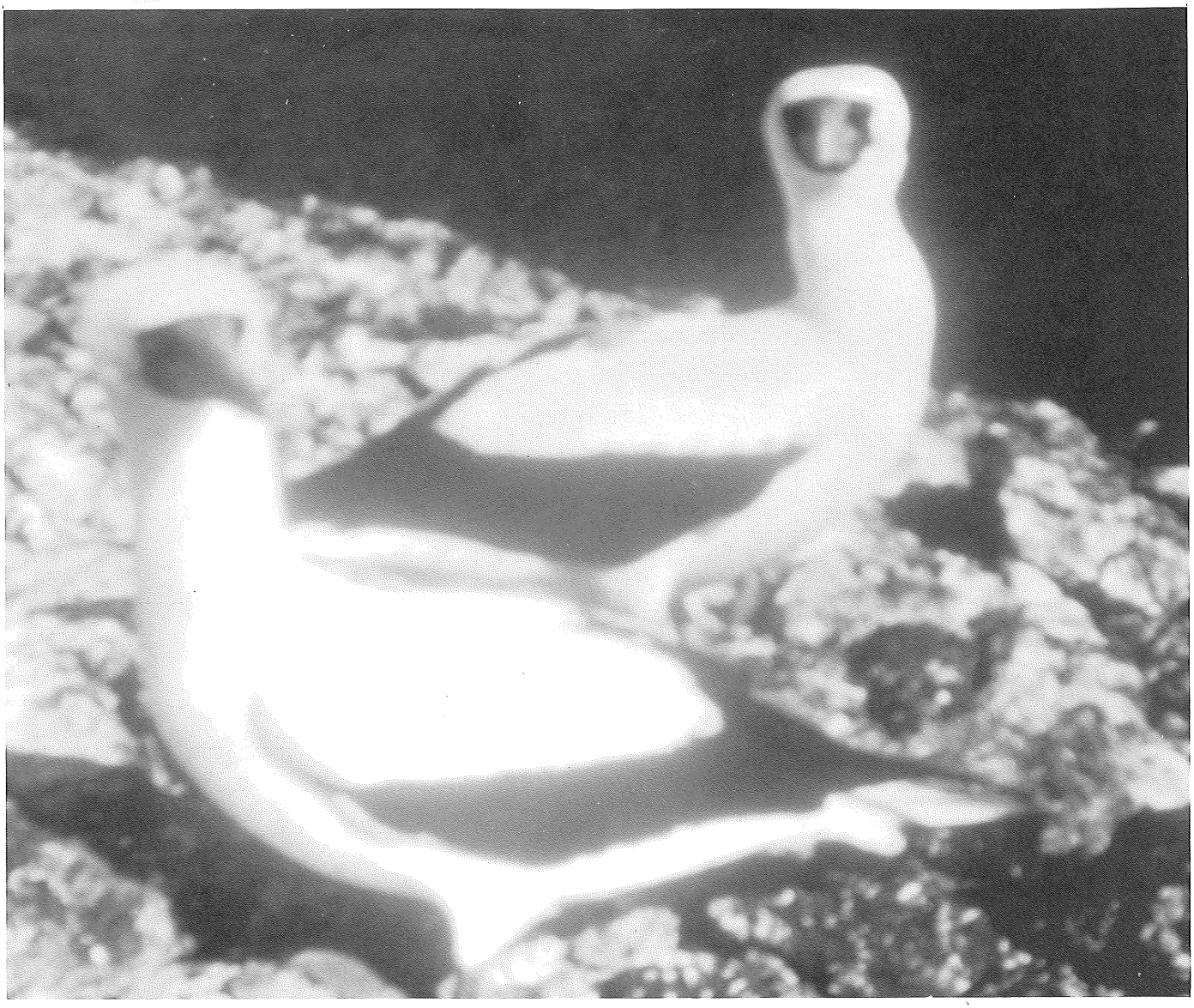
TEXAS ORNITHOLOGICAL SOCIETY



Blue-faced Booby — a widely distributed bird seen occasionally on the Texas coast. (photographed on the Galapagos Islands by Richard Albert)

Due to circumstances beyond our control, photographs in this issue could not be reproduced satisfactorily. In future issues this situation will be corrected.—Ed.

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TEXAS ORNITHOLOGICAL SOCIETY

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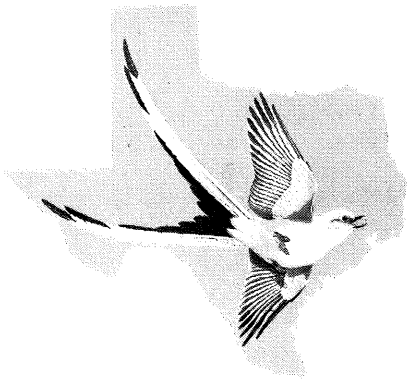

The Bulletin and Newsletter of the Texas Ornithological Society are issued to all members not in arrears for dues. Inquiries regarding membership should be addressed to Mr. George A. Newman, President, Texas Ornithological Society, Department of Biology, Hardin-Simmons University, Abilene, Texas 79601. Original articles, reports and news items submitted for inclusion in the TOS Bulletin should be sent to Dr. Michael K. Rylander, Department of Biology, Texas Tech University, Lubbock, Texas 79409. Inquiries regarding the TOS Newsletter should be directed to Mrs. M. H. Robinson, Newsletter Editor, Route 4, Wills Point, Texas 75169.

The ferruginous hawk (front cover), little blue heron (page 2) and clapper rail (back cover) were photographed by John Tveten, who also illustrated the prairie chickens and egret on pages 3 and 4, respectively. The keel-billed toucan (Ramphastos sulphuratus) *on page 9, is a captive bird photographed by Jeff Schultz. Tim High contributed the drawing on pages 6 and 7, as well as much of the art work throughout the bulletin.*

CONSERVATION OF BIRDS IN TEXAS (1844-1916) — by STANLEY CASTO

For over a hundred years the people of Texas have realized the value of certain species of birds and afforded them either common law or formal legal protection. As early as 1844, while exploring the region West of San Antonio in preparation for the establishment of his namesake settlement, Prince Carl of Solms-Braunfels noted that the buzzard ". . . takes care of and disposes of all dead animals and is therefore a promotor of health in as far as it eliminates all corrupted bodies." In 1846 another German, Ferdinand von Roemer, visited the New Braunfels area where again the occurrence of the buzzard was noted with the passing comment that it was punishable by fine in Louisiana and Texas to kill birds of this type. Since there were no state laws protecting wildlife in 1846, Roemer must have had reference either to county laws or accepted common law practice.

In February 1860, the State of Texas enacted its first formal game law. This act specified that quail and partridges on Galveston Island would be fully protected for a period of two years after which time they would again be subject to hunting at all times except the breeding season, March through August. The fine for conviction was ten dollars per each illegal bird with all collections accruing to the benefit of Galveston County. Considered in retrospect, it is doubtful that the law had any effect whatsoever. Its limited jurisdiction and the fact that in 1860 there were no specific law officers charged with enforcing game laws makes it probable that it was ignored by the general public. In addition, Texas was drifting slowly into the Civil War and the radical politics which dominated the state, both during and after the war, placed little value on conservation of natural resources. During the war, Galveston Island was highly fortified and was the scene of considerable military action. It is hardly conceivable, in the chaos that was taking place, that anyone would give a second thought to the plight of the quail and partridges.

In the decade following the end of the Civil War, Texas began to develop rapidly, with cattle raising becoming big business. Free land was no longer available and fences appeared to mark and protect boundary lines. With the advent of fencing, laws prescribing punishment for trespass were enacted. One of the first was the law of 1874, which protected the enclosed lands of any person from trespass by ". . . shooting, hunting, fishing or fowling." Although not specifically designed for the purpose of wildlife conservation, this law probably aided somewhat in the prevention of wholesale slaughter by market hunters on enclosed lands.

In 1879 the first general game law was passed in Texas. This law, which gave protection to songbirds and prohibited the killing of doves and quails during breeding season, was met with vigorous protest culminating in the formal exemption of 85 counties. In 1881 the law was strengthened by requiring a five month closed season on prairie chickens and a three and one-half month closed season on turkeys. Response to this act was almost in the form of a popular revolt and when the legislature met in 1883, over half the state (130 counties) were declared exempt from all game and bird laws. The concept of county exemption on game laws was to be the curse of conservation progress in Texas for almost another 20 years.

Concern at the national level was, however, developing rapidly and in November 1885 the A.O.U. Committee on Bird Protection was formed to study problems of conservation. In that same year George B. Sennett was elected permanent chairman of the

committee. Although a business man by trade, Sennett's special field of ornithological interest was birds of the lower Rio Grande Valley and it was generally accepted that his collection of Texas birds, nests, and eggs was the most extensive and carefully selected series ever assembled. Sennett was well acquainted with conservation problems in Texas, having made three trips to the state during 1877, 1878, and 1882. Although it was his life-long ambition, Sennett did not live to complete his planned monograph of the birds of Texas. Under his leadership the Committee on Bird Protection drafted what later became known as the A.O.U. Model Law. The draft of this law, along with a series of articles on conservation problems, was published as a supplement to the February 1886 issue of the prestigious journal "Science." Quickly accepted in some of the eastern states, the law first went into effect in New York State in May 1886. Although the model law was to be ignored in Texas for a number of years, the legislature did pass a law in 1887 prohibiting the catching or killing of quail and partridges during the months April - September. Netting was prohibited at all times of the year.

By the end of the 1880's, sympathy was growing among Texas Legislators with respect to the growing plight of those birds hunted for their plumage, and in 1891 an act to protect seagulls, egrets, herons, and pelicans was passed by an overwhelming majority. Protection was also extended to the eggs of the aforementioned birds, with the only exceptions being birds collected for scientific purposes. Since Texas had no wardens at this time, it was difficult, if not impossible, to enforce the law and so the slaughter continued unabated. Reporting on observations made in 1896, James J. Carroll, a lumberman by profession and ornithologist by avocation, noted that the roseate spoonbill was becoming rare in Refugio County. Still common but being ". . . rapidly exterminated by plume hunters" was the great blue heron. The whooping crane was described as being "rather rare." Carroll was an ardent conservationist and it was noted following his death that the ". . . saving of the Roseate Spoonbill . . . stands as monument to him, and the increase of the Reddish Egret is largely due to his never-failing efforts."

J. J. Carroll did not stand alone. Rising to the challenge of wholesale slaughter of wildlife, Texas sportsmen from across the state founded the Texas Game Protective Association. In November 1896 the state secretary of the organization reported heavy slaughter by market hunters as well as successful prosecutions in counties not exempt from the game law. With respect to the current situation it was reported that the ". . . market hunters and the protectors are at war and so far the protectors have held their ground." The members of the Protective Association were determined in their efforts and in January 1897 there was issued a general call for members to meet in Austin to formulate and present to the legislature a new and efficient game protection law. Bowing to public pressure of this type a new game law was passed in 1897.

Two important concepts were established by the 1897 law. First of all, certain avian species were declared "property of the public," renouncing the popular idea that wildlife belonged to the individual property owner to do with as he might please. As public property, wildlife could therefore be managed by the state in the fashion deemed best for the general public. It also followed that the state would have power to limit transport of wildlife within or across state borders. A second advance was the recognition of breeding periods of certain species and the establishment of protection during this critical time. Although it prohibited shooting of ducks and geese by any weapon other than an ordinary gun, the 1897 law was quite lenient on the hunting of waterfowl and their sale on public markets, both within and out of the state. In spite of this, the greed of overzealous hunters along the Texas coast became such that it was necessary in 1901 to enact a special law protecting these birds from slaughter at night.

In 1899 the first Audubon Society was formed in Texas. The charter members of the society are unknown but must undoubtedly include the name of Henry Philemon Attwater, who was for many years a champion of bird protection in Texas. In 1900 the National Audubon Society became heir to a fund initiated by Abbott H. Thayer for the protection of sea birds which were being hunted for their plumage. Contributions to this fund were used to hire wardens whose duty it was to watch over sea bird colonies.

In 1903 the A.O.U. Model Law was passed in Texas. Comprehensive in its scope, the law declared all species found within the borders of the state to be public property. It was furthermore declared unlawful for a period of five years to catch, kill, possess, purchase, offer for sale, or transport within or across state boundaries any wild birds, other than game birds which were subject to special restrictions. Nests and eggs of wild birds were also protected by this act and it was declared unlawful to sell any part of the plumage, skin or body of a protected bird. English sparrows, hawks, crows, buzzards, blackbirds, rice birds, and owls were specifically excluded from the list of protected birds. Exceptions to this blanket law were made for purposes of scientific collecting, provided that the individual concerned could present written testimonials from two well-known scientific men and provide for a small bond. Passage of the 1903 law made it feasible to consider employment of wardens for its enforcement. Records of the National Audubon Society show that in 1904 the keeper of the Matagorda lighthouse was employed as an Audubon warden to protect terns, laughing gulls, and black skimmers during the breeding season. Expenses for the 1904 season paid from the Thayer Fund totaled $38.50 with the warden receiving a $20.00 salary, $16.50 for warning notices, and $2.00 on express charges.

In 1907, before the expiration of the 1903 enactment, the state legislated once again for the protection of wildlife. In general substance, the 1907 law differed little from that of its predecessor. However, in spite of adequate legislation and the employment of a few wardens by the newly formed State Game Department many species of Texas birds continued to decline. In 1912, Texas' greatest naturalist, John Kern Strecker, observed bitterly that "The birds of Texas, or at least the majority of them, are on the rapid road to extermination . . ." However, all was not despair for a number of dedicated individuals were rallying to the cause of bird protection through the medium of scientific study and dissemination of factual material in an easily digested form. A classic from

this period is the 1916 report on the mourning dove which included testimonials from a number of conservationists and men of science. As one of the contributors to this report phrased it, we must not ". . . kill the goose that lays the golden egg . . ." What better way could there be, even in this modern time, of stating that the future of man on this planet is irrevocably bound to that of the other species with which it is shared?

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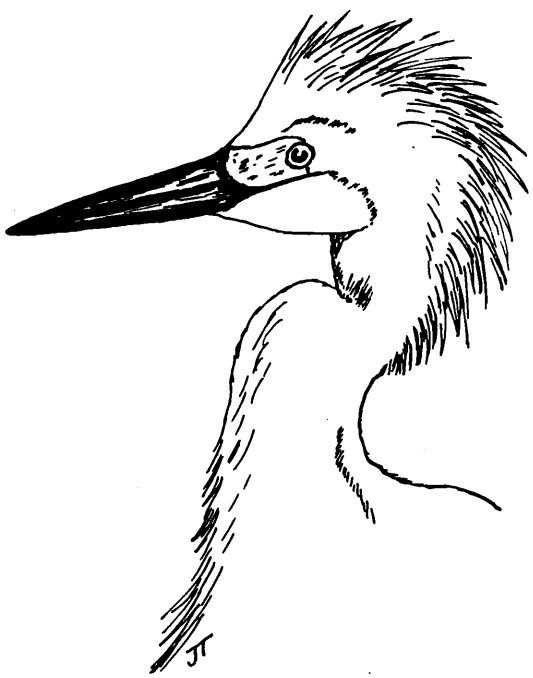


BOOK REVIEW

A FIELD GUIDE TO THE BIRDS OF MEXICO AND CENTRAL AMERICA, by L. Irby Davis; illustrated by F. P. Bennett, Jr. The University of Texas Press: Austin. 1972. $6.50; $10.00 (clothbound). — For a number of years we have waited for the publication of a complete field guide to Mexican birds. Now, L. Irby Davis, who has been an authority on Mexican birds for more than a quarter of a century, has published this guide to the birds of all of Central America. F. P. Bennett, Jr. has contributed color illustrations of over 1000 birds—a most comprehensive and impressive set of plates for this artist who is just now becoming known for his bird paintings.

Relatively few species that occur north of Mexico have been described or illustrated in this book, the rationale apparently being (and I would agree) that most birders in Mexico will have their North American guides with them; and that to duplicate color plates of North American species that occur in Central America would be unnecessary and expensive. Most of the illustrations are small and crowded on the pages but the field marks are generally clear.

One strong point of the book is its thorough treatment of certain bird vocalizations. Davis is well-known for his long experience recording neotropical bird songs. The elaborate detail with which a number of songs are described gives the book an uneven appearance (almost ½ page for the song of some individual species; no entry for others)—but many of these vocalizations have never been described in such detail and it is necessary that they be given serious attention. Many people will find it difficult to interpret Davis' unconventional descriptive devices (e.g., Lichtenstein's Saltator: "C^4 sharp-D^4 sharp-E^4-F^4 sharp"). It is doubtful if critics who object to the recent use of sonograms to describe songs in bird guides will consider Davis' notations much of an improvement over sonograms. Yet I suspect that the usefulness of this book as a catalog of tropical bird vocalizations will outlast its usefulness as a guide for field identification.

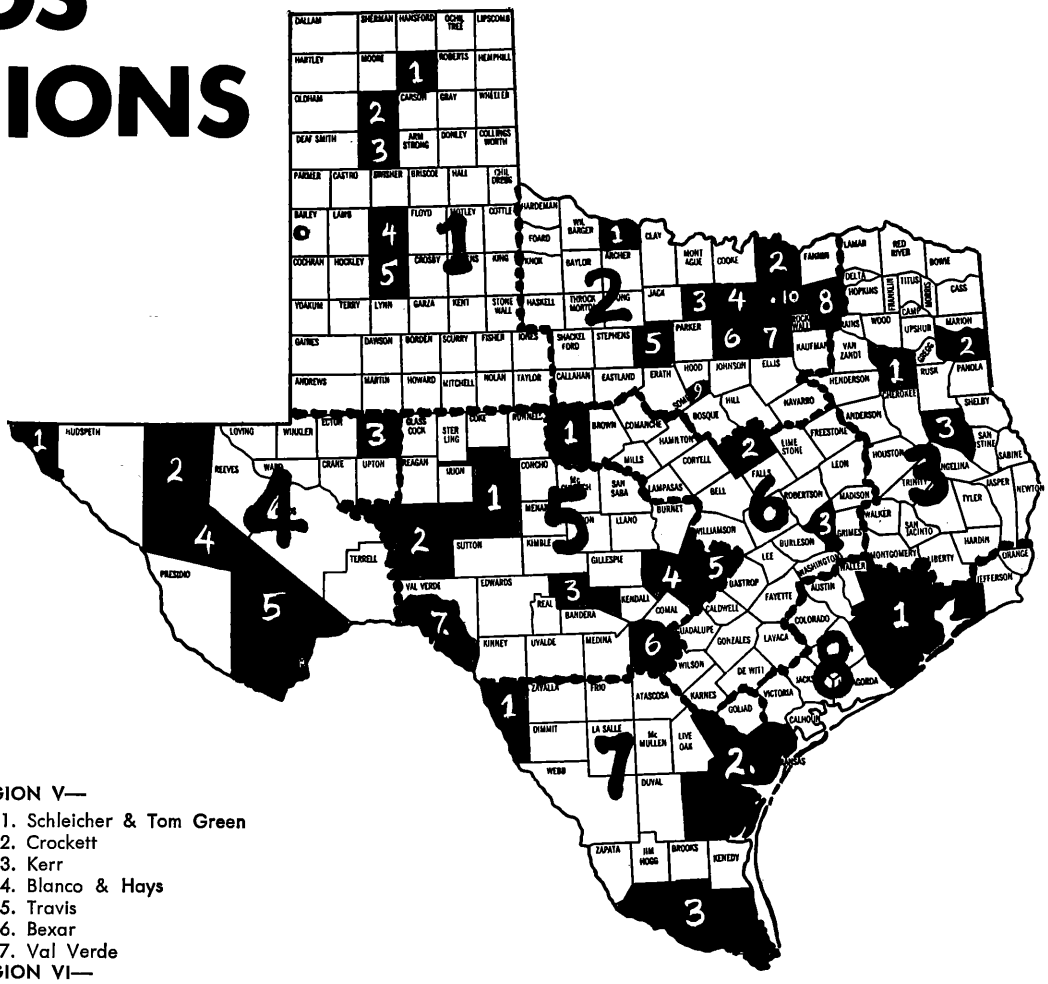
Its usefulness as a field guide is questionable for several reasons. First, a large number of Mexican species are not described at all in the text, and their identification is not always obvious from the plates. Second, many currently recognized subspecies are listed as legitimate species. (Although Davis points out that disagreement may exist among taxonomists, he gives us no clue as to the most current or most widely accepted taxonomy.) Third, the common names in Davis' book differ considerably from those in most other books about Central American birds. Anyone who follows the nomenclature in Edward's **Finding Birds in Mexico** (1968), Alden's **Finding the Birds in Western Mexico** (1969), Blake's **Birds of Mexico** (1953), Land's **Birds of Guatemala** (1970), or Eisenmann's authoritative **The Species of Middle American Birds** (1955) will find it extremely difficult to talk about birds with people who are familiar only with Davis' nomenclature. Davis derived his names largely from authorities such as Ridgway, Hellmayr and Alexander, some of whose taxonomic and nomenclatural opinions were published almost three-quarters of a century ago. The following comparisons (representing a few of many examples that could be cited), show how Davis' nomenclature is almost in a class by itself:

(DAVIS, 1972)	**(ALDEN,** 1969), **(EDWARDS,** 1968), **(BLAKE,** 1953), **(LAND,** 1970), **(EISENMANN,** 1955)
Rufous-tailed Sparrow	Striped-headed Sparrow
Mexican Ptilogonys	Gray Silky Flycatcher
Placid Flycatcher	Greenish Elaenia
Giraud's Flycatcher	Social Flycatcher
Scissor-tailed Kingbird	Scissor-tailed Flycatcher
Booming Nighthawk	Common Nighthawk
Trilling Nighthawk	Lesser Nighthawk
Rufous-rumped Cuckoo	Lesser Ground Cuckoo

This is not to say that the nomenclature in the other tropical American bird books is uniform, because it is not. My point is that Davis' names deviate radically from the names in other books. His guide may well go unappreciated by numerous birdwatchers who will find his nomenclature simply unworkable.

Perhaps the publication of this book—so incredibly burdened with nomenclatural idiosyncracies—will arouse ornithologists into insisting on a long-overdue standard nomenclature for neotropical birds. The A.O.U. standard nomenclature for North American birds is adopted by virtually every respected field guide published in the U.S., even by authors who do not agree with the A.O.U. on every taxonomic point. In contrast, it is now possible for a party of three birdwatchers in Mexico, each with his own recent field guide, to give three separate identifications to a parrot flying overhead: "Pacific Parrot," "Finsch Parrot" and "Lilac-crowned Parrot." Needless to say, the resulting confusion would amuse very few dead-serious birdwatchers, most of whom are not at all impressed by our ornithologists' enthusiastic battles to have their favorite bird names accepted as standard. Ironically, in the case of the "Pacific/Finsch/Lilac-crowned Parrot," this bird's rather simple scientific name, **Amazona finschi,** has no currently accepted synonyms.—M.K.R.

TEXAS CHECK LISTS OF BIRDS BY REGIONS



REGION I—Counties:
1. Hutchinson (Summer only)
2. Potter
3. Randall
4. Hale (Plainview)
5. Lubbock

REGION II—
1. Wichita
2. Grayson
3. Wise
4. Denton
5. Palo Pinto
6. Tarrant
7. Dallas
8. Hunt
9. Sommerville
10. Collin

REGION III—
1. Smith
2. Harrison
3. Nacogdoches

REGION IV—
1. El Paso
2. Culberson
3. Midland
4. Jeff Davis
5. Brewster

REGION V—
1. Schleicher & Tom Green
2. Crockett
3. Kerr
4. Blanco & Hays
5. Travis
6. Bexar
7. Val Verde

REGION VI—
1. Coleman
2. McLennon
3. Brazos

REGION VII—
1. Maverick
2. (a.) **Central Gulf Coast:** Aransas, Bee, Jim Wells, Kleberg, Nueces, Refugio, San Patricio
   (b.) Sea Gun Inn
   (c.) Nueces
   (d.) Welder Wildlife Refuge
   (e.) Rockport Wildlife
3. Rio Grande Delta: Starr, Hidalgo, Willacy, Cameron

REGION VIII—Counties:
1. **Upper Gulf Coast:** Harris, Chambers, Galveston, Fort Bend, Brazoria

- **More than one checklist exists for certain areas.**
- **Checklists for National Parks and Wildlife Areas in Texas, and certain Texas State Parks, are also available.**
- **Books and material, covering wider areas, on Texas Birds are also available.**

Prepared by Hazel Nichols, who is preparing a comprehensive account of the checklists in Texas. If you have corrections or additions to this map, please write her at 3827 Holland Avenue, Dallas, Texas 75219, so that your contribution may be included in her revised edition.—ed.

We should establish a national area in the Big Thicket of Southeast Texas, virtually everyone agrees. Conservationists generally believe that the national area should include zones along both sides of the three major streams of the Big Thicket and some of their tributaries. These streams connect choice samples of biotic communities, all of which lie close to the waterways.

The forest products executives generally feel that only a few scattered areas should be taken out of private exploitation.

The stream zone approach is known as the connected streamways, connected trails, or environmental corridors. The scattered samples approach is referred to as the unstrung pearls.

Ideally, the connected streamways should comprise 300,000 acres. The Big Thicket Coordinating Committee, on which Texas Ornithological Society has a representative, has agreed to compromise for 100,000 acres to obtain quick passage, provided that the stream zones and part of Little Pine Island Bayou are included. The timber interests are opposing whatever we support. The advantages of the extensive streamways are as follows:

1. They include superb recreation.
2. They protect the water and the borders of the choice ecological areas.

The environmental corridors will afford better protection from the choice Biological Areas. Firstly, they will embrace these areas in buffer zones, so that they could not become isolated pockets in a matrix of urbanization, cut off from the interflow of animals, plant seeds, pure air and water which support a thriving ecosystem. Secondly, by controlling the floodplains for the entire distance between ecological units, the government can better assure the pollution control, flood periodicity, erosion protection and the maintenance of a comprehensive aesthetic plan which are necessary to the preservation of the ecological gems, both physically and aesthetically.

3. They save the visitor from driving through commercialized areas in getting from one ecological pearl to the other.

The flow of visitors along the streams, by boat, and the trails, by foot, from one pearl to another, will enable these visitors to enjoy a wholesome aesthetic experience. On the contrary, under the unstrung pearls approach, tourists would have to drive thirty miles through commercialized districts to get from one unit of the national area to another. Many of the existing roadsides, between the proposed pearls are featured by beer joints, filling stations, factories, shopping centers, towns, cities, and housing, both standard and sub-standard. These roads are often crowded with traffic, and under the unstrung pearls approach would become overcrowded.

4. They afford a wilderness experience.
5. They are extensive enough to absorb the expected multitudes of tourists.
6. They facilitate the interpretive mission.

7. They enable the efficiency of park management to increase.

The interconnection of the choice samples so as to form a single unit will make possible a better quality of management. Instead of trying to administer isolated spots, up to 25 air miles apart, the National Park Service could service the area from one end to the other, as in all the existing national parks, monuments and recreation areas. In dealing with the state and the six counties involved, and local people, the federal government will have greater efficiency per acre.

DISADVANTAGES OF SMALLER PLANS

The only comparative advantage of the smaller proposals would be the lesser cost. This approach has many disadvantages, which are the reverse of the advantages of the environmental corridors approach.

1. The limited approach would not provide hunting areas, and would provide areas so small that the ecosystems would suffer if part of them were used for camping. The recreational value of the streams for float trips and the stream borders for trails would be vastly diminished, especially if the owners and lessors continue to post their lands against trespassing, a practice which now leads to numerous criminal complaints against citizens.

2. The smaller segments would be vulnerable to becoming surrounded by commercial development and other forms of urban encroachment, which would ultimately affect their natural drainage, would cut off the ingress and egress of wildlife, and would pollute the air and water.

3. A substantial portion of visitors to the scattered pockets of nature would be disappointed and discouraged by having to drive through civilization, often of a junky nature, from one unit to another. Many would give up after reaching two or three of the nine pearls, and would never again return to the region.

4. No pearl is large enough (maximum 6,100 acres, except for the ultra-thin Profile Unit) to permit a sustained wilderness experience.

5. Even one hundred thousand acres will not absorb ultimately the anticipated masses of visitors.

6. Except for two short stretches alongside the Neches River, there would be very little riverfront in the pearls to illustrate the role of streams in the evolution of the Big Thicket. If the streamside zones are too narrow, they will not encompass sufficient sloughs, ox-bow lakes and floodbottoms to illustrate the role of flooding.

7. Supervision would have to be dispersed across predominantly private holdings to reach the isolated pearls. Constant conflict would arise between the National Park Service and surrounding landowners as to control of tree diseases, predators, erosion and pesticides, as to the loss of livestock and dogs in the pearls, and other problems.—*Ned Fritz*

GUEST EDITORIAL:

MEXICO AND CENTRAL AMERICA

a naturalist's concern – by Peter Alden

The felling of a tree is an act many of us have participated in without shedding a tear, for we live in the eastern United States with its abundance of government and privately-owned forests. With the exception of subdivision and industrial demands in certain metropolitan areas for land, the red-eyed vireo is not an endangered species by loss of habitat.

South of the border, the sound of the axe brings tears to all visiting naturalists. These lands are fast reaching the breaking point with a human plague of landless and poor peasant farmers, devouring huge tracts of land not really suitable for agriculture. These last tracts are the homes of exciting biotic communities being threatened not by pollution, but by human stomachs.

The vast new irrigated fields in the deserts of Mexico, and the rich volcanic soils in the highlands of each republic are indeed wealthy situations. Unfortunately man's inability to control his numbers has forced surplus people up and down the mountainsides. On these slopes, which are characteristically steep in Middle America, the forests are being cut at a tremendous rate, and crops planted. When a farmer's family is hungry he has neither the time nor energy to build terraces to preserve what topsoil remains after the first rain. When a farmer has a very limited selection of tree crops to plant, he has to plant field crops, usually developed for temperate climates. These crops are washed away with the last topsoil in five years and he must move on. Bare rock is the end result, and downstream you find increasing problems of greater floods each year, and the silting of irrigation reservoirs. The naturalist, the tourist, the urban people of each country seeking recreation, the downstream farmers, the public works projects, and the future of these nations is being darkened by the humble peasant farmers of the hillsides.

This efficient deforestation is the number one enemy of those of us who wish to protect the flora and fauna of countries too unconcerned to realize their value. It is the wet tropical forests (the rain, the tropical evergreen, and cloud forests) and in some countries the temperate pine-oak woodlands, which are in gravest danger of exhaustion and need steps taken to preserve them soon. The drier vegetational zones, including desert, mesquite-grassland, arid tropical scrub, and the seasonally dry tropical savanna are not in serious demand. These communities are apparently even increasing at the expense of once-forested land, which having lost its thin top-soil is now good for only cactus, grass and small bushes.

Wildlife is, of course, closely tied to the vegetation. It is thus easily predictable that it is the animals of the forests which have suffered most. In contrast, few forms prevalent in dry and/or open situations are endangered. Although habitat loss is the major problem, human misuse is important.

Most available forms of wildlife are used for food to a large extent in the rural areas of all these countries. Recreational hunting, and scientific collecting have adversely affected some wild populations. While most of the hunted species retain numbers, the individuals are becoming shyer as the pressure increases. The enjoyment of observing these forms in the wild, by native and tourist alike, is being denied due to a rural surplus of people, and the pleasure the hunter obtains from killing.

The crocodile and the jaguar are in trouble due to fashion and sport. The jaguar is losing a major food source due to overhunting of the tapir. Scarlet macaws, formerly common in the rain forests, have proved to be too good looking, and they, like the beautiful quetzal of the mountain-top cloud forests, wind up as skins, pets, and even food. The imperial woodpecker of the Mexican sierra, a magnificent bird, has not been seen alive for close to a decade. Monkeys have been hunted out of most areas for food. The harpy eagle, perhaps the strongest bird in the world, is in real trouble throughout its range north of the Amazon. The eagle's rain forests are going, the larger birds and mammals on which it preyed are disappearing, and it is shot by natives who consider all predators as enemies worth killing. The list goes on and on.

Despite the elimination of several exciting forms, there remains a remarkable wealth of animal life. Birds and butterflies are very conspicuous, occurring in great abundance. Reptiles and mammals tend to be much shyer, often nocturnal, and are killed in most areas for a variety of reasons. Each country, except El Salvador, has an avifauna roughly equal to or ex-

ceeding that of the United States, despite their small size. This is due to their being mountainous tropical lands, bounded by two oceans and able to draw on the wealth of two continents, the Nearctic avifauna from North America, and the Neotropical avifauna originating in South America. It is quite easy to observe more than 400 bird species in three weeks in most of the region if one knows where to go and prepares in identification.

What can and must be done to ensure the survival of Middle America's wildlife and vegetational complexes? The pre-eminent concern is without a doubt that the human populations of each area be correlated intelligently with the carrying capacity of the land. In the meantime, a three-pronged approach is needed (1) research (2) education and (3) habitat preservation. All of these steps face major obstacles in the fact that none of these countries has effective conservation groups, private or governmental. Secondly most of these nations don't allow foreign ownership of land, and resent being told what to do with their country. With the current surge in nationalism, these countries can be expected to do just the opposite of whatever the colossus to the north tells them to do. Thus steps must be taken to manufacture conservationists from the educated and/or wealthy populace within each country and have these people form effective organizations, with as little visible help from the United States as possible. It would be these groups which could best influence government policy.

Research is needed to understand tropical ecology, to find new tree crops which can be planted on hillsides, and tree crops which would produce food in the rain forests. Research is needed to find out the requirements of wildlife species, and to locate relic populations of vanishing species.

Educating rural people in some of the basic principles of conservation is as necessary as educating the governments to promote sound practices involving soil, water, land and wildlife. Priority should be given to watershed protection and instruction in terracing. Sooner or later good books in Spanish must be produced on a wide range of natural history subjects.

Wheels must be turned urgently to save representative habitat for the diverse forms of animal life, many of which are local and endemic, necessitating a large number of land withdrawals. National parks now in existence include a large number in Mexico, but only in the central highlands at high elevations. Guatemala has a small park surrounding Tikal, and small projects with varying success exist in Belice, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama. These projects are encouraging, but their futures are clouded by a failure to police wildlife users, and to prevent the taking of timber. Lowland rain forest parks with enough acreage to support species which require room should be created and policed in each country. The wealth of animal life, trees, and orchids, and in particular the quetzal, can be saved by forming highland parks in the moist cloud forest remnants of Mexico, Guatemala, Honduras, Costa Rica, and Panama.

Before the United States gives up the Canal Zone we should try to guarantee that Madden Forest, Gatun Lake, and Fort Sherman be made into reserves. The Chiriqui volcano in Panama, the Talamanca Mountains of Costa Rica, and Lake Atitlan, the Volcanoes, and the Peten Lakes of Guatemala would be good projects. Mexico is very conscious of the benefits of the tourist dollar, and its government, as indeed other Latin nations, should study the success story of Kenya. This African nation is becoming a power in international tourism due to its foresight in setting up sufficient reserves to preserve its geographical and natural assets in the wild state. Mexico could start with projects in Nayarit at San Blas and Cerro San Juan, in Veracruz at Lake Catemaco and Volcan San Martin, and in Chiapas around Palenque, the Lakes of the Lacandones, and the Volcan de Tacana.

It is hoped that concerned individuals, existing conservation organizations, and interested foundations can unite and give impetus to help save the tremendous assets of our neighboring republics.—Reprinted through the courtesy of *Massachusetts Audubon*.

TECHNICAL REPORTS

NOTES ON FOOD HABITS OF WHITE-TAILED KITE (ELANUS LEUCURUS) IN JACKSON COUNTY, TEXAS

On 27 December 1961, we located a white-tailed kite, *Elanus leucurus,* in a patch of ungrazed grassland just northeast of Edna, Jackson County, Texas. Reports of this species along the central and upper coasts, though still notable, have become increasingly frequent in recent years. As far as we know, this is the first published record for Jackson County. These birds have also been seen in the county near Cordele (one), LaWard (a pair), and Lolita (four in one tree) (Gary Hafernick, pers. comm.).

There are several published records on the food habits of the species in southern California, where the main food item is *Microtus californicus* (Bond, 1940 Condor 42: 168; Dixon and Dixon, 1957 Condor 59: 156-165; Stoner, 1947 Condor 49: 84), but food habits of the kite in Texas apparently have not been studied, even in the lower Rio Grande Valley where the bird has been frequently seen. The kite near Edna was sighted again on 7 and 8 February and efforts were made to locate pellets beneath its usual perch, one of a group of three small prickly-ashes *(Xanthoxylum clava-herculis)* in prairie. During our observations of the bird, this was the only perch seen in use, and no other raptors were seen perched in any of these small trees. Only two pellets were found: one quite old containing only bony fragments and two skulls of *Sigmodon hispidus;* the other fresh, containing bones and matted hairs. Bones included in the second pellet were the skulls, dentaries, and various other bones from single individuals of *Sigmodon hispidus, Cryptotis parva,* and *Baiomys taylori.* It seems probable that the kite hunted in a marsh one-half mile distant as well as in the grassland, but the two pellets found may represent prey taken only in grassland.—*Doyle B. McKey,* and *Charles A. Fischer, Jr., Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station. Present address: Department of Biology, University of Chicago (McKey); and Department of Wildlife Ecology, University of Wisconsin, Madison.*

AN ECOLOGICAL AND STATISTICAL SURVEY OF THE BIRDS AND PLANTS OF HENSEL PARK, BRAZOS COUNTY, TEXAS

Hensel Park, a part of the campus of the Texas A&M University at College Station, Texas, contains 110 acres of upper prairie grasslands and wooded creek bottoms. The park is bounded on the west by a four lane highway, on the north by Burton Creek which flows throughout the year, on the east by the heavily traveled state highway 6, and on the south by a university apartment development. Residential areas are found across the highway on the west and across Burton Creek. A business area is across highway 6.

Approximately 50% of the area is covered by ten kinds of grass (Table IId), nine of these being native, while ribbon grass *(Arundo sp. L.)* was introduced.

The wooded part, about 50% of the area, is divided approximately into 30% upland, and 20% creek bottom. Thirty-two species of trees, (Table IIa) are found in the park. Of these, post oak *(Quercus stellata* Wang.) comprises approximately 50% of the tree cover. The loblolly pines *(Pinus taeda* L.) were planted in 1937.

Brush and shrubs are intermingled with the trees in about 20% of the area. Evergreen yaupon *(Ilex vomitoria* Ait.) is the most common shrub of the ten species to be found, constituting fully 60% of the brush cover. (Table IIb).

Four species of vines (Table IIc), and various species of forbs (Table IIe), form the rest of the cover in the park. Only six species of flowers were found at the time I made the floral survey in the fall of 1969. This represents only a very small part of the flowers found there during the year.

The survey, lasting 98 days, was conducted from 9 February to 17 May, 1969. Each day 35 acres were covered on foot and 75 acres by automobile. I was out of town on six days. On these six days the area was surveyed by John Hill (four days), John and Fay Hill (one day), and by Dennis Shepler and Fred Collins (one day).

Daily surveys began at 6 a.m. or daylight, whichever came first, and lasted from one to three hours.

During the 98 days of the survey, 109 species of birds were seen one or more times. Of these species, 30 are definitely resident in the park. Ten others are listed as summer residents.

Of the 69 remaining species observed, 35 are classified as migrant. Of these, 20 are warblers. For the whip-poor-will, see Table I, note (1). Four other species are listed as accidental. This list includes the Swainson's and the blackpoll warblers, and the sighting of the five Bullock's orioles. Our area is well out of the regular range for this bird. The black-capped chickadee is also listed as accidental. It was identified in a group of 13 chickadees, at less than 20 feet, by voice, size, and coloration. It was well marked: a great amount of white in wings, a decidedly larger bird than the others, and all were singing and calling excitedly.

Four species are listed as vagrant: common egret, osprey, western kingbird, and Audubon's warbler. The western kingbird has nested in this county for several years. It is suggested that perhaps Audubon's warbler may really be extending its range.

Dr. Stanley Archer observed an Audubon's warbler at his feeder from 17 December, 1971 through 17 February, 1972 and photographed it on 3 January, 1972. Dr. Keith Arnold and I verified the identification.

Twenty-three other species are listed as winter visitors. For the robin, see Table I, note (2). Three species, the eastern wood pewee, the summer tanager, and the blue grosbeak are listed as summer visitors. The eastern wood pewee has been observed in April, May, August, September and November. It nests in east Texas. See Table I, note (1).

It is not so easy to evaluate the effect of weather from this limited survey. However, a study of the effect of temperature, precipitation, and sky condition was made. From this study, the following observations may be made.

On the 43 clear days, 7,180 birds were observed, at an average of 167.0 birds per day. On the 39 cloudy days, 9,451 birds were seen at an average of 242.3 birds per day, and on the 16 rain or fog days, 3,444 birds were seen at an average of 215.3 birds per day.

A similar survey for temperature produced the following results: for ranges of Fahrenheit temperature of 30-45 degrees, 45-60 degrees, and 60-75 degrees, I observed 6,326 birds, 8,209 birds, and 5,540 birds respectively, for daily averages of 332.9, 248.8, and 120.4 birds per day respectively.

Tables relating daily weather to the number of species and the number of individual birds are available on request.

Also available on request are several curves of population density. These display interesting features. For example, the curves contrasting the population density of all warblers to that of the myrtle warbler, the most common warbler of the season of the survey, display three distinct peaks. For all warblers, these peaks occurred on 26 March, 20 April, and 7 May. There occur seven lesser peaks, distributed fairly uniformly from 12 March to 4 May. The peaks for the myrtle warbler follow closely those of all warblers until 28 April, after which the myrtle warbler completely disappeared.

The days having the largest number of individuals were those in February when the grackle roost was active. Disregarding these days, the days with the largest number of individual birds were as follows: a cloudy February 15 with 389 birds, including 150 robins; a cloudy March 1 with 460 birds, including 250 grackles; and a rainy March 5, with 493 birds, including 250 grackles.

For the 98 days of the total survey, the average number of birds per day was 204.8, with 20,075 individual birds for the period. Disregarding the 5,000 grackles seen at the roost on the five days in February, the average number of birds per day for the period was 153.8.

It should be noted that in the total column of Table I, many of the same individual birds were seen day after day, especially in the cases of species which stayed around for some time.

In all, 30 species of warblers were seen during the period, including 1,057 individuals. Of these, 135 were Nashville warblers and 610 were myrtle warblers. The former is a migrant, while the latter is a winter visitor.

Only four species of vireos (45 individuals) were observed.

Surprisingly, only lark, chipping, field, white-throated, Lincoln, and song sparrows were seen. Of these six species comprising 1,087 individuals, 961 were white-throated sparrows.

A diary of daily comments on bird activities is available on request.

It is hard to draw conclusions from this limited survey. Even when it was raining heavily, the birds were present. The difference in the number of birds observed on days of rain and on days of no rain may have been due to my inability to hear or see them, or their inactivity.

No doubt the variation in the number of birds observed with varying temperature may have been a result of the seasonal variation rather than the daily variation of temperature.

I definitely feel that there is a need for expanding the survey of this area to include an entire year. This would give a complete coverage of the area by seasons for both birds and plants. Also a more statistically reliable set of conclusions could be obtained by extending the survey to cover five years or more.

Professor Robert H. Rucker accompanied me on the floral survey. Dr. Keith A. Arnold assisted me in evaluating the status of the species of birds. Dr. and Mrs. Lawrence S. Dillon and Dr. John J. Sperry assisted me in classifying the plants. To each of these I wish to express my appreciation.—*Jack T. Kent, Department of Mathematics, Texas A&M University, College Station, Texas 77843.*

STATUS SYMBOLS

30	R—Resident (found year-round; implies breeding).
23	WV—Winter visitor (found during some or all winter months).
3	SV—Summer visitor (found during some or all summer months).
10	SR—Summer resident (found during some or all summer months; implies breeding).
35	M—Migrant (bird in passage).
4	V—Vagrant (wanderer; may be expected any time of the year).
4	A—Accidental (very far out of its normal range; not expected).

TABLE I

No.	Species	No. Days Species Seen	Total Individuals	No. Per Day Max.-Min.	Date First-Last		Status
1	Green Heron	2	2	8—0	2/19	4/29	R
2	Common Egret	1	2	2—0	5/3	5/3	V
3	Geese, Sp.	1	heard	Flock	3/2	3/2	WV
4	Turkey Vulture	2	2	1—0	4/18	4/20	R
5	Mississippi Kite	1	2	2—0	4/10	4/10	M
6	Cooper's Hawk	3	3	1—0	2/22	3/23	WV
7	Broad-winged Hawk	2	49	49—1	4/10	5/9	M
8	Osprey	1	1	1—0	4/10	4/10	V
9	Killdeer	1	2	1—0	3/7	3/7	R
10	Mourning Dove	97	705	22—0	2/9	5/17	R
11	Yellow-billed Cuckoo	12	28	4—0	5/2	5/17	SR
12	Great Horned Owl	1	1	1—0	2/16	2/16	R
13	Chuck-will's-widow	5	5	1—0	3/30	4/30	M
14	Whip-poor-will	1	1	1—0	4/16	4/16	M-R[1]
15	Chimney Swift	31	182	20—0	4/9	5/17	SR
16	Ruby-throated Hummingbird	2	2	1—0	4/20	5/11	SR
17	Yellow-shafted Flicker	67	211	11—0	2/9	5/2	WV
18	Red-bellied Woodpecker	33	51	4—0	2/24	5/16	R
19	Yellow-bellied Sapsucker	23	27	2—0	2/9	3/23	WV
20	Downy Woodpecker	15	16	2—0	2/23	4/20	R
21	Eastern Kingbird	2	2	1—0	4/7	4/30	SR
22	Western Kingbird	1	1	1—0	5/8	5/8	V
23	Scissor-tailed Flycatcher	34	107	8—0	3/20	5/9	SR
24	Great Crested Flycatcher	14	22	8—0	4/14	5/11	SR
25	Eastern Phoebe	5	6	2—0	3/2	4/28	WV
26	Traill's Flycatcher	2	2	1—0	5/5	5/8	M
27	Eastern Wood Pewee	6	19	5—0	5/4	5/9	SV-R[1]
28	Olive-sided Flycatcher	2	3	2—0	5/4	5/7	M
29	Barn Swallow	1	1	1—0	4/20	4/20	M
30	Purple Martin	55	256	11—0	3/7	5/17	SR
31	Blue Jay	98	637	15—1	2/9	5/17	R
32	Common Crow	90	236	10—0	2/9	5/17	R
33	Black-capped Chickadee	1	1	1—0	2/10	2/10	A
34	Carolina Chickadee	68	157	12—0	2/9	5/16	R
35	Tufted Titmouse	68	107	4—0	2/9	5/16	R
36	House Wren	1	1	1—0	4/16	4/16	WV
37	Winter Wren	2	2	1—0	4/19	4/20	WV
38	Carolina Wren	97	229	9—0	2/9	5/17	R
39	Mockingbird	97	455	13—0	2/9	5/17	R
40	Catbird	20	30	3—0	4/19	5/17	R
41	Brown Thrasher	95	545	17—0	2/9	5/17	R
42	Robin	52	903	57—0	2/9	4/15	WV-R[2]
43	Wood Thrush	33	51	3—0	4/14	5/17	M
44	Swainson's Thrush	3	3	1—0	4/20	5/6	M
45	Blue-gray Gnatcatcher	9	39	10—0	3/18	4/10	M
46	Ruby-crowned Kinglet	76	636	20—0	2/9	5/10	WV
47	Cedar Waxwing	50	1590	200—0	2/9	5/9	WV
48	Loggerhead Shrike	8	13	3—0	3/9	5/7	R
49	Starling	75	327	25—0	2/9	5/17	R
50	White-eyed Vireo	14	24	3—0	3/18	4/20	R
51	Solitary Vireo	8	8	1—0	2/24	5/14	M
52	Red-eyed Vireo	3	3	1—0	4/7	5/4	SR
53	Philadelphia Vireo	6	10	4—0	4/19	5/16	M
54	Black-and-white Warbler	9	13	3—0	3/21	5/6	M
55	Swainson's Warbler	1	1	1—0	4/15	4/15	A
56	Worm-eating Warbler	2	2	1—0	5/5	5/7	M
57	Golden-winged Warbler	1	1	1—0	5/5	5/5	M
58	Blue-winged Warbler	3	4	1—0	4/18	5/7	M
59	Tennessee Warbler	18	79	25—0	4/10	5/9	M
60	Orange-crowned Warbler	19	24	3—0	2/10	4/15	WV
61	Nashville Warbler	27	135	12—0	3/18	5/9	M
62	Parula Warbler	2	2	1—0	4/10	4/20	R
63	Yellow Warbler	5	21	4—0	4/21	5/10	R
64	Magnolia Warbler	3	14	2—0	5/6	5/8	M
65	Myrtle Warbler	60	610	62—0	2/9	4/28	WV
66	Audubon's Warbler	4	8	4—0	3/26	5/7	V
67	Black-throated Green Warbler	5	6	2—0	4/19	5/8	M
68	Cerulean Warbler	1	3	3—0	4/20	4/20	M
69	Blackburnian Warbler	4	8	5—0	3/21	5/8	M
70	Yellow-throated Warbler	2	2	1—0	4/5	4/7	M
71	Chestnut-sided Warbler	6	50	25—0	4/28	5/9	M
72	Blackpoll Warbler	1	1	1—0	4/28	4/28	A
73	Pine Warbler	3	3	2—0	4/29	5/7	WV
74	Ovenbird	1	1	1—0	5/7	5/7	M
75	Kentucky Warbler	1	1	1—0	5/7	5/7	M
76	Connecticut Warbler[3]	1	1	1—0	4/22	4/22	M
77	Mourning Warbler	3	5	2—0	4/20	5/9	M
78	Yellowthroat	5	8	4—0	4/6	5/10	R
79	Yellow-breasted Chat	16	30	5—0	4/17	5/9	SR
80	Hooded Warbler	2	2	1—0	4/18	5/7	M
81	Wilson's Warbler	3	4	1—0	4/28	5/9	M
82	Canada Warbler	5	6	2—0	5/4	5/10	M
83	American Redstart	6	12	5—0	5/4	5/9	M
84	House Sparrow	8	29	8—0	3/1	5/10	R
85	Eastern Meadowlark	26	42	6—0	2/9	5/9	R
86	Baltimore Oriole	7	13	4—0	4/14	5/9	M
87	Bullock's Oriole	1	5	5—0	4/21	4/21	A
88	Rusty Blackbird	4	10	4—0	3/14	5/12	WV
89	Brewer's Blackbird	4	4	1—0	3/26	5/5	WV
90	Great-tailed Grackle	96	6536	1000+—0	2/9	5/17	R
91	Common Grackle	95	705	50—0	2/9	5/17	R
92	Brown-headed Cowbird	81	441	50—0	2/11	5/17	R
93	Scarlet Tanager	5	7	2—0	4/14	4/27	M
94	Summer Tanager	3	3	1—0	4/17	4/21	SV-R[1]
95	Cardinal[4]	98	2027	30—3	2/9	5/17	R
96	Rose-breasted Grosbeak	1	4	4—0	4/28	4/28	M
97	Blue Grosbeak	3	3	1—0	4/18	5/9	SV-R[1]
98	Indigo Bunting	7	26	15—0	4/6	5/6	R
99	Painted Bunting	1	1	1—0	5/6	5/6	R
100	Dickcissel	1	1	1—0	4/20	4/20	SR
101	Purple Finch	10	72	14—0	2/9	3/29	WV
102	American Goldfinch	19	117	18—0	2/10	5/2	WV
103	Rufous-sided Towhee	1	1	1—0	4/18	4/18	WV
104	Lark Sparrow	11	18	4—0	3/23	5/6	R
105	Chipping Sparrow	17	61	20—0	3/21	4/25	WV
106	Field Sparrow	5	37	15—0	3/22	4/14	WV
107	White-throated Sparrow	80	961	30—0	2/9	4/29	WV
108	Lincoln's Sparrow	4	9	3—0	3/28	5/6	WV
109	Song Sparrow	1	1	1—0	3/31	3/31	WV

TOTAL — 20,075

NOTES:

[1]At the present time nesting has not been substantiated.

[2]Found here throughout the year. There is an influx of very large numbers in the winter. A few stay around to nest in spring and summer.

[3]Identified by the very prominent full eye ring, by its color, and by voice. It was singing.

[4]On 16 March, five male cardinals, playing together, were humming like the strumming of a violin catgut string. Bent mentions the cardinal giving a note like a "taut wire being sharply struck". The tone I heard was more melodious, and given while birds were chasing one another.

TABLE II

HENSEL PARK FLORA

Fall 1969

References: Correl, D. S. and M. C. Johnston, MANUAL OF THE VASCULAR PLANTS OF TEXAS, Texas Research Foundation, 1970[1]
Gould, F. W., TEXAS PLANTS. Ag. Exp. Pub. No. MP-585.

TABLE IIa. TREES

1. Longleaf Pine—**Pinus palustris** Mill.
2. Loblolly Pine—**Pinus taeda** L.
3. Eastern Red Cedar—**Juniperus virginiana** L.
4. Heimer's Black Willow—**Salix nigra** Marsh.
5. Eastern Cottonwood—**Populus deltoides** Marsh.
6. Pecan—**Carya illinoinensis** (Wang.) K. Koch.
7. Black Hickory—**Carya texana** Buckl.
8. Post Oak (50% of tree cover)—**Quercus stellata** Wang.
9. Live Oak—**Quercus virginiana** Mill.
10. Willow Oak—**Quercus phello** L.
11. Water Oak—**Quercus nigra** L.
12. Pin Oak—**Quercus palustris** Coult., non Muenchh.
13. Black Jack Oak—**Quercus marilandica** Muenchh.
14. Sugar Hackberry—**Celtis laevigata** Willd.
15. Eastern (Netleaf) Hackberry (sugar berry)—**Celtis reticulata** Torr.
16. Cedar Elm—**Ulmus crassifolia** Nutt.
17. Winged Elm—**Ulmus alata** Michx.
18. Red Mulberry—**Morus rubra** L.
19. Osage Orange (Bois D'Arc)—**Maclura pomifera** (Raf.) Schneid.
20. Laurel Cherry—**Prunus caroliniana** (Mill.) Ait.
21. Wild Black Cherry—**Prunus serotina** Ehrh.
22. Eastern Redbud—**Cercis canadensis** L.
23. Common Honey Locust—**Gleditsia triacanthos** L.
24. Chinaberry-tree (pride of India)—**Melia azedarach** L.
25. Chinese Tallow Tree (frijolito)—**Sapium sebiforum** (L.) Roxb.
26. Boxelder (ash-leaved maple, arce, fresno de Guajuco)—**Acer negundo** L.
27. Western Soap-berry (janoncillo)—**Sapindus saporaria L. var. Drummondii** (H. & A.) L. Benson.
28. Farkleberry (sparkleberry)—**Vaccinium arboreum** Marsh.
29. Gum Elastic (chittum wood, coma)—**Bumelia lanuginosa** (Michx.) Pers.
30. Common Persimmon—**Diospyros virginiana** L.
31. White (American) Ash—**Fraxinus americana** L.
32. Southern Black-haw—**Viburnum rufidulum** Raf.

TABLE IIb. SHRUBS AND BRUSH

1. Spanish Dagger (aloe yucca)—**Yucca carnerosana** (Trel.) McKelvey.
2. Spanish Dagger (trecul yucca)—**Yucca treculeana** Carr.
3. Poison Ivy (poison oak)—**Rhus toxicodendron radicans** L. Torr.
4. Deciduous Yaupon (deciduous holly, possum-haw, winterberry)—**Ilex decidua** Walt.
5. Yaupon (evergreen yaupon) (60% of brush cover)—**Ilex vomitoria** Ait.
6. Broadleaf Ligustrum (introduced)—**Ligustrum lucidum** Ait.
7. Chinese Privet (amur river privet)—**Ligustrum sinese** Lour.
8. French-mulberry (American beautyberry, sour-bush, etc.)—**Callicarpa americana** L.
9. Indian - Currant (coral-berry) — **Symphoricarpus orbiculatus** Moench.
10. Bamboo (introduced)—**Bambusa** sp.

TABLE IIc. VINES

1. Common Green-brier (bull-brier, horse-brier) — **Smilax rotundifolia** L.
2. Supple-jack (rattan-vine)—**Berchemia scandens** (Hill) K. Koch.
3. Native grape—**Vitis** sp.
4. Virginia Creeper—**Parthenocissus quinquefolia** (L.) Planch.

TABLE IId. GRASSES

1. Ribbon Grass (giant reed)—**Arundo dnoax** L.
2. Broadleaf Uniola (sea oats)—**Uniola paniculata** L.
3. Needlegrass (speargrass)—**Stipa** sp. L.
4. Crabgrass—**Digitaria** sp. Fabr.
5. Dallis Grass—**Paspalum dilatatum** Poir.
6. Little Bluestem—**Schizachyrium scoparium** (Michx.) Nash.
7. Silver Beardgrass (silver bluestem)—**Andropogon saccharoides** Sw.
8. Johnston Grass—**Sorghum halepense** (L.) Pers.
9. Purpletop—**Tridens flavus** (L.) Hitchc.
10. Bermuda Grass—**Cynodon dactylon** (L.) Pers.

TABLE IIe. FORBS

1. Clubmoss—**Lycopodium** sp. L.
2. Spanish Moss—**Tillandsia usneoides** L.
3. Partridge Pea (prairie senna)—**Cassia fasciculata** Michx.
4. St. Andrew's Cross—**Ascyrum hypericoides** L.
5. Camphor Weed—**Heterotheca subaxillaris** (Lamb.) Britt. & Rusby.
6. Aster (calico aster)—**Aster lateriflorus** (L.) Britt.
7. Aster (skydrop aster)—**Aster patens** Ait.
8. Rose Palafoxia—**Palafoxia rosea** (Bush) Cory.

NOTE. [1]Plant nomenclature in this paper follows the nomenclature of Correl.

BULLETIN
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