NOTES ON BIRDS OF THE VERACRUZ COASTAL PLAIN

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FROM July 15 to 21, 1942, we collected and studied birds in the Mexican State of Veracruz, mostly in the vicinity of Boca del Río, a small fishing village at the mouth of the Río Jamapa, about 20 kilometers south of the city of Veracruz. We made a few observations at other localities, mainly along the Mexico-Veracruz highway.

We were accompanied by Mrs. Warner and by John Gerber, of Mexico City. Simultaneously with our arrival, a party of four from the Agricultural and Mechanical College of Texas, students of Dr. William B. Davis, established a camp a short distance up the Río Jamapa. This group (David Donaldson, R. E. Stone, J. W. McKamy, and M. Whisenhunt) remained in the area from July 15 to 28. Dr. Davis has generously made available to us the notes and specimens secured near Boca del Río by these students.

The country about Boca del Río lies in the flat coastal plain of tropical Veracruz, the "tierra caliente." Though marshy, it is arid compared with the eastern slopes of the mountains 40 or 50 miles inland. Vegetation is very dense and mostly low and scrubby, but along the river grow strangling figs, tall palms, and other tropical trees.

Comparatively little ornithological work has been done along the coast of Veracruz. Most collectors have concentrated on mountainous areas farther inland, a fact apparent from even a cursory inspection of the exhaustive bibliography in "Ornithology of the Mexican State of Veracruz," the unpublished doctoral thesis (Cornell University) completed by Frederick W. Loetscher, Jr. in 1941. This work, to which we refer as "Loetscher (MS)," presumably covered all birds known to occur in Veracruz, the status of each being set forth as completely as information available at the time of writing permitted.

The following 92 species were recorded between July 15 and 28. The order and nomenclature through the Formicariidae follow Peters. For the rest of the paper, except where departures are mentioned, we have followed Cory, Hellmayr, and Conover in scientific nomenclature and order of genera and species within families; the order of families is that of Wetmore. We have taken the common names from various sources in attempting to employ the most appropriate ones available. A few suggested by George M. Sutton, who is much interested in this problem, are here used for the second time. These are marked by an asterisk. We have omitted subspecific common names altogether.

We are indebted to W. B. Davis for his afore-mentioned generosity, to Alexander Wetmore for comparing certain specimens, to George M. Sutton for many helpful suggestions, and especially to O. L. Gerber of Mexico City, who made our visit to Veracruz possible. William C. Dilger made the photograph of the Chachalacas. Finally, our thanks are due to J. Van Tyne for a critical readWarner and Mengel

ing of the manuscript. The specimens taken by Warner and Mengel are in the Sutton collection; the rest are at the Agricultural and Mechanical College of Texas.

LIST OF SPECIES

Pelecanus occidentalis. Brown Pelican. We observed one July 16, and one July 17, near Boca del Río.

Phalacrocorax olivaceus mexicanus. Olivaceous Cormorant. Common along the Río Jamapa, July 16–25; 3 to 30 birds seen flying toward the ocean late each evening. A female shot by Donaldson, July 23, was not in breeding condition.

Fregata magnificens. Man-o'-war Bird. One to three seen daily, July 16-21, at Boca del Río.

Ardea herodias. Great Blue Heron. Mengel saw one July 16. The Texas party observed one on the Río Jamapa. Loetscher (MS: 187) lists no records between April and October.

Butorides virescens. Green Heron. Three or four noted daily along the Río Jamapa near the coast, July 16-21.

Florida caerulea. Little Blue Heron. We saw a few white immature birds in the wet lands near Boca del Río.

Casmerodius albus. Egret. We noted 10 to 20 daily along the Río Jamapa.

Guara alba. White Ibis. An immature female shot from a flock of 20 near the Río Jamapa, July 23 (Whisenhunt), has a few white feathers on the back and wings.

Dendrocygna autumnalis. Black-bellied Tree Duck. Mengel saw two just south of Boca del Río on July 20.

Coragyps atratus. Black Vulture. Abundant about all towns in the low country, especially on the beach where fish nets were dumped. Noted twice in western Veracruz above Jalapa, at elevations of more than 7,000 feet.

Cathartes aura. Turkey Vulture. Common about Boca del Río and the city of Veracruz, but less so than the Black Vulture.

Elanus leucurus. White-tailed Kite. On July 19 Mengel watched one flying over the marshes south of Boca del Río.

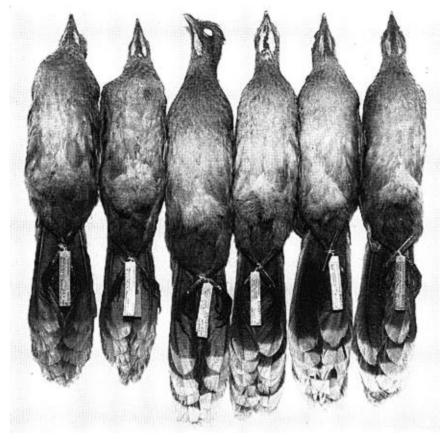
Buteo magnirostris griseocauda. Roadside Hawk.* Common in the brushy, semi-arid lands around Boca del Río. Our four specimens (males, July 16 and 18; females, July 18 and 19) are in various stages of molt. They are slightly paler, perhaps due to fading, than a small series from Tamaulipas, but typical of griseocauda in size.

Buteogallus a. anthracinus. Mexican Black Hawk. At dusk, on July 18, Warner took an adult female as it came to roost in coconut palms with several Black Vultures. Mengel saw two others a mile south of Boca del Río on July 20.

Polyborus cheriway. Caracara. We noted several along the Mexico-Veracruz highway, July 15, all on the low coastal plain, and a few flying over the marshes near Boca del Río, July 15–25.

Ortalis v. vetula. Chachalaca. Many of these birds inhabited the dense brush south and west of Boca del Río, where Warner took an adult male and female and saw nearly grown young on July 19. The birds called for a very short time in morning and evening, and on several occasions just after showers during the day.

The nomenclature and relationships of the Chachalacas of eastern México have attracted considerable attention recently (cf. Wetmore, 1943: 244–246). Since our Boca del Río specimens are virtual topotypes of *vetula* as restricted by Miller and Griscom (1921: 455), they are of particular interest. Compared with a series from southern Tamaulipas, San Luis Potosí, and northern Veracruz, they are markedly darker below and a richer olivaceous above, and the tips of the rectrices (nearly clear white in Texas and Tamaulipas birds) are dingy grayish buff. Thus they seem to belong with the southern population, further supporting use of the name *vetula* for that population. The accompanying plate illustrates these characters.



Six Ortalis vetula specimens from México. The two at the left, from Boca del Río, Veracruz, are O. v. vetula; the four at the right, from San Luis Potosí and Tamaulipas, are O. v. mccalli. Note, in particular, the difference in tail-tipping.

Colinus virginianus. Bob-white. Fairly common in the fields about Boca del Río. Concerning an adult female taken by Stone on July 22, Dr. Wetmore (letter: March 15, 1943) states: "It is near Colinus v. pectoralis but also approaches godmani. It differs from our two females of pectoralis in having definite chestnut markings on the upper back and lower hindneck, and in being paler above. Below it is like pectoralis."

Porphyrula martinica. Purple Gallinule. Apparently not recorded previously from Veracruz. Loetscher (MS: 956) includes it in his "Conjectural List" with the following statement: "... apparently unrecorded... unquestionably is of regular occurrence." We saw seven or eight on July 21, at close range in marshes near the city of Veracruz, and McKamy collected a male (enlarged testes) in fresh water marshes eight kilometers southwest of the city, July 26.

Heliornis fulica. Sun-Grebe or Finfoot. Loetscher (MS: 290) lists three Veracruz localities for this bird: Río Coatzocoalcos, Buena Vista, and Isla, all in the extreme southern part of the state. Wetmore (1943: 248) states that it is "fairly common" along the Río San Agustín

below Boca San Miguel "and through the channels to ... Tlacotalpam," and records it also from Hueyapa. Donaldson took an adult male, not in breeding condition, in the dense mangrove swamp along the Río Jamapa on July 23. Davis (1950: 379) reported this same specimen from "Boca del Río ... July 23, 1941, in the tidal waters of the Río Moreno." The year should have read 1942. He describes the Río Moreno (letter: October 23, 1950) as a branch of the Río Atoyac, stating that the two join a short distance west of Boca del Río. He evidently overlooked Wetmore's records mentioned above. Boca del Río is about 50 miles northwest of Tlacotalpam. Mengel saw one near Boca del Río, July 16, 1942.

Jacana spinosa gymnostoma. Jacana. Fairly common in the marshes. Specimens taken at Boca del Río July 17 (male), July 18 (female), and July 20 (female). On July 27, a male was secured eight kilometers southwest of Veracruz. The gonads of all were enlarged.

Charadrius collaris. Collared Plover. Fairly common along the beach. Donaldson took a female near Boca del Río, July 18, and Mengel secured a male and female there, July 19.

Actitis macularia. Spotted Sandpiper. Mengel saw one, July 19, at the mouth of the Río Jamapa.

Erolia minutilla. Least Sandpiper. Near Boca del Río Stone collected a female on July 18, and Mengel saw two, July 19. All were in worn breeding plumage.

Sterna albifrons. Least Tern. At the mouth of the Río Jamapa, Mengel and Gerber collected a male (testes 2×4 mm.) from a flock of seven on July 19. This appears to be the first Least Tern to be taken in Veracruz. Dr. Wetmore has referred the specimen to *browni*, but this race is not strongly characterized and we can not help feeling that the specimen is from an eastern population.

Thalasseus m. maximus. Royal Tern. Gerber and Mengel took a female from a flock of 15 on July 19, and Stone shot a female from a flock of 25 on July 18. All were in winter plumage.

Columba flavirostris. Red-billed Pigeon. We saw from a few to over one hundred of these pigeons daily in the brushlands and mangroves near Boca del Río.

Scardafella inca. Inca Dove. Common; seen and heard frequently around Boca del Río, where Stone took a male (testes somewhat enlarged) July 21.

Columbigallina passerina. Ground Dove. Seen on several occasions at Boca del Río, but not as common as the following.

Columbigallina talpacoti rufipennis. Ruddy Ground Dove. Warner and Mengel, respectively, took a male (testes enlarged) and a female (egg in oviduct), July 16. Donaldson took a male, July 19.

Leptotila verreauxi. White-fronted Dove. Warner saw one on July 15, near the town of Rinconada just above the coastal plain, and one on July 20, near Boca del Río. Davis (1945: 275) refers specimens taken somewhat farther inland to the race *fulviventris*.

Aratinga holochlora. Green Parakeet. We noted several pairs along the Río Jamapa, July 17, and observed flocks of up to 12 birds during our stay.

Aratinga astec. Aztec Parakeet. Mengel saw two late in the evening of July 17, about a mile up the Río Jamapa from Boca del Río.

Piaya cayana thermophila. Squirrel Cuckoo. Warner saw two in heavy brush near Boca del Río, July 20, collecting one of these (molting female).

Crotophaga sulcirostris. Groove-billed Ani. Common in the brush and mangrove swamps about Boca del Río. Three males taken respectively on July 16 (Donaldson), July 18 (Donaldson), and July 20 (Mengel). The testes of all of these were somewhat enlarged.

Tapera naevia excellens. Striped Cuckoo. Mengel collected a female in badly worn plumage, July 20, just south of Boca del Río.

Tyto alba pratincola. Barn Owl. Gerber shot a female (ovary not enlarged) on July 18, at Boca del Río. Few Barn Owls have been taken in Veracruz. Davis (1945: 275) identified a female taken at Jalapa on August 6, 1942, as guatemalae. Brodkorb (1948: 33) identified a specimen taken June 22, 1939, at Potrero Viejo, as pratincola.

Glaucidium brasilianum ridgwayi. Ferruginous Pygmy Owl. Seen daily at Boca del Río, July 16–21. Its monotonous whistle could be heard most often in the evenings. Mengel took an apparently mated pair near a hole about 25 feet above ground in the trunk of a palm, July 16. Stone shot a female, July 21.

Rhinoptynx clamator. Striped Horned Owl. July 20, near Boca del Río, Mengel saw one of these owls in a thicket at such close range that he was unable to shoot. This is apparently the third published record of the species for México, the second being Brodkorb's record (1948: 33) of a specimen taken at Potrero Viejo, Veracruz, in January, 1939.

Chordeiles minor aserriensis. Nighthawk. Seen and heard every evening over Boca del Río. An immature female taken there by Stone, on July 23, has been identified by Dr. Wetmore, who says (letter of March 15, 1943): "We have only two females of this race and your specimen is not exactly like either of them; in fact it resembles in color some females of sennetti but differs in distinctly smaller size. This is one of the characters of the race in question [aserriensis] and with available material it seems proper to identify it as indicated..." The only race of this species listed for Veracruz by Loetscher (MS: 380) is C. m. chapmani (on the basis of a female collected "... off a nest with two eggs on the beach within sight of the city of Veracruz. This specimen, now in the Princeton Museum of Zoology, has been identified as chapmani by Dr. Oberholser, Mr. Rogers, and the writer..."). The bird referred to was collected by Charles H. Rogers on July 5, 1930. The possibility that breeding Nighthawks of this region actually belong to the race chapmani seems to us remote. It seems more probable that the breeding form is (1) aserriensis or (2) an undescribed subspecies. The breeding of C. minor at the city of Veracruz is surprising and constitutes a considerable extension of the known breeding range of the species.

Nyctidromus albicollis yucatanensis. Pauraque. Donaldson shot an immature male near Boca del Río, July 22.

Streptoprocne zonaris mexicana. Collared Swift. We saw several flocks near Boca del Río. Gerber shot a male and a second bird (sex?) from a flock of 20 on July 20.

Anthracothorax p. prevosti. Prevost's Mango. Mengel collected an immature male on July 16. Warner saw an adult perched on a telephone wire, July 19.

Chlorostilbon c. caniveti. Canivet's Emerald. Warner collected one at Boca del Río on July 16. It could not be sexed positively, but is very much like female specimens examined.

Amazilia yucatanensis cerviniventris. Yucatán Hummingbird. Mengel and Gerber secured male and female specimens typical of this form at Boca del Río on July 17. Warner saw others on July 16, 18, and 19.

Trogon citreolus. Citreoline Trogon. Fairly common in the mangroves and brush near Boca del Río.

Megaceryle t. torquata. Ringed Kingfisher. At least two pairs inhabited a mile-long stretch of the Río Jamapa. One pair frequented the vicinity of a clay bank just upstream from Boca del Río. Stone collected a female on July 25.

Chloroceryle amazona. Amazon Kingfisher. On July 18, Warner observed one near the clay bank referred to above.

Chloroceryle americana septentrionalis. Green Kingfisher. We saw six or eight Green Kingfishers along the Río Jamapa every day. Gerber collected a male, July 16. Females with reduced ovaries were taken July 16 and 23 (Stone).

Melanerpes aurifrons grateloupensis. Golden-fronted Woodpecker. Fairly common about Boca del Río, where a number of specimens were taken July 16 to July 19. All were molting. Dr. Wetmore has referred one of these to the present race.

Dryocopus lineatus similis. Lineated Woodpecker. Mengel collected an adult female one mile south of Boca del Río, July 20.

Dendrocopos scalaris ridgwayi. Ladder-backed Woodpecker. A juvenal-plumaged male (July 16) and a very worn adult female (July 19; reduced ovary) have been identified as ridgwayi by Dr. Wetmore.

Synallaxis erythrothorax furtiva. Rufous-breasted Spinetail. Heard frequently in the dense thickets near Boca del Río, but seldom seen. Warner succeeded in collecting two singing males and a worn female (with a fully formed egg in the oviduct) on July 20. These specimens are typical furtiva.

Thamnophilus doliatus intermedius. Mexican Ant-shrike. Common in dense brush near Boca del Río, where Warner took an adult male, July 18.

Platypsaris aglaiae sumichrasti. Rose-throated Cotinga. Common at Boca del Río. Two adult males, an immature male, and three females, although quite worn, are recognizable as this dark race.

Pyrocephalus rubinus. Vermilion Flycatcher. Recorded at Boca del Río on four occasions by the Texas party. A juvenile female taken July 17 (Whisenhunt) is not, in our opinion, subspecifically identifiable.

Tyrannus melancholicus chloronotus. Olive-backed Kingbird. Usually found with Derby and Social Flycatchers. Five adult specimens (three males, two females) secured near Boca del Río were in various stages of molt. Stone took an immature female in fresh plumage, July 17. One of our specimens, sent to Dr. Wetmore, he identified as this race.

Legatus leucophaius variegatus. Pirate Flycatcher. We took a female (wing, 92 mm.) on July 17, when two were seen. A second female (wing, 87 mm.) was secured on July 18.

Myiodynastes l. luteiventris. Sulphur-bellied Flycatcher. Seen at Boca del Río July 16, 18, and 19. Warner collected a male on July 17.

Myiozetetes similis texensis. Social Flycatcher. Common at Boca del Río. Warner took a female there, July 16.

Pitangus sulphuratus guatemalensis. Derby Flycatcher. Common along the Río Jamapa near Boca del Río. We saw several nests, some of them apparently occupied, and two newly fledged young. Concerning a male (July 16) and female (July 18) taken at Boca del Río, Wetmore has written (letter: December 8, 1947): "... definitely intermediate but appear closer to guatemalensis. They agree with this form in extent of white on the forehead. Below they are paler colored, like texanus, but I believe that this lighter color is due in part at least to fading...."

Myiarchus tyrannulus nelsoni. Mexican Crested Flycatcher. According to Loetscher (MS: 540) this species has not been recorded as breeding in Veracruz. He gives only six records for the state. We found it common at Boca del Río. Ten specimens, all in very worn plumage and with gonads of moderate size, were collected by the two parties.

Elaenia flavogaster subpagana. Yellow-bellied Elaenia. Warner saw a single individual in the town of Boca del Río, July 16. Mengel took a female there July 17.

Camptostoma imberbe. Beardless Flycatcher. Mengel saw one on July 16, just west of Boca del Río.

Progne c. chalybea. Gray-breasted Martin. Common near Boca del Río. Male collected July 17 (Mengel).

Iridoprocne a. albilinea. Mangrove Swallow. Common at Boca del Río. Male collected July 17 (Mengel).

Psilorhinus m. morio. Brown Jay. Seen at Boca del Río July 16, 18, and 20. McKamy took a female of this race on July 21.

Campylorhynchus z. zonatus. Banded Cactus Wren. Groups of from three to five encountered frequently in palms near Boca del Río. We took males July 16 and 18, and McKamy collected another, July 20.

Campylorhynchus r. rufinucha. Rufous-naped Cactus Wren. Although this wren was less common than the preceding species, we saw it almost daily in the more open areas about Boca del Río, where we took a juvenal-plumaged male on July 20. Mengel collected an adult on July 15, near Rinconada, just above the coastal plain.

Pheugopedius m. maculipectus. Spotted-breasted Wren. Quite common in the low, dense growth around Boca del Río. Warner and Mengel each collected a singing male on July 18.

See Wetmore (1943: 300) for the name used here.

Turdus grayi tamaulipensis. Gray's Robin. Seen several times July 16–20. A female taken at Boca del Río on July 16 (Warner) is intermediate in coloration of underparts, but much closer to tamaulipensis than to grayi.

Polioptila c. caerulea. Blue-gray Gnatcatcher. Warner saw three gnatcatchers at Boca del Río on July 20. A female (?) specimen he secured that day we have called *caerulea* on the basis of size (wing, 50 mm.) and coloration.

Vireo olivaceus flavoviridis. Red-eyed Vireo. Two males taken respectively on July 16 (Warner) and July 20 (Donaldson) at Boca del Río. We agree with Sutton, Lea, and Edwards (1950: 53-54) that *olivaceus* and *flavoviridis* are conspecific.

Dendroica petechia bryanti. Yellow Warbler. According to Loetscher (MS: 739) a specimen taken by Fuertes at Tamiahua Lake in extreme northern Veracruz on April 16, 1910, is the only one "... undoubtedly taken within the state which the writer has seen." This specimen, now at Cornell University (No. 16180), is labelled female. We took single females at Boca del Río on July 17 (Mengel) and July 20 (Warner). These are in fresh fall plumage. One is much yellower than the other. We saw other individuals on July 17, 19 (two), and 20.

Chamaethlypis poliocephala palpebralis. Thick-billed Yellow-throat.* Common and singing constantly. Our two groups collected seven specimens, all males with enlarged testes, in the marshes near Boca del Río, July 16-22.

Amblycercus holosericeus. Yellow-billed Cacique. We saw one close to the Mexico-Veracruz highway near Rinconada, July 15.

Tangavius a. aeneus. Red-eyed Cowbird. The Texas party saw several small flocks at Boca del Río and collected two adult males (one with enlarged testes).

Cassidix m. mexicanus. Great-tailed Grackle. One of the most abundant birds along the Río Jamapa. Warner shot a female (ovary reduced) July 18, and Donaldson took a male (testes enlarged) July 16.

Dives d. dives. Sumichrast's Blackbird. Six specimens taken near Boca del Río July 18-27. One of these (July 18) was a male in juvenal plumage (Donaldson).

Icterus spurius. Orchard Oriole. Warner took a molting immature male, July 16. We saw three others the same day, two immature males and one presumed to be a female. Mengel saw three on July 17, and McKamy collected an adult male (testes reduced), July 18.

Icterus prosthemelas. Black-cowled Oriole.* Mengel took a molting male, July 18, and Warner saw one on July 20. Loetscher (MS: 805) regards this species as rather rare in Veracruz.

Icterus m. mesomelas. Yellow-tailed Oriole. Noted once, when Stone took an adult female in worn plumage, July 21.

Icterus g. graduacauda. Black-headed Oriole. Recorded once: a female in worn plumage shot on July 18 (McKamy). According to Loetscher (MS: 809) this bird is rare on the coastal plain.

Icterus gularis tamaulipensis. Black-throated Oriole.* Common in the vicinity of Veracruz City and Boca del Río. Gerber, McKamy, and Whisenhunt secured specimens, July 16 and 18. We saw a number of nests, and the Texas party observed two young just out of the nest.

Agelaius phoeniceus richmondi. Red-wing. Common along the lower reaches of the Río Jamapa and in the coastal marshes near the city of Veracruz. Five males and a female collected. We saw young being fed on July 18.

Thraupis episcopus diaconus. Blue-gray Tanager. Rather common in the vicinity of Boca del Río, although Wetmore (1943: 327) did not find it common at Tres Zapotes. Our two parties took two males and four females, July 16–20. We suggest that the common name used here is more appropriate than "Gray Tanager" or "Blue Tanager"—names previously applied to the species.

Thraupis abbas. Yellow-winged Tanager. Fairly common near Boca del Río, where we saw individuals and small groups every day. Gerber and Warner took two immature specimens, July 16 and 17, respectively. Whisenhunt collected a female (molting) on July 19.

Saltator coerulescens grandis. Gray Saltator. Common in brushy fields. Daily we heard its clear, whistled song which was suggestive of a Cardinal's. Two males secured: July 16 (Warner); July 17 (Mengel).

Richmondena cardinalis coccinea. Jalapa Cardinal. Moderately numerous along edges of fields near Boca del Río. Warner, Mengel, and Donaldson took three males, July 18–20.

Passerina v. versicolor. Varied Bunting. According to Loetscher (MS: 883-884), the only records for Veracruz are "unsatisfactory" ones from Orizaba and Jalapa. Mengel took a singing male (testes enlarged) on July 15, near Rinconada, just inland from the coastal plain. Davis (1945: 285) and Brodkorb (1948: 38) have reported specimens from the state.

Passerina ciris pallidior. Painted Bunting. Loetscher (MS: 884) lists this bird as "a rather common transient and winter visitant." He gives no spring date later than May 5 and states that fall arrival dates are lacking. Warner took an adult male (testes somewhat enlarged) one mile north of Boca del Río, July 20 (wing, worn, 74 mm.; tail, worn, 56).

Sporophila torqueola morelleti. Collared Seedeater. One of the most numerous birds at Boca del Río, where it sang throughout each day in the brush. Mengel shot a male, July 20. Whisenhunt, Stone, and McKamy collected two males and a female, July 17–19.

Volatinia jacarina splendens. Blue-black Grassquit. Quite common near Boca del Río: three males taken there—July 16 and 18 (Whisenhunt); July 18 (Warner). Stone took one eight kilometers southwest of the city of Veracruz on July 26.

LITERATURE CITED

BRODKORB, PIERCE

1948 Some birds from the lowlands of central Veracruz, México. Quart. Jour. Florida Acad. Sci., 10: 31-38.

DAVIS, WILLIAM B.

1945 Notes on Veracruzan birds. Auk, 62: 272-286.

1950 Sun-grebe, Heliornis fulica, in Veracruz, México. Auk, 67: 379.

LOETSCHER, FREDERICK W., JR.

MS Ornithology of the Mexican State of Veracruz. (Unpublished doctoral thesis, Cornell University, 1941: 1–989).

MILLER, W. DEWITT, AND LUDLOW GRISCOM

1921 The type locality of Ortalis v. vetula-a correction. Auk, 38: 455.

SUTTON, GEORGE M., ROBERT B. LEA, AND ERNEST P. EDWARDS

1950 Notes on the ranges and breeding habits of certain Mexican birds. *Bird-Banding*, 21: 45-59.

WETMORE, ALEXANDER

1943 The birds of southern Veracruz, México. Proc. U. S. Natl. Mus., 93: 215-340.

MINNESOTA MUSEUM OF NATURAL HISTORY, MINNEAPOLIS

UNIVERSITY OF MICHIGAN MUSEUM OF ZOOLOGY, ANN ARBOR