
Tucholsky
Wagner
Zola
Scott
Sydow
Schlegel
Turgenev
Wallace
Fonatne
Freud
Twain
Walther von der Vogelweide
Fouqué
Friedrich II. von Preußen
Weber
Freiligrath
Frey
Fechner
Fichte
Weiße Rose
von Fallersleben
Kant
Ernst
Frommel
Richthofen
Hölderlin
Engels
Fielding
Eichendorff
Tacitus
Dumas
Fehrs
Faber
Flaubert
Eliasberg
Ebner Eschenbach
Maximilian I. von Habsburg
Feuerbach
Fock
Zweig
Eliot
Vergil
Ewald
Goethe
London
Elisabeth von Österreich
Mendelssohn
Balzac
Shakespeare
Dostojewski
Ganghofer
Lichtenberg
Rathenau
Trackl
Stevenson
Doyle
Gjellerup
Hambruch
Tolstoi
Mommsen
Lenz
Droste-Hülshoff
Thoma
Hanrieder
Dach
Verne
von Arnim
Hägele
Hauff
Humboldt
Reuter
Karrillon
Rousseau
Hagen
Hauptmann
Gautier
Garschin
Damaschke
Defoe
Hebbel
Baudelaire
Descartes
Hegel
Kussmaul
Herder
Wolfram von Eschenbach
Schopenhauer
Darwin
Dickens
Rilke
George
Bronner
Melville
Grimm
Jerome
Bebel
Campe
Horváth
Aristoteles
Proust
Voltaire
Federer
Bismarck
Vigny
Barlach
Herodot
Gengenbach
Heine
Storm
Casanova
Tersteegen
Grillparzer
Georgy
Gilm
Chamberlain
Lessing
Langbein
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Brentano
Lafontaine
Strachwitz
Claudius
Schiller
Kralik
Iffland
Sokrates
Bellamy
Schilling
Katharina II. von Rußland
Gerstäcker
Raabe
Gibbon
Tschechow
Löns
Hesse
Hoffmann
Gogol
Wilde
Vulpius
Gleim
Luther
Heym
Hofmannsthal
Morgenstern
Klee
Hölty
Goedicke
Roth
Heyse
Klopstock
Kleist
Luxemburg
Puschkin
Homer
Mörike
La Roche
Horaz
Musil
Machiavelli
Kierkegaard
Kraft
Kraus
Navarra
Aurel
Musset
Lamprecht
Kind
Kirchhoff
Hugo
Moltke
Nestroy
Marie de France
Laotse
Ipsen
Liebknecht
Nietzsche
Nansen
Ringelnatz
Marx
Lassalle
Gorki
Klett
Leibniz
von Ossietzky
May
vom Stein
Lawrence
Irving
Petalozzi
Knigge
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Birds from Coahuila, Mexico

Emil K. Urban

Imprint

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9. Mammals of the San Gabriel mountains of California. By Terry A. Vaughan. Pp. 513-582, 1 figure in text, 12 tables. November 15, 1954.

10. A new bat (Genus Pipistrellus) from northeastern Mexico. By Rollin H. Baker. Pp. 583-586. November 15, 1954.

11. A new subspecies of pocket mouse from Kansas. By E. Raymond Hall. Pp. 587-590. November 15, 1954.

12. Geographic variation in the pocket gopher, Cratogeomys castanops, in Coahuila, Mexico. By Robert J. Russell and Rollin H. Baker. Pp. 591-608. March 15, 1955.

13. A new cottontail (Sylvilagus floridanus) from northeastern Mexico. By Rollin H. Baker. Pp. 609-612. April 8, 1955.

14. Taxonomy and distribution of some American shrews. By James S. Findley. Pp. 613-618. June 10, 1955.

15. The pigmy woodrat, Neotoma goldmani, its distribution and systematic position. By Dennis G. Rainey and Rollin H. Baker. Pp. 619-624, 2 figures in text. June 10, 1955.

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INTRODUCTION

The following account is a summary of the present knowledge of the birds of Coahuila. Some 500 specimens from Coahuila in the Museum of Natural History at the University of Kansas are the basis for this report; these are supplemented by records of birds previously listed from the State.

In Coahuila, habitats vary from those characteristic near tree-line to those of the floors of the low deserts. Because of the variety of habitats, many kinds of birds are present in the State; at least 312 living named kinds of 249 species have been recorded. Possibly another 100 species will be reported after further studies have been made there. At least 154 of the species listed in this paper probably breed in Coahuila. The bird fauna in the State includes species characteristic of eastern North America and of western North America, species that range from the Atlantic to the Pacific Ocean, and species found only, or mostly, in México.

I thank Professor E. Raymond Hall, Doctor Richard F. Johnston and Doctor Robert M. Mengel for their kind help, and Doctor Harrison B. Tordoff for first suggesting this study to me. Unless otherwise stated, the nomenclature in this paper is that of the A.O.U. Check-list Committee (1957). Catalogue numbers are those of the Museum of Natural History at the University of Kansas. In so far as known to me, all birds recorded in the literature from Coahuila are listed below. In a few instances the only support for occurrence is the ascription of a given kind to Coahuila (without mention of date, catalogue number, or precise locality) by Friedmann, Griscom, and Moore (1950), and/or the A.O.U. Check-list Committee (1957); when this is so the entire entry is inclosed within brackets. In the accounts beyond, an asterisk indicates that the kind breeds in Coahuila; two asterisks indicate probable breeding in the State.

LIST OF COLLECTORS

Persons who have obtained specimens of birds from Coahuila for the Museum of Natural History are as follows:

Albert A. Alcorn
Joseph Raymond Alcorn
Sydney Anderson
Rollin Harold Baker
James Sheldon Carey
Peter Stanley Chrapliwy
W. Kim Clark
Robert William Dickerman
John R. Esther
James Smith Findley
John Keever Greer
John William Hardy
Gerd H. Heinrich
William McKee Lynn
Jack M. Mohler
Roger O. Olmstead
Robert Lewis Packard
Robert Julian Russell
William J. Schaldach, Jr.
Harrison Bruce Tordoff
South Van Hoose, Jr.
Olin Lawrence Webb

GAZETTEER OF LOCALITIES IN COAHUILA

The following place-names were used to record the localities of Coahuilan birds now specimens in the University of Kansas Museum of Natural History. Each place-name is followed by its location in degrees and minutes of latitude and longitude, respectively.

Acebuches.—28°17′, 102°56′.

Americanos.—27°12′, 103°14′.

Australia.—26°18′, 102°18′.

Bella Unión.—25°26′, 100°51′.

Boquillas.—29°11′, 102°55′.

Castillón.—28°21′, 103°33′.

Cuatro Ciénegas.—26°58′, 102°04′.

Diamante.—25°22′, 100°54′.

Don Martin.—27°32′, 100°37′.

Fortín.—28°48′, 101°41′.

General Cepeda.—25°22′, 101°28′.

Gómez Farías.—24°58′, 101°02′.

Hermanas.—27°13′, 101°13′.

Iglesias.—27°34′, 101°20′.

Jaco.—27°50′, 103°55′.

Jiménez.—29°04′, 100°42′.

La Babia.—28°33′, 102°03′.

La Gacha.—28°09′,

Múzquiz.—27°53′, 101°32′.

Nava.—28°25′, 100°46′.

Ocampo.—27°22′, 102°26′.

Paila.—25°38′, 102°09′.

Parras.—25°25′, 102°12′.

Piedras Blanca.—29°02′, 102°33′.

Piedras Negras.—28°43′, 100°32′.

Sabinas.—27°52′, 101°07′.

Saltillo.—25°26′, 101°00′.

San Antonio de las Alazanas.—25°16′, 100°37′.

San Buenaventura.—27°06′, 101°32′.

San Francisco.—27°37′, 102°37′.

San Gerónimo.—28°30′, 101°48′.

San Isidro.—27°33′, 102°27′.

San Juan de Sabinas.—27°55′, 101°17′.

San Lorenzo.—25°28′, 102°12′.

San Marcos.—26°41′, 102°07′.

San Miguel.—29°14′, 101°22′.

101°31′.

La Mariposa.—28°12′, 101°49′.

San Pedro de las Colonias (San Pedro).—25°45′, 102°58′.

La Ventura.—24°48′, 100°38′.

Santa Teresa.—26°27′, 101°21′.

Las Delicias.—26°10′, 102°49′.

Tanque Alvarez.—27°56′, 102°38′.

Las Margaritas.—28°42′, 101°14′.

Torreón.—25°33′, 103°27′.

Mesa de Tablas.—25°14′, 100°24′.

Villa Acuña.—29°19′, 100°56′.

For mountain ranges, the approximate center of the highland of each range is used as the point of reference.

Pico de Jimulco.—25°08′, 103°16′.

Sierra de Guadalupe.—25°13′, 101°32′.

Sierra del Carmen.—29°00′, 102°30′.

Sierra del Pino.—28°15′, 103°03′.

Sierra de la Encantada.—28°25′, 102°30′.

Sierra de la Madera.—27°03′, 102°30′.

DISTRIBUTION OF THE KNOWN BREEDING BIRDS OF COAHUILA

Topography and Climate

Coahuila lies in the broad northern end of México, immediately east of the center of the continental mass. The mountains of Coahuila, which are part of the Rocky Mountain-Sierra Madre Oriental Axis, extend in a north-south direction and divide the lower lands into two areas, a larger one, a part of the Central Plateau, to the westward and a smaller one, a part of the Gulf Coastal Plain, to the northeastward. Most of the mountains of Coahuila do not exceed 6000 feet in elevation. A few peaks such as in the Sierra del Carmen, Sierra del Pino, Sierra de la Madera, Sierra Encarnación, and Sierra de Guadalupe, are more than 9000 feet high, and some more than 10,000 feet in elevation occur near the southeastern border of the State in the Sierra Madre Oriental. The Gulf Coastal Plain of northeastern Coahuila ranges from 700 feet to 1800 feet. The desert plains of the Mesa del Norte to the west of the Sierra Madre Oriental Axis are higher, more rugged, and more dissected than those of the Coastal Plain and are marked by scattered desert ranges, buttes, low hills, and knobs.

Most of Coahuila is arid. Rainfall is moderate on the Coastal Plain and is low west of the central mountains. Baker (1956:128-132) and Muller (1947:35-38) give good summary discussions of the topography and climate of Coahuila, and the reader is referred to these for further details.

Biotic Communities

Baker (1956:132) stated that "the biotic communities of Coahuila might be divided in accordance with the three physiographic areas of the State: the Gulf Coastal Plain, the mountains, and the desert plains of the Mesa del Norte." Goldman and Moore (1945:348-349) listed three biotic provinces in Coahuila: the Chihuahua-Zacatecas Biotic Province, in the western half of the State; the Tamaulipas Biotic Province, in the northeastern part of the State; and the Sierra Madre Oriental Biotic Province, in the southeastern part of the State. Merriam (1898) noted that definable portions of the Lower Sonoran Life-zone, the Upper Sonoran Life-zone, the Transition Life-zone,

and the Canadian Life-zone can be distinguished in Coahuila. In my study of the distribution of the avifauna of Coahuila, I found that the three biotic provinces listed by Goldman and Moore (*op. cit.*) as major headings and Merriam's life-zones as supplements are the most satisfactory divisions.

The Tamaulipas Biotic Province.—This province consists of lowland plains and a few isolated ranges of low mountains. The average rainfall is 23 inches (Baker, 1956:130), considerably more than the 10 inches falling in the western part of the State. In the northeastern section of the State, the moderate amount of rain, mesic vegetation, and close proximity to the eastern migration pathway importantly influence the types of birds found.

In Coahuila, the Coastal Plain and the Río Grande Plain lie in the path of the northernmost trade winds; they account for the more humid eastern slopes of the mountains of the northeastern part of the State (Muller, 1947:38). Nevertheless, the northeastern section of the State is semi-arid and can be placed in the Lower Sonoran Life-zone. The vegetation consists mainly of thorny shrubs and small trees with a liberal admixture of yuccas, agaves, and cacti, and closely resembles that of southern Texas, northern Nuevo León, and northern Tamaulipas (Goldman and Moore, 1945:354).

Migrant birds from the eastern flyway and less commonly migrants from western North America pass through northeastern Coahuila. The following breeding birds seem to be associated with this province: Harris' Hawk, Bobwhite (*C. v. texanus*), Scaled Quail (*C. s. castanogastris*), Yellow-billed Cuckoo, Groove-billed Ani, Green Kingfisher, Golden-fronted Woodpecker, Hairy Woodpecker (*D. v. intermedius*), Ladder-backed Woodpecker (*D. s. symplectus*), Vermilion Flycatcher (*P. r. mexicanus*), Cave Swallow, Gray-breasted Martin, Black-crested Titmouse (*P. a. atricristatus*), Carolina Wren, Long-billed Thrasher, Curve-billed Thrasher (*T. c. oberholseri*), Blue-gray Gnatcatcher (*P. c. caerulea*), Hutton's Vireo (*V. h. carolinae*), Bell's Vireo (*V. b. medius*), Yellow-throated Vireo, Red-eyed Vireo, Summer Tanager (*P. r. rubra*), Olive Sparrow, Cassin's Sparrow, and Black-throated Sparrow (*A. b. bilineata*).

The Sierra Madre Oriental Biotic Province.—Southeastern Coahuila is in this province that includes mountains in southern Nuevo León,

southwestern Tamaulipas, and eastern San Luis Potosí. Areas classifiable as Canadian, Transition, Upper Sonoran, and Lower Sonoran in life-zone are found in this province. This region of Coahuila receives the highest rainfall; this is evidenced by the luxuriant growth of boreal plants living in the higher places there (Baker, 1956:131). Spruce, pine, and aspen occur at higher elevations and oaks, thorny shrubs, and grasslands are present lower down.

Birds of central or southern México reach the southern part of Coahuila; the Thick-billed Parrot, Hooded Yellowthroat, and Rufous-capped Atlapetes are examples. A boreal forest on the higher slopes of the mountains of southeastern Coahuila is suitable for certain northern birds such as Goshawks, Pine Siskins, and Brown Creepers. Some species of birds ordinarily associated with western North America are present in Coahuila only in its southeastern part; striking examples of disjunction in range thus occur. Probably sometime in the past these birds were distributed throughout most of Coahuila. When this area became arid, these species disappeared from all of Coahuila except from the high mountains in the southeastern part. For example, Steller's Jay and the Scrub Jay are absent in the Sierra del Carmen of northwestern Coahuila but do occur in southeastern Coahuila.

Migrants of the eastern flyway as well as migrants associated with western North America pass through this section of Coahuila. The following breeding birds are associated with this province: Goshawk, Band-tailed Pigeon, Thick-billed Parrot, Golden-fronted Woodpecker, Ladder-backed Woodpecker (*D. s. giraudi*), Pine Flycatcher, Buff-breasted Flycatcher, Vermilion Flycatcher (*P. r. mexicanus*), Steller's Jay, Scrub Jay, Mexican Chickadee, Black-crested Titmouse (*P. a. atricristatus*), Cactus Wren (*C. b. guttatus*), Robin, Blue-gray Gnatcatcher (*P. c. amoenissima*), Hutton's Vireo (*V. h. stephensi*), Bell's Vireo (*V. b. medius*), Hartlaub's Warbler, Summer Tanager (*P. r. cooperi*), Pine Siskin, Rufous-capped Atlaptes, and Black-throated Sparrow (*A. b. grisea*).

The Chihuahua-Zacatecas Biotic Province.—This province in Coahuila covers the arid, interior, western desert area; it consists of rolling plains with mountains that rise islandlike above the general surface. Some of the mountains, such as in the Sierra del Carmen and the

Sierra del Pino, are more than 9000 feet high. The major part of this biotic area lies within the Lower Sonoran Life-zone. Areas of the Transition and Canadian life-zones are present on some of the higher mountains; their discontinuity results in a discontinuous distribution of the conifer-dependent avifauna.

The large desert restricts the movement of birds considerably. Major results of this include isolation of certain populations and absence of others in the boreal islands. For example, Miller (1955a:157) noted that the "dispersal of conifer-belt birds to and from the Sierra del Carmen, although not as difficult as to well separated islands [such as off the coast of Baja California], is nevertheless a formidable matter to accomplish across the great deserts of Texas, Chihuahua, and Coahuila." Miller (*loc. cit.*) noted also that the avifauna of the Sierra del Carmen, due to its insularity, is unbalanced and stated that "as a consequence of unbalance, species that are present show ecologic extension and unusual numerical relations." At least in this type of environment, an extension or expansion of the ecologic habits of the related types takes place when some species are absent.

This isolation influences local variation among some of the birds found in Coahuila. Niches elsewhere usually occupied by certain species, absent here, are occupied by other species. These other species thus enjoy an ecologic freedom and can expand their niches in the absence of related types of similar ecologic scope. For example, Miller (1955a:158-159) reported that Hairy Woodpeckers occurred only casually in the Sierra del Carmen and that the Ladder-backed Woodpecker has spread out and seems to occupy the niche or niches usually characteristic of the Hairy Woodpecker. Changes usually thought of as of subspecific character seem to be taking place between the Ladder-backed Woodpeckers of the Sierra del Carmen and of other areas, possibly because the Ladder-backed Woodpecker in the Sierra del Carmen is extending its ecologic sphere more than in areas where the Hairy Woodpecker exists. Restriction in dispersal due to geographic isolation has probably hindered gene flow, thus allowing rapid local adaptation, recognizable in variation at the infraspecific level. Miller (*loc. cit.*) listed other birds that have expanded their ecologic scope; his work should be referred to for further details.

The following birds are associated with this province: Black Vulture, Scaled Quail (*C. s. pallida*), Turkey, Elf Owl, Green Kingfisher, Hairy Woodpecker (*D. v. icastus*), Ladder-backed Woodpecker (*D. s. cactophilus*), Wied's Crested Flycatcher, Buff-breasted Flycatcher, Vermilion Flycatcher (*P. r. flammeus*), Black-crested Titmouse (*P. a. dysleptus*), Cactus Wren (*C. b. couesi*), Curve-billed Thrasher (*T. c. celsum*), Blue-gray Gnatcatcher (*P. c. amoenissima*), Hutton's Vireo (*V. h. carolinae*), Summer Tanager (*P. r. cooperi*), and Black-throated Sparrow (*A. b. opuntia*). Several kinds of birds, such as the Band-tailed Pigeon, occur in the "pine islands" in this province rather than on the desert floor.

There remain several kinds of birds that are not especially associated with any one or two of the above-named provinces. These birds are widely distributed and vary geographically without corresponding to the Biotic Provinces. Examples of these species are: Black Phoebe (*S. n. semiatra* in northern Coahuila; *S. n. nigricans* in southern Coahuila), Violet-green Swallow (*T. t. lepida* in northwestern Coahuila; *T. t. thalassina* in southeastern Coahuila), Black-eared Bushtit (*P. m. lloydi* in northern Coahuila; *P. m. iulus* in southeastern Coahuila), White-breasted Nuthatch (*S. c. nelsoni* in northern Coahuila; *S. c. mexicana* in southern Coahuila), Brown-throated Wren (*T. b. cahooni* in northern Coahuila; *T. b. compositus* in southern Coahuila), Crissal Thrasher (*T. d. dorsale* in northern Coahuila; *T. d. dumosum* in southern Coahuila), and Rufous-crowned Sparrow (*A. r. tenuirostris* in northern Coahuila; *A. r. boucardi* in southern Coahuila).

Some representatives of the avifauna of the central and southern sections of the Central Plateau reach southwestern Coahuila. The subspecies *squamata* of the Scaled Quail and *eurhyncha* of the Blue Grosbeak are examples. Each in Coahuila seems to be at the northern limit of its range.

In summary, there are three associations of vegetation in Coahuila and each has characteristic birds. Gross climate and topography, through their influence on vegetation, are the prime factors in the distribution and kinds of birds in the State. Some birds of central and southern México reach southeastern and southwestern Coahuila. Representatives of the Gulf Coastal Plain in Tamaulipas and

Nuevo León as well as migrants of the eastern flyway occur in northeastern Coahuila. Most of the species that occur in Coahuila seem to be associated with western North America. The aridity of western Coahuila restricts, to a large extent, the diversity of the breeding populations of its avifauna. Xeric conditions surrounding some of the higher mountains are barriers to movement of some species.

ORIGIN OF BREEDING BIRDS OF COAHUILA

Probably beginning in the late Pliocene and ending in the Ice Age (Griscom, 1950:379) the refrigeration of climate in the Northern Hemisphere initiated a period of southward withdrawal of birds from the northern part of North America. Some members of the avifauna of Coahuila probably reached the State in this time. When the continental deserts were formed, or reformed, many tropical and subtropical Middle American species were forced to leave Coahuila. Species associated with arid conditions found their way there. Many representatives of the Old World element also seem to have found their way to the State during the refrigeration of climate in the Northern Hemisphere. The separation of North and South America in the greater part of the Tertiary (Mayr, 1946:9) that deterred mammals from intercontinental colonization seemingly did not hinder birds. Some South American species moved northward into México, all the way north to Coahuila.

The avifauna of Coahuila today is a mixture of the several mentioned elements. Of the breeding populations, 43 per cent breed in the western rather than the eastern United States, 6 per cent breed in the eastern rather than the western United States, 30 per cent breed in both the eastern and western United States, 20 per cent are restricted to the Republic of México, and the southern parts of Arizona, New Mexico, and Texas, and 1 per cent (Aztec Thrush and Rufous-capped Atlapetes) is endemic to the Republic of México.

It is instructive to consider also the origin of avifaunal elements at the level of Family. According to Mayr (1946:11) most North American families and subfamilies clearly originated in the Old World, in South America, or from a North American element that developed in the partial isolation of North America in the Tertiary. Three other