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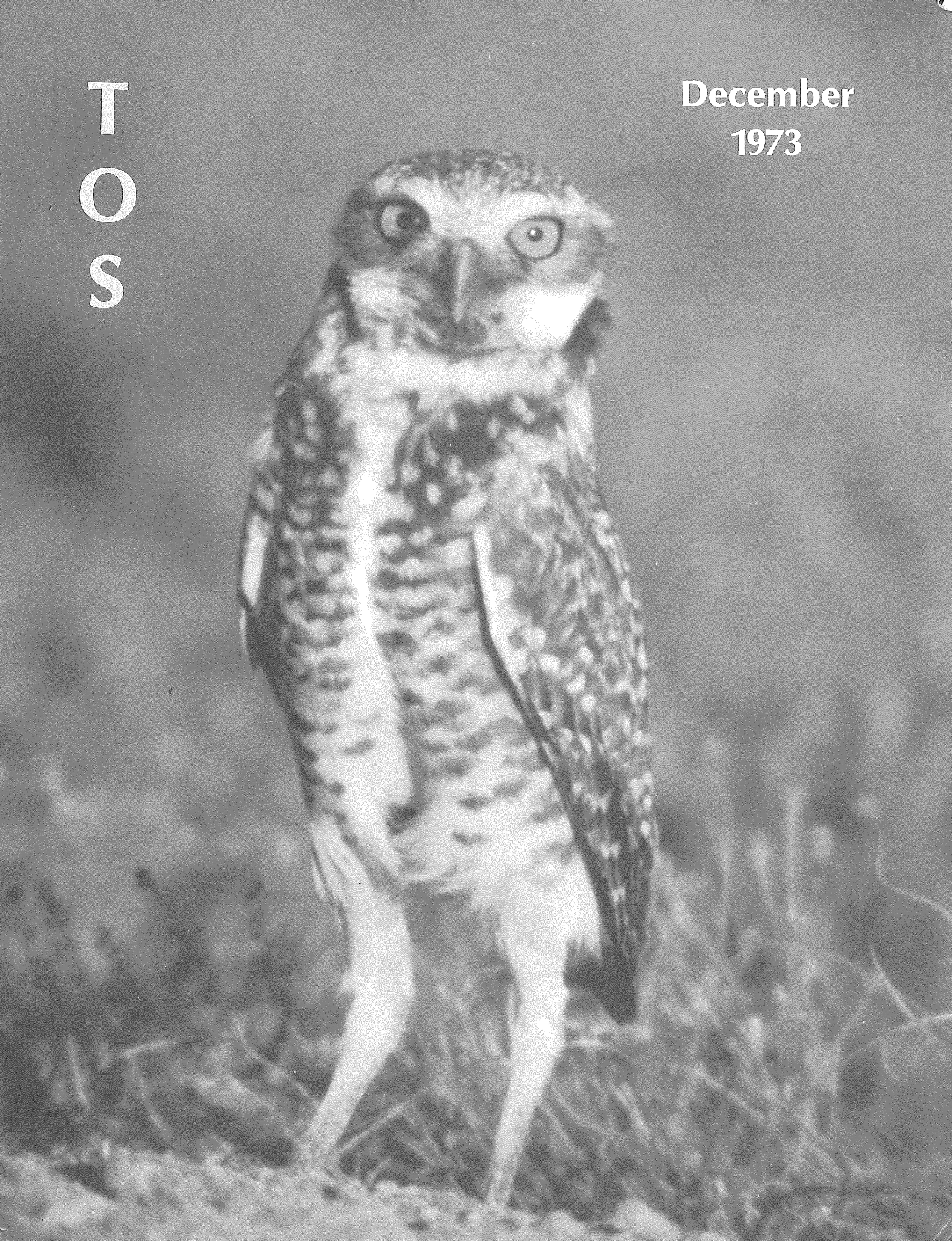

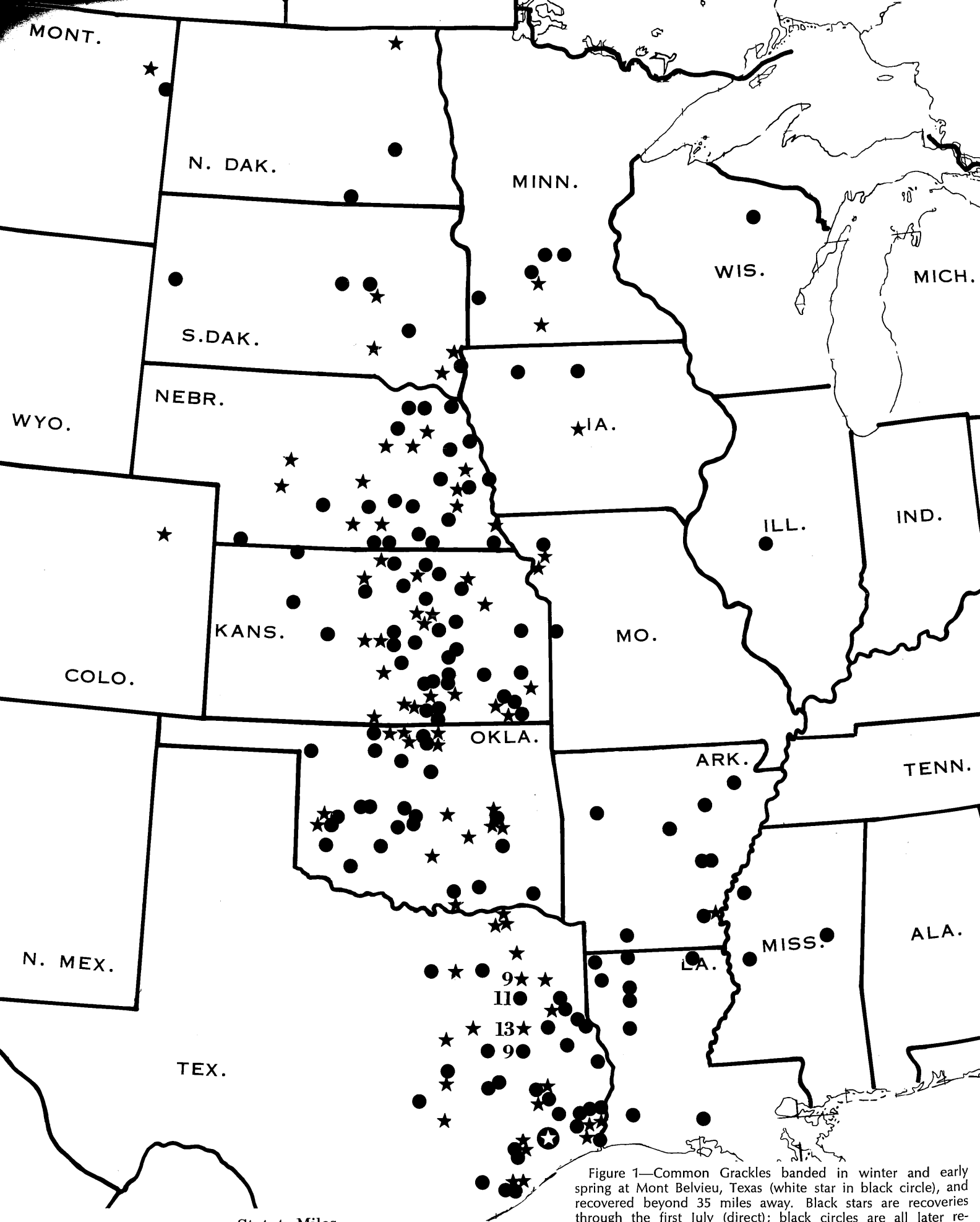

Figure 1—Common Grackles banded in winter and early spring at Mont Belvieu, Texas (white star in black circle), and recovered beyond 35 miles away. Black stars are recoveries through the first July (direct); black circles are all later recoveries (indirect). Unmapped are 3 grackles reported recovered in Massachusetts, southeastern Ontario, and eastern Tennessee, all far east of the main recovery pattern.

(See page 30 for explanatory article.)

Bulletin of the

TEXAS ORNITHOLOGICAL SOCIETY

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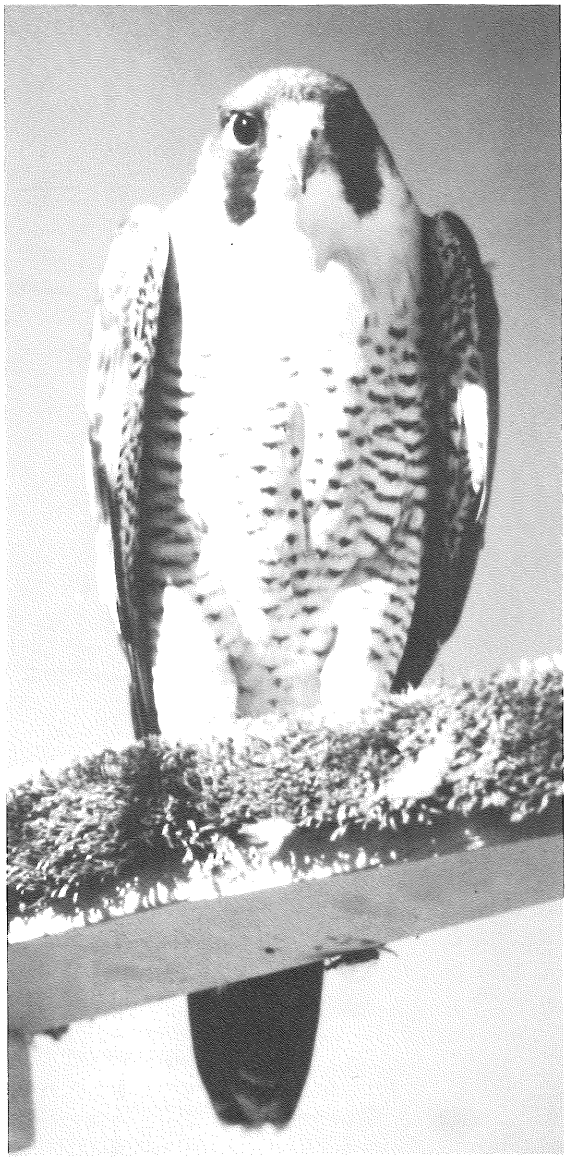
Burrowing Owl (front cover) and Scaled Quail (back cover)
by Bert Blair

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. Edward A. Kutac, President, Texas Ornithological Society, 5800 Reicher Drive, Austin, Texas 78727. Original articles, reports and other items submitted for inclusion in the TOS Bulletin should be sent to the editor, Dr. Michael K. Rylander, Department of Biology, Texas Tech University, Lubbock, Texas 79409.



Texas Peregrine Falcons

WRITINGS about the peregrine falcon have changed drastically in the last ten years. It was once necessary to give a detailed description of just what nature of "chicken hawk" this was. Today everyone who is old enough to read or watch television is familiar with the species. The peregrine has grown in stature from among the last raptors to receive protection, to the very symbol of man's excessive abuses to his environment. Of special interest to Texas birders is the fact that Texas is an excellent place to see this magnificent predator.

The peregrine is the third largest member of the genus *Falco*, surpassed in size only by the Gyrfalcon (*Falco rusticolus*) and Saker Falcon (*Falco cherrug*). It is cosmopolitan in distribution, occurring on all continents except Antarctica, and most major islands, with some 17 subspecies having been described. These "races" vary in size from the arid-adapted "Barbary" Peregrine, which may weigh as little as 15 ounces to the huge (as peregrines go) marine-adapted Peale's Peregrine of the Pacific North West weighing up to 50 ounces. As is the case with most birds of prey, the sexes are quite different with respect to size. The male is smaller than the female by a factor of one-third and for this reason he is traditionally called the "tiercel" while his mate is termed "falcon."

Ecologically speaking, peregrines are "top predators" in that they occupy the highest levels of food chain. Peregrines eat birds, which may eat insects, which eat . . . etc. This fact has proved unfortunate for peregrines since a number of modern poisonous chemicals may be passed up these food chains and are concentrated by this process. These chlorinated hydrocarbons, and especially DDT, have caused population declines in portions of Europe and North America.

Three races of peregrines have been described in North America: the Tundra Peregrine (*F. p. tundrius*), the Anatum Peregrine (*F. p. anatum*), and the Peale's Peregrine (*F. p. pealei*).

The Peale's Falcon, which nests off the coast of British Columbia, Alaska, Russia, and the Aleutian Islands is one of the healthiest populations of peregrines in the world. These birds exist in a saturated condition and are reproducing normally. The Aleutian Island chain alone is estimated to contain some 1,000 individual adult falcons. Since they are non-migratory and feed on a relatively uncontaminated food source, mainly auklets and puffins, they are safe from pesticide disease.

Both the Anatum Peregrine and the Tundra Peregrine occur in Texas and can be seen by birders. Though difficult to differentiate on the wing, you will know which subspecies you have sighted from its location in the state and the time of year. Very roughly, the Anatum is a rare resident occurring in West Texas, and the Tundra Falcon is an arctic subspecies which is seen on migration in the fall and winter, especially along the coast.

Griscom and Crosby (Birds of the Brownsville region—southern Texas. Auk 42:519-537) noted the occurrence of peregrines on the Texas coast as early as 1890, but the discovery of an actual flight of Arctic Falcons was made in the 1940's by the late Col. R. L. Meredith of Brownsville. Colonel Meredith was a world respected falconer

and peregrine expert, and no doubt many of the south Texas birders will remember him. The writers are indebted to Col. Meredith for his excellent notes taken during the 50's and early 60's and for his efforts to protect the peregrine in the days when it wasn't popular.

After the first week in September, the young Arctic Peregrines become independent of their parents and follow the adult falcons and prey species southward on migration. The Mississippi, central, and eastern flyways are all utilized with the coastal migrations along Texas and the eastern seaboard being the most intense. We see falcons in Texas from about the third week in September through the month of October. When one considers a month-old peregrine falcon migrating from above the Arctic Circle to the coast of Texas in two or three weeks, the powers of flight possessed by the peregrine become quite apparent.

Adult falcons are usually seen at the beginning of the migration, but most do not hesitate long on their way to wintering areas in Central and South America. The immature falcons remain on the coast, often for several days, because the beach environment is excellent habitat for young peregrines to increase their predatory skills. When identifying falcons the birder must keep in mind that these immature peregrines are strikingly different in plumage from the adult birds.

During the two-week peak of migration the peregrine falcon is the most common raptorial bird on the beach. The numbers of falcons sighted can be very high. In October, 1971, on South Padre Island, 115 peregrines were sighted in nine days of observation. The number of sightings depends greatly on weather conditions, especially the movement of cold fronts.

We find Arctic Peregrines by driving the gulf side of Padre Island in the mornings during the month of October. Falcons are seen sitting in the dunes, on mud flats, and most often flying, where their cutting silhouettes make them unmistakable. Young falcons are often incredibly tame and it is not unusual to approach within fifty feet or less. In order to gather data on falcon movements and mortality we trap a number of peregrines each year. Falcons are checked over for diseases and parasites then banded and released.

The food habits of the Arctic migrants on the Texas coast are very similar to those of nesting falcons in Alaska. Sixty-four per cent of the food of our falcons consists of various small land birds such as mourning doves and sparrows. These are caught over the open beaches or over water. A peregrine will sometimes force a dove or other small bird into the surf where it founders and washes ashore for the waiting falcon. Birds being pursued by peregrines will seek refuge in a clump of vegetation or anything which provides protection. Once, on Padre Island, a lady was standing by the surf when a terrified woodpecker attached itself to her jacket and hung on for dear life while a tiercel shot up and waited overhead. The rest of the peregrine's diet on the coast consists of shorebirds (23%), ducks (9%), and mammals (4%).

The current status of this Arctic Peregrine is quite controversial. In 1969, at Cornell University, researchers working in Canada and Alaska reported reproductive decreases along some Arctic rivers. The adults were still present at the eyries, but production was down. These and other symptoms such as egg shell thinning indicated that some birds were suffering from pesticide disease.

Following the Cornell report we decided to check for the possibility that the Texas migrant population had decreased (Rogers and Hunt, South Padre Island: Recent Years, Conference on Raptor Conservation, Ft. Collins, Colorado, 1973). Arctic investigators report that these failures did not begin until 1966. The migrations of 1959 through 1965 would then reflect normal years and the period 1966 through 1972 would reflect a decline if one were occurring. The number of daily sightings during the peak period of migration (October 5-17) averaged 6.8 from 1959 to 1965, and averaged 7.9 from 1966 to 1972. Our results have indicated that there has been no decrease in migrant peregrines.

We also examined the adult to immature ratios thinking that reproductive failure would be reflected by a smaller proportion of young in the population. There

was one adult to every 2.15 immatures seen before 1966, while the recent period shows a ratio of one to 5.25! The results of both our comparisons are statistically significant.

Other migration studies have reached similar conclusions. Ward and Berry (Journal of Wildlife Management, 36:484-492) report no decrease in Arctic Peregrines migrating along the coast of Maryland in recent years.

How can the discrepancy between the migration data and that of nesting success in the Arctic be understood? We feel that because of the enormity of the Arctic breeding range, which includes all of the Tundra and Taiga regions of North America, it is simply impossible to make judgments on productivity for the population as a whole. This problem was faced by waterfowl biologists years ago who discovered that migratory and wintering concentrations are the most reliable measure of waterfowl censusing. We believe that a census at a point of concentration is a preferable method for peregrines also.

In addition to Arctic migrants, there is a resident population of peregrines existing in West Texas. The present range of this "mountain anatum peregrine" extends through Northern Mexico and into other parts of the interior of the western United States. Roland Wauer (Birds of the Big Bend, University of Texas Press, 1973), estimates that there are about 15 to 25 pairs of peregrines nesting in our state.

How has our resident population managed to survive while so many other populations of peregrines have been decimated? The answer lies in their food supply. There is very little use of pesticides in the mountainous regions of West Texas where agriculture takes the form of cattle and sheep ranching. Also, the winters in Texas are such that neither the peregrine nor its prey are forced to migrate to other areas.

Doves, jays, flickers, wrens and other medium-sized birds form the major part of the diet of the mountain peregrine during the nesting season. Some of these are safe for peregrine consumption, but it should be remembered that mourning and white-winged doves are known to winter in agricultural areas of Mexico. Fortunately, these doves are not common nesters at higher elevations but must be suspect near the river eyries. There is circumstantial evidence to indicate that peregrine productivity increases with elevation.

Peregrines will often nest near large cliff swallow colonies and a falcon can sometimes be seen, usually at dawn or dusk, repeatedly diving through milling flocks of swallows until one is taken. Another curious item in the diet of Texas peregrines is bats. Peregrines have been observed taking them in the vicinities of bat caves during the evening emergence. The falcons involved are evidently resident birds since such observations have taken place during the summer months. Both bats and cliff swallows are migratory and insectivorous which may represent two strikes against the peregrine.

If even the minimum number of Wauer's 15 to 25 pair estimate is correct for the peregrines nesting in West Texas, then this population must be considered relatively stable. As we have reported, the Arctic migrant population is as plentiful as historical data will allow us to judge. We should be optimistic about the condition of both subspecies but there are several points of concern and things which could be done to insure the future of our peregrines.

The prey of peregrines is most vulnerable when on expanses of coverless terrain like our barrier islands. Those of us who have observed young falcons making often awkward attempts at catching prey realize the importance of this habitat. Peregrines have been visiting the coast of Texas for thousands of years. The continual paving and development of our barrier islands must certainly be considered peregrine habitat destruction.

The mountain peregrine of West Texas is currently nesting in sparsely populated, ranching country which probably accounts for its continued success. The increased popularity of mountain homes and the rapid development of some of these remote areas must certainly be threatening some eyries. Peregrines demand very little and are never common or gregarious nesters. It would be very easy to find and protect our producing eyries from the encroachment of men. Certainly the presence of peregrines in the canyons of the Rio Grande should be reason enough for the official designation of those portions as "Wild River Wilderness Area."

Experiments in artificially increasing peregrine productivity have been recently encouraging. It has long been known that if a clutch of eggs is taken from a pair of peregrines within a week or so of laying, another clutch will be produced. Experiments by the Canadian Wildlife Service have indicated that second clutches have thicker shells, lower pesticide levels, and greater survivability. If handled carefully, the first clutch of eggs can be incubated artificially and the chicks reintroduced or retained for breeding purposes. "Double-clutching" has successfully doubled the productivity of some peregrines in Canada.

Captive breeding is no longer a matter of speculation. The captive Anatum Peregrines in Colorado produced more young than the known wild eyries around the state. Wild peregrines produce about two young per year while captive birds can produce eight or more. Plans are to reintroduce peregrines into the wild—hopefully into an environment which has ameliorated through our present ban on DDT. Many people were skeptical about the feasibility of captive propagation and remain pessimistic about the proposed reintroduction. Initial Canadian experiments with Prairie Falcons have been very encouraging and Cornell University is attempting to reintroduce peregrines into New York this year. If we can breed peregrines and reintroduce them on a significant scale then not only have we insured their place in this world, but we can restore them to all their former ranges.

We are, and should be, optimistic for both subspecies of the peregrine in Texas, but certainly we must continue to monitor the health of these populations. We wish to solicit the help of Texas birders in our continuing effort to evaluate the yearly numbers and productivity. Please inform us as to peregrine sightings, numbers of young fledged at eyries, and observations of prey items taken by peregrines in Texas. Write to us c/o Department of Biology, Sul Ross State University, Alpine, Texas 79830.—*Grainger Hunt, Ralph Rogers.*

The Pesticide Problem Continues in Texas!

"THE birds . . . where had they gone? What has already silenced the voices of spring in countless towns in America?" With these words, Rachel Carson launched an inquiry that was to mark the beginning of the era of ecological awareness and environmental concern. Yet Silent Spring, for all its impact in 1962 and since, has left some lessons still unlearned in Texas more than a decade later. In marshes and forests, in countryside and city, the thoughtless and ill-advised use of pesticides too often has wreaked havoc on the rich Texas avifauna.

One of Texas' specialty birds, the Fulvous Tree Duck, continues as a casualty of pesticides in much of the coastal rice belt. Biologists for the U. S. Fish and Wildlife Service recently reported that aldrin-treated rice has contaminated much of the region. Rice and the seeds of plants associated with rice culture are the mainstay of the summer diet of Fulvous Tree Ducks. The birds are unusually susceptible to aldrin in comparison with other waterfowl, and the Texas population of this valuable species has declined alarmingly. In 1953, as many as 4,000 Fulvous Tree Ducks frequented the rice fields in Brazoria County during the summer; but between 1967 and 1970, Fulvous Tree Ducks were seen only once (in 1969) in the county and their numbers were then reduced to a pitiful 50 birds. We doubt that the years since have seen any increase whatever in the tree duck population elsewhere in the state.

The list of stricken birds in the aldrin-treated area is impressive for its diversity. Included were Blue-winged Teal, Snow Geese, Lesser Yellowlegs, Mourning Doves, Western Sandpipers, Black-necked Stilts, King Rails, Common Gallinules, Dickcissels, White-faced Ibises, and others for a total of 32 species.

The biologists further reported finding residues of aldrin, or its analogue, dieldrin, in not only every sample of stricken birds they encountered, but also in every egg, fish, frog, scavenger, predator, and invertebrate they sampled. The intended victim, the rice water weevil, had plenty of company! Moreover, if the rice water weevil follows the trend set by over 200 other insect pests, it will soon develop immunity to the chemicals. The birds, however, are not blessed with the reproductive capabilities of the insects and therefore don't have the advantage of huge populations per unit of time to develop a similar genetic resistance.

All birders in Texas might well acquaint themselves with a short "pesticide primer." There's no weaker argument than to be caught short of basic facts and concepts when confronted by those persons who hold DDT as the chemical savior of mankind.

First of all, we need to underscore that pesticide is a term often belying the true nature of the situation. Chemicals remain "pesticides" *only* when they in fact kill pests. When non-target species, like birds, become victims, then the chemicals may properly be regarded as biocides—killers which act irrespective of their intended victims. Sprays and dusts which do not discriminate their targets are nothing more than wholesale poisons.

There are many and diverse compounds employed to control agricultural pests. Too many, in fact, to be thoroughly examined here. However, two major families of compounds can be noted for emphasis as they are at the center of much of the controversy begun by Silent Spring. Chlorinated hydrocarbons are a group widely heralded because of their seemingly low toxicity at the time of application, their low cost of manufacture, and because of what once seemed to be unbelievably effective results. Aldrin, dieldrin, heptachlor, mirex, and the best known of all, DDT, belong to this group. These chemicals attack the central nervous system (i.e. brain and spinal cord) in a manner not clearly understood. They are also effective killers of fish and other gill-breathing animals. Toxaphene is a chlorinated hydrocarbon with a dual punch; it is sprayed on croplands for insect control but it has also been widely used to kill carp and other rough fish in overstocked ponds and lakes.

The second family of chemicals is quite different. Organophosphates are highly lethal compounds that have often claimed human lives merely on contact over a small area of skin. More than 50 human deaths during

a 6-month period were recorded in Florida from contact with organophosphates. These chemicals also attack the nervous system at any point and induce spasms and/or paralysis of muscles associated with breathing. The organophosphates include malathion and the even deadlier compound, parathion.

However, the most significant ecological difference between chlorinated hydrocarbons and organophosphates concerns their retention and viability in the environment after application. Organophosphates, for all their immediate deadliness, decompose rather rapidly and *may* become harmless to higher forms of life within a few days of application.

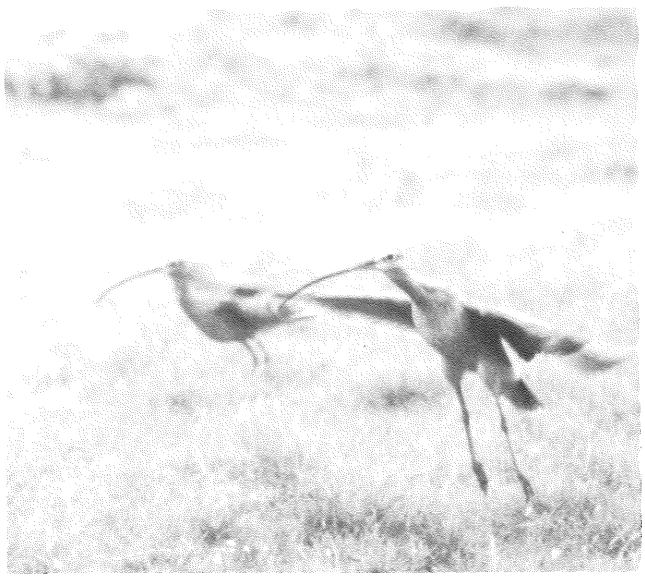
On the other hand, chlorinated hydrocarbons are major culprits of environmental damage through their delayed action as biocides even though they may first act as insecticides. DDT is applied in extremely minute amounts, so low that the measurement is expressed in parts per million (PPM). As a reference for this measurement, recall that one inch is about 1 millionth of 16 miles. How then can DDT applied in amounts of less than a few PPM possibly poison anything but insects? The answer lies in a fundamental fact of life, "eat and be eaten." Since chlorinated hydrocarbons persist in the environment for years (5-50 years, depending on the circumstances) what are indeed small amounts of poison at the time of application work their way through the food chain, growing in concentration at each step of the way. Ecologists refer to this process as biomagnification. Small, almost microscopic organisms pick up DDT in their systems and then in turn become the food for still larger invertebrates. These are then eaten by small fish, then still larger fish, and finally, on to the last link in the food chain, the fish-eating birds. By this time, the DDT has undergone such tremendous concentration that the dosage can be thousands of times greater than the application rate. The "harmless" snowflake has become a deadly avalanche. Obviously, Ospreys, Bald Eagles, Gulls and other birds which eat large amounts of animal foods are most often the victims of biomagnification. Other birds are uniquely susceptible to much smaller amounts of chlorinated hydrocarbon poisoning. When the federal biologists placed penned Fulvous Tree Ducks in rice fields freshly treated with aldrin, all of the experimental birds became intoxicated within 3 days and 30 percent of them actually died; the latter succumbed to residues of no more than 2.5 to 6.8 PPM of the poison in their brain tissues.

But do all birds necessarily die when exposed to food contaminated with DDT? No, yet the final results of such exposure may be every bit as lethal to the welfare of the population. The Brown Pelican, famous landmark of the Gulf Coast, is an unfortunate example. Chlorinated hydrocarbons also effect the complex mechanism of calcium transport, thereby preventing female pelicans from depositing normally shelled eggs. Numerous scientific studies have shown beyond any doubt that eggs may have shells 20 percent thinner than normal where pelicans are exposed to DDT. Thus weakened, the thinned-shelled eggs are soon crushed during the normal course of incubation leaving the nesting season a complete failure. Thousands of brown pelican eggs have failed for this very reason. This loss has continued each year to the point where Brown Pelicans have now been largely exterminated from New Orleans to Brownsville, from San Francisco to Baja California, and along both coasts of Florida. In 1955 about 25,000 Brown Pelicans fished the coastal waters from the Mississippi to the Rio Grande. Today this same coastline harbors fewer than 100 birds. Moreover, the Brown Pelican is the state bird of Louisiana but in one recent 5-year period, not a single bird of this species was seen in the state. State wildlife officials subsequently imported some birds in hopes of re-establishing the population.

Egg shell thinning is less direct but more insidious than outright death of living birds. Its subtle action allows proponents for the continued and unlimited use of DDT or other chlorinated hydrocarbons to shout, "If DDT is as bad as you say, there ought to be hundreds of pelican carcasses strewn about for all to see and smell." There aren't of course, but to the simple-minded, this sort of evidence seems to be demanded before any remedial action can be justified.

Interestingly, the discovery of egg shell thinning owes much to the 19th century pastime of nest robbing. Eggs collected prior to the period when DDT was widely used can be compared with those found today in the nests of Pelicans, Prairie and Peregrine Falcons, Bald Eagles, and a host of other affected species. How ironic that we turn to eggs nearly a century old to document the environmental decay wrought by modern technology. Miners once used caged canaries to determine the safety of the shaft for escaping gasses. It seems we haven't learned much if we still require the useless waste of birds and other animals to monitor the well being of our environment today.

Where have the birds gone? Only by following a responsible course of action regarding the use of agricultural chemicals will it be possible for future springs to avoid a silence too real to imagine.—*Dr. Clarence Cottam, Director and Dr. Eric G. Bolen, Assistant Director, Rob and Bessie Welder Wildlife Foundation.*



Long-billed Curlews Bert Blair

TRIBUTE TO A TEXAS FIRST: THE SUNNY SOUTH OOLOGIST

PRIOR to passage of protective laws around the turn of the century the collection and display of eggs (oology) was a widespread avocation throughout the United States. Numerous short-lived journals were founded during the years 1875-1895 which served as a medium for the advertisement of eggs, nests, trade tools, and as an outlet for short articles on nesting schedules and natural history. Representative journals of this era were the *Ornithologist and Oologist* (R.I., 1875-1893), *Western Oologist* (Wis., 1878-1885), *Oologist* (N.Y., 1884-1941), *Oologists' Exchange* (Ill., 1888-1890), *Oologists' Advertiser* (Conn., 1890), *Oologists' Journal* (N.Y., 1891-1892), and the *Ornithologist and Oologists' Semi-Annual* (Ohio, 1889-1891). Of these journals only the *Semi-Annual* survived to become what is today the highly respected *Wilson Bulletin*.

Texas' contribution to oology came in the form of a small pamphlet known as the *Sunny South Oologist* which was published at Gainesville during March, April, and May 1886. The editor and publisher of this journal was Edwin C. Davis. Little is known of Davis and his role in the history of Texas ornithology. He was a collector and retailer of naturalia and regularly advertised his collection of California hummingbird eggs, egg drills, blow pipes, and jack rabbit ears. His contacts were apparently widespread and the *SSO* carried advertisements and short communications from collectors and naturalists in diverse parts of both the U.S. and Canada.

The subscription rate for the *SSO* was 50 cents per year, domestic, and 65 cents, foreign. Size of the journal varied from 12 pages in the March and April issues to 16 pages in the May issue.

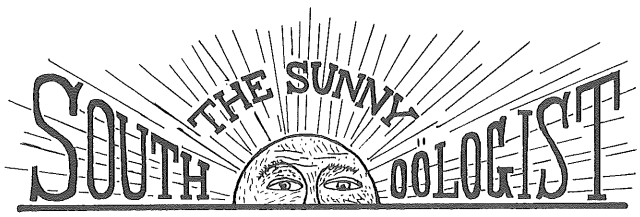
Attesting to the widespread popularity of oology during the 1880's the *SSO* contained articles from contributors in such diverse states as Colorado, Maine, N. Carolina, Minnesota, Georgia, Dakota, Maryland, California, Pennsylvania, and even Ontario, Canada. The only major Texas contributors were George H. Ragsdale and John Allen Singley. Other Texans furnishing short communications were L. L. Howard and Phil Schwartz, Gainesville; Charles Cates, Jr., Decatur; and James L. Long, McKinney.

George Ragsdale (1846-1895) was a naturalist and collector who moved to Gainesville about 1867. In 1880 he was employed as a taxidermist. Advertisements in the *SSO* indicate that he was also a retailer of bird skins, eggs, and other curiosities. Ragsdale was professionally interested in birds and became an associate member of the A.O.U. He sent skins to the U.S. Museum and published short articles on the natural history of birds. His abilities as a popularizer of the natural history of birds were also evident in his contributions to the local newspapers.

J. A. Singley was important to Texas ornithology because his field observations were published in the Geological Survey of Texas. Prior to his employment by the Survey Commission, Singley apparently operated as a collector and retailer of everything from bird eggs to scorpions, cotton bolls, and "Burnet Granite."

For the April issue of the *SSO* Singley contributed an article entitled "Early Finds" in which he listed several Texas birds and the earliest date at which eggs had been found for each species. Particularly interesting was the declaration that he had collected a set of Great Horned Owl eggs in advanced incubation on 30 January 1886. A second article in the April issue dealt with the natural history of the Roadrunner. Obviously writing to impress the northern subscribers Singley terminated the communication with a reminder that members of this species ". . . are famous runners, and it takes a fast 'pony' to overtake them."

Specific information about Texas birds was rarely found in the *SSO*. One short entry in the April issue was, however, of particular interest since it reported the occurrence of "Hundreds of bright colored parrots . . . near Brownwood, Texas, last summer . . . something which has never happened before." One can only wonder at the accuracy of this amazing distribution record. Another interesting distribution reported in the May issue was the collection of three Laughing Gulls near Gainesville.



Davis was enthusiastic about the future of his journal. In the final issue he promised that he would ". . . guarantee to give *more* for the money than any journal in America." In this same issue he dutifully reported on the recent founding of the Audubon Society (1885) and its stated purpose of preventing "the taking or destroying of the eggs or nests of any wild birds." Thus ended the *Sunny South Oologist*. Since it was not yet against the law to collect eggs in Texas and would not be until the game laws of 1891 and 1897 the sudden demise of the journal is somewhat of a mystery.

Today few ornithologists realize that Texas once had its very own journal of oology. Copies of this rare publication are found only in eight libraries located outside the state of Texas. It indeed seems ironic that the library of McGill University in Montreal, Canada, would have copies of an obscure journal that was published almost 90 years ago in Gainesville, Texas.—*Stanley D. Casto, Dept. of Biology, Texas Tech University, Lubbock, Texas 79409.*

THE COMMON GRACKLE IN TEXAS--A REVIEW OF FIFTY YEARS OF BAND RECOVERY DATA

FROM 1920 through August 1970, the Bird Banding Laboratory at Laurel, Maryland, processed 818 recoveries of Common Grackles (*Quiscalus quiscula*) that were banded and/or recovered in Texas. This paper reviews these records, many of which have not been published previously, and discusses them in relation to the distribution and migration of the Common Grackle.

BANDING IN TEXAS

Amon R. Shearer (1929, 1933) banded Common Grackles at Mont Belvieu, Chambers County, in 1924-1940, and obtained 336 recoveries. F. W. Jensen, R. R. Reppert, K. L. Dixon, K. A. Arnold, and Texas A&M University students under their supervision banded grackles at College Station, Brazos County, in 1931-1970. They obtained 72 recoveries. Banding under 13 other permits in six counties in eastern Texas resulted in only 24 recoveries. Of the 432 recoveries of Texas-banded grackles, only 18 (banded by Dr. Shearer) have been published (Lincoln, 1927; Anon., 1931). Although Neff (1949) and Huntington (1952) made limited use of Texas records, they did not report them specifically.

I have obtained information on banding dates only from a review of band recovery records. At Mont Belvieu, birds were banded from December 6 through April 20, but 92 percent were banded from January through March. Most of the birds from College Station were banded from January 31 through April 22; a few were banded in July and August. Common Grackles regularly winter in large numbers and commonly nest in the Bryan-College Station area (Keith A. Arnold, pers. comm.). Kent (1972) recorded them on 95 of 98 days of observation from February 9 through May 17, 1969, at 110-acre Hensel Park, College Station.

Of birds banded at Mont Belvieu and College Station, 261 and 49, respectively, were recovered more than 35 miles away (Figures 1 and 2). From banding at all other Texas locations, only eight grackles were recovered beyond 35 miles—two in Texas, one in Oklahoma, and five in Kansas. These are not mapped because they occurred within the same general pattern as those banded at Mont Belvieu and College Station. Most of the Texas wintering population evidently migrates to states farther north to breed. May-June recoveries are distributed as follows: Texas, 6; Oklahoma, 13; Missouri, Kansas, and southern Colorado, 31; Iowa, Nebraska, and northern Colorado, 19; and Wisconsin, Minnesota, the Dakotas, and Montana, 12.

(Figure 1, inside front cover)

Some idea of the progress of the earliest spring migration north from Mont Belvieu is shown by the earliest direct recovery dates at various latitudes (Table 1). Grackles were moving north in early March and reached Kansas in late March and Nebraska in early April. These dates are later than the average spring arrival dates in the central and northern plains states as summarized by Bent (1958) and Bray *et al.* (1973). Perhaps grackles originating in other wintering areas arrive earlier than do those from Mont Belvieu. Or, more likely, band recovery dates are poor indicators of earliest spring arrival because only a minute portion of the total population is banded. One record (banded College Station April 16, recovered 150 miles north 14 days later) indicates that migration in Texas extends at least through mid-April.

Of 47 mid-winter (January-February) recoveries in later years, 32 occurred in Texas but 15 occurred in Arkansas, Louisiana, and Mississippi, showing that individual birds did not always return to the same winter range year after year.

BANDING OUTSIDE OF TEXAS

From 1920 through August 1970, 386 Common Grackles banded in 17 other states and two Canadian provinces were recovered in Texas (Table 2). About 28 percent of these have been previously reported in the literature.

Bandings in the Central Flyway from Oklahoma and Colorado into western Canada account for 139 of the Texas recoveries. About half of these birds were banded in South Dakota. The other 247 were banded from Louisiana and Alabama north to Minnesota and Michigan, 192 of them at Fort Smith, Arkansas, by S. H. Weakley. Most grackles banded at Fort Smith and recovered in Texas were banded in March and April and recovered from mid-December through March. These and the three Texas recoveries of grackles banded in Tennessee and Alabama again indicate a shift in the distribution of some individuals from one winter to another.

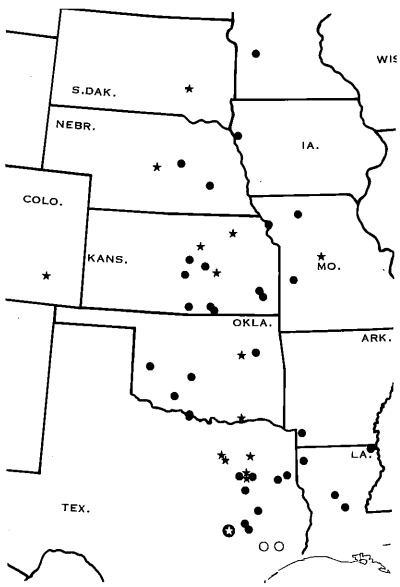


Figure 2—Common Grackles banded at College Station, Texas, and recovered beyond 35 miles away (black symbols are as in Figure 1; white circles are winter recoveries from banding in July and August).

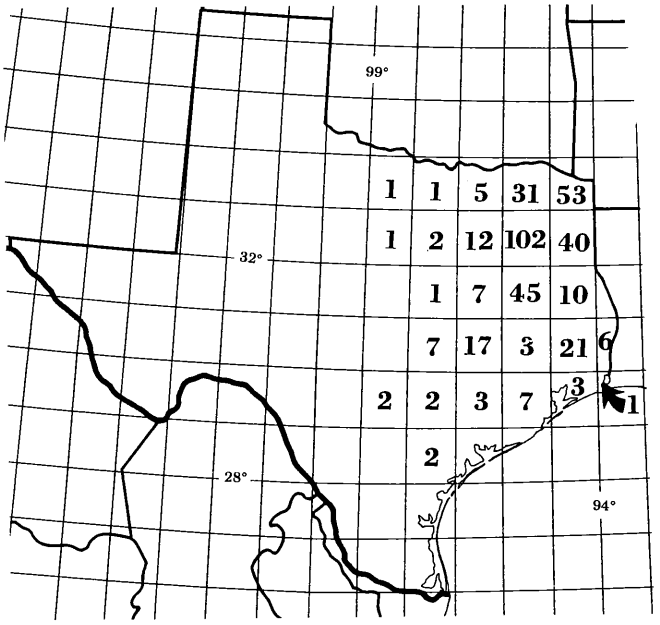


Figure 3—Common Grackles banded in other states and recovered in Texas; numbers of recoveries shown in one-degree blocks.

The composite Texas recovery pattern from out-of-state grackle banding is shown in Figure 3. None were recovered farther west than 98°40'W (Ranger and southwest of San Antonio) nor farther south than 28°50'N (near Mission Valley). Most were in the eastern quarter of Texas in the East Texas Timberlands and Blackland Prairies areas (Oakes *et al.*, undated), and over 25 percent were within the 32°N-95°W block (approximately 69.6 × 59.2 miles) that includes Tyler and Athens. Of 77 January recoveries, 83 percent were north of 31°N. This suggests that many more grackles winter in northeastern Texas than in the upper coastal area, despite the numbers banded at Mont Belvieu. Bray *et al.* (1973) also found that winter recoveries of grackles banded in eastern South Dakota were densest in northeastern Texas.

Within Texas, the band recovery pattern coincides well with the principal range of the Common Grackle as given by Peterson (1960) and others. However, the recovery data do not reveal the peripheral distribution of grackles in central and western Texas. Grackles breed in central Texas and the northern Panhandle in suitable habitats such as occur locally in urban areas (Attwater, 1892; More and Strecker, 1929; Hamilton, 1962; Strecker, 1912; Van Velzen, unpubl. Breeding Bird Survey data). Winter records, especially those from Christmas Bird Counts, are common in some localities west of 97°W, but usually involve few grackles.

The winter records of Common Grackles in southwestern Texas have particular interest in regard to migration. What routes do the birds follow in reaching that area? Peterson (1960:234) states that "in winter a few wander west to Del Rio and Sabinal and south to San Antonio." From the band recovery patterns shown in this paper and by Mott *et al.* (1972) and Bray *et al.* (1973), a south or southeast fall migration route seems more likely than the westward movement that Peterson seems to imply. Future banding in central and west Texas and elsewhere along the western periphery of the grackle's range might eventually result in recoveries that better indicate the migratory patterns within this area.

Grackles banded out-of-state were recovered in greatest numbers in Texas from December through March (Table 3). Fall migrants apparently first arrived in early November (five shot November 4-11), and some remained in Texas into April and a very few into May (one each

Table 1. Northward progress of migrant grackles banded at Mont Belvieu, Texas, based on direct recoveries.

Degrees North Latitude[a]	State	Earliest Recovery Date[b]
31	Texas	March 1
32	Texas	March 7
33	Texas	March 14
35	Oklahoma	March 25
37	Kansas	Late March
41	Nebraska	Early April
42	Iowa	May 5
43	Minnesota	Mid-May
44	Minnesota	Mid-June

[a] One degree latitude measures approximately 69.6 miles.
[b] For some recoveries, only an approximate date is known; the Bird Banding Laboratory defines early, mid-, and late as the first, middle, and last thirds of the month.

Table 2. Texas recoveries of Common Grackles banded elsewhere.

Banding Location	Total Texas Recoveries	Recoveries Already Published	
		Number	Source
Alberta	1		
Wyoming	1		
Colorado	8	9[a]	Mott *et al.*, 1972
Saskatchewan	1	1	Houston, 1968
North Dakota	9	1	Cooke, 1942
		1	Gray, 1948
		9	Bray *et al.*, 1973
South Dakota	71	1	Cooke, 1942
		3	De Grazio *et al.*, 1969
		13	Meanley, 1971
		71	Bray *et al.*, 1973
Nebraska	15	4	Meanley, 1971
Kansas	25		
Oklahoma	8		
Minnesota	11	2	Meanley, 1971
Iowa	6	1	Lincoln, 1927
		4	Meanley, 1971
Missouri	11	1	Anon., 1938
		1	Cooke, 1942
		3	Meanley, 1971
Arkansas	204	(?)[b]	Neff, 1949
		2	Neff and Meanley, 1957
Louisiana	6		
Michigan	2	2	Stack, 1933
Illinois	3	1	Meanley, 1971
Ohio	1	1	Maxwell, 1965
Tennessee	2	1	Coffey, 1938
		2	Irwin, 1956 and 1960
Alabama	1		

[a] Includes one recovery processed since August 1970.
[b] No number given.

Table 3. Number of Common Grackles banded out-of-state and recovered in Texas.

Recovery Month	Shot	Found Dead	Other[a]	Total
Nov	15	0	1	16
Dec	44	5	11	60
Jan	52	8	17	77
Feb	57	12	19	88
Mar	55	34	24	113
Apr	7	10	6	23
May	3	1	0	4
Jun	0	1	1	2
Jul	0	1	0	1
Aug	0	0	0	0
Sep	0	1	0	1
Oct	0	0	0	0
Unknown	1	0	0	1
Total	234	73	79	386

[a] Usually indicates no information on how the recovery was obtained.

shot May 1, 18, and 27). The four grackles recovered in June, July, and September either were found dead or information on how they were obtained is lacking.

Quite similar numbers of grackles were reported shot each month from January through March, and the numbers of "other" recoveries did not vary greatly (Table 3). However, those reported found dead showed a sharp increase in March and were the largest category in April. Possibly, this March peak reflects high mortality in late winter. For example, in March 1960, J. D. Lacy (personal communication) observed many dead grackles, including a banded one, on the Stephen F. Austin State College campus in Nacogdoches. That same month, Clark and Locke (1962) investigated a major outbreak of *Pasteurella pseudotuberculosis* at a large icterid roost in Maryland. They suspected that high stress conditions such as grackles are exposed to in late winter (food supply depletion; cold, damp weather; increased activity before migration) are prerequisite to such an epizootic.

SUMMARY

A total of 818 recoveries of Common Grackles banded and/or recovered in Texas in 1920-1970 were analyzed. Most grackles that wintered in eastern Texas bred farther north. Most arrived in Texas in November and December and departed in March and April. A comparative increase in the number of out-of-state banded grackles found dead in March possibly reflects high mortality from late winter epizootics. Within Texas, the main recovery pattern lay east of 98°W longitude, and 80 percent of the winter recoveries of birds banded outside Texas were north of 31°N latitude. Some grackles wintered in Texas one year and in states farther east another year, and vice versa. Future banding is needed to reveal the breeding range of a small peripheral grackle population wintering in central and western Texas.

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I thank K. A. Arnold and K. L. Dixon for permission to include their band recovery data in this paper.—*Willis C. Royall, Jr., Wildlife Research Center, Building 16, Federal Center, Denver, Colorado 80225.*

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FURTHER NOTES ON THE PARULIDS OF MIDLAND, TEXAS. —In *The Southwestern Naturalist* 18(1):105-110, Roland Wauer reported on the status of certain parulids of west Texas, using Midland, Texas as the northeastern limits of the area. Since many Midland records of warblers were unpublished, Wauer's information was incomplete. This note will make the record complete, but will not include those species where no new information is available.

Midland, at 102°03' west longitude, is west of the range of most "eastern" warblers and east of the range of most "western" warblers. Only nine species can be considered regular migrants in the area: Black-and-white (*Mniotitla varia*), Orange-crowned (*Vermivora celata*), Nashville (*Vermivora ruficapilla*), Yellow (*Dendroica petechia*), Yellow-rumped (*Dendroica coronata*), MacGillivray's (*Oporornis tolmiei*), Common Yellowthroat (*Geothlypis trichas*), Wilson's (*Wilsonia pusilla*), American Redstart (*Setophaga ruticilla*). No parulids breed in Midland County. Orange-crowned and Yellow-rumped Warblers winter in good numbers, and rarely a Common Yellowthroat also winters.

There has been a small but active group of amateur ornithologists in Midland since 1945. Records have been kept for more than 25 years, but no sight record has been accepted unless confirmed by two or more (usually more) competent field observers. Specimens have been collected from other families, but most parulids appear at feeding stations where it is difficult to collect them. Therefore, with one exception, the species noted here are sight records only.

Prothonotary Warbler. *Protonotaria citrea.* A single individual remained at a feeder 10-16 April 1964.

Worm-eating Warbler. *Helmitheros vermivorus.* In addition to the two records cited by Wauer, one individual was seen 1 May 1955.

Virginia's Warbler. *Vermivora virginiae.* Irregular migrant, single individuals appearing 2-15 May and 22 September to 8 October.

Parula Warbler. *Parula americana.* Irregular migrant 17 March to 3 June. Rare in fall, 12 September to 2 October.

Black-throated Gray Warbler. *Dendroica nigrescens.* One or two individuals irregularly in fall, 6 September to 23 October. Only one spring sighting, 14 April 1954.

Townsend's Warbler. *Dendroica townsendi.* Three spring sightings: 14 May 1956, 21-24 April 1957, 6 May 1971. More common in fall, 19 September to 2 November.

Black-throated Green Warbler. *Dendroica virens.* Two spring records, 6 & 12 May 1964. Up to five in one day in fall, 17 August to 6 November.

Blackburnian Warbler. *Dendroica fusca.* One record, 15 May 1973. Adult male.

Yellow-throated Warbler. *Dendroica dominica.* Three spring records, 21 April 1955, 29 April 1957, 21 April 1959.

Grace's Warbler. *Dendroica graciae.* One spring record, 14 April 1954. Three fall records, 25 September 1954, 24 October 1956, 16 September 1971.

Chestnut-sided Warbler. *Dendroica pensylvanica.* In addition to the two records cited by Wauer, a single individual was seen 15 May 1973.

Bay-breasted Warbler. *Dendroica castanea.* Two records, one individual at a feeding station 11-17 May 1958 and another 8 October 1972.

Blackpoll Warbler. *Dendroica striata.* In addition to the record cited by Wauer, one bird was seen 11 May 1964.

Prairie Warbler. *Dendroica discolor.* A single record, 30 April 1971.

Palm Warbler. *Dendroica palmarum.* A single record, 1 October 1956.

Ovenbird. *Seiurus aurocapillus.* Infrequent migrant: 1 May to 1 June and 26 August to 23 September.

Northern Waterthrush. *Seiurus noveboracensis.* Migrant in spring 1 April to 28 May. Two late summer sightings, 11 August 1963 and 24 August 1966.

Louisiana Waterthrush. *Seiurus motacilla.* Seen in spring only, 21 March to 12 May.

Kentucky Warbler. *Oporornis formosus.* Three spring records, 6 May 1967, 5 May 1970, 2 May 1971. One fall record, 9 September 1972.

Mourning Warbler. *Oporornis philadelphia.* Three spring records, 30 May 1957, 18 May 1962, 19 April 1963.

Yellow-breasted Chat. *Icteria virens.* Strangely, this common, widespread warbler is irregular in occurrence at Midland, 15 April to 19 May and 11 September to 25 October.

Red-faced Warbler. *Cardellina rubrifrons.* One confirmed sighting, 11 May 1962.

Hooded Warbler. *Wilsonia citrina.* First sighted 23 April 1957. Irregular in spring, 7 April to 19 May. Two fall records, 8 & 19 September 1964.

Canada Warbler. *Wilsonia canadensis.* Two records, 30 September 1970 and 11 October 1973.

Painted Redstart. *Setophaga picta.* One photographed 10 March 1961. Photo deposited in Texas Photo-Record File, Texas A&M University. Another individual seen, 22 May 1967. —*Frances C. Williams, 3307 Neely, Midland, Texas 79701.*

BOOK REVIEW

NATURALIST'S BIG BEND by Roland H. Wauer. Drawings of plants by Carolyn Borden. Peregrine Productions, Box 5373, Santa Fe, N. Mex., 1973. 160 pp., 28 photographs and 10 plates. $3.65 (paper).—This small, eye-catching volume is intended as a guide to the major plant (trees, shrubs, flowers, cacti) and animal species (mammals, birds, herptiles, fish, selected invertebrates) of Big Bend National Park. Beginning chapters of the book provide interesting information on the archeology, history, geology and ecology of the Park. An excellent bibliography of 429 entries provides access to the technical literature for the more serious naturalist. There is no index, but considering the format of the book, one is probably not needed. Misspellings and technical errors are at a minimum.

The chapter on birds is short (8 pages) and the author refers the reader to his recent monograph, *Birds of Big Bend National Park and Vicinity* (Review, *Bull. T.O.S.* 6:9). The highlight of the bird section may well be the photograph (p. 101) showing the courtship behavior of Roadrunners.

The omission of a Park map poses a problem for the efficient use of this guide. After his interest in a particular plant or animal has been stimulated, the reader is informed that the species may be observed at such an exciting location as Burrow Mesa, Reagan Canyon, Green Gulch, or River Road. How the naturalist is to find his way to these locations is never revealed. Although maps of the Park are undoubtedly available under separate cover the inclusion of one in this volume would have been a major asset.

This book is recommended to all nature-lovers who intend to visit the "Big Bend." For those individuals who have previously visited the Park it will provide a broadened perspective of the Park's physical beauty and diversity of life.—*Stan Casto*

When Were Pheasants First Introduced into Texas?

PHEASANTS are now a well-established species in localized areas of the Texas Panhandle where 12,000-13,000 are harvested during the annual season (Long, 1971). The establishment of pheasants in the Panhandle is generally believed to have resulted from the southward movement of birds from Kansas, Colorado, and Oklahoma although stocking by individuals, private groups, and the Game and Fish Commission may have been important (Glazener and Cottam, 1958; Long, 1971). In addition to their occurrence in the Panhandle, pheasants have been known to occur in the Upper Rio Grande Valley and on the Coastal Prairie (Jones and Felts, 1950).

The literature relating to Texas wildlife indicates that interest in the propagation of pheasants began around 1920. At this time the Game, Fish, and Oyster Commission reported the purchase and raising of pheasant hens and the possibility of distributing eggs to farmers and ranchers (Anonymous, 1929). This project was apparently never finalized and it was not until 1939 that stocking was officially begun (Yeager *et al.*, 1956).

Contrary to the impression obtained from review of the conventional literature, non-wildlife sources reveal that there was considerable interest in pheasants prior to 1900. As early as 1841, William Kennedy noted that there could be found in Texas a ". . . good store of partridges, pheasants, prairie-hens, quails . . . ortolons, and other birds suitable for the table." While exploring the region of present-day New Braunfels in 1844-1845, Carl, Prince of Solms-Braunfels noted that "pheasants are found around San Antonio and in Bexar County in the woods along the road to New Braunfels. As far as I know, this is the only place where they can be found."

After the 1840's travelers and explorers make no mention of pheasants. Durham (1868) maintained that "of the Phasianidae or pheasant family this state . . . does not furnish even a single member . . . ." The statements of Kennedy and Solms-Braunfels would therefore appear to be based on faulty observation in spite of the fact that both were educated men and undoubtedly had seen pheasants during their extensive travels throughout the world. To the rescue of these belated individuals came official sanction in the form of a series of exact and substantive statements appearing in the General Game Law of 1897.

The 1897 law states that (1) "It shall be unlawful . . . to kill, take or destroy wild Mongolian or English pheasants . . . for the space of five years . . ." (2) ". . . it shall be unlawful to kill, ensnare, or trap, or in any way destroy . . . any Mongolian or English pheasants . . . between the first day of February and the first day of August . . ." (3) ". . . this act shall not apply to the shipment or transportation of live Mongolian or English pheasants shipped for scientific or breeding purposes . . ."

Inherent in the 1897 law is the implication that populations of pheasants did exist in Texas and that there was interest in their breeding and scientific study. Protections set forth in the 1897 enactment were reaffirmed in the laws of 1903 and 1907. In spite of the protection which had been extended to pheasants for the past 15 years, J. K. Strecker's checklist which was published in 1912 did not acknowledge their occurrence in the state.

Motivation for enactment of legislation to protect pheasants is entirely speculative. The testimony of witnesses and the floor debate of the pending legislation is either nonexistent or inaccessible. Progressive legislators and interested citizens may have been aware of the stocking efforts and the increasing importance of pheasants as a game species in other states. With admirable foresight they may have decided to include the pheasant on the protected list in anticipation of its successful introduction and establishment in Texas.—*Stanley D. Casto, Dept. of Biology, Texas Tech University, Lubbock, Texas 79409.*

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THE FIGHTING CHACHALACA

ALTHOUGH illegal, cock-fighting has been and still is a popular pastime in South Texas. This "sport" apparently reached its highest state of development over a hundred years ago when the Chachalaca was hybridized with the domestic chicken to produce a superior fighting animal.

H. E. Dresser who visited Texas in 1863-64 was the first to describe the practice (Ibis, 1866, p. 24-25). In the markets of Matamoros Dresser noted that Chachalacas were offered for sale. After careful inquiry as to the purpose for which they were to be used he arrived at the following conclusion.

> "The Mexicans hold the Chlacalacca (*sic*) in high esteem for its fighting qualities, and often keep it in a domesticated state, and crossing it, it is said, with the common fowl, use the mule birds for cock-fighting."

Dresser realized that hybridization of Chachalacas would not be accepted on the basis of hearsay and he hastened to add that he had once seen a hybrid bird in a Matamoros cockpit. His Mexican friends informed him that the cross was always between the male Chachalaca and the female hen. Dresser kept a young male Chachalaca as a pet and allowed him to consort freely with the poultry where he was seen ". . . making amorous advances to the hens." The intriguing idea that the two species might hybridize continued to haunt Dresser for when he departed Texas he blamed himself ". . . for not having got to the bottom of this interesting question."

The use of Chachalacas for cock-fighting apparently flourished for a number of years in the Lower Rio Grande Valley. When G. B. Sennett visited the area in 1877 it was rumored that hybridization was still being practiced (1878, Bull. U.S. Geol. Surv. Terr. IV, No. 1, p. 51). Sennett, however, was skeptical and noted that he ". . . saw no proof, but it is accepted as true by everyone in the region."

There the question stands. Was the Chachalaca at one time bred for fighting purposes? Perhaps an enterprising game breeder will someday provide an answer.—*Stanley D. Casto, Dept. of Biology, Texas Tech University, Lubbock, Texas 79409.*

BULLETIN
OF THE
TEXAS ORNITHOLOGICAL SOCIETY

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