

MIDDLE AMERICAN RACES OF THE EASTERN BLUEBIRD

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THE last complete revision of the Eastern Bluebird, *Sialia sialis*, was by Ridgway (1907: 142–148). Ridgway recognized two races south of the United States border—*fulva* from southeastern Arizona to Oaxaca and *guatemalae* from Chiapas to Nicaragua. In 1917 Oberholser described *S. s. episcopus* from northern Mexico. Dickey and Van Rossem (1930) described *S. s. meridionalis* from El Salvador. Griscom (1932: 312–315; 1934), reviewing variation within the species south of the U. S., recognized all four races and extended the range of *guatemalae* north to Veracruz. Phillips (1964) intimated that *episcopus* was not recognizable. Howell (1965) described *caribaea* from Nicaragua.

The present study began in 1969 with the assembly of a loan series of 700 specimens from south of the United States border. Later I studied additional series, bringing the total examined to 826 from south of the United States plus 199 from all northern parts of the species' range except Florida. (The status of the Florida race *grata* was not investigated.)

All measurements in this paper are in millimeters. Color names, where capitalized, were compared directly with the color standard of Palmer and Reilly (1956). Colors refer to fresh plumage specimens, except in the few cases where otherwise stated. "Fresh plumage specimens" is arbitrarily defined as those taken more than halfway through the fall molt up until 31 January. "Worn plumage specimens" refers to those taken from 1 February up to halfway through the fall molt, about 25 August.

ECOLOGY

In Mexico north of the Rio Balsas the Eastern Bluebird breeds in temperate oak woodland and oak savannah or sparse pine-oak woodland. In winter it lives in similar spots and spreads to temperate grassland and tropical woodland with adjacent cultivated fields. South of the Balsas, where the Western Bluebird (*Sialia mexicana*) is not found, the Eastern Bluebird is resident in almost any kind of pine or pine oak or temperate oak woodland, even low elevation pines down to 3,000 feet along the Pacific Coast of Guerrero and Oaxaca and almost sea level along the Atlantic Coast from British Honduras to Nicaragua.

The statement by Moore (1939) that the Eastern Bluebird inhabits only the western slope of the Sierra Madre Occidental in Durango and the Western Bluebird the eastern slope seems to me an exaggeration, although it does reflect the distribution of abundance. In the vicinity

of El Salto and Coyote, Durango, approximately on the crest of the range, I saw an occasional Eastern Bluebird—about 1 for every 50 Western Bluebirds. Similarly, in northern Zacatecas (Laguna Valderama, Milpillas, Monte Escobedo, etc.; Webster 1958) in summer I recorded about 1 Eastern for each 20 Western; this was the drier, eastern part of the range.

MOLTS

Dwight (1900) describes the molts of *Sialia sialis sialis*. I note no discrepancies in Middle American populations except a minor one in the postjuvénal molt (see below). The postnuptial molt in adults extends from 30 June (1954, Jalisco) to 13 October (1940, Michoacán), and to 23 September (1963, Chiapas) for remiges and rectrices. I examined fledged young in full juvenal plumage with collection dates of 30 May (1897, Guatemala) and 5 June (1936, Honduras) and 8 June (1949, Tamaulipas) to 14 August (1936, Chihuahua). Most such specimens were collected in June or July.

The postjuvénal molt is complete except for the primaries, secondaries, and rectrices; sometimes the rectrices may be molted also, though no sheathed rectrix was found. (Dwight states that the rectrices are molted.) Suggestive evidence of possible rectrix molt is provided by 2 or 3 fall immatures from Middle America in which the rectrices are as pale as those of adults, rather than as blackish as juvenal rectrices usually are. Dates of specimens showing any postjuvénal molt were from 22 August (1939, Michoacán) to 5 October (1951, San Luis Potosí). Between male first winter plumage and male adult plumage no consistent difference can be distinguished after about 1 November. Prior to that time wear of the remiges can be used; also immatures average darker ventrally and their rectrices are slightly sharper-pointed and average more blackish on the webs.

GEOGRAPHIC VARIATION

In this section, geographical sample groups are segregated thus: (1) North America—a, United States (exclusive of Arizona and Texas), Canada, and Bermuda; b, Texas; c, Sierra de Tamaulipas; d, specimens from Arizona and northern Mexico with colors of North American type, called migrants. (2) Mexico—e, Arizona and Sonora; f, Chihuahua and Durango; g, Sinaloa; h, Zacatecas, Aguascalientes, and Guanajuato; i, Nayarit, Jalisco, and Colima; j, Michoacán, Est. México, Distrito Federal, and Morelos; k, Puebla and Veracruz; l, San Luis Potosí, m, Tamaulipas (exclusive of Sierra de Tamaulipas); n, Guerrero and Oaxaca. (3) Central America—o, Chiapas; p, Guatemala; q, British

Honduras; r, Honduras, El Salvador, and the mountains of Nicaragua; s, Caribbean coast of Nicaragua. Within (2), Mexico, "northwestern" includes e, f, g, h, and i (except Colima); "central" includes j (except Morelos) and Colima; "southeastern" includes k, l, m, n, and Morelos. Within (3), Central America, "western" includes o and p; "eastern" includes q and r; s is always separated.

Wing length.—Size as measured by wing length (chord) does not vary much. In the samples computed (Figure 1) it is longest in Guatemala and shortest on the Nicaraguan coast. Fairly significant changes between adjacent populations occur: between western Tamaulipas and either the Sierra de Tamaulipas or Texas, between Guatemala and Honduras, and between the mountains of Nicaragua and the coast of Nicaragua.

Tail length.—Tail length is surprisingly consistent (Table 1). Maximum length is found in Chiapas and minimum in Nicaragua. The sharpest changes, although they should not be called significant, occur between western Tamaulipas and Texas, and between Guatemala and Honduras-El Salvador. It is interesting to note that the highest coefficients of variation for both wing length and tail length occur in the same sample—that for western Tamaulipas. Presumably this high variability indicates some sort of hybridization in the border population or else that the sample includes migrants from the north (despite the removal of specimens with color typical of the North America sample) as well as local residents.

Colors of females.—Using 128 female specimens in fresh plumage, I analyzed four characteristics:

(1) Hue of dorsal browns. This was the sharpest single character for geographic separation and the only one showing good separation of four races:

Grayish; pale grayish Fuscous—16 North America.

More drab than the preceding; cinnamonaceous Fuscous—2 North America (from southern Texas), 23 Mexico (20 northwestern and 3 central).

Browner; grayish tawny Sepia—24 Mexico (6 northwestern, 4 central, and 14 southeastern).

Brownest; dusky reddish Sepia—9 Mexico (2 central and 7 southeastern).

Reddish; fairly pale; reddish pale Tawny—6 eastern Central America.

Darker; fuscous Tawny—34 Central America (27 western and 7 eastern).

Paler than preceding 2 groups and more yellowish; Cinnamon—14 Central America (7 western, 2 eastern and 5 coastal Nicaragua).

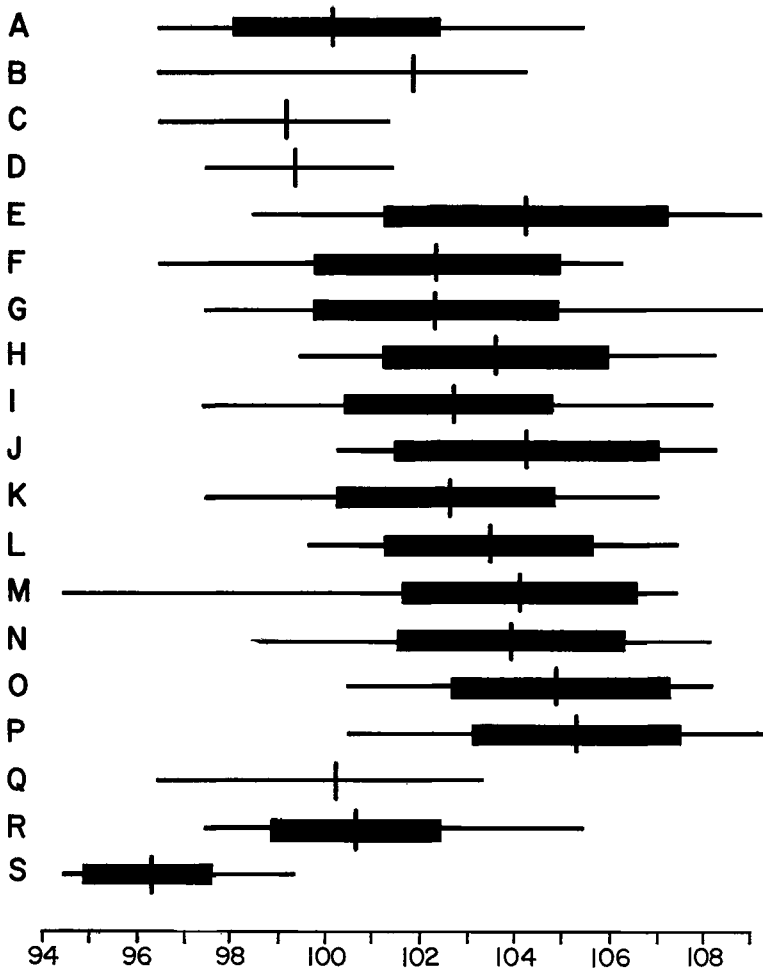


Figure 1. Length of wing of males in mm showing range, mean, and one standard deviation on either side of the mean. Samples A-D are *S. s. sialis*; E-N, *S. s. fulva*; O-R, *S. s. guatemalae*; S, *S. s. caribaea*. A is from eastern United States, Canada, and Bermuda; B, Texas; C, Sierra de Tamaulipas; D, northern Mexico and Arizona, migrants; E, Tamaulipas; F, San Luis Potosí; G, Puebla and Veracruz; H, Michoacán, Est. México, Dist. Federal, and Morelos; I, Nayarit, Jalisco, and Colima; J, Zacatecas, Aguascalientes, and Guanajuato; K, Sinaloa; L, Chihuahua and Durango; M, Arizona and Sonora; N, Guerrero and Oaxaca; O, Chiapas; P, Guatemala; Q, British Honduras; R, Honduras, El Salvador, and the mountains of Nicaragua; S, coast of Nicaragua. Sample sizes are essentially the same as in tail length, Table 1. Coefficients of variation range from 1.45 to 2.67 except for 2.98 for the Tamaulipas (exclusive of the Sierra de Tamaulipas) sample.

TABLE 1
LENGTH OF TAIL OF ADULT MALES

Geographical Group		N	Max.	Min.	Mean	SD	CV
North America,	a	101	68	57	62.13	1.97	3.17
	b	9	68	59	62.33	—	—
	d	7	66	60	63.43	—	—
	c	3	66	62	64.00	—	—
Mexico,	e	23	68	61	64.26	1.73	2.69
	f	23	68	62	64.48	1.77	2.75
	g	32	68	60	62.94	1.94	3.09
	h	15	68	62	64.33	1.67	2.59
	i	62	69	59	63.34	2.05	3.23
	j	47	71	59	64.34	2.47	3.84
	k	40	67	60	63.35	1.82	2.87
	l	21	66	58	62.24	1.80	2.90
	m	13	74	61	65.46	3.87	5.90
	n	44	69	60	64.36	1.89	2.94
	Central America,	o	46	69	62	65.61	2.15
p		67	71	60	65.04	2.43	3.73
q		7	66	59	63.00	—	—
r		52	65	59	61.42	1.48	2.41
s		16	65	58	61.50	2.09	3.39

(2) Extensiveness of blue in dorsal surface. Care was taken to avoid consideration of hue of either browns or blues. Three categories were established:

Virtually no blue in crown, neck, back or rump. (At least a little is always present in wings, upper tail coverts and rectrices.)—49 Mexico.

A moderate amount of blue in rump; none in back; a little in crown—17 North America (includes 4 from southern Texas and 2 migrants), 7 Mexico, 14 Central America (13 western, 1 eastern).

Much blue on head and rump; some in back in most specimens—2 North America (one from southern Texas and one a migrant from Tamaulipas), 40 Central America (21 western, 14 eastern, and 5 coastal Nicaragua).

(3) Hue of blue on dorsal surface. Geographic segregation is poor using this character. Three classes were discriminated:

Least purplish blue; Cobalt—14 Mexico, 4 Central America (2 western and 2 coastal Nicaragua).

Intermediate; Cobalt-ultramarine—18 North America, 40 Mexico, 18 Central America (13 western, 2 eastern and 3 coastal Nicaragua).

Most purplish blue; about half way between Ultramarine and Cobalt-ultramarine—2 Mexico, 32 Central America (19 western and 13 eastern).

(4) Hue and intensity of brown on ventral surface. Geographical tendencies are evident, as shown in Table 2, but there is no clear segregation.

Altogether, the above details show that individual female specimens

TABLE 2
COMPARISON OF VENTRAL BROWN IN FEMALES

	← redder (1)	(2)	yellower → (3)
	(a) 10 North America 2 Mexico 1 western Central America	1 Mexico	
↑ darker	(b) 4 North America 5 western Central America 2 eastern Central America	24 Mexico 8 western Central America	2 North America 27 Mexico
	(c) 6 eastern Central America	1 Mexico 9 western Central America	1 Mexico 4 western Central America
	(d) 3 eastern Central America	8 western Central America 4 eastern Central America 3 coastal Nicaragua	
↓ paler	(e)	2 coastal Nicaragua	

in fall plumage may be assigned to one of three races (North America, Mexico, Central America) on the basis of coloration with almost 100% certainty. However, only 40% of females of the coastal Nicaragua population may be distinguished by color and only 67% of the eastern Central American population, nor can I discriminate further subspecies by color differences.

Color of males.—I compared 244 specimens in fresh plumage; three characters were analyzed fully. No one of these characters discriminates even three races at much better than the 40% level. A combination of the three color characters with wing length (see above) would differentiate more than 95% of male specimens into one of four races.

(1) Hue of ventral brown. In order of increasing paleness four categories may be differentiated:

Darkest; dark tawny Brownish Red—49 North America (5 migrants and 4 southern Texas included), 6 Mexico (2 northwestern, 3 central and 1 southeastern), 2 western Central America.

Next darkest; tawny Brownish Red—11 North America (2 Texas included), 53 Mexico (16 northwestern, 6 central and 31 southeastern), 24 Central America (17 western and 7 eastern).

Paler; (a) ruddy, tawny Cinnamon—16 Mexico (6 central and 10 southeastern), 41 Central America (32 western, 7 eastern and 2 coastal Nicaragua). (b) tawny Cinnamon—20 Mexico (13 northwestern, 2 central, and 5 southeastern).

Palest; (a) brownish Cinnamon—4 southeastern Mexico, 13 Central America (4 western, 5 eastern, and 4 coastal Nicaragua). (b) Cinnamon—5 northwestern Mexico.

Notice that there is a partial separation, within each of the pale categories, of more reddish ventral colors in eastern and southern Mexico and more yellowish ventral browns in northwestern Mexico.

(2) Brilliance of the blue of the dorsal surface.

Very brilliant—9 North America (includes 5 migrants and all 4 Bermuda), 2 Mexico, 10 Central America (4 western, 3 eastern, and 3 coastal Nicaragua).

Moderately brilliant—17 North America (includes 3 southern Texas), 10 Mexico, 19 Central America (13 western and 6 eastern).

Dull—34 North America (includes 6 Texas), 92 Mexico, 51 Central America (38 western, 10 eastern, and 3 coastal Nicaragua).

If the discrimination between very brilliant and moderately brilliant is not made, so that only the categories brilliant and dull are recognized, then we may summarize that North America is 43% brilliant, Mexico 11%, Central America (western) 31%, eastern Central America 47%, and coastal Nicaragua 50%. Similar figures for worn plumages are: North America 86%, Mexico 22%, western Central America 76%, eastern Central America 69%, and coastal Nicaragua 90%.

(3) Hue of dorsal blue. Three classes were discriminated:

Most greenish blue; Cobalt—30 Mexico, 4 Central America (1 western and 3 coastal Nicaragua).

More purplish blue; Cobalt-ultramarine—36 North America (includes 7 Texas), 73 Mexico, 31 Central America (24 western, 4 eastern and 3 coastal Nicaragua).

Most purplish blue; Ultramarine—24 North America (includes 5 migrants and 2 Texas), 1 Mexico, 45 Central America (30 western and 15 eastern).

Some other color characters in fresh-plumaged males vary geographically. Dorsal browns vary greatly in extent; although this is primarily individual variation, maximum extreme specimens were all from Mexico. Dorsal browns also vary in color, but this is difficult to evaluate properly against the blue background and apparently geographic variation of this character is the same as that of the ventral browns. Extensiveness of the brown area ventrally varies geographically, averaging greatest in western Mexico. Again individual variation is extreme, and is complicated by

different makes of skin. Prominence of the boundary between the anterior brown and posterior white is geographically variable as emphasized by Ridgway (1907: 146), being most prominent in North America. I found it difficult to evaluate and much influenced by make of skin.

Colors of juvenal plumage.—I compared 91 specimens; clearly there was some age-foxing, but major geographic trends of color were apparent. Ventral coloration was quite erratic and is not reported; dorsal coloration was analyzed for two characters.

(1) General dorsal coloration. Paler and browner or most reddish brown—39 Mexico, 1 North America (apparently severely foxed).

Less brown or reddish; in most cases also darker—15 Central America (8 western and 7 eastern), 5 North America.

Blackest or grayest and darkest; least brown—31 North America.

(2) Amount of pale streaking on dorsum. More streaked with white or pale buff—39 Mexico, 18 North America.

Less streaked or fewer streaks—19 North America, 15 Central America (8 western and 7 eastern).

SYNOPSIS OF SUBSPECIES RECOGNIZED

Sialia sialis sialis (Linnaeus)

1758, Syst. Nat. ed. 10, 1: 187—in *Bermudis & America calidiore* (= South Carolina).

Size moderate. Female gray, with a moderate amount of blue. Male dark reddish brown ventrally. Juvenile blackest, least brown.

Breeds in eastern United States, southeastern Canada, Bermuda, and extreme northeastern Mexico (Sierra de Tamaulipas). Winters within the breeding range and also, in small numbers or casually, south to Arizona, Coahuila, Tamaulipas, Nuevo Leon, San Luis Potosí, and Cuba.

As previously noted, I did not investigate the status of the Florida race. The alleged race *S. s. episcopus* Oberholser, supposed to inhabit southern Texas and northeastern Mexico, is clearly not recognizable. Oberholser (1917) for his original description apparently had only six or so specimens; he stated the subspecific characters as only those of color, and emphasized those of the blues. As described above, the hue of the blue in both sexes is extremely variable individually, apparently far more so than Oberholser realized.

While I did not intend to investigate the status of the Bermuda population, the series I studied had 14 specimens of *sialis* from that island. One character is geographically peculiar—the high proportion of males (100% of sample of 10) with a brilliant blue dorsum. This is as clear in the worn plumage sample as in the fresh one. Thus the race *S. s. bermudensis* Verrill (1901) has some real basis, but I cannot recognize

a subspecies on the basis of a single character in one sex that is duplicated in at least 10% of specimens from elsewhere. (Duplicated in 85% from elsewhere in worn plumage; 39% from elsewhere in fresh plumage if the more decisive definition of brilliance is made as including both "very brilliant" and "moderately brilliant" classes.)

Sialia sialis fulva Brewster

1885, Auk 2: 85 (Santa Rita Mountains of Arizona).

Size moderate to moderately large. Female brown, with little blue. Male rather fulvous ventrally. Juvenile browner dorsally.

Resident in the pine and pine-oak regions of Mexico north of the Isthmus of Tehuantepec excepting the Sierra de Tamaulipas and including southeastern Arizona.

Although no additional subspecies have been described from the range here assigned to the race *fulva* (approximately the same range assigned by Ridgway 1907: 147), it has been subdivided. Griscom (1932: 313) extended the range of *guatemalae* north to include eastern Mexico (north to southern Tamaulipas), an arrangement that was followed in the Mexican check-list (Miller et al., 1957: 197) and in Peters' "Check-list of birds of the world" (Ripley 1964: 84). The brown of the venter in both sexes and the brown of the dorsum in the female do average more reddish to the east and south, yellower or grayer and paler to the northwest. Best separation is on female dorsum, which I pick out as 57% of total sample separable into one of the two forms when specimens from the intergradient area (= central Mexico) are eliminated. I don't regard this variation as consistent enough for subspecific segregation. In the section on geographic variation above, I tabulated these subdivisions only for the two characters (female dorsal brown and male ventral brown) in which discrimination in my sample exceeded 20%. Griscom's arrangement seems quite contrary to the facts, for on almost every color character analyzed above, the sharpest break was at the Isthmus of Tehuantepec.

Sialia sialis guatemalae Ridgway

1882, Proc. U. S. Natl. Mus. 5: 13 (Guatemala).

Size large to moderate. Female pale brown, with much blue. Male pale reddish brown ventrally. Juvenile less streaked dorsally, intermediate in hue.

Resident in Chiapas, Guatemala, British Honduras, Honduras (probably excluding the Atlantic coast), El Salvador, and the mountains of Nicaragua.

This race shows considerable geographic variation in size (length of

wing), but little in color. Individual color variation is greater than in any other race. As can be seen from Table 1, size is larger in Chiapas and Guatemala, and decreases to the east in British Honduras, Honduras, El Salvador, and Nicaragua. The name *S. s. meridionalis* Dickey and Van Rossem has often been applied to this smaller population, for which Dickey and Van Rossem (1930) also claimed prominent color differences.

In the analyses of color characters above, I have in some cases segregated *guatemalae* into western and eastern populations. I saw no fresh plumage specimens from British Honduras. I find that the best color distinction is for ventral brown in females, which came to 67% from 100% in my sample (62% of the total sample was separable into one of the two forms). Separation on the basis of wing length in males gives a coefficient of difference of 1.16 (see Mayr 1969: 190) corresponding to 88% of total population separable. For an intermediate step on a size cline, I regard this as an unnecessary split.

Sialia sialis caribaea Howell

1965, Auk 82: 453 (4 miles northwest of Leicus Creek, Comarca de El Cabo, Nicaragua).

Size small. Female pale (usually even paler than extremes of last race) brown ventrally. Male indistinguishable from preceding race except by size.

Resident on the Caribbean coast of northern Nicaragua and also on the adjacent coast of Honduras according to Howell (1965) and Monroe (1968: 309–310). As Howell points out, this race represents the end of a long cline of increasing pallor of the brown pigments, all the way from the United States, and of a short cline through Central America of decreasing size southward.

SPECIMENS EXAMINED

S. s. sialis: Canada, 16; eastern United States, 162; Bermuda, 14; Arizona, 1; Coahuila, 1; Tamaulipas, 8; San Luis Potosí, 3.

S. s. fulva: Arizona, 6; Sonora, 36; Chihuahua, 29; Sinaloa, 54; Durango, 12; Zacatecas, 6; Aguascalientes, 3; Guanajuato, 15; Nayarit, 38; Jalisco, 53; Colima, 5; Michoacán, 47; Estado de México, 19; Distrito Federal, 3; Tamaulipas, 23; San Luis Potosí, 22; Puebla, 9; Veracruz, 52; Oaxaca, 17; Guerrero, 48; Morelos, 4; Mexico, state uncertain, 2.

S. s. guatemalae: Chiapas, 73; Guatemala, 109; British Honduras, 10; Honduras, 46; El Salvador, 22; highlands of Nicaragua, 27.

S. s. caribaea: Northeastern coastal plain of Nicaragua, 30.

DISCUSSION

It may be questioned as to why I didn't recognize *meridionalis* and synonymize *caribaea*, assigning to the former the range British Honduras,

Honduras, Nicaragua, and El Salvador. I chose the opposite course because (1) It is better to name the end of a cline rather than half of it. (2) The separation in size of *caribaea* from "*meridionalis*" (= eastern part of *guatemalae*) is sharper than that of "*meridionalis*" from *guatemalae* (91% separable vs. 88% separable).

The pattern of geographic variation described above is curious. Bergmann's Rule is violated; except within Central America, size increases southward. Gloger's Rule is violated; the palest race (*caribaea*) inhabits the wettest district. Altogether, most of the variation described is probably nonadaptive.

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SUMMARY

Geographic variation in *Sialia sialis* is analyzed, excluding Florida and emphasizing Middle American populations. Four races are recognized, of which one is but slightly differentiated. *S. s. bermudensis* Verrill, *S. s. episcopus* Oberholser, and *S. s. meridionalis* Dickey and Van Rossem are synonymized as representing weakly differentiated populations.

LITERATURE CITED

- DICKEY, D. R., AND A. J. VAN ROSSEM. 1930. A new bluebird from El Salvador. *Condor* 32: 69-70.
- DWIGHT, J. 1900. The sequence of plumages and molts of the passerine birds of New York. *Ann. New York Acad. Sci.* 13: 73-360.
- GRISCOM, L. 1932. The distribution of bird-life in Guatemala. *Bull. Amer. Mus. Nat. Hist.* 64: 1-439.
- GRISCOM, L. 1934. The ornithology of Guerrero, Mexico. *Bull. Mus. Comp. Zool.* 75: 367-422.
- HOWELL, T. R. 1965. New subspecies of birds from the lowland pine savanna of northeastern Nicaragua. *Auk* 82: 438-464.
- MAYR, E. 1969. *Principles of systematic zoology*. New York, McGraw-Hill.
- MILLER, A. H., H. FRIEDMANN, L. GRISCOM, AND R. T. MOORE. 1957. Distributional check-list of the birds of Mexico, part 2. *Pacific Coast Avifauna* No. 33.
- MONROE, B. L., JR. 1968. A distributional survey of the birds of Honduras. *Ornithol. Monogr.* 7: 1-458.

- MOORE, R. T. 1939. New races of the genera *Sialia* and *Carpodacus* from Mexico. Proc. Biol. Soc. Washington 52: 125-130.
- OBERHOLSER, H. C. 1917. Description of a new *Sialia* from Mexico. Proc. Biol. Soc. Washington 30: 27-28.
- PALMER, R. S., AND E. M. REILLY. 1956. A concise color standard. A.O.U. Handbook, separate: 1-8.
- PHILLIPS, A. 1964. Pp. 131-132 in *The birds of Arizona* (A. Phillips, J. Marshall, and G. Monson, Eds.). Tucson, Univ. Arizona Press.
- RIDGWAY, R. 1907. *The birds of North and Middle America*. U. S. Natl. Mus. Bull. 50, part 4: 1-973.
- RIPLEY, S. D. 1964. Pp. 83-84 in *Check-list of the birds of the world*, vol. 10 (E. Mayr and R. A. Paynter, Jr., Eds.). Cambridge, Massachusetts, Mus. Comp. Zool.
- VERRILL, A. H. 1901. Notes on the birds of the Bermudas with descriptions of two new subspecies and several additions to the fauna. *Osprey* 5: 82-85.
- WEBSTER, J. D. 1958. Further ornithological notes from Zacatecas, Mexico. *Wilson Bull.* 70: 243-256.

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