

## FURTHER NOTES ON THE AVIFAUNA OF OAXACA, MEXICO

WILLIAM J. SCHALDACH, JR\*  
B. PATRICIA ESCALANTE P.\*\*  
KEVIN WINKER \*\*\*

### RESUMEN

Con base en el trabajo intensivo de campo realizado en el istmo de Tehuantepec de 1959 a 1969, y en los especímenes ahí recolectados, se presentan datos sobre 235 especies que complementan la extensa obra sobre las aves de Oaxaca de Binford (1989). Trece de estas especies son registros nuevos para la avifauna de Oaxaca, de acuerdo con Binford (1989); ocho se basan en avistamientos y cinco en ejemplares. Para la mayoría de las especies se da información de su reproducción y movimientos migratorios, que amplían los conocimientos de las aves en el neotrópico. En ciertos casos se incluyen algunas notas taxonómicas subespecíficas.

Palabras clave: avifauna, Oaxaca, México.

### ABSTRACT

Based primarily upon intensive field work conducted on the Isthmus of Tehuantepec from 1959 - 1969 (and the specimens collected during this effort), we present data on 235 species of birds to supplement the monumental work of Binford (1989) on the birds of Oaxaca. Thirteen species are reported as new to the Oaxacan avifauna as defined by Binford (1989): eight from sight records and five from specimens. Breeding and movement data are also presented for many species, expanding our understanding of the reproduction and

\* Apartado Postal 68, Catemaco, 95870 Veracruz. México.

\*\* Departamento de Zoología, Instituto de Biología, UNAM, Apartado Postal 70-153, 04510 México, D. F. (escalant@servidor.unam.mx)

\*\*\* Division of Birds, National Museum of Natural History, MSC MRC 334, Smithsonian Institution, Washington, D.C. 20560. U.S.A. (winker@onyx.si.edu) Present address: University of Alaska Museum, 907 Yukon Drive. Fairbanks, Alaska 99775-6960 (ffksw@aurora.alaska.edu)

migration of birds in the northern neotropics. Subspecific taxonomic notes are included for some species.

Key words: avifauna, Oaxaca, Mexico.

Since the publication by Parkes (1990) and Winker *et al.* (1992) of papers giving additional records and data supplementing the species accounts in Binford's (1989) monumental work on the avifauna of Oaxaca, it has become apparent that a great deal of additional supplementary information on the birds of that state could be assembled from the field notes and specimens of the senior author's 1959-1969 field work in Isthmian Oaxaca. Binford did not consult us in the preparation of his work, and the majority of specimens reported herein were not seen by him.

The dates of WJS's various collecting trips to Oaxaca (the Isthmus of Tehuantepec, on both the Atlantic and Pacific slopes) were as follows: December 1959 (with Allan R. Phillips); 3 Feb - 10 Apr 1960; early Feb -early Jul 1961 (with Richard S. Crossin); early Feb to end Jul 1962; mid-Jul - mid-Aug 1964; and 9 Feb - 23 Mar 1969.

In the process of writing this report, additional records came to light, but the majority of the data presented here originate from the field notes, field catalogues, and field-numbered specimen file cards of WJS. The file cards were maintained in the field, and all data were entered (for a total of over 6000 specimens), including the eventual disposition of the specimens. Original field numbers are used throughout this paper; these numbers should still be on the field labels, regardless of the current institutions where they are held. The data presented were carefully selected through a page-by-page comparison of Binford (1989), and fall into several categories: 1. New species added to the Oaxacan avifauna (most of which Binford had already predicted; 1989:3). 2. Supplemental breeding data from specimens and a few observations. 3. Additional records (mostly from the Atlantic Region) of birds for which Binford had no or few records, and of very uncommon or rare birds. 4. Specimens long ago deposited in several museums that Binford visited but which are either no longer there or were overlooked. 5. Taxonomic notes.

Many of the specimens reported here were missed by Binford for these reasons: A large part of the 1962 collection and most of the 1964 collection were maintained in WJS' private collection and then donated to the Dirección General de la Fauna Silvestre in Mexico City. These are now supposed to be in the national bird collection at the Instituto de Biología, Universidad Nacional Autónoma de México (Colección Nacional de Aves, CNAV), in Mexico City, but it appears that all of them did not survive the 30+ years in the former collection. All of the 1969 specimens (450+) were stored in the private museum of Richard S. Crossin in Tucson, Arizona (WJSC), and are now in the collection at Southwestern College, Win-

field, Kansas (SWCK). A small number of pickles, skeletons, and skins went to Yale's Peabody Museum (YPM). Otherwise, all institutional abbreviations follow Binford (1989:60). Also, a few specimens collected by Richard S. Crossin or WJS in 1961 and 1962 were in his private collection (RSCC), which has since been donated to Southwestern College, Winfield, Kansas (SWCK). These abbreviations (CNAV, WJSC, SWCK, YPM, and RSCC) will be used throughout to indicate the present location (to the best of our knowledge) of each specimen cited.

This paper treats data on 235 species of birds from Isthmian Oaxaca. Thirteen species are reported as new to the Oaxacan avifauna as defined by Binford (1989). Eight of these are listed from sight records and five from specimens. Breeding or other data are also included from a few specimens collected in 1962 at a point in then-virgin tropical evergreen forest 3 km N of the Oaxaca-Veracruz border (listed on labels as "4 kms S.W. Suchilapa, Veracruz"). These data are pertinent and important because political boundaries are of no interest to birds.

A note on the important category of breeding data is needed. Binford's (1989) method of indicating the extent of the breeding season, while admittedly traditional, does not indicate the frequency of nestings (breeding episodes) *during* the breeding season, and often, due to scanty data, gives the impression of only two breeding episodes. From examination of WJS' breeding data from Oaxaca, the invaluable nesting data cited by Binford (from Rowley, Rook, Kirby Wolfe, Binford and his associates, and others), and 25 years of observing birds almost daily at home in the Sierra de los Tuxtlas of Veracruz (WJS), it appears that most (not all) species of passerines (*sensu lato*) that are permanent residents on the tropical Atlantic slope of S México (between 16° 50' and 18° 40' N) are at least triple-brooded, with many engaging in a fourth, early autumn episode (or even later). Summer resident birds (intra-tropical migrants) are mostly double-brooded, but a small number of these are also triple-brooded. For example, in the Catemaco area of the Sierra de los Tuxtlas (Veracruz), *Troglodytes aedon intermedius* (House Wren) has three nestings. The presumed same pair (or same female with other males?) nested in a hole in the cement wall about 15 m from the door of WJS' home. They used the same nest each time in three episodes: Apr - 5 May, 12 May - 15 Jun, and 27 Jun - 30 Jul 1992. A few seed-eating birds, as pointed out by Skutch (1950) for Costa Rica, may wait until the start of the rainy season. However, WJS has found both *Sporophila moreletii* and *Tiaris olivacea* nesting in the "dry" season in Los Tuxtlas (Apr into May, late May into Jun), and then in the real rainy season (Jul into Aug), and in Sep (in two years). But the Los Tuxtlas areas has more precipitation than the southern Isthmus due to late winter and spring *nortes*, and Binford's study area SW of Valle Nacional also has more precipitation for the same reason. See Species Accounts below for evidence of either a very late (Dec) or very early (Jan) breeding episode in *Sporophila moreletii* and several other species.

The Species Accounts follow Binford's system of giving the date first, followed by the breeding data, which is often abbreviated. For males: T.E. testes enlarged, or T.G.E. testes greatly enlarged (the point of approximately maximum enlarge-

ment for the species), followed by the measurement of the larger testis or by measurements of both when they varied widely in size. For females: O.E. ovary enlarged, followed by size of the largest ovum and other developing ova. We do not use Binford's arbitrary definition of oviduct size, but rather "oviduct enlarging" when the oviduct is present but small, and the ova are less than 1.0 mm in diameter; "oviduct enlarged" when the ova were larger than 1.0 mm and one may have already entered the oviduct; "oviduct large and wrinkled" means follicles of 2-8 mm, completion of laying, and beginning of resorption of the oviduct (usually indicates incubating females). The notation "brood patch" means an edematous brood, or incubation, patch. Breeding data are followed by the locality, field numbers, and collection(s) where specimens were deposited.

Because our knowledge of the breeding seasons of neotropical birds remains imprecise, we include (under breeding data) data on testes size when testes were enlarged. Although this is not dependable evidence of breeding *per se*, it is suggestive, indicating that we can expect at these times to observe breeding behavior, breeding habitat occupancy, and that we should seek stronger evidence of actual breeding.

The localities listed herein can readily be found by combining the use of a good map of eastern Oaxaca with the gazetteer given by Binford (1989). The only exception is "Río Tolositas," which denotes the Río Jumuapán near the town of Tolosa. Locally this river is called the Río Tolositas.

A final note of caution for those who might use WJS *et al.* specimens in the WfVZ, AMNH, USNM, or in the CNAV: many of the labels bear only cryptic notations such as T. (or O.) N.E., T. (or O.) S.E., T. (or O.) E., T. (or O.) G.E., meaning, of course, gonads not enlarged, slightly enlarged, or greatly enlarged. These abbreviations arose due to a desire to save time in label writing, especially on the many occasions when 30-50 specimens were prepared in a day. Full notes on reproductive condition were kept separately for each specimen. Although many specimens were prepared by assistants, gonads were examined and recorded by WJS, who also catalogued and added each to his permanent specimen file cards.

## SPECIES ACCOUNTS

*Tinamus major percautus* Van Tyne, 1935. Great Tinamou.

*Breeding*: 12 Mar 1960. O.E. = lgst. ovum 10 mm (on label) and 6 and 4 mm (from field notes). Montebello. 8614 (WfVZ) 16 Mar 1960. T.E. = 16 x 8 mm. Not fully adult? Montebello. ARP5597. 23 Apr 1962. O.G.E. = 35 mm, non-shelled egg in oviduct, next largest ovum 20 mm and other large follicles. 4 km SW Suchilapa, Veracruz (WfVZ, *ex* Bull Coll.).

*Taxonomy*: Detailed descriptions (made in the field) of our four Isthmus specimens were compared with the series of adults at the USNM and the Isthmian birds were found to be much closer to *percautus* (i.e. grayer above and paler below). *ro-*

*bustus* is much darker overall. We follow Wetmore (1943:228-229) rather than Friedmann *et al.* (1950). The fourth specimen is an adult female ("O.N.E.," but prepared by one of the men during WJS' absence), from near Finca San Carlos, 26 Mar 1969, 14034 (WJSC). Finca San Carlos is well-described by Parkes (1990:2) and was the base camp for the 1969 season.

***Crypturellus soui meserythrus*** (Sclater, 1859). Little Tinamou.

*Breeding*: 22 Apr 1960. T.E. = 13 x 7 mm, Río Tolositas. ARP5685. 15 May 1962. O.G.E. = largest ovum 19 mm, yolk formed and in enlarged oviduct. Near Sarabia. 11802 (ARPC). 19 May 1962. T.G.E. = 21 x 9 mm. 10 km E Sarabia. 11958 (CNAV).

***Crypturellus cinnamomeus soconuscensis*** Brodtkorb, 1939. Thicket Tinamou.

*Breeding*: 25 Jun 1961. T.G.E. = 27 x 14 mm. Rancho Sol y Luna. 10399 (AMNH).

***Crypturellus b. boucardi*** (Sclater, 1859). Slaty-breasted Tinamou.

*Breeding*: 21 Feb 1969. T.E. = 15 x 8 mm. Finca San Carlos. 13711 (WJSC). 24 and 25 May 1962. T.G.E. = 21 x 12 mm and O.G.E. = large (ca. 49 x 38 mm) shelled egg in oviduct, other large-yolked ovum 21 mm; probably mate of first bird as both taken at same spot on a scrape "nest," the first in the evening and the second the next morning. 16 km ENE Piedra Blanca (both in CNAV). 19 Jun 1961. Juvenile, testes tiny. Montebello 10348 (AMNH).

***Podilymbus p. podiceps*** (Linnaeus, 1758). Pied-billed Grebe.

*Breeding*: 5 Aug 1964. O.E. = many developing follicles, lgst. ova 4 and 3 mm, but large, wrinkled oviduct indicating completion of laying. 3.6 km SE Chivela. 12986 (WJSC). The bird was found flopping on the highway, obviously struck by an earlier vehicle, at 2100 h in heavy rain. It had little fat, so was not an early migrant.

*Taxonomy*: The wing chords measured 129.3 and 129.5 mm (l and r, respectively), which are consonant with the nominate race. WJS' theory on the one specimen of this species assigned to *antillarum* by Binford is that the bird was an immature born in late autumn of the previous year and undergoing its first sexual cycle without attaining full wing growth. Until more specimens fitting all characteristics of the weakly-marked race *antillarum* (Bangs, 1913) conclusively show that it occurs in México, we prefer to follow Storer (1979:227). Binford (1989:72) did not agree with Storer's treatment, but it seems unlikely that two subspecies would be breeding sympatrically in the same general areas of Oaxaca. Also, WJS measured a series of six breeding *Podilymbus podiceps* killed by fishermen on Lake Catemaco in the Sierra de Los Tuxtlas of Veracruz (29 Mar - 18 Sep), and all measurements fell within the range of variation of the nominate form (see also Schaldach, 1969:300-301).

***Fregata magnificens*** Mathews, 1914. Magnificent Frigatebird.

During our field work in Isthmian Oaxaca, we had 37 sightings of these unmistakable birds in obvious transit across the Isthmus. Twenty five of these observa-

tions concerned flocks of 3 - 15 birds soaring at fairly high altitudes (est. 500 m aloft) on a S - N line, and 12 sightings were of flocks of 5 - 17 birds traveling on a N - S line at about the same altitude. We saw the species at the Río Sarabia bridge, Donají-Sarabia area, 16 and 27 km ENE of Piedra Blanca, and at and near Finca San Carlos, from mid-Feb to mid-Aug. These sightings would seem to confirm Dalquest's (1951) hypothesis that the species regularly crosses the Isthmus. An interesting point concerning the 250+ birds seen is that 172 were white-headed immatures. This may indicate a dispersal of immatures out of their natal areas.

***Botaurus pinnatus*** (Wagler, 1829). Pinnated Bittern.

*New record.* This very uncommon species was observed by WJS in Isthmian Oaxaca as follows: an adult was seen at close range (30 m) for one-half hour at the marsh on the south side of the highway bridge over the Río Tolositas (= Jamuapan) by Mr. and Mrs. Bert Shaughnessy and WJS on 26 Jul 1964. We agreed on the identification. Another adult was observed by José González B. and WJS at ranges of 50 - 70 m at the large marsh at the Río Malatengo bridges on 12 Jun 1962.

***Egretta caerulea*** (Linnaeus, 1758). Little Blue Heron.

We have an early autumn date for this species of 28 Sep 1947 (male), from 3 km NW of El Paraíso Tuxtepec, collected by R. López (CNAV).

***Agamia agami*** (Gmelin, 1789). Chestnut-bellied Heron.

*New record.* On 18 Apr 1962 WJS flushed an adult of this unmistakable species in the marsh at the S end of the bridge over the Río Tolositas. It was seen very well at ranges from 6 to 50 m before it plopped back into the marsh again. Again, on 13 Aug 1964, Juan Nava S. and WJS chased an adult and two juveniles (half the size of the adult, with streaked juvenal plumage) around a good part of the large marsh at the Río Malatengo bridges. Both agreed on the identification.

***Nycticorax nycticorax hoactli*** (Gmelin, 1789). Black-crowned Night-Heron.

Binford recorded this species from the Atlantic slope only at Presa Miguel Alemán near Temascal, and considered it a winter resident (although possibly a rare permanent resident in the lowlands). Peter Hubbell, Juan Nava S., and WJS found a small breeding colony in the swamp forest at the edge of the marshes at the Río Malatengo bridges. Nesting birds were seen there in Jun 1962 and on 13 Aug 1964 Juan Nava S. and WJS saw two juveniles at the same place. During Feb and Mar 1969 we saw a few birds practically daily on the Río Coatzacoalcos in swamp forest.

***Jabiru mycteria*** (Lichtenstein, 1819). Jabiru.

*New record.* WJS observed this vagrant species twice during field work in Isthmian Oaxaca: an immature (entire head, bill, and neck black, grayish-white plumage) seen well for 5 min at a range of 80 m in a marshy field 14 km ENE of Piedra Blanca (23 May 1962), and an adult seen well for over 10 min at a range of ca. 150 m in a large, recently cleared field on the W bank of the Río Coatzacoalcos, 5 km S Finca San Carlos (9 Feb 1969). Also, Warren Rook (pers. comm.) saw

an adult (apparently in the same field where the immature was seen later) in early Aug 1961.

*Anas strepera* Linnaeus, 1758. Gadwall.

On ca. 23 Mar 1968, Parkes' field party (of which WJS was a member) saw a small flock (ca. 5) of this species on the Río Coatzacoalcos between Suchilapa, Veracruz and Finca San Carlos, most probably in Oaxaca. In 1969, Peter Hubbell, Juan Nava S., and WJS saw small groups (3-7 birds) on eight dates in Feb and four dates in Mar, also on the Río Coatzacoalcos between Finca San Carlos and 10 km S. Binford did not record this species from the Atlantic slope.

*Aythya affinis* (Eyton, 1838). Lesser Scaup.

We record here several more specimens for Oaxaca: 19 Apr 1962, testes not enlarged. Taken on a small pond 2 mi N Matías Romero. 11361 (YPM). 14 May 1964, female, 12 km NW Rancho Sol y Luna (Warren Rook); 17 Mar 1971, male, Laguna de Chacahua (E. J. Vega and Ángel Sánchez; both CNAV).

*Oxyura dominica* (Linnaeus, 1766). Masked Duck.

*New record.* WJS had five observations of this apparently very rare species in Oaxaca: A pair (male and female) was seen on the Río Chichihui, 16 km ENE of Piedra Blanca on 24 May 1962. Juan Nava S., Peter Hubbell, and WJS watched the birds for 5 min at a range of about 60 m. On 31 May 1962 a male was found on a small pool in an arroyo at ca. 40 m. On 9 Jun 1962 a pair (male and female) was seen on a small permanent pond beside the highway ca. 3 km S of the Oaxaca-Veracruz border near a sign "Rancho Novilleros". Another pair was seen on 12 Jul 1962 on the pond at the Río Malatengo bridges at ca. 80 m. The last was a pair on a small rainwater pond beside the highway just S of Palomares on 20 Jul 1964. As Juan stepped silently out of the truck, the birds quietly swam away and disappeared.

*Sarcoramphus papa* (Linnaeus, 1758). King Vulture.

*Breeding:* 25 Feb 1969. Ovary enlarging, many developing follicles, lgst. ova 2 x 2 mm. 3 km S Finca San Carlos. 13788. Given to Museo de Historia Natural, San Andres Tuxtla, Veracruz.

*Pandion haliaetus carolinensis* (Gmelin, 1798). Osprey.

At least three individuals were seen almost daily on the Río Coatzacoalcos, from Finca San Carlos to 8 km S, from early Feb to 21 Mar 1969. This extends the Oaxacan Atlantic slope range (as recorded by Binford) much farther to the true SE. His records from 1 mi SW of Valle Nacional are almost due S of Temascal.

*Leptodon cayanensis mexicanus* Swann, 1922. Gray-headed Kite.

*Breeding:* 20 Apr 1962. O.E. = lgst. ovum 8 mm; other large follicles. It had a large lizard (*Sceloporus* sp.) in its stomach. 8 mi N Matías Romero (CNAV).

*Taxonomy:* Hellmayr and Conover (1949:25) notwithstanding, Mexican birds are separable from northern South American birds. In 1964 WJS examined seven

adult Mexican specimens in the AMNH, USNM, and RSCC collections and made detailed notes on each. In late 1970 WJS accompanied Allan R. Phillips trip to Venezuela, where detailed notes were made of 11 Venezuelan specimens in the Phelps collection in Caracas. In 1970 and 1972 WJS examined three adult skins (two females and one, from size, "presumably female," taken by Abraham Ramírez V. and a local hunter at Tebanca (flat skin), Dos Amates, and the Lake Catemaco area of Veracruz, plus our two adult female Oaxaca specimens. From the 12 Mexican and 11 Venezuelan skins studied closely, the Mexican birds were smaller in wing chord measurements (Table 1). Specimens examined from Mexico came from Oaxaca (one male, two females), Veracruz (three females), Tabasco, Chiapas, and Yucatan (one of each sex, respectively). The Venezuelan specimens came from eight localities in that country.

An examination of specimens in the USNM confirms that, as Hellmayr and Conover (1949:25) noted, color (or pattern) differences do not permit the recognition of *mexicanus*.

**Table 1.** Summary statistics of wing chord measurements of *Leptodon cayanensis* specimens

	Mexico		Venezuela	
	Males	Females	Males	Females
Number	4	8	4	7
Average	311.50	333.44	333.75	353.43
Standard Deviation	2.96	6.93	8.14	9.53
Maximum	315	342	341	365
Minimum	307	320	320	335

*Elanoides forficatus* (Linnaeus, 1758). Swallow-tailed Kite.

Juan Nava S., Florentino Fransisco, and WJS watched a single adult of this unmistakable species for 10 min at ranges of 60 - 200 m over the marsh near the Río Malatengo bridges on 22 Jun 1962. The date seems too late for a belated migrant. It might have been a sexually undeveloped bird that stayed at a favorable feeding area, but at the time it occurred to WJS that it might be a vagrant of the Central American subspecies *E. f. yetapa*. Our Mije Indian assistant Florentino had never seen the species before.



*Elanus caeruleus majusculus* Bangs & Pennard, 1920. Black-shouldered Kite.

Our data show that this species is a permanent, breeding resident.

*Breeding:* 6 Jul 1962. Nestling female, ovary tiny. Shot on the nest; both parents flying nearby. 5 km E Sarabia. 12476. 8 Jul 1962. T. slightly enlarged = 8 x 5 mm. 3 km E Sarabia. 12528 (both CNAV).

*Rostrhamus sociabilis major* Nelson & Goldman, 1933. Snail Kite.

On 16 Feb 1967, while crossing on the Isthmus highway from Tehuantepec City to Coatzacoalcos, WJS saw an adult female flying low over a marshy spot beside the road 0.6 km S of the Oaxaca-Veracruz border. This sighting provides a winter date for the Atlantic slope in Oaxaca. Between this point and Acayucan, Veracruz, seven more Snail Kites were seen on the same day.

*Ictinia mississippiensis* (Wilson, 1811). Mississippi Kite.

*New record.* Binford (1989:276) considered this species as a hypothetical member of the Oaxacan avifauna, based largely on unreliable earlier reports. WJS had two observations of this species in Isthmian Oaxaca. On 5 Apr 1960 at the Río Malatengo bridges, Chester Champion called attention to nine dark kites flying over the bridges on a general south to north line. WJS identified them as this migrant species, the first he had seen in Oaxaca. On 22 Apr 1962, Peter Hubbell and WJS saw a flock of seven birds over the Río Sarabia bridge, again flying on a general south to north line.

*Ictinia plumbea* (Gmelin, 1789). Plumbeous Kite.

*Breeding:* 19 May 1962. O.S.E., lgst. ova 3 mm, but oviduct enlarged and wrinkled (indicating completion of laying) and edematous incubation patch present. 10 km E of Sarabia. 11938 (CNAV). 10 Aug 1964. Immature, ovary tiny. In postjuvinal (first year immature) plumage. Montebello. 13040 (SWCK).

*Geranospiza caerulescens nigra* (DuBus, 1847). Crane Hawk.

*Breeding:* 13 Feb 1969. O. slightly enlarged = lgst. ova 3 mm, but others 2 and 1 mm. 6 km S Finca San Carlos. 13605 (WJSC). Apparently the second valid specimen for the Atlantic slope.

*Buteogallus urubitinga ridgwayi* (Gurney, 1884). Great Black-Hawk.

*Breeding:* 26 Feb 1969. O. enlarging = lgst. ovum 5 mm. Finca San Carlos. 13787 (WJSC).

*Busarellus n. nigricollis* (Latham, 1790). Black-collared Hawk.

On 12 Dec 1964, Juan Nava S., Santos Farfán B., and WJS had a marvelous view of an adult sitting in a mangrove at 30 m range at Lagunas de Chacahua, W of Puerto Escondido.

*Buteo p. platypterus* (Vieillot, 1823). Broad-winged Hawk.

*Migration:* Every spring in Isthmian Oaxaca (1960, 1961, 1962, and 1969), WJS observed massive flights between 18 Mar and 13 Apr (peak passage on 24 Mar

1962 estimated at 1000 birds per h into late P.M.). These flights were seen with massive flights of *Buteo swainsoni*, but at lower altitudes. All were soaring on a general S to N line at Sarabia to Montebello, at the ridges 4 mi N and 2 mi E of Matías Romero, and at Finca San Carlos.

***Buteo swainsoni*** Bonaparte, 1838. Swainson's Hawk.

*Migration:* Similar but even heavier passages of this species were seen crossing the Isthmus from S to N, often at very high altitudes, from 9 Mar to 15 Apr, with small flocks of 100+ birds seen from 11 Mar, increasing until the peak of passage (18 to 25 Mar), when flights estimated at perhaps 2000 birds per h were seen, diminishing in numbers until the last sighting (18 Apr 1962) on the Pacific coastal plain near Tapanatepec (50+ birds). The Isthmus gap, due to favorable winds aloft, appears to be the flyway for a goodly part of the returning migrants of this species.

***Harpia harpyja*** (Linnaeus, 1758). Harpy Eagle.

This unmistakable species was seen on nine occasions in our study area. One adult was seen flying low over the forest at Montebello on 28 Mar 1960. On 27 Mar 1961, Crossin and WJS saw an adult soaring high above five circling *Sarcoramphus papa* (King Vulture) at Sarabia. On 21 May 1962, two adults were seen soaring low over forest near Colonia Las Vegas, 27 km ENE of Piedra Blanca (seen by all). A single adult was seen nearby on 27 May 1962, soaring over our camp 16 km ENE of Piedra Blanca. Peter Hubbell, Juan Nava S., Abraham Ramírez V., and WJS saw single adults soaring over the Río Coatzacoalcos from 1-8 km S Finca San Carlos on five dates in Feb and Mar 1969. Warren Rook saw single adults on four dates in Mar 1960 and 1961 in the same Montebello to Sarabia area (pers. comm.). Old hunters in the Los Tuxtlas area of S Veracruz have said that they never saw the species there in the winter, *norte* months.

***Spizastur melanoleucus*** (Vieillot, 1816). Black-and-white Hawk-Eagle.

Binford had no records for the Atlantic slope. WJS had three sight records on the Atlantic slope of the Isthmus: One adult was seen circling low over the forest at the Río Sarabia bridge on 8 and 9 Feb 1960, and two adults were seen perched in forest edge near our camp 16 km ENE of Piedra Blanca on 24 May 1962. Two adults were also seen soaring over the Río Coatzacoalcos 3 km S Finca San Carlos on 13 Feb 1969.

***Spizaetus tyrannus*** (Wied, 1820). Black Hawk-Eagle.

*New record.* An adult female was taken by Manuel Isidro 3 km W of Palo Blanco, Tuxtepec on 25 Sep 1947 (CNAV). In addition, we have eight sight records of this species on the Atlantic slope in Oaxaca. On 21 May 1962 an adult was seen perched in forest edge at 100 m range, but flew when Juan Nava S. tried to stalk it (near Colonia Las Vegas, 27 km ENE Piedra Blanca). Single adults were seen soaring over the Río Coatzacoalcos on six dates in Mar 1969, from 2-8 km S Finca San Carlos, and two adults and an immature were seen in this area on 14 Mar 1969.

*Micrastur ruficollis guerilla* (Cassin, 1848). Barred Forest-Falcon.

We add two more specimens and three observations of this very uncommon species from the Atlantic slope of Isthmian Oaxaca: 5 Mar 1969. Immature, T.N.E., iris clear gray with slight brownish tinge; cere = greenish yellow, shading forward to more green; brow ridge and facial skin = orange-yellow. Finca San Carlos. 13926 (WJSC). 14 Feb 1969. Immature, T.N.E. Near Finca San Carlos. 13625 (WJSC). One adult was seen well by Peter Hubbell and Chester Champion at Montebello on 12 Mar 1960, and WJS saw an adult on 2 May 1961 at Donají, and a pair on 24 May 1962 at the Río Chichihui, 16 km ENE Piedra.

*Micrastur semitorquatus naso* (Lesson, 1842). Collared Forest Falcon.

We record here the second known specimen from the Atlantic slope in Oaxaca: 7 Feb 1960. Im mature. female, ovary not enlarged. Río Sarabia bridge. 7926 (WFVZ).

*Falco deiroleucus* Temminck, 1825. Orange-breasted Falcon.

*New record.* WJS and associates had eight sightings of this uncommon falcon in Oaxaca, all on the Atlantic slope. On 8 Mar 1960 a presumed adult female was seen at 60 m perched in a dead tree in the marsh at the Río Malatengo bridges. Peter Hubbell, Warren Rook, Kirby Wolfe, and WJS saw it together and agreed that it was this species. On 10 Mar 1962 a presumed male was seen by Juan Nava S. and WJS, apparently in the same dead tree. The remaining six sightings were all at forest edge or in trees in cleared fields on the banks of the Río Coatzacoalcos. An adult (thought to be female) was seen 2 km S of Finca San Carlos on 24 Mar 1968. The other five sightings in this area were from 10 Feb to 18 Mar 1969, all of single adults, from 1-8 km S Finca San Carlos.

*Falco femoralis septentrionalis* Todd, 1916. Aplomado Falcon.

Binford noted this species from Oaxaca only on the Pacific slope and suggested that it was only a winter resident. WJS and Warren Rook had one winter sight record of an adult on the Pacific slope on 25 Feb 1961 near Juchitán. WJS also had two summer sight records. Juan Nava and WJS saw an adult at the marshes at the Río Malatengo bridges on 6 Jul 1962. On 13 Jul 1964 an adult flew into a tree near our outdoor worktable at Sarabia.

*Falco peregrinus* (Tunstall, 1771). Peregrine Falcon.

To the single Oaxaca specimen cited by Binford (1989:99) we add an immature specimen taken on 2 Mar 1976 by Pedro Huerta on the Parque Nacional de Chacahua.

*Colinus virginianus "thayeri"* Bangs & Peters, 1928. Northern Bobwhite.

*Breeding:* 5 Jul 1962. O.E. = lgst. ovum 16 mm, in oviduct. Sarabia. (CNAV). 4 Aug 1964. T.E. = 14 x 9 mm. 5 km E Sarabia.

*Taxonomy:* After comparing 14 of our 20 specimens with the original descriptions of *godmani* and *thayeri*, and later comparison of detailed notes on these speci-

mens with what other museums call *coyalcos*, WJS concluded that *thayeri* is untenable, as it consists of varying intergrades between *godmani* of the Atlantic slope and *coyalcos* of the Pacific slope of the Isthmus. For instance, some birds from Sarabia are very close to *godmani*, while birds from Río Grande are typical "*thayeri*," and a bird from near Mazahuito, only 6 mi S of Chivela, is almost a good *coyalcos*.

***Laterallus ruber*** (Sclater & Salvin 1860). Ruddy Crake.

*Breeding*: 27 Feb 1969. Ovary enlarging = 7 follicles of 2 x 2 and 1 x 1 mm. Moderate general molt. Finca San Carlos. 13817 (WJSC). 1 Mar 1969. T.E. = 10 x 6 mm; no molt. Finca San Carlos. 13954 (WJSC). 16 Aug 1968. T.S.E. = 6 x 4 mm; general heavy molt; very fat. Coll. by Juan Nava S. and given to WJS. Rancho Las Cruces, Donají. 13519 (WJSC).

***Aramides cajanea mexicana*** Bangs, 1907. Gray-necked Wood-Rail.

*Breeding*: 23 June 1962. O.E. = lgst. ova 3 mm, but large, wrinkled oviduct present, indicating completion of laying. Sarabia. 13 Aug 1964. T.E. = 17 x 8 mm. Arroyo Tonto, near Sarabia. (both CNAV).

***Amaurolimnas concolor*** (Gosse, 1847). Uniform Crake.

Our three Mije Indian assistants (Florentino Francisco Rincón and his two young nephews, Victor [Tito] and Conrado [then 15 and 13 years old]) collected the largest series of this supposedly rare rail ever taken in México, one on 15 Jul 1962 and 13 in Aug 1964. They did it by using their knowledge of the bird's habits, calling all the birds collected into their ambush (lying prone on the wet ground) in heavy saw-grass coverts in thickets and swamp forest within 5 km E and W of Sarabia. They imitated the clear, mellow, rising whistles (a series of 7-10 whistles, rising in half-tones) and the birds often came so close that they could not shoot. In fact, No. 13122 (Delaware Museum 23838; reported by Binford) was caught by Tito by grabbing its legs from behind a clump of saw-grass! Binford reported seven of these specimens. The breeding data and dispositions of the remaining six are as follows:

*Breeding*: 2 Aug 1964. T.E. = 7 x 4 mm. 5 km NE Sarabia. 12951 (CNAV). 3 Aug 1964. T.E. = 6 x 4 mm. 0.5 km E Sarabia. 12962 (RSCC). 4 Aug 1964. T.E. = 5 x 3 mm. 5 km E Sarabia. 12970. (CNAV). 4 Aug 1964. O.N.E. or slightly. Same loc. 12971 (CNAV). 16 Aug 1964. T.E. = 11 x 7 mm. Arroyo Tonto, near Sarabia. 13142. (CNAV).

By using the same "ambush" and whistling technique, WJS has since, during 25 years of residence in the Tuxtla region of Veracruz, determined that the abundance of this rail should be termed uncommon, not rare. It is not certain that the species is a permanent resident everywhere, however. WJS has no sight or sound records in Los Tuxtlas between 1 Oct and 15 Feb 1963 (specimen taken by Abraham Ramírez V. at Dos Amates, Los Tuxtlas; T.E.). However, Abraham Ramírez V. took winter specimens at El Mirador, Veracruz (ca. 30 mi WSW Tezonapa, *vide* Dickerman 1971:55) on 14 Jan 1962 and 23 Jan 1963 (Bell Museum of Natural History).

The flesh colors noted in all 12 specimens taken in 1964 were variable, but most were close to the colors noted by Walter Weber on his 1913 Tabasco specimen (see Dickerman 1971:55). The only exceptions are that the bright, orange-vermilion frontal scutella on the tarsometatarsi had brownish patches and the feet were dusky brownish. The bare flesh of the orbital ring varied from dull orange to yellowish and the irides were dull brownish-orange. The 15 Jul 1962 specimen (AMNH 768793) had the testes unenlarged and perhaps was a first-year bird (skull with two small "windows"). Its irides were also dull brownish-orange, but its tarsometatarsi were paler (salmon, rather than bright orange-vermilion, and without the brownish patches on the scutella) and its feet and plantar surfaces were paler salmon. The fleshy orbital ring was pale flesh in color. Dickerman (1971) seems correct in hypothesizing a deepening in flesh colors when individuals are in breeding condition.

*Heliornis fulica* (Boddaert, 1783). Sungrebe.

To the three known Oaxaca specimens cited by Binford, we add four more, collected by WJS on the Río Coatzacoalcos from 6 - 8 km S of Finca San Carlos: 22 Feb 1969; pair shot swimming together. T.E. = 9 x 6 mm (13724) and ovary enlarging = lgst. ova 2 x 2 mm (13723). 26 Feb 1969. Ovary slightly enlarged = lgst. ova 1 x 1 mm. 13803. 17 Mar 1969. O.N.E. 13991. All were extremely fat; all are in WJSC.

*Burhinus b. bistratus* (Wagler, 1829). Double-striped Thick-knee.

Binford apparently overlooked the mate of AMNH 775894, taken near Ixhuatán (28 Mar 1961). The mate was an adult female (10030), which is also in the AMNH. This oversight was probably because only "O.S.E." is written on the label. But field notes show that this bird was killed with the male, running together. She had the ovary slightly enlarged (lgst. ovum 3 mm), but the oviduct was huge and wrinkled, indicating completion of laying. The birds were found in coarse bunch grass and cohune palm savannah.

*Charadrius collaris* Vieillot, 1818. Collared Plover.

An adult was seen amid five *C. semipalmatus* on a sandbar at the mouth of Río Sarabia from 15 - 17 Feb 1969. Two adults were seen again on the same sandbar at Finca San Carlos on 12 and 17 Mar 1969.

*Charadrius semipalmatus* Bonaparte, 1825. Semipalmated Plover.

Five adults in winter plumage were seen as noted above, but from 5 - 12 adults were also seen almost daily on sandbars and exposed riverbanks on the Río Coatzacoalcos from 1 - 5 km S Finca San Carlos from 12 Feb to 20 Mar 1969.

*Himantopus mexicanus* (Müller, 1776). Black-necked Stilt.

Binford cited no recent records for the Atlantic slope. From 5 - 7 individuals were recorded almost daily on the Río Coatzacoalcos from 1 - 6 km S Finca San Carlos between 21 Feb and 18 Mar 1969.

***Recurvirostra americana*** (Gmelin, 1789). American Avocet.

Again, Binford cited no records for the Atlantic slope. From 3 - 5 birds were recorded almost daily along the Río Coatzacoalcos S of Finca San Carlos from 12 Feb - 20 Mar 1969. In addition, we report the second specimen for the state, taken at the Laguna de Chacahua (no date or sex recorded; CNAV).

***Tringa flavipes*** (Gmelin, 1789). Lesser Yellowlegs.

Binford did not record this species from the Atlantic slope. Again, from 7 - 9 birds were recorded almost daily along the Río Coatzacoalcos S of Finca San Carlos from 12 Feb - 20 Mar 1969.

***Tringa solitaria*** Wilson, 1813. Solitary Sandpiper.

Binford cited only one record for the species on the Atlantic slope. In 1968 Ken Parkes, J. W. Hardy, Laszlo Szijj, and WJS saw the species often between 23 and 28 Mar, and in 1969 WJS recorded it almost daily (7 - 10 birds) in the stretch of the Río Coatzacoalcos 1 - 6 km S Finca San Carlos (12 Feb - 20 Mar). Probably both subspecies winter together here, as they do in the Tuxtlas region to the north.

***Heteroscelus incanus*** (Gmelin, 1789). Wandering Tattler.

A specimen taken on 6 June 1974 on the Laguna de Chacahua indicates the presence of over-summering birds (CNAV).

***Phalaropus lobatus*** (Linnaeus, 1758). Red-necked Phalarope.

A wintering presence is indicated by a male taken on 23 Jan 1973 on the Laguna de Chacahua (CNAV).

***Chlidonias niger*** (Linnaeus, 1758). Black Tern.

Two specimens were taken on 10 and 12 Jun 1974 at the Laguna de Chacahua, indicating rare over-summering.

***Columba f. flavirostris*** (Wagler, 1831). Red-billed Pigeon.

*Breeding:* 18 Feb 1961. Ovary enlarging = lgst. ova 1 x 1 mm. Río Malatengo bridges. 9436 (AMNH).

***Columba nigrirostris*** Sclater, 1860. Short-billed Pigeon.

*Breeding:* 21 Apr 1962. T.G.E. = 14 x 8 mm. 4 km SW Suchilapa, Veracruz. Shot approaching nest, upon which another bird was sitting. 11398 (AMNH).

***Columbina passerina pallescens*** (Baird, 1859). Common Ground-Dove.

*Breeding:* 18 Aug 1964. A mated pair was collected at a newly constructed nest (no eggs) at Sarabia: T.G.E. = 9 x 6 mm (13143), and O.G.E. = lgst. ovum 13 x 13 mm, next lgst. = 10 x 10 mm, oviduct enlarged (13144). Both SWCK. 12 Feb 1969. T.E. = 8 x 5 mm. Finca San Carlos. 13856 (WJSC).

***Columbina talpacoti rufipennis*** (Bonaparte, 1855). Ruddy Ground-Dove.

*Breeding:* 24 May 1962. T.E. = 14 x 10 mm. One of a pair seen together, 16 km ENE Piedra Blanca. 12096 (RSCC). 11 Aug 1964. T.E. = 12 x 7 mm. Montebello.

13048 (SWCK). 10 Feb 1964. Testes enlarging, = 7 x 3 mm. Finca San Carlos. 13545 (WJSC).

*Leptotila verreauxi fulviventris* Lawrence, 1882. White-tipped Dove.

*Breeding*: 12 Mar 1960. O.E. = large (27 x 22 mm), shelled egg in oviduct. Montebello. 8636 (WFVZ). 22 May 1962. Juvenile female, ovary tiny. 4 mi N + 2 mi E Matías Romero. 12061 (CNAV). 15 Jul 1962. T.E. = 12 x 7 mm. Donají. 12519 (CNAV). Our 8 adult specimens were considered as *fulviventris* using the 75% rule.

*Leptotila rufaxilla plumbeiceps* Sclater & Salvin, 1868. Gray-fronted Dove.

*Breeding*: 2 Mar 1969. O.G.E. = lgst. ova 18 and 14 mm, oviduct enlarged. Finca San Carlos. 13887 (WJSC). 26 Apr 1962. T.G.E. = 17 x 9 mm. 4 km SW Suchilapa, Veracruz. 11483 (CNAV).

*Geotrygon m. montana* (Linnaeus, 1758). Ruddy Quail-Dove

*Breeding*: 26 Mar 1962. O.G.E. = one large (31 x 19 mm), non-shelled egg in oviduct. Montebello. 10893 (CNAV).

*Ara militaris mexicana* Ridgway, 1915. Military Macaw.

WJS and field associates (including Allan R. Phillips in Dec 1959) had eight sightings of this species near and over the ridges E of Mazahuito in Dec and 20 Feb - 20 Mar 1960. Each sighting was of one to seven birds. For the record, our locality "Mazahuito" was identified by an official S.O.P. road sign spelled this way in large block letters. The spot was 18 road miles S Matías Romero and roughly 6 road miles from Chivela and 7.4 mi from La Ventosa Junction. We never heard the name used by local residents (*fide* Binford, 1989:368). We had three more observations of this species above Rancho Sol y Luna: one (two birds) on 23 Jun 1961, and two (one and five birds) in Mar 1962. Crossin and WJS also saw two birds flying together over the coastal lowlands near El Jícara on 29 Mar 1961, and again over the ridge 3 mi N El Jícara on 1 Apr 1961.

*Brotogeris jugularis* (Müller, 1776). Orange-chinned Parakeet.

A male taken 20 Feb 1965 at Matías Romero by F. de Maeyer may indicate rare wandering outside of the normal range.

*Amazona a. autumnalis* (Linnaeus, 1758). Red-lored Parrot.

*Breeding*: 8 Mar 1960. O.E. = lgst. ovum 14 mm, other large ova developing. Montebello. 8401 (WFVZ). 11 Jun 1962. O.S.E. = lgst. ovum 3 mm, but oviduct large and wrinkled, indicating completion of laying (field notes). Sarabia. 10199 (AMNH). 26 Jul 1964. O.S.E. = lgst. ova 3 mm; oviduct not enlarged. Sarabia. 12860 (CNAV). 14 Aug 1964. Juvenile. Ovary tiny, filmy. Sarabia. 13087 (CNAV).

*Amazona farinosa guatemalae* (Sclater, 1860). Mealy Parrot.

*Breeding*: 19 Feb 1969. T.E. = 12 x 7 mm. Finca San Carlos. 13708 (WJSC).

*Amazona a auropalliata* (Lesson, 1842). Yellow-naped Parrot.

*Breeding:* 28 Mar 1961. T.E. = 16 x 9 mm. Near Ixhuatán, in bunch grass and cohune palm savannah. 10041 (AMNH).

***Tapera naevia excellens*** (Sclater, 1857). Striped Cuckoo.

*Breeding:* 25 Feb 1969. T.E. = 7 x 4 mm. Finca San Carlos. 13765 (WJSC). 2 Aug 1964. Juvenile. Testes tiny; skull not ossified. 5 km E Sarabia. 12952 (CNAV). A total of eight males and two females were taken. All of the males were decoyed in by imitating their distinctive whistles (see Wetmore, 1943:257).

***Geococcyx velox melanchima*** Moore, 1943. Lesser Roadrunner.

*Breeding:* 27 Jun 1962. Ovary enlarging = lgst. ovum 3 mm. Oviduct not visible. 4 mi N and 2 mi E Matías Romero. 12442 (ARPC).

***Tyto alba pratincola*** (Bonaparte, 1838). Barn Owl.

*Breeding:* WJS examined three birds of this species killed by a townsman in Matías Romero. He was a taxidermist who sold mounted mammals and birds. Upon a visit on 7 Feb 1960, he was preparing these owls for mounts. He allowed an examination of the adult, and it was found to be a female, O.N.E. or slightly. The other two birds were juveniles (male and female), both with gonads tiny, and with downy, juvenal plumage. The winter breeding date is of interest.

***Otus flammeolus*** (Kaup, 1853). Flammulated Owl.

*New record.* This species was also predicted to occur in Oaxaca by Binford (1989:3). Emilio Hernández and J. Francisco Ornelas took three specimens on 14, 15, and 19 Jan 1985 at San Mateo Río Hondo, 3 km S E San Mateo, La Cruz, at 2650 m in pine-oak forest. Two of the specimens are males (one with enlarged gonads), and the third was a female with enlarged ovary (CNAV).

***Otus g. guatemalae*** (Sharpe, 1875). Vermiculated Screech-Owl.

*Breeding:* 8 Aug 1964. Juvenile male. Testes tiny. 0.5 km E Sarabia. 13000 (CNAV).

***Bubo virginianus* cf. *mesembrinus*** (Oberholser, 1904). Great Horned Owl.

WJS examined a specimen said to have been killed by a rancher near Lagunas (6 mi SW Matías Romero) on 20 Jun 1961, which was being prepared by the same taxidermist mentioned above. The skin was already off, so it was not possible to obtain an accurate wing measurement, but the color matched Oberholser's (1904) description of *mesembrinus*. It was an adult male with slightly enlarged testes (10 x 7 mm). Crossin and WJS observed a bird at dusk on "Cotinga" ridge (= 4 mi N and 2 mi E Matías Romero) on 15 Mar 1961. The species' distinctive triple hoots were heard occasionally near Donají, Sarabia, and Matías Romero.

***Lophotrix cristata stricklandi*** Sclater & Salvin, 1859. Crested Owl.

A pair of these rare owls (shot together) was collected on 23 Feb 1969 near Finca San Carlos. Adult male, T.E. = 7 x 4 mm. No molt; quite fat. 1370. Adult female, O.N.E. No molt; quite fat. 13791 (both WJSC). Juan Nava S., the collector, was attracted to them by their peculiar, frog-like growling call. An additional Paci-



fic slope specimen (sex not recorded) was taken at Tehuantepec in June 1965 by an unknown collector (CNAV).

*Pulsatrix perspicillata saturata* Ridgway, 1914. Spectacled Owl.

*Breeding*: 25 Mar 1960. T.S.E. = 10.5 x 8.5 mm. No molt; 859 g. 9001 (WFVZ). 25 Jun 1961. "O.S.E." on label, but field notes state that an edematous brood patch was present and that the bird was shot on a nest with two eggs. Rancho Sol y Luna. 10397 (AMNH).

*Glaucidium brasilianum ridgwayi* (Sharpe, 1875). Ferruginous Pygmy-Owl.

*Breeding*: (Atlantic slope): 5 Mar 1961. T.E. = 8 x 5 mm. Sarabia. 9632 (AMNH). 10 Aug 1964. Juvenile female; ovary tiny. Montebello. 13039 (CNAV).

"*Ciccaba*" *virgata centralis* Griscom, 1929. Mottled Wood-Owl.

*Breeding*: 16 Mar 1961. T.E. = 14 x 17 mm. Río Sarabia bridge. 9807 (AMNH). 16 Jul 1962. Juvenile male; testes tiny. Palomares. 12524 (ARPC).

*Taxonomy*: WJS considers this species and the following to be perfectly good members of the genus *Strix*.

"*Ciccaba*" *nigrolineata* Sclater, 1859. Black-and-white Owl.

*Breeding*: 30 Mar 1960. O.E. = large ovum (28 x 25 mm in field notes) in oviduct, other large ovum 11 mm. Río Sarabia bridge. 9093 (WFVZ).

*Chordeiles acutipennis littoralis* Brodkorb, 1940. Lesser Nighthawk.

*Breeding*: 10 Apr 1962. O.E. = lgst. ovum 6 mm, oviduct large and swollen. Río Grande (SWCK).

*Chordeiles minor* (Forster, 1771). Common Nighthawk.

A fifth Oaxacan specimen was taken at Rancho Sol y Luna on 6 Apr 1966 by J. S. Rowley.

*Nyctidromus albicollis yucatanensis* Nelson, 1901. Common Pauraque.

*Breeding*: 2 Jun 1962 (two birds). Ovary enlarging = largest ovum 4 mm; T.G.E. = 21 x 14 mm. 12 km ENE Piedra Blanca. 12226 and 12225 (CNAV). 11 Jun 1962. Juvenile female; ovary tiny. Donají. 12391. Finally, seven juveniles (five males and two females, all in part juvenal, part first basic plumage) were taken on 31 Jul 1962 at Sarabia. Numbers between 12914 - 12932 (CNAV).

*Caprimulgus ridgwayi* (Nelson, 1897). Buff-collared Nightjar.

*Breeding*: 11 Jul 1962. Juvenile, testes tiny. Molting from juvenal into first basic plumage. 13 mi E Juchitán. 12496 (WFVZ *ex* Bull collection).

*Caprimulgus maculicaudus* (Lawrence, 1862). Spot-tailed Nightjar.

Binford cited only nine of our specimens. WJS took 23 specimens in 1962: 21 at Donají and 2 at Sarabia. The 14 specimens not seen by Binford are at CNAV, with the exception of two given to RSC and SWCK. Two specimens need mentioning: 25 Jun 1962. O.G.E. = lgst. ovum 18 x 13 mm, in enlarged oviduct; edematous brood patch. Donají. 12438. 19 Jul 1962 (latest date in series). O.S.E. = lgst.

ova = 2 mm, but small oviduct still present (resorption after laying?). Sarabia. 12545 (both CNAV).

*Nyctibeus griseus mexicanus* Nelson, 1900. Common Potoo.

*Breeding:* 16 Jul 1962. Juvenile, testes tiny, in juvenal plumage. Very fat. Palomares. 12523 (CNAV).

*Cypseloides niger* (ssp. probably *borealis*, Kinnerly, 1857). Black Swift.

On 21 Mar 1969, while in our "canoa" on the Río Coatzacoalcos some 3 km S of Finca San Carlos, Peter Hubbell and WJS saw three different flocks (7-8 birds each time) flying low over the river on a general S to N line. We agreed on the identification (see Schaldach, 1969:305). Also, on 28 Mar 1968, as we left Finca San Carlos, Ken Parkes and WJS saw 10-12 Black Swifts as we approached the town of Suchilapa, Veracruz, again on a general S to N line over the Río Coatzacoalcos.

*Chaetura pelagica* (Linnaeus, 1758). Chimney Swift.

Binford saw only 9 Oaxacan specimens. WJS took 16 specimens in Isthmian Oaxaca: 12 from one huge flock (estimated at 600+) that passed low overhead on 18 Apr 1962. Three other immense flocks (of ca. 500-700 birds) were seen on the same morning, also passing very low overhead. The numbers of this series are 11309-11321. Three are in AMNH, 11309 is in RSCC. 11315 was deposited in the USNM. It bore a U.S.F.W.S. band (#31-130637), and was banded as a late juvenile 12 Oct 1961 by Mr. Nat Halvorsen at Collegedale, Tennessee. The rest of this series is in CNAV.

Of interest is that 11 birds of this series were females, with only one male. We found the species to migrate in large flocks through our study areas, all on a S to N line, from 14 Mar to 14 May 1962 (17 birds over Sarabia; characteristic pretytect-tect call heard). Our latest specimen date was 3 May 1962, taken from a low-flying flock of 100+. O.N.E.; heavy fat. Sarabia. 11546 (WFVZ *ex* Bull coll.).

*Campylopterus h. hemileucurus* (Deppe, 1830). Violet Sabrewing.

*Breeding:* 27 Feb 1969. Juvenile, testes tiny. In postjuvenal molt. Finca San Carlos. 13824 (WJSC). 3 Jun 1962. Juvenile, ovary tiny. 8 km SE Donají. 12263 (CNAV).

*Florisuga m. mellivora* (Linnaeus, 1758). White-necked Jacobin.

On 20 Mar 1969 WJS collected another male-plumaged adult female (O.N.E.) at Finca San Carlos. 14022 (ARPC), with alcoholic body. Richard Crossin took another male-plumaged adult female on her nest incubating two eggs at Sarabia in June 1961 (RSCC).

*"Anthracothorax" p. prevostii* (Lesson, 1832). Green-breasted Mango.

In Isthmian Oaxaca, the first birds recorded were on 8 Mar 1960, 14 mi N Matías Romero (male, T.S.E. = 3 x 2 mm, from field notes, 8427, WFVZ), but on 24 and 25 Feb 1969 the first birds were a male (T.S.E. = 3 x 2 mm) and a female (O.S.E. = lgst. ova 1 mm). 13751 and 13770 (WJSC).

*Breeding:* Other nesting episodes are indicated by: 6 May 1962. O.E. = lgst. ovum 5 mm. Montebello. 11557 (WJSC). 15 Jun 1962. T.E. = 4 x 2 mm. 4 mi N and 2 mi E Matías Romero. 12415 (USNM). 31 Jul 1964. Ad. female, ovary enlarging, largest ovum 3 mm. Sarabia. 12926 (WJSC) and two juveniles (male and female) in juvenal plumage. Sarabia. 12927 and 12928 (WJSC). 10 Aug 1964. Male in juvenal plumage. Sarabia. 13017 (WJSC), and 16 and 17 Aug 1968. Six juveniles taken by Juan Nava S. and given to WJS. Rancho de Las Cruces, Donají. 13515-13517 and 13522-13524 (WJSC).

*Taxonomy:* WJS considers this species to be a member of the genus *Colibri*.

*Lophornis helenae* (De Lattre, 1843). Black-crested Coquette.

To the specimen reported by Binford (WJS 10655, LSUMZ 28753) we add three more from Finca San Carlos: 4 Mar 1969. T.N.E.; mod. fat. 13925. 5 Mar 1969. O.N.E.; mod. fat. 13927. 16 Mar 1969. T.N.E. or slightly; mod. fat. (all WJSC). The "J.G.B." mentioned by Binford was our field assistant José Gonzalez Barragán, who collected the specimen Binford reported. WJS sexed the bird, removed the abdominal contents, and mummified it in the sun. The specimen was later given to George Lowery because he had mentioned (*in litt.*) that the LSUMZ collection lacked the species. The species may be an intratropical migrant.

*Hylocharis eliciae* (Bourcier & Mulsant, 1846). Blue-throated Goldentail.

WJS had two observations of this species at Finca San Carlos, each time at a flowering tree at forest edge: 18 and 20 Mar 1969. These sightings are consonant with a spring movement northward on the Atlantic slope. Warren Rook took an additional male on 6 Nov 1963 at Rancho Sol y Luna (CNAV 19314). Also, two specimens (male and unknown sex) were taken at Rancho Chepenegro 8 km NE Santo Domingo Zanatepec on 15 and 16 Feb 1982 by M. E. Méndez and M. Sánchez (CNAV 1676 & 1677), adding another Isthmian site to the known range of the species in the state.

*Amazilia c. candida* (Bourcier & Mulsant, 1846). White-bellied Emerald.

We agree with Binford that this species is not present in numbers from the end of Jul to early Dec. ARP and WJS saw very few in Dec 1959 in the Montebello to Sarabia area, and collected only one specimen: 12 Dec 1959. Juvenile female. O.N.E. = tiny. Río Sarabia bridge. 7688 (WFVZ). Our earliest record is 23 Feb 1961. O.N.E. Río Sarabia bridge. RSC 178 (RSCC). By 26 Feb 1969 it was common again at Finca San Carlos. In Aug 1964 it was again scarce near Sarabia, only one specimen being taken by us: 7 Aug 1964. Juvenile male, testes tiny; mostly first basic plumage with some juvenal plumage on head. 5 km E Sarabia. 12999 (ARPC). WJS believes that the bulk of the population withdraws to the SE, both here and in the Tuxtlas region to the NW, where we have had relatively few authentic records in late Nov, Dec, and Jan. See also Wetmore's (1943:262) comments on Carriker's impression that the species seemed absent from Los Tuxtlas in Jan and early Feb 1940, and of his taking the first bird seen on 28 Feb. The few wintering birds taken may prove to be late juveniles.

*Breeding:* 16 Mar 1961. T.S.E. = 2 x 2 mm, in field notes. Río Sarabia bridge. 9819 (AMNH). 22 May 1962. T.E. = 4 x 3 mm. 4 mi N and 2 mi E Matías Romero. 12037 (CNAV). 26 and 28 Jul 1964. 2 juveniles, O. tiny (12866, CNAV) and T. tiny (12884, ARPC).

***Amazilia t. tzacatl*** (De la Llave, 1833). Rufous-tailed Hummingbird.

*Breeding:* 23 Feb 1961. O.S.E. = lgst. ova 2 mm. Río Sarabia bridge. 9491 (AMNH). 16 May 1962. Ovary enlarging = lgst. ova 2.5 x 2 mm. 4 mi N and 2 mi E Matías Romero. 11872 (CNAV). 8 Jul 1962. T.E. = 3 x 2 mm. Sarabia. 12766 (CNAV). 2 Aug 1964. T. E. = 3 x 2 mm. 1 km E Sarabia. 12960 (CNAV). 14 Aug 1964. Juvenile, testes tiny. Sarabia. 13110 (ARPC).

***Amazilia cyanura*** (Gould, 1859). Blue-tailed Hummingbird.

*New record.* A specimen was collected by J. Celaya Rojas on 21 May 1981 at Santo Domingo Zanatepec, 8 km N of Santo Domingo, Rancho Chepenegro. The specimen was dried and has no sex data (CNAV).

***Heliomaster longirostris pallidiceps*** Gould, 1861. Long-billed Star-throat.

*Breeding:* 22 May 1964. Juvenile male, testes tiny. 27 km ENE Piedra Blanca. 12031 (USNM).

***Archilochus colubris*** (Linnaeus, 1758). Ruby-throated Hummingbird.

*Contra* Binford, we did not find this species wintering in our Atlantic slope collecting areas, but saw it regularly on the Pacific slope of the Isthmus. WJS' few (eight) observations of this species in the Atlantic slope forested areas were in the spring migration period: 18 and 20 Mar 1969 at Finca San Carlos, 5 and 8 Apr 1961 at the Río Sarabia bridge, 12 Apr 1962 at Sarabia, and 24 Apr 1962 near Colonia Las Vegas (27 km ENE Piedra Blanca), 27 Apr 1962 again near Sarabia, and 3 May 1962 near Donají. All sightings recorded were of adult males, females of this species being practically impossible to distinguish by sight in this region with certainty.

***Trogon melanocephalus*** Gould, 1835. Black-headed Trogon.

Binford has an interesting discussion of major phenotypes, distinguishing the Atlantic slope birds from the Pacific slope *Trogon citreolus*, and mentions that he has seen no intergrades. Among the series of 20 adults that WJS collected in Atlantic slope Oaxaca, one bird clearly showed one (perhaps the most important) phenotypic trait attributed to *T. citreolus*. An adult male taken on 10 June 1961 at Sarabia (T.S.E. = 5 x 3 mm, 10179; AMNH) had irides definitely bright yellow and the orbital rings slate-blue. All other specimens had the normal dark-brown irides and pale blue orbital rings. The nearest point to the Pacific drainage where we took a specimen of *T. melancholicus* was 4 mi E and 2 mi N Matías Romero at the continental divide, and it was also a normal-eyed male (16 May 1962, T.S.E. = 5 x 3 mm, 11835; CNAV). This is farther south than recorded by Binford. The yellow-eyed specimen noted above could not otherwise be distinguished from the other males in the series.

*Breeding:* 27 Mar 1960. Ovary enlarging = lgst. ovum 2.7 x 2.5 mm. Montebello 7086 (WVZ) and 13 Mar 1969. Ovary enlarging = lgst. ovum 2 x 2 mm. Finca San Carlos. 13961 (WJSC).

*Trogon violaceus braccatus* (Cabanis & Heine, 1863). Violaceous Trogon.

*Breeding:* 13 Jun 1961. T.E. = 9 x 6 mm. Donají. RSC 248 (RSCC). 31 Jul 1964. Juvenile; ov. tiny; in juvenal plumage. Sarabia. 12929 (CNAV).

*Trogon collaris xalapensis* (Du Bus, 1845). Collared Trogon.

To the 3 Atlantic slope lowland forest specimens noted by Binford, we add the following specimens: 10 Mar 1960. An unnumbered male (T.N.E.). Río Sarabia bridge (presumably in WFVZ; it was set aside for ARP, as we could not get all of the blood off of the breast feathers, but it was sent in with the collection by mistake). 19 Jun 1961. T.S.E. = 7 x 4 mm in field notes. Montebello. RSC 257 (RSCC).

*Breeding:* Apparently breeds within 3 km of the Oaxaca-Veracruz border, as attested by the following specimens: 21 Apr 1962: two males (T.E. = 9 x 7 mm and 9 x 6 mm) and a female (O.G.E. = lgst. ovum 9 mm, oviduct enlarging). 23 Apr 1962. T.S.E. = 7 x 4 mm in field notes. All from 4 km S Suchilapa, Veracruz. 11394, 11396, 11397, and 11427. (AMNH or CNAV). The dates of all but the first noted are of interest as tending to prove the presence of the species in spring and summer in lowland evergreen forest, contra Binford's tentative assumption that it is only a winter resident in the lowlands. We found it to be very uncommon in our areas.

*Trogon m. massena* Gould, 1838. Slaty-tailed Trogon.

*Breeding:* 13 Feb 1969. T.E. = 7 x 5 mm. 13595. 2 Mar 1969. T.E. = 7 x 5 mm. 13886. 4 Mar 1969. Ovary enlarging = lgst. ova 2 x 2 mm. 13921. All near Finca San Carlos (WJSC). 19 May 1962. T.S.E. = 5 x 3 mm. 10 km E Sarabia. 11961 (WFVZ, *ex* Bull coll.). 30 Jul 1964. T.E. = 8 x 5 mm. 5 km NE Sarabia. 12900 (CNAV).

*Hylomanes m. momotula* Lichtenstein, 1839. Tody Motmot.

*Breeding:* Only one of the 14 specimens taken offers data of breeding activity: 2 Jun 1962. Juvenile - tail shorter than adult; testes tiny. 12 km ENE Piedra Blanca. 12220 (AMNH). This is the specimen noted by Binford. It is noteworthy that all of the rest had unenlarged gonads (8 & 13 Feb, 12 - 24 Mar, 29 Jul, and 8 Dec).

*Momotus momota lessoni* Lesson, 1842. Blue-crowned Motmot.

*Breeding:* Binford did not see the female of the pair mentioned from 24 Apr 1962. Ovary enlarging = lgst. ovum 4 mm; two other ova 3 mm. 11438 (CNAV). 1 Mar 1969. Ovary enlarging = lgst. ovum 2.5 x 1.7 mm. Finca San Carlos 13875 (WJSC).

*Electron carinatum* (Du Bus, 1847). Keel-billed Motmot.

*New record.* WJS had one observation of this extremely rare species. On 9 Mar 1969, as Abraham Ramírez V. and WJS were proceeding upstream on the Río Coatzacoalcos (S of Finca San Carlos), Abraham signalled the motorman to stop the engine. He pointed out to me an obvious motmot in the top of a dead tree on

the W bank. We estimated the range as 50+ m. Just as the salient details had registered - green head, nape, and back, brown forehead spot, pale blue, short supercilious stripe, and long, bluish tail - and while still watching through binoculars, the bird opened its black bill, uttered an amazingly loud ku-kedack, and flew away. Both of us were sure of the identification by Blake's (1953) detailed description and by Dalquest's description of the call (Lowery & Dalquest 1951; both references carried with us). This area is within 30 km of the spot on the Río Chalchijapan where Dalquest collected one of the few known Mexican specimens. Juan and Abraham told WJS that they heard this same call in the forest on two other dates in Mar 1969.

***Chloroceryle aenea stictopectera*** (Ridgway, 1884). Pygmy Kingfisher.

*Breeding:* 20 Mar 1960. T.S.E. = 5 x 3 mm in field notes. Río Sarabia bridge. 9920 (AMNH). 4 Jun 1962. Ovary enlarging = lgst. ova 3 mm. 12 km ENE Piedra Blanca. 12268 (CNAV). 13 Aug 1964. Stub-tailed juvenile; ovary tiny. Arroyo Tonto, near Sarabia. 13089 (CNAV).

***Bucco macrorhynchus hyperrhynchus*** Sclater, 1855. White-necked Puffbird.

*Breeding:* Pair on 20 Mar 1962: T.S.E. = 7 x 4 mm and O.S.E. = lgst. ova 3 mm (field notes). 10695 and 10696 (AMNH). 17 Feb 1969. T.S.E. = 7 x 4 mm; mod. fat. Finca San Carlos. 13689 (RSCC).

***Galbula ruficauda melanogenia*** Sclater, 1853. Rufous-tailed Jacamar.

*Breeding:* 5 Mar 1969. T.E. = 6 x 4 mm, and O. enlarging = lgst. ova 3 mm. Both from near Finca San Carlos. 13932 and 13934 (WJSC). 8 May 1962. O.E. = lgst. ovum 15 mm, yolked; large, wrinkled oviduct present. Montebello. 11598 (CNAV).

***Ramphastos s. sulfuratus*** Lesson, 1830. Keel-billed Toucan.

*Breeding:* 5 Feb 1960. O.S.E. = lgst. ova 3 mm. Río Sarabia bridge. 7897 (WFVZ).

*Molt:* A series of five (one male, four females) taken at Montebello on 10 and 11 Aug 1964 showed post-nuptial (prebasic) molt. All were adults, but the gonads were not enlarged. All had most body plumage fresh; primaries and the first 3-4 secondaries were old; the middle rectrices were old, and the lateral rectrices were fresh and in various stages of growth. Molt probably would have been completed by the first week in Sep (13012, 13058-13061; CNAV).

Todd, 1910. Black-cheeked Woodpecker.

*Breeding:* 24 May 1962. O.E. = lgst. ovum 3 mm. 16 km ENE Piedra Blanca. 12168 (AMNH). 28 Mar 1960. O.E. = lgst. ovum 2.7 x 2.5 mm. ARP5630 (ARPC). 11 Aug 1964. Juvenile; testes tiny. Montebello. 13049 (CNAV).

***Melanerpes pucherani perileucus*** Nelson, 1900. Golden-fronted Woodpecker.

*Breeding:* 27 Jun 1962. T.E. = 6 x 5 mm, and a juvenile with tiny testes. 4 mi N and 2 mi E Matías Romero. 12440 and 12441 (CNAV). 31 Jul 1962. Juvenile; testes tiny. (CNAV).

*Taxonomy:* Parkes (1990) pointed out the taxonomic situation of this subspecies, and we agree with his conclusion that *veraecrucis* is valid. Our series of 18 adults of this race showed some intergradations with *polygrammus*, especially on the barring of the back, the continuous head and neck color, and the orange-red (instead of dark red) abdominal patches. No. 12440 above and two birds from Río Grande (9 Apr 1962, T.E. = 11 x 7 mm, 11207 and T.E. = 7 x 5 mm, 11208 [both AMNH]) were intermediate. In the small series of nine *M. a. polygrammus*, one male had T.E. = 11 x 6 mm on 28 Mar 1961 (Río Ostuta; AMNH). Two specimens taken at Cacahuatal (4 km E Rizo de Oro, Chiapas) were typical *frontalis* (11 May 1961, 11673 and 11674; CNAV).

*Veniliornis fumigatus sanguinolentus* (Sclater, 1859). Smoky-brown Woodpecker.

*Breeding:* 30 Apr 1962. Juvenile; ovary tiny, filmy. Montebello. 11500 (ARPC). 25 May 1962. O.S.E. = lgst. ova 1 mm. 16 km ENE Piedra Blanca. 12164 (CNAV).

*Piculus rubiginosus yucatanensis* (Cabot, 1844). Golden-olive Woodpecker.

*Breeding:* 18 Mar 1969. O.E. = lgst. ovum 4 mm, others 2 mm. Near Finca San Carlos. 13759 (WJSC). 15 Jun 1962. T.E. = 6 x 4 mm. 4 mi N and 2 mi E Matías Romero. 12407 (CNAV). This specimen shows intergradation with *P. r. maximus*.

*Celeus castaneus* (Wagler, 1829). Chestnut-colored Woodpecker.

*Breeding:* 13 Mar 1969. T.G.E. = 9 x 6 mm. Near Finca San Carlos. 13960 (WJSC). 3 Jun 1962. O.E. = lgst. ovum 4 mm, but large, wrinkled oviduct and edematous brood patch present. 12 km ENE Piedra Blanca. 12252 (CNAV). From specimens taken (28) and number of birds seen and heard, we considered the species fairly common.

*Campephilus g. guatemalensis* (Hartlaub, 1844). Pale-billed Woodpecker.

*Breeding:* 14 Feb 1969. O.S.E. = lgst. ova 2 mm. Finca San Carlos. 13629 (WJSC).

*Synallaxis e. erythrothorax* (Sclater, 1855). Rufous-breasted Spinetail.

*Breeding:* 26 Feb 1960. O.S.E. = lgst. ova 2 mm (field notes). Río Sarabia bridge. 8234 (WFVZ). 31 May 1962. Ovary enlarging = lgst. ova 3 mm. 16 km ENE Piedra Blanca. 12211 (CNAV). 18 Jul 1962. Ovary enlarging = 3 mm. Sarabia. 12529 (CNAV).

*Taxonomy:* We do not recognize the race *furtiva* (see also Lowery & Dalquest, 1951:602).

*Automolus ochrolaemus cervinigularis* (Sclater, 1857). Buff-throated Foliage-Gleaner.

*Breeding:* 10 Aug 1964. Ovary enlarging = lgst. ova 3 mm. Montebello. 13037 (CNAV). 11 Aug 1964. Juvenile; testes tiny; skull not completely ossified. Montebello. 13044 (CNAV).

*Xenops minutus mexicanus* (Sclater, 1857). Plain Xenops.

*Breeding:* 5 Mar 1969. T.G.E. = 9 x 6 mm. Finca San Carlos. 13935 (WJSC). 28 Mar 1962. T.E. = 7 x 5 mm. Montebello. 10951 (CNAV). 10 Jun 1962. Juvenile; testes tiny; skull not ossified. Donají. 12361 (CNAV).





***Taraba major melanocrissa*** (Sclater, 1860). Great Antshrike.

*Breeding:* From four specimens not available to Binford, we record the following data: 14 Jun 1961. T.E. = 11 x 6 mm. Sarabia. 12539 (ARPC). 6 Aug 1964. Ovary enlarging = lgst. ovum 3 x 2 mm, other developing follicles present. 5 km NE Sarabia. 12988 (CNAV). 18 Aug 1964. Juvenile; testes tiny; skull unossified. Being fed by adult, which escaped (*fide* Juan Nava S.). Arroyo Tonto, near Sarabia. 13158 (CNAV).

***Thamnophilus doliatus intermedius*** Ridgway, 1887. Barred Antshrike.

*Breeding:* 16 May 1961. Ovary enlarging ("O.S.E." on label) = lgst. ovum 4 mm, others 3 and 2 mm; oviduct present and enlarging (from field notes). Sarabia. 10295 (AMNH). 24 May 1962. Two males, both T.E. = 7 x 4 mm. 16 km ENE Piedra Blanca. 12100 and 12101 (CNAV). 18 Mar 1969. Ovary enlarging = lgst. ovum 2 mm, others 1 mm. Near Finca San Carlos. 14012 (WJSC).

***Grallaria guatemalensis mexicana*** Sclater, 1857. Scaled Antpitta.

Here we add a fourth lowland tropical evergreen forest specimen of this distinctive Atlantic slope subspecies: 11 Feb 1969. O.S.E. = lgst. ovum 1.5 x 1 mm. Near Finca San Carlos. 13553 (RSCC).

***Ornithion semiflavum*** (Sclater & Salvin, 1860). Yellow-bellied Tyrannulet.

Binford stated that his field parties took the only satisfactory records for the state of Oaxaca (three specimens and four sightings). WJS' field parties took six Oaxacan specimens and had a total of twelve sightings of this uncommon species between 15 Mar (Finca San Carlos) and 14 Aug (two seen at a point 5 km E Sarabia, WJS). The only breeding record was a specimen taken 18 Mar 1969 (T.E. = 8 x 5 mm), near Finca San Carlos. 14002 (WJSC). The other five specimens, and one taken 3 km N of the Oaxaca-Veracruz border were: 3 alcoholics from Montebello: 23 Mar, 25 Mar, and 28 Mar 1962. 10788, 10867, 10935 (YPM). 21 Apr 1962. O.N.E. or slightly. 4 km SW Suchilapa, Veracruz. 11391 (AMNH). 24 May 1962. 16 km ENE Piedra Blanca (point farthest S on Isthmus). 12111 (sex? Bird partly destroyed by shot; ARPC). 11 Aug 1964. T.N.E. Montebello. 13042 (CNAV).

***Camptostoma imberbe*** Sclater, 1857. Northern Beardless-Tyrannulet.

*Breeding:* 4 Apr 1960. T.E. = 6 x 4 mm. 2 mi E Tapanatepec. 9165 (WFVZ). 6 Jun 1962. Ovary enlarging = lgst. ovum 3 mm, other ova 2 and 1 mm. No oviduct visible. Sarabia. 12298 (CNAV). 6 Aug 1964. Immature; testes tiny; in fresh first basic plumage. 5 km E Sarabia. 12993 (CNAV).

***Elaenia flavogaster saturata*** Salvin & Sclater, 1860. Yellow-bellied Elaenia.

*Breeding:* 15 Jun 1961. O.E. = lgst ovum 8 mm; other large ova (5 and 4 mm) present (field notes). Constructing nest. Sarabia. 10284 (AMNH). 18 Jun 1961. Female on nest with two fresh eggs. Sarabia. RSC 255 (RSCC). 10 Aug 1964. Juvenile; testes tiny; juvenal plumage. Montebello. 13036 (CNAV).

*Taxonomy:* We follow Brodkorb (1943:1) in distinguishing Atlantic slope birds (on color characters and longer, slimmer bill) as *saturata*. Thus, *subpagana* occurs in México only in extreme SE Chiapas - Finca Esperanza to Tapachula on the arid Pacific coast. All of our specimens from the Atlantic slope were considered *saturata*.

***Mionectes oleagineus assimilis*** Sclater, 1859. Ochre-bellied Flycatcher.

*Breeding:* 27 Feb 1969. Testes enlarging = 5 x 2 mm. Near Finca San Carlos. 13826 (WJSC). 18 Mar 1960. Testes enlarging = 5.5 x 3 mm. Montebello. ARP 5590 (ARPC).

***Leptopogon amaurocephalus pileatus*** Cabanis, 1865. Sepia-capped Flycatcher.

*Breeding:* 7 Aug 1964. Juvenile; testes tiny; juvenal plumage. 5 km E Sarabia. 12996 (CNAV).

***Oncostoma cinereigulare*** (Sclater, 1867). Northern Bentbill.

*Breeding:* 3 Aug 1964. Juvenile molting into first basic plumage. 4 mi N and 2 mi E Matías Romero. 12967 (CNAV). 28 Jun 1961. O.S.E. = lgst. ovum 2 mm, oviduct large and wrinkled, indicating completion of laying, and bare (not edematous) incubation patch (field notes). Rancho Sol y Luna. 10439 (AMNH).

***Rhynchocyclus b. brevirostris*** (Cabanis, 1874). Eye-ringed Flatbill.

*Breeding:* 10 Aug 1964. Juvenile; testes tiny. Two large skull windows, but had just completed first prebasic molt. Montebello. 13013 (CNAV).

***Tolmomyias sulphurescens cinereiceps*** (Sclater, 1859). Yellow-olive Flycatcher.

*Breeding:* 9 Jun 1961. Adult female on nest with three fresh eggs. Sarabia. RSC 245 (RSCC).

***Onychorhynchus coronatus mexicanus*** (Sclater, 1857). Royal Flycatcher.

*Breeding:* 28 Jun 1961. Label says "O.S.E., large oviduct + brood patch present." Field notes give O.S.E. = lgst. ova 2 mm. Large, wrinkled oviduct and edematous brood patch indicate completion of laying and incubation. Rancho Sol y Luna. 10442 (AMNH). 3 Jun 1962. T.E. = 7 x 5 mm. 12 km ENE Piedra Blanca and 7 Aug 1964. T.E. = 6 x 3 mm. 5 km E Sarabia. 12995 (both in CNAV).

***Myiobius s. sulphureipygius*** (Sclater, 1857). Sulphur-rumped Flycatcher.

*Breeding:* 23 May 1962. T.E. = 5 x 3 mm, and O.S.E. = lgst. ova 2 mm. This was a presumed pair, captured 1 m apart in a mist net at the same time. Sarabia. 11548, 11549 (CNAV). 10 Aug 1964. Juvenal females; skulls not ossified and ovaries tiny, but in fresh first basic plumage; being fed by adult (*vide* Juan Nava S.). 13020 and 13022 (CNAV).

***Empidonax alnorum*** Brewster, 1895. Alder Flycatcher.

*New record.* 24 May 1962. T.E. = 6 x 4 mm. 16 km ENE Piedra Blanca. 12087 (ARPC). Identified in Mexico City by ARP and given to him.

***Attila spadiceus flammulatus*** Lafresnaye, 1848. Bright-rumped Attila.

*Breeding:* 12 Feb 1969. T.E. = 7 x 4 mm. Near Finca San Carlos. 13574 (WJSC). 8 May 1962. T.G.E. = 14 x 8 mm. Montebello. 11599 (CNAV). 13 Jul 1962. Juvenile; testes tiny; large skull windows; juvenal plumage. 12500 (CNAV).

*Rhytipterna h. holerythra* (Sclater & Salvin, 1860). Rufous Mourner.

Only one specimen of this very uncommon bird was taken during all those years: 23 Apr 1962. Ovary enlarging = lgst. ovum 4 mm, two others 3 and 2 mm. 4 km SW Suchilapa, Veracruz. 11415 (AMNH).

*Myiarchus tuberculifer lawrencii* (Giraud, 1841). Dusky-capped Flycatcher.

*Breeding:* 27 Mar 1962. T.G.E. = 11 x 7 mm. Montebello. 10849 (AMNH). 24 Apr 1962. Ovary enlarging = lgst. ovum 3 mm. Near Piedra Blanca. 11432 (CNAV). 18 May 1962. T.G.E. = 10 x 6 mm. 4 mi N and 2 mi E Matías Romero. 11929 (CNAV). 20 May 1962. O.S.E. = lgst. ovum 3 mm. 13 mi N Matías Romero. 11979 (CNAV). 12 Jun 1961. T.S.E. = 5 x 3 mm. Sarabia. 10218 (AMNH). Between the end of June and 7 Aug 1964, we saw very few birds of this species in the tropical evergreen forest of our area. On 7 Aug a single adult female (O.N.E.) was taken, and perhaps 10 birds were seen. There seemed to be an influx of this species then, as we saw them daily until 14 Aug, after which none were seen until we left on 18 Aug. This is consistent with WJS' hypothesis that this species is an intratropical migrant.

*Taxonomy:* Based on the measurements and color characteristics of our unworn adults in breeding condition, we agree with Miller *et al.* (1957) and Wetmore (1943:290) that Atlantic Isthmus breeding birds are intergrades between *lawrencii* and *connectens*.

*Myiarchus crinitus* (Linnaeus, 1758). Gret Crested Flycatcher.

A specimen taken 24 Jan 1985 by J. Francisco Ornelas at San Rafael Toltepec, Pochutla (CNAV 5608) suggests that besides being a rare migrant, it also is to be found wintering on the Atlantic slope. An adult male (WJS 11,434) taken near Piedra Blanca 24 Apr 1962 extends the spring migration period for the species on the Atlantic slope. Four specimens suggest a rare autumn, winter, and spring presence for this species in the state.

*Myiarchus tyrannulus cooperi* Baird, 1858. Brown-crested Flycatcher.

*Breeding:* 24 Apr 1962. T.G.E. = 16 x 9 mm. Near Piedra Blanca. 11443 (CNAV). 15 May 1962. T.G.E. = 16 x 7 mm. Sarabia. 11824 (CNAV). 16 May 1962. Ovary enlarging = lgst. ovum 4 mm. 4 mi N and 2 mi E Matías Romero. 11845 (CNAV). We agree that wintering birds on the eastern Pacific slope of the Isthmus are mainly intergrades with *magister*. Earliest arrival dates on the Atlantic slope were 15 Mar 1960 and 20 Mar 1961. We noted no birds of this species before these dates and none at Finca San Carlos in 1969 (we left on 21 Mar). It appears that this races does not winter on the Atlantic slope of Isthmian Oaxaca, and also that it leaves early after breeding for the second time, as we saw none after 31 July. This latter is typical intratropical migrant behavior.

*Pitangus sulphuratus guatemalensis* (Lafresnaye, 1852). Great Kiskadee.

*Breeding:* 2 Apr 1961. O.E. = large, soft-shelled egg (30 x 28 mm) in oviduct. Río Ostuta. RSC 207 (RSCC).

*Megarynchus pitangua mexicanus* (Lafresnaye, 1851). Boat-billed Flycatcher.

*Breeding:* 2 Apr 1961. T.E. = 11 x 7 mm. Río Ostuta. 10152 (AMNH). 28 Mar 1961. Ovary enlarging = lgst. ovum 2 mm, others 1 mm (from field notes). Río Ostuta. 10018 (AMNH). 12 Jun 1961. O.S.E. = lgst. ovum 2 mm, large, wrinkled oviduct indicating completion of laying (from field notes). Sarabia. 10225 (AMNH). 30 Jun 1961. T.E. = 13 x 7 mm. Rancho Sol y Luna. 10446 (AMNH).

*Myiozetetes similis texensis* (Giraud 1841). Social Flycatcher.

*Breeding:* 17 May 1961. Adult female, O.S.E.; taken with nest with three fresh eggs. Sarabia. RSC 238 (RSCC).

*Myiodynastes maculatus insolens* Ridgway, 1887. Streaked Flycatcher.

*Breeding:* Richard Crossin took an incubating female on her nest (three eggs) on 18 Jun 1961 at Sarabia. (RSCC).

*Myiodynastes l. luteiventris* Sclater, 1859. Sulphur-bellied Flycatcher.

*Breeding:* This species appears to be single-brooded in the Tuxtlas region of southern Veracruz (WJS, pers. obs.); breeding is triggered by the first rains of the rainy season. Breeding data from the Isthmus suggest a similar situation: 30 Apr 1962. T.E. = 9 x 4 mm. Montebello. 11493 (CNAV). 31 May 1962. T. E. = 14 x 8 mm. Singing. 12 km ENE Piedra Blanca. 12212 (CNAV). 12 Jun 1961. T.G.E. = 16 x 9 mm. Shot near nest hole (contents unknown, but another bird seen inside). Sarabia. 10228 (AMNH). 15 June 1961. O.E. and oviduct present; lgst. ovum = 8 mm, but oviduct swollen and wrinkled, indicating completion of laying (from field notes). Sarabia. 10282 (AMNH). 30 Jun 1961. O.S.E. = lgst. ovum 3 mm; oviduct shriveled, indicating subsidence, and edematous incubation patch present (from field notes). Rancho Sol y Luna. 10487 (AMNH). These birds depart early here, as elsewhere. The latest specimens taken were on 29 Jul, 11 and 13 Aug (12892, 13034, 13036, 1347, 13090; all CNAV). On 14 Aug 1964 we saw only five individuals, and then none until our departure on 18 Aug.

*Legatus leucophaeus variegatus* (Sclater, 1857). Piratic Flycatcher.

*Breeding:* 21 May 1962. O.E. = lgst. ova 5 and 3 mm, oviduct enlarging. 27 km ENE Piedra Blanca. 12015 (CNAV). Arrival dates at Montebello were 14 Mar 1960 and 22 Mar 1962. We saw individuals as late as 22 Jun at Montebello, but were unable to collect them. This species is probably also single-brooded in this region.

*Tyrannus c. crassirostris* (Swainson, 1826). Thick-billed Kingbird.

WJS took a third Atlantic slope record of this species that Binford apparently overlooked: 9 Mar 1960. O.N.E. Río Malatengo bridges. 8481 (WFVZ). In addition, Allan Phillips saw one at a point 12.5 mi N of Matías Romero on 20 Mar, and WJS saw one at Matías Romero on 18 Feb 1960.

***Tyrannus verticalis*** Say, 1823. Western Kingbird.

*Migration:* WJS took two specimens during the height of migration on the Pacific coastal plain: 30 Mar 1961. T.N.E. Very fat. One of over 100 seen in early morning in three flights of 28, 50+, and ca. 30 individuals at the Oaxaca-Chiapas line. 10073 (AMNH). 4 Apr 1960. T.N.E. Very fat. One of 7-8 seen on telephone wires, after passing 40+, 2 mi W of Tapanatepec. 9176 (CNAV). Our one presumed wintering record was a single male, with T.N.E., no fat, and heavy molt on the dorsal tract and in the right primaries. Rancho Sol y Luna. 8 Mar 1962. 10513 (CNAV). WJS saw an adult on telephone wires at Matías Romero on 24 Mar 1961. The species has recently been collected and seen as a vagrant during the spring migration period on the coast of the Gulf of México in the Tuxtla region (see Winker *et al.*, 1992a).

***Tyrannus tyrannus*** (Linnaeus, 1758). Eastern Kingbird.

Apparently the first valid specimens for the Atlantic slope in Isthmian Oaxaca are five birds WJS collected from a flock of 70+ birds on 20 May 1962 near Mogóne (four males and one female, all with unenlarged gonads and heavy fat). 11980, 11981, 11983 (CNAV), 11982, 11984 (RSCC). WJS saw the species regularly in 1960, 1961, and 1962 near Sarabia in obviously migrating flocks of 15 - 100+ individuals from 3 - 24 May. The Isthmus gap is definitely a flyway for the species.

***Tyrannus forficatus*** (Gmelin, 1789). Scissor-tailed Flycatcher.

*Migration:* WJS saw a flight of 16 birds in the late afternoon of 27 May 1962 at Sarabia, our latest date for the Atlantic slope. The first migrating birds were seen on 10 Mar 1969 (flock of eight at Finca San Carlos), and one was collected (T.N.E. Very fat. 13934 [WJSC]). Allan Phillips saw one bird on 7 Dec 1959 (11.3 road miles N Matías Romero), and Juan Nava and WJS saw another single bird at the Río Tolositas bridge on 12 Dec 1959. These were our only winter records for the Atlantic slope.

***Tyrannus savana monachus*** Hartlaub, 1844. Fork-tailed Flycatcher.

*Breeding:* Crossin took a female on a nest in a low orange tree at Sarabia in Jun 1961. WJS saw several occupied nests just E of Sarabia in Jun and Jul 1962. A pair was seen at a nest (contents unknown) in the upper canopy of swamp forest at the Río Malatengo bridges by Juan Nava, Peter Hubbell, and WJS, but we could not collect them due to impassable conditions. We also saw several in the marsh on the E bank of the Coatzacoalcos near Suchilapa, Veracruz on 21 Mar 1969, but none during our stay at Finca San Carlos.

***Pachyramphus cinnamomeus fulvidior*** Griscom, 1932. Cinnamon Becard.

*Breeding:* 17 Feb 1969. Ovary enlarging = lgst. ova 1 mm. 13681 and four other females (O.N.E.) on 17, 21, and 27 Feb 1969. Finca San Carlos. 13687, 13718, 13720, and 13818 (WJSC).

***Pachyramphus aglaiae sumichrasti*** Nelson, 1897. Rose-throated Becard.

*Breeding:* 18 Feb 1969. T.E. = 7 x 5 mm. Near Finca San Carlos. 13944 (WJSC). WJS observed active nest construction at Sarabia in late Mar, mid-May, late Jun and early Jul in 1961 and 1962.

*Tityra semifasciata personata* Jardine & Selby, 1827. Masked Tityra.

*Breeding:* 18 Feb 1969. T.E. = 11 x 6.5 mm. Near Finca San Carlos. 13695 (WJSC). 27 Feb 1960. T.G.E. = 12 x 6 mm. Río Sarabia bridge. 8298 (WFVZ). 17 Mar 1960. T.E. = 14 x 6 mm. Montebello. 8749 (WFVZ). 9 Apr 1962. O.E. = lgst. ovum 4 mm. Río Grande. 11204 (CNAV). 24 May 1962, pair at nest: T.E. = 12 x 8 mm, and O.E. = lgst. ovum = 6 mm. 16 km ENE Piedra Blanca. 12102 and 12103 (CNAV). 11 Jun 1961. O.S.E. = lgst. ovum 2 mm, but shriveled, wrinkled oviduct and edematous incubation patch present, indicating completion of laying and initiation of incubation (from field notes). Sarabia. 10195 (AMNH). 9 Aug 1964. Juvenile; ovary tiny; two large skull windows; juvenal plumage. 2 km E Sarabia. 13005 (CNAV).

*Tityra inquisitor fraserii* (Kaup, 1852). Black-crowned Tityra.

*Breeding:* 23 May 1962. Pair shot bringing food to nesting hole (contents unknown). Ovary enlarging = lgst. ovum 3 mm, others 2 and 1 mm. T.E. = 10 x 6 mm. 8 mi N Matías Romero. 12067 and 12068 (CNAV). 30 Jul 1964. Pair shot at nest hole. O.E. = lgst. ovum 6 mm, other ova 4 and 3 mm. T.E. = 10 x 5 mm. 5 km E Sarabia. 12905 and 12906 (CNAV).

*Lipaugus unirufus* Sclater, 1859. Rufous Piha.

*Breeding:* 15 Feb 1969. T.E. = 7 x 5 mm. Finca San Carlos. 13646 (WJSC). 24 May 1962. Ovary enlarging = lgst. ovum 3 mm, others 2 mm. Oviduct not evident. 16 km ENE Piedra Blanca. 12107 (ARPC).

*Cotinga amabilis* Gould, 1857. Lovely Cotinga.

*Breeding:* 21 Mar 1962. T.E. = 12 x 5 mm. Montebello. 10720 (WFVZ).

*Schiffornis turdinus veraepacis* (Sclater & Salvin, 1860). Thrush-like Manakin.

*Breeding:* 19 Feb 1969. T.E. = left 10 x 7 mm, right 8 x 5 mm. Finca San Carlos. 13703 (WJSC). 23 Mar 1960. T.E. = left 12 x 8 mm, right 8 x 5 mm. Montebello. 8950 (WFVZ). 21 Apr 1962. T.E. = 10 x 7 mm. 4 km SW Suchilapa, Veracruz. 11378 (CNAV). 31 May 1962. O.E. = lgst. ovum 4 mm; oviduct not evident. 12 km ENE Piedra Blanca. 12205 (CNAV). 10 Jun 1962. T.E. = 9 x 6 mm. Donají. 12359 (CNAV). 10 Aug 1964. O.N.E. Montebello. 13033 (CNAV). We had three more specimens (13, 21, and 25 Feb 1969; 13 Feb male with T.E. = 8 x 5 mm; rest in nonbreeding condition), and we released at least 15 birds. It was judged to be fairly common, but only by using mist nest in forest arroyos.

*Manacus candei* (Parzudaki, 1841). White-collared Manakin.

*Breeding:* 26 Feb 1969. T.S.E. = 5 x 3 mm. Finca San Carlos. 13793 (WJSC). 5 Mar 1969. O.S.E. = lgst. ovum 2 mm. Finca San Carlos. 13936 (WJSC). 28 Mar 1960. Testes enlarging = 6 x 3.5 mm. Shot on lek where two other males were par-

ticipating. Montebello. 9027 (WFVZ). 13 Jun 1962. T.E. = 8 x 5 mm. Montebello. 12501 (CNAV). 15 Jun 1961. O.E. = lgst. ovum 4 mm; oviduct developing. Sarabia. RSC 250 (RSCC). 11 Aug 1964. T.E. = 7 x 5 mm. Also shot on lek where there were two other males. Montebello. 13051 (CNAV).

***Chiroxiphia l. linearis*** (Bonaparte, 1838). Long-tailed Manakin.

*Breeding:* On 7 Apr 1961, Richard Crossin and WJS watched four males "dancing" on a lek in tropical deciduous forest at about 800 ft elevation, 3 mi N El Jícara. After watching, we collected two of them: T.S.E. = 4 x 2 mm and 5 x 3 mm. RSC 205 (RSCC) and 10136 (AMNH). Then, at Rancho Sol y Luna, we collected the following: 25 Jun 1961. O.E. = large (18 mm), non-shelled egg in oviduct. 10387 (AMNH). 26 Jun 1961. O.S.E., but shot on nest with one egg. RSC (RSCC). 27 Jun 1961. Juvenile; testes tiny; skull with large windows. 10431 (CNAV).

***Pipra m. mentalis*** (Sclater, 1857). Red-capped Manakin.

*Breeding:* 12 Feb 1969. T.E. = 7 x 5 mm. Shot on lek where 4 other males were present. 5 Mar 1969. O.S.E. = lgst. ovum 2 mm. Near Finca San Carlos. 13572, 13930 (WJSC). 10 Aug 1964. O.S.E. = lgst. ovum 2 mm, but edematous brood patch present, indicating incubation.

***Progne c. chalybea*** (Gmelin, 1798). Gray-breasted Martin.

*Breeding:* Five birds shot from a flock of 35+ circling over Sarabia on 2 Mar 1961 had enlarging gonads: two males T.S.E. = 4 x 2 mm; and three females O.S.E. = lgst. ova 1 mm. 9750 - 9754; AMNH). They provide an arrival date as well, as they were the first birds seen that year. 8 Jun 1962. A pair shot sitting together on a wire. T.E. = 12 x 9 mm. O.S.E. = lgst. ovum 2 mm. 12323 and 12324 (CNAV). On 3 Jul 1962 WJS took five birds with unenlarged gonads from a flock of 40+ travelling on a general N to S line at Donají (three males, two females). 12456 - 12459, and 12464 (CNAV). A few more flocks were seen travelling southward afterwards, and then none after 15 Jul. The specimen cited by Binford (WFVZ 30,261) was shot from one of many flocks seen that day, and WJS collected another male from this same flock: T.E. = 11 x 7 mm. 11535 (CNAV). All of these flocks (ca. 12) seen on 3 May 1962 were travelling on a general S to N line.

***Tachycineta bicolor*** (Vieillot, 1807). Tree Swallow.

*New record.* Tree Swallows were seen clearly and at close range (30 - 60 m) in two small flocks of 8 and 15+ birds by Peter Hubbell and WJS on 20 Mar 1969, over the Río Coatzacoalcos near Finca San Carlos, amid hundreds of migrating Violet-green, Barn, and Cliff swallows (*Tachycineta thalassina*, *Hirundo rustica*, and *H. pyrrhonota*).

***Tachycineta t. thalassina*** (Swainson, 1827). Violet-green Swallow.

*Migration:* Our 1969 observations of this species over the Río Coatzacoalcos near Finca San Carlos (to 8 km S) are summarized here: 4 - 10 Mar, 25 - 100+ seen daily in flocks of 12 - 17 birds, peaking on 12 and 13 Mar with 600 - 1000 seen daily in larger flocks, decreasing in numbers and flock size until 20 Mar (200+ in 15

small flocks). We left the finca the next day and counted 8 more flocks of 10 - 20+ birds before leaving the river at Suchilapa, Veracruz. In 1968, Parkes' field party saw a few small flocks from 23 -28 Mar (Finca San Carlos). These records are in contrast to Binford's statement that the species is a rare spring transient over rivers in the Atlantic slope lowlands.

*Stelgidopteryx serripennis fulvipennis* (Sclater, 1860). Northern Rough-winged Swallow.

*Breeding:* 27 Mar 1962. T.E. = 6 x 3 mm. 10924, from a flock found 14.5 road mi N Matías Romero. (USNM). 24 Apr 1962. Two females (O.E. = lgst. ovum 2 mm) in nesting holes under bridge near Piedra Blanca. 11445 (CNAV) and 11446 (USNM).

*Hirundo pyrrhonota* (Vieillot, 1817). Cliff Swallow.

*Migration:* On 18 Mar 1969 WJS shot three birds from a single large flock (45+ birds) on the Río Coatzacoalcos. Allan Phillips later identified these birds as three subspecies: *aprophata* Oberholser (14014), *melanogaster* Swainson (14016), and *tachina* Oberholser (14015). (All CNAV). Migrating flocks were seen at Finca San Carlos on 16 Mar (one flock of 20+), 18 Mar (est. 200+ all day), and 21 Mar (est. 150+ in four hours in the morning between Finca San Carlos and Suchilapa). At Sarabia flocks were seen from a first date of 17 Mar to 28 Apr 1962, with an apparent peak of passage (est. 300-500 seen daily) between 2 - 16 Apr, thence diminishing until last date.

*Hirundo rustica erythrogaster* Boddaert, 1783. Barn Swallow.

Fulfilling Binford's (1989:329) prediction that the species would be found to winter regularly, and supporting Phillips' hypothesis that they do (pers. comm.), WJS had 18 sightings of this species in the long-cleared agricultural areas of the transisthmian highway and railroad (Matías Romero N to Sarabia) between 3 Feb and 1 Mar - always from 2-7 birds among Northern Rough-winged Swallows (*Stelgidopteryx serripennis*). On the Río Coatzacoalcos in 1969 we had no sightings of *any* swallows except Mangrove Swallows (*Tachycineta albilinea*) from 9 Feb to 4 Mar, when the first two small flocks (8 and 20+) of Barn Swallows were seen. This was undoubtedly due to the still more or less contiguous forest existing at that time. WJS has since found the species to winter (always in small numbers), in the Catemaco basin of the Tuxtla region on the northern Isthmus in Veracruz (see also Winker *et al.*, 1992b). Dates for definitely migrating birds in Oaxaca in other years were: 6 Mar 1960, 7 Mar 1961, and 3 Mar 1962. It seems unlikely that birds seen from Dec to the end of Feb are early or late migrants.

*Cyanocorax yncas persimilis* Phillips, 1966. Green Jay.

*Breeding:* 16 May 1962. O.E. = lgst. ovum 11 mm, other large ova present. 4 mi N and 2 mi E Matías Romero. 11868 (CNAV). 18 Jun 1961. O.S.E., but oviduct large and wrinkled, indicating completion of laying (from field notes). Sarabia. 10322 (AMNH).



*Taxonomy:* In 1962, WJS compared the 15 adult Atlantic slope specimens obtained (from 4 mi N and 2 mi E of Matías Romero to 16 mi N of same) with 12 adults taken at Cacahuatal, 4 km E Rizo de Oro, Chiapas (ca. 10 km E of the Oaxaca-Chiapas border, and ca. 85 km NW of the type locality near Pijijiapan, Chiapas). All were taken in May and Jun 1962, and so were in comparable states of plumage wear. All had yellow irides except for two immatures of *confusus* (Phillips, 1966) and two of *persimilis* (last taken in 1961), which had reddish-brown irides. The differences noted then (1962) were that *confusus* was larger; wings were slightly longer but tails were definitely longer (Table 2). Further, color differences were distinct. Atlantic slope birds (*persimilis*) were darker and duller on average, with distinctly greenish, not yellowish-green, backs and rumps, with paler green on flanks and venter. The crowns and napes of these birds were distinctly more purplish-blue. An adult female from Rancho Sol y Luna (11 May 1962) was near *confusus*. Thus, all of the Atlantic slope birds taken were considered to be *persimilis*, intergrading to the SE with *confusus* and to the NW with *luxuosus* Lesson in southcentral Veracruz.

*Campylorhynchus zonatus restrictus* (Nelson, 1901). Band-backed Wren.

*Breeding:* 30 Jul 1964. Flúvenal plumage; being fed by adult. 5 km NE Sarabia. 12903 (CNAV). 8 Aug 1964. O.E. = lgst. ovum 4 mm, swollen oviduct and edematous brood patch present. 5 km NE Sarabia. 12991 (CNAV).

*Campylorhynchus rufinucha humilis* Sclater, 1856. Rufous-naped Wren.

*Breeding:* 5 Aug 1964. Female in juvenal plumage being fed by adult (12985, O.N.E.). 2 mi S Chivela Jct. 12983 (both CNAV).

*Thryothorus pleurostictus* near *acaciarum* Brodkorb, 1942. Banded Wren.

*Breeding:* 26 Jun 1961 (same date and locality as juvenile cited by Binford). Female collected with nest containing four eggs. RSC 265 (RSCC). Ten of the 14 specimens from Rancho Sol y Luna were intergrades with *acaciarum*. This female and three other specimens were closer to *acaciarum* than *oaxacae* (Brodkorb, 1942): more finely barred on flanks and tail, and with definite brownish wash on belly and flanks.

*Uropsila l. leucogastra* (Gould, 1837). White-bellied Wren.

*Breeding:* 18 May 1962. T.G.E. = 8 x 5 mm. 4 mi N and 2 mi E Matías Romero. 11933 (CNAV). 28 Jul 1964. Male in juvenal plumage being fed by adult (female, O.N.E.; 12881). Sarabia. 12882 (both CNAV).

*Henicorhina leucosticta prosthaleuca* (Sclater, 1857). White-breasted Wood-Wren.

*Breeding:* 2 Mar 1969. T.G.E. = 8 x 5 mm. Finca San Carlos. 13879 (WJSC). 27 Jul 1964. T.E. = 5 x 3 mm. Sarabia. 12870 (CNAV).

*Ramphocaenus melanurus rufiventris* (Bonaparte, 1837). Long-billed Gnatwren.

**Table 2.** Summary statistics of wing chord and tail lengths in two subspecies of *Cyanocorax yncas*

	<i>persimilis</i>		<i>confusus</i>	
	Males	Females	Males	Females
Number	9	6	9	5
A. Wing chord				
Average	121.06	121.00	122.79	122.00
Standard Deviation	2.37	1.63	2.48	2.70
Maximum	124.0	123.0	126.5	125.0
Minimum	116.5	118.0	119.0	117.5
B. Tail				
Average	131.72	130.70	137.64	136.00
Standard Deviation	1.73	1.66	3.06	2.00
Maximum	134.0	133.0	142.0	139.0
Minimum	129.0	128.0	133.5	133.0

*Breeding:* 10 Jun 1961. Two males, T.G.E. = 7 x 4 mm (field no1 and 10168 (AMNH)). 10 Aug 1964. Juvenile female (two large skull windows) and T.E. = 5 x 3 mm. Montebello. 13018 and 13019 (CNAV).

***Poliophtila plumbea*** [*brodkorbi* Parkes, 1979]. Tropical Gnatcatcher.

*Breeding:* 18 Aug 1964. Juvenile male. Arroyo Tonto, near Sarabia. 13149 (CNAV). This specimen was considered by Phillips (in 1964) as "most probably this species."

***Turdus grayi lanyoni*** Dickerman, 1981. Clay-colored Robin.

*Breeding:* 15 May 1962. O.E. = 25 mm shelled egg in oviduct; other large ova present. T.G.E. = 17 x 10 mm. Sarabia. 11817 and 11816 (CNAV). 12 Jun 1961. O.E. = lgst. ovum 10 mm; large, swollen oviduct present. Sarabia. 10231 (AMNH). 26 Jun 1961. "Juvenile" on label; field notes give: skull windows, testes tiny, and fresh first basic plumage (=immature). Rancho Sol y Luna. 10420 (AMNH).

***Mimus gilvus gracilis*** Cabanis, 1851. Tropical Mockingbird.

*Breeding:* 31 Mar 1960. T.E. = 9 x 5 mm. 21 mi E Juchitán. ARP 5635 (ARPC). A wintering *M. polyglottos* was taken 18 Mar 1960 at Montebello. 8831 (WFVZ).

*Vireo f. flavoviridis* (Cassin, 1851). Yellow-green Vireo.

*Breeding*: 26 Jun 1961. T.G.E. = 12 x 8 mm. Taken as it flushed from nest with one egg. Rancho Sol y Luna. RSC 266 (RSCC).

*Hylophilus o. ochraceiceps* Sclater, 1859. Tawny-crowned Greenlet.

*Breeding*: 18 Mar 1969. Testes enlarging = 5 x 3 mm. Finca San Carlos. 14005 (WJSC). 24 May 1962. T.G.E. = 8 x 5 mm. Río Chichihui. 16 km ENE Piedra Blanca. 12092 (ARPC).

*Hylophilus decurtatus dickermanni* Parkes, 1991. Lesser Greenlet.

*Breeding*: 24 Apr 1962. T.E. = 7 x 5 mm. Near Piedra Blanca. 11447 (CNAV). 23 May 1962. T.E. = 8 x 5 mm. 16 km ENE Piedra Blanca. 12077 (CNAV). 15 Jun 1962. T.E. = 7 x 4 mm. 4 mi N and 2 mi E Matías Romero. 12417 (CNAV).

*Vireolanius pulchellus* cf. *ramosi* Phillips, 1991. Green Shrike-Vireo.

*Breeding*: 27 Feb 1969. T.G.E. = 11 x 8 mm. Finca San Carlos. 13812 (WJSC).

*Cyclarhis gujanensis flavirostris* Lafresnaye, 1842. Rufous-browed Peppershrike.

*Breeding*: 23 May 1962. T.E. = 9 x 6 mm. 8 mi N Matías Romero. 12081 (CNAV). 17 Jun 1961. Juvenile male; two large skull windows. Sarabia. 10320 (AMNH). 3 Aug 1964. T = 5 x 3 mm, subsiding after breeding? El Guanacaste, 4 mi S Sarabia. 12964 (CNAV). 17 Jun 1961. O.S.E. Sarabia. RSC 253 (RSCC).

*Vermivora pinus* (Linnaeus, 1766). Blue-winged Warbler.

WJS collected an adult male (skull ossified; testes small; no fat) in prealternate molt on 25 Feb 1969 at Finca San Carlos. 13903 (WJSC). Peter Hubbell and WJS saw two others on 12 and 16 Mar at the Finca. Most probably an uncommon winterer here.

*Helmitheros vermivorus* (Gmelin, 1789). Worm-eating Warbler.

A specimen (adult female, O.N.E.; heavy fat) was taken 26 Apr 1962 at a point 4 km SW Suchilapa, Veracruz. But Peter Hubbell and WJS saw several at Montebe- llo and E of Sarabia on 18, 22, and 26 Apr. Also, a male was taken 15 May 1987 9 km W of San Miguel Mixtepec (collector unknown). These appear to be the latest dates for the Atlantic slope (*vide* Binford, 1989).

*Geothlypis poliocephala palpebralis* Ridgway, 1887. Gray-crowned Yellowthroat.

*Breeding*: 15 Jun 1962. T.E. = 9 x 6 mm. 4 mi N and 2 mi E Matías Romero. 12428 (CNAV). 15 Jul 1962. Immature in fresh first basic plumage. Rancho Las Cruces, Donají. 12158 (CNAV). 13 Aug 1964. O.G.E. = lgst. ovum 15 mm, others 7, 5, and 4 mm. Sarabia (CNAV).

*Euthlypis lachrymosa* (Bonaparte, 1850). Fan-tailed Warbler.

*Breeding*: 27 Jun 1961. T.G.E. = 4 x 7 mm. Rancho Sol y Luna. 10436 (AMNH).

*Basileuterus rufifrons flavigaster* Nelson, 1897. Rufous-capped Warbler.

*Breeding:* 10 Jun 1961. T.E. = 9 x 6 mm. Collected on nest with three eggs. Sarabia. RSC 246 (RSCC). 6 Jul 1962. T.G.E. = 11 x 6 mm. 5 km E Sarabia. 12481 (CNAV).

***Granatellus v. venustus*** Bonaparte, 1850. Red-breasted Chat.

*Breeding:* 29 Jun 1961. O.E. = several large follicles (2 and 3 mm), but large, wrinkled oviduct and edematous brood patch present (from field notes). Rancho Sol y Luna. 10447 (AMNH).

***Coereba flaveola mexicana*** (Sclater, 1856). Bananaquit.

*Breeding:* 10 Jun 1962. Immature in fresh first basic plumage; testes tiny. Río Tolosita bridge. 12369 (CNAV).

***Tangara l. larvata*** (Du Bus, 1846). Golden-masked Tanager.

*Breeding:* 11 Mar 1969. T.E. = 9 x 6 mm. Finca San Carlos. 13947 (WJSC). 21 May 1962. T.E. = 7 x 4 mm. 27 km ENE Piedra Blanca. 11993 (CNAV). The southernmost point where a specimen was taken was 9.3 road mi N Matías Romero (10 Feb 1960, adult male, T.N.E.; WFVZ).

***Chlorophanes spiza*** (Linnaeus, 1758). Green Honeycreeper.

We have another Palomares specimen from del Toro Avilés (male, Dec 1947), as well as a male from "Santo Domingo Occidente" (probably Isthmian) taken by M. Olalla on 2 Sep 1958.

***Cyanerpes cyaneus carneipes*** (Sclater, 1859). Red-legged Honeycreeper.

The northwesternmost nonbreeding specimen is a female taken on the Pacific slope 5 km E of Putla on 26 Oct 1985 by E. Hernández.

*Breeding:* 13 Mar 1969. T.G.E. = 10 x 6 mm. Finca San Carlos. 13955 (WJSC). 3 Jul 1962. T.E. = 7 x 4 mm. Donají. 12465 (CNAV). We only saw several birds during late Jul (all in basic plumage), and none during Aug 1964.

***Euphonia affinis olmecorum*** Dickerman, 1981. Scrub Euphonia.

*Breeding:* 9 Mar 1961. Ovary enlarging = many developing follicles, lgst. 1 mm. Montebello. 9726 (AMNH). 23 May 1962. T.E. = 9 x 6 mm. 8 mi N Matías Romero (RSCC). 15 Jun 1962. T.S.E. = 5 x 3 mm. 4 mi N and 2 mi E Matías Romero. 12425 (CNAV). Farthest S on Isthmus for this race; see Dickerman (1981:4).

***Euphonia hirundinacea caribbaea*** Phillips, 1966. Yellow-throated Euphonia.

*Breeding:* 4 Mar 1969. T.E. = 6 x 4 mm. Finca San Carlos. 13920 (WJSC). 21 May 1962. Ovary enlarging = lgst. ova 2 mm, others 1 mm. 16 km ENE Piedra Blanca. 12090 (CNAV). 21 May 1962. T.E. = 8 x 5 mm. 27 km ENE Piedra Blanca. 11992 (CNAV). 27 Jul 1964. Juvenile (large skull windows; ovary tiny). Sarabia. 12871 (CNAV).

***Euphonia g. gouldi*** Sclater 1857. Olive-backed Euphonia.

*Breeding:* 4 Mar 1969. T.E. = 6 x 4 mm. Finca San Carlos. 13933 (WJSC).

***Thraupis episcopus cana*** (Swainson, 1827). Blue-gray Tanager.

*Breeding:* 11 Feb 1969. Ovary enlarging = lgst. ova 1 mm. Finca San Carlos. 13567 (WJSC). 4 Mar 1969. O.S.E. = lgst. ovum 3 mm, others 2 and 1 mm. Finca San Carlos (WJSC). 3 Jul 1962. O.E. - lgst. ovum 8 mm; oviduct large and swollen. Donají. 5 Jul 1962. T.E. = 7 x 4 mm. Donají. 28 Jul 1964. Juvenile (large skull windows, ovary tiny, molting into first basic plumage) being fed by adult. Sarabia. 12460, 12516, and 12885 (CNAV).

***Thraupis abbas*** (Deppe, 1830). Yellow-winged Tanager.

*Breeding:* 15 Feb 1969. T.E. = 8 x 5 mm. 4 Mar 1969. T.E. = 9 x 5 mm. Finca San Carlos. 13657, 13906 (WJSC). 1 May 1962. O.E. = lgst. ovum 7 mm, others 5, 4, and 3 mm. Montebello. 11514 (AMNH). 16 Jun 1961. O.E. = lgst. ovum = 11 mm, others 7 and 4 mm. Sarabia. 10306 (AMNH).

***Eucometis penicillata pallida*** Berlepsch, 1888. Gray-headed Tanager.

*Breeding:* The mate of the female reported by Binford (1989) is 11595; T.E. = 8 x 3 mm. WJS took it in bushes near the net where its mate was calling loudly. The specimen was in ARPC. WJS took six other specimens of this rare species: 24 May 1962. T.G.E. = 9 x 5 mm. One of a pair seen 16 km ENE Piedra Blanca. 12099 (CNAV). 14 Feb 1969. Adult male and female netted flying together. 13634 and 13635 (WJSC). 15 Feb 1969. Two adult males. 13650 and 13653 (WJSC). 16 Feb 1969. Adult female. All of these birds were taken near Finca San Carlos and had unenlarged gonads and moderate fat. We saw none after the last date in 1969. These data suggest that there may be an annual movement through this area.

***Lanio aurantius*** (Lafresnaye, 1846). Black-throated Shrike-Tanager.

*Breeding:* Two immatures: skulls largely unossified, testes tiny, and in female-type first basic plumage. 10 Aug 1964. Montebello. 13021 (CNAV) and 16 Aug 1968 (collected by Juan Nava S. and given to WJS). Donají. 13518 (WJSC).

***Habia rubica rubicoides*** (Lafresnaye, 1844). Red-crowned Ant-Tanager.

*Breeding:* 31 Mar 1962. T.E. = 7 x 5 mm. Montebello. 11041 (CNAV). 21 Apr 1962. T.G.E. = 18 x 11 mm. 4 km SW Suchilapa, Veracruz. 11374 (AMNH). 8 May 1962. T.G.E. = 15 x 9 mm. Montebello. 11606 (CNAV). 20 May 1961. T.E. = 12 x 6 mm. In subadult plumage. Montebello. 10359 (AMNH).

***Habia fuscicauda salvini*** (Berlepsch, 1883). Red-throated Ant-Tanager.

*Breeding:* 27 Mar 1962. Ovary enlarging = lgst. ovum 2 mm, others 1 mm. T.E. = 9 x 4 mm. Montebello. 10915 and 10916 (AMNH). 18 May 1962. Ovary enlarging = lgst. ovum 4 mm, others 3 and 2 mm. T.E. = 12 x 8 mm. Montebello. 11923 and 11921 (CNAV).

***Piranga flava dextra*** Bangs, 1907. Hepatic Tanager.

*Breeding:* 28 Jun 1961. T.E. = 12 x 8 mm. Rancho Sol y Luna. 10444 (AMNH).

***Piranga olivacea*** (Linnaeus, 1758). Scarlet Tanager.

*New record.* An adult male (T.S.E. = 4 x 2 mm), with heavy fat and in fresh alternate plumage (except for six green feathers remaining among the upper tail coverts), was collected by Juan Nava S. at the Río Sarabia bridge forest on 2 May 1962. The specimen was lost in the field. This was the only bird of this species encountered, and we consider it a vagrant blown S from its normal migration route. Another specimen, a female, was taken by M. G. Sánchez on 25 Mar 1982 at Santo Domingo Zanatepec, Rancho Chepenegro (CNAV).

***Saltator coerulescens grandis*** (Deppe, 1830). Grayish Saltator.

*Breeding:* 15 May 1962. T.E. = 10 x 7 mm. O.E. = lgst. ovum 4 mm, but large, wrinkled oviduct and edematous brood patch present, indicating incubation (field notes). 11828 and 11829 (male ARPC, female CNAV). 22 Jun 1961. O.S.E., taken on nest with two eggs. RSC 260 (RSCC). All three above specimens taken at Sarabia, where the species was common. 9 Aug 1964. Fledgling (testes tiny, juvenal plumage, being fed by adult). Sarabia. 13007 (CNAV).

***Saltator maximus gigantodes*** Cabanis, 1851. Buff-throated Saltator.

*Breeding:* 29 Mar 1962. T.E. = 11 x 8 mm. Montebello. 10991 (CNAV). 15 May 1962. T.E. = 8 x 5 mm. O.E. = lgst. ovum 2 mm, others 1 mm; no oviduct evident. Sarabia. 11812 and 11815 (CNAV).

***Saltator a. atriceps*** (Lesson, 1832). Black-headed Saltator.

*Breeding:* 29 Mar 1962. T.E. = 9 x 6 mm. Montebello. 10989 (CNAV). 7 May 1962. T.G.E. = 17 x 12 mm. Montebello. 11512 (CNAV). 15 May 1962. T.E. = 15 x 11 mm. O.E. = lgst. ovum 12 mm, oviduct swollen. Sarabia. 11806 and 11810 (CNAV). 7 Aug 1964. O.E. = lgst. ovum 4 mm, but large, wrinkled oviduct present, indicating completion of laying. 2 km W Sarabia. 12949 (CNAV). Allan Phillips and WJS considered the specimens from Río Grande and 4 mi N and 2 mi E Matías Romero as intergrades with *S. a. peeti* Brodkorb.

***Caryothraustes p. poliogaster*** (Du Bus, 1847). Black-faced Grosbeak.

*Breeding:* 21 Mar 1962. T.G.E. = 9 x 6 mm. O.E. = lgst. ovum 3 mm. Montebello. 10715 and 10716 (AMNH). 21 May 1962. T.G.E. = 9 x 6 mm. Ovary enlarging = lgst. ovum 3 mm. 27 km ENE Piedra Blanca. 12005 and 12006 (CNAV).

***Cardinalis cardinalis littoralis*** Nelson, 1897. Northern Cardinal.

*Breeding:* 14 Jun 1962. T.G.E. = 12 x 7 mm. Sarabia. 12405 (AMNH). 6 Jul 1962. T.E. = 8 x 5 mm. 5 km E Sarabia. 12477 (USNM). 19 Jul 1962. T.S.E. = 6 x 3 mm, subsiding? 3 km E Sarabia. 12537 (USNM).

***Cyanocompsa cyanooides concreta*** (Du Bus, 1855). Blue-black Grosbeak.

*Breeding:* 10 Feb 1969. T.E. = 8 x 5 mm. Finca San Carlos. 13450 (WJSC). 18 Apr 1962. T.E. = 9 x 5 mm. "4 kms. E. and 1/2 km. N Oaxaca-Veracruz line" = 4 km from road junction to Suchilapa, Veracruz and 0.5 km N of state border. 11325 (AMNH). 4 Jun 1962. T.E. = 4 x 6 mm. 12 km ENE Piedra Blanca. 12266

(CNAV). 17 Jun 1962. T.G.E. = 11 x 7 mm. Donají. 12431 (CNAV). 14 Aug 1964. T.S.E. = 6 x 4 mm, subsiding? Arroyo Tonto, near Sarabia. 13108 (CNAV).

*Cyanocompsa p. parellina* (Bonaparte, 1850). Blue Bunting.

*Breeding:* 28 Jul 1964. T.G.E. = 11 x 7 mm. Sarabia. 12879 (CNAV). 14 Aug 1964. Two males T.E. = 8 x 5 mm and T.E. = 9 x 6 mm. Sarabia. 13106 and 13107 (CNAV).

*Passerina leclancherii grandior* Griscom, 1934. Orange-breasted Bunting.

*Breeding:* 8 Jul 1962. O.S.E. = lgst. ovum 2 mm (large wrinkled oviduct and edematous brood patch present; from field notes). 13 mi E Juchitán. 12485 (CNAV). 27 Jun 1961. T.G.E. = 8 x 5 mm. O.S.E., but large, wrinkled oviduct present. Rancho Sol y Luna. RSC 268 and RSC 269 (SWCK).

*Spiza americana* (Gmelin, 1789). Dickcissel.

*Migration:* 18 May 1962. O.N.E. Heavy fat. Shot from flock of 15+ 4 mi N and 2 mi E Matías Romero. 11907 (SWCK). Latest date for Isthmus.

*Arremon aurantirostris saturatus* Cherrie, 1891. Orange-billed Sparrow.

*Breeding:* 2 Mar 1969. T.S.E. = 5 x 3 mm. Finca San Carlos. 13883 (WJSC). 26 Apr 1962. T.E. = 9 x 6 mm. T.E. = 8 x 5 mm. Ovary enlarging = lgst. ovum 2 mm. All three taken in a net within 1.5 m of each other at the same instant. Courtship chasing? 4 km SW Suchilapa, Veracruz. 11479, 11480, and 11481 (CNAV). 10 Jun 1962. Same place and date as cited by Binford (WFVZ 26517; *ex* Bull coll.): T.G.E. = 13 x 9 mm. 12365 (RSCC).

*Arremonops rufivirgatus crassirostris* (Ridgway, 1878). Olive Sparrow.

*Breeding:* 23 Feb 1961. T.E. = 7 x 5 mm. Río Sarabia bridge. 9493 (AMNH). 29 Mar 1962. Ovary enlarging = lgst. ova 1 mm, other developing follicles. Montebello. 10997 (CNAV). 6 May 1962. T.G.E. = 11 x 7 mm. Montebello. 11567 (CNAV). 13 Jun 1961. T.G.E. = 11 x 7 mm. O.S.E. = granular, but large, wrinkled oviduct present, indicating completion of laying. Donají. 10253 and 10277 (AMNH).

*Volatinia jacarina splendens* (Vieillot, 1817). Blue-black Grassquit.

*Breeding:* 15 Feb 1969. Juvenile female in juvenal plumage with no molt. Finca San Carlos. 13638 (WJSC). This constitutes evidence for a winter (ca. Jan) breeding episode. 26 Jun 1961. T.G.E. = 8 x 5 mm (in field notes). Rancho Sol y Luna. 10393 (AMNH). 8 Jul 1962. T.G.E. = 7 x 5 mm. Sarabia. 12491 (CNAV). 15 Jul 1962. O.E. = lgst. ovum 4 mm, others 3 and 2 mm; oviduct developing. Donají. 12513 (CNAV).

*Sporophila schistacea subconcolor* Berlioz, 1959. Slate-colored Seedeater.

In 1969 the WJS field party made a determined and continuous (Feb - 20 Mar) effort to locate this taxon at the alleged type locality (confluence of the Río Sarabia and Río Coatzacoalcos) while based at Finca San Carlos. It seems highly unlikely that the species was taken here, adding to the doubts expressed by others who have repudiated the use of Mario del Toro Avilés' specimens. Further, it is doub-

that in the autumn of 1957 (date of the collection of the types) there were enough forest clearings here to have attracted the species. Its validity as a member of the avifauna of Oaxaca is questionable (see also Binford, 1989:255).

*Sporophila aurita corvina* (Sclater, 1859). Variable Seedeater.

Binford listed this species as "very uncommon" south to Montebello, based on Rook's specimen (WFVZ-HC 4727). WJS took a specimen (8426, adult female, O.N.E.; WFVZ) on 8 Mar 1960 at the same location, but also two more specimens 12 km ENE Piedra Blanca (or ca. 19 km NE Matías Romero), making these the southernmost specimens taken on the Isthmus. The specimens were in breeding condition on 31 May 1962, and were a pair, taken in tall marsh grass: T.E. = 7 x 4 mm. Ovary enlarging = lgst. ovum 3 mm. 12214 and 12215 (CNAV). Other breeding records were: 24 May 1962 Ovary enlarging = lgst. ovum 3 mm. 16 km ENE Piedra Blanca. 12058 (CNAV). In the series of 13 taken at Finca San Carlos, two males were in breeding condition: 28 Feb 1969. T.S.E. = 5 x 3 mm. 17 Mar 1969. T.E. = 7 x 4 mm. 13849 and 13987 (WJSC).

*Sporophila "torqueola" moreletii* (Bonaparte, 1850). White-collared Seedeater.

We agree with Binford's reluctance to consider *torqueola* and *moreletii* conspecific. WJS has considered them as two species for years, based not only on the morphological differences and the lack of specimens showing intergradation, but also on striking differences in calls and songs, and what would seem to be deep-seated genetic differences in clutch size, color of eggs, and method of nest construction (see Rowley, 1962: 265; Skutch, 1954:36-37). In each of the six nests of *moreletii* that WJS has examined in Los Tuxtlas, Veracruz, there were two eggs marked precisely as described by Skutch: pale blue mottled with brown, and often with a darker brown ring around the larger end. Also, every nest was low (within 2.5 m of the ground) and fastened to upright branches or tall grasses with cobwebs, features lacking in the nests of *torqueola* found by Rowley.

*Breeding*: 27 Feb 1960. Two juvenile males (skulls with large windows; testes tiny). Río Sarabia bridge. 8281 and 8287 (WFVZ). 15 May 1962. T.G.E. = 7 x 4 mm (in field notes). Sarabia. 11827 (CNAV). 24 May 1962. Ovary enlarging = lgst. ovum 3 mm, other follicles developing. Río Chichihui, 16 km ENE Piedra Blanca. 12086 (CNAV). 11 Jun 1962. T.G.E. = 7 x 5 mm (in field notes). Sarabia. 10203 (AMNH). 6 Jul 1962. O.E. = lgst. ovum 5 mm, others 3 and 2 mm. Sarabia. 12480 (CNAV).

*Sporophila angolensis fumereus* (Sclater, 1859). Thick-billed Seed-Finch.

We follow Olson (1981) in taxonomy. WJS took another specimen of this rare species that Binford apparently overlooked: 21 Feb 1960, male, T.N.E., 30 mi. W Matías Romero. 8186 (CNAV).

*Aimophila ruficauda lawrencii* (Salvin & Godman, 1886). Stripe-headed Sparrow.

*Breeding*: 5 Aug 1964. Two males, T.E. = 9 x 6 mm. 2 mi SE Chivela. 12981 and 12982 (SWCK).

*Aimophila sumichrasti* (Lawrence, 1871). Cinnamon-tailed Sparrow.



*Breeding:* 8 Jul 1962. T.E. = 8 x 5 mm. O.S.E. = lgst. ovum 2 mm, but large, wrinkled oviduct and edematous brood patch present. 13 mi E Juchitán. 12482 and 12483 (CNAV).

*Aimophila b. botteri* (Sclater, 1857). Botteri's Sparrow.

*Breeding:* 27 Jun 1961. T.E. = 10 x 6 mm. Ridge above Rancho Sol y Luna. 10437 (AMNH).

*Aimophila rufescens pyrgitoides* (Lafresnaye, 1839). Rusty Sparrow.

*Breeding:* 24 Apr 1962. T.E. = 8 x 5 mm. Sarabia. 11453 (CNAV). 22 May 1962. Two males, T.E. = 11 x 7 mm; and two females: O.G.E. = large (20 x 14 mm) non-shelled egg in oviduct, and O.E. = lgst. ovum 9 mm, another 4 mm. 4 mi N and 2 mi E Matías Romero. 12053, 12062, 12054, and 12055 (CNAV). 12 Jun 1961. T.E. = 11 x 8 mm, singing. Sarabia. 10229 (AMNH). 13 Jun 1961. O.S.E. = lgst. ovum 2 mm, and large, wrinkled oviduct present, indicating completion of laying (in field notes). Donají. 10264 (AMNH). 18 Jul 1962. T.E. = 11 x 7 mm. 3 km E Sarabia. 12527 (CNAV).

*Chondestes grammacus strigatus* Swainson, 1827. Lark Sparrow.

WJS took an adult female (O.N.E., little fat) on 21 Apr 1962 at Sarabia (11400; CNAV). Allan Phillips kindly identified the specimen. This is apparently the first valid record for the species from the Atlantic slope in Oaxaca.

*Ammodramus savannarum* (Gmelin, 1789). Grasshopper Sparrow.

We took a specimen of the eastern migratory subspecies *pratensis* (identified by Allan Phillips) on 2 May 1962 at Sarabia (O.N.E., heavy fat). 11526 (USNM). Two other migrants were taken in the same area in Mar 1960 (subspecific affiliations not determined; 8319 and 8933, WFVZ). On 4 Aug 1964 WJS took an adult female (O.S.E. = ova less than 1 mm) 5 km E Sarabia. This specimen was compared at the University of Arizona with *A. s. perpallidus* Coues, *ammolegus* Oberholser, *pratensis* Vieillot, and with Ridgway (1901). The specimen fit with exactitude Ridgway's description of a female *bimaculatus* Swainson. Thus, it seems the summer resident race *bimaculatus* may be added to the Oaxaca list on a specimen basis. (SWCK).

*Agelaius phoeniceus richmondi* Nelson, 1897. Red-winged Blackbird.

Binford recorded this species for the Atlantic slope only from two birds seen W of Loma Bonita. Florentino Francisco R. collected two males (T.N.E., not fat) at a small marsh 6 km NE Sarabia on 10 Jul 1964. Upon return to Tucson that year, WJS measured and compared them with all of the literature available at the University library. They measured: (12873, 12874) wing chord: 115, 115; tail (worn in both): 86, 84. While large, they fall within the range of variation of *richmondi*. These are apparently the first specimen records for the Atlantic slope race in Oaxaca, whose range thus seems to extend this far south on the Isthmus. We saw no birds of this species in the same general area in 1962, and Flor said that these were the first birds of this species that he had seen in his bailiwick. With deforestation opening the area, the species had occupied the newly-available habitats.

*Sturnella magna mexicana* Sclater, 1861. Eastern Meadowlark.

*Breeding:* Binford did not note breeding data for the Atlantic slope subspecies. We record the following: 2 May 1962. O.E. = lgst. ovum 4 mm. Sarabia. 11521 (This specimen and five others, including a female, O.N.E. [9460] taken at a point 2 mi N and 2 mi E Matías Romero [the point farthest S from which a specimen was obtained] are in AMNH). The rest of our large series (16) are at CNAV, and pertinent breeding data are: 16 May 1962. T.G.E. = 12 x 8 mm. O.E. = lgst. ovum 4 mm. 4 mi N and 2 mi E Matías Romero. 11833 and 11834. 13 Jun 1962. T.G.E. = 11 x 7 mm. Sarabia. 12398. These specimens should be comparatively examined again; all may show intergradation with *saundersi*.

*Dives d. dives* (Deppe, 1830). Melodious Blackbird.

*Breeding:* 15 Mar 1960. T.S.E. = 6 x 4 and singing (in field notes). Montebello. 8701 (WVZ). 23 May 1962. T.G.E. = 14 x 10 mm, singing. 8 mi N Matías Romero. 12080 (CNAV). 3 Jul 1962. O.S.E. = lgst. ovum 1 mm, but large, wrinkled oviduct present, indicating completion of laying. Donají. 12461 (CNAV).

*Molothrus a. aeneus* (Wagler, 1829). Bronzed Cowbird.

*Breeding:* 10 Jun 1961. O.E. = lgst. ovum 12 x 11 mm, others 9 and 7 mm, oviduct enlarging. Sarabia. 10176 (AMNH). 19 Jul 1962. Immature, ovary tiny, filmy; in first basic plumage. Sarabia. 12544 (CNAV).

*Icterus s. spurius* (Linnaeus, 1766). Orchard Oriole.

An early autumn arrival date occurred on 9 Aug 1964 (T.N.E., some fat. 2 km E Sarabia; one of 16+ seen), and what seems to be the latest spring date occurred on 2 May 1962 (O.N.E., heavy fat, one of eight birds in a flock). 13003 and 11523 (CNAV).

*Icterus cucullatus* (Swainson, 1827). Hooded Oriole.

To the three Oaxacan specimens cited by Binford, we add one more: a male taken 5 km S of San Pedro Huamelula on 3 Sep 1988 (CNAV).

*Icterus m. mesomelas* (Wagler, 1829). Yellow-tailed Oriole.

*Breeding:* 24 May 1962. T.E. = 11 x 7 mm. 16 km ENE Piedra Blanca (Río Chichihui). 12095 (CNAV). 5 Jun 1962. Ovary enlarging = lgst. ovum 3 mm, others 2 and 1 mm. 8 mi N Matías Romero. 12286 (CNAV).

*Icterus pustulatus formosus* Lawrence, 1872. Streak-backed Oriole.

Although there is an old record of this species for Chivela, there are apparently no records farther N on the Isthmus. We took three specimens in open grass and scrub below the pine ridges 4 mi N and 2 mi E Matías Romero (see below). This ridge is the continental divide. On the Atlantic slope at that time there was extensive tropical evergreen forest within 250 m of the spot where we collected these specimens. On that same day we collected three *Icterus dominicensis prothemelas* Strickland on the N slope below the ridge. WJS also took a nonbreeding adult female *I. p. formosus* on 7 Apr 1962 at Río Grande. 11108 (CNAV).

*Breeding:* The three specimens from the ridge on 27 June 1962 were all in breeding condition: T.E. = 10 x 6 mm, T.E. = 11 x 7 mm, and O.S.E. = 2 mm (but large, wrinkled oviduct, indicating completion of laying). 12444, 12445, and 12446 (CNAV). Other breeding data for the species are: 2 Apr 1962. T.E. = 7 x 5 mm. O.S.E. = lgst. ovum 1 mm. El Guamol. 11060 and 11061 (CNAV).

*Icterus p. pectoralis* (Wagler, 1829). Spot-breasted Oriole.

We have a male from Palomares taken on 21 Feb 1965 by F. de Maeyer, which extends the largely coastal distribution of this species well into the interior of the Isthmus.

*Breeding:* 29 Mar 1969. T.E. = 8 x 4 mm. 4 mi W Zapanatepec. 10054 (AMNH).

*Icterus g. gularis* (Wagler, 1829). Altamira Oriole.

*Breeding:* 29 Mar 1961. T.E. = 9 x 7 mm. 4 mi W Zapanatepec. 10047 (AMNH). 22 May 1962. O.E. = lgst. ovum 3 mm, others 2 and 1 mm. 4 mi N and 2 mi E Matías Romero. 12059 (CNAV).

*Icterus graduacauda richardsoni* Sclater, 1939. Audubon's Oriole.

*Breeding:* 15 Mar 1961. O.S.E. = lgst. ovum 2 mm. 2 mi N and 2 mi E Matías Romero. 9783 (AMNH). 16 May 1962. T.G.E. = 14 x 9 mm. 4 mi N and 2 mi E Matías Romero. 11860 (CNAV). 27 Jun 1962. Immature, ovary tiny, filmy, in fresh first basic plumage. 27 June 1962. 4 mi N and 2 mi E Matías Romero. 12950 (CNAV).

*Amblycercus h. holosericeus* (Deppe, 1830). Yellow-billed Cacique.

*Breeding:* 16 Feb 1960. T.E. = 8 x 5 mm. 18 Feb 1960. T.E. = 9 x 6 mm. Both from 8 mi N Matías Romero. 8098 and 8125 (WVZ). 18 May 1962. T.G.E. = 13 x 9 mm. 4 mi N and 2 mi E Matías Romero. 11906 (CNAV). 18 Mar 1969. T.E. = 7 x 5 mm. Finca San Carlos. 14019 (WJSC).

*Cacicus melanicterus* (Bonaparte, 1825). Yellow-winged Cacique.

*Breeding:* 8 Mar 1962. Testes enlarging = 6 x 4 mm. Rancho Sol y Luna. 10536 (AMNH). 7 Apr 1962. T.E. = 10 x 6 mm. Río Grande. 11123 (CNAV). Richard Crossin and WJS saw one individual of this species on the ridge 2 mi N and 2 mi E Matías Romero on 16 Mar 1961. This is the farthest N on the Isthmus that it was observed.

*Psaracolius montezuma* (Lesson, 1830). Montezuma Oropendola.

*Breeding:* 5 Feb 1960. O.S.E. = lgst. ovum 2 mm. Río Sarabia bridge. 7898 (AMNH). This specimen demonstrates early gonadal development in this species, consonant with our observations of full nesting activity near Sarabia in early March.

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#### LITERATURE CITED

- BINFORD, L. C. 1989. A distributional survey of the birds of the Mexican state of Oaxaca. *Ornithol. Monogr.* 43:1-418.
- BLAKE, E. R. 1950. Report on a collection of birds from Oaxaca, Mexico. *Fieldiana* 31:395-419.
- BLAKE, E. R. 1953. *Birds of Mexico: a guide for field identification*. Univ. Chicago Press, Chicago, Illinois. 644 pp.
- BRODKORB, P. 1942. A revisionary study of the wren *Thryothorus pleurostictus*. *Occ. Papers Mus. Zool. Univ. Mich.* 459:1-19.
- BRODKORB, P. 1943. Birds from the Gulf lowlands of southern Mexico. *Misc. Publ. Mus. Zool. Univ. Mich.* 55:1-88.
- DALQUEST, W. W. 1951. Frigate birds crossing Isthmus of Tehuantepec. *Condor* 53:256.
- DICKERMAN, R. W. 1971. Notes on various rails in Mexico. *Wilson Bull.* 83:49-56.
- DICKERMAN, R. W. 1981. Geographic variation in the Scrub Euphonia. *Occ. Papers Mus. Zool. Louisiana State Univ.* 59:1-6.
- FRIEDMANN, H., L. GRISCOM, & R. T. MOORE. 1950. Distributional check-list of the birds of Mexico. Part I. *Pacific Coast Avifauna* 29:1-202.
- HELLMAYR, C. E., & B. CONOVER. 1949. Catalogue of birds of the Americas, Part I, No. 4. *Zool. Ser. Field Mus. Nat. Hist.* 13. 358 pp.
- LOWERY, G. H., Jr., & W. W. Dalquest. 1951. Birds from the state of Veracruz, Mexico. *Univ. Kansas Publ. Mus. Nat. Hist.* 3:531-649.
- MILLER, A. H., H. FRIEDMANN, L. GRISCOM, & R. T. MOORE. 1957. Distributional check-list of the birds of Mexico. Part II. *Pac. Coast Avifauna* 33:1-436.

- OBERHOLSER, H. C. 1904. A revision of the North American horned owls. *Proc. U.S. Natl. Mus.* 27:177-199.
- OLSON, S. L. 1981. A revision of the subspecies of *Sporophila* ("Oryzoborus") *angolensis* (Aves: Emberizinae). *Proc. Biol. Soc. Washington* 94.
- PARKES, K. C. 1990. Additional records of birds from Oaxaca, Mexico. *Occ. Pap. Western Foundation Vert. Zool.* 5:1-13.
- PHILLIPS, A. R. 1966. Further systematic notes on Mexican birds. *Bull. British Ornithol Club* 86:86-94, 103-112, 125-131, 148-159.
- RIDGWAY, R. 1901. The birds of North and Middle America. Part I. *Bull U.S. Natl. Mus.* 50(1):1-715.
- ROWLEY, J. S. 1962. Nesting of the birds of Morelos, Mexico. *Condor* 64:253-272.
- SCHALDACH, W. J., Jr. 1969. Further notes on the avifauna of Colima and adjacent Jalisco, Mexico. *Anales Inst. Biol. Univ. Nac. Autón. Mexico* 40:299-315.
- SKUTCH, A. F. 1950. The nesting seasons of Central American birds in relation to climate and food supply. *Ibis* 92:185-222.
- SKUTCH, A. F. 1954. Life histories of Central American birds. *Cooper Ornithol. Soc. Pacific Coast Avifauna* 31:1-448.
- STORER, R. W. 1979. Order Podicipediformes. In: E. Mayr & G. W. Cottrell (eds.). *Check-list of birds of the world*, vol. I, second ed. Mus. Comp. Zool., Cambridge, Massachusetts, pp. 140-155.
- WETMORE, A. 1943. The birds of southern Veracruz, Mexico. *Proc. U. S. Natl. Mus.* 93:215-340.
- WINKER, K., D. W. WARNER, & R. W. DICKERMAN. 1992. Additional bird records from Oaxaca, Mexico. *Ornitologia Neotropical* 3:69-70.
- WINKER, K., R. J. OEHLenschLAGER, M. A. RAMOS, R. M. ZINK, J. H. RAPPOLE, & D. W. WARNER. 1992a. Bird distribution and abundance records for the Sierra de Los Tuxtlas, Veracruz, México. *Wilson Bull.* 104:699-718.