

THE CONDOR

VOLUME 57

MARCH-APRIL, 1955

NUMBER 2

OBSERVATIONS ON MEXICAN BIRDS

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On April 15, 1952, Edward Chalif, Roger Hurd, Bertram Schaughency, and the authors entered México at Matamoros, Tamaulipas, to initiate about seven weeks of field work in the eastern and southern sections of that country. After reaching the Pan-American Highway we followed it to Pachuca where we turned east to Tecolutla and Nautla on the Gulf coast. From Nautla we proceeded inland to Tezuitlán, Perote, and Jalapa, reaching the coast again at Veracruz City, and from there we went southeast to Coatzacoalcos and Tonalá by way of Alvarado, San Andrés Tuxtla, and Acayucan. Crossing the Isthmus of Tehuantepec, we rejoined the Pan-American Highway and followed it east to Tuxtla Gutiérrez, Chiapas. From this point a side trip was made to Pueblo Nuevo, about 30 miles north-northeast of Tuxtla. From Tuxtla we took the highway west to Tehuantepec and Oaxaca City, turning off at Izúcar de Matamoros to reach our camp on Popocatepetl by way of Cuautla. Hurd left the expedition at Tehuantepec and Chalif at Popocatepetl. Schaughency and the authors returned via México City and the highway, arriving in Brownsville, Texas, on June 5. No overall list was compiled, but Eckelberry's notes cover 415 species. Camps were made in 27 areas. Forms collected are marked with an asterisk. Localities referred to in the annotated list which require general comment are as follows:

Veracruz: Seventeen miles south of Veracruz City.—This is an area of coastal prairie which was extremely dry at the season we visited it. Overgrazed grassland predominates, although low trees and dense shrubs border the water courses, which for the most part were reduced to scattered pot holes. Our camp was near a muddy, open pond beside the road, which we called Yellow Finch Pond because of the constant presence there of this finch (see annotated list). The ponds and pot holes were also a strong attraction to such species as Caracaras (*Polyborus cheriway*), Fork-tailed and Scissor-tailed flycatchers (*Muscivora tyrannus* and *M. forficata*), Vermilion Flycatchers (*Pyrocephalus rubinus*), Brown-headed and Bronzed cowbirds (*Molothrus ater* and *Tangavius aeneus*), which were joined by one Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*), Rough-winged, Bank, Mangrove, and Barn swallows (*Stelgidopteryx ruficollis*, *Riparia riparia*, *Iridoprocne albinea*, *Hirundo rustica*), Mourning, Common Ground, Ruddy Ground, and Inca doves (*Zenaidura macroura*, *Columbigallina passerina*, *C. talpacoti*, *Scardafella inca*), as well as others mentioned in the annotated list.

Veracruz: Tacotalpan.—This small settlement on the Río Tacotalpan at the base of the Tuxtla Mountains is not shown on any of our maps, but we were advised by the local people that it is some 20 kilometers from Tlacotalpan. It may be the "Tecalapan" referred to by Wetmore (1943:225). At any rate the typical humid lower tropical jungle found here is adequately described in that paper, including mention of the choncha palm. We were greatly surprised not to see or hear a single parrot in the area, but birds were abundant and mention of even the most common species would be prohibitively long.

Veracruz-Oaxaca: Río Jaltepec, Isthmus of Tehuantepec.—This point at which the

Río Jaltepec, a tributary of the Río Coatzacoalcos, intersects the trans-isthmian road is at the border of the states of Oaxaca and Veracruz. There is no extensive forest here, the land being largely under cultivation, but open forest with considerable brushy undergrowth borders the north side of the river and becomes quite dense in a low, wet area less than a mile to the west. The south or Oaxacan side is almost completely cleared except for small trees and scrub on a grassy flat east of the bridge. Eckelberry listed 100 species in a two and one-half day period.

Oaxaca: Fifteen miles east of Tehuantepec City.—The vegetation of this arid lower tropical area was composed largely of organ pipe cacti, acacias, and other brushy growth. A morning's work produced 25 species. The only Lesser Ground-Cuckoo (*Morococcyx erythropygus*) that we encountered was seen here. Green Parakeets (*Aratinga holochlora*) were abundant, Lesser Nighthawks (*Chordeiles acutipennis*) were common, and Orange-breasted Buntings (*Passerina leclancherii*) were seen mating.

Chiapas: Mountains near Pueblo Nuevo.—This is a beautiful area at about 5300 feet, sharply divided between pine-oak woods and cloud forest. The pines support bromeliads and other epiphytes. The trees of the higher cloud forest are not particularly large and are so completely covered with mosses, ferns, bromeliads, philodendrons and other plants that it is difficult to determine what foliage belongs to the trees. The ground is covered with bracken-like ferns and many other plants, some of intermediate height such as a large spine-covered tree-fern. Entering this dark and wet forest from a milpa was almost like going into a cave. Movement and observation were extremely difficult and few birds were seen. There were heavy rains, as the natives put it, *todos tardes*.

The Band-tailed Pigeon (*Columba fasciata*), White-eared Hummingbird (*Hylocharis leucotis*), Red-shafted Flicker (*Colaptes cafer*), Steller Jay (*Cyanocitta stelleri*; the local race, *ridgwayi*, shows pronounced white "eyebrows"), Brown-backed Solitaire (*Myadestes obscurus*), Red Crossbill (*Loxia curvirostra*) and Red-eyed Towhee (*Pipilo erythrophthalmus*) are common in the pines. The birds of the montane rain forest, like those of the other uplands of Chiapas, have strong Guatemalan affinities, the Quetzal (*Pharomachrus mocino*) being the most conspicuous example.

Mexico: Volcán de Popocatepetl.—Inasmuch as Paynter (1952) has listed 29 species for the Popocatepetl-Ixtaccihuatl area from October 31 through November 5, it may be worth while comparing our list for the western side of Popocatepetl from the valley to timberline, May 27–28. Excluding eight species seen in the valley, 34 were recorded for the volcano. Seventeen species listed by Paynter were not observed by the authors, although three of these were seen in the valley. On the other hand we found the following 16 species not listed by Paynter for the area.

The Tufted Flycatcher (*Mitrephanes phaeocercus*), White-breasted Nuthatch (*Sitta carolinensis*), and Black-headed Grosbeak (*Pheucticus melanocephalus*) were seen in the lower pine forests. In the fir belt at about 10,000 feet we found the Turkey Vulture (*Cathartes aura*), Red-tailed Hawk (*Buteo jamaicensis*), White-naped Swift (*Streptoprocne semicollaris*), Hairy Woodpecker (*Dendrocopos villosus*), Black-eared Bush-tit (*Psaltriparus melanotis*), *White-throated Robin (*Turdus assimilis*), Russet Nightingale-Thrush (*Catharus occidentalis*), and *Slate-throated Redstart (*Myioborus miniatus*). In the highest pines at timberline we found the White-throated Swift (*Aëronautes saxatalis*), Steller Jay (*Cyanocitta stelleri*), Eastern Bluebird (*Sialia sialis*) feeding young in nest, and Pine Siskin (*Spinus pinus*). And slightly lower, at the Pass of Cortés, Eastern Meadowlarks (*Sturnella magna*) were common in the sacaton grass.

Two additional birds, a whip-poor-will (likely *Caprimulgus vociferus*) which was

seen at dusk and voiced only a few phrases, and a swift (*Chaetura vauxi* presumably), which was high-flying and very common, are not included in our total number of species recorded in this area.

Acknowledgments.—We wish to thank Mr. Everts Storms for his generous hospitality to us at Rancho Paño Ayuctle; Sr. Miguel Alvarez del Toro for the pleasure of his company in the field and that of his family in his home, as well as for specimens and helpful information; and the United States National Museum, through Dr. Herbert Friedmann and Mr. Samuel Army, for the loan of a specimen of one of the rarest swifts in collections. Mr. Paul Martin identified a snake for us, and Mr. William C. Dilger sent us information from unpublished material at Cornell University. For reading and criticizing the manuscript we are indebted to Mr. Eugene Eisenmann and Mr. Byron Harrell. A permit to collect specimens was issued to us through the kind offices of the Departamento de Forestal y de Caza in México City. The expenses of the senior author were met in part by a grant from the Frank M. Chapman Memorial Fund.

NOTES ON MIGRANTS

April 18. Forested foothills near Rancho Paño Ayuctle on the Río Sabinas, Tamaulipas: One Hooded Warbler (*Wilsonia citrina*) singing frequently and several Common Redstarts (*Setophaga ruticilla*). Neither has been listed heretofore by Sutton and others for the area.

April 28. Lowlands a few miles east of Papantla, Veracruz: Warbling Vireo (*Vireo gilvus*), Bay-breasted Warbler (*Dendroica castanea*), Baltimore Oriole (*Icterus galbula*), Scarlet Tanager (*Piranga olivacea*), a male in full spring plumage, and Summer Tanager (*Piranga rubra*).

April 29. Pine country between Perote and Jalapa, Veracruz: Black-throated Green Warbler (*Dendroica virens*).

May 3. "Yellow Finch Pond," 17 miles south of Veracruz City: Rose-breasted Grosbeak (*Pheucticus ludovicianus*). Between this point and Alvarado we encountered a heavy migration of Scissor-tailed Flycatchers (*Muscivora forficata*) and saw as many as 14 perched on one bush.

May 3. Bay of Alvarado, Veracruz: Ringed Plover (*Charadrius hiaticula*), Thick-billed Plover (*Charadrius wilsonia*). The Mexican Check-list (Friedmann, Griscom, and Moore, 1950) does not list the former for Veracruz and reports only two records for the latter. Unaware of this at the time, we did not count the several birds seen. Sandwich Tern (*Thalasseus sandvicensis*). Only winter records are indicated from Veracruz in the Mexican Check-list. Several were seen with Common and Royal terns and Black Skimmers.

May 4. Tacolapan, base of Tuxtla Mountains, Veracruz: Black-billed Cuckoo (*Coccyzus erythrophthalmus*). We were surprised that on this late date we saw the largest warbler wave both as to species and numbers. They included the Tennessee Warbler (*Vermivora peregrina*), Yellow Warbler (*Dendroica petechia*), Magnolia Warbler (*D. magnolia*), Chestnut-sided Warbler (*D. pensylvanica*), Water-thrush sp.? (*Seiurus*), Hooded Warbler (*Wilsonia citrina*), Pileolated Warbler (*W. pusilla*), Canada Warbler (*W. canadensis*), and Common Redstart (*Setophaga ruticilla*).

May 6. Lake Catemaco, Veracruz: One Pied-billed Grebe (*Podilymbus podiceps*) with a group of 18 Least Grebes (*Podiceps dominicus*). The Mexican Check-list does not list *Podilymbus* for Veracruz.

May 12-14. Río Jaltepec and trans-isthmian road, Veracruz-Oaxaca border: A Duck Hawk (*Falco peregrinus*) was noticed overhead because of the sudden frenzied screaming of Brown Jays. Four Baird Sandpipers (*Erolia bairdii*) were seen on the south side of the river in Oaxaca where, according to the Mexican Check-list, the species is unrecorded. A single Western Kingbird (*Tyrannus verticalis*) was collected, but an impressive migration of hundreds of Eastern Kingbirds (*T. tyrannus*) literally covered trees, the birds fluttering and chattering in great excitement. Other migrants included the Olive-sided Flycatcher (*Nuttallornis borealis*), Swainson Thrush (*Hylocichla ustulata*), Yellow Warbler (*Dendroica petechia*), Magnolia Warbler (*D. magnolia*) and Pileolated Warbler (*Wilsonia pusilla*).

May 22. Marshes near Tehuantepec, Oaxaca: Black-bellied Tree Ducks (*Dendrocygna autumnalis*), Baldpates (*Mareca americana*) and Shovelers (*Anas clypeata*), for which the Mexican Check-

list does not list Oaxacan records, in company with White Ibises (*Eudocimus albus*), Roseate Spoonbills (*Ajaia ajaja*), Blue-winged Teal (*Anas discors*), and several herons. The date impressed us as late for the northern ducks.

ANNOTATED LIST OF SPECIES

Pelecanus erythrorhynchos. White Pelican. Observed soaring near the coast in Tamaulipas, fifteen or twenty miles south of Brownsville, Texas, both when we entered México on April 15 and when we left on June 5. Since the latter date seems rather late for migrants, the possibility of a nesting colony somewhere on this coast should be considered. So far as we know the only colony on the Gulf coast is the one near Corpus Christi, Texas, more than 100 miles to the north. We also saw a flock of White Pelicans at Tecolutla on the coast of Veracruz on April 28.

Elanoides forficatus. Swallow-tailed Kite. Common in the pine forests in Chiapas; not seen elsewhere. Two of these birds were seen harrying a Turkey Vulture, but all three birds soared so gracefully that the small circles they described only now and then brought one of the kites over the vulture. The kite would then bend its head down, dangle its feet, but continue without contact with the vulture or interruption in its movement. While the kites may have been defending a nest nearby, their performance gave the impression of pure aerial play.

**Buteogallus anthracinus anthracinus*. Common Black Hawk. An adult female was taken a few miles west of Río Jaltepec, Oaxaca, on May 14. It is surprising how similar the nominate race of this black hawk is to *B. a. cancrivorus*, of which we examined four skins from the type locality, St. Vincent, Lesser Antilles. There is no difference in size or in the blackness of the plumage, but the light markings on the nape and the margins of the back feathers average buffier in *cancrivorus*. Some specimens from Ecuador and Colombia are smaller and buffier than the Oaxacan bird, but this presumably represents intergradation toward the coastal form, *subtilis*, whose status is still not fully understood. cursory examination of a good series of *subtilis* suggests that even the adult is much buffier than adults of *cancrivorus* and *anthracinus*, although Dickey and van Rossem (1938:125) and Wetmore (1946:28) considered small size its chief character.

Marshall (1943:22) has reported an immature specimen of *subtilis* from the inland Lake Olomega in El Salvador. He regards it as a straggler from the coast rather than an indication that *subtilis* and *anthracinus* are sympatric species.

Buteogallus gundlachi of Cuba and *B. aequinoctialis* of the coast of Brazil seem, like *subtilis*, to be coastal or mangrove representatives of *anthracinus*, of small size and rufous coloration. *Gundlachi* can perhaps be regarded as a race of *anthracinus* (unless *subtilis* should prove to be a species, in which case similar rank would be indicated for the Cuban form), but *aequinoctialis* is so different that it is no doubt correct to believe that it has achieved specific status.

Amadon (1949) concluded that there is little basis for separating *Hypomorphnus [urubitinga]* from *Buteogallus*; on the other hand, the related "eagles" *Harpyhaliaetus coronatus* and *H. solitarius* are so much larger and more robust that generic separation seems indicated. These two birds, which were placed in separate genera (*Harpyhaliaetus coronatus* and *Urubitornis solitaria*) by Peters (1931, 1; 246) and others, were, a few years later, regarded as conspecific by Hellmayr and Conover (1949: 199)! In the absence of any indication whatever of intergradation between these well marked forms, we consider it best to regard them as distinct but congeneric species.

We thus have for this group of related species:

- Buteogallus aequinoctialis* (Gmelin)
- Buteogallus* (?*anthracinus*) *gundlachi* (Cabanis)
- Buteogallus* (?*anthracinus*) *subtilis* (Thayer and Bangs)
- Buteogallus anthracinus cancrivorus* (Clark)
- Buteogallus anthracinus anthracinus* (Lichtenstein)
- Buteogallus urubitinga* (Gmelin)—3 races
- Harpyhaliaetus solitarius* (Tschudi)
- Harpyhaliaetus coronatus* (Vieillot)

The form *Buteogallus anthracinus micronyx* van Rossem and Hachisuka, described from Sonora, was not recognized by Friedmann (1950) or other recent workers.

**Busarellus nigricollis nigricollis*. Black-collared Hawk. A non-breeding female was taken on May 2, 17 miles south of Veracruz City. The uniformly broad wings and very short tail of this strik-



Fig. 1 Black and White Hawk-eagle (*Spizastur melanoleucus*).
Drawing by Don R. Eckelberry.

ing hawk create a highly distinctive flight pattern, somewhat like that of the Black Vulture (*Coragyps atratus*), although the effect is rather more eagle-like. Contrary to published statements by Sturgis (1928:135) and others, there is no resemblance to an Osprey. When perched, the wings extend at least to the tip of the tail, if not beyond.

The individual secured was one of two seen at intervals for a half hour or so, soaring over open country. Suddenly it dropped earthward with legs dangling and tail pumping awkwardly up and down. It perched in a low tree beside a weed-choked pond. Later, near Coatzacoalcos, we found two of these hawks beside a lagoon, one in a royal palm, the other lower in mangroves. Shortly, a third circled over and the two others flew up as though to challenge it, uttering rather low-pitched cries.

Spizastur melanoleucus. Black and White Hawk-eagle. On April 17, along the Río Sabinas at Rancho Paño Ayuctle, Eckelberry and Chalif observed a hawk circling overhead not far above the cypresses. It was entirely white below except for frosty barring on the primaries, a barred tail, and black lores. The following day the bird was seen again by the entire party, perched at some distance on the crown of a jungle tree (fig. 1), where it was being scolded by Brown Jays. It appeared rather blackish above. The black crest was short, was held flat, and projected slightly beyond the back of the head. Chalif approached closely and verified these characters. When it took to the air, it appeared more brownish and not unlike an Osprey in general pattern, although quite buteo-like in proportions and manner of flight. After a few flaps it soared in circles, appearing very white headed when its back was toward us, although the dark lores and black crest could be seen. We identified it as *Spizastur melanoleucus*, a species hitherto not reported north of southern Veracruz.

The Ornate Hawk-eagle (*Spizaetus ornatus*) occurs in this area. It differs from *Spizastur melanoleucus* in being larger and more conspicuously crested, and in lacking the dark lores; and while extensively white below, it shows strong barring on sides, flags, and underwing coverts. Immatures are white-headed. *Ornatus* is more accipiter-like in proportions with a decidedly longer tail. Sutton advises us that "high in air, *S. ornatus* looks rounded winged and very big-tailed, but not especially long-tailed." This was certainly *not* true of the buteo-shaped bird we observed.

The Gray-headed Kite (*Leptodon cayanensis*) in some plumages also resembles *Spizastur*. *Leptodon*, however, is a slighter bird with a relatively longer tail; it lacks the blackish areas before the eyes, and the wing quills are more prominently barred below. Surely it would not have the erect, robust, flat-headed aquiline profile of the bird we saw.

Spizastur melanoleucus and *Spizaetus ornatus* belong to a group of tropical eagles that have fully bootied tarsi. They seem to be fairly closely related to the true eagles of the genus *Aquila*, but they are even more predatory in habits and, unlike the aquilas, are never carrion-feeders. Some of these tropical eagles, and this is especially true of those belonging to the pan-tropical genus *Spizaetus*, have the proportions of a classical "hawk" (*Accipiter*). For this reason they are known in books on the birds of the Old World as "hawk-eagles." In America this term has unfortunately become transposed into "eagle-hawks." Since uniformity is desirable and since these birds are certainly deserving of the name eagle, we suggest that the form "hawk-eagle" be used uniformly.

**Charadrius collaris*. Collared Plover. A fledgling hardly old enough to fly was taken on May 13, and an adult male on May 14, both from Río Jaltepec, Isthmus of Tehuantepec. The species was quite common and presumably it nested on the numerous gravel bars along the Río Jaltepec, although it is conceivable that the fledgling could have flown in from the coast. Very small chicks were seen with their parents along the Río Grijalva near Tuxtla Gutierrez, Chiapas, on May 20. The Mexican Check-list (Friedmann, Griscom, and Moore, 1950:91) states that *C. collaris* is primarily coastal, but our experience indicates that where suitable gravel bars exist it is at home along large rivers.

Bolborhynchus lineola. Barred Parakeet. On May 18 and 19 near Pueblo Nuevo, Chiapas, small groups (10 or less) of little parrots were often seen flying with great velocity high above the mountain forest, uttering tiny but typically psitticine shrieks. Alvarez del Toro told us these were Barred Parakeets and showed us his specimens. There were only six records for México at the time of the Mexican Check-list (1950:127), one of these from Petalcingo, Chiapas (R. T. Moore Collection).

**Tapera naevia excellens*. Striped Cuckoo. A male was taken on May 2, 17 miles south of Veracruz City; gonads little if any enlarged, but calling freely; gape and base of mandible dull light chrome yellow; outer portion of mandible matched color of margins of adjacent forehead feathers, blending to dull chrome in area under nostril; maxilla light gray-green, the ridge broadly horn black; iris

orange brown, matching color of crown feather margins; eyelids dull chrome yellow; tarsi and feet light blue-gray-green, the claws slightly darker fleshy horn color.

Excellent films of this cuckoo, which were obtained by Mr. Schaughency while it was calling from one of the outer twigs of a leafy bush, show that the crest is raised and lowered rhythmically between each call. The call consists of two somewhat melancholy but deliberately whistled notes, slow but clear and endlessly repeated: *pee-tee, pee-tee*, etc. It was coaxed into the open by our imitating its notes.

Streptoprocne semicollaris. White-naped Swift. On May 27 we were camped just off the road leading to the Pass of Cortes on the shoulder of Popocatepetl, México, at about 10,000 feet in the fir belt. Late in the afternoon Eckelberry and Schaughency were standing near the edge of a ravine just beyond kilometer mark 76, when a compact flock of 15 or 20 large swifts bolted out of the ravine where it narrowed and rose on our right. They shot past at no great distance and somewhat below eye level, chipping loudly. The white nape was seen but, due to the angle, they were at first taken to be the familiar White-collared Swifts (*S. zonaris*). They passed up and down the ravine several times, chipping in pell-mell flight or making a deep *whurr* when gliding on set, backswept wings, before we observed that the white area did not on a single bird extend around the neck to form a collar. They suddenly broke off their dashing flight to soar silently in tight, little circles just above the firs and directly overhead. The wings were then held straight out and presented an interesting

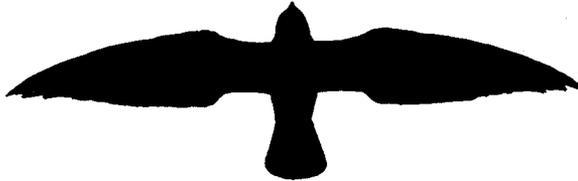


Fig. 2. Silhouette of White-naped Swift (*Streptoprocne semicollaris*).

silhouette (fig. 2). The inner primaries are apparently considerably longer than the secondaries, which produces a pronounced jog at this juncture, giving the wings a peculiar pinched look where they join the body. Soaring birds showed a well spread and ample, rounded tail. We did not have an opportunity subsequently to compare this pattern with that of living *zonaris*.

The next morning Eckelberry went up this ravine and found an overhang with a small waterfall nearby. The rock strata were up-ended and the "ceiling" was pocked with many inaccessible holes. A number of white droppings spotted the floor. Amadon later visited this possible nesting site and found a piece of white egg shell. We remained until late afternoon hoping to see the birds again, but without success. It is hoped that by pinpointing this location further investigations will be made. Scarcely ten specimens of this rare Mexican species are known.

The National Museum's loan of its single specimen gave us the opportunity to compare *semicollaris* with a good series of *zonaris*. All specimens of the latter species, even immatures, show at least some white across the throat and chest. The tail of *semicollaris* is square, which would account for the slightly rounded effect when spread, but the slightly forked tail of *zonaris* is sometimes almost square in worn specimens. No satisfactory comparison of the wing shape could be made from specimens.

Momotus mexicanus. Russet-crowned Motmot. A pair was feeding young in a completely exposed hole in a vertical bank only three or four feet high in a vacant field near the Museo Zoológico, Tuxtla Gutiérrez, Chiapas. Mr. Schaughency set up his camera some seventy-five feet away but the birds proved to be so shy that they would not feed the young despite several hours of intermittent waiting. On one occasion a snake, eight inches or so in length, dangled from the bill of one of them, but large insects seemed to be the usual choice. Davis (1953:91) recently reported another instance in which this motmot fed upon snakes. Their wariness was somewhat surprising as the nest was scarcely one hundred feet from a traveled road, and the species impressed us as more adaptable and confiding than *M. momota*. Russet-crowned Motmots were observed on telegraph wires along the highway and in pines and oaks at least to elevations of 4000 feet (fig. 3). The call is a single or double croupy *groom* or *hrook*, guttural and quite unlike the soft, owlish *hoot-hoot* of *M. momota*.



Fig. 3. Russet-crowned Motmot (*Momotus mexicanus*), $\times 4/5$.
Drawing by Don R. Eckelberry.



Fig. 4. Rufous-tailed Jacamar (*Galbula ruficauda*), $\times \frac{1}{2}$.
Drawing by Don R. Eckelberry.

**Galbula ruficauda melanogenia*. Rufous-tailed Jacamar. A female was taken at the Río Jaltepec, Veracruz, on May 12; bill black; tarsi and feet buffy ochre, slightly lighter than breast; claws black; iris very deep brown, almost black; skin around eye dull green gray which blends with feathers (gold green), brightening to chrome yellow on lower lid.

The ovary of this specimen was rather small. Shortly after the female was collected, a male appeared and we found that the pair had a nest in a bank beside the trail, so well concealed under brush that it would have been impossible to find but for the male's extreme tameness and regular visits to the burrow. It had a favorite perch nearby (see fig. 4) from which frequent sorties were made after dragonflies and other large insects. After beating them against the branch, removing the wings and softening the bodies in its bill, they were taken to the young without hesitation, even while the photographer and two other members of the party surrounded the nest. In flight the male frequently gave a single squeak or an energetic nasal *peet, peet-peet-peet, peet*. A second pair was located about half a mile distant along the same trail in open forest paralleling the river.

**Melanerpes hypopolius*. Gray-breasted Woodpecker. An adult male was taken on May 26, with well developed brood patch. The species nested commonly in large cacti along the Pan-American Highway near Izúcarde Matamoros, Puebla. Several well-fledged young were following their parents about, begging food.

Peters (1948:161) considered the various races of Gila Woodpeckers (*uropygialis*) races of *hypopolius*, but Sutton (1951a:220) wrote as follows: "The Gila Woodpecker and its allies are puzzling too. Peters lists eight races, all Mexican or partly so. To me the most southward ranging of these, *hypopolius* (Gray-breasted Woodpecker) seems to be a separate species, if for no other reason than that it has a partly concealed patch of red under the eye." *Hypopolius* is best left a species unless intergradation with *uropygialis* is demonstrated.

Peters (*op. cit.*:157) reduced *Centurus* to a synonym of *Melanerpes*. A number of recent authors, including Sutton, have failed to follow him in this. Yet the barred immature plumage of the Red-headed Woodpecker (*M. erythrocephalus*) and the color pattern of *M. portoricensis*, do tie the two groups together.

Tripsurus pucherani. Black-cheeked Woodpecker. A pair was nesting in a dead tree in an exposed location beside the highway at Tacolapan, Veracruz, on May 5. Masked Tityras (*Tityra semifasciata*) had a nest hole a few feet higher in the same tree.

**Pteroglossus torquatus torquatus*. Collared Aracari. A male was taken on May 6 at the Río Tacolapan, Veracruz; well developed brood patch; base of bill ivory (cream white), mandible otherwise entirely black; tip, top ridge, and marks along serrations of cutting edge of maxilla black; black tip shades through plumbeous to ivory (sharply defined elsewhere); maxilla with large spot bruised purplish flesh shading through green-ivory to ivory; base of inside of bill bright orange, larger and brighter on maxilla and on mandible shading into dusky orange and coming forward as a line into black area; tarsi and feet dull pea green; soles grayed light ochre; claws and sides of toes horn or dusky; iris sulphur or chrome yellow; face skin black concentrically around eye, changing abruptly to carmine red; flesh inside throat orange. The tail was extremely abraded, presumably through contact with the edge of the nest cavity.

**Ramphastos sulfuratus sulfuratus*. Keel-billed Toucan. A female was taken on the Río Tacolapan, Veracruz, on May 6; brood patch present; terminal third of bill deep cherry red or maroon, a straight orange center spot joining maroon on lower part of maxilla; light middle-value gray markings on cutting edges of bill; bill black entirely around base; rest of bill same value as breast but lime yellow fading to banana yellow on ridge and to lighter green-blue at base of maxilla adjacent to cutting edge between the orange area and black base, and on mandible adjacent to maroon tip and along cutting edge to middle of bill and along bottom edge of mandible, except in middle of the light area where somewhat invaded by lime yellow; tarsi and feet: green blue (turquoise), the top scales bluer; leg slightly lighter below and less blue (greener), this light green invading upper scales near heel; soles of feet dirty ochre; claws horn color; iris bright emerald green graduating to darker dull brown around pupil so that definition of pupil is lost; face skin generally matches throat feathers but greener around eye and more yellow-orange adjacent to black cap above and behind eye.

The bright colors of the bill extend even to the inside edges of the "mouth." Since some species of toucans that live together differ externally only or chiefly in the colors of the bills (for example, the present species and *R. swainsonii* on Barro Colorado Island and elsewhere), it is possible that the function of the bill, insofar as its color and pattern are concerned, is for species recognition, and perhaps as an intraspecific threat organ. The fact that Van Tyne (1929:19) and others have described "dueling" and "sham battles" between toucans in which only the bills are employed, with no attempt made to strike the body, strengthens this hypothesis.

**Myiozetetes similis texensis*. Vermilion-crowned or Social Flycatcher. A male was taken on May 1, 17 miles south of Veracruz City; gonads greatly enlarged. This specimen has conspicuous white tips about a centimeter long on the tail feathers. The red crown patch and the development of the gonads show that it was mature, but the rectrices are somewhat pointed and there is a slight tinge of rusty on the upper tail coverts, suggesting immaturity. Eckelberry was of the opinion that this individual, unlike others of the species in the vicinity, did not have a territory. Probably it is abnormal as regards the tail, for we have seen no other specimen with similar whitish tips.

In the areas visited, the Vermilion-crowned Flycatcher usually nests in bull's horn acacias, often in company with the Kiskadee (*Pitangus sulphuratus*), which builds a similar domed nest with a side entrance. On May 14, just south of the continental divide on the Isthmus of Tehuantepec, we found a nest of *Myiozetetes* with four eggs, about five feet above the ground in a small acacia. One of the birds was on the nest at 11 p.m. and permitted itself to be stroked without leaving the nest.

**Pitangus sulphuratus texanus*. Kiskadee or Derby Flycatcher. A completed nest contained as yet no eggs on May 2, 17 miles south of Veracruz City.

**Myiarchus tuberculifer lawrenceii*. Dusky-capped or Querulous Flycatcher. A male in breeding condition was taken on May 12 at the Río Jaltepec, Isthmus of Tehuantepec. The small size of this specimen (wing 82 mm.) might suggest that it belongs with the race "*connectens*" Miller and Griscom, described from the lowlands of Guatemala. These authorities thought that the break in size occurs south of the Isthmus, and to be sure this specimen does fall within the lower limits of the size

range they give for *lawrenceii* of México. Later, Griscom found that birds from higher altitudes in Guatemala are larger, and called them *lawrenceii*. Admitting that birds from the northern and the higher parts of the range formerly assigned to *lawrenceii* are larger, the problem remains: is it worthwhile upholding the name *connectens* for the smaller birds of the southern lowlands, which have no other basis for their separation? We do not think that it is. Zimmer (1953) has recently discussed the Middle American races of this species and described a new one, *littoralis*, from El Zapotal, Guanacaste, Costa Rica.

**Elaenia flavogaster subpagana*. Yellow-bellied Elaenia. A male taken on May 14 on the Río Jaltepec was one of a pair with a nest almost completed. The nest, which was about 12-foot high in the fork of a thorny bush, was an open, rather shallow cup of grass and weed stems with a layer of lichens attached by (? plant) gauze on the outside and to a lesser extent on the inside. Its overall diameter was 9 cm. The area was a grassy river-side flat grown up here and there with clumps of low bushes and trees. In this flycatcher the whitish bases of the crest feathers are frequently visible in the field.



Fig. 5. Common Tody Flycatcher (*Todiostrostrum cinereum*), $\times \frac{3}{4}$. Drawing by Don R. Eckelberry.

Todiostrostrum cinereum. Common Tody Flycatcher. On May 14 along the Río Jaltepec, a pair was found building a nest, a pendant structure 8 or 10 inches long in an early stage of construction. It was situated in a low and rather open bush on the river bank about four feet from the ground. The birds proceeded with their work entirely unconcerned by our presence. On the basis of posture and actions the species is remarkably gnatcatcher-like, even to the tail wagging (fig. 5). In the field it is difficult to think of it as a flycatcher at all.

**Petrochelidon fulva* subsp. Cave Swallow. A male taken at Tuxtla Gutiérrez, Chiapas, was presented to us by Sr. Alvarez del Toro. It seems to have the small size and dark upper parts of the race *citata* from Yucatán, but the sides of the head are pale as in *pallida* from north-central México and Kerrville, Texas. On May 17 we found a colony constructing nests on the beams beneath a portico along the village plaza in the town of Chiapa de Corzo, a few miles from Tuxtla. Three days later we saw this species gathering mud at a bar in the middle of the turbid Río Grijalva. The species also

nests, according to Alvarez del Toro, on the cathedral in Tuxtla. *Petrochelidon fulva* is not listed from this part of México by recent authorities such as Blake (1953).

Notiochelidon pileata. Black-capped Swallow. Formerly considered a genus endemic to Guatemala, the Black-capped Swallow has now been found in El Salvador and Chiapas. We first found these swallows flying about a rock outcropping above Pueblo Nuevo, Chiapas, on May 18, and we saw them again some miles below the village the following day. Both groups were entering and leaving holes in road-cuts. Presumably they were nesting or preparing to nest. Rough-wings (*Stelgidopteryx ruficollis*) were frequenting holes in the same banks. Marshall (1943:31) has described the flight and call note of *Notiochelidon*, of which he found hundreds consorting in a large dead tree on a ridge in El Salvador in March. Wetmore (1941:555) was given specimens on November 26 which were said to be from a group of 30 sleeping in a single hole in a bank in Guatemala. According to Griscom (1932:284) this species also nests in caves, and around buildings.

**Calocitta formosa formosa*. Magpie-jay. A male, collected on May 22 near Tehuantepec, Oaxaca, had a brood patch and was in very worn plumage. The note was a husky *haah* or *zaah*, somewhat raven-like but buzzier. Like Brown Jays they moved about in groups.

A specimen was marked by Amadon as a male with well developed brood patch, in ignorance of the supposed absence of this feature in Oscines (Bailey, 1952). But Mewaldt (1952) found a brood patch of common occurrence in males of the Clark Nutcracker (*Nucifraga columbiana*), so it may occur also in other corvids.

Psilorhynchus "mexicanus". "White-tipped" Brown Jay. We recorded this form in palmetto hammocks a few miles south of Veracruz City, and also along the Río Jaltepec on the Isthmus of Tehuantepec. In both localities the plain tailed Brown Jay (*P. morio*) was present in greater numbers. Even Wetmore (1943:297), who has been the principal recent advocate of the view that this form is specifically distinct from *P. morio*, states that the two consort together in the same flocks. He was not able to find any difference between them other than the white tips on the rectrices in *mexicanus*. We feel that the conservative course is to regard the white-tipped birds as a phase or mutant of *Psilorhynchus morio* until or unless someone can prove otherwise.

**Cyanocorax yncas luxuosa*. Green Jay. A female was taken on May 6 at the Río Tacolopan, Veracruz; brood patch; eye yellow. The two common calls noted were a jay-like *kyit yit yit yit* and one we described as *kyomp-iomp*. The first we took to be a scolding note, whereas the second was closer to the musical "pump-handle notes" of the Blue Jay (*Cyanocitta cristata*).

**Melanotis hypoleucus*. Blue and White Mockingbird. A female was taken on May 18 in oak-pine forest at four or five thousand feet, near Pueblo Nuevo, Chiapas. This individual was very responsive to squeaking and approached through second growth, perching at about 20 feet elevation. Others were seen nearer the ground. They were not uncommon.

Formerly thought to be restricted to Guatemala, this mockingbird was recorded from Chiapas by Wetmore (1941:562). Hellmayr considered *hypoleucus* a race of the Blue Mockingbird (*M. melanotis*). The two differ in little but color. That difference is, however, striking, and there is no doubt that they, like so many other forms, were long isolated, one in México, the other in the highlands of Guatemala and Chiapas. Perhaps the two forms are best left as species. Certainly the fact that the race of *melanotis* found on the Tres Marias Islands has some albinotic individuals with scattered white feathers is no real evidence for uniting them, although Hellmayr used this argument. Both Sutton (1951) and Wetmore (*loc. cit.*) believe that *melanotis* and *hypoleucus* should be granted specific status. The latter described the song of the Blue and White Mockingbird as thrasher-like, with some of the notes in couplets. We noted that it was rather flute-like with a burr, with some thrasher-like notes and not nearly so varied and continuous as that of true mockingbirds.

**Turdus infuscatus*. Black Robin. A male taken on May 18 at Pueblo Nuevo, Chiapas, in cloud forest was in breeding condition; bill, legs, and narrow bare skin around eyes golden ochre (chrome yellow with ochre added); claws very slightly lighter horn yellow; iris: dark red brown.

As Hellmayr (1934:414) has suggested, this bird is closely allied to *Turdus serranus*. No representative is found in the almost 1000 miles from El Salvador, the southern outpost of *infuscatus* to the subtropical zone of Colombia, where *serranus* first appears, unless, as Griscom believes, the duller colored *Turdus nigrescens* of Costa Rica and Panamá belongs here too. It is possible that *serranus* and *infuscatus* are conspecific, as Ripley (1952:45) has considered them to be.

**Turdus ruftorques*. Rufous-collared Robin. A female was taken on May 18 in the pine country

of Chiapas, where the species is very common. Hellmayr (1934:354) wrote: "This is a near relative and possibly merely a strongly marked race of the American Robin (*T. migratorius*), which it is said to resemble in manners and song." The difference in coloration is so great that one hesitates to make *rufitorques* a race of *migratorius*, more especially since there are "robins" in many parts of the world, including South Africa, which look more like *migratorius* than does *rufitorques*. The song of *rufitorques* is somewhat less vigorous than that of *migratorius*, but the call notes are almost exactly the same. It spends more time on the ground than does *T. grayi* or *T. affinis* and in this, too, it resembles *migratorius*.

**Turdus assimilis assimilis*. White-throated Robin. The following specimens were taken: two at about 5000 feet, near Xilitla, San Luis Potosí, April 22; one at Río Tacolapan, Veracruz; one at about 10,000 feet on Volcán de Popocatepetl, México, May 27; all were in breeding condition.



Fig. 6. Rufous-browed Pepper-shrike (*Cyclarhis gujanensis*), $\times \frac{2}{3}$.
Drawing by Don R. Eckelberry.

The bird taken on Popocatepetl was labeled as a male with well developed brood patch. Since, as in *Calocitta* mentioned earlier, we did not know that this feature is usually absent in songbirds, confirmation of its presence in *Turdus* is required.

Hellmayr refers to the race *Turdus assimilis renominatus* Griscom and Miller of western México as "rather poor" and not discernible in worn plumage. In series, however, western birds seem quite noticeably paler below than nominate *assimilis*, of which we have a nice toptotypical series taken by Chapman at Jalapa, Veracruz.

**Tanagra elegantissima*. Blue-hooded Euphonia. A male taken from a mistletoe clump in the high country of Chiapas was preserved in the flesh to aid in investigating Sutton's (1951) suggestion that the euphonias may not be tanagers (Thraupidae), as universally believed, but flowerpeckers (Dicaeidae), related to the Oriental and Australian genus *Dicaeum*. Flowerpeckers and euphonias are both small, short-tailed, nine-primaried birds that live largely on mistletoe berries. In both genera the alimentary canal is modified to accommodate this diet. In the euphonias the gut has become almost a single straight tube with the stomach represented only by a thin-walled slightly enlarged area (Wetmore, 1914). The birds swallow the mistletoe berries whole and derive nourishment from the viscous material which surrounds the seeds. The latter pass through the bird unimpaired and retain enough of their stickiness to adhere to the twigs of trees where, when conditions are favorable, they germinate.

In the genus *Dicaeum* the modification of the alimentary canal is somewhat different and the diet does not consist exclusively of these berries. The "gizzard" or ventriculus has become a blind sac guarded by a sphincter muscle. Mistletoe berries pass to the intestine without entering this diverticulum. But tiny spiders and insects, which are eaten in abundance, do enter the gizzard for partial digestion. In addition to these items of diet, many flowerpeckers feed on nectar and have tubular tongues for doing so (Mayr and Amadon, 1947). The tongue of *Tanagra elegantissima* is small, rather fleshy, and though it has a rather deep depression is by no means tubular. It may be adapted to aid in the speedy ingestion of mistletoe berries.

The intestinal adaptations of *Dicaeum* and *Tanagra* for accommodating mistletoe berries, as just noted, have basic differences. We are inclined to think that parallelism only is involved. Further, certain genera of tanagers such as *Chlorophonia*, *Tanagra* (*Calliste*) and others seem related to the euphonias and connect them with the more typical tanagers. It must be noted, however, that the euphonias build a domed nest with side entrance presumably more or less similar to the hanging domed nest of the flowerpeckers. Further studies of the anatomy and natural history of the euphonias are desirable, but it seems reasonably sure that they are, in fact, tanagers.

**Sicalis luteola chrysops*. Yellow Finch. Two males and one female were taken on May 1 and 2, 17 miles south of Veracruz City; bill dark horn, slightly lighter fleshy horn on lower part of mandible, darkest on ridge of maxilla; tarsi and feet dull fleshy horn, slightly darker on top, the legs of one specimen as dark horn as bill, the others slightly lighter; iris deep brown (appears black).

Small flocks of restless Yellow Finches were constantly pitching in to the edge of the pond where they drank and also probably picked up gravel and perhaps food. Often they would perch in the dead limbs of bushes one hundred feet or so away. We were never able to count more than 23 at any one time, but to say there were twice that number in the immediate area is probably conservative. The call note, a thin *t'slip* given especially while in flight, is somewhat like that of the Horned Lark (*Eremophila alpestris*). Although the gonads, especially of the males, were considerably enlarged, the finches showed no indication of nesting and no song was heard. Perhaps nesting awaited the arrival of the rains, then overdue.

The pond by the road was beside a brush-lined stream reduced at that time to scattered, stagnant pools. Yellow Finches were seen to visit one of these ponds that was clear of vegetation on one side, but in much smaller numbers than at the completely exposed pond by the road.

The Yellow Finch is a very local bird, at least in the Middle American part of its range. Wetmore did not encounter it in his work in southern Veracruz, but Loetscher (1941) found it to be "positively abundant" in a restricted area near Isla. Davis (1952) has previously recorded the species in the area where we found it. Brodkorb (1943) described a race *mexicana* from Morelos based on a considerable series, but his specimens are the only record we know of from western México. The western race is said to be larger and paler than *chrysops*. Hellmayr (1938:327, footnote) stated that *chrysops* itself is scarcely separable from nominate *luteola* of northern South America. Our two adult males of *chrysops* have the top of the head yellower than in any specimens we have seen of *luteola*. The female has the breast yellower and less washed with dusky than in *luteola*, if one may draw valid conclusions from a single specimen.

**Aimophila sumichrasti*. Cinnamon-tailed or Sumichrast Sparrow. One adult male, with testes somewhat enlarged, was taken on May 22 near Tehuantepec, Oaxaca. The species was abundant in the hot, dry brush along the Pan-American Highway about 15 miles east of Tehuantepec City (see color plate). A sprightly tinkling song heard on all sides was attributed to this species, but possibly could have originated from some other sparrow. Two birds were observed perched close together and singing a "whisper song" in duet. Sutton (1952:256) states that *A. humeralis* also has the habit of singing in duet.

Hellmayr's (1938:522) suggestion that *sumichrasti* may eventually prove to be a race of *A. carpalis* of northwestern México, a bird half its size and with some differences in coloration, should not be taken too seriously.

Arremonops rufivirgatus. Olive Sparrow. On April 15, about 30 miles south of Brownsville, Texas, in Tamaulipas, we were attracted by a protesting pair of Olive Sparrows. A coachwhip snake, *Cotuber* (*Masticophis*) *flagellum*, was found with its head in the sparrows' nest, which was about three feet above the ground in the center of a large mass of candelabra cactus. The young (or eggs) had been eaten. This was shortly after noon on a hot, sunny day.

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