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FIELD IDENTIFICATION OF GULLS IN NEW MEXICO.
MORE ON LAUGHING AND FRANKLIN'S GULLS

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Since the publication of part two of the series on gulls (Blom 1983), I have been made aware of two additional characters for separating Laughing (*Larus atricilla*) and Franklin's (*L. pipixcan*) Gulls.

Second summer and subsequent plumages of Laughing Gulls (LG) have an extensive dusky area on the underside of the primaries, darkest toward the tip. The entire undersides of the primaries are dusky, however. First summer and subsequent plumages of Franklin's Gulls (FG) have a much smaller area of black, confined to the tips of the outermost primaries, and contrasting with the white of the rest of the primaries. The dark area on the underside of the primaries corresponds to the black area on the upperside, which is much reduced in FG. With a little practice the difference is readily discernible at a distance on flying birds; the clean black and white look of FG contrasts with the mottled look of LG.

The distinction is also true for earlier plumages, but is not as great. In no instance should this difference be the sole character for identifying a LG in New Mexico, but it can be a useful way to spot a possible LG in flight.

Another way of separating juvenile and first winter birds is the color of the inner primaries. They are pale gray-brown on FG, contrasting with the dark brown outer primaries and secondaries. The result is a pale "window",

similar to that seen on young Herring Gulls (*L. argentatus*).

On LG the inner primaries are dark, not contrasting with the outer primaries or the secondaries. The result is a two-toned wing, dark on the outer half, slightly paler on the inner half. On the FG the look is more three-toned. This distinction is quite obvious with practice, and it is worthwhile watching young FG until the pattern is clear. Though not enough to identify a LG by itself, it is a quick and dirty way of picking out a possible LG in flight.

A third point involves a clarification of the difference in head pattern between winter-plumaged birds of all ages. The original article noted that the FG had a dark half-hood, while the LG had only gray smudging around the nape and eye. On some LG the gray can be quite extensive, covering most of the rear of the head, and can be dark in a small area behind the eye. It often forms a narrow blackish band across the top of the head. The rest of the color is distinctly gray, however. On the FG the winter half-hood is black, much more intense and rich than on the LG. The distinction is readily apparent in the field.

I am grateful to Claudia Wilds of Washington, D.C. for pointing out some of these distinctions and for discussing them all with me.

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THE BIRDS OF WATER CANYON, MAGDALENA MOUNTAINS, NEW MEXICO

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INTRODUCTION

The Magdalena Mountains are an isolated mountain chain located 30 km west of Socorro in Socorro County, central New Mexico. Rising to an altitude of 3286 m on South Baldy Peak, these mountains encompass a variety of habitats, ranging from semi-desert grasslands at their base to spruce-fir forest and subalpine grassland at the highest elevations. Although geologically the Magdalenas are part of the fringe of mountains that border the central Rio Grande Valley, the plants and animals have affinities with those of the Mogollon Plateau of southwestern New Mexico. This area is of particular interest to ornithologists not only because of the diversity of bird life found within the mountains, but also because several species reach the northeastern limit of their regular breeding ranges here. These species include the Montezuma Quail (*Cyrtonyx montezunse*), the Elf Owl (*Micrathene whitneyi*), the Acorn Woodpecker (*Melanerpes formicivorus*), the Bridled Titmouse (*Parus wollweberi*), and the Red-faced Warbler (*Cardellina rubrifrons*).

Since 1975, I have conducted a study of the ecology of the Acorn Woodpecker in Water Canyon, located on the eastern side of the Magdalenas. The canyon is readily accessible by automobile, and is the most extensive drainage system within the range. The systematic list presented below is based upon observations made opportunistically between 1975 and 1983. Most of my research has been conducted during the summer months (May through August), and because of this the information on the summer status of species is most

nearly complete. However, I also worked in the canyon during the winters of 1975 and 1977, and periodically thereafter. I have therefore included data on winter status where I believe it is reliable. This list is presented not only as a guide to the birdlife within Water Canyon, but also to encourage visitors to take note of any new species encountered or found nesting. Such observations can make a substantial contribution to our knowledge of this interesting and important area of New Mexico.

STUDY AREA AND DEFINITIONS

The specific area covered in this report runs from the Cibola National Forest boundary line in the grasslands approximately 1 km from the mouth of the canyon to 4 km upstream in the Water Canyon drainage proper, as well as 1 km upstream along the adjacent Copper Creek drainage system and 3 km upstream in North Fork canyon. Maximal elevational change is from 1950 m in the grasslands at the mouth of the canyon to 2225 m in the North Fork drainage.

Habitats. There are four primary habitats included within the study area, each named after its dominant plant association. 1) Semi-desert Grasslands, located primarily outside of the mouth of Water Canyon proper. 2) Pinyon-Juniper (*Pinus edulis-Juniperus* spp.) Woodland, found primarily at lower elevations in the canyon and on southern and southeastern exposures; 3) Ponderosa Pine (*Pinus ponderosa*) Woodland, found primarily at higher elevations on the main study area and on northern and northwestern exposures; and 4) Riparian Woodland, found at all elevations, and which contains numerous tree species, including narrow-leaf cottonwood (*Populus angustifolia*), Gambel's oak (*Quercus gambelii*), grey oak (*Q. grisea*), and Arizona walnut (*Juglans major*). At higher elevations in the Magdalena Mountains several additional primary plant associations are found, including spruce-fir (*Picea-Abies*) forests, aspen (*Populus tremuloides*) woodlands, and small areas of subalpine grassland. These latter associations were not sampled regularly, and I have noted the summer occurrence of a species in the higher elevation habitats only if that species also occurs during some season on the main study area.

Because both elevation and exposure change rapidly in Water Canyon, plants from two or more associations may occur together at any single location within the canyon. In the following list, I have given the typical association in which each species is found, based upon frequency of nesting or occurrence in each association. Because of the mixing of plant associations, however, a single species may be observed in habitats other than those mentioned in the list.

Abundance Categories. During this study, I did not attempt to measure quantitatively the abundance of the populations of all of the species observed in Water Canyon. Rather, I have estimated the abundance of a species from the observational records according to the following categories: 1) Accidental: one or two observations of single individuals during the period between 1975-1983. 2) Rare: one or two individuals present in the canyon at any one time. These species are not likely to be encountered during a single visit to the canyon even during the appropriate season. 3) Uncommon: a low density of that species within its preferred habitat(s). Species listed as uncommon are likely to be seen somewhere in the canyon during a single visit, but in low numbers. 4) Common: a relatively high density of birds of that species within its preferred habitats. A species listed as common is likely to be encountered in numbers almost anywhere in the canyon in the correct habitat type. 5) Abundant: a very high density of birds in the preferred habitat type. Large numbers of that species should be encountered almost

anywhere in the study area in the correct habitat type.

Residency and Occurrence. 1) Resident: species for which individuals are observed in the same location for periods of two weeks or more during the summer or winter. 2) Visitor: species considered to be visitors are present in one area for a brief time (usually less than one week), and then encountered in that area again. The area considered is larger than the typical home range of that species during that season. 3) Regular: recorded during most or all years of the study. A regular status is implied for birds listed as uncommon or common residents unless otherwise stated. 4) Irregular: species that were not observed during most of the study, usually in no more than three or fewer years.

Seasons. The following dates have been used for seasonal categories in the systematic list: 1) Summer: mid-May through mid-August; 2) Fall: mid-August through September; 3) Winter: October through March; 4) Spring: April through mid-May. Because typical migratory dates may differ among species, there can be differences in the actual dates of occurrences of each species (e.g. Dark-eyed Juncos, winter residents, are observed in the canyon later in the winter than are Townsend's Solitaires, also winter residents). In general, birds that are listed as winter residents may also be present during the fall and spring seasons, depending upon exact migratory dates.

Breeding Status. I have attempted to be conservative concerning the breeding status of each species. A species is listed as breeding only if either 1) an active nest containing either eggs or nestlings was located (symbolized by the letter "N"); or 2) for altricial birds, observations were made of "recently fledged young" that meet all of the following criteria: a short tail relative to that of the adults; remaining motionless for extended periods of time in a location with cover; and being fed by an adult (symbolized by the letters "RFY"); or 3) for resident precocial species, individuals in a family group with two or more adults that were noticeably smaller than those adults (also symbolized by "REY"). Species are listed as probable breeders (RP) if two or more individuals were regularly observed in the same location for more than two weeks during that species' breeding season, but for which nests or young were not located.

Names. All common and scientific names used in this report, and the taxonomic arrangement of species, follow those used in the 6th edition of the A.O.U. Checklist of North American Birds (A.O.U. 1983).

Acknowledgements. I thank the personnel of Cibola National Forest for their cooperation and assistance during this study. The research on Acorn Woodpeckers has been funded by the National Science Foundation, and was aided by numerous co-workers, including especially Roxana Jansma, J. D. Ligon, of the University of New Mexico, and B. and D. McKnight, of Glenwood, New Mexico, made valuable comments and a few additions to the systematic list.

SYSTEMATIC LIST

Green-backed Heron (*Butorides striatus*). Accidental. A single individual was observed 5/77, when the Water Canyon stream was flowing.

Turkey Vulture (*Cathartes aura*). Common spring and summer resident; probably nests (North Fork area); widespread over all habitats.

Sharp-shinned Hawk (*Accipiter striatus*). Uncommon winter resident; primarily at higher elevations.

Cooper's Hawk (*Accipiter cooperii*). Common summer resident; less common in winter. Regular nester (N) in riparian habitat at all elevations of main study area.

Northern Goshawk (*Accipiter gentilis*). Irregular and rare spring and late summer visitor to main study area; may nest at higher elevations.

Red-tailed Hawk (*Buteo jamaicensis*). Uncommon summer resident (winter status uncertain), primarily at higher elevations. Nests (RFY).

Ferruginous Hawk (*Buteo regalis*). Accidental; a single individual was observed 6/83.

Golden Eagle (*Aquila chrysaetos*). Uncommon but regular year-round visitor; irregular nester (N) on cliffs.

American Kestrel (*Falco sparverius*). Uncommon summer resident; nests (N) in riparian and adjacent habitat at lower elevations.

Peregrine Falcon (*Falco peregrinus*). Irregular and rare spring visitor.

Prairie Falcon (*Falco mexicanus*). uncommon summer resident. Irregular and uncommon summer resident.

Blue Grouse (*Dendragapus obscurus*). Accidental in ponderosa pine habitat; may be resident at higher elevations.

Wild Turkey (*Meleagris gallopavo*). Uncommon resident in ponderosa pine habitat and at higher elevations; nests (RFY).

Montezuma Quail (*Cyrtonyx montezumae*). Rare resident, observed primarily in Gambel's Oak habitat at higher elevations on main study area, particularly in North Fork Canyon; nests (RFY)

Scaled Quail (*Callipepla squamata*). Uncommon resident in grasslands at mouth of canyon; nests (RFY).

Gambel's Quail (*Callipepla gambelii*). Irregular and rare resident (?) in riparian and adjacent habitats at lower elevations; nesting uncertain.

Spotted Sandpiper (*Actitis macularia*). Accidental; a single individual was recorded by J. D. Ligon (pers. comm.) during spring migration (4/83).

Band-tailed Pigeon (*Columba fasciata*). Irregular but common summer and fall visitor in riparian and adjacent habitats at all elevations; nesting has not been observed.

Mourning Dove (*Zenaida macroura*). Common resident; nests (N) in riparian and adjacent habitat, primarily at lower elevations.

Greater Roadrunner (*Geococcyx californianus*). Irregular and rare resident (?) in grasslands at mouth of canyon.

Flammulated Owl (*Otus flammeolus*). Uncommon summer resident in ponderosa pine and adjacent habitats; nests (N).

Western Screech-Owl (*Otus kennicottii*). Common summer resident (winter status

uncertain) in riparian habitats at all elevations on study area; nests (N).

Great Horned Owl (*Bubo virginianus*). Uncommon spring and summer resident at all elevations on study area (winter status uncertain); probably nests (RP).

Northern Pygmy-Owl (*Glaucidium gnoma*). Rare summer resident (?). First recorded 7/83 in riparian habitat at 2225 m in North Fork Canyon.

Elf Owl (*Micrathene whitneyi*). Rare but regular summer resident; nests (N) in riparian habitat at middle elevations. One pair has nested downstream from the campground since 1976; Water Canyon is the northeastern limit of this species' breeding range in New Mexico.

Common Nighthawk (*Chordeiles minor*). Uncommon summer resident in grasslands and adjacent pinyon-juniper forests, primarily at lower elevations; probably nests (RP), but not confirmed.

Common Poorwill (*Phalacrocorax nuttalli*). Uncommon summer resident in pinyon-juniper and adjacent habitats, primarily at middle elevations; probably nests (RP), but not confirmed.

Whip-poor-will (*Caprimulgus vociferus*). Uncommon summer resident, primarily in ponderosa pine and adjacent habitats at higher elevations on study area; probably nests (RP), but not confirmed.

White-throated Swift (*Aeronautes saxatilis*). Common summer resident; nests (N) on cliffs.

Calliope Hummingbird (*Stellula calliope*). Rare and irregular late summer migrant in riparian and adjacent habitats.

Broad-tailed Hummingbird (*Selasphorus platycercus*) Common summer resident in riparian and adjacent habitats, primarily at higher elevations; nests (N).

Rufous Hummingbird (*Selasphorus rufus*). Common and widespread late summer migrant.

Belted Kingfisher (*Ceryle alcyon*). Accidental; one record 7/82 in riparian habitat.

Lewis' Woodpecker (*Melanerpes lewis*). Rare and irregular fall visitor during post-breeding dispersal.

Acorn Woodpecker (*Melanerpes formicivorus*) Common resident in riparian and adjacent habitats at all elevations on main study area; nests (N).

Yellow-bellied Sapsucker (*Sphyrapicus varius*). Uncommon migrant and winter resident in riparian and adjacent habitats.

Williamson's Sapsucker (*Sphyrapicus thyroideus*). Uncommon fall migrant in riparian and adjacent habitats.

Ladder-backed Woodpecker (*Picoides scalaris*). Uncommon resident in riparian and adjacent pinyon pine habitats at lower elevations; nests (N).

Hairy Woodpecker (*Picoides villosus*). Uncommon resident in riparian and adjacent pine habitats at higher elevations; nests (N).

Violet-crowned Hummingbird (*Amazilia violiceps*). Accidental. An adult male was observed and photographed in the canyon for two weeks in July 1981. This is the only record for this species in New Mexico outside of Guadalupe Canyon, in the southwest corner of the state.

Magnificent Hummingbird (*Eugenes fulgens*). Rare but regular late summer visitor and possible migrant in riparian habitats.

Black-chinned Hummingbird (*Archilochus alexandri*). Common summer resident in riparian and adjacent habitats, primarily at lower elevations in the canyon; nests (N).

Northern Flicker (*Colaptes auratus*). Uncommon resident in riparian and adjacent habitats, primarily at lower elevations; nests (N).

Olive-sided Flycatcher (*Contopus borealis*). Uncommon migrant; may be a summer resident at higher elevations in the Magdalena Mountains (latest summer record in Water Canyon is 11 June).

Western Wood-Pewee (*Contopus sordidulus*). Common summer resident in riparian habitats at all elevations; nests (N).

Hammond's Flycatcher (*Empidonax hammondi*) Uncommon migrant in ponderosa pine habitats (sight records only)

Gray Flycatcher (*Empidonax wrightii*). Rare summer resident, in pinyon-juniper and adjacent riparian habitat. A resident pair was first observed (sight records only) during June and July 1983, but this species may be easily overlooked.

Western Flycatcher (*Empidonax difficilis*). Uncommon summer resident in riparian habitats near cliffs; nests (N).

Say's Phoebe (*Sayornis saya*). Rare but regular summer resident in riparian and adjacent habitat; probably nests (RP), but not confirmed.

Ash-throated Flycatcher (*Myiarchus cinerascens*). Common summer resident in riparian and adjacent habitats at all elevations on main study area; nests (N).

Brown-crested Flycatcher (*Myiarchus tyrannulus*). Possible rare and irregular summer resident; three summer sight records, including a pair that attempted to nest during 1982. The status of this species needs to be confirmed by photograph or specimen, as its presence in Water Canyon would constitute a considerable northeastern range extension.

Cassin's Kingbird (*Tyrannus vociferans*). Rare and irregular summer visitor to main study area; however, a resident pair was observed 6/83 in ponderosa pines at 2250 m in North Fork Canyon.

Western Kingbird (*Tyrannus verticalis*). Common to abundant fall migrant in grasslands at mouth of canyon.

Horned Lark (*Eremophila alpestris*). Uncommon and irregular winter resident in grasslands at mouth of canyon.

Violet-green Swallow (*Tachycineta thalassina*). Common summer resident in riparian and adjacent habitats; nests (N).

Cliff Swallow (*Hirundo pyrrhonota*). Uncommon and irregular fall visitor at mouth of canyon.

Steller's Jay (*Cyanocitta stelleri*). Uncommon resident in ponderosa pine and adjacent habitats in summer and lower in winter; probably nests (RP), but not confirmed.

Scrub Jay (*Aphelocoma coerulescens*). Common resident in pinyon pine and adjacent habitats, primarily at lower elevations; nests (N).

Pinyon Jay (*Gymnorhinus cyanocephalus*). Rare and irregular spring and summer visitor and irregular but common fall visitor in pinyon pine habitats.

Clark's Nutcracker (*Nucifraga columbiana*). Rare but regular late summer and winter visitor to main study area; may breed (RP) at higher elevations in the Magdalena Mountains.

American Crow (*Corvus brachyrhynchos*). Rare and irregular fall migrant in grasslands at the mouth of the canyon.

Common Raven (*Corvus corax*). Common spring and summer (permanent?) resident; nests (N) on cliffs in canyon.

Mountain Chickadee (*Parus gambeli*). Common resident at all elevations in pine forests; probably breeds (RP), but not confirmed.

Bridled Titmouse (*Parus wollweberi*). Uncommon summer resident (winter status uncertain) in riparian and adjacent habitats; probably nests (RP), but not confirmed.

Plain Titmouse (*Parus inornatus*). Common resident in riparian and adjacent habitats, primarily at lower elevations; nests (N).

Bushtit (*Psaltriparus minimus*). Common resident in pinyon pine and adjacent habitats; probably nests (RP), but not confirmed.

Red-breasted Nuthatch (*Sitta canadensis*). Uncommon winter resident in ponderosa pine and adjacent habitats; summer resident in spruce-fir habitats at higher elevations in the Magdalena Mountains.

White-breasted Nuthatch (*Sitta carolinensis*). Common resident in riparian and adjacent habitats at all elevations on main study area; nests (N)

Pygmy Nuthatch (*Sitta pygmaea*). Rare winter resident in ponderosa pine and adjacent habitats.

Brown Creeper (*Certhia americana*). Rare and irregular fall visitor and possible migrant.

Canyon Wren (*Catherpes mexicanus*). Uncommon summer resident (winter status uncertain) in rocky areas; primarily at lower elevations; nests (N).

House Wren (*Troglodytes aedon*). Common summer resident in riparian and adjacent habitats at all elevations; nests (N).

Golden-crowned Kinglet (*Regulus satrapa*). Rare and irregular winter visitor and possible migrant in riparian habitats.

Ruby-crowned Kinglet (*Regulus calendula*). Common winter resident in riparian and adjacent habitats at all elevations on main study area.

Blue-gray Gnatcatcher (*Polioptila caerulea*). Common summer resident in pinyon pine and adjacent habitats; probably nests (RP), but not confirmed.

Western Bluebird (*Sialia mexicana*). Common resident in riparian and adjacent habitats, primarily at higher elevations on main study area; nests (N).

Mountain Bluebird (*Sialia currucoides*). Rare and irregular summer resident in riparian and adjacent open areas on main study area (winter status uncertain); may nest (RP), but not confirmed. This species also breeds (REY) in high elevation grasslands and adjacent habitats in the Magdalena Mountains.

Townsend's Solitaire (*Myadestes townsendi*). Uncommon winter resident in ponderosa pine and adjacent habitats.

Swainson's Thrush (*Catharus ustulatus*). Uncommon spring migrant in riparian habitats.

Hermit Thrush (*Catharus guttatus*). Common summer resident in riparian and adjacent habitats at all elevations; nests (N).

American Robin (*Turdus migratorius*). Common summer resident in riparian and adjacent habitats at all elevations; nests (N).

Curve-billed Thrasher (*Toxostoma curvirostra*). Rare and irregular resident(?). One summer record (7/76) in pinyon-juniper habitat; a single individual of this species also visited a feeder in the canyon during the winter of 1982-1983.

Cedar Waxwing (*Bombycilla cedrorum*). Irregular and uncommon spring visitor and possible migrant in riparian habitats.

Loggerhead Shrike (*Lanius ludovicianus*). Uncommon and irregular resident in grasslands at mouth of canyon. Probably breeds (RP).

European Starling (*Sturnus vulgaris*). Accidental summer resident; one pair unsuccessfully attempted to nest during the summer of 1981.

Solitary Vireo (*Vireo solitarius*). Common summer resident in riparian habitats; nests (N).

Warbling Vireo (*Vireo gilvus*). Common summer resident in riparian habitats; nests (N).

Orange-crowned Warbler (*Vermivora celata*). Rare but regular spring migrant in riparian habitats.

Virginia's Warbler (*Vermivora virginiae*). Uncommon summer resident in riparian and adjacent ponderosa pine habitats, primarily at higher elevations on main study area; nests (RET).

Yellow Warber (*Dendroica petechia*). Uncommon migrant in riparian habitats at all elevations on main study area.

Yellow-rumped Warbler (*Dendroica coronata*). Common migrant in ponderosa pine

and adjacent habitats on main study area; common summer resident and probable nester (RP) in spruce-fir habitats at higher elevations in the Magdalena Mountains.

Black-throated Gray Warbler (*Dendroica nigrescens*). Uncommon migrant and summer resident, primarily in pinyon-juniper and adjacent habitats; may nest but not confirmed.

Grace's Warbler (*Dendroica gracise*). Common summer resident in ponderosa pine and adjacent habitats; nests (N).

Northern Waterthrush (*Seiurus noveboracensis*). Rare and irregular spring migrant in riparian habitats.

MacGillivray's Warbler (*Oporornis tolmiei*). Uncommon and irregular spring migrant in riparian and adjacent habitats.

Wilson's Warbler (*Wilsonia pusilla*). Uncommon spring and fall migrant in riparian habitats.

Painted Redstart (*Myioborus pictus*). Rare and irregular summer visitor in riparian habitats. During the present study there was not evidence of a breeding population in Water Canyon or nearby areas in the Magdalena Mountains (contra Hubbard (1978)).

Red-faced Warbler (*Cardellina rubrifrons*). Common summer resident in riparian and adjacent Gambel oak habitat at higher elevations on main study area; nests (N).

Hepatic Tanager (*Piranga flava*). Common summer resident in riparian and adjacent habitats at all elevations on main study area; nests (N).

Western Tanager (*Piranga ludoviciana*). Common summer resident, primarily in ponderosa pine and adjacent habitats; nests (N).

Rose-breasted Grosbeak (*Pheucticus ludovicianus*). Rare but regular late spring and early summer visitor in riparian habitats; nesting has not been observed.

Black-headed Grosbeak (*Pheucticus melanocephalus*). Common summer resident, primarily in pinyon-juniper and adjacent habitats; nests (RFY).

Blue Grosbeak (*Guiraca caerulea*). Rare but regular early summer visitor in riparian habitats; breeding has not been observed during the present study, but a nest with three eggs of this species was located in Water Canyon by B. and D. McKnight on 21 June 1959 (B. McKnight, pars. comm.).

Lazuli Bunting (*Passerina amoena*). Rare and irregular spring migrant in riparian and adjacent habitats.

Indigo Bunting (*Passerina cyanea*). Rare but regular spring migrant; first recorded in Water Canyon during this study in 1981.

Green-tailed Towhee (*Pipilo chlorurus*). Rare and irregular spring migrant on main study area. Recorded in willow thickets at higher elevations in the Magdalena Mountains during June 1983.

Rufous-sided Towhee (*Pipilo erythrophthalmus*). Common resident in riparian

and adjacent habitats at all elevations on main study area; nests (N).

Brown Towhee (*Pipilo fuscus*). Common resident in open pinyon-juniper and adjacent grassland habitats at lower elevations on main study area; nests (N).

Chipping Sparrow (*Spizella passerina*). Common summer resident (winter status uncertain) in riparian and adjacent habitats at all elevations on main study area; nests (N).

Black-chinned Sparrow (*Spizella atrogularis*). Common summer resident (winter status uncertain) in grasslands and adjacent pinyon-juniper habitats near mouth of canyon; probably nests (RP), but not confirmed.

Lark Bunting (*Calamospiza melanocorys*). Uncommon and irregular fall migrant in grasslands at mouth of canyon.

Dark-eyed Junco (*Junco hyemalis*). Common winter resident; this species is a common summer resident in spruce-fir and adjacent habitats at higher elevations in the Magdalena Mountains.

Western Meadowlark (*Sturnella neglecta*). Uncommon summer resident (winter status uncertain) in grasslands at mouth of canyon; probably nests (RP).

Brown-headed Cowbird (*Molothrus ater*). Common summer resident in riparian and adjacent habitats, primarily at lower elevations; presumably breeds, as courtship and copulations have been observed.

Northern Oriole (*Icterus galbula*). Rare but regular late summer visitor in riparian habitats.

Scott's Oriole (*Icterus parisorum*). Rare and irregular summer visitor in pinyon-juniper and adjacent habitats on main study area.

Cassin's Finch (*Carpodacus cassinii*). Uncommon fall migrant and possible winter resident, in riparian and adjacent habitats.

House Finch (*Carpodacus mexicanus*). Uncommon resident in riparian and adjacent habitats at all elevations; nests (N).

Red Crossbill (*Loxia curvirostra*). Uncommon spring and fall (winter status uncertain) resident in riparian and adjacent habitats at all elevations on main study area.

Pine Siskin (*Carduelis pinus*). Common winter resident (through May) in riparian and adjacent habitats at all elevations on main study area.

Lesser Goldfinch (*Carduelis psaltria*). Common summer resident in open riparian and adjacent habitats, primarily at middle elevations on main study area; probably nests (RP), but not confirmed.

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THE TAIL PATTERN OF MEADOWLARKS IN NEW MEXICO

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INTRODUCTION

The tail patterns of Eastern Meadowlarks (*Sturnella magna*) and Western Meadowlarks (*S. neglecta*) have long been known to differ in the southwestern United States. In fact, these differences can be used to distinguish the two species consistently and accurately in this region. Previous application of this character has been restricted to birds in the hand, but there have been recent attempts in New Mexico to identify meadowlarks in the field on the basis of tail pattern. This paper explores the variation of this character in the species in this geographic area, with the aims of documenting the differences and of evaluating their usefulness to field identification.

METHODS

I examined closely 72 adult specimens of meadowlarks (20 Eastern Meadowlarks (EM) and 52 Western Meadowlarks (WM)) to determine tail pattern. Institutions that kindly allowed such examinations were Eastern New Mexico University, New Mexico State University (collections of the Department of Biology and the Department of Wildlife and Fishery Science), University of New Mexico, and Western New Mexico University, as well as the Department of Game and Fish.

Tail patterns were scored using an index system based on ten types (Fig. 1). These types are derived from sketches that I made of an array of tail feathers in the two species of meadowlarks. I recognize that many of the patterns, in fact, grade into one another, and thus their segregation is arbitrary. If one is to "score" a continuum, however, a degree of arbitrariness is necessary. Each pattern is assigned a numerical value on a scale of 1 to 10, with the number reflecting the relationship in the continuum of any given pattern. One may thus regard pattern 10 to be "derived" from 9, 9 from 8, and so on.

Tail feathers (henceforth rectrices, singular rectrix) were scored from the outside in, i.e. the outer pair is number 1, and so on to the middle pair, number 6.

The breakdown of these samples is such that the results of this analysis must be viewed with caution. For example, of the 52 specimens of WM only two are from the breeding season (May-August). The ratio is better in the 20 EM, with nine from the breeding season. While I do not expect there to be differences in the tail pattern of breeding versus non-breeding birds, it is possible that such differences exist, thus making more data desirable, especially from WM taken in the May-August period.

In terms of sex, males outnumber females in the EM sample by 13 to 6, another point of concern. In WM, the ratio is 24 to 16, which is more acceptable. As for geographic areas represented, nine of the EM are from the Pecos River Valley eastward, whereas ten are from the Rio Grande Valley westward. In WM, 14 are from eastern New Mexico, compared to 26 that are from the western part of the state.

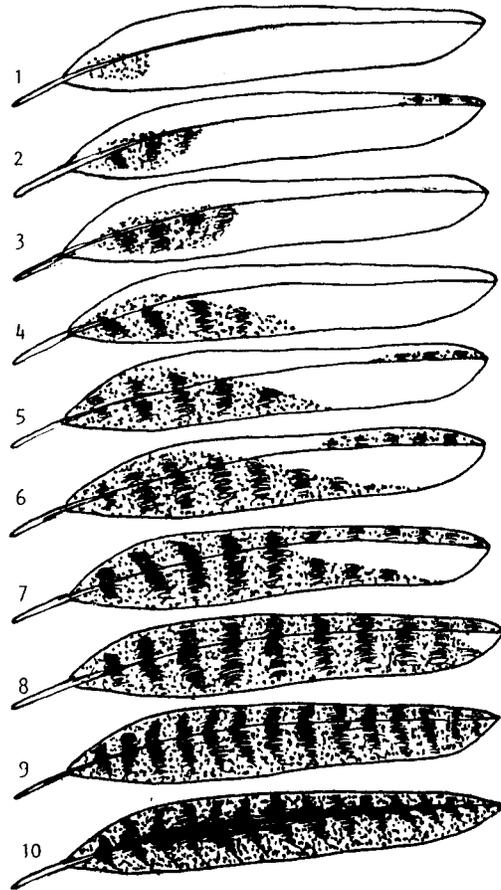


Fig. 1. Tail pattern types in Eastern and Western meadowlarks from New Mexico.

RESULTS AND DISCUSSION

Table 1 shows the frequency distribution, means, and standard deviations of pattern-types in each pair of rectrices in the meadowlark specimens studied. The information shows that EM and WM in New Mexico have distinctively different patterns in rectrix pairs 1 through 4. In essence, the EM has considerably more white in these feathers than does the WM. This is also illustrated in Fig. 2, where "typical" tails of the two species are shown side-by-side.

In comparing the two species, one finds in the samples studied that no overlap in pattern types occurs in rectrix pairs 2, 3, and 4, whereas one WM overlapped the EM sample in rectrix pair 1. That WM is a male from Bernalillo County, taken in November 1938 and in the University of New Mexico collection (MSB 95). I scored its rectrix pair 1 as pattern type 2, owing to the reduced dark areas at the base of the feather and on the tip of the outer web. While unusual, this is not a radical departure from the typical WM pattern for this rectrix pair, which is type 5. This specimen is otherwise typical of its

species, with the pattern-typing (outer to inner pair) being 2-5-7-9-10-10.

Table 1. Per cent frequency distribution, means, and standard deviations of tail patterns by rectrix pair and by species of meadowlark (E = Eastern and W = Western)

Pattern Type	Rectrix Pairs											
	1		2		3		4		5		6	
	E	W	E	W	E	W	E	W	E	W	E	W
1	55.0		55.0		31.6							
2	45.0	1.9	30.0		21.1		10.0					
3			15.0		10.5							
4				3.8	10.5		10.0					
5		94.2		67.3	26.3		5.0					
6		1.9		28.8		46.2	75.0		10.0			
7		1.9				53.8		21.2				
8								40.4		1.9		
9								36.5	70.0	86.5	89.5	78.8
10								1.9	20.0	11.5	10.5	21.2
Mean	1.45	5.00	1.60	5.25	2.79	6.54	4.60	8.21	8.90	9.10	9.11	9.21
SD	0.50	0.52	0.75	0.52	1.65	0.50	0.94	0.78	1.07	0.36	0.32	0.41
N	20	52	20	52	19	52	20	52	20	52	19	52

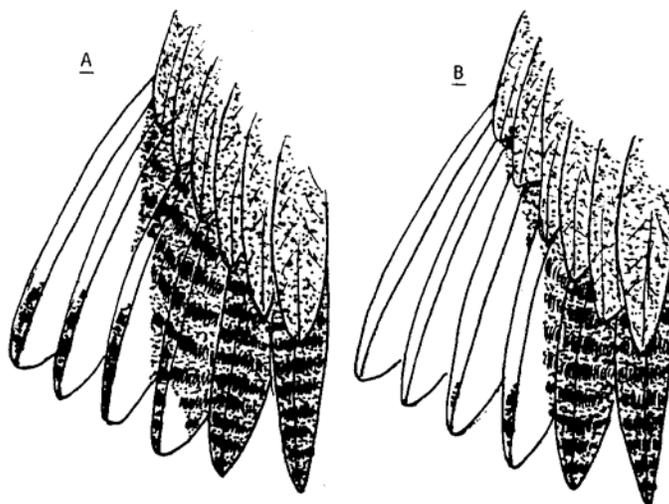


Fig. 2. "Typical" tail patterns in the Western (A) and Eastern (B) meadowlarks in New Mexico.

USE OF TAIL PATTERN AS A FIELD CHARACTER

Given the differences in tail patterns between these two species of meadowlarks in New Mexico, the next issue is to address their possible use in identification of the bird in the field. From a very conservative point of view, I find the use of tail pattern for this purpose to be of questionable value--not because the differences are not real, but because of problems in detecting them in the field. In my opinion, proper observation of this character requires that the tail be viewed well enough to determine the

pattern of white versus dark in all four outer feathers. It will not be sufficient to perceive that a bird has ``moderate'' versus ``much'' white in the tail (or vice versa), because these terms are relative and require comparison for their definition. If one cannot do this with utter confidence, then identification will be questionable--to say the least.

Having a clear perception of the white versus dark patterning in the outer four rectrices, one must then equate this information with those aspects of the tail pattern that are most useful in distinguishing the two meadowlarks. Based on my information, these aspects are as follows:

1. Dark areas at base of rectrix pairs 2 and/or 3
 - a. not visible--Eastern Meadowlark
 - b. Visible--Western Meadowlark
2. Extent of white in rectrix pair 4
 - a. One-third or more--Eastern Meadowlark
 - b. One-fourth or less--Western Meadowlark

In addition, the absence of any dark on the outer web toward the tips of rectrix pairs 1, 2, and/or 3 is indicative of EM. The obverse, however, is not true, as both EM and WM can have this area dark. In applying this or any other of these characters, the observer should make sure that the rectrices are complete, full-grown, and clean. If there is doubt, tail pattern should not be used to identify meadowlarks.

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