personal use, without payment, provided the material reproduced includes the statement "©2024 The Texas Ornithological Society" and contains the full citation, including names of all authors. TOS does not maintain copyright for Figure/graphic material therefore does not allow any reproduction of such material without written consent of the author/photographer. Any use not specifically granted here, and any use of Bulletin or TBA articles or portions thereof for advertising, republication, or commercial uses, requires prior approval from the Editor.

[1]Starting with Vol. 42 both issues were combined..

Cover Figure: Gray Hawk fledglings. Photo Michael Stewart.

Frontispiece. Barred Owl (*Strix varia*) a Lake Jackson summer resident. Photo Michael Patrikeev

BULLETIN OF THE

TEXAS ORNITHOLOGICAL SOCIETY

THE UNSEEN AND SOMETIMES UNEXPECTED SUMMER MIGRATION: OVERNIGHT RECORDING ON THE UPPER TEXAS COAST

Ron J. Weeks

110 Indian Warrior, Lake Jackson, TX 77566

ABSTRACT.—A passive recording system set up in a residential Lake Jackson yard during June and July 2023 yielded some surprising nocturnal and diurnal bird detections in terms of both extreme migration dates and volume of migration. New Upper Texas Coast (UTC) late spring records for both Baird's Sandpiper and Swainson's Thrush and a new early UTC fall record for Ovenbird were physically documented. Larger than expected migration volumes of Least Bitterns (72) and Black-and-white Warblers (58) were recorded. Nocturnal movements of saltwater species including Clapper Rails, Black Rail, and American Oystercatchers 16 km inland from the immediate coast were also confirmed. In all, 425 migrants were detected over the two-month period.

During the fall of 2021, the author started recording nocturnal flight calls (NFCs) under the tutelage of Rice University professor, Cin-Ty Lee. That fall proved both rewarding and frustrating but ultimately highlighted the lure of understanding the massiveness of the unseen migration that flies over almost any location every night. NFCers, as birders who record birds flight calls at night are often called, typically focus on the major migrations of spring and fall when hundreds to thousands of birds give their flight calls as they fly over in the darkness. Previous NFC work has been published on the late summer/early fall migration of Black-and-white Warblers (*Mniotilta varia*) in Harlingen, Texas (Evans and Conway 2021) and the general fall migration in downtown Houston, Texas in 2020 (Lee, Aquila, and Birch 2021). However, this article focuses on. Recordings were made every night and early morning (from hrs to hrs) in June and July 2023 ... and yielded many interesting results.

METHODS

Recording Equipment and Software Used

Recording of nocturnal migrants can be done with either specially designed microphones mounted on rooftops (Evans and Conway 2021 or the Old Bird Inc. web site at oldbird.org) or more simply by commercial field recorders mounted in more easily accessible locations. Safety concerns created by a two-story house with a steep roof forced the latter as it is risky to do placement and maintenance of a rooftop system. The recording device utilized is a Zoom F1-SP field recorder and shotgun microphone setup (Fig. 1). Such setups can be purchased as a bundle with other auxiliary equipment for about $250. After a few seasons where bad weather shorted out one setup, and another was simply dropped led to the development of a "sandwich meat tray" enclosure to protect the electronics. This setup is attached onto a PVC pipe

[1]Corresponding author E-mail: dwood@se.edu

Figure 1. Zoom F1-SP field recording setup inside protective container and the same setup elevated on a PVC pipe mounted on the fence between the author's and neighbor's yards.

mounted on the fence between two homes (Fig. 1). This area is deemed best as it is relatively free of noise sources such as trees and air conditioners.

During the summer of 2023 recording typically started around 2000 h CDT (shortly before sunset) and then ended around 0900 h AM (about three hours after sunrise) the next morning allowing for a full night and a full dawn chorus of recording. The recorder was then brought inside, and its contents downloaded into Audacity® 3.2.5, a free digital audio editor and recording application software. The recorder creates two nearly seven-hour spectrograms or sonograms. The spectrograms were visually searched screen-by-screen (each screen containing 12 seconds of recording time) for bird flight call "signatures". These signatures were reviewed to confirm they were bird calls. Those calls were labelled to species where possible and saved for later addition to eBird checklists. This review process would typically take about an hour per each night of recording as the summer bird "traffic" is relatively light. The checklists, comprised of data passively collected largely while I was sleeping, were posted to a secondary eBird account to keep them separate from "personal" lists.

Accuracy of Nocturnal Flight Call Identification

For those unfamiliar with nocturnal flight call identification, the obvious question is "How does one know those calls are of a given species?" Many years ago, Bill Evans and Michael O'Brien, arguably the modern-day godfathers of NFCs, started working on answering that question. Realizing that these flight calls are also given diurnally, they started recording birds of visually verified species giving their flight calls. These were matched up with birds recorded giving similar calls at night. Ultimately, they developed a guide, Flight Calls of Migratory Birds: Eastern North American Landbirds (Evans and O'Brien 2002), which outlined the parameters of these calls and gave layman descriptions of what these birds' calls not only looked like on a sonogram but what they sounded like in the field. They graciously donated their work by providing free public access in 2017 (http://oldbird.org/pubs/fcmb/start.htm). As recording technology advanced allowing greater affordability, more and more people have seen the

vision for using such techniques to enhance their personal knowledge of the bird's vocalization and ultimately conservation of the birds themselves. It should be noted that not all birds are known to make flight calls (e.g. vireos) in nocturnal migration. Some seldom call during nocturnal migration (e.g. flycatchers, orioles, grosbeaks, etc.). And some may simply fly too high to be detected unless they are also loud. Therefore, the techniques discussed here are not effective at detecting all species and all individuals.

Over the past two years the author has gotten more and more fascinated by the sheer numbers of birds that pass over us all as everyone sleeps. It also begs questions such as "Why so many last night?" or "Which way was that summer migrant going?", etc. The mere details of their movement timing and identity is fascinating information. A word of caution is being added here to let those that choose to follow that there is a steep curve in learning these flight calls many of which can be only 50 to 70 milliseconds (ms) long and delivered at frequencies of 6,000 to 10,000 kilohertz (khz) in the case of most warblers. There is also a temptation among new NFCers to think everything is a bird as opposed to a frog or insect or beyond that a rare bird. The reality is that many of the calls one records, even if an excellent recording is obtained, are not always identifiable to species or even genus. During this work, all unexpected species were shared with those more experienced in NFCs to ensure reasonable conclusions. Despite that effort to insure accuracy, there exists a certain error in the technique due to the impossibility of knowing the true variability of a given species just as there is with some sight (visual) records.

Efforts were also made to conservatively count birds recorded knowing that artificial light (i.e. the nearby Brazos Mall can cause an individual migrant to call multiple times effectively mimicking a "flock". A general rule of thumb of one minute of calls for individual passerines and two minutes of calls for louder waterbirds was used based largely on earlier work (Evans and Mellinger 1999) and personal experiences where a single bird can be heard approaching (getting louder) and departing (getting softer) the microphone.

Study Site

The study site (29° 02' 34" N 95° 27' 51" W) lies in a residential subdivision not far from the intersection of State Highways 288 and 332 in Lake Jackson, Texas. It is close the Dow Nature Preserve (largely second growth forest) which lies just 100 meters to the south, the Brazos River which lies about 1.6 km south, and most importantly the Gulf of Mexico about 16.1 km to the south (Fig. 2).

There are no significant native grassland areas or marshes, other than some municipal drainage ditches, anywhere near the property that might account for nesting field or marsh birds. So other than the normal bottomland woods region "yard" birds listed below in Table 1, all of the nocturnal birds recorded giving flight calls were considered migrants.

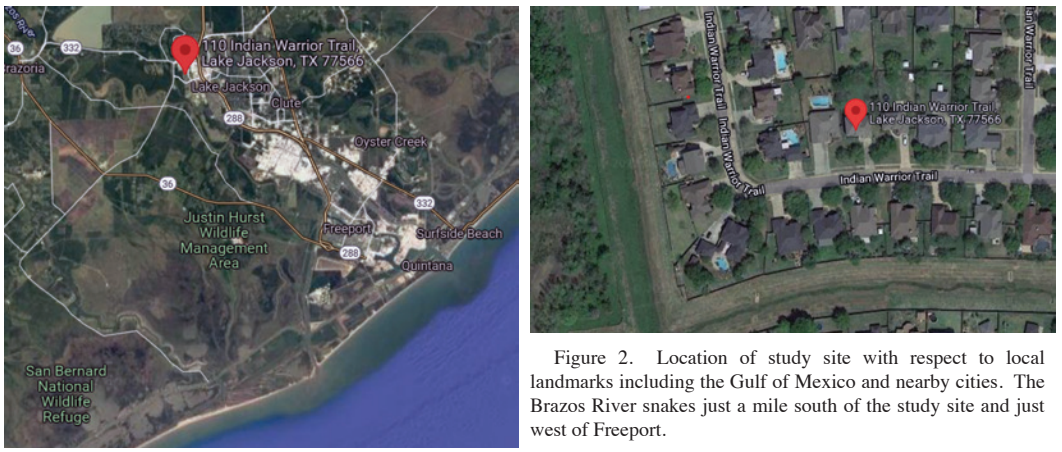


Figure 2. Location of study site with respect to local landmarks including the Gulf of Mexico and nearby cities. The Brazos River snakes just a mile south of the study site and just west of Freeport.

Table 1. Regular summer resident birds known from the study site

Black-bellied Whistling-Duck	*Dendrocygna autumnalis*
Mourning Dove	*Zenaida macroura*
Yellow-billed Cuckoo	*Coccyzus americanus*
Common Nighthawk	*Chordeiles minor*
Chimney Swift	*Chaetura pelagica*
Killdeer	*Charadrius vociferus*
Yellow-crowned Night-Heron	*Nyctanassa violacea*
Laughing Gull	*Leucophaeus atricilla*
Mississippi Kite	*Ictinia mississippiensis*
Red-shouldered Hawk	*Buteo lineatus*
Barred Owl	*Strix varia*
Red-bellied Woodpecker	*Melanerpes carolinus*
Downy Woodpecker	*Picoides pubescens*
American Crow	*Corvus brachyrhynchos*
Carolina Chickadee	*Poecile carolinensis*
Purple Martin	*Progne subis*
Barn Swallow	*Hirundo rustica*
Cliff Swallow	*Petrochelidon pyrrhonota*
Carolina Wren	*Thryothorus ludovicianus*
Northern Mockingbird	*Mimus polyglottos*
European Starling	*Sturnus vulgaris*
Eastern Bluebird	*Sialia sialis*
House Sparrow	*Passer domesticus*
Brown-headed Cowbird	*Molothrus ater*
Common Grackle	*Quiscalus quiscula*
Great-tailed Grackle	*Quiscalus mexicanus*
Northern Cardinal	*Cardinalis cardinalis*

RESULTS AND DISCUSSION

Rather than discuss all the migrants together as a large set, the various species have been grouped into subsets of species including freshwater marsh birds, saltwater marsh birds, shorebirds, warblers, etc. During the discussion the reader will notice references to a similar set of recordings made at the same site in 2022. This 2022 data was made by recording on all but four evenings (93%) that summer and provided a comparison to put the 2023 data (recordings made each day during June and July) into better perspective.

Freshwater marsh birds

One of the observations that repeated itself from 2022 was the large movement of freshwater marsh birds (Table 2). This was not a huge surprise as birds such as the commonly recorded Least Bittern (*Ixobrychus exilis*) are heard on a regular basis through May. It would also seem logical that such birds that settled into a cattail marsh after completing their early spring migration back to Texas might be forced to relocate as the summers of both 2022 and 2023 were quite dry likely causing many freshwater marshes to dry up. There are no suitable marshes for birds like Least Bittern and

Common Gallinule (*Gallinula galeata*) within several miles of the recording site, therefore all of these birds recorded in the middle of the night were believed to be true migrants as opposed to birds on a daily movement to and from feeding sites.

Table 2. 2023 Freshwater marsh bird totals at study site in June and July 2023

Species	# Detected	First Date	Last Date	Peak Count/Comment
Least Bittern	72	3 June	30 July	six on 29 June (21 in Jun/51 Jul)
Fulvous Whistling-Duck	21	8 June	29 July	four on 19 July
Common Gallinule	17	2 June	25 July	
Green Heron	15	6 June	24 July	two on 06 and 07 June
King Rail	1	30 June		
Least Grebe	1	10 July		
Black-crowned Night-Heron	1	14 July		

The Least Bitterns were tallied by their "squeak" calls (Fig. 3) not known to be given during the day (Pieplow 2017). The tally of 72 is initially impressive, but a very similar 65 were detected in 2022. Furthermore, the monthly distribution was very similar with 26 in June and 39 in July recorded in 2022 and 21 and 51 recorded in 2023.

The total Common Gallinule number of 17 was also similar to the 14 recorded in 2022. There was also one probable Purple Gallinule (*Porphyrio martinicus*) detected on 06 July 2023; the separation between Common and Purple Gallinules is not straightforward and subsequent learning could lead to reassignment of a few of these gallinules. Least Grebe (*Tachybaptus dominicus*) was detected for the second summer in a row with one bird reported on ten July 2023 after one was detected on 18 June 2022. Interestingly, the more common Pied-billed Grebe (*Podilymbus podiceps*) does not call frequently in nocturnal migration and has not been detected in any season at this site. The rest of the species tallied in Table 2, Fulvous Whistling-Ducks (*Dendrocygna bicolor*), Green Heron (*Butorides virescens*), King Rail (*Rallus elegans*), and Black-crowned Night-Heron (*Nycticorax nycticorax*) also fit into this category of freshwater marsh birds which may be moving because of drying local marshes.

As alluded to above, it is the author's hypothesis that the marshes these species nest in along the Texas coast are ephemeral in that they would have undergone massive change during the hot, dry summer months experienced in both 2022 and 2023. In simpler, terms their marshland homes

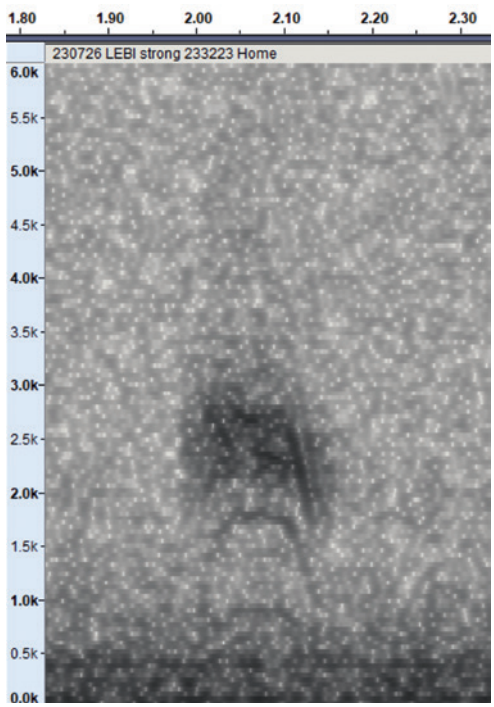


Figure 3. Spectrogram of of a Least Bittern "squeak" call recorded at the study site at 2332 h on 23 July 2023

would have been expected to dry up in most cases requiring these birds to relocate. In some cases such as Least Bittern, higher numbers were noted in late July which could also signal the beginning of the species' normal fall migration.

Saltwater Marsh Birds

One of the biggest surprises of the summer was confirmation of birds closely associated with the salt marshes 16 km inland (Table #3). As no saltwater bays reach any closer to the study site. Although there is no way to know which direction these birds were heading, the leading hypothesis by most consulted is that these saltwater species are simply moving between coastal populations as would be expected for virtually all species.

Table 3. 2023 Saltwater marsh species totals at the study site in June and July 2023

Species	# Detected	First Date	Last Date
American Oystercatcher	2	3 July (2138 hrs)	7 July (0304 hrs)
Clapper Rail	2	22 June (2256 hrs)	26 July (0308 hrs)
Black Rail	1	9 July (2219 hrs)	
Black Skimmer	1	11 July (0637 hrs)	

Michael O'Brien commented in the NFC Facebook group page that he regularly hears Clapper Rails (*Rallus crepitans*) calling overhead at night on the Cape May peninsula in New Jersey. The Black Skimmer (*Rynchops niger*) was the most expected as local breeders from a large nesting colony just 12.9 km away in Freeport are known to move around looking for food in local freshwater areas. Radio-tagged skimmers had recently been documented moving up the nearby Brazos River. Perhaps, the least expected was the Black Rail (*Laterallus jamaicensis*) recorded giving its "kick-kee-doo" call which it is known to give in nocturnal migration. The presence of Black Rails, a local nester, is expected along the immediate coast but it presence 16 km inland at night implies it was migrating. Evans and Mellinger (1999) recorded NFCs of five migrating Black Rails eight km inland at Laguna Atascosa NWR in a more expected migration window of late April to early May 1995. Perhaps, like the Clapper Rails, the summer Black Rails detected in this study are simply moving to and from different populations along the coast.

However, the above explanation does not explain why none of these species were detected in the summer of 2022. And only American Oystercatcher (*Haematopus palliates*), had been detected previously (16 March 2023) at the study site. Hopefully, more data in subsequent years and perhaps other study sites will provide answers as to whether 2023 was an anomaly or simply the norm.

Shorebirds

Shorebirds are one of the expected "late" spring migrants through late May and even into early June and then again in late June and July when adults begin to return from the breeding grounds. Most noteworthy in the summer of 2023 were Baird's Sandpipers (*Calidris bairdii*) recorded on 1 June and again on 12 June (Table 4). The latter date is the latest ever the species has been documented in spring migration on the Upper Texas Coast. Also noteworthy was a late Spotted Sandpiper (*Actitis macularius*) on 6 June.

The July shorebird arrivals in the table are somewhat nesting in North America as almost any species could conceivably pass over the site. Solitary Sandpiper (*Tringa solitaria*) was the most numerous July shorebird migrants followed by Least Sandpiper (*Calidris minutilla*). This is not necessarily a statement about the absolute numbers of a given species passing over the site as that can be biased by a species call volume (loudness), migration elevation, and propensity to vocalize during nocturnal migration. The Lesser Yellowlegs (*Tringa flavipes*), Greater Yellowlegs (*Tringa melanoleuca*), and Semipalmated/Western Sandpiper (*Calidris pusilla/mauri*) are expected July migrants detected in lower numbers than might be expected.

The 2023 shorebirds numbers were slightly higher (54 vs, 43) when compared with the 2022 data at the study site. The 2022 data did have

Table 4. Shorebird species totals at the study site in June and July 2023

Species	# Detected	First Date	Last Date	Comment
Baird's Sandpiper	2	1 June	12 June*	*New UTC late
Spotted Sandpiper	4	6 June	31 July	Also 20 and 21 July
Lesser Yellowlegs	3	29 June	14 July	Also 09 July
Solitary Sandpiper	22	5 July	31 July	3 on 16 and 17 July
Least Sandpiper	13	7 July	23 July	3 on 15 July
Semi/Western Sandpiper	1	13 July		
Upland Sandpiper	4	17 July	31 July	All singles
Greater Yellowlegs	2	29 July		Only date
shorebird sp.	3	9 July	16 July	
Total	54			

two interesting recordings that were not matched in 2023. On 28 June 2022 a very early Upland Sandpiper (*Bartramia longicauda*) was detected and on 06 July 2022 a Willet (*Tringa semipalmata*) was detected. These likely represent rare occurrences and are not expected at a single recording location every year.

Warblers

It has long been known that warblers begin arriving in late summer in the migrant traps of the UTC. Verser 2003 of Houston spent nearly 110 hours in late June and July hours in Upper Texas Coast migrants traps focusing on the warbler migration from 1993-2002. His data showed arrival times for Black-and-white Warblers as early as the last few days of June, Louisiana Waterthrushes (*Parkesia motacilla*) the first week of July, and Yellow Warblers (*Setophaga petechia*) in the last week of July. Evans and Conway (2021) also did late summer NFC work at Harlingen in the Lower Rio Grande Valley for 4 years documenting a significant Black-and-white Warbler migration starting in July including an unexpected early season peak in August.

Table 5. 2023 NFC Warbler detections at study site

Species	# Detected	First Date	Last Date	Comment
Black-and White Warbler	58	2 July	31 July	8 on 16 July, 11 on 23 July
Louisiana Waterthrush	13	1 July	30 July	4 on July 16
Prothonotary Warbler	2	16 July	20 July	
Yellow Warbler	3	28 July	31 July	Also late spring bird on 08 June
Northern Parula	2	21 July	31 July	
Ovenbird	1	30 July		First July record for UTC
Unidentified warbler	16	01 June	30 July	
Total warblers	95			

The warbler data in Table 5 and additional 2022 data collected at the study site included 60 overall warbler detections and a 27 June 2022 Black-and-white Warbler. These data match well with the findings of Verser (2003) and Evans and Conway (2021). Although not entirely unexpected, the total of 58 Black-and-white Warbler detections at the Lake Jackson study site in June and July 2023

are higher than those detected by any earlier study. This is likely due to the proximity to the coast and the fact that continuous recording when birds are moving at night is the best way to detect migrants.

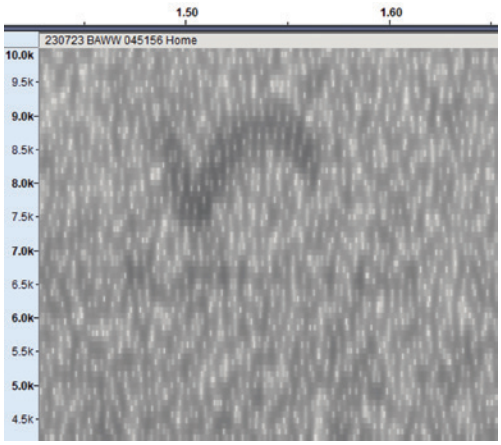


Figure 4. Spectrogram of frequency (kilohertz) vs time (seconds) of a Black-and-white Warbler flight call recorded at the study site at 0451 h on 23 July 2023.

Louisiana Waterthrushes are known to be early migrants with a fall migration that begins in early July in Texas. The detection of 13 of these warblers underscores the effectiveness of NFC detection of migrants. It is important to note that the spectrograms for Louisiana Waterthrushes were carefully differentiated by looking at the time between peaks (Fig. 5). Measured calls of birds of known species showed that peak or hump spacing averages 15.6 milliseconds (range 13.6-17.0, N=5) which is longer than that of the similar flight call of Northern Waterthrush (*Parkesia noveboracensis*) which averages 11.2 milliseconds (range 8.6 to 13.3, N=17) (Evans and O'Brien 2002). Since statistically both species will occasionally hit the 13-14 ms window, birds calls measuring near the overlap zone are left to the more generic classification of waterthrush species. As might be expected given the later fall migration window for Northern Waterthrush, the July 2023 birds at the study site all fell neatly into the Louisiana range with respect to hump spacing. Another similarly sounding "zeet-type" warbler, Yellow Warbler, was also considered as a source for these notes. But Yellows are not known to arrive on the Texas coast prior to the last few days of July; that along with their average call note measurements led to the Louisiana Waterthrush conclusion. The Prothonotary Warblers (*Protonotaria citrea*) and Northern Parulas (*Setophaga americana*) are also expected July migrants.

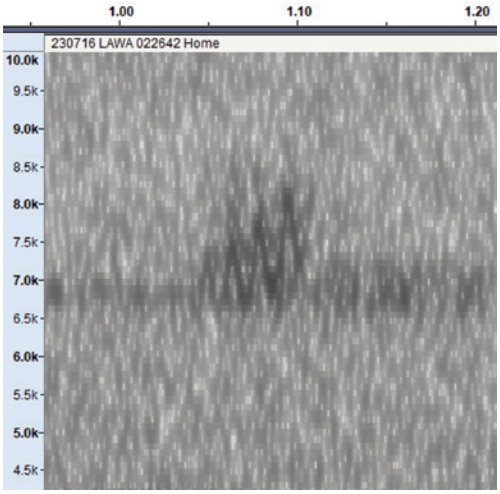


Figure 5. Spectrogram of frequency (kilohertz) vs time (seconds) of a Louisiana Waterthrush flight call recorded at the study site at 0226 h on 16 July 2023.

Also interesting is the numbers of birds detected given the date (Fig. 6). It is well known that migrants move with favorable weather especially in spring when bird use southerly winds and are easily detected when north winds and sometimes rain slow their migration. Fall migration is more complicated as birds reach the Texas coast even without north winds to aid their journey. The dates of 16 and 23 July were interesting in that they had 13 and 12 total warblers detected, respectively. This seems early for significant numbers of birds given the limited migration in July.

A quick look at the weather on those two dates shows stationary fronts that stalled out just north of the Houston area. It might be that birds moving with those fronts continued to move ahead of the front lines shown (Fig. 7). Interestingly, the wind situations were quite different on these two dates with both Dallas and Houston reporting light south winds on the night of the 15–16 July and north winds on 22–23 July. Although birds obviously take advantage of weather to move, it is a complex process to sort out just which conditions will cause movement at a given locale.

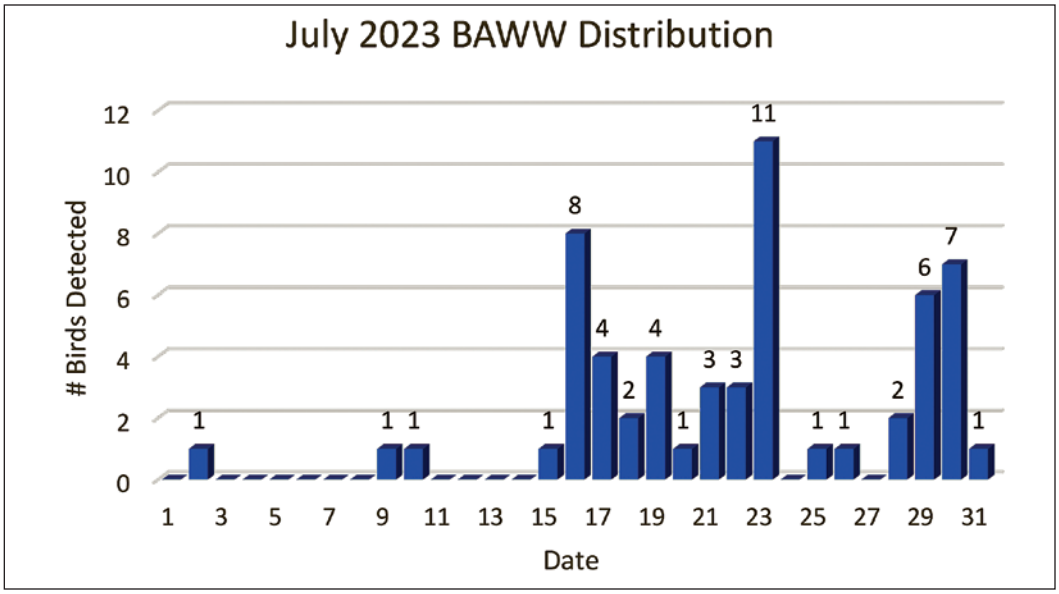


Figure 6. Distribution of Black-and-white Warblers by date at the study site.

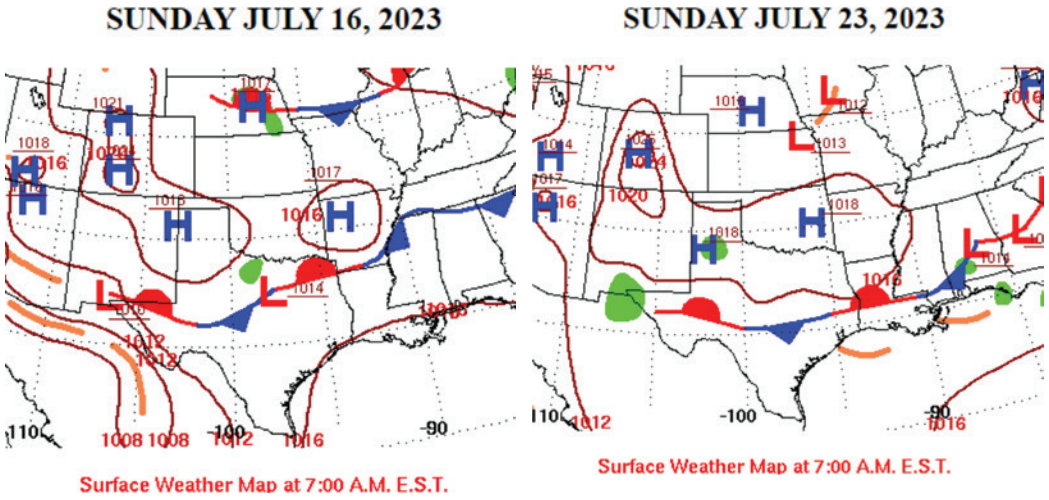


Figure 7. Surface weather maps for 16 and 23 July when large numbers or warblers were noted at the study site. Source: http://www.wpc.ncep.noaa.gov/dailywxmap

Thrushes and Other Passerine Migrants

Other interesting passerines detected in 2023 were late spring migrant thrushes. A Veery (*Catharus fuscescens*) on 2 June was just the second known record for the UTC and a minimum of 6 Swainson's Thrushes (*Catharus ustulatus*) on 11 June included a new spring late for the UTC. It is likely that this late movement of thrushes is not unprecedented but just rarely detected. These thrushes are occasionally present the first two weeks of June. What is impressive are the numbers at one site. Just like the fall migration of thrushes in Texas, nocturnal flight calls have proven the best way to detect flights of these stealthy birds. The same could be said of the Ovenbird (*Seiurus aurocapilla*), a known "skulker", detected at the study site on 30 July (Table 5). This site produced other Ovenbird records on 4 and 5 August which were early dates for the UTC.

Table 6. Other migrant passerines detected at the study sSite

Species	# Detected	First Date	Last Date	Comment
Veery	1	2 June		2nd June record for UTC
Swainson's Thrush	6	1 June	11 June*	*New late date for UTC
Grasshopper Sparrow	2	21 June	23 July	Rare but not unprecedented
Summer Tanager	1	4 July		
Orchard Oriole	3	15 July	19 July	
Blue Grosbeak	1	8 July		
Dickcissel	27	4 June	31 July	Peak of 4 on 27 July

Another somewhat unexpected species was Grasshopper Sparrow (*Ammodramus savannarum*). Although this species breeds in Texas and throughout much of the US, summer movement was not anticipated. Not only was this species recorded in both June and July 2023 at the study side, three at Harlingen in July 2012 (Evans and Conway 2021). Blue Grosbeak (*Passerina caerulea*) is a rare nesting species in East Texas, but the 8 July 2023 detection was the second summer in a row this species was recorded at the study site.

Orchard Orioles (*Icterus spurius*) are known July migrants, and all of these detections were during the morning and not nocturnal. Summer Tanagers (*Piranga rubra*) are a very local summer resident on the UTC, so one giving its daytime call during a 4 July fireworks display was not entirely unexpected.

The movement of Dickcissels (*Spiza americana*) is interesting in that so many birds are on the move throughout the summer. The 27 birds were spread through the summer four birds on 27 July might signal the start of their normal fall migration.

CONCLUSIONS

A passive recording system set up in a residential Lake Jackson yard during June and July 2023 yielded some surprising nocturnal and diurnal bird records in terms of both unusual migration dates and volume of migration. New Upper Texas Coast (UTC) late spring records for both Baird's Sandpiper and Swainson's Thrush and a new early UTC fall record for Ovenbird were physically documented. Larger than expected numbers of Least Bitterns (72) and Black-and-white Warblers (58) were recorded. Nocturnal movements of coastal species including Clapper Rails, a Black Rail, and American Oystercatchers 16 km inland from were also confirmed. In all, 425 birds were detected over the two-month period. The results were very similar to results collected at the same study site during the summer of 2022. Since both years were exceptionally dry, more data from future summers are needed before making any conclusions.

ACKNOWLEDGEMENTS

The author would like to thank Cin-Ty Lee, Brad Lirette, and Irenna Garapetian for critically reviewing this article.

LITERATURE CITED

Ebird. 2021. An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Online: http://www.ebird.org.

Evans, W. R. and M. H. Conway. 2021. Early fall migrant Black-and-white Warblers (*Mniotilta varia*) in the Lower Rio Grande Valley detected by nocturnal flight calls, Bulletin of the Texas Ornithological Society. 54(1-2):19–25.

Evans, W. R. and D. K. Mellinger. 1999. Monitoring grassland birds in nocturnal migration. Studies in Avian Biology. 19:219–229.

Evans W. R. and M. O' Brien. 2002. Flight calls of migratory birds: Eastern North American landbirds. Old Bird Incorporated [CD-ROM]. Online at Old Bird Inc. website.

Lee, C.-T., G., Aquila, and A., Birch, 2021, Acoustic survey of nocturnal bird migration at Rice University in Houston, Texas during fall 2020, Bulletin of the Texas Ornithological Society. 54(1-2):37–57.

Pieplow, N. 2017. Peterson Field Guide to Bird Sounds of Eastern North America. Houghton Mifflin.

Verser, D. 2003. Fall Warblers On the Upper Texas Coast. Unpublished.

REVIEW OF BANDED RESIDENT SPECIES FROM A LONG-TERM MIST-NETTING STATION IN NORTH TEXAS

Douglas R. Wood[1]

[1]*Department of Biological Sciences, 425 W. University Blvd., Southeastern Oklahoma State University, Durant, OK 74701*

ABSTRACT.—Banding data provide diverse population information over long temporal scales. My objective was to analyze 37 years of data from a long-term mist-netting station in North Texas. 5576 individual birds of 36 species were banded in a fragmented landscape from 1978 to 2014 at the Heard Natural Science Museum and Wildlife Sanctuary in North Texas. The two most frequently banded species (Northern Cardinal and Carolina Chickadee) accounted for 58% of all records and the 9 most abundant species accounted for 93% of all banded birds. Five species exhibited increase over the banding period, whereas four species experiences decline. Annual species richness decreased from 1980 to 2014; however, the number of netting days per year declined during the last eight years of banding. Among species with ≥37 captures, 13 demonstrated age ratios favoring more adults than hatch year (HY) birds and two species exhibited equal age ratios. Four species exhibited sex ratios favoring more males than females, four species exhibited sex ratios favoring more females than males, four species exhibited balanced sex ratios, and 4 species the sex ratio could not be determined among species with ≥37 captures. Historical data in this study provide a baseline for population abundance and demographics among studies for resident bird species in North Texas.

Long-term bird banding efforts accrue diverse population data for resident bird species at different spatiotemporal scales (Dunn and Ralph 2004). Banding was used to study survivorship in resident bird species (Karr 1990, Doherty Jr. and Grubb, Jr. 2002, Ruiz-Gutiérrez et al. 2012). Similarly, Weatherhead and Forbes (1994) studied philopatry of banded resident bird species. Ballard et al. (2003) documented long-term declines in resident birds using constant effort mist-netting in coastal California. Wood (2020, 2021) documented long-term changes in abundance and species richness during migration for Nearctic-Nearctic and Nearctic-Neotropical migrants at an inland stopover site in North Texas. Similarly, Wang and Finch (2002) used mist-netting and point counts to develop accurate assessments of avian species richness and abundance. Other long-term banding studies focused on avian demography. In North Texas, Wood (2020, 2021) used bird banding data to demonstrate differences in age and sex ratios of Nearctic-Nearctic and Nearctic-Neotropical migrants.

Bird banding data also can be used to examine the impacts of anthropogenic climate change. In China, Jiao et al. (2016) utilized banding data from two banding stations to document declines in passerine populations related to increasing annual temperatures. Bird banding data also can be used to examine the impacts of sprawl and habitat loss on passerines in urban environments. In an isolated urban habitat patch in Louisiana, Wolfe et al. (2013) used bird banding data to demonstrate that residents like Carolina Wren (*Thryothorus ludovicianus*) and Tufted Titmouse (*Baeolophus bicolor*) had comparable survival rates to Monitoring Avian Productivity and Survivorship (MAPS) program regional survival estimates. Conversely, residents like Carolina Chickadee (*Poecile carolinensis*) and Northern Cardinal (*Cardinalis cardinalis*) exhibited lower survival rates than regional survival estimates from MAPS data.

In 2010, the Prairie and Timbers Audubon Society brought to the author's attention that they collected 37 years of bird banding data at the Heard Natural Science Museum and Wildlife Sanctuary (hereafter

[1] E-mail: ecarpe@gmail.com

referred to as the Heard) in North Texas. This data offered an opportunity to examine species richness, abundance, and population characteristics such as age and sex ratios of resident species over a long temporal scale. Similar to Wolfe et al. (2013), the Heard data are from an isolated habitat surrounded by urban sprawl. Baseline data from the Heard can be used in the future to examine species-level responses to local landscape changes due to encroachment from sprawl or large-scale abiotic factors such as anthropogenic climate change in North Texas. My objectives were to 1) summarize banding data for resident species from a long-term mist-netting effort, 2) examine trends in abundance and species richness, and 3) examine age and sex ratios for each species.

METHODS

Study Site

Banding occurred at the Heard located in McKinney, Collin County in North Texas (33° 09'N, 96° 36'W; elevation 192 m) from 1978 to 2014. Birds were netted in a variety of habitats within the 117-ha site. Habitats included: mid-successional prairie grassland, green ash (*Fraxinus pennsylvanica*) black willow (*Salix nigra*) forest, and intermittently flooded mid-successional forest with sugarberry (*Celtis laevigata*), Osage orange (*Maclura pomifera*), cedar elm (*Ulmus crassifolia*), and honey locust (*Gleditsia triacanthos*). Open forests of scattered pecan (*Carya illinoinensis*) and escarpment live oaks (*Quercus fusiformis*) interspersed with Bermuda grass (*Cynodon dactylon*) also were sampled. Long-term successional habitat changes including species composition and physical structure occurred at the Heard, which likely influenced capture rates for different species (Remsen and Good 1996).

Field and Analysis Methods

Volunteer banders operated ten to 25 12 m nylon mist nets (2.6 m height, 36-mm mesh size) depending on the number of volunteers available. Nets were only placed in the understory, therefore netting efforts likely under-sampled mid- and high-canopy species (Mallory et al. 2004). Netting and handling protocols followed Ralph et al. (1993) and Gustafson et al. (1997). All birds received a uniquely numbered band; aging and sexing criteria followed Pyle (1997). For this study, only adult and hatch year birds were included. Within year recaptures were not included, nor were recent fledglings (banding code L (Local)). Each banding year consisted of birds banded from 1 January to 31 December. Due to logistical reasons, no banding occurred in fall 1978, 1979, and 2004. 1312 banding days were achieved over the course of the study (Fig. 1). Descriptive statistics were developed for species richness, abundance, and age-sex combinations for mist-netted resident bird species at the Heard. Age designations (Pyle 1997) included: ATY (After Third Year), TY (Third Year), ASY (After Second Year), AHY (After Hatch Year), SY (Second Year), HY (Hatch Year), and U (Unknown). Sex designations (Pyle 1997) included: F (female), M (male), and U (unknown). Sex ratio was defined as # males:#females.

RESULTS

Species Richness

From 1978 to 2014, 36 resident species were banded at the Heard (Table 1). Species richness varied annually (mean = 12.2 species/yr; range = five to 20 species/yr) but exhibited a declining trend post-1980 (Fig. 2). Peak species richness occurred from 1980 to 1985; however, the lowest species richness years occurred during the early 1990s (Fig. 2). Eight of 36 species (22.2%) were banded in ≥30 years; Northern Cardinal and Carolina Chickadee were the only species banded every year. 16.7% (6/36) of species were banded during 11 to 29 years and 61.1% (22/36) of species were captured in ≤14 years at the Heard (Table 1).

Abundance

Thirty-six resident species (5,576 individuals) were banded at the Heard over 37 years (Table 1). The two most abundant species (Northern Cardinal and Carolina Chickadee) accounted for 58% (3,247/5,576) of all individuals mist-netted at the Heard. Nine species (These two species and Carolina Wren, Tufted Titmouse, Brown-headed Cowbird, Downy Woodpecker, Northern Mockingbird, Blue Jay, and Eastern Phoebe) accounted for 93% (5180/5,576) of all banded individuals. Four species (Brown-headed Cowbird, Blue Jay, Carolina Chickadee, Tufted Titmouse) with substantial sample size (≥152 individuals), exhibited decreasing annual abundance trends. Five species (Carolina Wren, Downy Woodpecker, Eastern Phoebe, Northern Cardinal, Northern

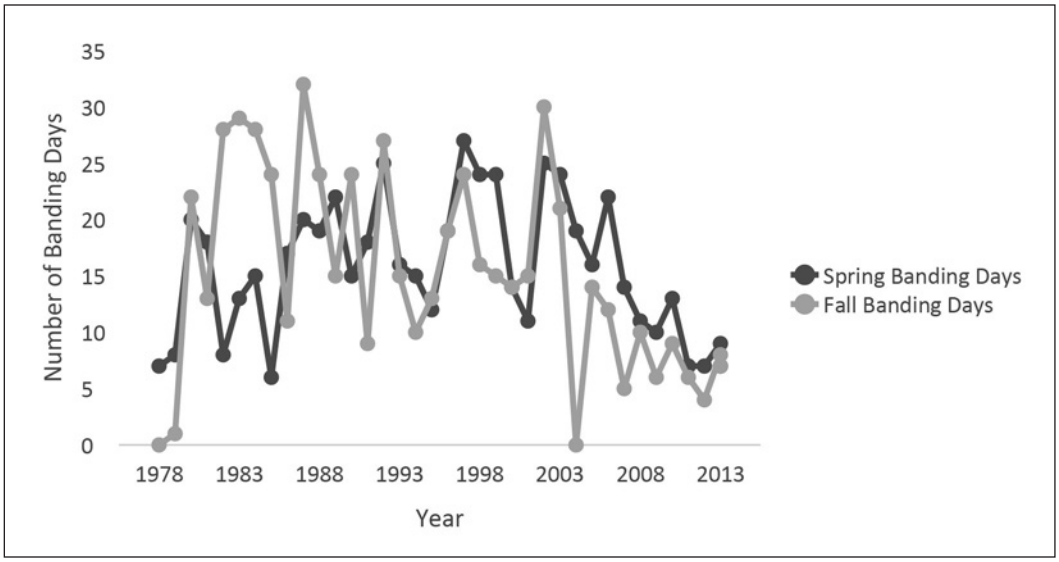


Figure 1. Number of spring and fall banding days by year from 1978 to 2014 at the Heard Natural Science Museum and Wildlife Sanctuary in North Texas.

Table 1. Total numbers and the catch effort for resident bird species at the Heard Natural Science Museum and Wildlife Sanctuary in North Texas from 1978 to 2014.

Common Name	**Scientific Name**	**Total Captures**	**# Seasons Captures**
Northern Cardinal	*Cardinalis cardinalis*	2252	37
Carolina Chickadee	*Poecile carolinensis*	995	37
Carolina Wren	*Thryothorus ludovicianus*	421	35
Tufted Titmouse	*Baeolophus bicolor*	414	36
Brown-headed Cowbird	*Molothrus ater*	311	14
Downy Woodpecker	*Dryobates pubescens*	265	34
Northern Mockingbird	*Mimus polyglottos*	198	35
Blue Jay	*Cyanocitta cristata*	172	34
Eastern Phoebe	*Sayornis phoebe*	152	32
American Robin	*Turdus migratorius*	59	18
Common Grackle	*Quiscalus quiscula*	50	20
Eastern Bluebird	*Sialia sialis*	47	14
Red-bellied Woodpecker	*Melanerpes carolinus*	43	23
House Finch	*Haemorhous mexicanus*	40	5
Eastern Screech-Owl	*Megascops asio*	37	14
Red-winged Blackbird	*Agelaius phoeniceus*	26	7
Mourning Dove	*Zenaida macroura*	14	7
American Kestrel	*Falco sparverius*	12	7
Red-tailed Hawk	*Buteo jamaicensis*	11	5
European Starling	*Sturnus vulgaris*	11	2

Table 1. *Continued*.

Common Name	Scientific Name	Total Captures	# Seasons Captures
Hairy Woodpecker	*Dryobates villosus*	9	8
Great Horned Owl	*Bubo virginianus*	7	3
Barn Owl	*Tyto alba*	5	4
Barred Owl	*Strix varia*	5	4
Red-shouldered Hawk	*Buteo lineatus*	3	3
Cooper's Hawk	*Accipiter cooperii*	3	1
American Crow	*Corvus brachyrhynchos*	2	2
Greater Roadrunner	*Geococcyx californianus*	2	2
Great-tailed Grackle	*Quiscalus mexicanus*	2	2
Killdeer	*Charadrius vociferus*	2	2
Black Vulture	*Coragyps atratus*	1	1
Great Blue Heron	*Ardea herodias*	1	1
House Sparrow	*Passer domesticus*	1	1
White-breasted Nuthatch	*Sitta carolinensis*	1	1
White-winged Dove	*Zenaida asiatica*	1	1
Wood Duck	*Aix sponsa*	1	1

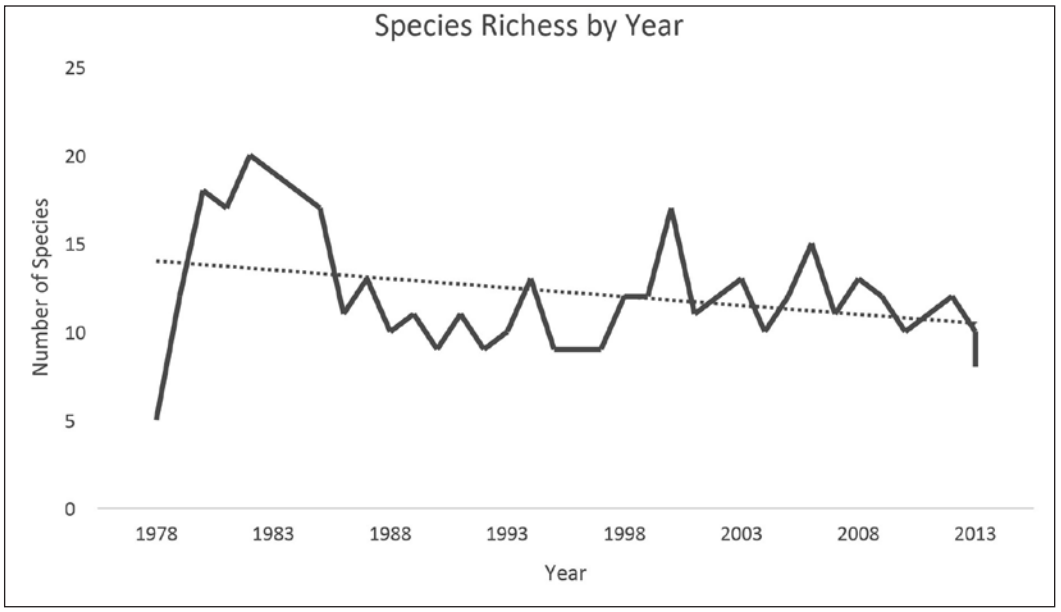


Figure 2. Annual species richness from 1978 to 2014 at the Heard Natural Science Museum and Wildlife Sanctuary in North Texas.

Mockingbird) demonstrated increasing annual abundance trends during the banding period.

Age and Sex Ratios

Among species with ≥37 captures, 13 demonstrated age ratios favoring more adults than

Table 2. Age-sex combinations, age ratios (# adults:# hatch year birds) and sex ratios (# males:# females) for resident bird species at the Heard Natural Science Museum and Sanctuary in North Texas from 1978 to 2014. Ratios are scaled down when necessary and rounded to the nearest tenth.

Species	Age-Sex	Number	Adult-HY Ratio	Sex Ratio
American Crow				
	AHY-U	2	2:0	-
American Kestrel				
	AHY-M	6	3:2	3:1
	HY-F	2		
	HY-M	2		
	U-F	1		
	U-M	1		
American Robin				
	ASY-F	1	6.9:1	1:1
	ASY-M	1		
	ASY-U	6		
	AHY-F	4		
	AHY-M	3		
	AHY-U	24		
	SY-M	2		
	SY-U	7		
	HY-U	7		
	U-F	1		
	U-U	3		
Barn Owl				
	AHY-U	3	3:2	-
	HY-U	2		
Barred Owl				
	AHY-U	2	2:3	-
	HY-U	3		
Black Vulture				
	HY-U	1	-	-
Blue Jay				
	ASY-F	2	1:1	-
	ASY-U	4		
	AHY-U	67		
	SY-F	6		
	SY-U	8		
	HY-U	84		
	U-U	1		

Table 2. *Continued*.

Species	Age-Sex	Number	Adult-HY Ratio	Sex Ratio
Brown-headed Cowbird				
	ASY-F	2	16.3:1	2.3:1
	ASY-M	8		
	AHY-F	81		
	AHY-M	179		
	AHY-U	13		
	SY-F	2		
	SY-M	3		
	HY-F	1		
	HY-M	7		
	HY-U	10		
Carolina Chickadee				
	ASY-F	9	1.9:1	1:1.5
	ASY-M	12		
	ASY-U	10		
	AHY-F	61		
	AHY-M	30		
	AHY-U	402		
	SY-F	6		
	SY-M	8		
	SY-U	25		
	HY-M	1		
	HY-U	292		
	U-F	1		
	U-U	138		
Carolina Wren				
	ASY-F	11	1.8:1	
	ASY-M	4		
	ASY-U	5		
	AHY-F	39		
	AHY-M	11		
	AHY-U	153		
	SY-F	6		
	SY-M	2		
	SY-U	20		
	HY-M	1		
	HY-U	139		
	U-U	30		

Table 2. *Continued*.

Species	Age-Sex	Number	Adult-HY Ratio	Sex Ratio
Common Grackle				
	AHY-F	5	14.7:1	4.7:1
	AHY-M	33		
	AHY-U	6		
	HY-F	2		
	HY-U	1		
	U-U	3		
Cooper's Hawk				
	HY-F	2	-	-
	HY-U	1		
Downy Woodpecker				
	ATY-F	10	4.3:1	1.4:1
	ATY-M	12		
	TY-F	5		
	TY-M	3		
	ASY-F	13		
	ASY-M	34		
	ASY-U	2		
	AHY-F	42		
	AHY-M	57		
	SY-F	14		
	SY-M	18		
	SY-U	1		
	HY-F	20		
	HY-M	16		
	HY-U	13		
	U-F	1		
	U-M	3		
	U-U	1		
Eastern Bluebird				
	ASY-F	7	4.5:1	2.8:1
	ASY-M	8		
	AHY-F	2		
	AHY-M	9		
	SY-F	3		
	SY-M	3		
	SY-U	4		
	HY-M	5		

Table 2. *Continued*.

Species	Age-Sex	Number	Adult-HY Ratio	Sex Ratio
	HY-U	3		
	U-F	1		
	U-M	1		
Eastern Phoebe				
	ASY-F	3	1.5:1	1:6
	ASY-U	10		
	AHY-F	6		
	AHY-M	2		
	AHY-U	52		
	SY-F	3		
	SY-U	5		
	HY-U	53		
	U-U	18		
Eastern Screech-Owl				
	AHY-U	15	1.3:1	-
	SY-U	1		
	HY-U	12		
	U-U	9		
European Starling				
	SY-U	1	1:10	-
	HY-U	10		
Great Blue Heron				
	U-U	1	-	-
Great Horned Owl				
	AHY-U	5	5:1	-
	HY-U	1		
	U-U	1		
Greater Roadrunner				
	AHY-U	2	-	-
Great-tailed Grackle				
	HY-M	1	-	1:1
	U-F	1		
Hairy Woodpecker				
	ASY-M	1	8:1	5:3 or
	AHY-F	3		
	AHY-M	3		
	SY-M	1		

Table 2. *Continued*.

Species	Age-Sex	Number	Adult-HY Ratio	Sex Ratio
	HY-M	1		
House Finch				
	AHY-F	17	3:1	1:1
	AHY-M	7		
	AHY-U	1		
	SY-M	2		
	HY-M	4		
	HY-U	5		
	U-M	3		
	U-U	1		
House Sparrow				
	U-M	1	-	-
Killdeer				
	AHY-U	2	-	-
Mourning Dove				
	ASY-M	1	4.5:1	3:1
	ASY-U	1		
	AHY-F	1		
	AHY-M	1		
	AHY-U	5		
	HY-U	2		
	U-M	1		
	U-U	2		
Northern Cardinal				
	ASY-F	14	2.6:1	1:1
	ASY-M	14		
	AHY-F	594		
	AHY-M	577		
	AHY-U	7		
	SY-F	38		
	SY-M	38		
	SY-U	1		
	HY-F	196		
	HY-M	221		
	HY-U	71		
	U-F	214		
	U-M	252		
	U-U	15		

Table 2. *Continued*.

Species	Age-Sex	Number	Adult-HY Ratio	Sex Ratio
Northern Mockingbird				
	ASY-F	1	1.1:1	1:1
	ASY-M	1		
	ASY-U	3		
	AHY-F	2		
	AHY-M	1		
	AHY-U	81		
	SY-M	1		
	SY-U	4		
	HY-U	88		
	U-U	16		
Red-bellied Woodpecker				
	ATY-F	1	3:1	1:1.2
	ATY-M	4		
	ASY-F	4		
	ASY-M	6		
	AHY-F	6		
	AHY-M	2		
	SY-F	8		
	SY-M	2		
	HY-F	3		
	HY-M	5		
	HY-U	2		
Red-shouldered Hawk				
	AHY-U	2	2:1	-
	HY-U	1		
Red-tailed Hawk				
	ASY-U	1	2.7:1	-
	SY-F	1		
	SY-U	6		
	HY-U	3		
Red-winged Blackbird				
	ASY-F	1	24:0	4.8:1
	ASY-M	7		
	AHY-F	3		
	AHY-M	10		
	AHY-U	1		
	SY-M	2		

Table 2. *Continued*.

Species	Age-Sex	Number	Adult-HY Ratio	Sex Ratio
	U-M	1		
	U-U	1		
Tufted Titmouse				
	ATY-U	1	1.5:1	1:2
	ASY-F	4		
	ASY-M	1		
	ASY-U	10		
	AHY-F	10		
	AHY-M	5		
	AHY-U	125		
	SY-F	9		
	SY-M	4		
	SY-U	22		
	HY-U	126		
	U-M	1		
	U-U	96		
White-breasted Nuthatch				
	AHY-M	1	-	-
Wood Duck				
	HY-M	1	-	-
White-winged Dove				
	AHY-U	1	-	-

hatch year (HY) birds and two species exhibited equal age ratios (Table 2). Four species exhibited sex ratios favoring more males than females, four species exhibited sex ratios favoring more females than males, four species exhibited balanced sex ratios, and four species the sex ratio could not be determined among species with ≥37 captures (Table 2).

DISCUSSION

Species-level

Northern Cardinal

Northern Cardinal was the most frequntly mist-netted species at the Heard with 2252 captures from 1978 to 2014. This species exhibited an increasing abundance trend with a significant upward spike in 1999 (Fig. 3). Northern Cardinal demonstrated a 2.6:1 adult to HY age ratio and a balanced sex ratio (Table 2). This species is a common to abundant resident in North Texas (Pulich 1988, White 2002) with confirmed nesting in Collin County (Tweit in Telfair 2007).

Carolina Chickadee

Carolina Chickadee was the second most frequently mist-netted species at the Heard with 995 captures from 1978 to 2014. Carolina Chickadee demonstrated a decreasing abundance trend with frequent annual variation (Fig. 4). This species exhibited a 1.9:1 adult to HY age ratio and a 1:1.5 sex ratio although sex ratio was calculated from a small sample size (Table 2). Carolina Chickadee is a fairly common to common forest resident in North Texas (Pulich 1988, White 2002) with confirmed nesting in Collin County (Pulich 1988, Tweit in Telfair 2007).

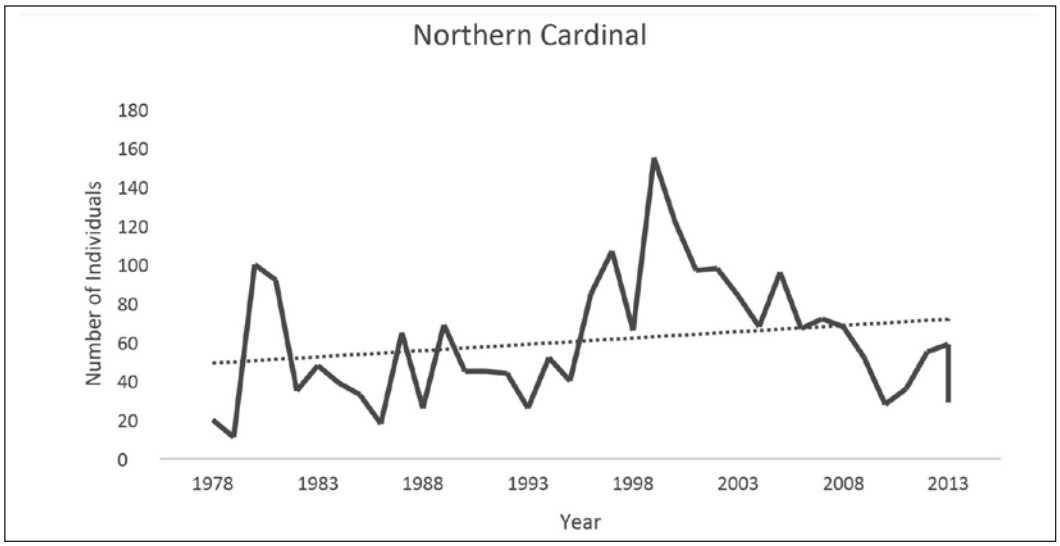


Figure 3. Increasing abundance trend for Northern Cardinal (*Cardinalis cardinalis*) from 1978 to 2014 at the Heard Natural Science Museum and Wildlife Sanctuary in North Texas.

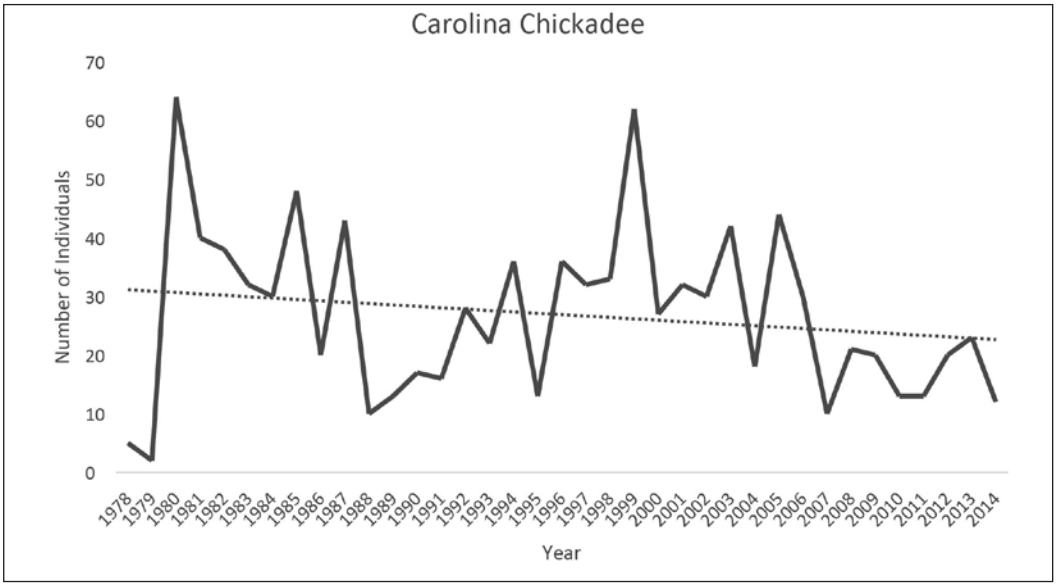


Figure 4. Decreasing abundance trend for Carolina Chickadee (*Poecile carolinensis*) from 1978 to 2014 at the Heard Natural Science Museum and Wildlife Sanctuary in North Texas.

Carolina Wren

From 1980 to 2014, 421 Carolina Wrens were mist-netted at the Heard across all months. This species exhibited an increasing abundance trend (Fig. 5). Carolina Wren demonstrated a 1.8:1 adult to HY ratio and sex ratio could not be determined (Table 2). Pulich (1988) listed Carolina Wren as uncommon to fairly common in North Texas, whereas White (2002) considered this species a common resident in Northeast Texas. Carolina Wren is a confirmed nesting species in North Texas (Pulich 1988, Tweit in Telfair 2007).

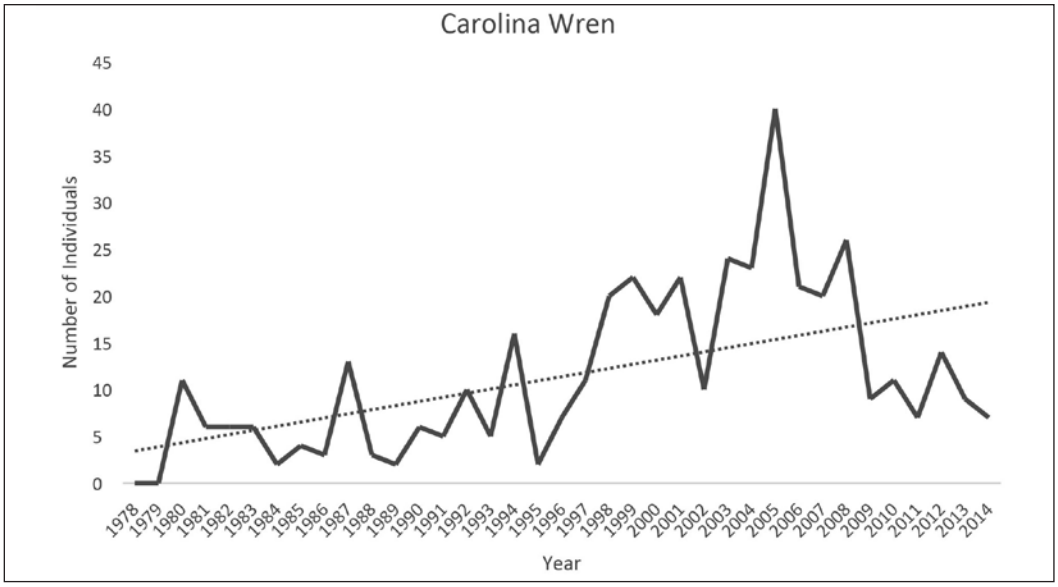


Figure 5. Increasing abundance trend for Carolina Wren (*Thryothorus ludovicianus*) from 1978 to 2014 at the Heard Natural Science Museum and Wildlife Sanctuary in North Texas.

Tufted Titmouse

414 Tufted Titmice were banded at the Heard across all months. This species demonstrated a slightly decreasing abundance trend each year albeit with frequent annual variation (Fig. 6). Tufted Titmouse exhibited a 1.5:1 adult to HY age ratio and a 1:2 sex ratio, although sex ratio was derived from a small sample size (Table 2). Pulich (1988) documented this species as a fairly common resident in North Texas, whereas White (2002) listed Tufted Titmouse as an uncommon to fairly common resident in Northeast Texas. Tufted

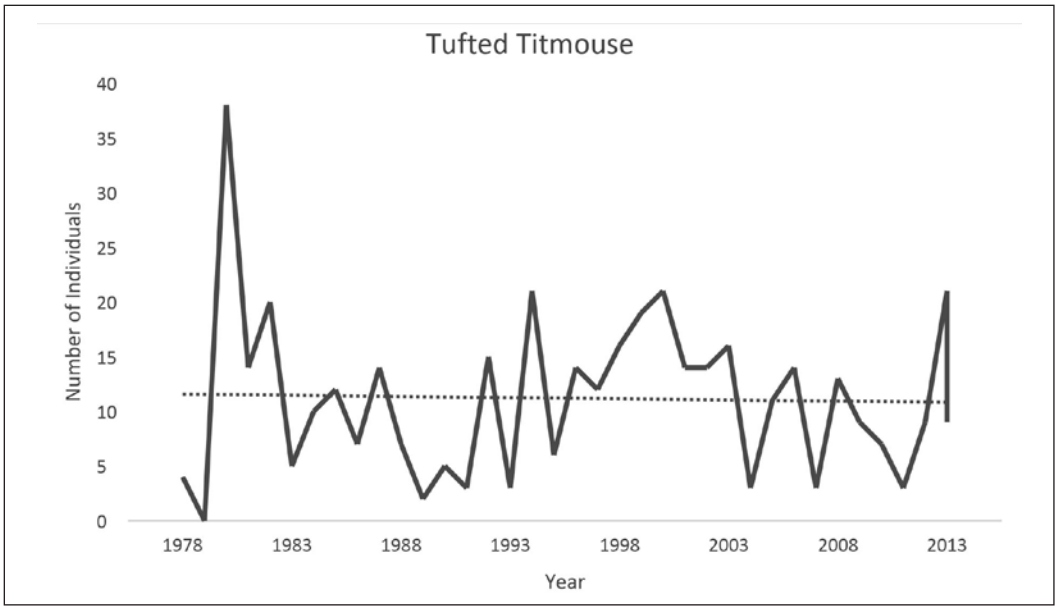


Figure 6. Decreasing abundance trend for Tufted Titmouse (*Baeolophus bicolor*) from 1978 to 2014 at the Heard Natural Science Museum and Wildlife Sanctuary in North Texas.

Titmouse is a confirmed nesting species in North Texas (Pulich 1988, Coldren in Telfair 2007).

Brown-headed Cowbird

Brown-headed Cowbirds exhibited a diverse and unusual capture history at the Heard. 97% of the captures for this species occurred between 1978 and 1988 during winter months (Fig. 7). Between 2006 and 2011, only eight Brown-headed Cowbirds were banded and all from April to June. This species demonstrated a decreasing abundance trend although this is deceptive given the significant upward spikes in captures in 1980 and 1983 compared to most years with no captures (Fig. 7). Brown-headed Cowbird exhibited a highly skewed adult to HY age ratio (16.3:1) and a 2.3:1 sex ratio (Table 2). Pulich (1988) listed this species as a common summer resident and abundant winter resident in North Texas. White (2002) considered Brown-headed Cowbird an uncommon summer resident and abundant winter resident in Northeast Texas. Although few summer captures occurred for Brown-headed Cowbirds at the Heard, this species was confirmed successfully parasitizing nests (Tweit in Telfair 2007).

Downy Woodpecker

Downy Woodpecker was the most frequently banded woodpecker at the Heard with 265 captures from 1980 to 2014, although surprisingly few were banded during winter. This species demonstrated an increasing abundance trend with higher spikes in captures from 1988 through the mid-2000s (Fig. 8). Downy Woodpeckers exhibited a 4.3:1 adult to HY age ratio and a 1.4:1 sex ratio (Table 2). Pulich (1988) and White (2002) listed Downy Woodpecker as a fairly common to common forest resident in North Texas. This species is a confirmed nester in North Texas (Fantina in Telfair 2007).

Northern Mockingbird

198 Northern Mockingbirds were banded at the Heard with the majority of captures during winter months. This species exhibited an increasing abundance trend with upward spikes in captures in 1984 and 2005 (Fig. 9). Age and sex ratios were both approximately 1:1 (Table 2). Northern Mockingbird is a common resident in North Texas (Pulich 1988, White 2002). This species nests in North Texas (Pulich 1988, Williams in Telfair 2007), although breeding season captures were rare at the Heard.

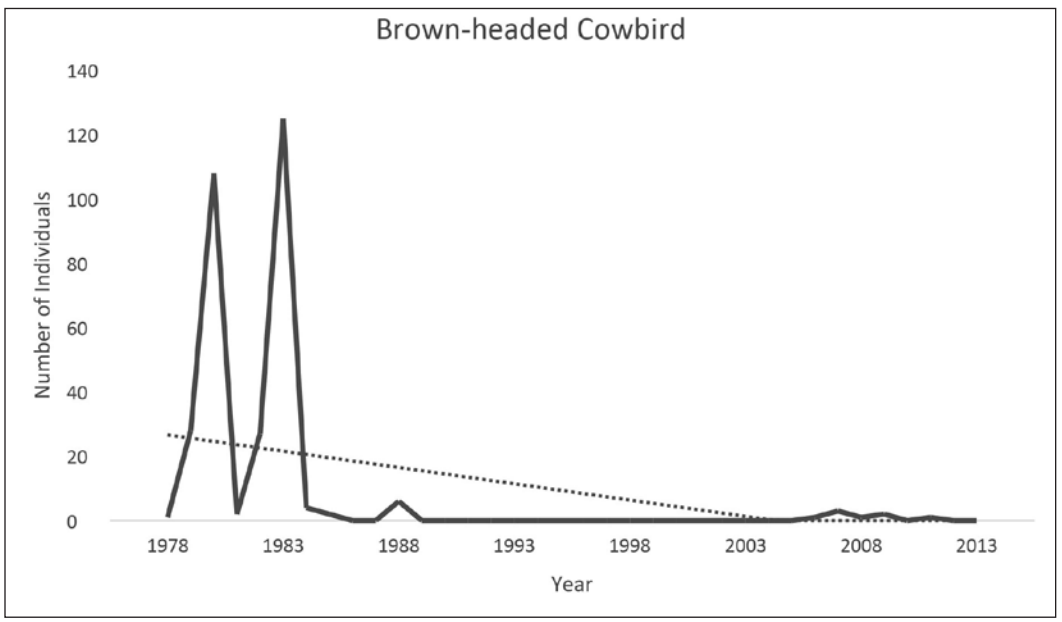


Figure 7. Decreasing abundance trend for Brown-headed Cowbird (*Molothrus ater*) from 1978 to 2014 at the Heard Natural Science Museum and Wildlife Sanctuary in North Texas.

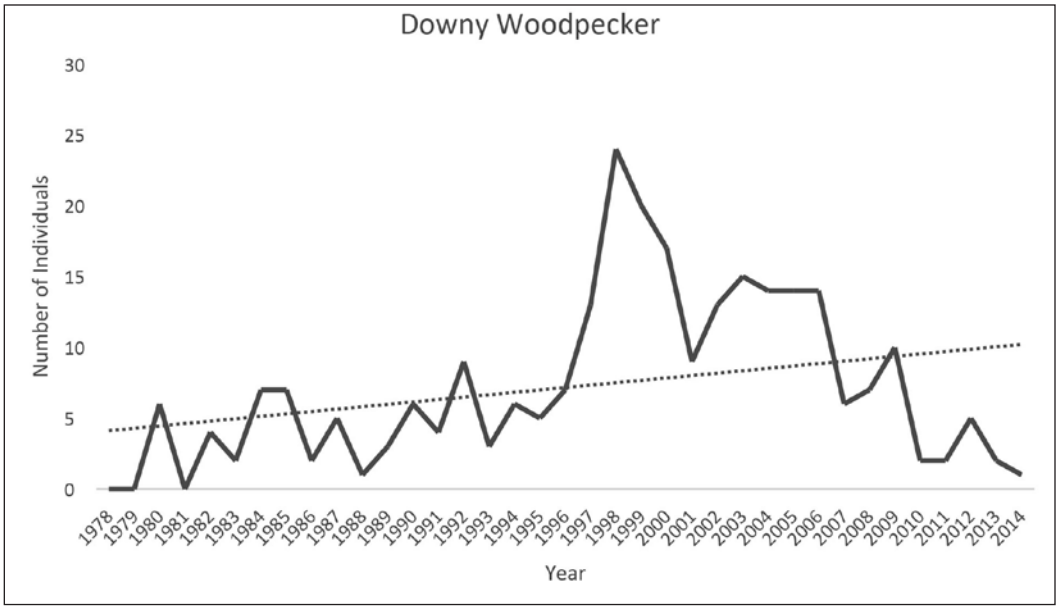


Figure 8. Increasing abundance trend for Downy Woodpecker (*Dryobates pubescens*) from 1978 to 2014 at the Heard Natural Science Museum and Wildlife Sanctuary in North Texas.

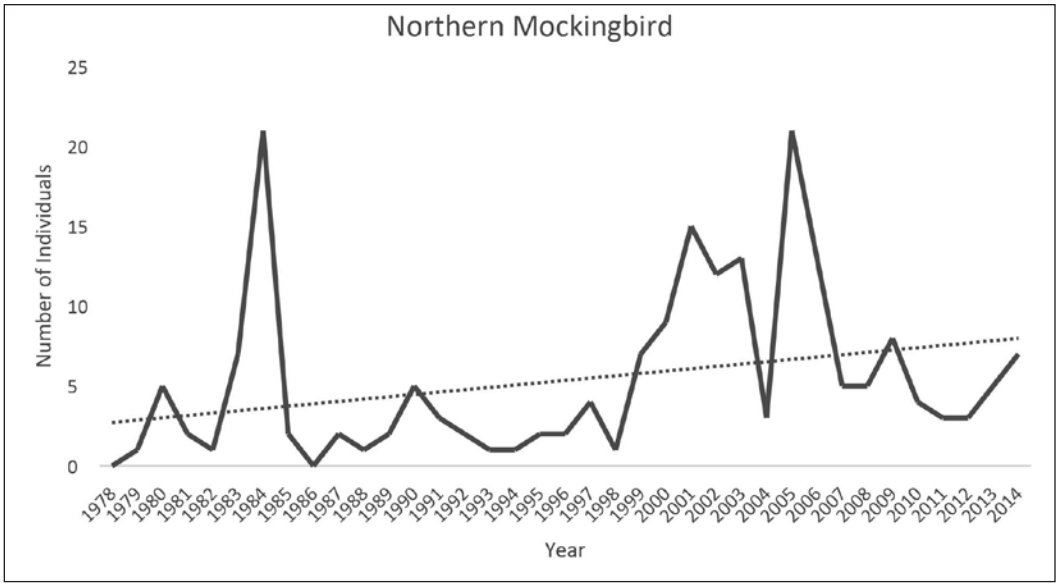


Figure 9. Increasing abundance trend for Northern Mockingbird (*Mimus polyglottos*) from 1978 to 2014 at the Heard Natural Science Museum and Wildlife Sanctuary in North Texas.

Blue Jay

172 Blue Jays were banded at the Heard with few captures during summer months. Blue Jays at the Heard demonstrated a decreasing abundance trend with 1984 and 2003 experiencing upward spikes in captures (Fig. 10). Blue Jays at the Heard exhibited a balanced age ratio and sex ratio could not be determined (Table 2). Pulich (1988) documented Blue Jay as a common to abundant resident in North Texas with confirmed nesting in Collin County.

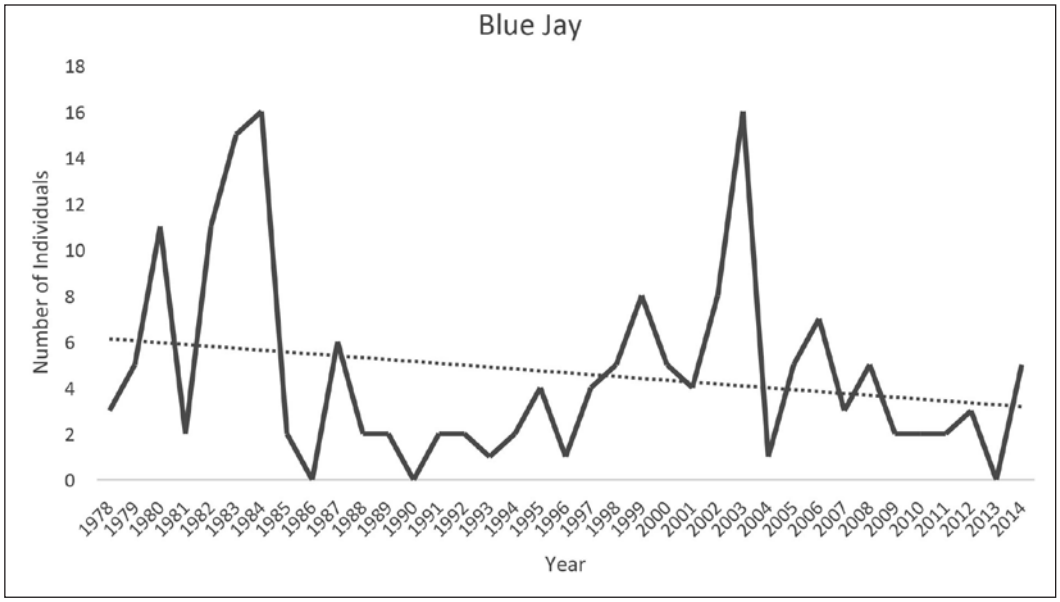


Figure 10. Decreasing abundance trend for Blue Jay (*Cyanocitta cristata*) from 1978 to 2014 at the Heard Natural Science Museum and Wildlife Sanctuary in North Texas.

White (2002) listed Blue Jay as a fairly common resident with increasing abundance in winter due to migrants from northern states, which corresponds to migration and winter capture records at the Heard. Blue Jays are known to nest as early as February (Tweit in Telfair 2007), thus records from February through July may indicate either nesting pairs or wintering Blue Jays at the Heard or both.

Eastern Phoebe

152 Eastern Phoebes were banded at the Heard with most individuals banded during spring and fall migration months. This species demonstrated a steadily increasing abundance trend with frequent annual variation (Fig. 11). Eastern Phoebes exhibited a 1.5:1 adult to HY age ratio and a 1:6 sex ratio favoring females, albeit from a small sample size (Table 2). Pulich (1988) listed Eastern Phoebe as a fairly common migrant, uncommon in winter, and uncommon to fairly common summer resident with confirmed nesting in Collin County. The Texas Breeding Bird Atlas also notes Eastern Phoebes nesting in North Texas (Benson in Telfair 2007); however, few phoebes were captured during summer months. White (2002) noted increased abundance of this species during spring and fall migration which corresponds to capture records at the Heard.

American Robin

59 American Robins were banded at the Heard with 90% banded during winter months and only ten during spring or summer. Age ratio was skewed towards adults (6.9:1) with a balanced sex ratio (Table 2). Pulich (1988) and White (2002) listed American Robin as an uncommon to fairly common summer resident and a common to abundant winter resident in North Texas, which corresponds to capture histories at the Heard. Similarly, the Texas Breeding Bird Atlas considered this species a common resident and more abundant in winter, with confirmed nesting in North Texas (Tweit in Telfair 2007).

Common Grackle

50 Common Grackles were banded at the Heard with the majority of captures during April and May. Age ratio was heavily skewed towards adults (14.7:1) and males (4.7:1) (Table 2). Pulich (1988) and White (2002) listed Common Grackle as an uncommon to common summer resident, but abundant winter resident in North Texas. However, only 12% of Common Grackles were captured during winter months at the Heard. The Texas Breeding Bird Atlas noted Common Grackle is a confirmed nesting species in North Texas (Tweit in Telfair 2007).

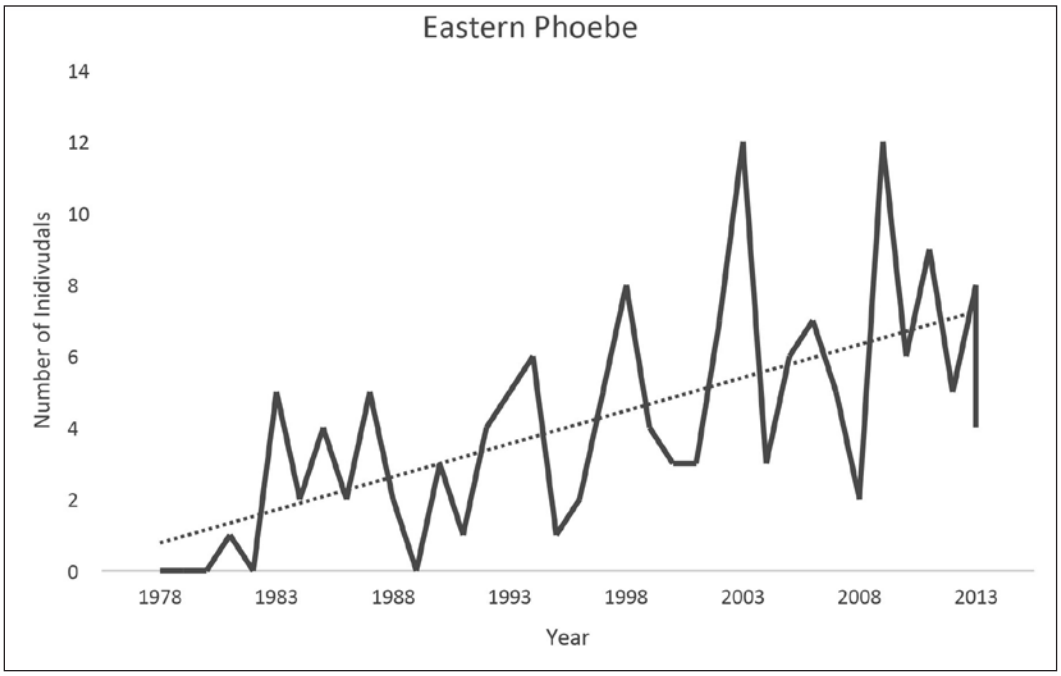


Figure 11. Increasing abundance trend for Eastern Phoebe (*Sayornis phoebe*) from 1978 to 2014 at the Heard Natural Science Museum and Wildlife Sanctuary in North Texas.

Eastern Bluebird

46 Eastern Bluebirds were mist-netted at the Heard in all months except June and August. Eastern Bluebirds exhibited a 4.5:1 adult to HY ratio and a 2.8:1 sex ratio (Table 2). Eastern Bluebird was listed as a fairly common to common resident with confirmed nesting in Collin County (Pulich 1988, Tweit in Telfair 2007). Similarly, White (2002) considered Eastern Bluebird a fairly common resident in Northeast Texas.

Red-bellied Woodpecker

Red-bellied Woodpecker is a common forest resident at the Heard with 43 captures from 1981 to 2014. This species exhibited a 3:1 adult to HY ratio and a 1:1.2 sex ratio (Table 2). Red-bellied Woodpecker is a common to abundant resident in North Texas (Pulich 1988, White 2002), with confirmed nesting in Collin County (Shackelford in Telfair 2007).

House Finch

The first House Finch mist-netted at the Heard was not until 2000 and not again until 2008. This species traditionally occurred in the western United States but was released in New York in 1939 (Elliot and Arbib 1953). Since 1939, House Finch has expanded its distribution from the East Coast to Texas (Badyaev et al. 2020), thus the lack of records during early mist-netting efforts at the Heard. House Finches were captured between 2000 and 2013; however, 82.5% of the captures occurred during two banding days in September and October 2008. House Finches exhibited a 3:1 adult to HY ratio and a 1:1 sex ratio (Table 2). Pulich (1988) considered House Finch a casual visitant in Collin County. More recently, White (2002) listed House Finch as rare to uncommon summer resident and uncommon to common winter resident in Northeast Texas. House Finch is a rare winter visitor at the Heard.

Eastern Screech-Owl

37 Eastern Screech-Owls were banded at the Heard with captures during every month but November. Although sex ratio could not be determined, Eastern Screech-Owls exhibited a 1.3:1 adult to HY ratio. Pulich (1988) considered this species to be a common forest resident in North Texas, with confirmed nesting in Collin County.

White (2002) listed Eastern Screech-Owl as an uncommon to common resident. Texas Breeding Bird Atlas data suggest this species likely nests in North Texas (Gehlbach in Telfair 2007).

Red-winged Blackbird

26 Red-winged Blackbirds were mist-netted at the Heard with all captures occurring between December and March. 92% of aged birds were adults and Red-winged Blackbirds netted at the Heard exhibited a 4.8:1 sex ratio (Table 2). Pulich (1988) listed Red-winged Blackbird as a fairly common to common resident and abundant winter resident in North Texas. White (2002) listed this species as an uncommon summer resident and common to abundant winter resident in Northeast Texas. The Texas Breeding Bird Atlas also noted this species as likely nesting in Collin County (Tweit in Telfair 2007).

Mourning Dove

14 Mourning Doves were mist-netted at the Heard with most captures during spring and fall migration months and no summer records. Mourning Dove exhibited a 4.5:1 adult to HY age ratio and a 3:1 sex ratio but with small sample size. Pulich (1988) and White (2002) listed this species as a common resident with increasing winter populations due to influxes of migrants from northern states. Mourning Dove likely nest in North Texas including Collin County (Tweit in Telfair 2007).

American Kestrel

12 American Kestrels were mist-netted at the Heard. Captures were evenly split between summer and winter months. 50% of captures were AHY-M with a 3:1 sex ratio albeit calculated from a small sample size. Pulich (1988) and White (2002) listed American Kestrel as a common migrant and winter resident in North Texas. The Texas Breeding Bird Atlas suggested this species may nest in North Texas (Seyffert in Telfair 2007) and half of Heard captures were during June indicating possible summer residency.

Red-tailed Hawk

Nine Red-tailed Hawks were mist-netted at the Heard, followed by two more in 2000. SY-U birds made up 55% of all Red-tailed Hawks captured at the Heard (Table 2). Pulich (1988) and White (2002) noted this species as an uncommon summer resident and common winter resident in North Texas, including confirmed nesting in Collin County. Increased winter abundance is due to migrants from northern states (Tweit in Telfair 2007, Preston and Beane 2020). Due to its body mass and size, Red-tailed Hawk is not typically captured in mist nets.

European Starling

11 European Starlings were mist-netted at the Heard with 91% HY-U individuals. The lack of captures since the early 1980s is unexpected given the abundance of European Starlings in urbanized habitat adjacent to the Heard. European Starling is an abundant resident frequently found in urban and exurban areas of North Texas with confirmed nesting in Collin County (Pulich 1988, White 2002, Tweit in Telfair 2007).

Hairy Woodpecker

Nine Hairy Woodpeckers were mist-netted at the Heard. All but one Hairy Woodpecker was an adult, and they exhibited a 2:1 sex ratio. The majority of captures were in May and October which may indicate these were migrants with only small numbers occurring during the summer at the Heard (Jackson et al. 2020). Pulich (1988) noted Hairy Woodpecker was a rare to uncommon migrant and winter resident with few nesting records from Collin County. White (2002) listed this species as a rare to uncommon summer resident with an increase during winter due to migrants. The Texas Breeding Bird Atlas listed Hairy Woodpecker as an uncommon to fairly common resident including nesting activity in Collin County (Schaefer in Telfair 2007).

Great Horned Owl

Seven Great Horned Owls were mist-netted at the Heard with 71% AHY-U birds (Table 2). Great Horned Owl is a common resident in open woodlands with confirmed nesting in Collin County (Pulich 1988, White 2002, Fantina in Telfair 2007). Due to its body mass and size, Great Horned Owl is not typically captured in mist nets.

Barn Owl

Three AHY-U and 2 HY-U Barn Owls were mist-netted during different months at the Heard (Table 2). Barn Owl is a rare to fairly common resident in North Texas, with nesting confirmed in Collin County (Pulich, 1988, White 2002, Telfair

2007). Due to its body mass and size, Barn Owl is not typically captured in mist nets.

Barred Owl

Two AHY-U and 3 HY-U Barred Owls were mist-netted at the Heard (Table 2). All captures occurred between September and November. Barred Owl is an uncommon to common resident species in forested habitats in North Texas, with confirmed nesting in Collin County (Pulich, 1988, White 2002, Telfair 2007). Due to its body mass and size, Barred Owl is not typically captured in mist nets.

Red-shouldered Hawk

Two AHY-U and one HY-U Red-shouldered Hawks were mist-netted at the Heard. They were captured on 4 November 1982, 27 July 2000, and 28 January 2001 respectively. Red-shouldered Hawk is a fairly common resident in wooded habitats of North Texas (Pulich 1988, White 2002, Telfair 2007). Red-shouldered Hawks occupy forested habitat and forage along the small lake at the Heard. Due to its body mass and size, Red-shouldered Hawk is not typically captured in mist nets.

Cooper's Hawk

Two HY-F and one HY-U Cooper's Hawks were mist-netted at the Heard. All three captures were in July and August 2000. Pulich (1988) was skeptical Cooper's Hawk nested in North Texas but noted scattered summer records. White (2002) listed this species as a very low density summer resident and uncommon to common fall migrant. Given all three were HY birds, its possible these Cooper's Hawks may have fledged locally or were early fall migrants.

American Crow

Two AHY-U American Crows were mist-netted at the Heard; one on 1 May 1982 and the other on 5 November 1986. American Crow is a common to abundant resident in North Texas (Pulich 1988, White 2002, Tweit in Telfair 2007). Due to its body mass and size, American Crow is not typically captured in mist nets.

Greater Roadrunner

Two AHY-U Greater Roadrunners were mist-netted at the Heard: on 13 March 1980 and on 7 February 1985. Pulich (1988) documented this species as a common resident in suitable habitat in North Texas, including Collin County. White (2002) and Telfair (2007) listed Greater Roadrunner as an uncommon resident in Northeast Texas. Although both records were from winter, this species is likely a resident at the Heard, but seasonal migration is possible (Hughes 2020). Due to its body mass and size, as well as being a ground-dwelling species, Greater Roadrunner is not typically captured in mist nets.

Great-tailed Grackle

Two Great-tailed Grackles were mist-netted at the Heard. One HY-M was banded on 28 June 1985 and an U-F was banded on 13 October 1986. Pulich (1988) listed Great-tailed Grackle as a common to fairly common resident in North Texas, including Collin County. White (2002) considered this species to be uncommon in urban areas in Northeast Texas. Although Great-tailed Grackle is common in urban areas adjacent to the Heard, this species likely avoids the forested habitat within the study site.

Killdeer

Two AHY-U Killdeer were mist-netted in 1979 and 1980, both in July. Pulich (1988) documented Killdeer as a common to abundant nesting resident in North Texas, including Collin County. White (2002) listed Killdeer as a common resident in Northeast Texas. The Texas Breeding Bird Atlas lists Killdeer as a confirmed nesting species in North Texas (Jackson in Telfair 2007). Due to its body mass and size, as well as being a ground-dwelling species, Killdeer are not typically captured in mist nets.

Black Vulture

One HY-U Black Vulture was mist-netted and banded on 3 September 1980. Black Vulture nests locally (Pulich 1988, White 2002, Telfair 2007) but typically are not captured in mist-nests due to large body mass and size.

Great Blue Heron

One U-U Great Blue Heron was mist-netted and banded on 30 December 1981. Great Blue Heron nests locally in North Texas (Pulich 1988, White 2002, Telfair 2007) and use a small lake for foraging at the Heard. Due to large body mass and size, Great Blue Heron is not typically captured in mist-nets.

House Sparrow

One U-M House Sparrow was mist-netted on 20 November 1980. The small sample size is surprising given that the area surrounding the Heard became more urbanized over the course of the study. House Sparrow often nest in urban areas (Pulich 1988, White 2002, Casto in Telfair 2007, Lowther and Cink 2020).

White-breasted Nuthatch

One AHY-M White-breasted Nuthatch was mist-netted on 24 April 2006. The lack of captures may be due to this species spending most of its time on trees above the height of mist-nets and short flights between trees (Grubb, Jr. and Pravosudov 2020). The Heard sits on the western margin of this species' range in North Texas which may account for the small population and capture rate (Pulich 1988, White 2002, Tweit in Telfair 2007).

White-winged Dove

One AHY-U White-winged Dove was mist-netted on 20 September 2006. Pulich (1988) listed White-winged Dove as a casual visitant to North Texas, but more recently has expanded its range northward and become increasingly more common in North Texas (White 2002, Schwertner et al. 2020). The single capture is surprising given how common this species has become in North Texas and near the Heard.

Wood Duck

One HY-M Wood Duck was mist-netted on 2 July 1984. Pulich (1988) listed Wood Duck as a rare to uncommon nesting species in North Texas including Collin County. White (2002) listed Wood Duck as a common resident in Northeast Texas. Wood Ducks forage on a small lake at the Heard and have nested locally. Due to large body mass and size, Wood Duck is not typically captured in mist nets.

ACKNOWLEDGMENTS

I thank Ken Steigman for initiating banding at the Heard. Thank you to Lorraine Bartlett, Linda Ergonis, Tom Heath, Betty Parker, Sandra Polcyn, Karen White, Judy Woods, and all volunteers from the Prairie and Timbers Audubon Society and the Heard for their banding efforts and assistance.

LITERATURE CITED

Badyaev, A. V., V. Belloni, and G. E. Hill. 2020. House Finch (*Haemorhous mexicanus*), version 1.0. In Birds of the World (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.houfin.01 (accessed 26 August 2023).

Ballard, G., G. G. Geupel, N. Nur, and T. Gardali. 2003. Long-term declines and decadal patterns in population trends of songbirds in western North America. Condor 105:737–755.

Doherty, P. F., Jr., and T. C. Grubb, Jr. 2002. Survivorship of permanent-resident birds in a fragmented forested landscape. Ecology 83:844–857.

Dunn, E. H., and C. J. Ralph. 2004. Use of mist nets as a tool for bird population monitoring. Studies in Avian Biology 29:1–6.

Elliot, J. J., and R. S. Arbib. 1953. Origin and status of the House Finch in the eastern United States. Auk 70:31–-37.

Grubb, Jr., T. C., And V. V. Pravosudov. 2020. White-breasted Nuthatch (*Sitta canadensis*), version 1.0. In Birds of the World (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.whbnut.01 (accessed 23 August 2023).

Gustafson, M. E., J. Hildenbrand, and L. Metras. 1997. The North American Bird Banding Manual (Electronic Version). Version 1.

Hughes, J. M. 2020. Greater Roadrunner (*Geococcyx californianus*), version 1.0. In Birds of the World (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.greroa.01.

Jackson, J. A., H. R. Ouellet, and B. J. Jackson. 2020. Hairy Woodpecker (*Dryobates villosus*), version 1.0. In Birds of the World (P. G. Rodewald, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.haiwoo. (accessed 25 August 2023).

Jiao, S., F. Huettmann, Y. Guo, X. Li, and Y. Ouyang. 2016. Advanced long-term bird banding and climate data mining in spring confirm passerine population declines for the Northeast Chinese-Russian flyway. Global and Planetary Change 144:17–33.

Karr, J. R. 1990. Avian survival rates and extinction process on Barro Colorado, Panama. Conservation Biology 4:391–397.

Lowther, P. E., and C. L. Cink. 2020. House Sparrow (*Passer domesticus*), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.houspa.01 (accessed 24 August 2023).

Mallory, E. P., N. V. L. Brokaw, and S. C. Hess. 2004. Coping with capture rate bias: canopy height and several extrinsic factors. Studies in Avian Biology 29:151–160.

Preston, C. R., and R. D. Beane. 2020. Red-tailed Hawk (*Buteo jamaicensis*), version 1.0. In Birds of the World (A. F. Poole, Editor). Cornell Lab of

Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.rethaw.01 (accessed 25 August 2023).

Pulich, W. M. 1988. The Birds of North Central Texas. Texas A&M University Press, College Station, Texas.

Pyle, P. 1997. Identification guide to North American birds. Part 1. Slate Creek Press, Bolinas, CA.

Ralph, C. J., G. R. Geupel, P. Pyle, T. E. Martin, and D. F. DeSante. 1993. Handbook for field methods for monitoring landbirds. USDA, Forest Service, General Technical Report PSW-GTR-144. Pacific Southwest Research Station, Albany, CA.

Remsen, Jr., J. V., and D. A. Good. 1996. Misuse of data from mist-net captures to assess relative abundance in bird populations. Auk 113:381–398.

Ruiz-Gutiérrez, V., P. F. Doherty, Jr., C. E. Santana, S. C. Martínez, J. Schondube, H. V. Munguía, and E. Iñigo-Elias. 2012. Survival of resident Neotropical birds: considerations for sampling and analysis based on 20 years of bird-banding efforts in Mexico. Auk 129:500–509.

Schwertner, T. W., H. A. Mathewson, J. A. Roberson, and G. L. Waggerman. 2020. White-winged Dove (*Zenaida asiatica*), version 1.0. In Birds of the World (A. F. Poole and F. B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.whwdov.01. (accessed 24 August 2023).

Telfair, R. C. 2007. The Texas Breeding Bird Atlas. Texas A&M University System, College Station and Corpus Christi, Texas. https://tbtbba.tamu.ed.

Wang, Y., and D. M. Finch. 2002. Consistency of mist netting and point counts in assessing landbird species richness and relative abundance during migration. Condor 104:59–72.

Weatherhead, P. J., and M. R. L. Forbes. 1994. Natal philopatry in passerine birds: genetic or ecological influences. Behavioral Ecology 5:426–433.

White, M. 2002. Birds of Northeast Texas. Texas A&M University Press, College Station, Texas.

Wolfe, J. D., E. I. Johnson, P. C. Stouffer, F. Owens, E. Deleon, E. Liffman, K. Brzeski, S. Utley, D. Mooney, C. Coco, and G. Grandy. 2013. Annual survival of birds captured in a habitat island bordered by the urban matrix of Baton Rouge, LA. Southeastern Naturalist 12:492–499.

Wood, D. R. 2020. Trends in abundance, species richness, and demographics of Nearctic-Neotropical migrants from a long-term bird banding effort in North Texas. Bulletin of the Texas Ornithological Society 53:35–67.

Wood, D. R. 2021. Abundance, species richness, and demographics of wintering Nearctic-Nearctic migrants from a long-term bird banding station in North Texas. Bulletin of the Texas Ornithological Society 54:59–80.

NEW ASSISTANT EDITOR

I am pleased to announce the services of Michael Patrikeev as ASSISTANT EDITOR of the Bulletin of the Texas Orniothological Society. Michael is a graduate of St. Petersburg State University (Russia), and studied diurnal birds of prey for his M.Sc. In later years, he worked at the Lower-Svir Nature Reserve in Russia, and then headed the wildlife inventory section at the Ecological Centre of Azerbaijan. In the latter country, he conducted avifaunal surveys and inventories, and published The Birds of Azerbaijan in 2004. Michael arrived in Canada in 1992, and since then worked for the Canadian Wildlife Service, Ontario Ministry of Natural Resources, Parks Canada, The Nature Conservancy, and Texas Parks and Wildlife. Michael is currently semi-retired and works wildlife-related contracts in Canada and the United States. His private interests include conservation of tropical birds and amphibians. Michael will be assisting Jack Eitniear (Editor) and Kent Rylander (Associate Editor).

[1] E-mail: mpatrikeev@hotmail

2023 ANNUAL REPORT
TEXAS BIRD RECORDS COMMITTEE REPORT FOR 2023

Eric Carpenter

674 Goodnight Trail, Dripping Springs, Texas 78620

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 117 records during 2023: 111 records of 46 species were accepted and six records of five species were not accepted, an acceptance rate of 94.8% for this report. A total of 194 observers submitted documentation (to the TBRC or to other entities) that was reviewed by the committee during 2023.

The TBRC accepted three first state records in 2023: Smooth-billed Ani, Crescent-chested Warbler, and Pacific Wren. In addition, Pacific-slope Flycatcher and Cordilleran Flycatchers were lumped into Western Flycatcher. The three state additions plus the net loss of one species due to the Western Flycatcher lumping bring the official Texas State List to 666 species in good standing. This total does not include the two species on the Presumptive Species List, nor the two 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, Eric Carpenter, 674 Goodnight Trail, Dripping Springs, Texas 78620 (email: ecarpe@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 64th supplement (Chesser et al. 2023). A number in parentheses after the species name represents the total number of accepted records in Texas for that species at the end of 2023. 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. If photographs or video recordings are on file with the TBRC, the Texas Photo Record File (TPRF) (Texas A&M University) number is also given. 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.

[1] E-mail: ecarpe@gmail.com

TBRC Membership – Members of the TBRC during 2023 who participated in decisions listed in this report were: Tony Frank, Chair; Keith Arnold, Academician; Eric Carpenter, Secretary; Sheridan Coffey, Greg Cook, Mel Cooksey, Steve Glover, Jesse Huth, Arman Moreno, and Willie Sekula.

Contributors – Ty Allen, Parker Allie, Dean Anderson, Connie Andrus, Marlin Andrus, Mike Austin (**MiA**), Carol Bailey (**CaB**), RJ Baltierra, Chuck Baskin, Mary Ann Beauchemin (**MAB**), Jennifer Bell (**JeB**), Kenny Benge, John Berner (**JoB**), Brian Berry, Peter Billingham, Gary Binderim, Cint Boal (**CiB**), Justin Bosler, Matt Brady, Mary Brogan (**MaB**), John Brush (JoBr), Jeffrey Bryant (**JBr**), Jimma Byrd (**JiB**), Michelle Cano (**MiC**), Shane Cantrell (**SCa**), Skip Cantrell (**SkC**), Steve Cardiff (**StC**), Lorie Carnes (**LoC**), Eric Carpenter, Shawn Chaney, Chris Chappell, Raymond Chiarello, Dan Cimbaro (**DaC**), Aeris Clarkson, Kevin Cochran (**KeC**), Sheridan Coffey (**ShC**), Fred Collins, Greg Cook, Dennis Cooke, Mel Cooksey, Kim Cortez (**KiC**), Jim Crites, Kelly Cyr, Linda Czopek, Tucker Dangremond, Tripp Davenport (**TrD**), Matthew Daw (**MaD**), Mike Dillon (**MiD**), Donna Dittmann, BJ Dooley, Matt DuRoss, Kathy Mihm Dunning (**KMD**), Caleb Dye, Todd Easterla, Maryann Eastman, Fran Edens, Wyatt Egelhoff, Stephen Falick, Evan Farese, Erich Fickle (**ErF**), Jodhan Fine, Todd Fitzgerald (**ToF**), Ava Flores, Tom Forwood Jr. (**TFo**), Phyllis Frank, Tony Frank, Bob Friedrichs, Dale Gawlik, Brian Genge, Joseph Girgente, Steve Glover, Javier Gonzalez (**JaG**), Rod Goodwin, Peter Gottschling, Gary Graves, Mike Gray, John Groves (**JoG**), Jouko Haapamaa (**JoH**), John Hale, Courtney Hanson (**CoH**), Shelia Hargis (**ShH**), Michael Harvey (**MiH**), Sheila Hebert, Caleb Helsel, Nestor Hernandez, Anthony Hewetson, Marla Hibbitts, Troy Hibbitts, Gary Hodne, Joseph Hood (**JHo**), Danna Hoover, Caroline Humphries (**CaH**), Patricia Isaacson, Greg Jackson, Heather Jenkins, Cameron Johnson, Oscar Johnson, Tiffany Kersten, Peter Keyel, Dan King, John Kiseda, Ad Konings (**AdK**), Rich Kostecke, Anastasia Kuzmina, Alex Lamoreaux, Justin LeClaire (**JuL**), Josh Lefever, Tim Lenz (**TiL**), Tony Leukering (**ToL**), Dell Little, Terry Little, Mark Lockwood, Scotty Lofland, Stephan Lorenz (**StL**), Charlie Lyon, John Mariani (**JMa**), Jamie Martin, Paolo Matteucci, Michael Matthews, Steve Mayes, Beth McBroom, Michael McCloy (**MiM**), Jon McIntyre (**JoM**), Pat McNabb (**PaM**), Tom McNabb (**ToM**), Colette Micallef, Tyler Miloy, Arman Moreno, Marquette Mutchler (**MaM**), David Nelson (**DaN**), David Newstead, Raphael Nussbaumer, Vincent O'Brien (**VOB**), Suzanne Odum, Carolyn Ohl (**CaO**), Andrew Orgill, Michael Orgill, Carol Ortenzio, Erik Ostrander, Jay Packer, Barbara Pankratz (**BaP**), Jim Paton (**JiP**), Eliana Patt, Sandra Peterson (**SaP**), John Piasecki (**JoP**), Nathan Pieplow (**NaP**), Barrett Pierce, Adam Pingatore, Randy Pinkston, Christopher Pipes, Pam Pipes, Niler Pyeatt, Suanne Pyle, Janet Rathjen, Douglas Raybuck, Ari Rice, James Rieman (**JRi**), Cecilia Riley, Ryan Rodriguez, Jack Rogers (**JaR**), Peggy Rudman, Jonathan Sadow (**JoS**), David Salinas, Ryan Sanderson, Brady Schwab, Willie Sekula, Jeff Sexton, Colin Shackelford, Brad Shine (**BrS**), Owen Sinkus, Douglas Smith (**DoS**), David Stekoll (**DaS**), Lauren Stokes, Robert Stone (**RoS**), Mary Beth Stowe (**MBS**), Wes Thompson, Jane Tillman, Steve Tillman, Zachary Tonzetich, Billy Trimble, David True, Sean Verkamp, Nick Vinciguerra, Christian Walker, Lee Wallace, Colby Watkins (**CoW**), Ron Weeks, Ed Wetzel, Mike Williams, Doug Willick, Vicki Wilmarth, Adam Wood, Nancy Young, Barry Zimmer.

Acknowledgments – The TBRC is very grateful to the many contributors listed above, without whom this report would not be possible. The committee would also like to thank Tania Homayoun, Dave Irons, Steve Mlodinow, Cliff Shackelford for providing the TBRC with assistance and expert opinion concerning records reviewed during 2023. The author thanks his fellow TBRC members for reviewing previous drafts of this report.

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*) (39). One west of Holliday, Archer on 15 January 2023 (**CJ**; 2023-10; TPRF 4041).

Trumpeter Swan (*Cygnus buccinator*) (16). Eight north of Stinnett and Lake Meredith, Hutchinson/

Moore on 25 December 2022 - 17 February 2023 (**RG**, SL, JS, BP, BF, MA, CA, JB; 2023-01; TPRF 4035).

Garganey (*Spatula querquedula*) (eight). One at Lockney WTP, Floyd on 28 April - 6 May 2023 (**JP**, PK, ML, RP, AH, CW, NP; 2023-29; TPRF 4062).

Eurasian Wigeon (*Mareca penelope*) (66). One at Balmorhea Lake, Reeves on 13 November - 14 December 2022 (**ST**, TH, MH, EF; 2023-54; TPRF 4027). One at Lewis Lake, Burnet on 28 December 2022 - 5 February 2023 (**DW**, RP, VOB, CH, CoW, LS; 2023-08; TPRF 4037).

Barrow's Goldeneye (*Bucephala islandica*) (11). One at Lake Meredith, Hutchinson on 15 January 2023 (**JB**; 2023-13; TPRF 4042).

American Flamingo (*Phoenicopterus ruber*) (14). Five at East Beach/Lagoon and Bolivar Flats, Galveston on 3 September 2023 (**CoH**, MW, SC; 2023-78; TPRF 4087). Three at east beach area, Galveston Island, Galveston on 6 October 2023 (**AK**; 2023-117; TPRF 4100). Two at San Jose Island, Aransas on 9 October 2023 (**BT**; 2023-95; TPRF 4102).

Red-necked Grebe (*Podiceps grisegena*) (35). One at White Rock Lake, Dallas on 21-27 November 2022 (**MD**, JS, SO, CaH; 2022-91; TPRF 4014). One at Lake O'The Pines, Marion on 27 December 2022 (**MiD, MM**; 2023-16; TPRF 4036). One at Richland Creek WMA, Navarro on 17 May - 1 June 2023 (**JM**, TM, JB; 2023-76; TPRF 4078).

Ruddy Ground Dove (*Columbina talpacoti*) (31). One at Lajitas, Brewster on 27 February - 4 March 2023 (**SF**, SH; 2023-56; TPRF 4050).

Smooth-billed Ani (*Crotophaga ani*) (one). One at South Padre Is., Cameron on 9-17 November 2022 (MaM, MBS, ShC, JoM, JS, RP, EC, AL, EO, RS; 2022-85; TPRF 4024). This represents the first documented record for Texas.

Mangrove Cuckoo (*Coccyzus minor*) (16). One north of Rio Hondo, Cameron on 10 May 2023 (**RW**, JoM; 2023-31; TPRF 4065). One at East End Lagoon Nature Preserve, e. Galveston Island, Galveston on 12-14 May 2023 (**PA**, JS, JMa, TF, PF; 2023-35; TPRF 4074).

Costa's Hummingbird (*Calypte costae*) (51). One at El Paso, El Paso on 20 November - 7 December 2022 (**JK**, JR, OJ; 2022-95; TPRF 4029). One at northeast Dallas, Dallas on 20–25 March 2023 (**JeB**, PB, AC, MD; 2023-84; TPRF 4067).

White-eared Hummingbird (*Basilinna leucotis*) (48). One at Davis Mountains Preserve, Jeff Davis on 29 July–26 August 2023 (**CS**, GC, SG; 2023-65; TPRF 4086).

Common Crane (*Grus grus*) (three). One northwest of Wolfforth, Lubbock on 25–26 January 2023 (**TD**, JG; 2023-18; TPRF 4045).

Bar-tailed Godwit (*Limosa lapponica*) (two). One at Portland and Oso Bay, San Patricio/Nueces on 20 November 2022 - 23 January 2023 (**SkC**, MO, TL; 2022-88; TPRF 4013).

Surfbird (*Calidris virgata*) (13). One at South Padre Is., Cameron on 3-13 April 2023 (**DS**, MBS, BF, JS, GC, SG, PM; 2023-22; TPRF 4060).

Ruff (*Calidris pugnax*) (44). One at Port Aransas, Nueces on 2-6 March 2023 (**TiL**, JoM, MC, RW; 2023-15; TPRF 4066). One west of Bryan, Brazos on 16 September 2023 (**JH**, SV; 2023-81; TPRF 4091).

Red Phalarope (*Phalaropus fulicarius*) (57). One at Horizon City, El Paso on 9 October 2022 (**MB**; 2022-99; TPRF 4007). One at Fort Clark Springs, Brackettville, Kinney on 24 October 2022 (**TH, MH**; 2022-100; TPRF 4011). One at Mitchell Lake, Bexar on 7-8 January 2023 (**ShH**, ShC; 2023-05; TPRF 4039).

Long-tailed Jaeger (*Stercorarius longicaudus*) (30). One near Port Mansfield jetty, South Padre Island, Willacy on 8 September 2023 (**EF**; 2023-83; TPRF 4094).

Short-billed Gull (*Larus brachyrhynchus*) (50). One at Amarillo, Randall on 25 January 2023 (**TiL**; 2023-17; TPRF 4046). One at Grapevine Lake, Tarrant on 25 April - 4 May 2023 (**KC**, ToF, DaS; 2023-68; TPRF 4071).

Slaty-backed Gull (*Larus schistisagus*) (eight). One at Windy Point, Lake Travis, Travis on 7 February 2023 (**VOB**; 2023-12; TPRF 4048).

Brown Noddy (*Anous stolidus*) (27). One at South Padre Island, Cameron on 6-7 September 2023 (**LC**, JaG; 2023-79; TPRF 4088).

Elegant Tern (*Thalasseus elegans*) (14). Up to three at Port Aransas jetty, Nueces on 10 September - 10 November 2022 (**ShC**, WE, MC, KeC, MBS, JoM, SkC, TrD, JL; 2022-69; TPRF 4006). One at beach near McFaddin NWR, Jefferson on 21 October 2022 (**GC, RoS**; 2022-92; TPRF 4009).

Sooty Shearwater (*Ardenna grisea*) (23). One at South Padre Is. jetty, Cameron on 1 January 2023 (**JF, OS**; 2023-02; TPRF 4038).

Great Shearwater (*Ardenna gravis*) (42). One at Mustang Island, Nueces on 10 July 2023 (AO; 2023-87; TPRF 4084). One ~15 miles east of Packery Channel, Nueces on 22 July 2023 (**DG**; 2023-64; TPRF 4085). One at Port Mansfield jetty, South Padre Island, Willacy on 15 September 2023 (**EF**; 2023-80; TPRF 4089). One ~15 miles southeast of Port Aransas, Nueces on 16 September 2023 (**SP, AM, GH**; 2023-82; TPRF 4090). One ~40 miles east of North Padre Island, Kenedy on 1 October 2023 (**JoM**; 2023-90; TPRF 4097). One at Mustang Island, Nueces on 4 October 2023 (**DN**, JuL; 2023-92; TPRF 4099). One ~27 miles southeast of Port Aransas, Nueces on 9 October 2023 (**JoM**; 2023-94; TPRF 4101). One at South Padre Island, Cameron on 13 October 2023 (**JuL**; 2023-119; TPRF 4104).

Manx Shearwater (*Puffinus puffinus*) (15). One ~91 miles east-northeast of the Mansfield cut on Padre Island, Willacy on 10 November 2022 (**JoM**; 2022-86; TPRF 4025).

Red-footed Booby (*Sula sula*) (11). One ~24 miles southeast of East Beach, Galveston Island, Galveston on 20 May 2023 (**SCa**; 2023-85; TPRF 4080). One ~110 miles southeast of Freeport, Brazoria on 29 September 2023 (**EC, GH, JS**; 2023-89; TPRF 4096).

Short-tailed Hawk (*Buteo brachyurus*) (72). One at Lost Maples SNA and nearby, Real/Uvalde on 27 March - 7 April 2023 (**KB**, ToL, KMD; 2023-71; TPRF 4068). One at Neal's Lodge, Concan, Uvalde on 13 April 2023 (**StL**; 2023-72; TPRF 4069). One at Lost Maples SNA, Bandera on 16 April 2023 (**RN**; 2023-73; TPRF 4070). One at Government Canyon, Bexar on 28 April 2023 (**ZT**, JoH; 2023-69; TPRF 4072).

Northern Saw-whet Owl (*Aegolius acadicus*) (39). One at Tobe Canyon, Davis Mountains Preserve, Jeff Davis on 6 May - 13 June 2023 (**RK, BaP**, BS, TA; 2023-33). One at Limpia Chute, Davis Mountains Preserve, Jeff Davis on 7 May - 9 June 2023 (**RK**, AM; 2023-32; TPRF 4073).

Social Flycatcher (*Myiozetetes similis*) (four). One at UT RGV campus, Brownsville, Cameron on 10 November 2021 - 7 January 2023 (**NaP**, JoM, EC, TF, RP, AF, EW, PI, SL, JHo, MC, PG, JiB, MiC, CO, DT, MiA; 2021-112; TPRF 4005).

Sulphur-bellied Flycatcher (*Myiodynastes luteiventris*) (39). One at Weslaco, Hidalgo on 22 May 2023 (**JBr**; 2023-75; TPRF 4081). One at Alamito Creek, Presidio on 12 June 2023 (**CR, MG**; 2023-86; TPRF 4083).

Thick-billed Kingbird (*Tyrannus crassirostris*) (22). One at Common Fords Park, west Austin, Travis on 13 May 2023 (**EP**; 2023-34; TPRF 4075). One at Madera Canyon, Jeff Davis on 3 June - 15 July 2023 (**GB**, AM, SL, JS, WT, RP, StC, DD, CR; 2023-58; TPRF 4082).

Gray Kingbird (*Tyrannus dominicensis*) (19). One near Sea Rim SP, Jefferson on 15-17 May 2023 (**JoM**, DC, MAB; 2023-38; TPRF 4077).

Greater Pewee (*Contopus pertinax*) (39). One at Alpine, Brewster on 9-19 November 2022 (**CaO**; 2022-101; TPRF 4012).

Black-whiskered Vireo (*Vireo altiloquus*) (48). One at High Island, Galveston on 26 April 2023 (**WE**, JoP; 2023-70).

Brown Jay (*Psilorhinus morio*) (six). Five at Salineno, Starr on 12 December 2022 (**GG**; 2023-57; TPRF 4057).

Pinyon Jay (*Gymnorhinus cyanocephalus*) (14). One at Franklin Mountains, El Paso on 14 September 2022 (**MiH**; 2023-53). Up to seventeen at Dog Canyon, GMNP, Culberson on 18 September - 30 October 2022 (**AP**, LoC, MiM; 2023-51; TPRF 4054). Two at Indio Mountains, Hudspeth on 1 October 2022 (**MB, MiH**; 2023-23; TPRF 4015). Up to two hundred on the east slope of the Guadalupe Mountains, Culberson on 11 October 2022 - 4 January 2023 (**CL**, RP, ShC, JS, WS, JT, AC, DA; 2022-93; TPRF 4016). Up to five at west-central El Paso, El Paso on 25-30 October 2022 (**JiP, OJ**, JoB, LW; 2022-76; TPRF 4018). Forty at ssw. of Alpine, Brewster on 3 November 2022 (**CC**; 2023-24). Two at Chihuahuan Desert Research Institute, Jeff Davis on 2 December 2022 (**JL**; 2022-97). Up to two hundred at Limpia Creek, nw. of Fort Davis, Jeff Davis on 7 December 2022 - 16 May 2023 (**CR, MG**, CaO, JR, RP, StC, DD, JaR, CW, CM, BF, BB, WS, DL; 2023-06; TPRF 4032). One at Redford, Presidio on 3 February 2023 (**TFo**; 2023-11; TPRF 4047).

Clark's Nutcracker (*Nucifraga columbiana*) (28). One at El Paso, El Paso on 28 January 2023 (**BZ**; 2023-55). Two at Smith Springs, GMNP, Culberson on 16 October 2023 (**JoS**; 2023-96; TPRF 4105).

Pacific Wren (*Troglodytes pacificus*) (One). One to two at El Paso, El Paso on 27 November 2022 - 19 March 2023 (**JiP**, OJ, MB, JS, JoG, AdK, BZ,

TF, PF, MiA, AW, MiH; 2022-94; TPRF 4092). This represents the first documented record for Texas.

Varied Thrush (*Ixoreus naevius*) (56). One at El Paso, El Paso on 24-26 October 2022 (**RC**, OJ; 2022-77; TPRF 4010). One at nw. San Antonio, Bexar on 8 December 2022 (CD; 2022-96; TPRF 4034). One at Fisk Canyon, Big Bend NP, Brewster on 16 January 2023 (**NY**; 2023-09; TPRF 4043).

Evening Grosbeak (*Coccothraustes vespertinus*) (57). One at Lubbock, Lubbock on 23-26 October 2022 (**TD**, BrS; 2022-75; TPRF 4017). One at wnw. of Alpine, Brewster on 30 October - 6 November 2022 (**CS**, CP; 2023-25; TPRF 4019). One west of Fort Davis, Jeff Davis on 5-6 November 2022 (**ME**; 2023-44; TPRF 4021). Two at w. of Plains, Yoakum on 5-6 November 2022 (**ToM, PaM**; 2023-39; TPRF 4020). Up to sixteen along the east slope of the Guadalupe Mountains, Culberson on 6 November - 29 December 2022 (**MiH**, JRi, RW, JT, BG; 2023-43; TPRF 4022). One south of Ozona, Crockett on 7 November 2022 (**CB**; 2023-26; TPRF 4023). One at Cherokee, San Saba on 12 November 2022 (**ErF**; 2023-27; TPRF 4026). One at Franklin Mountains SP, El Paso on 13 November 2022 (**OJ**; 2023-60). One southwest of Lake Abilene, Taylor on 16-19 November 2022 (JP, GC; 2023-40; TPRF 4028). Twenty-three at Amarillo, Randall on 21 November 2022 - 16 April 2023 (**DoS**, JS, BP, RB, VW; 2022-87; TPRF 4030). One at Alpine, Brewster on 22-23 November 2022 (**SF**; 2023-41; TPRF 4031). One at UTEP campus, El Paso on 22 November 2022 (**MiH**; 2023-61). One at Mission Hills, El Paso on 27 November 2022 (**JK**; 2023-62). One on the east slope of Franklin Mountains, El Paso on 30 November - 3 December 2022 (**BZ**, JoG; 2023-63; TPRF 4055). Up to twenty-eight at west El Paso, El Paso on 3 December 2022 - 15 April 2023 (**JiP**, JS, MiH, JoG, TF, PF; 2022-98; TPRF 4056). Two at Limpia Creek, nw. of Fort Davis, Jeff Davis on 7 December 2022 (**DL**; 2023-42; TPRF 4033). One at Marfa, Presidio on 2 January 2023 (**JL**; 2023-04). Up to three at Midland, Midland on 13 January - 7 May 2023 (**CaB**; 2023-47; TPRF 4040). Two south of Lorenzo, Crosby on 22 January - 7 April 2023 (**ML**; 2023-07; TPRF 4044). Two southwest of Fredricksburg, Gillespie on 18 February - 4 April 2023 (**MaB**; 2023-45; TPRF 4058). One at Shafter, Presidio on 25-27 February 2023 (**FC**, TFo; 2023-46; TPRF 4049). One at Graham, Young on 5-6 March 2023 (**FE**; 2023-52; TPRF 4051). One at Davis Mountains SP, Jeff Davis on 1 April 2023 (**CP, PP**; 2023-48; TPRF 4052). One at Limpia Creek, nw. of Fort Davis, Jeff Davis on 2-13 April 2023 (**DL**; 2023-49; TPRF 4053). Up to five at Lubbock, Lubbock on 3 April - 1 May 2023 (**CiB**, AR, HJ, JC; 2023-59; TPRF 4059). One at The Bowl, GMNP, Culberson on 7 May 2023 (**MaD**; 2023-50; TPRF 4064).

Golden-crowned Sparrow (*Zonotrichia atricapilla*) (51). One at Fort Peña Colorado Park, Brewster on 19 April 2023 (**SF**; 2023-28; TPRF 4061).

Crescent-chested Warbler (*Oreothlypis superciliosa*) (two). One at Pinnacles Trail, Chisos Mountains, Big Bend NP, Brewster on 14-18 May 2023 (**TE**, BS, AC, JS, RW, SaP, JoB; 2023-37; TPRF 4076). This represents the first fully documented record for Texas ; there was a prior accepted sight record.

Golden-crowned Warbler (*Basileuterus culicivorus*) (34). One at Palmview, Hidalgo on 15 September 2023 (**PR**; 2023-114; TPRF 4095). One at San Benito, Cameron on 4 October 2023 (**KiC**; 2023-115; TPRF 4098).

Slate-throated Redstart (*Myioborus miniatus*) (20). One at Lubbock, Lubbock on 30 April 2023 (**PK**, JC; 2023-30; TPRF 4063). One at Boot Canyon, BBNP, Brewster on 19 May 2023 (**DaC**; 2023-74; TPRF 4079). One at Tobe Canyon, Davis Mountains Preserve, Jeff Davis on 20 May - 25 August 2023 (**AR**, NV, AM; 2023-116; TPRF 4093).

Crimson-collared Grosbeak (*Periporphyrus celaeno*) (62). One at Quinta Mazatlan, Hidalgo on 5-12 October 2023 (**JoBr**, RR, MBS, NH; 2023-118; TPRF 4103).

Red-legged Honeycreeper (*Cyanerpes cyaneus*) (two). One at Sabine Woods, Jefferson on 16-27 October 2022 (**SM**, MiA, TF, PF, JS, EC, GJ, DaN, DK, BD, BM; 2022-74; TPRF 4008).

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.

Sooty/Short-tailed Shearwater (*Ardenna grisea/tenuirostris*). One four miles southeast of San Jose Is., Aransas on 19 August 2021 (2021-90). One in the surf near High Island, Galveston on 12 February 2022 (2022-27).

Snail Kite (*Rostrhamus sociabilis*). One at Pearland, Harris on 30 March 2023 (2023-21).

Yellow-headed Caracara (*Daptrius chimachima*). One south-southwest of Burnet, Burnet on 9 May 2023 (2023-36). The species identification was correct; the record was not accepted due to natural occurrence questionable.

(Slate-colored) Fox Sparrow (*Passerella iliaca* [schistacea Group]). One to two at Davis Mts SP, Jeff Davis on 28 October 2022 (2022-84).

Blue Bunting (*Cyanocompsa parellina*). One at Bentsen-Rio Grande SP, Hidalgo on 5 February 2021 (2021-43).

LITERATURE CITED

American Ornithologists' Union. 1998. Check-list of North American Birds, 7th ed., American Ornithologists' Union, Washington, D. C.

Chesser, R. T., Billerman, S. M., Burns, K. J., Cicero, C., Dunn, J. L., Blanca E Hernández-Baños, Jiménez, R. A., Kratter, A. W., Mason, N. A., Rasmussen, P. C., Remsen, Jr., J. V., and K.winker.. 2023. Sixty-four supplement to the American Ornithologists' Society Check-list of North American Birds. Auk 140, Issue 3.

Dittmann, D. L., and G. W. Lasley. 1992. How to Document Rare Birds. Birding 24:145–159.

SHORT COMMUNICATIONS

PEREGRINE FALCON (*FALCO PEREGRINUS*) MORTALITY DUE TO SHOTGUN WOUNDS

Timothy McSweeny and Daniel M. Brooks

Houston Museum of Natural Science, Department of Vertebrate Zoology, 5555 Herman Park Drive, Houston, Texas, 77030-1799

The Houston Museum of Natural Science's Vertebrate Zoology Collection received a salvaged specimen of Peregrine Falcon (*Falco peregrinus*) found in Freeport (Brazoria County, Texas) from wildlife rehabilitator Dana Simon on 29 November 2021. It was prepared as a study skin by TM on 29 June 2023 and accessioned into the collection with the catalog number HMNS.VO 4342.

The specimen presented as an adult male (skull completely ossified), left and right testes same size (6.77 x 3.12 mm), mass of 605 g with light traces of subcutaneous fat. During preparation the stomach was dissected, with 1.2 g of feathers found from a prior meal.

There was notable external damage to the skin, with two shotgun wounds identified. One wound was found on the upper right breast, and the other near the base of the left wing, which had damaged the humerus. Both wounds could be located subcutaneously due to round holes in the skin and blood on the feathers. There was some bruising on the left pectoralis major, patagialis longus, and the biceps and triceps brachii.

It is assumed that the gunshot was the ultimate cause of mortality to the falcon, as no other wounds or internal issues were observed. The rest of the body was in good condition, indicating that the falcon was healthy when killed. No pellets were found during specimen preparation, despite thorough inspection of the skin and the carcass. It is possible that the person who shot the falcon removed the pellets before leaving the body, but this is speculative.

For decades the Peregrine Falcon was federally protected, as populations plummeted during the 1970s due to the effect of DDT on eggshell thickness (USFW 2023). This species was removed from the Endangered Species List in 1999 after recovering from lower population (Holroyd and Bird, 2012), but is still state-listed as threatened in Texas, where it is still protected and monitored in the state (TPWD 2020a). Consequently, the individual who shot the falcon performed an illegal activity, violating Rule 65.171 of the Texas Administrative Code (TPWD 2020b).

Peregrine Falcon

LITERATURE CITED

Holroyd, G. L., and D. M. Bird. 2012. Lessons Learned During the Recovery of the Peregrine Falcon in Canada. Canadian Wildlife Biology and Management 1:3–20.

Texas Parks and Wildlife. 2020a. Federal and State Listed Species in Texas https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/nongame/listed-species/

Texas Parks and Wildlife. 2020b. Chapter 65 of the Texas Parks and Wildlife Code https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=31&pt=2&ch=65&rl=175

U.S. Fish and Wildlife Service. 2023. 2023 Peregrine Falcon Status Assessment, Sustainable Take Rate, and Take Limits. U.S. Fish and Wildlife Service, Division of Migratory Bird Management, Washington, D.C. USA

SEQUENTIAL OCCUPATION OF A BROWN THRASHER (*TOXOSTOMA RUFUM*) WINTER-FEEDING TERRITORY

Allan J. Mueller[1]

20 Moseley Lane, Conway, AR 72032 USA.

Many Passerine birds do not establish exclusive winter-feeding territories, but Brown Thrashers (*Toxostoma rufum*) vigorously defend such territories (Fischer 1981). They are common winter residents in Galveston, Texas (Oberholser 1974), where I had a back yard feeding/banding station (N 29.29278, W 94.86375). The feeder consisted of scattered grain on the ground with a funnel trap occasionally placed on the same spot.

During the winter of 1980-81 four Brown Thrashers sequentially used my feeder, but for the most part only one at a time. In mid-September 1980 a thrasher with all of its rectrices missing (dubbed "No Tail/unbanded") began to regularly visit the feeder, until October 10, 1980. On October 12, 1980 an unbanded, full-tailed thrasher began to use the feeder daily. This bird was banded on January 10, 1981 and named "Full Tail/979". No Tail/unbanded was never seen again after the arrival of Full Tail/979. On January 25, 1981 another unbanded thrasher began to use the feeder: it was banded on February 1, 1981 and named "Unbanded/301". Again, after its arrival Full Tail/979 disappeared. I imagine that predation (e.g., tail missing) is more likely than displacement.

Two Brown Thrashers were not seen in the yard in the same day until April 2, 1981 when another unbanded thrasher (called "Unbanded") joined the feeder users. This time Unbanded/301 continued to use the feeder until April 22, 1981, not to be seen after that. At this time spring migration was likely underway (Cavitt and Haas 2020, James and Neal 1986) and possibly winter-feeding patterns were breaking down.

Between February 1 when Unbanded/301 was banded, and April 22, 1981, when it disappeared, it is possible that there were two banded thrashers in the area, Full Tail/979 and Unbanded/301, using the feeder. However, between January 25, when Unbanded/301 arrived and when it was banded on February 1, no banded thrashers were seen, indicating that Full Tail/979 had left the area or died.

During the winter of 1980-81 it appears that two newly arrived thrashers displaced the already present thrasher from a prime feeding site, the bird feeder. No interactions between any of the thrashers was ever observed. While Brown Thrashers regularly maintain winter-feeding territories, and sometimes displace other foraging songbirds; especially American Robin (*Turdus migratorius*), Hermit Thrush (*Hylocichla guttata*), and Northern Cardinal (*Cardinalis cardinalis*); from feeding sites (Fischer 1981), there is no record of the sequential occupation of the same territory as described here. Michener and Michener (1935) found rigid winter-feeding territories in Northern Mockingbirds (*Mimus polyglottos*) with displacement rare and no cases of double displacement from the same territory to parallel this occurrence.

Kathleen Mueller recorded many observations at the feeder station. I banded all Brown Thrashers under U.S. Fish and Wildlife Service banding permit 20434 and Texas Parks and Wildlife Department banding permit 0682.

LITERATURE CITED

Cavitt, J. F. and C. A. Haas. 2020. Brown Thrasher (*Toxostoma rufum*), version 1.0. In

Birds of the World (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, New York, USA. https://doi.org/10.2173/bow.brnthr.01

Fischer, D. H. 1981. Wintering ecology of thrashers in southern Texas. Condor 83:340–346.

James, D. A. and J .C. Neal. 1986. Arkansas Birds Their Distribution and Abundance. The University of Arkansas Press, Fayetteville. 402pp.

Michener, H. and J. R. Michener. 1935. Mockingbirds, their territories and individualities. Condor 37(5):97–149.

Oberholser, H. C. 1974. *The Bird Life of Texas*. (E. B. Kincaid, Jr., Editor). Volume 2 University of Texas Press, Austin.

[1]E-Mail: akcmueller@gmail.com

RESPONSE TO: GRAY HAWK NEST WITH FIVE FLEDGLINGS IN SOUTH TEXAS

Michael T. Stewart[1] and William S. Clark[2, 3]

[1]*Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville, Kingsville, TX 78363*
[2]*2301 South Whitehouse Circle, Harlingen, TX 78550*

The observation by Galindo et al. (2016) of a Gray Hawk (*Buteo plagiatus*) nest with five fledglings published in an earlier issue of this journal is noteworthy, as the maximum clutch size previously reported for this species is four eggs (Bibles et al. 2020). This report of the first instance of five Gray Hawk fledglings from one nest provides an important addition to the scientific literature on the breeding biology of this raptor. However, the additional speculation reported about the post-fledging sightings and association of these particular juveniles after 9 September in the natal area is unsupported and contrary to recent findings.

Recent research on Gray Hawk fledglings in the Lower Rio Grande Valley (RGV) of Texas contradicts the notion that the five juveniles remained together with their parents for an extended period after leaving the nest. Stewart et al. (2023) tracked the dispersal movements of 14 juvenile Gray Hawks in the RGV using GPS-GSM transmitters (OrniTrack-10 and E10 solar powered GSM/GPRS/3G transceivers, Ornitela, UAB, Vilnius, Lithuania; www.ornitela.com). They found that post-fledging dispersal was initiated between 24 July and 9 September 2020. An additional 11 juveniles tracked in subsequent years all dispersed prior to September, with the latest dispersal date being 31 August. After dispersing from their natal areas, these juveniles often spent time on the peripheries of and within the home ranges of

Figure 1. Juvenile Broad-winged Hawk misidentified as a juvenile Gray Hawk on eBird. Note lack of dark barring on the leg feathers, fewer and wider dark tail bands, and lack of white cheeks and strong face pattern.

[3]Corresponding Author: raptours@earthlink.net

adult Gray Hawks that were not their parents. This evidence makes the claims of the five juveniles staying together as a family group into October and November highly unlikely. Without marking the individual nestlings in some way, re-sightings of juveniles cannot definitively be attributed to the same five birds from this nest.

It is also quite possible that subsequent observations reported were juvenile Gray Hawks from other territories, juvenile Broad-winged Hawks (*Buteo platypterus*), or juvenile Red-shouldered Hawks (*Buteo lineatus*). Further, mis-identified juvenile Broad-winged and Red-shouldered Hawks as Gray Hawks are frequently posted on eBird and iNaturalist. Figure 1 is a posting on eBird of a perched juvenile Broad-winged Hawk that was identified as a juvenile Gray Hawk, Figure 2 is a juvenile Gray Hawk Flying juveniles are even harder to distinguish.

Figure 2. Juvenile Gray Hawk perched on a power pole in Harlingen, Texas. Note the dark barring on the leg feathers, narrower dark tail bands compared to the juvenile Broad-winged Hawk in figure 1, and white cheeks with a strong face pattern.

None of the five nestlings were banded, so the subsequent sightings of juvenile Gray Hawks in this area cannot be accurately assigned to one of these five individuals. The reporting of five Gray Hawk fledglings from one nest stands as an important observation, but ascribing the further observations and behaviors in the natal area to these particular birds is unsupported and most likely erroneous.

ACKNOWLEDGEMENTS

We received the photograph for figure 1 from the Macaulay Library at the Cornell Lab of Ornithology.

LITERATURE CITED

Bibles, B. D., R. L. Glinski, and R. R. Johnson. 2020. Gray Hawk (*Buteo plagiatus*). Birds of the World: https://doi.org/10.2173/bow.gryhaw2.01 (accessed 18 September 2023).

Galindo, R., M. Gustafson, R. Rodriguez, and W. S. Clark. 2016. Gray Hawk fledged five juveniles in south Texas. Bulletin of the Texas Ornithological Society 49:86–87.

Stewart, M. T., W. S. Clark, B. A. Millsap, B. D. Bibles, and T. Brush. 2023. Adult home range size and juvenile movements of Gray Hawks in the Lower Rio Grande Valley. The Journal of Raptor Research 57:1–11.

BULLETIN OF THE TEXAS ORNITHOLOGICAL SOCIETY GUIDELINES FOR AUTHORS

SUBMISSION

For initial submission, e-mail one copy of the manuscript and photographs/illustrations[1] to jclintoneitniear@gmail.com or mail to Jack C. Eitniear, 218 Conway Drive, San Antonio, Texas 78209-1716. If you do not have access to the internet mail a DVD or CD containing a word processor version (MS WORD 2015 preferred or Apache Open Office 4.1) of the manuscript with all figures and tables, as separate documents

Submission Categories.—Manuscripts may be submitted as a Major Article or Short Communication. Major Articles generally are longer papers that are >5,000 character count including literature cited and figure captions, and excluding tables, figures, and spaces between characters. Manuscripts <5,000 characters in length including literature cited and figure captions, and excluding tables, figures, and spaces between characters will be considered Short Communications. Major articles must include an Abstract. The Editor may move a paper from one category to another at his discretion.

Multi-authored Submissions.—All authors should have contributed in a significant manner to designing and performing the research, writing the manuscript, and reading and approving the manuscript prior to submission.

Non-U.S. Submissions.—Authors whose native language is not English should ensure that colleagues fluent in English have critically reviewed their manuscript before submission.

GENERAL INSTRUCTIONS

(Carefully read and follow these instructions before submitting your manuscript. Papers that do not conform to these guidelines will be returned.)

Prepare manuscripts on 8.5 X 11 inch format with 1-inch margins. Double-space all text, including literature cited, figure captions, and tables. Insert page numbers top right beginning on the second page. Use a font size of at least 11 point. Consult a recent issue of the journal for correct format and style as you prepare your manuscript.

Write in the active voice whenever possible. Use U.S. English and spelling. Use *italics* instead of underlining (i. e., scientific names, third-level headings, and standard statistical symbols). Use Roman typeface (**not boldface**) throughout the manuscript.

Common and scientific names of bird species that occur in North and Middle America should follow the AOU *Check-list of North American Birds* (1998, 7th ed., and its supplements. Reference http://www.americanornithology.org/content/checklist-north-and-middle-american-birds. Names for other bird species should follow an appropriate standard (cite standard used). Use subspecific identification and list taxonomic authorities only when relevant. Give the scientific name at first mention of a species in the abstract and in the body of the paper. Capitalize common names of birds except when referred to as a group (i. e., Northern Cardinal, Golden-cheeked and Yellow warblers, vireos). Do not italicize family names.

The common names of other organisms are lower case except for proper names (i. e., yellow pine, Ashe juniper, Texas kangaroo rat).

Cite each figure and table in the text. Sequence tables and figures in the order cited. Use "figure" only outside of parentheses; otherwise, use "Fig." if singular, "Figs." if plural (i. e., Fig. 1, Figs. 2–3). To cite figures or tables from another work, write figure, fig., or table in lowercase (i. e., figure 2 in Jones 1980; Jones 1980:fig. 2; Jones 1987: table 5).

Use the following abbreviations: d (day), wk (week), mon (month), yr (year), sec (second), min (minute), h (hour); report temperature as °C (i. e., 15° C). In text months should be abbreviated (Jan, Feb, Mar, Apr, etc.) in figures and tables. Define and write out acronyms and abbreviations the first time they appear in text; abbreviate thereafter: "Second-year (SY) birds . . . We found SY birds in large numbers."

Present all measurements in metric units. Use continental dating (i. e., 15 August 2007), the 24-hour clock (i. e., 0500, 1230), and local standard time. Specify time as Standard Time (i. e., CST for Central

[1]Due to file restrictions by most e-mail systems we ask that you contact the editor regarding the best means to provide graphic support.

Standard Time) at first reference to time of day. **Study site location(s) should be identified by latitude and longitude.** Present latitude and longitude with one space between each element (i. e., 28° 07' N, 114° 31'W). If latitude and longitude are not available indicate the distance and direction from the nearest permanent location. Abbreviate and capitalize direction (i. e., north = N, southwest = SW, or 5 km W Abilene, Taylor County [but Taylor and Bexar counties]). Also capitalize regions such as South Texas or Southwest United States.

Numbers.—The conventions presented here revise what has often been called the "Scientific Number Style (SNS)". The SNS generally used words for 1-digit whole numbers (i.e., 9 = nine) and numerals for larger numbers (i.e., ten = 10), a distinction that may be confusing and arbitrary. The revised SNS treats numbers more consistently by extending the use of numerals to most single-digit whole numbers that were previously expressed as words. This style allows all quantities to be expressed in a single manner, and because numerals have greater visual distinctiveness than words, it increases the profile of quantities in running text. The objective of emphasizing quantity with numerals is further facilitated by the use of words for numbers appearing in a context that is only secondarily quantitative, i.e., when a number's quantitative function has been subordinated to an essentially nonquantitative meaning or the number is used idiomatically. In these cases, use words to express numbers (i.e., the sixty-four-dollar question). However, the numbers zero and one present additional challenges. For these numbers, applying consistent logic (numerals for quantities and words otherwise) often increases tedium in making decisions about correct usage and creates an inconsistent appearance, primarily because "one" has a variety of functions and readers might not quickly grasp the logic. For example, "one" can be used in ways in which quantity is irrelevant: as a personal pronoun or synonym for "you" (i.e., "one must never forget that") or as an indefinite pronoun ("this one is preferred"). The usage of the numeral in these cases would possibly be confusing to a reader. "Zero" and "one" are also used in ways that are more like figures of speech than precise quantifications (i.e., "in one or both of the ….", "in any one year", "a zero-tolerance policy"). In addition the numeral"1" can be easily confused with the letters "l" and "I", particularly in running text, and the value"0" can be confused with the letter "O" or "o" used to designate a variable. Therefore simplicity and consistent appearance have been given priority for these 2 numbers.

Cardinal Numbers.—quantitative elements in scientific writing are of paramount importance because they lead the way to the findings. Use numerals rather than words to express whole and decimal numbers in text tables and figures. This practice increases their visibility and distinctiveness and emphasizes their enumerative function.

2 hypotheses 5 birds 65 trees 0.5 mm 5 times 8 samples Also use numerals to designate mathematical relationships.

6:1 at 200X magnification 5-fold not five-fold

Use words in to represent numbers in 4 categories of exceptions:

(1) If a number begins a sentence, title, or heading, spell out the number or reword the sentence so the number appears elsewhere in the sentence.

Five eggs were in the nest, but the typical clutch size is 12. The nest contained 5 eggs, but the typical clutch size is 12.

(2) When 2 numbers are adjacent, spell out the first number and leave the second as a numeral or reword the sentence.

The sample area was divided into four 5 ha plots.

I divided my sample area into 4 plots containing 5 ha.

(3) For most general uses, spell out zero and one.

one of the species was one of the most important on the one hand values approaching zero one peak at 12-14 m, the other at 25-28 m.

However, express the whole numbers zero and one as numerals when they are directly connected to a unit of measure or a calculated value.

1 week 1 m a mean of 0 1-digit numbers when $z = 0$

Similarly, express zero and one as numerals when part of a series or closely linked to other numbers.

1 of 4 species between 0 and 5 of these, 4 samples were…1 sample was… and 8 samples

(4) When a number is used idiomatically or within a figure of speech.

the one and only reason a thousand and one possibilities comparing one to the other the two of them one or two of these an extra week or two of growth.

Ordinal Numbers

Ordinal numbers usually convey rank order, not quantity. Rather than expressing how many, ordinals often describe what, which, or sequence. Ordinals are more prose oriented than quantitative within the text and it is less important to express ordinal numbers as numerals.

(1) Spell out single-digit ordinals used as adjectives or adverbs.
the third chick hatched first discovered a third washings for the seventh time

(2) The numeric form of 2-digit ordinals is less confusing, so express larger ordinals as numerals.
the 20th century for a 15th time the 10th replication the 50th flock

(3) Express single digit ordinals numerically if in a series linked with double-digit ordinals.
The 5th, 6th, 10th, and 20th hypotheses were tested or We tested hypotheses 5, 6, 10, and 20

Zeros before Decimals.

For numbers less than 1.0, always use an initial zero before the decimal point.
0.05 not .05 P = 0.05 not P = .05

Numbers Combined with Units of Measure

(1) Use a single space to separate a number and a subsequent alphabetic symbol
235 g 1240 h 8 mm

(2) Generally close up a number and a non alphabetic symbol whether it precedes or follows the number. 45° for angles 45 °C for temperature ±9 35± <5 but P < 0.001

(3) Geographic coordinate designation for latitude and longitude have a space between each unit. 35º 44' 77" N

(4) If the number and associated symbol or unit start a sentence, spell out the number and associated factor.
Twenty-five percent of nests

Numeric Ranges, Dimensions, Series, and Placement of Units

(1) When expressing a range of numbers in text, use the word to or through to connect the numbers. Alternatively, an en dash, which means to may be us3ed but only between 2 numbers that are not interrupted by words, mathematical operators, or symbols.
Yielded −0.3 to +1.2 differences not −0.3−+1.2 differences 5 July to 20 July or 5-20 July not 5 July-20 July 1-12 m not 1 m – 12 m

(2) When the word from precedes a range, do not substitute the en dash for to. From 3 to 4 nests not from 3-4 nests

(3) The en dash represents only the word "to", when between precedes a range, use "and" between the numbers.
between 5 and 18 March not between 5-18 March

(4) When the range includes numbers of several digits, do not omit the leading digits from the second number in the range.
between 2001 and 2012 not between 2001 and 12 nor 2001-12 1587-1612 m not 1587-12 m

(5) A range of numbers and the accompanying unit can be expressed with a single unit symbol after the second number of the range, except when the symbol must be closed up to the number (i.e., percent symbol) or the unit symbol may be presented with both numbers of the range.
5 to 12 cm or 5 cm to 12 cm 5 to 10 °C or 5 °C to 10 °C 20% to 30% or 20-30% not 20 to 30%

(6) If a range begins a sentence, spell out the first number and present the second as a numeral; however if a nonalphabetic symbol (%), write out both units.
Twelve to 15 ha not twelve to fifteen ha Ten percent to 20 percent of samples not Ten percent to 20% of samples

(7) To prevent misunderstanding, avoid using "by" before a range; this may imply an amount change from an original value, rather than a range of values. growth increased 0.5 to 0.8 g/d (a range) or growth increased 0.5-0.8 g/d not growth increased by 0.5-0.8 g/d

(8) To prevent a wrong conclusion by a reader, do not express 2 numbers preceded by words like "increase", "decrease", or "change". A range may be intended but the reader may conclude the first value as an initial value and the second as a new value.

increased from 2 cm/wk to 5 cm/ wk (Was the increase 2-5 cm or was the increase 3 cm?)
When changes are from one range to a new range, en dashes within each range is a better statement. increased from 10-20 m to 15-30 m

(9) For dimensions, use a mathematical symbol (not a lower case "x") or the word "by" to separate the measurements.
5 X 10 X 20 cm 5 cm X 10 cm X 20 cm 5 by 10 by 20 cm

(10) For a series of numbers, present the unit after the last numeral only, except if the unit symbol must be set close to the number.
5, 8, 12, and 20 m diameters of 6 and 8 mm 12%, 15%, and 25% categories of <2, 2-4, and > 6 km

Descriptive Statistics

Variables are often reported in the text: the units and variability term should be unambiguous.
mean (SD) = 20% (2) or Mean of 20% (SD 2) mean of 32 m (SD 5.3) not mean of 32 ± 5.3 m
mean of 5 g (SD ± 0.33) mean (SE) = 25 m (0.24)

MANUSCRIPT

Assemble a manuscript for Major Articles in this sequence: title page, abstract, text (introduction, methods, results, and discussion), acknowledgments, literature cited, tables, figure captions, and figures. Short Communications need not be subdivided into sections (optional).

Title Page.—Put title in all caps for a Major Article and a Short Communication. Follow with author name(s) with the first letter of the first name, middle initial and last name as a cap and all other letters in lower case.

Addresses of author(s) should be in italics and arranged from first to last at the time of the study. The current address (if different from above) of each author (first to last), any special essential information (i. e., deceased), and the corresponding author and e-mail address should be in a footnote. Use two-letter postal codes (i. e., TX) for U.S. states and Canadian provinces. Spell out countries except USA. Consult a recent issue if in doubt.

Abstract.—Heading should be caps, indented, and followed by a period, three dashes, and the first sentence of the abstract (ABSTRACT.—Text . . .). Only Major Articles have an abstract.

Text.—Text, except for headings, should be left justified. Indent each paragraph with a 0.5-inch tab. Text should began immediately after the abstract.

Up to three levels of headings may be used. First level: centered, all caps (includes METHODS, RESULTS, DISCUSSION, ACKNOWLEDGMENTS, and LITERATURE CITED). There is no heading for the Introduction. Second level: flush left, indent, capitalize initial letter of significant words and italicize all words. Third level: flush left, indent, capitalize the initial letter of each word, followed by a period, three dashes, and then the text. *Keep headings to a minimum*. Major Articles typically contain all first-level headings. Short Communications may or may not have these headings, depending on the topic and length of paper. Typical headings under Methods may include "Study Area" and "Statistical Analyses." Consult a recent issue for examples.

METHOD—First level
Study Species, Locations, and Recordings—Second level
Study Species, Locations, and Recordings—Third level

Each reference cited in text must be listed in Literature Cited section and vice versa. The exception is unpublished materials, which occur only in the text. Cite literature in text as follows:

- One author: Jones (1989) or (Smith 1989).
- Two authors: Jones and Smith (1989) or (Jones and Smith 1989)
- Three or more authors: Smith et al. (1989) or (Smith et al. 1989)

• Manuscripts accepted for publication but not published: Smith (in press), (Jones in press) or Jones (1998) if date known. "In Press" citations must be accepted for publication, with the name of journal or publisher included.

• Unpublished materials, including those in preparation, submitted, and in review:
(1) By submitting author(s) use initials: (JTB unpubl. data), JTB (pers. obs.),
(2) By non-submitting author(s): (J. T. Jones unpubl. data), (J. T. Jones and J. C. Smith pers. obs.), or J. T. Jones (pers. comm.). Do not use (J. T. Jones et al. unpubl. data); cite as (J. T. Jones unpubl. data).

• Within parentheses, order citations by date: (Jones 1989, Smith 1992, Franklin et al. 1996), (Franklin 1980; Jones 1983, 1990; Smith and Black 1984), (Delgado 1988a, b, c; Smith 2000).

• When citing a direct quote, insert the page number of the quote after the year: (Beck 1983:77).

Acknowledgments.—For individuals, use first, middle (initial) and last name (i. e., John T. Smith); abbreviate professional titles and institutions from individuals. Accepted manuscripts should acknowledge peer reviewers, if known. PLEASE INCLUDE COMPLETE FIRST NAME. THIS IS DIFFERENT THAN MOST JOURNALS

Literature Cited.—**Verify all entries against original sources,** especially journal titles, volume and page numbers, accents, diacritical marks, and spelling in languages other than English.

Cite references in alphabetical order by first, second, third, etc., authors' surnames and then by date. References by a single author precede multi-authored works by the same first author, regardless of date. List works by the same author(s) in chronological order, beginning with earliest date of publication. If a cited author has two works in same year, place in alphabetical order by first significant word in title; these works should be lettered consecutively (i. e., 2006a, 2006b). Write author names in upper case (i. e., SMITH, J. T. AND D. L. JONES, ...FRANKLIN, B. J., T. S. JEFFERSON, AND H. H. SMITH). Insert a period and space after each initial of an author's name.

Journal titles and place names should be written out in full and not abbreviated; do not use abbreviations for state, Editor, edition, number, Technical Coordinator, volume, version, but do abbreviate Incorporated (Inc.). Do not indicate the state in literature cited for books or technical papers or reports when the state is obvious (i. e., Texas A&M Press, College Station.). Do not add USA after states of the United States but indicate country for publications outside the United States. Cite papers from Current Ornithology, Studies in Avian Biology, and International Ornithological Congresses as journal articles. The following are examples of how article should be referenced in the Literature Cited section of a manuscript.

BIRDS OF NORTH AMERICA

(Hard copy version) Grzybowski, J. A. 1995. Black-capped Vireo (*Vireo atricapillus*). The Birds of North America, No. 181.

(Electronic version) *See Internet Sources*

BOOKS, CHAPTERS, THESES, DISSERTATIONS:

American Ornithologists' Union. 1998. Check-list of North American birds, 7th Edition. American Ornithologists' Union, Washington, D.C.

Oberholser, H. C. 1938. The bird life of Louisiana. Bulletin 28. Louisiana Department of Conservation, New Orleans.

Menge, R. M. 1965. The birds of Kentucky. Ornithological Monographs 3.

Bennett, P. M. and I. P. F. Owens. 2002. Evolutionary ecology of birds: life histories, mating systems, and extinction. Oxford University Press, New York, New York.

Bent, A. C. 1926. Jabiru. Pages 66–72 *in* Life histories of North American marsh birds. U.S. National Museum Bulletin, Number 135. [Reprinted 1963, Dover Publications, New York, New York].

Oberholser, H. C. 1974. *The bird life of Texas*. (E. B. Kincaid, Jr., Editor). Volume 1 (or 2 please specify) University of Texas Press, Austin.

Gallucci, T. L. 1978. The biological and taxonomic status of the White-winged Doves of the Big Bend of Texas. Thesis. Sul Ross State University, Alpine, Texas.

Small, M. 2007. Flow alteration of the Lower Rio Grande and White-winged Dove range expansion. Dissertation. Texas State University, San Marcos.

Kear, J. 1970. The adaptive radiation of parental care in waterfowl. Pages 357–392 *in* Social behavior in birds and mammals (J. H. Crook, Editor). Academic Press, London, United Kingdom.

Snow, D. W. 2001. Family Momotidae (motmots). Pages 264–285 *in* Handbook of the birds of the world, Volume 6: mousebirds to hornbills (J. del Hoyo, A. Elliot, and J. Sargatal, Editors). Lynx Edicions, Barcelona, Spain. SPSS INSTITUTE, Inc. 2005. SPSS for Windows, version 13. SPSS Institute, Inc., Chicago, Illinois.

Zar, J. H. 1996. Biostatistical analysis, 3rd Edition. Prentice Hall, Upper Saddle River, New Jersey.

GOVERNMENT PUBLICATIONS:

Burns, R. M. and B. H. Honkala (Technical Coordinators). 1990. Silvics of North America, Volume 1: conifers, and Volume 2: hardwoods. Agriculture Handbook, USDA Forest Service, Washington, D.C.

Franzreb, K. E. 1990. Endangered and threatened wildlife and plants—determination of threatened status for the Northern Spotted Owl: final rule. Federal Register 55:26114–26194.

Huff, M. H., K. A. Betinger, H. L. Ferfuson, M. J. Brown, and B. Altman. 2000. A habitat-based point-count protocol for terrestrial birds, emphasizing Washington and Oregon. General Technical Report PNW-501, USDA Forest Service, Portland, Oregon.

JOURNAL, TRANSACTIONS AND PROCEEDINGS ARTICLES

Braun, C. E., D. R. Stevens, K. M. Giesen, and C. P. Melcher. 1991. Elk, White-tailed Ptarmigan and willow relationships: a management dilemma in Rocky Mountain National Park. Transactions of the North American Wildlife and Natural Resources Conference 56:74–85.

Maclean, G. L. 1976. Arid-zone ornithology in Africa and South America. Proceedings of the International Ornithological Congress 16:468–480.

Taylor, J. S., K. E. Church, and D. H. Rusch. 1999. Microhabitat selection by nesting and brood-rearing Northern Bobwhite in Kansas. Journal of Wildlife Management 63:686–6994.

Johnson, C. M. and G. A. Baldassarre. 1988. Aspects of the wintering ecology of Piping Plovers in coastal Alabama. Wilson Bulletin 100:214–223.

Parrish, J. D. 2000. Behavioral, energetic, and conservation implications of foraging plasticity during migration. Studies in Avian Biology 20:53–70.

INTERNET SOURCES

Davis, J. N. 1995. Hutton's Vireo (*Vireo huttoni*). The Birds of North America Online: http://bna.birds.cornell.edu/bna/species/189 (accessed 10 November 2012).

Sauer, J. R., J. E. Hines, and J. Fallown. 2003. The North American Breeding Bird Survey, results and analysis 1966–2003, version 2003.1. USGS Patuxent Wildlife Research Center, Laurel, Maryland. www.mbr-pwrc.usgs.gov/bbs/bbs.html (accessed 5 May 2004).

Wright, E. 2003. Ecological site description: sandy. Pages 1–5 in USDA, Natural Resources Conservation Service. Site ID: Ro77XC055NM. http://esis.sc.egov.usda.gov/.

Pitman, N. C. A. 2006. An overview of the Los Amigos watershed, Madre de Dios, southeastern Peru. September 2006 version of an unpublished report available from the author at npitman@amazonconservation.org

IN PRESS CITATIONS

Date unknown:

Miller, M. R., J. P. Fleskes, J. Y. Takekawa, D. C. Orthmeyer, M. L. Casazza, and W. M. Perry. In Press. Spring migration of Northern Pintails from California's Central Valley wintering area tracked with satellite telemetry: routes, timing, and destinations. Canadian Journal of Zoology.

Date known:

Decandido, R., R. O. Bierregaard, Jr., M.S. Martell, and K. L. Bildstein. 2006. Evidence of nighttime migration by Osprey (*Pandion haliaetus*) in eastern North America and Western Europe. Journal of Raptor Research. In Press.

Date and volume number known:

Poling, T. D. and S. E. Hayslette. 2006. Dietary overlap and foraging competition between Mourning Doves and Eurasian Collared-Doves. Journal of Wildlife Management 70:In

Tables and Appendices.—Each table and appendix must start on a new page and contain a title caption that is intelligible without recourse to the text. Titles usually indicate who, what, where and when. Kroodsma (2000;

Auk 117:1081–1083) provides suggestions to improve table and figure captions. Tables/appendices should supplement, not duplicate, material in the text or figures. Indent and double-space captions, beginning with Table 1 (if only one appendix is included, label as Appendix). Indicate footnotes by lower case superscript letters. Develop tables/appendices with your word processor's table format, not a tab-delimited format. Do not use vertical lines in tables/appendices. Include horizontal lines above and below the box head, and at end of table/appendix. Use the same font type and size as in text. Consult a recent issue for style and format.

Figures.—Type captions in paragraph form on a page separate from and preceding the figures. Indent and double-space captions, beginning with Fig. 1. Do not include symbols (lines, dots, triangles, etc.) in figure captions; either label them in a figure key or refer to them by name in the caption. Consult a recent issue for style and format.

Use a consistent font and style throughout; sans serif typeface is required (i. e., Arial, Helvetica, Univers). Do not use boldface font for figure keys and axis labels. Capitalize first word of figure keys and axis labels; all other words are lower case except proper nouns. Handwritten or typed symbols are not acceptable.

Routine illustrations are black-and-white half-tones (photographs), drawings, or graphs and color photographs. Copies of halftone figures and plates must be of good quality (final figures must be at least 300 dpi). Figures in the Bulletin are virtually identical to those submitted (little degradation occurs, but flaws will show). Thus, illustrations should be prepared to professional standards. Drawings should be on good-quality paper and allow for about 20% reduction. Do not submit originals larger than 8.5 X 11 inches in size, unless impractical to do otherwise. Illustrations should be prepared for one- or two-column width, keeping in mind dimensions of a page in the Bulletin. When possible, try to group closely related illustrations as panels in a single figure. In the initial submission of an article, figures should be submitted separate from the manuscript on computer disk. **Preference for submission of graphic support is by PDF or TIFF**. Photographs should be at least 1.5 MB in size for clear reproduction.

Maps.—Use Google maps ONLY as a last resort! Authors should use one of a number of cartographical software packages (Arcmap, Geocart, Ortelius). Maps should contain either an embedded key with a caption (as a separate WORD attachment)

Proofs, Reprints, and Page Charges.—Authors will receive page proofs (electronic PDF) for approval. Corrections must be returned via e-mail, fax, or courier to the Editorial Office within two weeks. Authors should not expect to make major modifications to their work at this stage. Authors should keep the Editor informed of e-mail address changes, so that proofs will not be delayed. The Bulletin requests that authors bear part or all of the cost of publishing their papers when grant, institutional, or personal funds are available for the purpose. **A minimum contribution of $35.00 a page is recommended.** Authors who do not have access to publication funds may request a waiver of this payment. Authors will receive a PDF copy of their paper to serve as a reprint for distribution to colleagues.

TIPS FOR IMPROVING YOUR MANUSCRIPT (AKA. COMMON OMISSIONS FROM PAST AUTHORS).

- **— Always include page numbers**
- **— Insert corresponding author's e-mail address at bottom of the first page with superscript referencing his/her name in author line.**
- **— Note author's names are in upper case in Literature Cited section.**
- **— Spell out complete names in Acknowledgment section.**
- **— Avoid repetition of pronouns, nouns and verbs within the same sentence and/or paragraph (i. e., try not to start EVERY sentence with "We observed....."). **
- **— Note the BNA accounts are available BOTH as hard copies and online documents. Be sure you cite the one you consulted.**
- **— If protected species were captured the manuscript must include appropriate Federal and State Permit numbers in the Acknowledgment section**
- **— Oberholser, H. C. 1974. The bird life of Texas. (E. B. Kincaid, Jr., Editor). Volume 1 (or 2 please specify) University of Texas Press, Austin. DO NOT FORGET TO SPECIFY VOLUME.**

If you have questions, contact the Editor (E-mail jclintoneitniear@gmail.com).

Jack C. Eitniear, Editor

Kent Rylander, Associate Editor

Rev. 01 February 2016
Rev. 01 January 2018

BULLETIN

OF THE

TEXAS ORNITHOLOGICAL SOCIETY

Vol. 56 No. 1–2 December 2023

Texas Ornithological Society

www.texasbirds.org

Hardcopies Available
$15.00 (Includes P&H)

Make checks payable to: Texas Ornithological Society
218 Conway San Antonio, Texas 78209-1726
Email: jclintoneitniear@gmail.com

YOUR NEXT VACATION, SIMPLIFIED.
STAY. PLAY. BIRD.

Texas. Island style.™

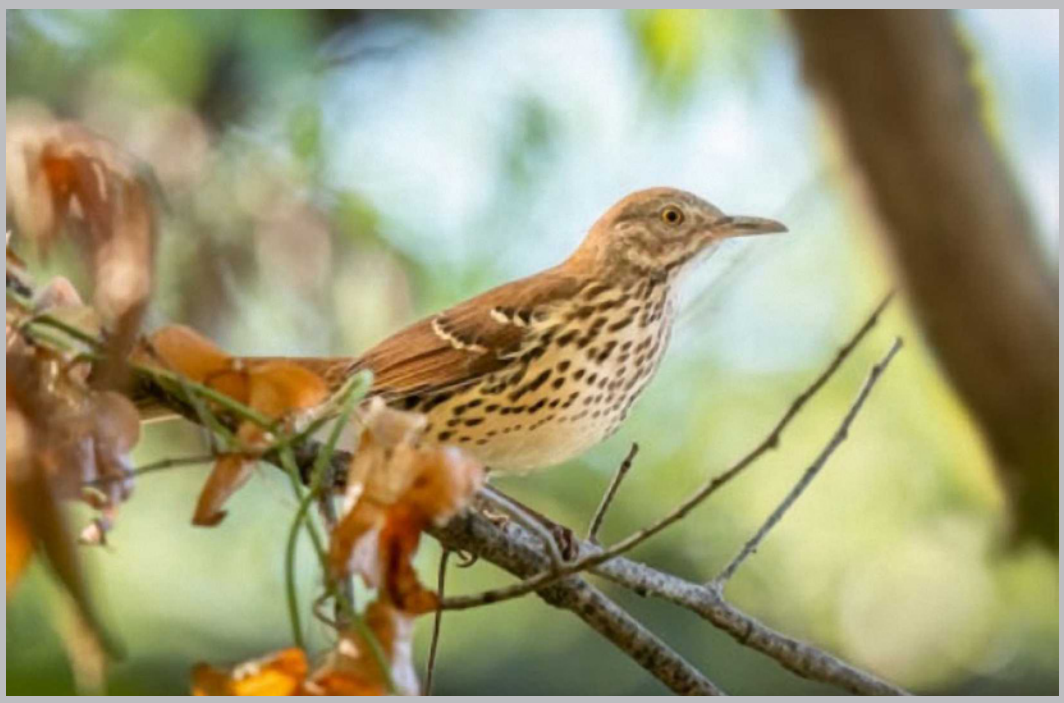
Port Aransas®
& MUSTANG ISLAND

www.PORTARANSAS.ORG | 800-45-COAST


J.R. CHIPMAN SAFARIS
THE ART OF THE ADVENTURE
CALLING
all BIRD
ENTHUSIASTS
Expand your collection of **bird sightings with J.R. Chipman Safaris.** Africa is home to hundreds of bird species waiting to be discovered, and with **our tailored safari packages, you can explore the world of birds like never before.**
The best way to find birds is on **our custom guided walking safaris,** which we do particularly in Kenya. You can spend your days walking with our knowledgeable guides, identifying species, and **adding to your list of seen birds.**
But that's not all - **J.R. Chipman Safaris** offers you the chance to **spot exotic wildlife, witness awe-inspiring landscapes, and immerse yourself in the local culture.** Our **custom safari packages** cater to all types of adventurers, from luxury tented camps to intimate lodge accommodations.
Don't wait for the adventure of a lifetime to pass you by. Book your J.R. Chipman Safaris birding adventure now, and start adding some African stars to your Life List.
INQUIRIES@JRCHIPMANSAFARIS.COM
+1 214-538-3989 | JRCHIPMANSAFARIS.COM

Vol. 56, No. 1−2 December 2023 Pages 1−50

CONTENTS



Brown Thrasher photographed at the Colleyville Nature Center (Image compliments Bob Hurst)

Jack Clinton Eitniear, Editor, E-mail: jclintoneitniear@gmail.com
Kent Rylander, Associate Editor, E-mail : kent.rylander@mac.com
Michael Patrikeev Assistant Editor, Email: mpatrikeev@hotmail.
Bulletin of the Texas Ornithological Society Copyright @2024 by the Texas Ornithological Society
Published in association with Phil Wolfe Graphic Design and Sheridan Press

BULLETIN OF THE TEXAS ORNITHOLOGICAL SOCIETY Vol. 56 No. 1–2 December 2023