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THE BIRDS OF SOUTHERN VERACRUZ, MEXICO

By Alexander Wetmore

The present account relates to the birds found in the Canton of the Tuxtlas, in southern Veracruz, and is based on collections and studies made in 1939 and 1940. It includes also some additional data obtained at Tlacotalpam nearby, with other information from El Conejo, located about midway between Tlacotalpam and Alvarado, among the sandhills that extend along the coast. Most of the observations were made near the village of Tres Zapotes, around the camp of the National Geographic Society–Smithsonian Institution Archeological Expedition to Veracruz, which was occupied here in extended excavations under the leadership of Matthew W. Stirling, chief of the Bureau of American Ethnology of the Smithsonian Institution (see map, p. 217).

In brief, my personal work in 1939 covered the period from March 5 to April 16. The following year other duties prevented my return, but the collections and observations were continued by M. A. Carriker, Jr., who was in the field from January 13 to May 21, 1940. Our records seem fairly complete for the area that we covered, though no tropical region can be completely known without years of study. Our notes cover 291 forms of birds that were certainly identified.

The investigations were carried on in 1939 under permits granted through the cooperation of Señor Juan Zinser, then Jefe del Servicio de Caza, Departamento Forestal y de Caza y Pesca, and in 1940 from the succeeding director of this service, Señor Salvador Guerrero. We are indebted deeply to General Alejandro Manje, Comandante of the 26ª Zona Militar en Veracruz, for the authorizations

allowing the bearing of arms for hunting, and for other courtesies. Thanks are due many friends in Mexico for assistance in a variety of matters.

Previous biological work in this general region had been decidedly limited, most of the studies relating to the region farther to the north between the city of Veracruz and the great volcano of Orizaba. Occasional specimens of birds have been recorded from Alvarado and Tlacotalpam, but these were few until 1894, when E. W. Nelson and E. A. Goldman, of the Biological Survey, made a general reconnaissance that covered a part of the section. Their observations were made principally near Tlacotalpam on April 21 and 22 and May 17 to 29, and at Catemaco from April 26 to May 5. From San Andrés Tuxtla, May 11 to 13, they made an excursion into the Sierra de Tuxtla, ascending to the summit of Volcán San Martín. From May 14 to 16 they were at Santiago Tuxtla. They were occupied principally with mammals, birds being collected mainly at Tlacotalpam and Catemaco. Their specimens have been studied in preparing this report and, in a number of instances, have afforded interesting comparative data with our own notes of the present day.

In 1900 and 1901 Percy W. Shufeldt and A. E. Colburn made a collection of birds at Paso Nuevo, Buena Vista, and La Buenaventura, considerably higher up on the Río San Juan. Part of their specimens are in the United States National Museum, while others went to the Museum of Comparative Zoölogy, the American Museum of Natural History, and elsewhere. The region they covered lies actually outside the limits of the present paper, but specimens from their collections have been among the most useful available for comparison.

ITINERARY

On March 5, 1939, the work covered in this report had its beginning when, in company with Richard H. Stewart, staff photographer of the National Geographic Society, I left the city of Veracruz by train for Alvarado, a town situated among the low, brush-grown sand-hills, evidently ancient dunes, that for miles to the south extend along the coast. At Alvarado we transferred to the launch *Eustolita*, which carried us across the Bay of Alvarado and up the Río Papaloapan to the fine old town of Tlacotalpam (pl. 26, fig. 1). This place is located on an open plain of slight elevation, with many shallow ponds and grassy marshes interspersed with thickets and low trees and broad areas of open savanna. The following morning, in the small launch or canoa *La Delfinita*, we continued up the river, crossing almost immediately by a narrow channel choked with water-hyacinth that cut across to the Río San Juan, and then by other channels into that branch of the San Juan Delta known as the Río San Agustín.

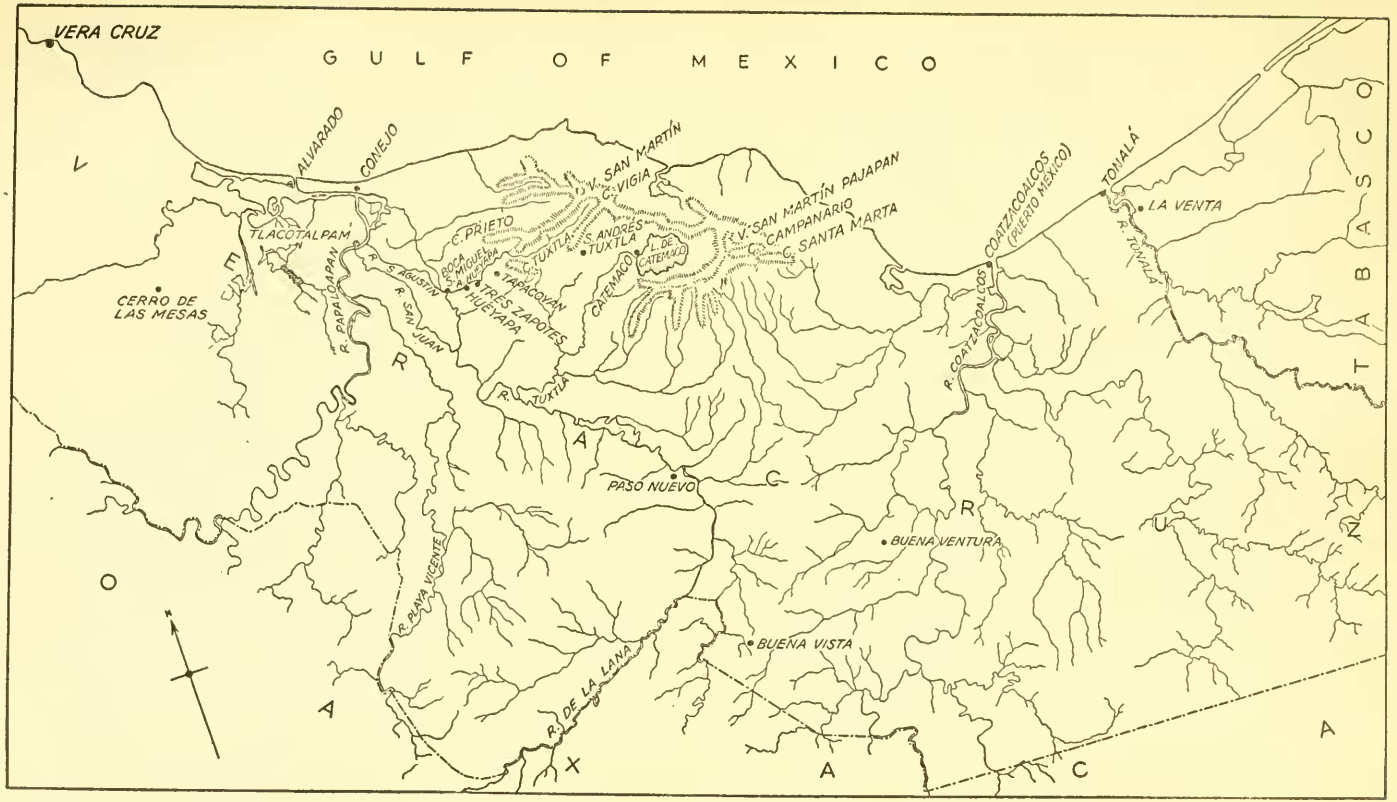

FIGURE 11.—Sketch map of southern Veracruz and western Tabasco to show the region covered in the present report. Scale approximately 25 miles to the inch.

For the first half of our journey the land was low and marshy, with connecting channels between the larger streams. Far to the south we could see the outline of the Sierra de Tuxtla, while to the north, dimly, appeared the great bulk of Orizaba. At La Candera the land became higher, and extensive forest of fair-sized trees appeared. After five hours' travel we reached the head of navigation at Boca San Miguel (pl. 26, fig. 2). Tide influence in the stream extended to this point. The stream here had fairly high banks with the elevation at the little palm-thatch houses that marked the place at about 40 feet above sea level. Here our outfit was transferred to an oxcart, while we rode mules for the 2-hour journey to camp, a mile beyond the village of Tres Zapotes.

The location was as ideal for the biologist as for the archeologist. The three palm-thatch houses of the camp were placed on slightly elevated ground, with the mounds marking the activities of the ancient inhabitants spread on all sides. The land is slightly undulating and is cut by the winding course of the Arroyo Hueyapa, a stream of clear water that comes down to the river at the Boca. From our houses we looked out across the open pastures of a small savanna to the Cerro de Tuxtla, with the low slopes of Cerro Prieto and the higher Volcán San Martín in the distance. Dense jungle began beside us and extended for miles, except where considerable tracts had been cleared and planted in corn by the villagers. These *milpas* are cultivated for four or five years until the tough-rooted grass finally gets the upper hand. They are then abandoned (pl. 27, fig. 1) and new clearings are made in the adjacent jungle. The old fields produce heavy stands of grass that are burned somewhat casually in the dry season but gradually grow up in bushes, which little by little form thickets and in the end are covered by second-growth forest. This ecological cycle, judged from the archeological evidence, has continued here for centuries, possibly for 2,000 years or more, with steady shift and change of plant and animal life in accommodation to the agricultural activities of man. The general elevation is less than 200 feet above sea level, with the land rising in rolling hills toward the Sierra de Tuxtla and becoming lower toward Hueyapa and the river.

Rainfall is heavy, with a limited dry season beginning in March and extending through the month of May. During our stay cold storms of rain and wind (*nortes*) swept down periodically from the north until the beginning of the dry season, flooding the lowlands with water, with the thermometer dropping regularly to 50° F. Even in the heat of the dry season the nights usually were cool.

Near Tres Zapotes village there are several small lakes and marshy channels (pl. 28, fig. 2). Laguna Larga begins adjacent to the houses and extends for some distance behind a low ridge, beyond which is

1. Low shore line of the Río Papaloapan, at Tlacotalpam. March 5, 1939.

2. The somewhat elevated bank of the Río San Agustín at Boca San Miguel. April 15, 1939.

1. Abandoned fields or milpas grown with scrub that will eventually become second-growth forest. Tres Zapotes. March 25, 1939.

2. Primitive forest along the Arroyo Corredor, near Tres Zapotes. April 4, 1939.

Laguna del Tular, and still farther away is the Arroyo Tepanaguasapan whose black waters run sluggishly through broad areas of dark, swampy forest to come down finally into the marshy savanna area called Para Madera that extends to the river. Other lakes and marshes are found near Hueyapa.

Beyond, toward the Sierra de Tuxtla, I worked on the low hills called Cerro Chico Zapote and Cerro Nestepe, which were covered with gallery forest, where I found relatively few birds. East and north of camp lay the Arroyo del Sitio and various other smaller branches of the Hueyapa running through jungle and milpas. To the northwest at the Arroyo Corredor was a great tract of heavy forest with much undergrowth (pl. 27, fig. 2).

The region was one of abundant birds that came to the very door of the little palm-thatched house that Richard Stewart and I had built to contain a dark room for the photographer and to serve as laboratory for the ornithologist. In the beginning, with Ramón Galloso as assistant, I worked on foot through the whole region adjacent to camp, and then used riding mules to reach more distant sections, traveling along narrow trails where the arroyo crossings seemed bottomless in sticky mud. These early morning rides afield, affording me opportunity to watch from the elevation of the saddle the small birds in the trailside bushes or the spiraling flocks of great hawks as they moved slowly northward in migration, while the harsh calls of dozens of chachalacas came on every hand, are among the happy memories of this work in Mexico. At the end of March, with appreciably lessened rainfall, the trails became hard, with disappearance of the sticky mud that had filled them previously, and at times the midday sun became hot and oppressive.

We closed the camp on April 15 and traveled that day as far as Tlacotalpam, continuing on April 16 to Alvarado and Veracruz.

Other duties prevented my own return the following season, but arrangement was made for M. A. Carriker, Jr., well known for his extensive work over wide areas in Latin America, to continue the investigations. Mr. Carriker arrived at the camp near Tres Zapotes on January 14, 1941. The weather early this season was bad, with one *norte* following another, considerable rain, and temperatures ranging from 50° F. to 60° F. Carriker was occupied with work in this area until January 31, when he returned to Tlacotalpam to secure a needed series of birds in that vicinity. The avifauna there is quite different from that of Tres Zapotes, owing to the absence of heavy forest. The higher, drier land is found principally near the Río Papaloapan, and is in the main planted in sugarcane, in whose fields birds are few. The scanty woodland consists of thorn scrub found inland near the extensive ponds and lagoons, with tracts of marshy meadow

between these thickets and the water. Marshy areas too wet for cultivation are used as pastures. Under these conditions, the number of land birds, aside from passing migrants, is not large, but aquatic species abound. Among these there are numerous species that are not listed in the accompanying report, as no extensive collection of them was made, so in this group there are many additions to be made to our list.

Work continued here until February 20 and included visits by launch on February 10 and 12 to El Conejo about midway between Tlacotalpam and Alvarado, and a little more than an hour's run from the first-mentioned of these two places. Here, Carriker investigated the low, broken range of hills that has a width of about a mile and an average height of 300 feet, and that extends for miles along the coast below Alvarado. These hills resemble ancient sand dunes and seem originally to have been covered with low woodland, some of which still remains in scattered areas. Extensive sections have been cleared and are now covered with short, thick grass used for pasture. Birds were abundant here, though the number of species was not great. The western mockingbird (*Mimus polyglottos leucopterus*) was common, *Icterus prosthemelas* was more abundant than elsewhere, and here Carriker found the Inca dove (*Scardafella inca*).

On February 21 he returned to Tres Zapotes. The weather in the meanwhile had moderated, with the dry season coming early. Until May, rain fell once in late February and again on April 10, in great contrast to conditions I had encountered the previous year. The rainy season began again at an early date, being initiated with a tremendous downpour on May 7. Between March 11 and April 3, Carriker made eight trips to the Cerro de Tuxtla (pl. 28, fig. 1), going in by way of Tapacoyan Arriba on the west flank of the mountain. These were one-day expeditions, and the birds secured were prepared at the main camp. Early in May he located for 8 days in Tapacoyan.

The Sierra de Tuxtla ends at the southwest in the Cerro de Tuxtla, which rises abruptly to about 4,000 feet elevation. There are few outlying foothills on the west and south, though low, broken hills lie between Tres Zapotes and the base of the peak. The whole of the western and southern slopes of the cerro is covered with a luxuriant growth of almost virgin forest, with clearings up to 800 feet elevation. On the eastern face most of the original forest has been cut and the slopes are now in pasture. Only where the descent is precipitous does forest remain. The region to the east and southeast is hilly and broken. Two peaks form the summit. The area on this mountain lying above 2,000 feet altitude is limited and is composed of narrow, steep-sided ridges, along whose summits the trees

were low, stunted, and gnarled, often covered with epiphytes. Elsewhere, the forest was beautifully luxuriant, with tall, spreading trees. In many areas, ordinary undergrowth was scant, but a small thorny palm, the chocha, was abundant. There are few trails in the forest, and water above Tapacoyan is scarce. Birds, aside from *Veniliornis fumigatus sanguinolentus*, *Henicorhina leucosticta prostheleuca*, and *Basileuterus culicivorus culicivorus*, were not abundant in the higher areas. Many of the common lowland species were not observed.

To collect on Volcán San Martín, Carriker left Tres Zapotes on April 14, going by way of Tapacoyan, Potreros, Santiago de Tuxtla, Buena Vista, and San Andrés Tuxtla. The following morning at 9:30 he reached a solitary house on the volcano at a place called El Tular, at 2,125 feet elevation. From here a mule trail, obscured by many old logging roads, led to 3,550 feet on the mountain. Carriker made his base at El Tular, where a clear, cool stream of water emerges from a subterranean channel in the upper end of a small valley and flows to the southwest. According to Carriker's notes, while the slopes below El Tular are intensely cultivated, above there extends a magnificent forest, unbroken by clearings, with many huge, tall trees and luxuriant undergrowth in which the thorn-covered chocha palm, so abundant on Cerro de Tuxtla, is happily absent. The slopes are gentle to 3,500 feet, with many extensive flats. The soil is decomposed volcanic ash overlying coarser deposits of the same material. Above El Tular he found only one trickle of water, which runs over volcanic rock in a deep ravine at the place called La Cocina, where the mule trail ends. As is often the case in such situations, the abundant rainfall in the main goes into the ground to reappear far below.

The ascent from La Cocina to the summit, over a narrow path along a narrow ridge, is in places steep but may be made in about an hour by an experienced climber. The mountain according to Carriker's barometer rises to about 5,500 feet. Dense forest comes up the cone of the volcano to within a few hundred feet of the rim of the crater, while trees of reduced size continue to the edge where they become gnarled and twisted and are covered with moss. From the edge of this woodland a tangle of tough, almost impenetrable shrubbery extends down into the crater, where it changes to forest growth of imposing proportions.

The trail emerges at the highest point on the volcano at the middle of the southern side, this side being much higher than the northern part of the rim. From this elevation, there is a grand view across the summit to the lowlands on the north, and to the sea on the east. To the south much of the view is obscured because of the configuration

of the land. The crater is approximately 1¼ miles across from east to west, and about a mile in the opposite direction. Carriker thought the depth to be about 800 feet, and noted two small vents, with minor cones and craters, rising from the floor. These were forest covered. One small area on the main crater floor, of perhaps 10 acres, was almost bare of vegetation, having only a few scattered trees. Collecting here continued until April 22.

On the return journey to Tres Zapotes, Carriker crossed from Santiago de Tuxtla to Lírios instead of making the long circuit to Tapacoyan. The trail though rocky and broken in places was easily practicable in the dry season, but probably not feasible during the rains.

On May 13 Carriker returned to Tlacotalpam and made another visit to El Conejo on May 15; he collected near the town on May 16 and 17, when field work for the season came to an end.

PHYSIOGRAPHY AND LIFE ZONES

Except for limited areas, the region covered in this report lies in the Humid Division of the Tropical Life Zone. At Tlacotalpam the land is almost at sea level (pl. 26, fig. 1), the effect of tide is felt in the rivers, and there are extensive swamps. Near Tres Zapotes the terrain becomes slightly undulating, with an average elevation of about 200 feet, rising steadily with more broken aspect toward the Sierra de Tuxtla (pl. 28, fig. 1). This range has four main peaks, the highest being Volcán San Martín. According to an account by Immanuel Friedlaender,[1] San Martín rises to 4,600 feet (1,400 meters), but Carriker's barometer readings showed about 5,500 feet. The Cerro de Tuxtla (called by Friedlaender C. Santiago) is about 4,000 feet (1,200 meters), and Cerro Prieto (Mono Blanco of Friedlaender) about 3,800 feet (1,150 meters). The Cerro Vigia, a spur of San Martín, is about 4,100 feet. (The difference in names for these individual mountains is due apparently to local usage, as Friedlaender worked from San Andrés Tuxtla at the east, while our contacts were with people living to the west and north.)

The Arid Division of the Tropical Zone surrounds the humid lowland area of the Tuxtla region, with savannas cutting in irregularly on the forests around their borders. According to the manuscript notes of E. W. Nelson in the files of the Fish and Wildlife Service, arid conditions come in south of the Tuxtla range at the western side of Lake Catemaco, where the low hills and valleys are dry, with sparse, woody vegetation.

[1] Über das Vulkangebiet von San Martin Tuxtla in Mexiko. Zeitschr. für Vulkanologie, vol. 7, No. 3, Nov., 1923, pp. 162–173, pls. 17–24.

1. A distant view of Cerro de Tuxtla from the village of Tres Zapotes. April 13, 1939.

2. A typical lagoon with aquatic vegetation and a background of swampy forest, near Tres Zapotes. April 11, 1939.

Across the higher sections of Cerro de Tuxtla and Volcán San Martín there is a small area that belongs with the Subtropical Zone, though these elevated portions are too small in total extent to support an extensive avifauna characteristic of this higher zone. The Subtropical element here must be considered a remnant or fragment from the cooler climatic conditions of the Pleistocene, preserved at its present rather low elevation through the fact of the extensive cloud banks with accompanying rains that cover the mountain peaks for much of the time with the modification of temperature that they bring. The northern location of the mountain mass between latitudes 18° and 19° N. must also be considered a contributing factor in this preservation, as also must its isolation by lowlands and the consequent full exposure of the higher slopes to cold winds. The list of birds that may be considered as of Subtropical affinity is as follows:

Oreopeleia lawrencii carrikeri
Campylopterus hemileucurus hemileucurus
Pampa pampa excellens
Aulocorhynchus prasinus prasinus
Lepidocolaptes affinis affinis
Xenicopsoides montanus variegaticeps
Empidonax flavescens imperturbatus
Turdus assimilis leucauchen
Myadestes unicolor unicolor
Catharus mexicanus mexicanus
Myioborus miniatus molochinus
Basileuterus culicivorus culicivorus
Basileuterus belli scitulus
Piranga leucoptera leucoptera
Chlorospingus ophthalmicus ophthalmicus
Atlapetes apertus

From a survey of the complete list of these mountain birds, the impression comes to me that the Subtropical elements, here near the northern limit of their latitudinal range, tend to descend lower than in the mountains of Central America, either regularly or casually, so that the demarcation of the Subtropical area from the Tropical Zone is less distinct than usual. This is reasonable when we consider that we are here in the northern sector of the Tropical area and that those elements of a subtropical nature that are found are undoubtedly affected by the prolonged period of heavy rains, which bring lowered temperatures, and by the constant sweep of cold storms from the north from November to the end of March, the "northers" of the Texas plains, in Mexico called *nortes*. Some species of the higher-zone element in the Sierra de Tuxtla range down to between 2,000 and 3,000 feet elevation, though in Central America to the south the same types of birds occur only at much higher levels. In the section on migration in the present paper, it is remarked that stragglers of such high-

mountain birds as *Basileuterus culicivorus culicivorus* and *Chlorospingus ophthalmicus ophthalmicus* in winter come casually in the heavier forests around Tres Zapotes at only 200 feet above sea level.

Our exploration of the avifauna of this fascinating region covered only the northern part of the mountain mass of which the Sierra de Tuxtla forms the northwestern bulwark, and that not completely, since we did not collect on the Cerro Prieto, except near its base, or on the Cerro Vigia. To the south of Catemaco there is another group of higher peaks called on some maps the Sierra San Juan and on others the Sierra de Acajucan. These include a Cerro Santa Marta and the steep-sided cone of the Cerro Campanario, which is said to be a little higher than Volcán San Martín. The farther peak, on the side toward Puerto México, is called San Martín de Pajapan and must not be confused with the other San Martín covered in this report. This second mountain has at its southeast base the town of Pajapan and is distant only about 40 kilometers from Puerto México. The biological exploration of this part of the region still remains to be made before our knowledge is complete.

The entire elevated area of the Tuxtlas, lying at the northern end of the great Isthmus of Tehuantepec, is of volcanic nature and is found at the southeastern end of the great arc of extensive recent volcanic activity that begins in Tepic and extends through Toluca and Orizaba. While available maps may not be wholly accurate in detail, the isolation of the Tuxtla area by extensive lowlands from the plateau of central Mexico is easily evident through study of the drainage. The abundant rainfall is carried off by streams that descend the Tuxtla highland on all sides, often with abrupt waterfalls interrupting their upper courses. The San Juan and Papaloapan Rivers flow around it on the west and southwest, reaching the sea at Alvarado, while on the southeast it is bounded by the Río Coatzacoalcos and its tributaries, the waters from which enter the sea at Coatzacoalcos (Puerto México). To the east is the Gulf of Mexico.

In modern times the Volcán San Martín has been reported active in 1662 and again in 1793. Of the latter eruption we have a detailed account in a manuscript report made by José Mariano Moziño, a botanist who was in the area at the time.[2] Earth tremors and thunderous subterranean noises began on March 2, 1793, and continued for two days, with smoke from the volcano. A second, more violent eruption came on May 22 and continued at intervals with considerable

[2] His notes have been published or reprinted in several places. See Informe de Don José Moziño sobre la erupción del Volcán de San Martín, Tuxtla (Vera Cruz) occurido en el año de 1793. Bol. Soc. Geogr. Estadistica Rep. Mex., vol. 2, 1870, pp. 62–70; and Descripción del Volcán de Tuxtla por D. Joseph Mariano Moziño Suarez de Figueroa, botanico naturalista de la Real expedición de Nueva Espana y de las limites al Norte de California. La Naturaleza, Periodico Cient. Soc. Mex. Hist. Nat., vol. 3, 1874, 1875, and 1876, pp. 106–114.

force until September, gradually then dying down. Moziño visited the crater on two occasions, on September 23 and November 21. He describes the two smaller, inner craters that Carriker observed, and the great amount of ash over the mountain slopes, but his only remark concerning the effect of the volcanic action on the life of the area is that at the end of June the eruptions had destroyed the forest cover on the mountain along the trail to Tecolapan for a distance of 10 leagues, leaving only burned trunks of trees.

Francisco Zérega,[3] who visited the crater of San Martín in August 1859, reports that the smaller cones in the bottom were covered with vegetation even to the openings in their summits, where trees 15 to 20 feet tall were growing. He was told, however, that in 1828 this plant growth was not present.

Because of the recent volcanic activity in these mountains, it has been supposed that there was no probability of any peculiarity in the fauna, but such proves not to be the case. The two eruptions recorded in historic times on San Martín had lava flows that broke out to the north, but there does not appear to have been major disturbance elsewhere except through the fall of volcanic ash. Friedlaender, in his visit of January and February 1922, noted the same condition of stunted trees on the crater rim of San Martín that Carriker reported in 1940, and he was told that the extreme upper slopes had been bare until 1900, the growth having appeared since then. In this, however, he was misinformed; more probably the restriction in the size of the trees at the point mentioned has come from the effect of winds, since the forest there is much older than the 40 years indicated. The stunting of trees is a usual circumstance at the summits of many such mountains.

It is remarkable that peculiar species could survive such volcanic catastrophes on this mountain. Part of the endemic forms that once inhabited the region no doubt have perished from repeated volcanic disturbances, but some have remained as indicated by the list given above. Of these species, the following, found and described during our work, so far as now known, are peculiar to this mountain range:

Oreopeleia lawrencii carrikeri
Pampa pampa excellens
Empidonax flavescens imperturbatus
Myioborus miniatus molochinus
Atlapetes apertus

There is not much question that other novelties remain in the great forests of this region and that there is much to be learned of the distribution of birds in this area. Carriker, for example, heard *Odon-*

[3] El Volcán de Tuxtla. Bol. Soc. Geogr. Estad. República Mexicana, vol. 2, 1870, pp. 500–503.

tophorus calling in the mountains on various occasions but did not succeed in locating them. The higher mountains beyond Catemaco that have not been explored may easily harbor forms whose presence now is not suspected, and the great lowland forests along the sea to the west and northwest of Puerto México offer many possibilities.

MIGRATION

Located near the Gulf of Mexico at the northern end of the Isthmus of Tehuantepec, the Tuxtla region is on the route traversed by hosts of avian migrants from the United States and Canada. Many remain through the period of northern winter, and others pass in flight to or from more southern localities. Of the 291 forms in the present list, 86 are certainly northern migrants, while some individuals of various other forms, as some of the herons and other water birds, undoubtedly come here as visitors from farther north, though part may be resident in the locality. The number of migrants among aquatic species will be increased considerably by more extended observations in the marshy lagoons and along the larger rivers. Our records do not cover the period of fall movement but begin in January and continue through the spring.

Among the attractive sights to the naturalist in the Tropics of the New World, the great flights of migrant hawks that pass through Mexico and Central America twice each year rank among the foremost. The majority of these fine birds that made the spring flight north at Tres Zapotes in 1939 were Sennett's white-tailed hawks, but occasionally other species traveled with them. Northward movement began at the end of March and flights passed almost daily, usually in the forenoon, with the birds soaring in circles and at the same time drifting steadily toward the north. At times 50 or more were visible at once crossing the sky to disappear over the northern horizon, followed steadily by more, until I sometimes wondered how many passed in the course of a day. The flights in 1939 continued until I left the region on April 16. One morning I shot an everglade kite from one of these bands, and on April 6 and 10 turkey buzzards passed in flight northward, evidently migrant individuals of one of the two northern subspecies.

The smaller migrants, familiar summer residents of eastern and central North America, often came in waves as they do farther north. On March 21, 1939, following a tremendous rain that flooded all the low-lying country and drenched the jungle, I found the bushes and weeds of old fields crowded with orchard orioles, yellow warblers, and parula warblers, with others in lesser numbers. These birds continued in abundance until March 25, when there was a noticeable decrease among them. March 30 I recorded that another wave of

migrants had come in during the night, and from then on the procession seemed constant. During the end of March and early April I saw more orchard orioles near Tres Zapotes than I had observed in all my previous years of observation of this species in its northern home. On some days they fairly swarmed, so that it was necessary to scrutinize carefully every bird collected to avoid shooting them. Lincoln's sparrows, common as winter residents, also increased decidedly at the end of March for a brief space. The period from March 25 to April 15 seemed to mark the height of the migratory movement as a whole, though some species were passing until early May.

Other interesting migrants were the Merrill's pauraque (*Nyctidromus albicollis merrillii*) and Couch's kingbird (*Tyrannus melancholicus couchii*), which in our northern summer come barely within the southern boundary of the United States. Some of their number come to live briefly, in winter, with the resident races of the same species in the Tuxtla region.

That there is definite migration among some species wholly tropical in distribution is a fact that is becoming constantly better known as our observations extend. In the Tres Zapotes area, the yellow-green vireo (*Vireo flavoviridis flavoviridis*) falls in this category. Seemingly this bird withdraws after its nesting season, so far as most of its individuals are concerned at least, into South America, to return the following season to its breeding grounds. In 1939 I noted none to the time that I left on April 16. The following year Carriker found the first one on April 6, followed by another April 8, after which they were common. Possibly the white-bellied emerald hummingbird (*Agyrtria candida candida*) may be a migrant also, since, although it was common in March both years, in 1940 Carriker did not record it until February 28, after which it was widely distributed. The sulphur-bellied flycatcher (*Myiodynastes luteiventris luteiventris*) appeared on April 1.

The striped flycatcher (*Legatus leucophaius variegatus*) also seemed to be migrant here, as it suddenly became common in April, though not recorded earlier. The Mexican crested flycatcher (*Myiarchus tyrannulus nelsoni*) was common after the middle of March but was not seen in winter. The peppershrike (*Cyclarhis guianensis flaviventris*) was recorded only after the first of March. Since it is found usually by its song, it may have been present earlier, though silent. The beginning of March marked the opening of its breeding period.

Further study in the field is needed to verify some of the observations just listed, which are based on scanty data. It appears, however, that there is definite shifting among some truly Tropical species for purposes of breeding.

The Mexican pipromorphna (*Pipromorphna oleaginea assimilis*), common on the Sierra de Tuxtla above 1,000 feet elevation, was taken once at Tres Zapotes on January 18, during a storm. Lichtenstein's warbler (*Basileuterus culicivorus culicivorus*), another common mountain species, seemed also to be a straggler to the lowlands, where it was taken at Tres Zapotes on January 26 and at Tlacotalpam February 7. The Mexican shrike-tanager (*Lanio auratius*), common to 2,500 feet in the mountains, was found at Tres Zapotes on January 26 and February 28. The brown-headed chlorospingus (*Chlorospingus ophthalmicus ophthalmicus*), which ranged mainly in the higher mountain forests, was obtained at Tres Zapotes on January 17. Though it is possible that there were local groups of these species resident in the lowland forests, it appears that there is a certain amount of altitudinal shifting in their search for food and because of cold and storms during the winter period. Much more study of this subject is required.

ANNOTATED LIST

Family TINAMIDAE

TINAMUS MAJOR PERCAUTUS Van Tyne

Tinamus major percautus Van Tyne, Univ. Michigan Mus. Zool. Misc. Publ. 27, Aug. 1, 1935, p. 8 (Uaxactun, Petén, Guatemala).

The two obtained were taken by Carriker. On March 23, 1940, at 2,000 feet elevation on the Cerro Tuxtla, he found two fighting furiously and shot one, which proved to be a male. Others were heard from time to time on this mountain, but no more were seen. On April 8, in fairly heavy woodland near Hueyapa, between Tres Zapotes and Boca San Miguel, attention was drawn by a rustling sound to one skulking off through the undergrowth. This proved to be a female. The bird appears to be the rarest of the tinamous of the region and is a species known there to very few persons.

The decidedly gray coloration of the two specimens obtained is evident at a glance, the difference being a striking one when the skins are compared with specimens of *T. m. robustus* from the Caribbean region of central Guatemala. After examination of four specimens kindly lent me by Dr. J. Van Tyne from the original series from which he described the race *percautus*, it appears to me evident that the birds from the Tres Zapotes area are to be identified as that form. They agree in more grayish olive color above and in paler coloration below. The only difference that I can find is that the black crossbars on the wings and back in the Veracruz specimens are not quite so heavy, a difference that is very slight and one that I believe is due to individual variation. In his discussion of this new race, Van Tyne noted that

three skins in the Fish and Wildlife Service collection obtained by Nelson and Goldman at Teapa in south-central Tabasco, near the Chiapas boundary, showed an approach to *percautus* in the paleness of the underparts. On examination of these specimens again with the new material from the present collection, I consider that they should be called *percautus*, as should two other specimens in the National Museum that come from Buena Vista and Potrero, Veracruz, the first locality being to the west of Tres Zapotes and the second near Córdoba. This gives a logical distribution, since it makes *percautus* the most northern race of its species, extending from southern Veracruz to northern Petén, while *robustus* ranges on the Caribbean slope from Choctum and Nebaj, in east central Guatemala, south to Nicaragua.

CRYPTURELLUS SOUI MESERYTHRUS (Sclater)

Tinamus meserythrus P. L. Sclater, Proc. Zool. Soc. London, 1859 (Feb. 1860), p. 392 (Playa Vicente, Veracruz).

Carriker secured a female near camp at Tres Zapotes on February 26 and a pair at about 800 feet elevation on Cerro de Tuxtla on May 8, 1940. The species seemed to be fairly common in the wooded lowlands through this region but was so secretive that it was seldom seen. During my own stay I heard tinamous calling daily, often immediately adjacent to our houses at camp, and on two or three occasions had indistinct glimpses of the birds along the trails. Never, however, did I secure a shot. Carriker notes that they rarely flush, usually hiding when approached. He reports that the two taken on May 8 were a breeding pair and that the female apparently had just completed laying.

CRYPTURELLUS CINNAMOMEUS SALLAEI (Bonaparte)

Nothocercus (sic) *sallaei* Bonaparte, Compt. Rend. Acad. Sci. Paris, vol. 42, 1856, p. 954 (Córdoba, Veracruz).

Carriker secured a male in forest near Hueyapa on March 27, 1940.

This bird agrees with a small series taken by Nelson and Goldman on May 3 and 4, 1894, and also with an old skin in the U. S. National Museum from Mirador near Veracruz. While Peters in his Check-list (vol. 1, p. 21) has included birds from this area under true *cinnamomeus*, it appears that Conover [4] and Brodkorb [5] are correct in calling *sallaei* a distinct race. The series before me stands out definitely from other tinamous of this group.

As for the type locality of this form, Bonaparte says of it "du Mexique," but continues in a footnote to explain that he has named it for Auguste Sallé from a fine collection obtained by that traveler,

[4] Proc. Biol. Soc. Washington, vol. 46, June 30, 1933, p. 114.
[5] Occ. Pap. Mus. Zool. Univ. Michigan, No. 401, Mar. 1, 1939, p. 3.

principally in the vicinity of Córdoba in Veracruz and around the volcano Orizaba in Puebla. When more material is available to outline the distribution of the race, the type locality should be definitely designated.

CRYPTURELLUS BOUCARDI BOUCARDI (Sclater)

Tinamus boucardi P. L. Sclater, Proc. Zool. Soc. London, 1859 (Feb. 1860), p. 391 (Teotalcingo, Oaxaca).

On the Sierra de Tuxtla this tinamou is fairly abundant, being confined to the higher levels above 1,000 feet elevation. The five specimens, taken by Carriker, come from the Cerro de Tuxtla, March 28 and 29, April 9, and May 7. They were calling at this season and decoyed to an imitation of their notes, though it was necessary for the hunter to be well concealed. They were heard frequently on San Martín, but none were taken here.

Family COLYMBIDAE

COLYMBUS DOMINICUS BRACHYPTERUS Chapman: Mexican Grebe

Colymbus dominicus brachypterus Chapman, Bull. Amer. Mus. Nat. Hist., vol. 12, Dec. 23, 1899, p. 256 (Lomita Ranch, Lower Rio Grande Valley, Tex.).

In the two or three feet of water of the Laguna del Tular, 25 or 30 of these small grebes lived, so that I saw them frequently between March 17 and April 11. On March 29 I found a few in Laguna Larga. The open water available was small in extent, and the grebes ranged back into the swamp under the arching branches of bushes. On March 17 I fired at two under such cover and was much surprised when my boy came wading back with four fine specimens. One of these was preserved as a skeleton. The three skins include an adult male and two females in immature plumage. The birds were known locally as *viuda* or *viudita*.

Carriker in 1940 secured a female on March 21 on a lagoon north of Hueyapa, and shot three more, two males and a female, on February 15 and 19 near Tlacotalpam, where these grebes were fairly common in the many ponds and sloughs of that region.

After examination of considerable material, I have characterized the various races of this grebe as follows:

Colymbus dominicus dominicus Linnaeus:

Colymbus dominicus Linnaeus, Systema naturae, ed. 12, vol. 1, 1766, p. 223 (Hispaniola).

Under surface with more mixture of fuscous; flanks, sides, and crissum darker; bill slightly larger.

Eight males, wing 88.5–96.3 (92.0), culmen from base 21.5–24.5 (23.4), tarsus 30.0–33.6 (31.8) mm.

Seven females, wing 87.5–94.0 (90.3),[6] culmen from base 19.0–21.3 (20.3), tarsus 28.5–32.1 (30.5) mm.

Cuba, Jamaica, Isle of Pines, Hispaniola, Puerto Rico, and many of the Bahama Islands; Cozumel Island.

Eight skins in the British Museum from Cozumel Island on the eastern coast of Yucatán agree with the Greater Antillean birds in darker flanks and sides and in the greater amount of fuscous on the breast. It is well known that Cozumel has definite Greater Antillean affinities in many elements of its avifauna.

Colymbus dominicus brachypterus Chapman:

Colymbus dominicus brachypterus Chapman, Bull. Amer. Mus. Nat. Hist., vol. 12, Dec. 23, 1899, p. 256 (Lomita Ranch, Lower Rio Grande Valley, Tex.).

Under surface whiter, with the sides and flanks lighter, less fuscous; wing and bill averaging slightly shorter.

Sixteen males, wing 82.0–93.7 (88.7), culmen from base 18.0–24.7 (21.5), tarsus 29.4–33.8 (32.4) mm.

Eighteen females, wing 83.8–91.5 (87.4), culmen from base 18.0–22.6 (19.8),[7] tarsus 29.3–32.5 (30.9) mm.

Southeastern Texas through Mexico and Central America to Panamá.

Another form has been described from Baja California by van Rossem and Hachisuka as *Colymbus dominicus bangsi*[8] and as differing from *C. d. brachypterus* in smaller bill, grayer and paler upper parts, with the breeding plumage darker below, and spotting prominent. The proposed form is said to range in the arid tropical zone of Baja California, southern Sonora, and "probably other portions of northwestern Mexico." I have seen only two specimens from Baja California, a male with the culmen from base 19.4 mm. and a female with the same measurement 17.6 mm. While small, this is not remarkably so. In color these two do not differ from specimens from elsewhere in Mexico. Skins from Rosario in the State of Sinaloa, Mazatlán, Nayarit, and Manzanillo in Colima do not differ at all from typical *brachypterus*. In view of the data given above, I wish to withhold decision as to the validity of *bangsi* for the present, though it would seem that it is doubtfully distinct.

Colymbus dominicus speciosus (Lynch Arribálzaga):

Podiceps speciosus Felix Lynch Arribálzaga, La Ley, Buenos Aires, July 2, 1877, p. 1 (Baradero, Buenos Aires, Argentina).

[6] Five specimens; other two molting.

[7] Measurements of 16 specimens.

[8] *Colymbus dominicus bangsi* van Rossem and Hachisuka, Trans. San Diego Soc. Nat. Hist., vol. 8, June 15, 1937, p. 323 (Santiago, Baja California).

Similar in color to *dominicus* but with smaller bill.

Seventeen males, wing 89.0–99.5 (93.5), culmen from base 18.0–22.0 (19.8), tarsus 31.2–36.2 (32.9) mm.

Seven females, wing 86.9–97.1 (90.3), culmen from base 17.7–21.5 (18.8), tarsus 30.0–33.0 (31.2) mm.

South America, from Venezuela south to central Argentina.

This form is very similar to the West Indian bird except for its smaller bill. The only specimen I have seen from Argentina is slightly paler than birds from farther north, but it is immature and I consider its colors uncertain. It is possible that there may be two forms in South America, but this can be determined only with more abundant material.

Family PELECANIDAE

PELECANUS ERYTHRORHYNCHOS Gmelin: White Pelican

Pelecanus erythrorhynchos GMELIN, Systema naturae, vol. 1, pt. 2, 1789, p. 571 (Hudson Bay).

On April 16 a flock of a dozen flew above the Río Papaloapan at Tlacotalpam.

PELECANUS OCCIDENTALIS CAROLINENSIS Gmelin: Brown Pelican

Pelecanus carolinensis GMELIN, Systema naturae, vol. 1, pt. 2, 1789, p. 571 (Charleston Harbor, S. C.).

The alcatraz was seen at Veracruz City on March 4 and at Alvarado on March 5 and April 16. One was observed in the Río Papaloapan at Tlacotalpam on March 6.

Family PHALACROCORACIDAE

PHALACROCORAX OLIVACEUS MEXICANUS (Brandt): Mexican Cormorant

Carbo mexicanus BRANDT, Bull. Sci. Acad. Imp. St. Pétersbourg, vol. 3, 1837, col. 56 (Mexico).

Cormorants were recorded along the Río Papaloapan and the Río San Agustín between Tlacotalpam and Boca San Miguel on March 6 and April 15.

Family ANHINGIDAE

ANHINGA ANHINGA LEUCOGASTER (Vieillot): Water-turkey

Plotus leucogaster VIEILLOT, Nouv. Dict. Hist. Nat., vol. 1, 1816, p. 545 (Florida).

On March 31, 1939, I saw a water-turkey at Laguna Larga, near Tres Zapotes. Carriker shot an immature male in a marsh north of Hueyapa on March 21, 1940, and recorded others along the river between Boca San Miguel and Tlacotalpam.

Separation of races in this species has been discussed by van Rossem[9] and by Griscom and Greenway.[10] After examination of

[9] Ann. Mag. Nat. Hist., Oct. 1939, pp. 439–440.

[10] Bull. Mus. Comp. Zoöl., vol. 88, June 1941, p. 103.

considerable material it appears to me that two races may be maintained. *Anhinga anhinga anhinga* (Linnaeus), marked by larger size and broader tail tip, ranges from Venezuela and Ecuador to Brazil, and presumably to Argentina. *Anhinga anhinga leucogaster* (Vieillot), found from Colombia northward through Central America and Mexico to the southeastern United States, is slightly smaller. The race *Anhinga anhinga minima* described by van Rossem from the Pacific coast of Central America, from Nayarit to El Salvador, I consider at present as of uncertain status. The type and some others that I have seen are immature birds, as is the individual from Langtry, Tex., called *minima* by van Rossem. Adults are appreciably larger than immatures in this species, so much so that I am doubtful whether this race can be recognized. This needs to be settled definitely with adult material. The skin from Langtry, Tex., I consider to be merely a young individual of *leucogaster*.

Family FREGATIDAE

FREGATA MAGNIFICENS ROTHSCHILDI Mathews: Caribbean Man-o'-war-bird

Fregata minor rothschildi MATHEWS, The birds of Australia, vol. 4, 1915, p. 280 (Aruba Island, Netherlands West Indies).

The man-o'-war-bird was recorded at Alvarado on March 6, 1939.

Family ARDEIDAE

CASMERODIUS ALBUS EGRETTA (Gmelin): American Egret

Ardea Egretta GMELIN, Systema naturae, vol. 1, pt. 2, 1789, p. 629 (Cayenne).

One was seen at Laguna del Tular April 11.

HYDRANASSA TRICOLOR RUFICOLLIS (Gosse): Louisiana Heron

Egretta ruficollis GOSSE, Birds of Jamaica, 1847, p. 338 (Jamaica).

Occasional birds were seen at Laguna Tular and near the Arroyo Tepanaguasapan in March and April.

FLORIDA CAERULEA CAERULEA (Linnaeus): Little Blue Heron

Ardea caerulea LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 143 (South Carolina).

This was the most abundant heron around Tres Zapotes, where it was found in number at the lagoons from March 17 to April 13. Many were recorded along the river route between Tlacotalpam and Boca San Miguel on March 6 and April 15.

BUTORIDES VIRESCENS VIRESCENS (Linnaeus): Eastern Green Heron

Ardea virescens LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 144 (South Carolina).

In 1939 I saw green herons near Tres Zapotes on four occasions, March 13, 29, and 31 (when a male was taken) and April 3. Carriker, in 1940, found them fairly abundant around the ponds and lagoons and in the small tracts of swampy woods adjacent to Tlacotalpam, where he took specimens on February 6, 9, and 19. He recorded them also near Tres Zapotes and on May 7 shot a female along the small arroyo above the village of Tapacoyan, on the lower slopes of the Cerro de Tuxtla. The latter had the ovaries slightly enlarged.

The five specimens taken belong to the widely distributed eastern race. Whether the bird from Tapacoyan was near its breeding grounds, as indicated by the date and its condition, or whether it was a belated northern migrant is uncertain.

NYCTICORAX NYCTICORAX HOACTLI (Gmelin): Black-crowned Night Heron

Ardea Hoactli GMELIN, Systema naturae, vol. 1, pt. 2, 1789, p. 630 (Lakes of Mexico).

This night heron, known as *tandíl*, was a common inhabitant of lagoons and wooded swamps and was hunted as game. In evening, when the wind was from the south, I heard their calls from the lagoons near the village, and often the birds passed at night over our camp. They were common along the river route between Tlacotalpam and Boca San Miguel.

NYCTANASSA VIOLACEA VIOLACEA (Linnaeus): Yellow-crowned Night Heron

Ardea violacea LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 143 (South Carolina).

In March and April these birds were fairly common with the other night heron at lagoons near the village.

Family COCHLEARIIDAE

COCHLEARIUS COCHLEARIUS ZELEDONI (Ridgway)

Cancroma zeledoni RIDGWAY, Proc. U. S. Nat. Mus., vol. 8, 1885, p. 93 (Mazatlán, Sinaloa).

The only one obtained, an immature female, was shot by Carriker's helper, Modesto, along the arroyo near Hueyapa.

Family CICONIIDAE

MYCTERIA AMERICANA Linnaeus: Wood Ibis

Mycteria americana LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 140 (Brazil).

A flock was seen circling high in the air at Tlacotalpam on March 6.

Family THRESKIORNITHIDAE

AJAIA AJAJA (Linnaeus): Roseate Spoonbill

Platalea Ajaja Linnaeus, Systema naturae, ed. 10, vol. 1, 1758, p. 140 (Jamaica).

Carriker recorded one May 1, 1940, between Tlacotalpam and Boca San Miguel. Nelson and Goldman found this species near Tlacotalpam in 1894.

Family ANATIDAE

DENDROCYGNA AUTUMNALIS AUTUMNALIS (Linnaeus): Black-bellied Tree Duck

Anas autumnalis Linnaeus, Systema naturae, ed. 10, vol. 1, 1758, p. 127 (America).

Carriker was told that this tree duck comes to the cornfields around Tres Zapotes in large numbers late in May and early in June to feed at night after the crops have been cleared and the ground burned for the June planting. The natives trap many at these sites. Carriker purchased one bird on May 2 which had been kept in captivity. I saw two downy young in bad state of plumage in the hands of native boys here early in April 1939.

CAIRINA MOSCHATA (Linnaeus)

Anas moschata Linnaeus, Systema naturae, ed. 10, vol. 1, 1758, p. 124 (Brazil).

On April 3, 1939, three flushed from a low tree in the lagoon adjacent to the village. Carriker secured the female of a pair on the arroyo at Hueyapa April 2, 1940. The bird seems rare in this vicinity.

QUERQUEDULA DISCORS (Linnaeus): Blue-winged Teal

Anas discors Linnaeus, Systema naturae, ed. 12, vol. 1, 1766, p. 205 (South Carolina).

Five of these teals were seen at Laguna del Tular on March 17, 1939. On April 2, soon after sunrise, two men rode into camp asking if we cared to buy *canates* (the name applied here to wild ducks of all species). They carried about 25 blue-winged teals in a woven bag, the birds having been partly skinned and partly plucked, eviscerated but otherwise complete. They had been boiled, probably so that they would not spoil, and were offered at the rate of two for 25 centavos. I was told that these ducks had been killed in the extensive lagoons near Boca San Miguel.

On April 11 I saw a flock of 12 blue-winged teals and another of 25 in the lagoon near the village, and on April 13 recorded a male in a small lagoon near the Arroyo Tepanaguasapan. On April 16 a dozen rested on the shore of the Río Papaloapan near Alvarado. In 1940 Carriker examined two killed on March 21.

NYROCA COLLARIS (Donovan): Ring-necked Duck

Anas collaris Donovan, British Birds, vol. 6, 1809, pl. 147 (Lincolnshire, England, from specimen found in Leadenhall Market, London).

On March 5, 1939, about 300 were seen in the Río Papaloapan in crossing from Alvarado to Tlacotalpam. On April 15, as I came into the latter place, about 25 were swimming in the river, and the following day an equal number were observed in returning to Alvarado.

NYROCA AFFINIS (Eyton): Lesser Scaup Duck

Fuligula affinis Eyton, A monograph on the Anatidae, 1838, p. 157 (North America).

On March 5, 1939, half a dozen were recorded among the abundant ring-necked ducks where the Río Chiquito enters the Papaloapan between Alvarado and Tlacotalpam. On April 15 about 20 were seen near Tlacotalpam, and the following day nearly 200 were seen between that point and Alvarado. The change in abundance in March and April between this species and the ring-necked duck was interesting.

Family CATHARTIDAE

SARCORAMPHUS PAPA (Linnaeus)

Vultur Papa Linnaeus, Systema naturae, ed. 10, vol. 1, 1758, p. 86 (Surinam).

At Tres Zapotes I heard frequently of *el rey zope* and April 2 was called to see this bird, a king vulture, resting in a small tree a hundred yards in front of our camp. While seeming unafraid, it appeared nervous and moved about until it was partly concealed by a thin screen of leaves. It rested much of the time with the head lowered and thrust a little forward. The colors of the head were brilliant, the red seeming especially intense. A short distance away a large group of black vultures rested about some carcass that apparently had attracted the king vulture. Near sundown the bird flew away rather heavily with a loud swishing of its wings, flapping them quickly for several beats and then spreading them to sail for a short distance, the motion being exactly that of a black vulture under similar circumstances. On April 7 I recorded one soaring over the clearings at the edge of the great forest at Arroyo Corredor.

CORAGYPS ATRATUS (Meyer): Black Vulture

Vultur atratus F. A. A. Meyer, Zool. Annalen, vol. 1, 1794, p. 290 (St. Johns River, Fla.).

This scavenger species, common through the country, was abundant about the village of Tres Zapotes. Although they came all around our camp, few alighted in the clearing, as we permitted no waste to be thrown out and there was nothing to attract them. They

were known regularly as *zopilote*, which the archeologists informed me was an Aztec word, and occasionally I heard them called *nopo*. Bands gathered about every carcass in the pastures, and after gorging rested in flocks in the trees, or congregated closely on the ground. Sometimes the natives, seeing the latter, remarked jokingly "hay musica," comparing them to the human groups that packed about the native orchestras. When the air was heavy, these vultures remained perched, or flapped heavily about for short distances. On days of sunshine, they were often seen soaring high overhead. On one occasion a flock circling 300 yards or more above the earth suddenly partly closed their wings and descended to the grass. Their speed in descent was extraordinary. They often fought viciously over food, rising several feet in the air as they struck at one another. But once in the village I saw a hen turkey drive one away from the vicinity of her young brood, and on another day two small dogs, growling and barking, drove a flock of *zopilotes* from a dead pig for no other reason than a very apparent dislike for the birds.

CATHARTES AURA AURA (Linnaeus)

Vultur Aura Linnaeus, Systema naturae, ed. 10, vol. 1, 1758, p. 86 (Veracruz, Mexico).

The turkey vulture was seen daily in the region about Tres Zapotes, either soaring with its usual ease over the open fields or resting in trees. It never joined the abundant flocks of black vultures that congregated at the bodies of all dead animals of medium to large size, from dogs and pigs to cattle and horses, and it was my impression that the turkey vulture was content with the dead of the smaller creatures for which there was less competition or, at any rate, less fighting among the scavengers.

While these notes are listed under the typical form, other races were observed; on April 6, for instance, I noted a considerable migration during which birds passed during the entire forenoon in little groups, turning in spirals high in the air and traveling steadily northward. A migrant flock of 30 individuals was seen following a similar course on April 10. These undoubtedly included one or both of the two northern races.

Family ACCIPITRIDAE

ELANUS LEUCURUS MAJUSCULUS Bangs and Penard

Elanus leucurus majusculus Bangs and Penard, Proc. New England Zoöl. Club, vol. 7, Feb. 19, 1920, p. 46 (San Rafael, Calif.)

Between Tlacotalpam and Boca San Miguel on March 6, 1939, I saw several white-tailed kites flying over marshy places. Later in the month a pair established themselves on the little savanna im-

mediately below our camp at Tres Zapotes. I shot the male on March 17, when the female was carrying sticks to build a nest in a tree standing in a line of brush bordering a fence. The structure was located at the top of a tall, strong branch about 50 feet from the ground. On March 27 I noted that the female had another mate and recorded the pair several times after that in passing near the nest. The male taken has a wing measurement of 322 mm.

ROSTRHAMUS SOCIABILIS MAJOR Nelson and Goldman

Rostrhamus sociabilis major Nelson and Goldman, Proc. Biol. Soc. Washington, vol. 46, Oct. 26, 1933, p. 193 (Catemaco, Veracruz, Mexico.)

Near Tlacotalpam the everglade kite was recorded in marshy places, where it was rather shy. It was more common around Tres Zapotes and there was usually tame, so that it was easily approached. I secured two here on March 27 and April 1, 1939, and Carriker shot two at the lagoon north of Hueyapa on March 5 and 21, 1940.

On March 27 at Laguna del Tular, I saw one resting in a dead tree that stood in the water, holding a large water snail of the genus *Pomacea* in its foot. It deftly extracted the animal with its bill, let the shell fall, and then, holding the mollusk in its talons, pulled it into small bits that it swallowed. Later I shot this individual and found that it was very fat. On April 1, while watching a flight of migrant hawks, I saw one of these kites circling among them but did not recognize it until I killed it at very long range. It seemed probable that it was one of the resident birds of this area that had merely come up to soar for the pleasure of it, so that its accompanying its migrant companions was a casual encounter. The long, broad wings and rather long, narrow tail with notched end noted when this bird was high in the air gave a curious silhouette strongly suggestive of the Old World kites of the genus *Milvus*.

The four specimens in the present collection, which come from near the typical locality of the race, bear out the characters of large size on which *major* is based. All are fully grown, though still in streaked and mottled plumage. Measurements are as follows: 3 males, wing 375, 380, 381, tail 203, 203, 210, culmen from cere 30.5, 31.2, 32.7, and tarsus 54.4, 55.1, 57.3 mm.; 1 female, wing 376, tail 200, culmen from cere 29.3, tarsus 54.9 mm.

ACCIPITER STRIATUS VELOX (Wilson): Sharp-shinned Hawk

Falco velox Wilson, American ornithology, vol. 5, 1812, p. 116, pl. 45, fig. 1 (Philadelphia, Pa.)

On April 7 I killed an adult female as it crossed an old clearing traveling in swift flight with a strong wind. I had glimpses of several

other sharp-shinned hawks along the borders of forest, probably all of this same species, but did not see them clearly enough for certain identification.

BUTEO ALBICAUDATUS HYPOSPODIUS Gurney: Sennett's White-tailed Hawk

Buteo hypospodius Gurney, Ibis, 1876, p. 73, pl. 3 (Medellín, Colombia).

Migrant flights of these hawks were recorded near Tres Zapotes from March 30 to April 12, the number seen varying from a few to several hundred during one day. They appeared in bands of varying size that traveled to the north, occasionally turning in spirals but even then drifting steadily northward. They were seen usually early in the morning and at times were accompanied by a smaller species that was probably *B. p. platypterus*, though none of these passed sufficiently near for certain identification. The white-tailed hawks were always high in the air, so that it was necessary to use field glasses to name them. They appeared white below, occasionally with a rusty wash on the lower breast, and were marked by the single broad band of black across the end of the white tail.

BUTEO MAGNIROSTRIS GRISEOCAUDA Ridgway

Buteo (*Rupornis*) *magnirostis* var. *griseocauda* Ridgway, Proc. Boston Soc. Nat. Hist., vol. 16, Dec. 1873, p. 87 (in key), p. 88 (orig. descr.) (Mexico).

These were the commonest hawks of the region, being spread everywhere through the more open monte and through the trees bordering the milpas, but not penetrating into dense forests. They are tame and noisy, calling with complaining, petulant notes when their haunts are invaded and usually allowing close approach without need for stealth or cover on the part of the collector. They seem generally rather sluggish, watching from perches for prey or swinging down across swales and openings to see what game they can surprise. Once I saw one in rapid pursuit of a small bird, but ordinarily other birds seemed to pay little attention to them.

In 1939 they were especially noisy during March and were seen at times turning overhead in short circles. Actual nesting seemed to begin at the end of the month, and on March 29 I saw one carrying nesting material. On April 7 I recorded one resting in a rather slight nest of sticks placed 25 feet from the ground in a small tree at the edge of a field. The natives assured Carriker that these birds catch many young chickens, but we saw no indication of this. Adults were taken on March 15, 1939, and January 22, 1940, at Tres Zapotes. Carriker secured one in immature plumage at Tlacotalpam on February 6, 1940.

These birds agree with specimens of *griseocauda* from elsewhere in Mexico.

There are three specimens in the collections of the U. S. National Museum taken by Nelson and Goldman at Frontera, in eastern Tabasco, March 5 and April 26, and Monte Cristo, May 5, that belong to the race *conspectus*,[11] which differs from *griseocauda* in paler gray coloration.

BUTEO NITIDA PLAGIATA (Schlegel)

Asturina plagiata SCHLEGEL, Mus. Pays-Bas, vol. 2, Asturinae, 1862, p. 1 (Veracruz, Mexico).

One was seen April 12 at the border of an old field near Arroyo Corredor. As Veracruz is the type locality of *plagiata*, it is assumed that this is the race found at Tres Zapotes. In placing this bird in the genus *Buteo*, I agree with van Rossem [12] that *Asturina* has no characters to separate it.

PARABUTEO UNICINCTUS HARRISI (Audubon): Harris's Hawk

Buteo Harrisi AUDUBON, Birds of America (folio), vol. 4, 1837, pl. 392 (Bayou Sara and Natchez, Miss.).

On March 6, 1939, I observed a pair in a low tree standing in an open savanna near Tlacotalpam.

LEUCOPTERNIS ALBICOLLIS GHIESBREGHTI (Du Bus)

Buteo ghiesbreghti DU BUS, Esquisses ornithologiques . . ., livr. 1, 1845, pl. 1 (Mirador, near Veracruz, Veracruz, Mexico).

Carriker saw two of these beautiful hawks on the Cerro de Tuxtla, where he collected a female at about 1,000 feet elevation on March 19.

HYPOMORPHNUS URUBITINGA RIDGWAYI (Gurney)

Urubitinga ridgwayi GURNEY, A list of the diurnal birds of prey, 1884, p. 148 (Guatemala and Mexico).

In 1939 I saw this hawk on various occasions above Tlacotalpam but did not secure specimens. Carriker shot one at Tlacotalpam on February 19 and two on the Cerro de Tuxtla on March 13 and 19, 1940.

The more extensive white banding on the tibia in the adult is an excellent character that distinguishes most individuals easily from the South American races.

BUTEOGALLUS ANTHRACINUS ANTHRACINUS (Lichtenstein): Mexican Black Hawk

Falco anthracinus LICHTENSTEIN, Preis-Verzeichniss mexicanischer Vögel . . ., 1830, p. 3 (Mexico).

Near Tres Zapotes I noted these birds regularly in the woodlands bordering milpas, where they often greeted me with high-pitched

[11] *Rupornis magnirostris conspecta* Peters, Auk, 1913, p. 370 (San Ignacio, Yucatán).
[12] Bull. Mus. Comp. Zoöl., vol. 77, 1934, p. 429.

eaglelike screams. The especially thick, heavy feathering made them hard to kill, especially since it was difficult to approach them within easy range. I secured an adult female that was laying at the Arroyo Corredor, April 12, 1939. Carriker shot an adult female near Hueyapa on March 7 and an immature of the same sex on the Cerro de Tuxtla at about 1,000 feet elevation near Tapacoyan on March 28, 1940.

BUSARELLUS NIGRICOLLIS NIGRICOLLIS (Latham)

Falco nigricollis LATHAM, Index ornithologicus, vol. 1, 1790, p. 35 (Cayenne).

On March 6, 1939, I saw a pair along the river below Boca San Miguel and later recorded one over a lagoon near Tres Zapotes. Carriker found a pair north of Hueyapa and shot the female on March 5, 1940. These hawks locally are called *cabeza vieja* because of their white heads.

In the small series at hand I can see no differences between birds from various localities in Mexico, Central America, and South America north of the lower Amazon.

CIRCUS CYANEUS HUDSONIUS (Linnaeus): Marsh Hawk

Falco hudsonius LINNAEUS, Systema naturae, ed. 12, vol. 1, 1766, p. 129 (Hudson Bay).

On March 30, I recorded an adult female coursing over open milpas. Another female was seen near Tlacotalpam April 16.

GERANOSPIZA NIGRA NIGRA (Du Bus)

Ischnocoles niger DU BUS, Bull. Acad. Roy. Belgique, vol. 14, pt. 2, 1847, p. 102 (Mexico).

On April 4, 1939, I shot a male at the Arroyo Corredor. As I moved quietly among the trees I suddenly saw its dark form clearly through the branches as it perched 15 feet from the ground in heavy, open forest. It was eating a large orthopteran. The feathers are dense, fluffy, and abundant, like those of some bird from a colder region.

I agree with Kirke Swann[13] that *nigra* is a species distinct from *caerulescens*. While the darker color of *nigra* might be considered merely a melanism, the immature plumage is decidedly different in the white throat and in the style of markings on the lower surface. In the juvenile stage *caerulescens* is distinctly barred with white while in *nigra* the white appears more as irregular blotching.

[13] Monograph of the birds of prey, vol. 1, pt. 3, May 30, 1925, p. 156.

Family FALCONIDAE

POLYBORUS CHERIWAY AUDUBONII Cassin

Polyborus Audubonii Cassin, Proc. Acad. Nat. Sci. Philadelphia, vol. 17, 1865, p. 2 (Florida).

The caracara was seen regularly around Tres Zapotes during March and April, but it was not abundant.

HERPETOTHERES CACHINNANS CHAPMANI Bangs and Penard

Herpetotheres cachinnans chapmani Bangs and Penard, Bull. Mus. Comp. Zoöl., vol. 62, Apr. 1918, p. 37 (Santa Lucia, Río Hondo, Quintana Roo, Mexico).

This interesting hawk was not rare around Tres Zapotes, the combination there of clearings and low forest being favorable to it, as it seems always to seek open tree growth, as at the borders of fields and savannas, but does not enter extensive areas of heavy forests. Usually its presence is revealed by its loud calls, which are heard mainly in morning and evening and carry for long distances. The notes seemed a little higher in tone than those of *H. c. queribundus* that I heard years ago in Paraguay and northern Argentina. The natives know it as the *vaquero* and say that when it perches among leaves it will rain, and that when it rests in the open on a dead tree the weather will be fair, a belief with a certain amount of truth in a country where rain is frequent and where the birds come out to sun themselves on clear days. Occasionally I saw these falcons turning in small circles 200 yards in the air with the short, round wings fully extended so that the tips of the primaries were widely separated. Under such circumstances the long tail gives an outline quite different from that of species of *Buteo* and allied hawks.

I secured a male at the edge of the forest at Arroyo Corredor on April 7, 1939. Carriker took another on January 20, 1940. The wing measurements are 261 and 273 mm. The smaller of the two has the wing somewhat worn.

One taken by Carriker on January 25, 1940, at Tres Zapotes has the wing 292 mm. In the National Museum there is a second specimen with the wing 289 mm. from Paso Nuevo, Veracruz, to the southeast of Tres Zapotes collected by A. E. Colburn between March 27 and April 22, 1901, and another (wing 283 mm.) obtained in March 1883 at "Santa Ana, Est. Veracruz" apparently Barra de Santa Ana, on the coast of eastern Tabasco.

FALCO FUSCO-COERULESCENS SEPTENTRIONALIS Todd: Aplomado Falcon

Falco fusco-coeruleseens septentrionalis Todd, Proc. Biol. Soc. Washington, vol. 29, June 6, 1916, p. 98 (Fort Huachuca, Ariz.).

On April 6, 1939, I saw one near Cerro Chico Zapote, to the south of Tres Zapotes.

FALCO SPARVERIUS SPARVERIUS Linnaeus: Eastern Sparrow Hawk

Falco sparverius Linnaeus, Systema naturae, ed. 10, vol. 1, 1758, p. 90 (South Carolina).

The sparrow hawk was common on March 6, 1939, when I began observations at Tlacotalpam, and a male shot the following day was one of the first specimens that I secured at Tres Zapotes. The birds were seen on commanding perches on palms and other trees through the cornfields and were constantly observed about our camp. On March 17 I noted a sudden decrease in their number, due apparently to migration to the north. On April 2 two passed camp traveling due north. Scattered individuals were seen daily until my departure, and it appeared to me that some might be breeding birds, but of this I was not certain. Two taken on March 30 and April 3 appear identical with the bird of the eastern United States. Whether the sparrow hawk actually breeds in this area remains to be ascertained, though Ramón, my native assistant, said that they nested in holes in the palms.

Carriker secured specimens at Tres Zapotes on January 19 and April 5, 1940.

FALCO ALBIGULARIS ALBIGULARIS Daudin

Falco albigularis Daudin, Traité d'ornithologie, vol. 2, 1800, p. 131 (Cayenne).

This falcon is rare in the region under discussion, as we recorded it only twice. On March 22, 1938, I shot one from a tall, dead tree at the border of a grove, above an old milpa. Carriker secured another on May 5, 1940, from a dead limb of a very tall tree standing high up on the slopes of Cerro de Tuxtla. Both are males.

Family CRACIDAE

CRAX RUBRA RUBRA Linnaeus

Crax rubra Linnaeus, Systema naturae, ed. 10, vol. 1, 1758, p. 157 (western Ecuador).[14]

Carriker secured a pair on Cerro de Tuxtla on May 4 and 8. The bird was well known to inhabit the Tuxtla Mountains, but accounts of it were confused and conflicting. His first view of it was of a captive bird near Tuxtla, which had been reared from an egg. Near Tapacoyan this species was called *cholín*, while on the eastern side of the same mountain the natives knew it as the *faisán*, a name usually applied to *Penelope p. purpurascens*. On Volcán San Martín it was called *faisán real.*

[14] See Hellmayr and Conover, Publ. Field Mus. Nat. Hist., Zool. ser., vol. 13, pt. 1, No. 1, Apr. 30, 1942, p. 130.

Linnaeus gives the type locality in the original reference as "America," while in his twelfth edition in 1766, p. 270, he lists it as from "Peru."

PENELOPE PURPURASCENS PURPURASCENS Wagler

Penelope purpurascens WAGLER, Isis von Oken, vol. 23, 1830, col. 1110 (Mexico).

Two females were secured by Carriker on Volcán San Martín on April 16 between 2,500 and 3,500 feet and on April 17 between 3,000 and 4,000 feet. His notes on this species are as follows: "My first encounter with this magnificent bird was on Cerro de Tuxtla, on my second trip up there. I surprised a pair on top of a ridge at about 2,000 feet, and they burst into a fearful racket. One was clearly visible, so far as its head and tail, but a large limb concealed the body. I waited quietly for it to emerge, but it suddenly launched into a power dive down into the deep valley of the Río Lírios, followed by the concealed mate.

"On San Martín they were more abundant. On the second day of my stay there, while I was skinning birds in the afternoon, a man came along with a fine specimen he had shot and after considerable pursuasion sold it to me for 3 pesos. The next day I shot another, and afterward several were seen high up on the volcano near 4,500 feet." He heard it called *faisán* and *faisán roncador* on San Martín and *cholín* on the east side of Cerro de Tuxtla, the latter name being applied to the curassow at Tapacoyan.

ORTALIS VETULA VETULA (Wagler)

Penelope vetula WAGLER, Isis von Oken, vol. 23, 1830, col. 1112 (near the city of Veracruz, Veracruz, Mexico).

The 10 specimens that we secured near Tres Zapotes were collected on March 28 and 31, 1939, and March 3 and 16, 1940.

The chachalaca, a name varied by some of the natives to chichalaca, is one of the most common of the larger birds of the region, hundreds of them being present. They are found regularly in tracts of heavy woodland, and they come out also from such cover into low thickets and thin lines of trees bordering milpas.

Early in the season, in January and February, it was difficult to see them, but with the opening of the breeding season in March and April, when they began to call, their true abundance became apparent. At alarms they flew heavily, or ran off along the larger limbs through the tree tops, usually so far ahead that they were safely hidden from our guns. Sometimes I found them dusting in loose soil between rows of corn in the milpas where these adjoined thickets. This must be a regular habit as I observed these dust baths on many occasions. When flushed they went immediately into the trees.

The calls are harsh and raucous and are sometimes mingled with a variety of chattering, clucking sounds. On some days the woods resounded with these notes, and when they were especially noisy our men often remarked on the fact, saying that there would be a change in the weather.

The names that have been employed for the more northern races of this species are in considerable confusion, due to different interpretations as to the identity of Wagler's *Penelope vetula*. The type of *vetula*, examined by van Rossem in the Munich Museum,[15] is described by him as being in molt. The newly grown third rectrices have the tips pure white like those of birds from the lower Rio Grande area, while in the outer pairs this color is somewhat dirty and grayish owing to wear. Van Rossem remarks that the body color is very dark like that of birds from farther south (*jalapensis* of Miller and Griscom). He concludes that this specimen cannot be placed with the form that ranges north into Texas, and that it is unlike any other chachalaca that he has seen, being perhaps of an unknown race, though possibly an aberrant bird of the group currently known as *jalapensis*. This last suggestion is the one that it seems to me we must accept, a conclusion reached after careful examination of a long series of specimens.

According to Miller and Griscom,[16] from information furnished by Dr. C. E. Hellmayr, Wagler's type was secured by a collector named Keerl, who worked near the city of Veracruz and then went up to Mexico City. The type locality for *vetula* was, therefore, designated by Miller and Griscom as "neighborhood of the City of Veracruz, Mexico," correcting their earlier designation[17] of Tampico, Tamaulipas. The latter could not be correct, as Keerl did not enter that state. With the type of Wagler considered as coming from near Veracruz, then *vetula* must be applied to birds from that area.

Miller and Griscom[17] have named *Ortalis vetula jalapensis*, with the type from Jalapa at an elevation of 4,400 feet in the state of Veracruz. Currently, for a number of years, the name *vetula* has been applied to the race from the lower Rio Grande Valley from Texas to Nuevo León southward through Tamaulipas, while *jalapensis* has been accepted for the race of chachalaca of the lowland area from Veracruz city southward through the state of Veracruz and farther.

There are available in the National Museum two skins collected by Nelson and Goldman at Jico, which is just outside Jalapa proper,

[15] Trans. San Diego Soc. Nat. Hist., vol. 7, May 31, 1934, p. 350.
[16] Auk, 1921, p. 455.
[17] Auk, 1921, p. 46.

so that these may be taken as topotypical of *jalapensis*. There is also an old skin from Mirador near Veracruz city that should be considered as from near the type locality of *vetula;* and, in addition, there is the excellent series of 10 skins from Tres Zapotes. Except for one specimen to be mentioned immediately, these all agree in general in the buffy color of the tail tip and in dark-colored underparts when compared with a good series from Tampico north to the Brownsville area in Texas. These latter have the tail tip definitely white and the breast appreciably paler. One of the skins from Jico has the tail tip quite white, there being only a slight buffy tinge, so that it shows approach to the more northern form.

From consideration of this material, it appears that the area around Veracruz city and around Jalapa represents a region of intergradation between the more northern, lighter-breasted form with white tail tips and the darker race with buffy extremities on the rectrices that ranges south through southern Veracruz state into Guatemala. We may expect in this intermediate area a mingling of characters, which is found in the specimen from Jico mentioned above with the tail tippings definitely white. It seems reasonable to consider the type of *vetula*, which is described as having the third pair of rectrices tipped with pure white and the others a little duller also as an intermediate bird. The situation is highly unsatisfactory, but it appears logical in view of what has been said to give the name *vetula* to birds from Veracruz city and Jalapa southward, with *jalapensis* as a synonym, and to retain *mccallii* for the northern race found from Tamaulipas to the lower Rio Grande area. (This is in accordance also with the opinion of Hellmayr and Conover.[18])

The birds from Tres Zapotes, therefore, are identified as typical *vetula.*

Family ARAMIDAE

ARAMUS GUARAUNA DOLOSUS Peters

Aramus pictus dolosus PETERS, Occ. Pap. Boston Soc. Nat. Hist., vol. 5, Jan. 30, 1925, p. 144 (Bolsón, Costa Rica).

Near Tres Zapotes, I flushed one of these birds April 13, 1939, at the border of a small lagoon choked with grassy vegetation and watched it fly across into swampy woods. Carriker saw a pair at Tlacotalpam and secured a female at a lagoon north of Hueyapa on May 3, 1940. The species is not common in this region.

[18] Publ. Field Mus. Nat. Hist., Zool. ser., vol. 13, pt. 1, No. 1, Apr. 30, 1942, pp. 169–171.

Family RALLIDAE

ARAMIDES CAJANEA MEXICANA Bangs

Aramides albiventris mexicanus BANGS, Amer. Nat., vol. 41, Mar. 1907, p. 185 (Buena Vista, Veracruz, Mexico).

At Tres Zapotes everyone knew the *Montezuma*, or *pollo de Montezuma*, sometimes varied to *Moctezuma*, which for weeks I supposed to be this rail, a matter difficult to prove, however, because the birds were very shy. One day Ramón led me to a nest that he had found at the Laguna del Tular, a platform of sticks and weed stems 15 inches across, placed 5 feet from the ground in a bush standing in heavy forest just above the flooded edge of the swamp at the border of the lagoon. We watched for the birds but did not see them. On March 29, 1939, at Laguna Larga, I worked slowly along the edge of a wooded swamp where trees 30 to 40 feet high stood on enormous, flaring, buttressed roots that radiated from the trunk in all directions and rose to a height of 6 to 8 feet. Dark water lay beneath the trees, leading to an open area grown thickly with plants. The light was subdued and the air quiet in spite of a wind blowing strongly overhead. Tracks of rails were impressed in the mud, and twice I had indistinct glimpses of birds slipping away without sound. Each time, by a quick shot, I secured a fine male of this species, and the mysterious *Montezuma* was identified. Afterward, on April 1, I saw one along the Arroyo Valdez, where there was little water, and occasionally heard one call, but I had no further opportunity to get specimens. This species is sometimes called *poposcala*, in imitation of its call.

PORZANA CAROLINA (Linnaeus)

Rallus carolinus LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 153 (Hudson Bay).

Carriker secured a male at the edge of a pond near Tlacotalpam February 29, 1940. He notes that he had shot several other birds nearby, and apparently the rail had come out through curiosity to learn the cause of the noise.

LATERALLUS RUBER TAMAULIPENSIS (Nelson)

Creciscus ruber tamaulipensis NELSON, Proc. Biol. Soc. Washington, vol. 39, Aug. 25, 1926, p. 105 (near the Tamesi River, Alta Mira, Tamaulipas, Mexico).

On March 16, 1940, at Tres Zapotes, a native brought a ruddy rail alive to Carriker, stating that he had caught it in high grass on a dry, open ridge in a pasture, far from any water. The bird was unknown to all those who saw it.

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The specimen, a female, is in a way intermediate between the two previously known specimens of *tamaulipensis* and true *ruber* of Guatemala. The dorsal surface of the head is dark as in *tamaulipensis*. The wings, including the scapulars, and the tail also are dark as in the northern race. On the other hand, the reddish brown color extends over the back, though it is a little darker than in *ruber*. The Tres Zapotes specimen while differing in the extent of the chestnut of the dorsal surface, seems decidedly nearer the northern form and is identified with it, thus marking out a considerable range for this bird, from near Tampico, Tamaulipas, to southeastern Veracruz.

It is the only female at present known of the race. Measurements are as follows: Wing 77.8, tail 29.9, culmen from base 19.3, tarsus 29.5, middle toe without claw 29.0 mm.

Family HELIORNITHIDAE

HELIORNIS FULICA (Boddaert)

Colymbus fulica Boddaert, Table des planches enluminéez, 1783, p. 54 (Cayenne).

Along the Río San Agustín below Boca San Miguel, and through the channels to the neighborhood of Tlacotalpam, the finfoot is fairly common. On March 6, 1939, on my journey up river, I observed several, and others were recorded on my return April 15. Carriker saw them in this same region the following year. As the launch in which I traveled approached, they came swimming out with nodding head from the cover of bushes along shore, often floating rather high on the water. They flew rather quickly, being able to rise after four or five strokes of the feet in the water. The flight was quite fast, just above the surface, and was continued until the birds reached the cover of aquatic growth, into which they disappeared instantly. As they usually flew ahead, the white lower surface was not visible, the birds appearing almost black, with an indication of the light line over the eye.

On March 7, 1940, Carriker secured a pair on the small stream at Hueyapa.

Family JACANIDAE

JACANA SPINOSA GYMNOSTOMA (Wagler): Mexican Jaçana

Parra gymnostoma Wagler, Isis von Oken, 1831, col. 517 (Mexico).

Near Tlacotalpam, the jaçana is common about lagoons and ponds, extending along the river and on small channels to Boca San Miguel wherever there are floating masses of water-hycinth. They fly continually before the launches that furnish means of travel in the streams, a pleasing and interesting sight. Natives call them the *gallito*.

At Tres Zapotes I found a few about the grassy shores of Laguna del Tular, where I shot an adult female on March 23, 1939. Carriker secured specimens near Tlacotalpam on February 6 and 9 and near Hueyapa on March 21, 1940.

Family CHARADRIIDAE

OXYECHUS VOCIFERUS VOCIFERUS (Linnaeus): Killdeer

Charadrius vociferus LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 150 (South Carolina).

In 1940 Carriker recorded the killdeer as fairly common around Tres Zapotes in January (one taken January 26), and at Tlacotalpam in February.

Family SCOLOPACIDAE

CAPELLA DELICATA (Ord): Wilson's Snipe

Scolopax delicata ORD, in reprint of Wilson's American ornithology, vol. 9, 1825, p. 218 (Pennsylvania).

Carriker found this snipe rather common in boggy pastures near Tlacotalpam, collecting a male on February 16, 1940.

NUMENIUS AMERICANUS Bechstein: Long-billed Curlew

Numenius americanus BECHSTEIN, in Latham's Allgemeine Uebersicht der Vögel, vol. 4, pt. 2, 1812, p. 432 (New York).

On February 8, 1940, Carriker found six or eight long-billed curlews at a shallow lagoon surrounded by extensive wet meadows near Tlacotalpam. He shot two females. One of these skins has the wing 267 and the culmen 160 mm. It might be identified as the northern race *occidentalis* as the measurements come within the upper limits assigned to that form. The second bird has the wing 263 mm. and the culmen 173 mm. The tips of the longest primaries are abraded so that the wing measurement is 3 or 4 mm. too short. This specimen therefore comes within the lower limits assigned to the larger southern race. Thus, two forms may be identified but pending further studies it seems better to record these two migrant individuals under the specific name.

BARTRAMIA LONGICAUDA (Bechstein): Upland Plover

Tringa longicauda BECHSTEIN, in Latham's Allgemeine Uebersicht der Vögel, vol. 4, pt. 2, 1812, p. 453 (North America).

From April 8 to 11, 1939, I heard these birds calling occasionally in evening as they passed Tres Zapotes in northward migration. On the morning of April 9 I saw one flying to the northwest, traveling about 80 yards above the earth.

ACTITIS MACULARIA (Linnaeus): Spotted Sandpiper

Tringa macularia LINNAEUS, Systema naturae, ed. 12, vol. 1, 1766, p. 249 (Pennsylvania).

In 1939 I recorded one on the beach at Veracruz city on March 4, and saw several along the Papaloapan and San Agustín Rivers between Tlacotalpam and Boca San Miguel, March 6 and April 16.

TRINGA SOLITARIA SOLITARIA Wilson: Eastern Solitary Sandpiper

Tringa solitaria WILSON, American ornithology, vol. 7, 1813, p. 53, pl. 58, fig. 3 (Pocono Mountain, Pa.).

Solitary sandpipers were found about small lagoons on March 23 and 29, and April 11 and 13. A female shot March 29, with the wing 130 mm., while identified as the typical form on the basis of size, may come from an intermediate area since the inner web of the outer primary is distinctly freckled with white.

TRINGA SOLITARIA CINNAMOMEA (Brewster): Western Solitary Sandpiper

Totanus solitarius cinnamomeus BREWSTER, Auk, 1890, p. 377 (San José del Cabo, Baja California).

A female shot on March 29 with the wing 135.6 mm., while slightly small, is identified as the western form. The grayish white spotting on the upper surface is reduced in amount, and there is some freckling of white on the inner web of the first primary. It is intermediate but seems nearer *cinnamomea*.

TOTANUS MELANOLEUCUS (Gmelin): Greater Yellowlegs

Scolopax melanoleuca GMELIN, Systema naturae, vol. 1, pt. 2, 1789, p. 659 (Chateaux Bay, Labrador).

On April 11, 1939, I saw several at Laguna del Tular near Tres Zapotes.

TOTANUS FLAVIPES (Gmelin): Lesser Yellowlegs

Scolopax flavipes GMELIN, Systema naturae, vol. 1, pt. 2, 1789, p. 659 (New York).

Near Tres Zapotes in 1939 I recorded this species about small lagoons and pools on March 23 and April 3, 8, 11, and 13. Carriker found them common near Tlacotalpam in February 1940.

PISOBIA MINUTILLA (Vieillot): Least Sandpiper

Tringa minutilla VIEILLOT, Nouv. Dict. Hist. Nat., vol. 34, 1819, p. 466 (Halifax, Nova Scotia).

Carriker shot one near Tlacotalpam on February 19, 1940, and records seeing others about ponds in that vicinity.

Family RECURVIROSTRIDAE

HIMANTOPUS MEXICANUS (Müller): Black-necked Stilt

Charadrius Mexicanus P. L. S. Müller, Natursystem, Suppl., 1776, p. 117 (Mexico).

Carriker found a few around a large pond near Tlacotalpam, where he collected a female on February 6.

Family LARIDAE

LARUS ARGENTATUS SMITHSONIANUS Coues: American Herring Gull

Larus Smithsonianus Coues, Proc. Acad. Nat. Sci. Philadelphia, 1862, p. 296 (eastern and western coasts of North America).

In 1939 I saw several in first and second year plumage at Veracruz city, March 4. They were recorded at Alvarado, March 5 and April 16, and over the Río Papaloapan at Tlacotalpam on March 6.

LARUS ATRICILLA Linnaeus: Laughing Gull

Larus Atricilla Linnaeus, Systema naturae, ed. 10, vol. 1, 1758, p. 136 (Bahamas).

In 1939 I recorded this gull near Veracruz on March 4, at Tlacotalpam on March 5, and near Alvarado on April 16.

Carriker shot a female in winter dress at Tlacotalpam on May 17, 1940.

THALASSEUS MAXIMUS MAXIMUS (Boddaert): Royal Tern

Sterna maxima Boddaert, Table des planches enluminéez, 1783, p. 58 (Cayenne).

Seen at Veracruz, March 4, and at Alvarado, April 16, 1939.

Family COLUMBIDAE

COLUMBA FLAVIROSTRIS FLAVIROSTRIS Wagler

Columba flavirostris Wagler, Isis von Oken, 1831, col. 519 (state of Veracruz, Mexico).

The *torcaza*, as this dove was called locally, was common in areas of woodland near Tres Zapotes and is represented by specimens taken on March 10 and April 1, 1939. In 1940 Carriker shot one on February 10 at El Conejo on the coast south of Alvarado, and another at Hueyapa on March 8. They were seen regularly flying across the sky, and called daily from the forest. Their call is a guttural *coo coo coo-oo coo*, followed by a growling sound. On April 1 I caught sight of two crowding each other on a branch and shot them, expecting to secure a pair. It turned out that the two were males and that they

had been fighting. As the dry season came on, these pigeons came to drink at the arroyo near the village. I found palm seeds and figs in the crops of those examined.

Van Rossem [19] has restricted the type locality to the state of Veracruz.

COLUMBA NIGRIROSTRIS Sclater

Columba nigrirostris P. L. Sclater, Proc. Zool. Soc. London, 1859 (Feb. 1860), p. 390 (Oaxaca, Mexico).

Carriker secured three of these pigeons on the Cerro de Tuxtla on March 19 and May 7, the birds being rare. They were found also on Volcán San Martín. They ranged in the tops of giant trees, so high that one bird was so broken on striking the ground, after the long fall from the perch on which it was killed, that it could not be skinned. Attention was usually drawn to them by their strongly accented calls.

ZENAIDURA MACROURA CAROLINENSIS (Linnaeus): Eastern Mourning Dove

Columba carolinensis Linnaeus, Systema naturae, ed. 12, vol. 1, 1766, p. 286 (South Carolina).

In 1940 Carriker did not record mourning doves until May 1, when he saw several in riding from Tlacotalpam to Tres Zapotes. The following day his native assistant shot three from a small flock near Hueyapa, but only one was preserved as the birds were excessively fat. It appeared that these birds were on their northward migration after having wintered in some other locality.

The male preserved is a typical specimen of the eastern form.

ZENAIDURA MACROURA MARGINELLA (Woodhouse): Western Mourning Dove

Ectopistes marginellus Woodhouse, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, 1852, p. 104 (Cross Timbers, north fork of the Canadian River, Okla.).

On March 11, 1939, I flushed two in a cornfield and killed an adult male. No others were seen in the Tres Zapotes area.

ZENAIDA ASIATICA ASIATICA (Linnaeus): Eastern White-winged Dove

Columba asiatica Linnaeus, Systema naturae, ed. 10, vol. 1, 1758, p. 163 (Jamaica).

In the region known as Para Madera near Tres Zapotes, I saw a flock of about 50 of these pigeons in flight on April 13. Carriker shot one on the lower slopes of the Cerro de Tuxtla on May 6, 1940.

[19] Trans. San Diego Soc. Nat. Hist., vol. 6, Aug. 30, 1930, p. 198.

SCARDAFELLA INCA (Lesson): Inca Dove

Chamaepelia inca Lesson, Description de mammifères et d'oiseaux récemment découverts . . ., 1847, p. 211 (Mexico).

Carriker secured two in the coastal sand dunes at El Conejo on February 12 and May 15, stating that he found one small flock here. He reports another observed on the trail between San Andrés and Cerro de Tuxtla. Apparently the species is rare in this region. It seems desirable to me to consider this bird as specifically distinct from the more southern *Scardafella squammata.*

COLUMBIGALLINA PASSERINA PALLESCENS (Baird): Mexican Ground Dove

Chamaepelia passerina ? var. *pallescens* Baird, Proc. Acad. Nat. Sci. Philadelphia, 1859 (Jan. 12, 1860), p. 305 (Cape San Lucas, Baja California).

Carriker found this little dove not uncommon in the coastal sandhills near El Conejo below Tlacotalpam, where he collected three females on February 12 and May 15. We did not see it elsewhere in the area covered. The skins secured appear slightly darker than a series from Texas.

COLUMBIGALLINA TALPACOTI RUFIPENNIS (Bonaparte)

Chamaepelia rufipennis Bonaparte, Compt. Rend. Acad. Sci. Paris, vol. 40, 1855, p. 22 (Cartagena, Colombia).

The six specimens obtained were secured near Tres Zapotes on March 13, 22, and 27, 1939, and March 3, 5, and 15, 1940. The species is fairly common in the vicinity but local in its distribution, being found in little groups of six or eight. In periods of rain these doves came out to feed at the borders of clearings, one group being found regularly about our camp, so that I saw them daily during the early part of my work. As the dry season came on they remained in the thickets and the second-growth monte, where they fed on the ground, flushing when startled with a flash of reddish brown from their wings. When rainy days returned briefly, they appeared again in our camp clearing.

There is no question that *rufipennis* is conspecific with *talpacoti.*

COLUMBIGALLINA MINUTA INTERRUPTA Griscom

Chaemepelia minuta interrupta Griscom, Amer. Mus. Nov., No. 379, Oct. 17, 1939, p. 4 (Secanquim, Guatemala).

The only one obtained was a female that I took on March 25, 1939, near the Arroyo del Sitio at Tres Zapotes. The bird was shot rather hastily without recognizing its true identity until it came to hand from a flock of half a dozen that flew up at the edge of a cornfield to alight in a thicket. I suppose that in life this bird is often confused with *C. t. rufipennis.*

Identification as *interrupta* is made after examination of only a few specimens. Races in this small dove are uncertain, as there is much individual variation.

LEPTOTILA VERREAUXI FULVIVENTRIS Lawrence

Leptoptila fulviventris Lawrence, Ann. New York Acad. Sci., vol. 2, 1882, p. 287 (Yucatán).

The seven specimens secured were collected on March 22 and April 10 and 12, 1939, and January 25, March 3 and 7, and April 9, 1940. They were common all through the woodland areas about Tres Zapotes but were wild and difficult to secure. When the woods became dry as the rains slackened, I seldom saw them as they always heard me and retreated ahead of me. Males were calling constantly after the middle of March, a resonant *coo-oo* with the last, accented syllable long drawn out. Occasionally at camp one walked out into the open when all was quiet to feed. Unlike the ground doves, which kept the head moving steadily and rapidly as they picked up food from the ground, this bird pecked only at intervals at small objects that it immediately swallowed. When startled, it stood quickly erect, drew the head and neck back, and then bowed suddenly, at the same time spreading the tail slightly and raising it. Females taken on April 10 and 12 were laying. Natives call this pigeon the *limonera.*

LEPTOTILA PLUMBEICEPS PLUMBEICEPS Sclater and Salvin

Leptoptila plumbeiceps Sclater and Salvin, Proc. Zool. Soc. London, 1868, p. 59 (Choctum, Vera Paz, Guatemala).

Carriker shot a male on April 7, 1940, at 2,000 feet elevation on the Cerro de Tuxtla where it was drinking water in a deep ravine. The species is one easily confused with the more abundant *L. v. fulviventris.*

OREOPELEIA LAWRENCII CARRIKERI Wetmore

Oreopeleia lawrencii carrikeri Wetmore, Proc. Biol. Soc. Washington, vol. 54, Dec. 8, 1941, p. 205 (Volcán San Martín, Sierra de Tuxtla, Veracruz, Mexico).

Two were taken by Carriker on the Cerro de Tuxtla on March 19 and 29, between 1,000 and 2,500 feet, and one on the Volcán San Martín, on April 17, 1940, between 3,000 and 4,000 feet. They were quite common in heavy forest where they walked on the darkly shaded ground. Though retiring, they were not particularly shy, and when flushed ordinarily alighted again on the ground, though sometimes they perched in trees.

This new race marks a great extension of range for the species, known previously only from two forms, typical *lawrencii* of Veraguas, Panamá, and eastern Costa Rica, and *lentipes* named by Peters from Te-

norio, northwestern Costa Rica. *O. l. carrikeri* differs from these in being definitely paler above, with the crown, hindneck, and upper back lighter, brighter green, the center of the back and the scapular area lighter, more purplish, the wing coverts, tail, lower back and rump lighter, the sides and flanks paler brown and the under tail coverts whiter. In addition, the black streak on the malar region is decidedly wider and heavier.

OREOPELEIA MONTANA (Linnaeus): Ruddy Quail-dove

Columba montana Linnaeus, Systema naturae, ed. 10, vol. 1, 1758, p. 163 (Jamaica).

Near Tres Zapotes we had occasional glimpses of pigeons in the woodlands that we thought were this species. Carriker finally secured a breeding male between 800 and 1,500 feet on Cerro de Tuxtla on May 9, 1940.

Family PSITTACIDAE

ARATINGA ASTEC ASTEC (Souancé)

Conurus astec Souancé, Rev. Mag. Zool., vol. 9, 1857, p. 97 (Mexico).

These parakeets ranged in pairs and small bands of six to a dozen individuals through woodland and second growth from Tres Zapotes and Hueyapa across to Tapacoyan. Their high-pitched chattering calls were heard regularly, and the birds themselves were seen constantly, sometimes at rest and sometimes on the wing. Seven were taken on March 8 and 18 and April 10, 1939, and on February 23, and March 8 and 14, 1940.

AMAZONA ALBIFRONS NANA Miller

Amazona albifrons nana W. DeWitt Miller, Bull. Amer. Mus. Nat. Hist., vol. 21, 1905, p. 349 (Calotmul, Yucatán).

Carriker, who collected five specimens, found these parrots more common than the larger species in the region between Tres Zapotes and Boca San Miguel, though the previous year I saw few. The five taken, four males and one female, vary in wing length from 160 to 169 mm. and so fall with the small race described originally from Yucatán, marking an extension of range.

According to specimens that I have examined, in *Amazona albifrons albifrons* the wing varies from 172 to 189 mm., while in *A. a. nana* it ranges from 154 to 170 mm. The smaller race averages slightly paler, more yellowish green, though this distinction is indefinite. I have seen one specimen from Apazote, Campeche, with the wing 175 mm., but all others fall within the limits assigned above.

AMAZONA AUTUMNALIS AUTUMNALIS (Linnaeus)

Psittacus autumnalis LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 102 (southern Mexico[20]).

This common parrot is represented by skins taken on March 8, 15, and 23, 1939, and March 5 and 25, 1940. They ranged in pairs in the forest and morning and evening traveled across the sky uttering harsh notes that to me often suggested loud, ribald speech. Like others of the family, they remain in pairs. There has been much speculation on the part of aviculturists on methods of determining sex in living birds, so that on March 23, when I killed a pair, I was interested to note that in the female the head was distinctly smaller, and the anal opening larger, though the birds were not in breeding condition. In skinning these two, the skin of the neck in the female passed easily over the head, while in the male it was forced over with difficulty after considerable manipulation.

Family CUCULIDAE

PIAYA CAYANA THERMOPHILA Sclater

Piaya thermophila P. L. SCLATER, Proc. Zool. Soc. London, 1859 (Feb. 1860), p. 368 (Jalapa, Veracruz, Mexico).

Fairly common near Tres Zapotes where specimens were taken on March 9, 15, and 16, and April 13, 1939, and on March 3, 1940. In addition, Carriker collected specimens on the Cerro de Tuxtla on May 6 and 9 and near Tlacotalpam on February 7, 1940. The taller second-growth of abandoned milpas, and the small tracts of thickets and low forest bordering the fields, were their principal haunts, though I saw them occasionally in heavier forest in the more open tree tops, as at Arroyo Corredor. Their colors and their long slender forms, with their manner of movement, are excellent reason for the name of squirrel cuckoo, as they often suggest these mammals. While quiet in general, at times they move rapidly through the branches.

CROTOPHAGA SULCIROSTRIS SULCIROSTRIS Swainson

Crotophaga sulcirostris SWAINSON, Phil. Mag., new ser., vol. 1, 1827, p. 440 (Temascáltepec, Mexico).

Common through the fields and pastures near Tres Zapotes, where I shot one March 18, 1939. Carriker collected one in the sandhills near El Conejo, February 12. They were known as *tigué*.

Frequently in the evening a little flock came through the trees at the edge of camp on their way to a roost, traveling always in the same direction, and I gained the impression that the bands were rather sedentary in that each had a limited range. On the day that

[20] See Peters, Check-list of birds of the world, vol. 3, 1937, p. 219.

I shot the specimen listed above, early in the morning I found a flock resting in the tops of bushes in old milpa, waiting for the sun to pierce a fog so as to dry their wet and bedraggled plumage. After looking them over, they appeared in such poor shape that I decided not to take a specimen. When I returned at 11 a. m. they were within 50 yards of the same spot, and as they were then dry and in good condition I shot one. They often rest with wings distended and tail spread to catch the sun. The notes of this species are high pitched and in the main are quite different from the querulous calls of *Crotophaga ani*.

TAPERA NAEVIA EXCELLENS (Sclater)

Diplopterus excellens P. L. Sclater, Proc. Zool. Soc. London, 1857 (Jan. 12, 1858), p. 229 (San Andrés Tuxtla, Veracruz, Mexico).

This interesting cuckoo may be more common than is supposed, as it is shy and is found mainly in the breeding season when its presence is indicated by its calls. In 1939 I heard the double-noted whistle at intervals in brushy localities in old fields, but did not succeed in seeing one for some time. On April 13, in the region known as Para Madera, as I came down toward the Arroyo Tepanaguasapan, I heard one and began to imitate it, meanwhile walking slowly along. The sound proved to be louder and to come from a greater distance than I had supposed. Finally I caught sight of a grayish, long-tailed, crested bird resting in the shadow of branches 10 feet from the ground, but it disappeared immediately. I continued to call and the bird to answer, until it showed again, when I shot it. The alula has large, broad feathers, dark in color, in contrast to the rest of the wing. The pollex is highly flexible, so that the feathers were extended as I extended the wing.

Carriker secured one on the trail to Tapacoyan, on the base of Cerro de Tuxtla, April 9, 1940, and heard one calling at Tlacotalpam on May 17.

Family STRIGIDAE

GLAUCIDIUM BRASILIANUM RIDGWAYI Sharpe

Glaucidium ridgwayi Sharpe, Ibis, 1875, p. 55 (Mexico).

The nine specimens obtained were collected in 1940 by Carriker among the coastal sandhills at El Conejo on February 6, at Tres Zapotes on March 4, 6, 12, and 20, and near Hueyapa on March 8, 15, and 25 and April 2. Although these differ somewhat in depth of color, all of them curiously enough are in rufescent phase.

SPEOTYTO CUNICULARIA HYPUGAEA (Bonaparte)

Strix hypugaea Bonaparte, American ornithology, vol. 1, 1825, p. 72, pl. 7, fig. 2 (plains of the Platte River).

In March 1939 one came occasionally at dusk to perch on mounds of earth at the archeological excavations adjacent to our camp.

CICCABA VIRGATA CENTRALIS Griscom

Ciccaba virgata centralis Griscom, Bull. Mus. Comp. Zoöl., vol. 69, Apr. 1929, p. 159 (Chivela, Oaxaca, Mexico).

The *tecolote* apparently is fairly common around Tres Zapotes, though entirely nocturnal, so that it was seen only by chance. On April 7, 1939, as we entered the heavy woodland at Arroyo Corredor, Ramón's keen eye discovered one of these owls resting in the top of a palm 40 feet from the ground, under the projecting fronds of the head, where it was protected from the rain that had been falling. This was a female about to lay. The iris was deep yellow, bill olive-green, cere dull brownish orange, toes dull olive, and claws horn color tipped with dusky. The left ear opening was 15 mm. in length and the right one 22 mm. The right opening appeared to include approximately twice the area of the left one.

On another day I flushed one in second-growth forest from a perch under a heavy mat of creepers 10 feet from the ground. As it flew silently away the light tail bars were prominent.

Carriker in 1940 secured skins at Tres Zapotes on March 6 and April 5, one being shot at night near camp. Two others were obtained near Hueyapa on March 7 and April 8. He noted two notes from this owl, one a hooting call and the other, heard at camp, resembling the crying of a child. The source of the latter was uncertain until he shot the bird.

These specimens agree with the characters of *centralis* and include birds in both light and dark phases. While Peters [21] has placed the race named *eatoni* by the Kelsos [22] in the synonymy of *centralis*, more material may prove this to be a valid form, with a range including the extreme eastern section of Tabasco, Campeche, British Honduras, and northern Petén. The few that I have seen from this area appear to be smaller and generally paler than *centralis*, seeming clearer white below in the light phase. Owing to the double color phase in these owls, and their blending colors and color patterns, large series are necessary to work out their geographic forms successfully.

Family NYCTIBIIDAE

NYCTIBIUS GRISEUS MEXICANUS Nelson

Nyctibius jamaicensis mexicanus Nelson, Auk, 1900, p. 260 (Metlaltoyuca, Puebla, Mexico).

[21] Check-list of birds of the world, vol. 4, 1940, p. 154.

[22] *Ciccaba virgata eatoni* Leon Kelso and Estelle H. Kelso, Auk, 1936, p 216 (Apazote, Campeche, Mexico).

On April 11, 1939, I shot a fine male of this strange bird. As we crossed the savanna toward the village on that morning, Ramón volunteered the information that the other evening he had seen a *lechusa* in a tree nearby, so we walked over to see if it might again be there. The tree was rather open-leaved, one of a group of three or four growing on open savanna, with grasslands and low, scattered thickets near, the nearest forest being a quarter of a mile distant. I expected to find an owl, so that my astonishment was great to see this strange bird perched on a knob projecting from the side of the tree trunk 15 feet from the ground. It rested with the bill pointed up and the tail hung down, so that the body throughout was perpendicular to the tree trunk. From its colors and position, it looked exactly like a dead branch. In the hand, it gave me the usual feeling of amazement at its great mouth and broad wings.

The pupil of the eye was perfectly round and the iris bright yellow. The brain was no larger than an ordinary marble. The natives who examined it remarked that it had bad meat, and in skinning it I noticed that the body gave, to a powerful degree, the rank odor found in anis and trogons. The natives all seemed well acquainted with the species, and all called it the *lechusa*.

Family CAPRIMULGIDAE

NYCTIDROMUS ALBICOLLIS YUCATANENSIS Nelson

Nyctidromus albicollis yucatanensis Nelson, Proc. Biol. Soc. Washington, vol. 14, Sept. 25, 1901, p. 171 (Tunkas, Yucatán).

The resident race of *tapa camino*, as these birds are known to the natives, is represented by skins taken near Tres Zapotes on March 8 and 22, 1939, and March 5 and 6 and April 5, 1940. Carriker secured two near Tlacotalpam on February 9 and 20.

At Tres Zapotes these birds were common and were seen on many occasions when they flushed near at hand in the monte. They were often in pairs in March and April and rested on the ground in places where small areas of a few square feet were relatively free of undergrowth. As they flew the light wing markings showed prominently, and at times it appeared that the wings were moved in such a way as to display these spots. A flight of a few feet usually carried them behind some cover when they dropped again to the ground, though occasionally they alighted on logs or low branches where they rested along the long axis of the perch in the manner common to members of their family. Sometimes I could see them with ease on their new resting places, and sometimes they circled around and were lost. On one dull, cloudy day, one rose in heavy woodland and flew high and swiftly away through the trees in contrast to the usual low, erratic flight.

At nightfall these birds came out of the dense forest by dozens into more open areas, many frequenting the savanna near camp. I saw them often at dusk, flying low along the ground, when the white wing markings were little visible, and the birds appeared like any other brownish goatsucker, being marked mainly by the long tail. They remained out until dawn came to illuminate the trails and then retreated again to cover.

By night they were active and moved frequently, especially when feeding, resting on the ground and seeming at times to walk about where the earth was bare. More often I saw them fly up a few feet to seize insects in the air. Occasionally I picked one up in the light of my flashlight, when the eye glowed with a beautiful light orange-red. They rested with the head drawn in, but in the light of the flashlight often extended the neck and then retracted it, or sometimes raised to the length of the long legs and then dropped back again. By moving slowly while I held the circle of bright light steadily on them sometimes I approached within 20 feet of them, but ordinarily they were more alert and flew while I was at a distance.

They called regularly in evening for an hour or more, and again before dawn, while on moonlit nights they were so vociferous and so many were about that sleep in camp sometimes was difficult. The notes were so different from the ordinary description of them that I can see no reason for the common name of pauraque if that is assumed to be onomatopoeic in origin. Instead, they seem to say with much emphasis *who are yoú*, occasionally varied to *who aré you*. Another call given in a steady monotone was *bup bup bup*, repeated steadily in a low voice a number of times. Still another note at a short distance sounded like the cutting swish of a heavy whip. After the first week in April, the calling was reduced in amount. It was not unusual to hear eight or ten at once near camp.

In the series taken two are in rufescent and six in grayish phase.

NYCTIDROMUS ALBICOLLIS MERRILLI Sennett: Merrill's Pauraque

Nyctidromus albicollis merrilli Sennett, Auk, 1888, p. 44 (Nueces River, Nueces County, Tex.).

Among the *Nyctidromus* that I collected near Tres Zapotes, there is one male, shot on March 10, that belongs to this race, present as a migrant from the north. It was found in a similar location as the others obtained and, in fact, was not distinguished from them until examined in the Museum. It is in the rufescent phase and is marked by larger size and paler color when compared with *yucatanensis*. The wing measures 172.5 mm. and the tail 165 mm.

CAPRIMULGUS CAROLINENSIS Gmelin: Chuck-will's-widow

Caprimulgus carolinensis Gmelin, Systema naturae, vol. 1, pt. 2, 1789, p. 1028 (South Carolina).

Carriker secured two, both in heavy forest, the first one at about 1,200 feet elevation on Cerro de Tuxtla on April 9, 1940. His assistant, Modesto, shot another at about 3,000 feet on Volcán San Martín, April 21.

CAPRIMULGUS VOCIFERUS VOCIFERUS Wilson: Eastern Whip-poor-will

Caprimulgus vociferus Wilson, American ornithology, vol. 5, 1812, p. 71, pl. 41, figs. 1–3 (Philadelphia, Pa.).

Carriker shot a female of this migrant at 1,500 feet elevation on Cerro de Tuxtla on April 9, 1940.

Family MICROPODIDAE

STREPTOPROCNE ZONARIS MEXICANA Ridgway

Streptoprocne zonaris mexicana Ridgway, Proc. Biol. Soc. Washington, vol. 23, Apr. 19, 1910, p. 53 (Río Seco, near Córdoba, Veracruz, Mexico).

These interesting swifts were seen at intervals of a few days about Tres Zapotes during the period of my stay, the first being taken on March 11, 1939. I secured others on March 25 and April 10. From three or four to a dozen were observed, usually flying over the milpas, but on April 10 I recorded 30 or more in company. One taken on March 25 was molting. In the air they appear black, but as they turn in swift flight there is occasionally a glimpse of white on the breast. They are known as the *golondrina.*

Family TROCHILIDAE

ARCHILOCHUS COLUBRIS (Linnaeus): Ruby-throated Hummingbird

Trochilus Colubris Linnaeus, Systema naturae, ed. 10, vol. 1, 1758, p. 120 (South Carolina).

Two females of this migrant from the north were shot at Tres Zapotes, one on March 20, 1939, feeding through low trees near camp, and the other on March 24, working about flowers in the open.

CHLOROSTILBON CANIVETII CANIVETII (Lesson)

Ornismya canivetii Lesson, Histoire naturelle des colibris, Suppl., 1830–31, pp. 174, 177, pls. 37, 38 ("Bresil"=Jalapa, Veracruz, Mexico).

Four specimens were secured near camp at Tres Zapotes on March 8 and 31, 1939, and January 29 and March 4, 1940. This was among the less common of the hummers in this region, being found feeding low down at the borders of thickets or in low, open brush. They are quite shy.

In the original description the type locality is given as Brazil, which is obviously erroneous. In a later account, in the Revue Zoologique for January 1839, page 15, Lesson refers to the two plates Nos. 37 and

38 cited above, gives the description again, with something of the habits as observed by DeLattre, and says "Elle est rare aux alentours de Jalapa," which fixes the type locality as I have listed it. Lesson's further statement that "M. DeLattre a tué une femelle à Kakamoukho, au Mexique" probably refers to *Chlorostilbon auriceps*, which is the related species found near Mexico City.

ANTHRACOTHORAX PREVOSTII PREVOSTII (Lesson)

Trochilus prevostii Lesson, Histoire naturelle des colibris, Suppl., 1830–31, p. 87, pl. 24 (locality unknown[23]).

The only specimen is a female that I shot on March 31, 1939, near Tres Zapotes after it had darted at a becard resting in an open tree top and then perched nearby. I had seen one in this same locality a few days earlier, and recorded another near Arroyo Corredor on April 12. They are robust, heavy-bodied birds of rapid flight.

AGYRTRIA CANDIDA CANDIDA (Bourcier and Mulsant)

Trochilus candidus Bourcier and Mulsant, Ann. Sci. Agric. Lyon, vol. 9, 1846, p. 326 (Cobán, Guatemala).

The white-bellied emerald was one of the more common hummers, though Carriker noted that it may not be resident here, since he did not record it until February 28, 1940, after which it was widely distributed. I found the birds in the open, or at the border of thickets. Specimens were taken at Tres Zapotes on March 7, 14, and 27, 1939, February 28, March 15 and 16, and April 5, 1940, at Hueyapa May 15, and on the Cerro de Tuxtla on March 13. Carriker noted them at El Conejo near the coast in May.

AMAZILIA TZACATL TZACATL (De la Llave)

Trochilus Tzacatl De la Llave, Registro Trimestre, vol. 2, no. 5, 1833, p. 48 (Mexico).

This is one of the most abundant hummers in the area covered, being represented by a good series taken as follows: Tres Zapotes, March 14 and April 4, 1939, January 25, March 3, 4, 7, and 16, and April 5 and May 3, 1940; Hueyapa, March 14 and 25, 1940; and 600 feet elevation on Cerro de Tuxtla, April 3, 1940. There are other specimens in the National Museum secured by Nelson and Goldman at Tlacotalpam on May 28 and 29, San Andrés Tuxtla on May 10, and Catemaco on May 4, 1894.

Rieffer's hummer is a bird of strong, robust form that, with loudly humming wings, feeds around flowers in open places bordering areas of second growth forest, or penetrates the monte itself to range from

[23] See Simon, Histoire naturelle des Trochilidae, 1921, p. 276, footnote 1.

ground level to the tops of the trees. Like many of its kind, it is highly pugnacious and is constantly driving at all others that come near. As it hovers in the air before one, a common habit, the brown tail and under tail coverts form a conspicuous mark. All hummers are known to the natives in this region as *chupa miel.*

On March 27, 1939, I saw one working at a nest on a horizontal limb 25 feet above an open trail in the monte. On April 2, at camp, one came to pick up tiny fluffs of cotton that had blown from my skinning table, and on April 10 in the heavy forest at Arroyo Corredor I saw one fly to its nest with a bit of plant down in its bill. The nest was placed in a little bend in a branch of a small shrub 3 feet from the ground, for support being built completely around the twig. The structure was made of soft, whitish plant downs, covered externally with green bits of hepatics stuck on with spider webs. It contained two fresh eggs, pure white in color, that measure as follows: 14.3 by 9.2 and 14.5 by 9.2 mm.

AMAZILIA YUCATANENSIS CERVINIVENTRIS Gould

Amazilius cerviniventris Gould, Proc. Zool. Soc. London, Nov. 11, 1856, p. 150 (Córdoba, Veracruz).

Four specimens of this hummer were secured at Tres Zapotes on March 7, 1939, and January 18 and 25, and March 4, 1940. I observed them about flowers in bushy growth, the brown tail and abdomen being prominent. The abundance of this species in the region is uncertain from existing information, as it mingles with the omnipresent *A. t. tzacatl.*

CAMPYLOPTERUS HEMILEUCURUS (Lichtenstein)

Trochilus hemileucurus Lichtenstein, Preis-Verzeichniss mexicanischer Vögel, 1830, p. 1 (Mexico).

A fine series of males of this beautiful sabre-wing was taken by Carriker on Cerro de Tuxtla on March 11, 13, 19, and 23 and April 1, 1940, at elevations of between 1,000 and 2,500 feet. The birds were found in the undergrowth in heavy forest, rarely being seen above 10 feet from the ground. They were not abundant and were very shy. The call is a loud chirp. A female was shot between 2,500 and 3,000 feet on Volcán San Martín on April 21.

PAMPA PAMPA EXCELLENS Wetmore

Pampa pampa excellens Wetmore, Proc. Biol. Soc. Washington, vol. 54, December 8, 1941, p. 207 (Volcán San Martín, Sierra de Tuxtla, Veracruz, Mexico).

This fine new subspecies is based on four males collected by Carriker, the first shot on March 13, 1940, at about 2,000 feet on Cerro

de Tuxtla. Attention was called to it by the loud whirring noise that it made as it dashed about in short flights, chirping loudly. On April 22 he saw a considerable number on Volcán San Martín, congregated in one spot at about 3,300 feet, acting like the one found on Tuxtla.

On casual examination these birds are so like the two previously known races of *Pampa pampa* that there seems nothing especially remarkable about them, until it is noted that the much larger size of the four specimens of *excellens* is actual and not due to any difference in preparation of skins. In fact, by bulk, the new form appears nearly twice the size of its relatives. In actual measurements, the bill and wing length are closely similar, though the bill in *excellens* is heavier. The tail in the new form is broader and longer, and the head is much larger. The clearer gray of the underparts in *excellens* is the principal color difference. The race probably is confined to the isolated Tuxtla Mountains.

PHAETHORNIS LONGIROSTRIS VERAECRUCIS Ridgway

Phaethornis longirostris veraecrucis Ridgway, Proc. Biol. Soc. Washington, vol. 23, Apr. 19, 1910, p. 54 (Buena Vista, Veracruz, Mexico.)

In March and April 1939 I had occasional glimpses of a large *Phaethornis* near camp but did not succeed in getting a shot at one. They are very shy and have the habit of flying up close to a person for a second or two, then darting away at high speed so that they are almost instantly out of sight. Carriker, the following year, was more fortunate as he secured two on Cerro de Tuxtla, on April 3 and May 9. He recorded the species as occurring up to 1,500 feet elevation on the mountain, and found a nest on May 9 fastened to the tip of a pendant leaf of a palm, so that it hung only 3 feet from the ground. The attachment was by means of spider webs, which held the structure to the under side of the leaf. The nest was of rather coarse material without a downy lining. The two eggs were broken.

PHAETHORNIS ADOLPHI ADOLPHI Gould

Phaëthornis adolphi Gould, A monograph of the Trochilidae, pt. 14, Sept. 1857 (vol. 1, 1861), pl. 35 and text, part (Córdoba, Veracruz, Mexico).

This small hermit was one of the two most common hummingbirds (the other being *Amazilia t. tzacatl*) in the region around Tres Zapotes and over the lower slopes of the Sierra de Tuxtla. Specimens were taken between March 9 and April 5, 1939, and from January 17 to April 12, 1940. The birds were found mainly in heavy forest, though early in the morning before the light became too intense I saw them occasionally in the open bordering the monte. They

ranged low down, ordinarily moving with a subdued humming of the wings that was the only sound that I heard from them. As the woodlands became drier with the cessation of rains, they sometimes fed at higher levels. They were rather quiet for hummingbirds, though I observed a certain amount of fighting among them. When disturbed by my presence, possibly because of the proximity of a nest, they perched near at hand with the tail vibrating in a vertical arc of at least 60°, so rapidly that in the subdued light of the forest, the whitish spot at the tip appeared as a white line while the bird itself was almost invisible in the obscurity. A young bird just from the nest that I caught by hand on March 21 moved the uropygium rapidly in this same fashion, though the tail was only about one-third grown. This juvenile specimen is like the adults, except that the colors are duller. The feet in this species are yellowish white, in contrast to the blackish claws.

Family TROGONIDAE

TROGON COLLARIS PUELLA Gould

Trogon puella Gould, Proc. Zool. Soc. London, 1845, p. 18 (Escuintla, Guatemala).

Carriker found the Jalapa trogon in the Sierra de Tuxtla and collected three pairs on Cerro de Tuxtla on March 11 and 19 and April 1 and 9, 1940, between 1,000 and 2,500 feet elevation. He records that they were as common both on the peak mentioned and on Volcán San Martín as the black-headed trogon is through the lowlands. They ranged almost invariably high among the trees where it was difficult to find them unless they were calling or flying about.

TROGON VIOLACEUS SALLAEI Bonaparte

Trogon sallaei Bonaparte, Compt. Rend. Acad. Sci. Paris, vol. 42, 1856, p. 955 (Orizaba, Veracruz, Mexico).

Apparently the gartered trogon was only fairly common. In 1939, on March 16, I shot a male from a shaded perch in open monte where it was calling steadily. April 10 I collected another male just inside the woods at Arroyo Corredor. In this bird the edge of the eyelid was thickened to form a distinct fleshy ring, light yellow in color, clear around the eye. Carriker in 1940 saw only two, a male taken on February 27 and a female on March 27. All were found near Tres Zapotes.

TROGON MELANOCEPHALUS MELANOCEPHALUS Gould

Trogon melanocephalus Gould, A monograph of the Trogonidae, ed. 1, 1838, pl. 12 (Tamaulipas, Mexico).

The black-headed trogon was the most common species around Tres Zapotes, being found in second-growth forest as well as in the virgin timber. Carriker recorded one at 1,200 feet elevation on Cerro de Tuxtla, but he considered the species uncommon over the lower slopes of the mountains. Specimens were taken on March 9 and 17 and April 12, 1939, and January 18, 22, and 29, February 22, and March 8, 1940, all near camp. The thickened fleshy eyelid is bright light blue in life. In March these birds were calling, and after the middle of the month I heard their notes constantly all through the afternoon as I worked at camp, as well as during the forenoon when I was afield. At this time also they seemed more alert and active, and occasionally one came to shaded perches in small trees outside my door to rest quietly, jerking the tail as it uttered a low *cuck*. The song is a cooing call that becomes suddenly faster at the end until it resembles a rattle. The natives called trogons *mira el sol*.

TROGON MASSENA MASSENA Gould

Trogon massena Gould, A monograph of the Trogonidae, ed. 1, 1838, pl. 16 and text (Guatemala).

The only specimen obtained is a male, shot by Modesto, Mr. Carriker's assistant, at about 1,500 feet elevation on Cerro de Tuxtla on March 19, 1940. The bird was resting rather high in a forest tree.

This individual apparently is immature, as the breast feathers are gray, barred with grayish black. The wing coverts and secondaries are darker, having less mixture of whitish than others that I have examined with the exception of one skin from Teapa, Tabasco.

Family ALCEDINIDAE

MEGACERYLE ALCYON (Linnaeus): Belted Kingfisher

Alcedo alcyon Linnaeus, Systema naturae, ed. 10, vol. 1, 1758, p. 115 (South Carolina).

Several were recorded along the river channels between Tlacotalpam and Boca San Miguel on March 6, and near Tres Zapotes single birds were observed at Laguna del Tular until March 29, 1939. No specimens were taken, but it is supposed that these were the eastern subspecies.

MEGACERYLE TORQUATA TORQUATA (Linnaeus): Ringed Kingfisher

Alcedo torquata Linnaeus, Systema naturae, ed 12, vol. 1, 1766, p. 180 (Mexico).

In 1939 I saw these birds along the Río San Agustín near Boca San Miguel and observed them occasionally about the larger lagoons

near Tres Zapotes. On April 13 I shot a laying female from a pair on the Arroyo Tepanaguasapan in the region known as Para Madera. Carriker secured one on March 5, 1940, and recorded them on the Río Papaloapan below Tlacotalpam.

CHLOROCERYLE AMAZONA MEXICANA Brodkorb

Chloroceryle amazona mexicana Brodkorb, Auk, 1940, p. 543 (Barra de Cahuacán, Chiapas).

These kingfishers were fairly common along the main channels of the San Agustín and Papaloapan, between Boca San Miguel and Tlacotalpam, and were found in smaller number along the arroyo at Tres Zapotes, as well as around the lagoons. From the latter they ranged out through the flooded lands in the swampy woods after rains. I secured one on March 27, 1939, and Carriker took another on March 7, 1940.

CHLOROCERYLE AMERICANA SEPTENTRIONALIS (Sharpe): Texas Kingfisher

Ceryle septentrionalis Sharpe, Catalogue of the birds in the British Museum, vol. 17, 1892, p. 134 (Teapa, Tabasco).

Carriker secured specimens near Tres Zapotes on March 26 and May 2 and 3, 1940, along the arroyo, and recorded it as the most common kingfisher of the region. In 1939 I noted it only along the Río San Agustín near Boca San Miguel.

CHLOROCERYLE AENEA STICTOPTERA (Ridgway)

Ceryle superciliosa stictoptera Ridgway, Proc. Biol. Soc. Washington, vol. 2, April 10, 1884, p. 95 (Sisal, Yucatán).

Carriker secured a male along a small stream east of Tres Zapotes in rather heavy woodland. The wing measures 56.4 mm.

Family MOMOTIDAE

MOMOTUS LESSONII LESSONII Lesson

Momotus Lessonii Lesson, Rev. Zool., vol. 5, June 1842, p. 174 (Realejo, Nicaragua).

Lesson's motmot, known as *pájaro coo* from its call, was fairly common near Tres Zapotes but was so unexpectedly shy that I did not see one often. Though I heard their curious call of *hoo hoot* occasionally in the forest near camp, they seemed most common near the Arroyo del Sitio, where I shot a male on March 24, 1939. They perched nearly always behind a screen of leaves and usually flew before I caught sight of them. Carriker obtained specimens at Tres Zapotes on February 27, near Hueyapa on March 7 and 27, and on Cerro de Tuxtla on March 11 and May 10, 1940 They ranged at least to 3,000 feet on Volcán San Martín.

After somewhat prolonged examination of a good series of specimens, I am not able to separate satisfactorily the Mexican race called *goldmani* by E. W. Nelson from the bird of Panamá, Costa Rica, and Nicaragua. There is evident no difference whatever in size, individual variation being considerable. Some of the northern birds are a little greener than the average, but there is no definite distinction here, particularly since many individuals are in rufescent phase, which varies greatly in depth of color from specimen to specimen regardless of locality. The other color character that has been used, i. e., the amount of violet in the posterior margin of the blue crown cap, is definitely variable. In the majority of specimens from southern Central America, this color is extensive and prominent. It tends to lessen in amount in Mexican and Guatemalan specimens, and in occasional birds may be absent. Usually, however, it is present, and some individuals show as much as the southern birds. Any separation on this character must be purely arbitrary, and I consider it merely a tendency that has not become definitely stabilized with geographic locality. I believe, therefore, that it is necessary to unite all these motmots from central Veracruz and Oaxaca to Panamá under the name *lessonii*. This is in agreement with the conclusions of Dr. van Tyne.[24]

Momotus lessonii exiguus Ridgway from Yucatán and Campeche is well marked by paler coloration above and below, particularly in the shades of green, and in smaller size, the wing ranging from 123.7 to 130.1 mm. in the birds that I have seen. The bill also appears more slender.

As for the rufescent phase in these birds, the juveniles I have seen are all of a rufescent-brown shade above and below, so that the phase mentioned may represent a partial stage of this early coloration.

Peters[25] has indicated his belief that all the blue-crowned motmots of the genus *Momotus* are conspecific and therefore to be included under the oldest specific name *momota*. This seems a reasonable conclusion, but until the question has been fully checked to determine it completely I have preferred to list this series from Veracruz as *M. lessonii lessonii*.

HYLOMANES MOMOTULA MOMOTULA Lichtenstein

Hylomanes Momotula Lichtenstein, Abh. Akad. Wiss. Berlin, 1838 (1839), p. 449, pl. 4 (Valle Real, Mexico).

While found in the Sierra de Tuxtla, apparently these odd little motmots are not common. Carriker secured two females on Cerro de

[24] Univ. Michigan Mus. Zool., Misc. Publ. 27, Aug. 1, 1935, p. 19.
[25] Bull. Mus. Comp. Zoöl., vol. 69, 1929, p. 425.

Tuxtla on March 11, 1940, and two more of the same sex between 2,500 and 3,000 feet on Volcán San Martín on April 16 and 21. They were encountered low down in the undergrowth in heavy forest.

Brodkorb recently has described a new form [26] from Chiapas, differentiating it on the basis of shorter bill, darker pileum, and less bluish wash on sides. His measurements of the culmen from base (without regard to sex) range from 25.5 to 27 mm. It may be noted that in eight available skins from Veracruz and Tabasco the same measurement runs 24.5, 26.7, 26.7, 26.9, 27.1, 27.3, 27.3, and 30.2 mm., thus including the dimensions of the proposed race. In view of the variation exhibited by the species, the color differences proposed should be carefully checked. The only distinction I can find that holds in our series to distinguish the southern form named *obscurus* by Nelson from Panamá, whose range extends into northwestern Costa Rica, is that it has the abdomen less definitely whitish.

Ridgway [27] believed that Valle Real, the type locality of *momotula*, is in Veracruz.

Family RAMPHASTIDAE

AULACORHYNCHUS PRASINUS PRASINUS (Gould)

Pteroglossus prasinus Gould, A monograph of the Ramphastidae, 1834 (1833), pl. 29 and text (Valle Real, Mexico).

Carriker found this species common through the forests across the summit of Volcán San Martín, securing five specimens on April 17 and 20, 1940. As usual, the birds were hard to see among the green leaves, though it was not difficult to approach them. He did not find them on Cerro de Tuxtla.

These five specimens all agree in having the white of the throat definitely yellowish, especially on the lower portion, and a distinct yellow area on the side of the head below the eye, bordering the posterior margin of the white of this region, and so forming the border between the white and the green of the posterior area of the side of the head. Six specimens of *prasinus* from Mirador, and Jalapa, Veracruz, all lack this yellow, so that at first glance the San Martín birds appear distinct. However, since I find these same two styles of coloration in series of the races *stenorhabdus* and *virescens*, I assume that it is individual variation, due possibly to age.

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[26] *Hylomanes momotula chiapensis* Brodkorb, Occ. Papers Mus. Zool. Univ. Michigan, No. 369, Apr. 11, 1938, p. 2 (1,900 meters on Mount Ovando, Chiapas).

[27] U. S. Nat. Mus. Bull. 50, pt. 6, 1914, p. 486.

PTEROGLOSSUS TORQUATUS TORQUATUS (Gmelin)

Ramphastos torquatus GMELIN, Systema naturae, vol. 1, pt. 1, 1788, p. 354 (Central America[28]).

Near Tres Zapotes, the Aracari toucan was uncommon, but on the lower slopes of the Tuxtla Mountains Carriker found it in greater abundance. Our specimens were taken on April 5, 1939, and February 22 and 24 and May 6, 1940, the last being the only one obtained on the mountain. On April 5 one flew past me into open woodland on the Cerro Nestepe, which is really in the foothills of the mountains. I followed and shot it and immediately thereafter secured a pair. These birds were at the opening of the breeding season. On April 8 I found others nearer Tres Zapotes, feeding on fruits in an open tree at the edge of monte. They were seen in small groups of four or five, flying and moving about with greater celerity and much less awkwardly than the larger toucans. They utter harsh, rattling calls that can be heard for some distance.

The iris is clear yellow, except that bordering the round pupil toward the inner and outer canthi of the eye there is a slight area of black that merges into the black of the pupil, so that it can be detected only on careful examination in good light. This gives the pupillar opening an oblong appearance, while in reality it is round.

RAMPHASTOS SULFURATUS SULFURATUS Lesson

Ramphastos sulfuratus LESSON, Traité d'ornithologie, pt. 3, July 1830, p. 173 (Mexico).

The large toucan was uncommon but not rare, being seen occasionally through the forested areas east of Tres Zapotes, near Hueyapa, and up to 2,000 feet elevation on the Sierra de Tuxtla. They were usually found resting in the very tops of the taller trees, where occasionally they called for long periods without moving, except to swing the huge bill about. They were known locally as the *pico canoa*. Carriker secured five specimens near Tres Zapotes on March 4, 18, and 27, 1940.

Peters[29] has shown that *Ramphastos piscivorus* of Linnaeus, long current as the name for this bird, is a composite, hopeless to identify. The species therefore takes the next name available, *sulfuratus* of Lesson.

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[28] Designated by Cory, Publ. Field Mus. Nat. Hist., zool. ser., vol. 13, pt. 2, No. 2, 1919, p. 368. Peters, Bull. Mus. Comp. Zoöl., vol. 69, 1929, p. 436, has listed the type locality as southeastern Mexico.

[29] Auk, 1930, pp. 406–407.

Family PICIDAE

DRYOBATES SCALARIS RIDGWAYI Oberholser

Dryobates scalaris ridgwayi Oberholser, Proc. U. S. Nat. Mus., vol. 41, June 30, 1911, p. 143 (Jaltipan, Veracruz, Mexico).

The four specimens taken were found in the vicinity of camp at Tres Zapotes on April 10 and 12, 1939, and March 8, 1940. They ranged in the open pastures and old fields in which there were scattered tracts of brush. On April 10 I found a nest hole 9 feet from the ground in a dead tree standing just outside a thicket. A male taken here showed definite incubation patches, while in a female, shot at this same place two days later, they were absent.

Measurements are as follows: 2 males, wing 89.4, 90.5, tail 47.4, 49.8, culmen from base, 19.3, 20.2, tarsus 16.1, 16.5 mm.; 2 females, wing 84, 85.5, culmen from base 17.6, 17.9, tarsus 16.5, 17.1 mm.

VENILIORNIS FUMIGATUS SANGUINOLENTUS (Sclater)

Chloronerpes sanguinolentus P. L. Sclater, Proc. Zool. Soc. London, May 1859, p. 60, pl. 151 (Omoa, Honduras).

This is the most common woodpecker of the region, ranging both in forest and in the lower second growths that come to cover the abandoned fields of the farmers. They often feed low down near the ground, sometimes under rather heavy cover. Carriker found them at 2,000 feet and higher in the Sierra de Tuxtla. They remind me of the downy woodpecker (*Dryobates pubescens*) of the North in their industrious habit of working with steady pecking at wood containing food. Sometimes I found them climbing over palm spathes. The call is a rattle somewhat suggestive of that of the downy woodpecker already mentioned.

Specimens were obtained near Tres Zapotes on March 13 and 21 and April 4, 1939, and February 24 and 28 and March 4, 1940, and on Cerro de Tuxtla on March 23, April 1 and 3, and May 4, 1940. The bills in this series average larger than in birds from Honduras so that the two groups probably are subspecifically distinct.

PHLOEOCEASTES GUATEMALENSIS REGIUS (Reichenbach)

Campephilus regius Reichenbach, Icones ad synopsin avium, No. 12, Scansores, Picinae, 1854, p. 393, pl. 649, figs. 4331–4332 (Papantla, Veracruz).

These large, handsome woodpeckers, of robust form, were fairly common through areas of heavy forest, though somewhat less abundant than *Ceophloeus lineatus similis* found with them. On April 4, in the heavy woodland at Arroyo Corredor, I heard a clear, staccato

woodpecker drum of two notes only, delivered rapidly with force and emphasis, with a pause before repetition, that brought to mind immediately the similar performance of the related *Phloeoceastes leucopogon* of northern Argentina. And following this sound and the loud hammering that accompanied it, I collected a fine pair of *P. g. regius*. Others were observed and heard regularly throughout my stay. Carriker secured three near Hueyapa on March 8 and 25, 1940, including two fully grown young birds in juvenal plumage. These are strong-muscled, robust birds with tough, thick skins, so that their preparation as specimens entails definite physical labor. A needle will scarcely penetrate the thickened skin of the back of the head.

Following are measurements of the adult specimens: 2 males, wing 190, 195.5, tail 103.3, 105.4, culmen from base 56.2, 51.0, tarsus 38.2, 38.2 mm.; 1 female, wing 185.5, tail 111.3, culmen from base 47.5, tarsus 33.7 mm.

The race *regius* is separated from typical *guatemalensis* solely by average larger size, there being definite overlap in dimension. The birds from the Tres Zapotes area come within the limits set for *regius* and are so identified, though it must be stated that the form is based on differences that are not at all sharp cut or trenchant.

CEOPHLOEUS LINEATUS SIMILIS (Lesson)

Picus similis Lesson. Oeuvres complètes de Buffon, vol. 20, Apr. 1847, p. 204 (San Carlos, El Salvador).

The five specimens secured were obtained near Tres Zapotes March 15 and 16, 1939, and January 26 and March 3, 1940, and Hueyapa, March 15, 1940.

The species was fairly common through wooded areas, coming into the more open second growth, and into dead trees in the fields where clearings bordered the forest. It was known locally only by the name *carpintero* applied to all woodpeckers. I heard them uttering a chattering call that was not unlike that of a *Centurus*, while the drum was a loudly resounding, rapid roll, slowing slightly toward the end. It resembled the sound made by *Ceophloeus pileatus* of the North but was slightly slower. The flight is bounding, and seemed somewhat heavier than that of the pileated woodpecker. On April 8 I found a pair working on a nest hole 50 feet from the ground in a dead tree at the border of a tract of forest. Two days later I noted one looking out from a nest hole cut 20 feet from the ground in a dead tree trunk standing in an old field.

CELEUS CASTANEUS (Wagler)

Picus castaneus Wagler, Isis von Oken, 1829, p. 515 (Veracruz, Veracruz, Mexico[30]).

Carriker secured a pair on March 19, 1940, at an elevation of about 1,000 feet on Cerro de Tuxtla. The birds were ranging low in an area where the forest was dense above and dark below.

PICULUS RUBIGINOSUS YUCATANENSIS (Cabot)

Picus yucatanensis Cabot, Proc. Boston Soc. Nat. Hist., vol. 1, May 1844, p. 164 (road from Chemax to Yalahao, Yucatan[31]).

Carriker found these birds fairly abundant in the forest over the higher elevations of the Sierra de Tuxtla, taking specimens on Cerro de Tuxtla on March 19 and April 1 and 9 and on Volcán San Martín on April 22 and 23, 1940. He saw them frequently low among the trees on the smaller trunks, even on the thorny palms.

These specimens range somewhat smaller than the dimensions usually given for this race, being as follows: 3 males, wing 114.5–116.2, tail 62.2–65.2, culmen from base 24.3–26.3, tarsus 20.8–22.0 mm.; 4 females, wing 111.4–115.4, tail 60.2–70.0, culmen from base 22.3–25.3, tarsus 20.2–21.7 mm.

CENTURUS AURIFRONS VERAECRUCIS (Nelson)

Melanerpes dubius veraecrucis Nelson, Auk, 1900, p. 259 (Coatzacoalcos, Veracruz).

The 11 specimens come from near Tres Zapotes, March 8, 14, 23, and 31, 1939, January 20, February 26, and March 7, 1940, and from Tlacotalpam, February 6, 1940. The form is one that ranges throughout the area from the coastal sandhills to the lower slopes of the Sierra de Tuxtla, principally in open country with scattering trees, though found occasionally in the higher trees of the forests. The lanes bordering the milpas were especially favored by them. The natives recognize this form of *carpintero* as one that feeds on corn.

The general habits and appearance of this woodpecker are similar to others of its group. The flight is bounding, accompanied often by flashes of color from the white of the rump and the red of the head. The call notes are chattering, and the drum is rapid, though rather short. The nesting season came at the end of March, when the birds became especially noisy and vociferous. On March 23 I observed a pair working on a nest hole in a large dead tree standing in a weed-grown field. By the end of the month all were mating.

[30] Designated by Cory, Publ. Field Mus. Nat. Hist., zool. ser., vol. 13, pt. 2, No. 2, Dec. 31, 1919, p. 453.

[31] Cabot, Boston Journ. Nat. Hist., vol. 5, 1845, p. 92, says: "I saw only two of these birds, and procured this one specimen in March, 1842, on the road from Chemax to Yalahao."

The relationships and name for the birds in this collection have been established only after a detailed study of all the woodpeckers of this type found from Texas to Costa Rica.

On first examination of this group of forms they appear a hopeless jumble, but with study an orderly arrangement becomes evident. The scheme here outlined in detail is that indicated by Griscom[32] except that it appears that *veraecrucis* is distinct rather than a synonym of *grateloupensis*.

After a somewhat prolonged study, it is evident that there are two principal types of these woodpeckers. The first comprises those with the dorsal surface boldly barred with black and white, and the abdomen yellow, including the three subspecies *aurifrons*, *polygrammus*, and *frontalis*. The second has the white barrings decidedly narrowed, so that with the black predominant the appearance is quite different, this group covering the subspecies *veraecrucis*, *dubius*, *leei*, *santacruzi*, *pauper*, *canescens*, and *insulanus*. I am inclined to believe that the red abdomen found in typical *veraecrucis*, *dubius*, and *leei* is the original condition, and that the yellow and orange-yellow of the abdomen in *santacruzi*, *pauper*, *canescens*, and *insulanus* represent a modification of this. I also think that the two general groups distinguished by difference in dorsal pattern have arisen independently and that they have joined subsequently by merging at their points of contact. The race *grateloupensis* is a present-day series of intermediates between the two. On this thesis, the heavily barred group may have had a more extensive former range from which it may have been crowded in part by invasion of the other. This would account for the present distribution, where there is apparently no actual contact between *aurifrons* and *polygrammus*, though the separation is for a small distance only, as well as for the far greater separation of *Centurus hoffmannii*, which now is so different as to rate treatment as a separate species.

Following is a synopsis of the races of *Centurus aurifrons* according to my present understanding of them:

Centurus aurifrons aurifrons (Wagler):

Picus Aurifrons Wagler, Isis von Oken, vol. 22, pt. 5, May, 1829, col. 512 (Ismiquilpam, Hidalgo).

Abdomen yellow; bands of white and black on dorsal surface broad and heavy; middle rectrices entirely black; male, forehead yellow, crown patch red, nape orange; female, with crown gray.

Birds from San Luis Potosí to Jalisco, i. e., those in the southern part of the range, appear to have the black markings above somewhat heavier, but this is an indefinite tendency only.

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[32] Bull. Amer. Mus. Nat. Hist., vol. 64, 1932, pp. 226–230.

Texas (most of the State) south into Mexico, from Tamaulipas and eastern Chihuahua southward to Hidalgo, Jalisco, and Michoacán (west of Veracruz).

Centurus aurifrons polygrammus Cabanis:

Centurus polygrammus Cabanis, Journ. für Ornith., 1862, p. 362 (San Bartolomé, Tehuantepec, Oaxaca).

Similar to *aurifrons*, but both black and white dorsal bars decidedly narrower; crown and nape patches in male more frequently confluent; middle rectrices marked heavily with white; darker below; nuchal area orange or orange-red.

Pacific slope from southeastern Oaxaca to western Chiapas (Tonalá).

Centurus aurifrons frontalis (Nelson):

Melanerpes frontalis Nelson, Auk, 1900, p. 257 (San Vicente, Chiapas).

Similar to *polygrammus*, but dorsal bars heavier, almost as heavy as in *aurifrons;* rump and upper tail-coverts more or less marked with black; yellow of abdomen paler and more restricted; nape in female averaging paler; male with red crown patch averaging smaller, separated in most by a wide gray space from the orange nape. Male, wing 131–136 (133.6), tail 71–80 (74.4); female, wing 124.5–136 (130.6), tail 66.5–81 (72.6) mm. (measurements from Ridgway).

Chiapas, except extreme west and north, possibly into northwestern Guatemala.

Centurus aurifrons grateloupensis (Lesson):

Picus grateloupensis Lesson, Rev. Zool., 1839, p. 41 (Mexico).

Abdomen yellow to orange; white bars on dorsal surface narrower; nasal tufts orange or yellow; male with nape and crown red, middle rectrices black, in some with white on the inner webs.

This is an intermediate form between *aurifrons* and *veraecrucis.*

Extreme southern Tamaulipas (Altamira) south to central Veracruz (Mirador, Jalapa, Motzorongo) and eastern Puebla (Metlaltoyuca).

Centurus aurifrons veraecrucis (Nelson):

Melanerpes dubius veraecrucis Nelson, Auk, 1900, p. 259 (Coatzacoalcos, Veracruz).

Abdomen orange-red to red; white bars on dorsal surface much narrowed; crown and nape in male bright red, usually confluent though sometimes partly or wholly separated by gray; nasal tufts red; lower surface darker. Wing, male, 122–133 (126.9); female, 118–134.5 (124.7) mm. (measurements from Ridgway).

Specimens from Frontera, San Juan Bautista, and Montecristi, Tabasco, and Tila, Chiapas, are lighter below, thus showing approach to *dubius*. Skins from Guichicovi and Tuxtepec, Oaxaca, also are paler below, and are orange-red on the abdomen, thus showing transition to *santacruzi*.

South-central Veracruz (Tres Zapotes and Paso Nuevo) to Tabasco and northern Chiapas. Possibly to north central Guatemala, west of Petén. (There are five specimens in the National Museum, all marked Guatemala, with no definite locality.)

Centurus aurifrons dubius (Cabot):

Picus dubius Cabot, Proc. Boston Soc. Nat. Hist., vol. 1, 1844, p. 164 (Uxmal, Yucatán).

Generally similar to *veraecrucis* but under surface distinctly paler, and averaging slightly larger; abdomen bright poppy red; crown and nape bright red with no gray bar. Wing, male, 130–137 (133.3); female, 123–132 (127.2) mm. (measurements from Ridgway).

Campeche and Yucatán to Petén and northern British Honduras (limit to the south uncertain).

Centurus aurifrons leei Ridgway:

Centurus leei Ridgway, Proc. Biol. Soc. Washington, vol. 3, Feb. 26, 1885, p. 22 (Cozumel Island, Yucatán).

Similar to *dubius* but much darker; rump and upper tail-coverts more or less barred with black; light frontal band sometimes lacking in male.

Cozumel and Meco Islands; Mujeres Island?

Centurus aurifrons canescens Salvin:

Centurus canescens Salvin, Ibis, 1889, p. 370 (Ruatan Island, Honduras).

Similar to *dubius*, but white dorsal bars wider, outer webs of inner primaries spotted definitely with white.

Ruatan and Barburat Islands.

Centurus aurifrons santacruzi Bonaparte:

Centurus Santa Cruzi Bonaparte, Proc. Zool. Soc. London, 1837, p. 116 (Guatemala).

Abdomen deep yellow, this color being darker and more extensive than in *grateloupensis;* differing further from that race in darker ventral surface, and, on the average, in slightly narrower white bars above; ordinarily with more white in the tail; averaging paler below than *veraecrucis;* nuchal area usually red. Wing, male, 124.5–142 (131.8); female, 122.5–141.5 (130.2) mm. (measurements from Ridgway).

Some individuals vary to orange or orange-red on the abdomen. The nasal tufts are orange, about as in *grateloupensis*. Specimens from Santo Domingo in southeastern Oaxaca are of doubtful status. They resemble this race but from their location are more probably intermediate between *polygrammus* and *veraecrucis*. More material is needed to settle this point.

Southwestern Chiapas (Finca Juarez) south through central and eastern Guatemala and El Salvador to northern Nicaragua.

Centurus aurifrons pauper Ridgway:

Centurus santacruzi pauper Ridgway, Proc. U. S. Nat. Mus., vol. 10, Aug. 6, 1888, p. 582 (Trujillo, Honduras).

Similar to *santacruzi*, but white dorsal bars averaging slightly narrower; size averaging slightly smaller. Wing, male, 117.5–131 (123.7); female, 115.5–123 (119.5) mm. (measurements from Ridgway).

The Caribbean slope of Honduras, ranging possibly north to Belize, British Honduras.

Centurus aurifrons insulanus Bond:

Centurus santa-cruzi insulanus Bond, Proc. Acad. Nat. Sci. Philadelphia, vol. 88, Aug. 14, 1936, p. 360 (Utila Island, Honduras).

Similar to *pauper* in color of abdomen, but with forehead and superciliary region whiter; upper parts more extensively barred with white; larger. Wing, male, 130-138; female, 127–128 mm. (measurements from Bond).

Utila Island, Honduras.

Centurus hoffmannii of Costa Rica and Nicaragua is generally similar to *Centurus aurifrons frontalis* but has the tail proportionately shorter, the size decidedly smaller, the under surface darker with the yellow on the abdomen darker and more extensive, the lower rump and upper tail-coverts usually without black markings, and the white on the middle rectrices reduced. The male has the red crown patch averaging larger and usually confluent with the orange of nape. Measurements, taken from Ridgway, are as follows: Male, wing 116.5–125 (120), tail 53–61.5 (57); female, wing 112–125.5 (117.8), tail 50–60.5 (54.9) mm.

While closely related to the *aurifrons* group, this woodpecker differs sufficiently in the relative length of the tail when compared to the wing to be held as specifically distinct. It is generally similar in appearance to the subspecies *aurifrons*, *polygrammus*, and *frontalis* but is isolated from the nearest of these by the intervention of the very different *Centurus aurifrons santacruzi*. In boldness of dorsal pattern, it is strongly suggestive of typical *aurifrons*.

Family DENDROCOLAPTIDAE

DENDROCINCLA ANABATINA ANABATINA Sclater

Dendrocincla anabatina P. L. Sclater, Proc. Zool. Soc. London, May 1859, p. 54, pl. 150 (Omoa, Honduras).

One of the rarer forest birds of the region, this form is represented by skins from near Tres Zapotes, March 10 and April 14, 1939, and January 19, 1940, and from near 2,000 feet elevation on Cerro de Tuxtla, March 29 and May 11, 1940. I found them in heavy forest, ordinarily rather low down, climbing over the tree trunks. They uttered high-pitched calls.

Three specimens in the National Museum series from Pigres and Buenos Aires, southwestern Costa Rica, and from Chiriquí appear indistinguishable from skins from Nicaragua and Guatemala to southeastern Mexico, so that I see no basis for recognizing *Dendrocincla anabatina saturata*, described by Carriker and recognized by Ridgway and Hellmayr. The form *typhla* of Yucatán is distinct in its paler coloration.

SITTASOMUS GRISEICAPILLUS SYLVIOIDES Lafresnaye

Sittasomus sylvioides Lafresnaye, Rev. Mag. Zool., 1850, p. 590 (State of Veracruz, Mexico [83]).

Four specimens were obtained by Carriker on Cerro de Tuxtla March 29 and April 16, and on Volcán San Martín May 7. They were found in the forest at 2,000 to 2,500 feet altitude.

Specimens taken by Nelson and Goldman at Metlaltoyuca, Puebla, are slightly paler than birds from Veracruz.

LEPIDOCOLAPTES AFFINIS AFFINIS (Lafresnaye)

Dendrocolaptes affinis Lafresnaye, Rev. Zool., April 1838, p. 100 (Mexico).

Carriker shot two on April 17 and 20, 1940, in heavy forest above 3,500 feet on Volcán San Martín.

XIPHORHYNCHUS FLAVIGASTER EBURNEIROSTRIS (Des Murs)

Dryocopus eburneirostris Des Murs, Iconographie ornithologique, July 1847, pl. 52, with text (Realejo, Nicaragua).

Swainson's woodhewer is one of the common forest birds in the lowlands around Tres Zapotes, and it ranged to at least 1,000 feet elevation on the Sierra de Tuxtla. Found singly or in pairs, usually in heavy forest, it was the most abundant species of its family. Occasionally it ranged through scrubby second growth, or came even into clumps of trees scattered through the pastures. It is quite active in moving over the tree trunks, climbing sometimes awkwardly and

[83] Designated by Bangs and Peters, Bull. Mus. Comp. Zoöl., vol. 68, 1928, p. 392.

sometimes gracefully, ordinarily going steadily up, though when it desired it moved downward like a woodpecker by simply raising the tail and dropping down a few inches at a time. Occasionally I saw one work around the underside of horizontal limbs. At the end of March they began to sing a high, whistled song. Sometimes this was varied by a low, tremulous whistle, given as the birds rested with raised crests. They appear to be strictly resident. An excellent series was taken near Tres Zapotes between March 7 and April 10, 1939, and January 19 and March 9, 1940. Carriker shot two on Cerro de Tuxtla on March 13 and May 8. There is considerable variation among them from light to dark.

For use of the name *eburneirostris* for this form, long known as *flavigaster*, the reader is referred to van Rossem's finding[34] that Swainson's type of *flavigaster* is an example of the race described later by Nelson as *megarhynchus*, so that *flavigaster* must transfer to this large-billed subspecies. The name *eburneirostris* thus becomes current again for the form extending from southeastern Mexico through Central America.

DENDROCOLAPTES CERTHIA SANCTI-THOMAE (Lafresnaye)

Dendrocops Sancti-Thomae LAFRESNAYE, Rev. Mag. Zool., 1852, p. 466 (Santo Tomás, near Omoa, Honduras).

Carriker shot three at about 2,000 feet elevation on Cerro de Tuxtla on March 11 and 29 and April 9, 1940. Two were high up in large trees, while the third had come down into the shrubbery above a band of hunting ants.

Family FURNARIIDAE

AUTOMOLUS OCHROLAEMUS CERVINIGULARIS (Sclater)

Anabates cervinigularis P. L. SCLATER, Proc. Zool. Soc. London, 1856 (Jan. 26, 1857), p. 288 (Cordóba, Veracruz).

In the Sierra de Tuxtla, Carriker found this bird fairly common, obtaining specimens on Cerro de Tuxtla on March 11, 19, and 29 and April 3, and on Volcán San Martín on April 22. He shot two near Tres Zapotes on January 17 and April 12. These birds were found in thick undergrowth in the forest and were rather shy.

While I have followed Hellmayr's recent treatment, I am not certain that true *ochrolaemus* is conspecific with *cervinigularis* and its allies. The freshly taken birds from the present collection appear darker on the flanks and back than older skins, a difference possibly due to age, though it may be of a subspecific nature.

[34] Proc. Biol. Soc. Washington, vol. 52, Feb. 4, 1939, p. 15.

XENICOPSOIDES MONTANUS VARIEGATICEPS (Sclater)

Anabazenops varicgaticeps P. L. Sclater, Proc. Zool. Soc. London, 1856 (Jan. 26, 1857), p. 289 (Córdoba, Veracruz).

Carriker shot a pair at about 3,700 feet altitude on April 20, 1940, on Volcán San Martín and reported two others in the same locality. They were found in high undergrowth in very heavy forest.

SYNALLAXIS ERYTHROTHORAX FURTIVA Bangs and Peters

Synallaxis erythrothrorax furtiva Bangs and Peters, Bull. Mus. Comp. Zoöl., vol. 67, Jan. 1927, p. 476 (Presidio, Veracruz).

One of the common species in the lowland area, these birds range in thickets or in the low, dense growth at the border of monte. From such protection they come out under cover of grass to feed in the open, usually on the ground, but retreat at once when alarmed. Carriker saw a few in the coastal sand dunes, and found them common among the low thickets scattered over the savannas near Tlacotalpam.

As they fly up with tilting flight or move about in the brush, they often appear very bright colored, suggesting little finches. The note is querulous with a curious cadence, often heard when the birds themselves are under cover. Their large stick nests are placed 5 to 7 feet from the ground. On April 13 I saw one carrying twigs.

The series taken comes from near Tres Zapotes on the following dates: March 7, 8, 9, 13, 15, 18, and 27 and April 3 and 13, 1939; January 17 and 18 and March 6, 8, and 18, 1940. The race *furtiva*, as represented in this good series, is distinguished from typical *erythrothorax* of eastern Guatemala by duller-colored flanks and sides, with the lighter area of the abdomen more extended laterally.

XENOPS MINUTUS MEXICANUS Sclater

Xenops mexicanus P. L. Sclater, Proc. Zool. Soc. London, 1856 (Jan. 26, 1857), p. 289 (Córdoba, Veracruz).

Carriker shot a male in the forest southeast of Tres Zapotes on April 12, 1940.

Family FORMICARIIDAE

GRALLARIA GUATIMALENSIS GUATIMALENSIS Prévost and Des Murs

Grallaria guatimalensis Prévost and Des Murs, Voyage autour du monde sur . . . la *Vénus*, Zool., Atlas, livr. 1, 1846 (1842), pl. 4 (Guatemala).

The antpittas, always shy, elusive forest birds, are difficult to secure. In 1939 I had no hint of their presence, but the following year Carriker obtained three in the forested area southeast of Tres Zapotes,

on April 11, and two at 1,500 feet elevation on Cerro de Tuxtla, May 5 and 9.

Griscom [35] considers that the birds from southeastern Mexico are to be united with those of Guatemala under the one name *guatimalcnsis*. The material in the National Museum shows considerable variation in depth of color, the four adult Guatemalan specimens available averaging darker, and the seven from Veracruz and Tabasco paler. In view of the more extensive series examined by Griscom, I have followed his findings.

FORMICARIUS ANALIS MONILIGER Sclater

Formicarius moniliger P. L. Sclater, Proc. Zool. Soc. London, 1856 (Jan. 26, 1857), p. 294 (Córdoba, Veracruz).

The series of nine specimens was secured as follows: Near Tres Zapotes, March 14 and April 7, 1939, and April 1, 1940; lower slopes of Cerro de Tuxtla, May 5, 6, and 9; and at about 3,000 feet elevation on Volcán San Martín, April 18 and 21. They are probably much more common than the relatively few that are seen indicate, as they live on the ground in heavy jungle, where they remain almost entirely under cover. About the middle of March at Tres Zapotes they began to call, uttering a whistled note repeated quickly with varying rapidity. They were heard most often on days of rain. They responded readily to a whistled imitation of the call but usually remained where they could see but could not be seen. When they do appear, they walk or run like thrushes on the ground, with raised tail, advancing a few steps and then stopping in shadow or beneath the shelter of leaves to look about. One day at Arroyo Corredor, as I called, one walked out finally around the base of a palm only 10 feet away, and as it saw me it flew with a rattling noise of its short wings to a perch on a branch 6 feet from the ground.

Carriker heard them frequently in May on the lower slopes of Cerro de Tuxtla and on San Martín.

THAMNOPHILUS DOLIATUS INTERMEDIUS Ridgway

Thamnophilus intermedius Ridgway, Proc. U. S. Nat. Mus., vol. 10, Aug. 1888, p. 581 (Trujillo, Honduras).

This, the most common of the ant-shrikes, was taken near Tres Zapotes on March 11, 14, 16, and 24, 1939, January 29, February 22, March 14 and 25 and April 5, 1940, at Tlacotalpam on February 7, and in the coastal sandhills near El Conejo on May 15. It ranged in areas of dense brush to the base of the Tuxtla Mountains but did not enter the forest that covers the slopes of this range. As just stated,

[35] Bull. Amer. Mus. Nat. Hist., vol. 64, 1932, p. 237.

it is an inhabitant of the densest coverts, where its rattling notes are heard constantly but where the birds themselves keep carefully under cover. The male in calling rises to full height and erects his crest, while the effort of uttering the notes shakes his body visibly.

As Peters has written,[36] the proper subspecific name for this antshrike is not *mexicanus* Allen (1889) but *intermedius* Ridgway (1888).

TARABA MAJOR MELANOCRISSUS (Sclater)

Thamnophilus melanocrissus P. L. Sclater, Proc. Zool. Soc. London, Aug. 1860, p. 252 (Santecomapam, Orizaba, Veracruz).

The six obtained were collected in the vicinity of Tres Zapotes on March 24, 1939, and January 26, February 23, March 6, 7, and April 1, 1940. I saw one near Boca San Miguel. They inhabit the densest of thickets and masses of vines, where it is difficult to locate them when their strange notes are heard.

It seems reasonable to follow Griscom's treatment of this form[37] in separating it from *T. m. transandeanus* of distant Ecuador. The three males in the present series have the under tail-coverts without white.

Family COTINGIDAE

ATTILA SPADICEUS FLAMMULATUS Lafresnaye

Attila flammulatus Lafresnaye, Rev. Zool., 1848, p. 47 (Veracruz, Mexico).

This forest bird was fairly common, specimens coming from Tres Zapotes March 19, 31, and April 10, 1939, and March 3, 7, and April 1, 1940, and from Cerro de Tuxtla March 11. Carriker recorded it also on Volcán San Martín. One I shot as it perched in an erect, flycatcherlike attitude on an open limb in the center of a tree. Another rested in the dense shadow beneath a heavy mass of vines in a tree top, and another in tree tops in open gallery forest near water. As they often remain quiet among leaves, they are easily overlooked.

PACHYRAMPHUS MAJOR MAJOR (Cabanis)

Bathmidurus major Cabanis, Arch. für Naturg., vol. 13, 1847, p. 246 (Jalapa, Veracruz).

Carriker shot a male on March 4, on the trail between Tres Zapotes and Hueyapa, and a female on April 17 high in a tree in heavy forest between 3,000 and 4,000 feet elevation on Volcán San Martín. The species apparently is rare in this region.

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[36] Bull. Mus. Comp. Zoöl., vol. 69, 1929, p. 439.
[37] Bull. Amer. Mus. Nat. Hist., vol. 64, 1932, pp. 232–233.

PLATYPSARIS AGLAIAE SUMICHRASTI Nelson

Platypsaris aglaiae sumichrasti Nelson, Auk, 1897, p. 52 (Otatitlan, Veracruz).

Near Tres Zapotes and Hueyapa this was among the most common birds, so that a good series was obtained between March 14 and April 13, 1939, and February 26 and March 27, 1940. Carriker found a few around Tlacotalpam, where he shot one February 7, and saw one at El Conejo near the coast. They were known as the *copetón negro*. They ranged in groves and to some extent in forest, where they were found in the tops of the taller trees. It was common to encounter them along trails in second growth, and in low trees standing in thickets. On April 11 I saw two nests and the following day recorded a male carrying nesting material. The structures were large, untidy masses of plant material, nearly as large as a basketball, placed on the free ends of slender limbs in trees growing in fairly open localities. They were conspicuous, but because of their location on slender branches 25 feet or so from the ground they were safe. About the first week in April, it appeared to me, these birds became less common than they had been during March.

TITYRA SEMIFASCIATA PERSONATA Jardine and Selby

Tityra personata Jardine and Selby, Illustrations of ornithology, vol. 1, pt. 2, June 1827, pl. 24 (Real del Monte, Hidalgo).

A fairly common bird, this species is represented by skins from Tres Zapotes, March 11, 14, and April 6, 1939, and February 27 and March 5, 1940. These are heavy-bodied birds, found usually in little groups of three or four individuals, sometimes of as many as half a dozen, that travel over the monte with bounding flight to alight on open limbs in the taller trees. Those that bear drupes are attractive to them, and here they hop about in the branches rather slowly and sluggishly to feed. The natives call them *borreguitos*, little lambs, probably because of their chunky forms and light colors. The notes are most curious, consisting of grunting, squeaking calls. On April 10 I recorded a male examining holes in palm trees standing in an old field, and two days later noted another of the same sex carrying a leaf into one of these openings. Ramón said that old woodpecker holes made the usual nesting places.

ERATOR INQUISITOR FRASERII (Kaup)

Psaris Fraserii Kaup, Proc. Zool. Soc. London, 1851 (Oct. 1852), p. 47, pls. 37, 38 (Veracruz, Mexico[38]).

[38] Designated by Hellmayer, Publ. Field Mus. Nat. Hist., zool. ser., vol. 13, pt. 6, 1929, p. 223.

Apparently this species is uncommon, as only three were taken. On March 21, 1939, I shot one from a tree top near camp at Tres Zapotes. On March 27, 1940, Modesto, Carriker's assistant, killed two from tall trees near the arroyo at Hueyapa. Unless seen near at hand they may be confused with the more abundant *Tityra semifasciata personata*.

While like *Tityra* in general style of coloration, this species in its various races differs so distinctly in closely feathered loral and orbital region, more swollen bill, with less strongly uncinate tip, longer gonys, which is much greater than the mandibular rami, and in the taxaspidian type of scutellation of the tarsus, that it definitely merits treatment as a distinct genus.

Family TYRANNIDAE

SAYORNIS PHOEBE (Latham): Eastern Phoebe

Muscicapa Phoebe LATHAM, Index ornithologicus, vol. 2, 1790, p. 489 (New York).

At Tlacotalpam on February 5 Carriker shot a female from a wire fence in a pasture near a patch of thorn scrub.

PYROCEPHALUS RUBINUS BLATTEUS Bangs

Pyrocephalus rubinus blatteus BANGS, Proc. Biol. Soc. Washington, vol. 24, June 23, 1911, p. 189 (Sabune district, British Honduras).

Vermilion flycatchers, known here as the *cardenal*, were taken at Tres Zapotes on March 17 and April 7, 1939, and January 17, March 27, and April 2, 1940, and at Tlacotalpam on February 5 and 20, 1940. They were found in open pastures, being always present in the little savanna near camp, and were especially common in the savanna area in the section called Para Madera. In March and April I found them often in pairs. Males were seen displaying during this period, and Carriker saw a fully fledged young bird near Tlacotalpam on May 16. He recorded the species as common in the coastal area at El Conejo.

Unexpectedly, the series taken is of the southern race, as indicated by wing measurements of 74 to 77 mm. for males and 72.7 to 73.4 for females. The bills in some are equal only to the maximum in *P. r. mexicanus* but in others are definitely larger. The race is one known previously north only to Yucatán, Campeche, and Petén.

MUSCIVORA FORFICATA (Gmelin): Scissor-tailed Flycatcher

Muscicapa forficata GMELIN, Systema naturae, vol. 1, pt. 2, 1789, p. 931 (Mexico).

The *tijerilla* seemingly is a migrant at Tres Zapotes, as neither Carriker nor I observed it there until the latter part of March. I recorded the first one March 25, and on March 27 I saw two resting in a dead tree that stood in water at Laguna del Tular. On April 1 I

collected one and on April 4 saw another. On April 11 half a dozen came to feed on the fruits of a palo mulato, and two that I shot were extremely fat. On April 15 I noted two at Boca San Miguel. In 1940 Carriker recorded about a dozen, collecting two on March 25. Near El Conejo on the coast he saw a pair flying overhead in February and shot a female there on May 15. They may therefore winter in that area.

MUSCIVORA TYRANNUS MONACHUS (Hartlaub)

Tyrannus (Milvulus) monachus Hartlaub, Rev. Zool., vol. 7, 1844, p. 214 (Guatemala).

In 1939 I saw several at Tlacotalpam on March 6, and the following year in February Carriker found a fair number there mainly on the marshes surrounding a shallow pond west of town. He collected a female on February 8. At Tres Zapotes on April 11, 1939, I shot two, male and female, from four or five that came with the more abundant scissor-tailed flycatchers to feed on the fruit of the palo mulato. These were the first that I had seen here, so that it was my impression that they were moving into the region from elsewhere. Whether this movement was from near or far it is not possible to say. The two taken were near breeding. While specimens of *Muscivora forficata* secured with them were very fat, these two were in ordinary body condition. The species is known as *tijerilla.*

TYRANNUS MELANCHOLICUS CHLORONOTUS Berlepsch

Tyrannus chloronotus Berlepsch, Ornis, vol. 14, 1907, p. 474 (Temax, Yucatán).

The small series obtained came from Tres Zapotes on March 20 and April 3, 8, and 13, 1939, and April 6, 1940, with one from Tlacotalpam shot on February 15, 1940. These average lighter, less yellowish across the breast band, and are very slightly paler yellow than skins from Yucatán and farther southward, showing in this a beginning of intergradation with *couchii* of more northern distribution. In size, however, and in darker dorsal color, these belong with *chloronotus.*

These kingbirds were common in open areas across the lowlands to the base of the mountains. They range mainly in pastures and old milpas and the borders of cultivated fields, occasionally flying across to alight in the tops of taller trees projecting through the monte. They rest on open perches as the tops of stakes, open branches, or the tops of trees and bushes, and often are a little wild and difficult to approach. The flight is direct and is performed with rapidly fluttering wings. The call notes are high in pitch and rather insignificant in volume. It appeared to me that they became some-

what less common about the first of April, so that part of those present earlier may have spread to other areas for nesting.

TYRANNUS MELANCHOLICUS COUCHII Baird: Couch's Kingbird

Tyrannus couchii Baird, Rep. Pac. R. R. Surv., vol. 9, 1858, pp. 170, 175 (Nuevo León).

Among the specimens from Tres Zapotes, there is one male taken by Carriker on March 18, 1940, that is unquestionably of this race, here as a migrant. The wing in this bird measures 125.2 and the tail 98.7 mm. The wing and tail feathers have the lighter brown color characteristic of *couchii*, and the other colors agree.

LEGATUS LEUCOPHAIUS VARIEGATUS (Sclater)

Elaenia variegata P. L. Sclater, Proc. Zool. Soc. London, 1856 (Jan. 26, 1857), p. 297 (Córdoba, Veracruz).

From the observations of our two seasons it appears that this flycatcher is not a permanent resident here. I did not record it in 1939 until April 11, when I collected two and saw several more. On April 13 and 15 a number of others were seen in places that I had had under observation since early March without noting this species. The following year Carriker secured four near Hueyapa on April 8, and found them common after that date, both through the lowlands and over the lower slopes of the Sierra de Tuxtla. When first found in April, the sexual organs showed activity. The evidence is rather definite that they had come into this area to breed.

They are quiet birds of slow movement, found usually among the upper branches of the trees. In pasture areas they are often at low elevations, as many of the trees are small, but in open forests they may be high overhead. They prefer open growth. At times they rest upright, turning the head from side to side, and then suggest cedar waxwings. Again, they incline forward so that with their rather heavy bodies, they resemble finches. The song is a double-noted sibilant whistle that may be represented by the syllables *whee–ces*.

MYIODYNASTES LUTEIVENTRIS LUTEIVENTRIS Sclater

Myiodynastes luteiventris P. L. Sclater, Proc. Zool. Soc. London, 1859, p. 42 (Orizaba, Mexico).

April 1, 1939, marked the date of arrival of this migrant form at Tres Zapotes, as on that day I saw two and collected an adult male. They were found at the edge of forest in a cut-over area, where they rested rather high in open trees. On April 12 I shot another male from a dead tree in a weed-grown milpa. Both are good examples of the typical race.

MYIODYNASTES MACULATUS INSOLENS Ridgway

Myiodynastes audax insolens Ridgway, Manual of North American birds, 1887, pp. 332, 502 (Mirador, Veracruz, Mexico).

The only specimen is a female, taken at 2,500 feet elevation on Volcán San Martín, April 22, 1940. Carriker found a pair here in a huge tree standing in an old clearing in the forest.

MEGARYNCHUS PITANGUA MEXICANUS (Lafresnaye)

Saurophagus mexicanus Lafresnaye, Rev. Mag. Zool., 1851, p. 473 (Mexico).

These birds were fairly common along the border of woodland and at times in the forest itself, ranging in leafy trees, usually where there was a little shade. Two were taken on March 16 and 27, 1939. On April 7 I recorded one carrying nesting material.

MYIOZETETES SIMILIS TEXENSIS (Giraud)

Muscicapa texensis Giraud, A description of sixteen new species of North American birds, 1841, (p. 5), pl. 1 ("Texas").

The present form is widely distributed through the lowland areas in the open limbs of high tree tops in the forests, and in groves, scattered trees, and shrubbery elsewhere. Carriker recorded its absence in the Sierra de Tuxtla so far as his observations extended. Specimens were taken at Tres Zapotes in 1939 on March 9, 23, and April 11 and 13, and in 1940 on January 19, 25, and February 22. Carriker shot one at El Conejo on February 10 and one at Tlacotalpam on May 16. He says that they were nesting in May and describes the nest as built of dry grass, of large size, and domed with an entrance in the side, like that of *Pitangus*. I found these flycatchers feeding at the drupes of the palo mulato tree.

The name for this race has been one that recently has been under question. Bonaparte in listing a collection of birds from Guatemala [39] had one of these birds which he thought was representative of a species that had been named *Tyrannula superciliosa* by Swainson.[40] Bonaparte therefore listed his Guatemalan specimen as "*Tyrannus superciliosus*, Swains." following the name by a brief description and measurements in Latin. Swainson's species, however, was a different form, somewhat similar in color and size, his name being considered now a synonym of *Conopias trivirgata trivirgata*. Nelson,[41] and later Peters,[42] have considered that the *superciliosus* of Bonaparte is to be accepted as valid, and therefore the name to be used for the race of *Myiozetetes* that has been generally called *texensis*, since

[39] Proc. Zool. Soc. London, 1837 (June 14, 1838), p. 118.
[40] *Tyrannula superciliosa* Swainson, Ornithological drawings, pt. 4, pl. 46, 1836 (Brazil).
[41] Auk, 1900, p. 124.
[42] Bull. Mus. Comp. Zoöl., vol. 69, Oct. 1929, p. 448.

it antedates *texensis* in publication. Hellmayr [43] and Zimmer [44] recently have held that this is incorrect, which seems to me to be the case. Zimmer, in support of his reasoning, cites Article 31 of the International Rules of Zoological Nomenclature, which provides that names based on a mistake in identification are not to be used for the form wrongly identified. It appears to me that Opinion 14 by the Commission also has definite bearing in so far as it deals with the species that it discusses. It is evident that Bonaparte's use of *supercilliosus* was through error in identification of his specimens and that it was Swainson's name that he used through this error.

PITANGUS SULPHURATUS GUATIMALENSIS (Lafresnaye)

Saurophagus Guatimalensis LAFRESNAYE, Rev. Mag. Zool., 1852, p. 462 (Guatemala).

We secured specimens of this noisy, conspicuous bird at Tres Zapotes on March 24 and 31 and April 7, 1939, and January 20 and 25, 1940. Carriker in the latter year obtained examples at Tlacotalpam on February 5 and May 16 and 17. They ranged in open pastures and fields, though in the heat of the day they often entered the woodland. On March 14 I recorded one displaying with raised crest and quivering wings, and on March 17 one was carrying nest material to a crotch 25 feet from the ground in a tree growing in the open near Laguna del Tular. On April 13 I examined a completed nest at the Arroyo Tepanaguasapan, a large, untidy structure of grass and other plant stems, domed and with a large opening in the side through which I could touch the eggs. It was placed 8 feet from the ground in a little tree growing in the open.

In identifying these specimens, I have followed van Rossem's recent treatment of this group,[45] though with some misgivings, as to this procedure. Specimens in the National Museum from Panamá to Honduras are appreciably darker, except that on the Pacific slope from northwestern Costa Rica to western Nicaragua they are a little grayer. Birds from Mexico north of southern Veracruz and Oaxaca are lighter, with a considerable region between these two areas in which individuals of more or less mixed character occur. In the northern group skins from southern Texas and Nuevo León to southern Veracruz have the frontal area more extensively white and are called *texanus*. Specimens from Zacatecas and interior Jalisco south in the region west of Veracruz to Oaxaca are a little darker above and below and are recognized as *derbianus*. Birds of northwestern Mexico from southern Sonora to the coastal area of Nayarit are like *derbianus* but average smaller and are called *palliatus*.

[43] Publ. Field Mus. Nat. Hist., zool. ser., vol. 13, 1927, p. 144.
[44] Amer. Mus. Nov., No. 963, 1937, pp. 20–21.
[45] Trans. San Diego Soc. Nat. Hist., vol. 9, Apr. 30, 1940, pp. 80–84.

The specimens from Tres Zapotes and Tlacotalpam are variously intermediate but seem nearer the *guatimalensis* type in slightly darker color above and below. There is much individual variation in depth of hue, and it must be recognized that as these are birds that live much in the open under an intense sun they are subject to definite fading, a fact that makes comparisons difficult where the differences that may exist are slight at best. The races *guatimalensis* and *palliatus* are smaller when compared to *texanus* and *derbianus*. The alleged differences in size and form of bill in the various races to me are insignificant or not apparent.

MYIARCHUS CRINITUS BOREUS Bangs: Northern Crested Flycatcher

Myiarchus crinitus boreus BANGS, Auk, Apr. 1898, p. 179 (Scituate, Mass.).

Carriker shot the only one obtained on the lower slopes of Cerro de Tuxtla on May 7, a late date for the species.

I heard one calling at the camp at Tres Zapotes on March 19, 1939, and recorded others on March 20, 21, and 22. Whether these were the northern or the southern form is, of course, unknown.

MYIARCHUS CINERASCENS CINERASCENS (Lawrence): Ash-throated Flycatcher

Tyrannula cinerascens LAWRENCE, Ann. Lyc. Nat. Hist. New York, vol. 5, Sept. 1851, p. 121 (western Texas).

The only one secured is a female, shot by Carriker on February 10, 1940, in the sandhills near the coast at El Conejo. Apparently this species is subject to some fading, since this specimen, in fresh plumage, has clearer yellow and gray tones below than skins obtained later in the year in the United States.

MYIARCHUS TYRANNULUS NELSONI Ridgway: Mexican Crested Flycatcher

Myiarchus tyrannulus nelsoni RIDGWAY, U. S. Nat. Mus. Bull. 50, pt. 4, 1907, p. 903 (Altamira, Tamaulipas).

A common species that is represented by the following specimens: Tres Zapotes, March 15, 18, 25, and 27 and April 5, 1939, and March 18, 25, and 27 and May 2, 1940; El Conejo, May 15, 1940. Carriker did not obtain it during winter, while after the middle of March it was common. It appears that it may be migratory, at least in part.

I found these flycatchers in fairly open areas in the forest or along lines of trees left standing at the borders of cultivated fields. The common notes are louder than those of its smaller relative in this area and were more like those of *Myiarchus crinitus*. I heard it give another call that suggested in tone the whistle of the Bartramian sandpiper. The specimen taken on May 2 is decidedly paler below than the others but offers no other peculiarities. It is in well-worn plumage.

MYIARCHUS TUBERCULIFER LAWRENCEII (Giraud)

Muscicapa lawrenceii Giraud, A description of sixteen new species of North American birds, 1841, p. 7, pl. 2, fig. 1 (Nuevo León, Mexico[46]).

Specimens were taken in the vicinity of Tres Zapotes from March 7 to April 5, 1939, and January 19 to March 25, 1940, on Cerro de Tuxtla on May 9, and at El Conejo near the coast on February 10 and 12. Two skins from El Conejo are about typical of *lawrenceii*, the wing in a male measuring 85.9 mm. and in a female 80.8. The rest of the series is definitely on the boundary line toward *connectens* of farther south, there being only one male taken at Tres Zapotes on March 4 that has the wing 85.5. It is possible that this may be a migrant from some point farther to the north. In eight other males the wing ranges from 82.7 to 83.8, while in three others it is 78, 81, and 82 mm. respectively. Two females from Tres Zapotes have the wing 75 and 79.2 mm., while in one from Cerro de Tuxtla it is 79.2 mm. The close approach to typical *connectens* is easily evident.

The *copetona* or *copetoncita* was one of the common birds that ranged both in the forest and along the lines of trees and shrubs bordering the fields and trails. In woodland it was found in more open branches of the tree tops. Individuals came constantly to the small trees bordering our campsite. By March 24 the breeding season was near, as the birds became more vociferous, and on April 5 I shot a male in breeding condition at the Cerro Nestepe. The ordinary call was a high-pitched *whee-ee-ee*, and I heard them also giving a song of varied notes. Carriker found them ranging to 2,000 feet on the Cerro de Tuxtla.

EMPIDONAX FLAVIVENTRIS (Baird and Baird): Yellow-bellied Flycatcher

Tyrannula flaviventris W. M. Baird and S. F. Baird, Proc. Acad. Nat. Sci. Philadelphia, vol. 1, Sept. 18, 1843, p. 283 (Carlisle, Pa.).

Six specimens were shot near Tres Zapotes on March 7, 16, and 17, April 10, 1939, and March 3 and April 8, 1940. They were found low down at the borders of thickets, in open woods, and occasionally in heavy forest.

EMPIDONAX TRAILLII TRAILLII (Audubon): Traill's Flycatcher

Muscicapa Traillii Audubon, Birds of America, folio ed., vol. 1, 1828, pl. 45 (prairie lands of the Arkansas River).

Carriker shot a late migrant male in a clump of shrubbery at El Conejo May 15.

[46] Designated by Miller and Griscom, Amer. Mus. Nov., No. 159, 1925, p. 7.

EMPIDONAX MINIMUS (Baird and Baird): Least Flycatcher

Tyrannula minima W. M. Baird and S. F. Baird, Proc. Acad. Nat. Sci. Philadelphia, vol. 1, Sept. 18, 1843, p. 284 (Carlisle, Pa.).

This is the most common of the flycatchers from the north, specimens having been taken as follows: Near Tres Zapotes, March 17, 20, 23, 28, and 31, and April 3 and 11, 1939, and January 18 and 19, March 14, and 27, and April 6 and 11, 1940; near Tlacotalpam, February 15. Specimens in full molt were shot on March 28 and April 3 and 8. These flycatchers were found usually in quiet spots out of the wind in the shelter of thickets and at the edge of forest. All were silent.

EMPIDONAX FLAVESCENS IMPERTURBATUS Wetmore

Empidonax flavescens imperturbatus Wetmore, Auk, vol. 59, Apr. 1942, p. 267 (Volcán San Martín, Sierra de Tuxtla, Veracruz, Mexico).

Carriker found this flycatcher fairly common in the smaller trees and undergrowth in the virgin forest on Volcán San Martín, where it ranged from 3,000 feet across the summit. It was quiet and rather shy. Four specimens were taken on April 16, 17, and 18, including two males and two females. This mountain marks the northern outpost for the species which has not been known before north of Chiapas.

EMPIDONAX ALBIGULARIS AXILLARIS Ridgway

Empidonax axillaris Ridgway, in Baird, Brewer, and Ridgway, History of North American birds, vol. 2, Jan. 1874, p. 363 (Orizaba, Veracruz).

The only specimen is a male taken by Carriker near Tlacotalpam on February 20, 1940. It was found at the border of a clump of thorn trees in a pasture north of the town and was the only one seen. This bird has the following measurements: Wing 62.0, tail 55, culmen from base 13.4, tarsus 16 mm. It is marked by the buffy brown of the under wing coverts, edge of the wing, and tibia, differing in this respect from other species of the genus found here.[47]

MYIOBIUS SULPHUREIPYGIUS SULPHUREIPYGIUS (Sclater)

Tyrannula sulphureipygia P. L. Sclater, Proc. Zool. Soc. London, 1856 (Jan. 26, 1857), p. 296 (Córdoba, Veracruz).

Carriker found these interesting birds common on the lower slopes of Cerro de Tuxtla below 1,200 feet, more abundantly below 800 feet. They ranged in undergrowth and in the smaller forest trees, often in company with the bands of little forest birds so common in the American tropics. He secured specimens on March 11 and 29, April 9, and May 6 and 7. He did not record it on Volcán San Martín.

[47] For the latest treatment of this species, see Moore, R. T., Auk, 1940, pp. 379–383.

ONYCHORHYNCHUS MEXICANUS MEXICANUS (Sclater)

Muscivora mexicana P. L. Sclater, Proc. Zool. Soc. London, 1856 (Jan. 27, 1857), p. 295 (Córdoba, Veracruz).

These interesting flycatchers are inhabitants of the lower levels in densely shaded woodland where the wet forest floor is open. My first one I found on March 7, 1939, resting on an open perch in the dark shadow of a dense thicket in heavy monte on low wet ground, where it appeared only as a silhouette, though I recognized it immediately from the shape of the crest. On April 7 at the Arroyo Corredor I heard a clear, rather plaintive whistle of several notes and imitated it, and one of these birds came instantly to a perch before me 20 feet from the ground. I saw others in this same region, and on April 12 secured a pair. A male in flight suddenly hovered with rapidly beating wings while the crest was spread and thrown forward. It then whirled around and alighted. The birds decoyed readily to an imitation of their calls and evidently were pairing. Carriker shot one on January 22, 1940. None of the natives knew this bird in life.

PLATYRINCHUS CANCROMINUS Sclater and Salvin

Platyrhynchus cancrominus Sclater and Salvin, Proc. Zool. Soc. London, 1860, p. 299 (Choctum, Vera Paz, Guatemala).

Near Tres Zapotes this is a common resident species, so that we secured a good series from January to May. Carriker observed a few over the slopes of Cerro de Tuxtla, where it ranged to 1,500 feet elevation, taking specimens on May 6 and 9, 1940. In March and April I found them in pairs, low down near the ground, in bushes beneath the heaviest forest growths, where light was dim and shadows heavy. As the birds were quiet, only occasionally hopping through the twigs, there is little doubt that they were often overlooked. I heard explosive, petulant notes from them, and one, on March 29, fluttered its wings while calling. Carriker recorded that the nest was a tiny cup set in an upright fork 3 to 5 feet from the ground.

TOLMOMYIAS SULPHURESCENS CINEREICEPS (Sclater)

Cyclorhynchus cinereiceps P. L. Sclater, Ibis, 1859, p. 443 (Oaxaca, Mexico).

Near Tres Zapotes I shot one on March 11, 1939, and Carriker obtained others here on February 23 and April 26, 1940, as well as one on the lower slopes of Cerro de Tuxtla May 7. The characteristic nest, made of blackish, fibrous rootlets suspended at the end of a slender branch was not uncommon, but the birds were hard to find. They ranged usually among the lower limbs in gallery forest, or less often in low, denser second growth.

The four specimens listed above, with two others in the Fish and Wildlife Service collection from Santa Lucrecia, Veracruz, average

slightly darker gray on the foreneck and upper breast than specimens from Oaxaca southward into Costa Rica.

TODIROSTRUM CINEREUM FINITIMUM Bangs

Todirostrum cinereum finitimum Bangs, Proc. Biol. Soc. Washington, vol. 17, May 18, 1904, p. 114 (San Juan Bautista, Tabasco, Mexico).

The six specimens were taken as follows: Tres Zapotes, April 11 and 13, 1939, January 18, 1940; Tlacotalpam, February 5, 7, and 16, 1940. Carriker saw it at El Conejo. It was found in thickets and low trees in the pastures and the borders of groves in masses of creepers where it worked actively with much flirting of the slender tail. Though rather rare at Tres Zapotes, it was common in the dense thorny scrub around Tlacotalpam. Two from the latter point are partially albino, one having a patch of white feathers on the posterior part of the crown, and the others the whole back of the head extensively white, with a large yellowish white patch in the center of the back.

TODIROSTRUM SYLVIA SCHISTACEICEPS Sclater

Todirostrum schistaceiceps P. L. Sclater, Ibis, 1859, p. 444 (State of Oaxaca, Mexico).

Seven specimens were taken near Tres Zapotes on March 21, 25, and 30, 1939, and January 29, 1940. They were fairly common, though because of their tiny size they were difficult to see, and had it not been that I soon learned their calls I would have considered them rare. They ranged in tangles of vines and bushes in dense monte, often in company with *Oncostoma cinereigulare*, and usually when I succeeded in seeing them they were within a few feet of me. At any distance their tiny forms disappeared behind the leaves. They hopped about a great deal or fluttered short distances, ranging from near the ground to an elevation of 15 feet or so. The call, uttered in a nasal tone, was somewhat like that of *Oncostoma* but was quite characteristic.

ONCOSTOMA CINEREIGULARE (Sclater)

Todirostrum cinereigulare P. L. Sclater, Proc. Zool. Soc. London, 1856 (Jan. 26, 1857), p. 295 (Córdoba, Veracruz).

This tiny flycatcher was fairly common near Tres Zapotes, so that it is represented by a small series taken from January 22 to April 1. Carriker secured two on Cerro de Tuxtla, one near the base of the mountain on April 3 and one at 1,500 feet on April 9. They range in densely shaded thickets and in heavy undergrowth in the forest, keeping always low down where they hop or flutter about or remain

motionless for considerable periods. They are so small and live in such obscure light that they are seen only by chance. In fact, they are usually found through their low, trilling, toadlike calls. I heard them often when I could not find them.

Examination of a good series substantiates what I have said elsewhere [48] with regard to variation in this bird, which, so far as I can see, cannot be divided into geographic races from material now at hand. Hellmayr [49] includes *Oncostoma olivaceum* (Lawrence) as a subspecies of *cinereigulare*, but I believe, with Peters, that it is specifically distinct. We have an excellent series of *olivaceum* from Panamá in which no intergradation is evident, and further have one typical skin of *C. cinereigulare* taken by J. McLeannan that is marked "Lion Hill, near Aspinwall," Lion Hill being the type locality of *olivaceum*. The two apparently occur there in the same general region, with no indication of intergradation. We have four excellent *olivaceum* collected by E. A. Goldman at the type locality.

ELAINEA FLAVOGASTER SUBPAGANA Sclater and Salvin

Elainia subpagana Sclater and Salvin, Ibis, 1860, p. 36 (Dueñas, Guatemala).

The only specimen was taken by Carriker on January 18, 1940, near Tres Zapotes. I saw no elaenias during my work in 1939, a matter that aroused my interest since the region seems well adapted for them.

MYIOPAGIS VIRIDICATA PLACENS (Sclater)

Elainia placens P. L. Sclater, Proc. Zool. Soc. London, May 1859, p. 46 (Córdoba, Veracruz).

Carriker secured specimens at Tres Zapotes on January 19 and March 3, 7, 18, and 26, as well as one at El Conejo on February 10. He found them both in heavy forest and in second growth, usually in the smaller trees or shrubs. They were quiet, but not particularly shy. I did not secure this species in 1939.

CAMPTOSTOMA IMBERBE Sclater: Beardless Flycatcher

Camptostoma imberbe P. L. Sclater, Proc. Zool. Soc. London, Nov. 16, 1857, p. 203 (San Andrés Tuxtla, Veracruz).

On March 19 I saw one working quickly through the open branches of a small tree at camp but did not collect it.

PIPROMORPHNA OLEAGINEA ASSIMILIS (Sclater)

Mionectes assimilis P. L. Sclater, Proc. Zool. Soc. London, May 1859, p. 46 (Córdoba, Veracruz).

On the Sierra de Tuxtla Carriker found this flycatcher fairly common in the undergrowth of the heavy forest, where it rarely ranged

[48] Proc. U. S. Nat. Mus., vol. 89, 1941, p. 555.
[49] Publ. Field Mus. Nat. Hist., zool. ser., vol. 13, pt. 5, 1927, p. 310.

more than 20 feet from the ground. He collected three on Cerro de Tuxtla between 1,000 and 2,500 feet elevation on March 29 and April 3, and two on Volcán San Martín between 2,500 and 3,000 feet on April 16 and 21. These were breeding birds, active and noisy with a loud call note. On January 18 Carriker secured one near camp at Tres Zapotes and another came into one of the houses. This was during a period of cold and heavy storm, and it was believed that they were wanderers from the mountains, as neither of us found them again in the lowlands.

The bill in this series of six specimens averages longer than in others but the bird seems to be one that is variable in this respect, several from Teapa in Tabasco being similar.

Family HIRUNDINIDAE

STELGIDOPTERYX RUFICOLLIS FULVIPENNIS (Sclater)

Cotyle fulvipennis P. L. Sclater, Proc. Zool. Soc. London, 1859, p. 364 (Jalapa, Veracruz).

The only rough-winged swallow collected is an adult female taken on April 3, 1939, at Tres Zapotes, shot as it passed in flight toward the north. Later that same day I saw a band of 30, and on April 10 I noted another little flock. On March 6 and April 15 I recorded swallows of this species at nesting holes in the river bank at Boca San Miguel but did not have opportunity to collect more for specimens. Carriker noted them near Tlacotalpam and at El Conejo.

The one taken has the dark coloration of *fulvipennis* on the dorsal surface and the sides but has only the faintest trace of buff on two or three of the tiny feathers of the throat. It is thus intermediate toward the more northern birds.

Stelgidopteryx ridgwayi, marked by very dark back and sides, I believe to be a distinct species, as it has a decidedly heavier bill than the various forms of the *ruficollis* group.

IRIDOPROCNE BICOLOR (Vieillot): Tree Swallow

Hirundo bicolor Vieillot, Histoire naturelle des oiseaux de l'Amérique septentrionale, vol. 1, 1808, p. 61, pl. 31 (New York).

Carriker found a few over the marshes near Tlacotalpam February 7, 1940, and shot a male.

IRIDOPROCNE ALBILINEA (Lawrence)

Petrochelidon albilinea Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, May 1863, p. 2 (Panamá).

Carriker found a few around the lagoons and near the river at Tlacotalpam, taking a male on February 8, 1940.

Family CORVIDAE

XANTHOURA YNCAS LUXUOSA (Lesson)

Garrulus luxuosus LESSON, Rev. Zool., Apr. 1839, p. 100 (Mexico).

The green jay was noted only in the Sierra de Tuxtla, where Carriker shot a male and saw another bird on May 19 on Cerro de Tuxtla, and secured a pair on April 22 and a male on April 23 on Volcán San Martín, between 2,500 and 3,500 feet elevation. There are specimens in the National Museum taken by Nelson and Goldman at Catemaco on May 5 and at San Andrés Tuxtla on May 10, 1894, and by A. E. Colburn at Paso Nuevo, April 22, 1901.

The seven specimens listed are so definitely intermediate that they are cited under the name *luxuosa* only because there is a very slight preponderance of their characters toward that race. With *luxuosa* they agree in size, including especially the bill and length of wing, and in the restricted amount of white on the forehead. Actually they look very similar to *vivida* with which they agree in brighter, more yellowish coloration of the ventral surface, the under tail coverts especially being yellow with only a slight wash of green. True *vivida*, however, is larger and has more white on the forehead. The southern Veracruz birds thus appear intermediate between the race named *centralis* and its slightly differentiated ally *maya* of van Rossem,[50] which have clear yellow underparts, with little or no green, that color, where present, being confined to the sides, and true *luxuosa* of farther north. The characters found do not warrant separation of the series from the Tuxtla area under a distinct name.

PSILORHINUS MORIO MORIO (Wagler)

Pica Morio WAGLER, Isis, 1829, p. 751 (Veracruz, Mexico).

Called *pepe* universally like the related species, this great jay, marked by its uniform color without the white tips on the tail, ranged everywhere through groves and woodlands around Tres Zapotes. The two species were found often in company and were about equally common. The three skins preserved were taken on March 28 and April 3, 1939, and February 24, 1940. These have the duller coloration of the southern race. Hellmayr, in the reference cited under *P. m. mexicanus*, groups all these jays under the name *morio*. From Nuevo León and Tamaulipas south into Chiapas and Tabasco these birds present an unbroken series, specimens from the north being pale and those from the south dark. Differences between the extreme north and the south are striking, and the distinctions are definitely joined with geographic distribution. It appears to me proper to

[50] Bull. Mus. Comp. Zoöl., vol. 77, Dec. 1934, pp. 395–397.

recognize two forms with the break between them coming somewhere north of the city of Veracruz. Details of range in this area will be decided by more material than now available. The species apparently represents a perfect example to illustrate complete intergradation between two forms.

Possibly there are slight differences in note and habit between the two species of jays found at Tres Zapotes, but if so my period of observation in 1939 was not sufficient to allow me to detect them. It appeared at times that *morio* produced a louder snapping noise than its companion, but of this I was not certain. Both seemed equally inquisitive and vociferous, and both ranged through the same areas. Only in cold, rainy weather were they subdued and still. On such occasions they remained in the thicker trees, coming out to range among the more open growth only between showers and retreating immediately to cover when the downpour was renewed. In the first weeks of my work here the loud and constant calls of the pepes dominated my attention, but in time I became so accustomed to their noise that I often overlooked them. The male shot on March 28 was alone in the forest and scolded me so loudly that it may have had a nest nearby, since it was in breeding condition. The following day I saw one flying about over an open pasture carrying a slender twig in its bill.

The bird taken on March 28 had the breast pouch a little smaller than the individuals of the other species examined and the sac seemed a little thicker walled. This, however, may have been merely individual difference.

The names to be applied to these jays have been discussed recently by van Rossem.[51]

PSILORHINUS MEXICANUS MEXICANUS Rüppell

Psilorhinus mexicanus Rüppell, Museum Senckenbergianum, vol. 2, pt. 2, 1837, p. 189, pl. 11, fig. 2 (Tamaulipas, Mexico).

I shot a male on March 9 and a female bird on April 3, 1939, the latter being prepared as a skeleton. The relationship of the present species, which has the tail with broad white tips, to *Psilorhinus morio* is most interesting and is a subject that will warrant careful study. At Tres Zapotes the two were in about equal number, and it was common to find them feeding and traveling in company. They were rather social and often ranged in little groups of 3 or 4 to 10, though sometimes they were encountered alone. That we did not prepare a series of the present species was due solely to preoccupation with other work, as there was no difficulty whatever in shooting them, so

[51] Bull. Mus. Comp. Zoöl., vol. 77, Dec. 1934, pp. 414–416.

that Hellmayr's comment on this species [52] that there are only 10 or 12 recorded specimens is no criterion of its abundance. I saw dozens of them in life. Further, it appears to me from the observations of my one season that two species are involved, a conclusion that is substantiated by the fact that both *morio* and *mexicanus* show variation in color in different parts of the range. Moreover, the color variations are not correlated in the two types, since according to present treatment *P. m. mexicanus* is found through the area inhabited by the two accepted subspecies of *Psilorhinus morio*. Also, the type with plain tail, *morio*, does not occur south of Chiapas, while two races of *mexicanus* extend through the area from Guatemala to the Almirante region in Panamá.

Under the name of *pepe* these jays are known to every country dweller, as they are vociferous and omnipresent. At our camp the two jays always ushered in the dawn, since at the faintest hint of light in the east, even as early as a few minutes after 4 a. m., scattered individuals came flying out over the pastures calling, while it was still far too dark to see them in the sky. In fact, their querulous, complaining notes were often mingled with the last calls of the goatsuckers (*Nyctidromus*), whose songs had continued throughout the night, long before any of the other daytime birds were astir.

The pepes were the subject of universal complaint among the farmers because of their destruction of corn. When the ears had formed in the fields children or, if there were no children in the family, older people went out at dawn into the milpas where, with shouting and stones cast by hand or from slings, they endeavored to keep the jays, the grackles, and the smaller blackbirds on the move. As I traveled along the trails, jays were often in evidence, calling frequently when they saw me and often coming down within 30 or 40 feet to scold me with jerking tails and wings and much peering and posturing. Occasionally they were shy, but this was unusual, as they were molested little by shooting because of the cost of ammunition.

Often they flew out with a curious hesitant but steady flapping of wings, calling loudly and at the same time producing a curious snapping sound. Sometimes this latter noise was heard when the birds were not calling, and almost on my first day afield here I saw when birds flew overhead a yellow spot appear on the breast, though when at rest this was not visible. In handling my first specimen, I found this spot of color was really a pouch of somewhat thickened skin, located over the junction of the two branches of the furculum. In a fresh-killed bird I could sometimes inflate and deflate this pouch by compressing and releasing the posterior part of the body so that air was driven into it and then withdrawn. The fully inflated sac was some-

[52] Publ. Field Mus. Nat. Hist., zool. ser., vol. 13, pt. 7, 1934, p. 15.

what elongate and was about the size of the terminal joint of my little finger. On dissection, I found that the pouch was connected with the interclavicular air-sac, and by that means with the lungs. The snapping sound described apparently came through its sudden distension with air. The structure was new to me and has been noted by few naturalists.

On inquiry I learned that Dr. George M. Sutton also had observed this curious structure during his work in eastern Mexico, and his notes on it, which he showed me at the time, he recently has elaborated with preserved material in collaboration with Perry W. Gilbert.[53] The earliest published note on the sac that I have found is by Cabot,[54] who saw it in the subspecies found in Yucatán, *Psilorhinus mexicanus vociferus*, though he was wrong in his description of its anatomy. He writes "they have a most peculiar formation in the trachea, being a membranous bag, coming off between the rings, and half way down, and intimately connected with the skin of the neck." It was first described accurately by Crandall,[55] who recorded the sac in *P. m. cyanogenys* in Costa Rica and also observed it in a captive specimen of *P. morio* in the collections of the New York Zoological Society. This bird produced the popping sound regularly. On dissection of this bird after its death Crandall recorded that the sac was a diverticulum from the interclavicular air-sac.

Family TROGLODYTIDAE

HELEODYTES ZONATUS RESTRICTUS Nelson

Heleodytes zonatus restrictus Nelson, Auk, 1901, p. 49 (Frontera, Tabasco).

The series obtained is as follows: Tres Zapotes, March 7 and 15, 1939, February 27, March 3 and 27, and April 5, 1940; Tapacoyan, May 11; below 1,000 feet elevation on Cerro de Tuxtla, May 7. They were fairly common, usually in little groups, but except when calling they were often unnoted, as they kept in heavy cover of dense leaves and tangles of vines. They ranged from the tops of bushes into the taller trees. Rarely they were observed passing with tilting flight between tracts of brush. The croaking, creaking calls are strange and curious, and they are known locally as *carrasquita* from their notes.

The series obtained appears to be intermediate between true *restrictus* of Tabasco and the style of this wren found from Veracruz City northward and westward. It differs from *restrictus* in the smaller amount of spotting and barring on flanks and abdomen but is definitely more heavily marked than birds from farther north. The species is one that is in need of revision, particularly since no type

[53] Condor, 1942, pp. 160–165, figs. 58–60.
[54] Cabot, S., Journ. Boston Soc. Nat. Hist., vol. 4, 1844, p. 465.
[55] Zoologica, vol. 1, No. 18, Sept. 1914, p. 337.

locality has been designated for the typical form so far as I am aware, though several races have been segregated. Assignment of the specimens from Tres Zapotes and vicinity is tentative, as it must be noted that they seem to resemble the form *impudens* described by Bangs and Peters from Oaxaca.

PHEUGOPEDIUS MACULIPECTUS MACULIPECTUS (Lafresnaye)

Thriothorus maculipectus LAFRESNAYE, Rev. Zool., vol. 8, 1845, p. 337 (Veracruz, Mexico[56]).

A good series comes from Tres Zapotes, taken between January 22 and April 11, with one bird from the base of Cerro de Tuxtla, May 7, and three from El Conejo, February 10 and 12 and May 15. There is a further specimen in the National Museum taken at Tlacotalpam on May 28, 1894, by Nelson and Goldman. Carriker encountered it to about 1,000 feet elevation in the Sierra de Tuxtla. This was a common wren throughout the region, ranging indifferently in undergrowth in heavy forest, in second growth, and in clumps of brush scattered through old fields and pastures. It is found usually near the ground. The clear, ringing song, to be represented by the syllables *cho hó cho hó*, repeated several times, was heard daily at camp and during trips into the field, one of the most pleasing bird sounds of the region. As early as March 24 I saw one displaying before another with bill pointing skyward, spread tail and shaking wings. Carriker shot a grown juvenile individual at El Conejo on May 15. This bird has only a very few faint spots on the foreneck. Two adults from this same point have the black spotting reduced in size and in extent over the lower breast, and the dorsal surface slightly paler than other skins in the present series. It is possible that there is a coastal form in this area.

TROGLODYTES AËDON AËDON Vieillot: Eastern House Wren

Troglodytes aëdon VIEILLOT, Histoire naturelle des oiseaux de l'Amérique septentrionale, vol. 2, 1807 (1808 or 1809), p. 52, pl. 107 (New York, N. Y.[57]).

Carriker shot a male of this race of the house wren at Tres Zapotes on January 20, 1940, this being the most southern point at which it has as yet been found.

TROGLODYTES AËDON PARKMANII Audubon: Western House Wren

Troglodytes Parkmanii AUDUBON, Ornithological biography, vol. 5, 1839, p. 310 (near Fort Vancouver, Wash.).

At Tres Zapotes I shot a female on March 8 and a male on April 4. Other house wrens were seen on March 12 and 30, the latter being in song. The race of these last two is uncertain, as the birds were not

[56] Designated by L. Griscom, Proc. New England Zoöl. Club, vol. 12, Apr. 3, 1930, p. 5.
[57] Designated by H. C. Oberholser, Ohio Journ. Sci., vol. 34, Mar. 1934, p. 87.

obtained. The birds were found in weed patches in old fields. The western house wren has been recorded previously only south to Orizaba, so that the two secured mark a southern extension of the winter range.

HENICORHINA LEUCOSTICTA PROSTHELEUCA (Sclater)

Scytalopus prostheleucus P. L. Sclater, Proc. Zool. Soc. London, 1856 (Jan. 26, 1857), p. 290 (Córdoba, Veracruz).

The following are dates on which specimens were taken: Tres Zapotes, March 10, 16, 24, 25, April 6, 1939, January 22, February 24, 1940; Cerro de Tuxtla, March 11, 19, April 3, 1940. They were found in the original stands of heavy forest where shadows were dense and often where it was damp and wet. Carriker recorded them to the summit of Cerro de Tuxtla and to 4,000 feet elevation on Volcán San Martín.

NANNORCHILUS LEUCOGASTER LEUCOGASTER (Gould)

Troglodytes leucogastra Gould, Proc. Zool. Soc. London, 1836 (Feb. 20, 1837), p. 89 (Tamaulipas).

Near Tres Zapotes this was the most common wren, so that we secured a good series between January 22 and April 5. The birds ranged in thickets and second growth, usually near the ground, but occasionally they ascended into the lower tree tops where there was a protective screen of creepers. They were found frequently in pairs, and ordinarily were so tame and curious that they could be called out into sight without much trouble. The clear, sweet song, of surprising volume for so small a bird, was heard daily, and came regularly from thickets about our camp. Their chattering calls greeted me on every journey afield.

Family MIMIDAE

DUMETELLA CAROLINENSIS (Linnaeus): Catbird

Muscicapa carolinensis Linnaeus, Systema naturae, ed. 12, vol. 1, 1766, p. 328 (Virginia).

This is one of the common winter residents among the North American migrants. Carriker recorded them as common on his arrival at Tres Zapotes in January and found them through the hills up to the limit of open country at El Tular on Volcán San Martín. They range along the lines of trees and thickets bordering the milpas and penetrate thickets elsewhere where the light enters. In 1939 I saw several on April 13 on my last day afield.

MIMUS POLYGLOTTOS LEUCOPTERUS (Vigors): Western Mockingbird

Orpheus leucopterus VIGORS, The zoology of Captain Beechey's voyage, 1839, p. 17 (Monterey, Calif.).

In the sand dune area near the coast at El Conejo, Carriker found mockingbirds common, but we did not note them elsewhere in the area that we covered, except that I saw one from the train near La Piedra between Alvarado and Veracruz on April 16, also in the coastal area but farther north. Carriker secured a series of ten birds on February 10 and 12 and May 15. On the last date he observed that they were nesting.

The specimens secured are of more than ordinary interest. Currently it has been held that *Mimus polyglottos* as a species, when compared with *M. gilvus*, is marked by white primary coverts, extensive white on the basal portions of the inner primaries, and by having the outer rectrix white except occasionally when there is a blackish margin on the outer web. In *Mimus gilvus* as a species the primary coverts have been said to be black, the bases of the primaries without white, and the outer rectrix with the base extensively black. Actually the subspecies *Mimus gilvus gracilis* often has considerable white on the inner webs of the primaries at the base. Also, in *Mimus polyglottos polyglottos* an occasional individual has extensive black markings across the center of the outer rectrix. We have two female birds from Hornbeak, Tenn. (No. 351105), and Jacksonville, Fla. (No. 54867), that show this character. A female of *M. p. leucopterus* from Fort Verde, Ariz. (No. 235964), shows the same marking to a less extent. It appears then that the color of the primary coverts is the most definite character separating the two species though here there is occasional black tipping in *polyglottos*. It may be noted that *gilvus* is always grayer and that its bill is somewhat more slender. The two are close but sufficiently different to warrant maintenance as distinct specific groups.

The two species *polyglottos* and *gilvus* meet across the Isthmus of Tehuantepec, where they merit careful study. We have in the National Museum from the city of Tehuantepec a skin of *M. g. gracilis* taken on October 29, 1869, and one of *M. p. leucopterus* on February 12, 1904. Similarly, from Puerto México (Coatzacoalcos), Veracruz, there is a series of *M. g. gracilis* taken on April 13 to 15, 1896, and January 27, 1904, and one *leucopterus* dated January 28, 1904.

At the point of junction through this region the two species apparently hybridize at times. From El Conejo we have one male (No. 360063) with the black tail markings of *gilvus* and the white primary coverts of *polyglottos*, and another of the same sex (No. 360059) that displays a slight tendency in this direction, as the inner web of the

outer rectrix shows some black and the tips of the white primary coverts are definitely tipped with black. Among the specimens from Puerto México (Coatzacoalcos) there is one female (No. 142601) with the tail of *gracilis* and the primary coverts of *leucopterus*, and a second female (No. 142555) with the center of the white outer rectrix mottled with dusky and the primary coverts two-thirds black and one-third white. Another example of this is found in specimens in the National Museum from San Mateo del Mar, Oaxaca, where the three taken on May 16, 1905, are *M. g. gracilis*, and a fourth, a male (No. 142603) shot May 15, 1905, has the primary coverts white except for dark tips, in this showing a character of *polyglottos* though otherwise resembling the other three.

The skins just described all come from the area in which the two species meet; the peculiar specimens offer characters in such combination that I consider them hybrids rather than intergrades, so that *polyglottos* and *gilvus* remain as distinct entities.

Family TURDIDAE

TURDUS MIGRATORIUS MIGRATORIUS Linnaeus: Eastern Robin

Turdus migratorius Linnaeus, Systema naturae, ed. 12, vol. 1, 1766, p. 292 (South Carolina, based on a winter migrant).

On February 28, 1940, Carriker shot a male in a clump of trees in a large pasture near camp, this being the only bird of the species that we found. It is a typical example of *migratorius*, a new record for the country. Darker color above and below, white tail spots, and larger bill distinguish it from *T. m. phillipsi* Bangs.

TURDUS ASSIMILIS LEUCAUCHEN Sclater

Turdus leucauchen P. L. Sclater, Proc. Zool. Soc. London, 1858 (1859), p. 447 (Guatemala).

Carriker found these thrushes on the higher, forested slopes of Sierra de Tuxtla, taking specimens on Cerro de Tuxtla on April 3 and 9 and May 10 and 11 and on Volcán San Martín on April 22 and 23. On Tuxtla they were noted mainly above 1,800 feet, while on San Martín they were found between El Tular and 4,000 feet elevation.

The seven specimens include five males and two females, the latter being distinctly browner above than the other sex. The birds agree fairly well with a series of old trade skins from Guatemala, allowing for discoloration due to age, and are distinctly different from typical *assimilis* of a little farther north in Veracruz. It is of interest to note that this is another species from the Tuxtla range that shows affinity with the mountain areas of Chiapas and other regions to the south, rather than with Orizaba and the other mountains of west-central Veracruz.

TURDUS GRAYI GRAYI Bonaparte

Turdus Grayi Bonaparte, Proc. Zool. Soc. London, 1837 (June 14, 1838), p. 118 (Alta Vera Paz, Guatemala).

Near Tres Zapotes we secured specimens on March 27 and 30, 1939, and March 4 and 14 and May 14, 1940. These birds had the usual habit of tropical thrushes of living in dense undergrowth or in the borders of heavier forests, coming up into the tree tops to sing. The call is a high-pitched *pup pup pup*, an imitation in higher tone of the note of our northern robins, and the somewhat indefinite song is also robinlike but also suggested to me the notes of an oriole. The natives call them *primavera*, as they say that they come in spring. Carriker secured two in the outskirts of Tlacotalpam on February 15 and 16, but he saw no others until early in March. Possibly they may come into the Tres Zapotes region from elsewhere to breed, but it seems more probable that they remain under cover and are overlooked. In April I heard them singing daily near our camp.

One male taken on March 30 at Tres Zapotes is lighter, less brownish, than the others, showing some approach to the coastal race *tamaulipensis*. It is, however, darker on the dorsum and the flanks than the average of that race, and is placed with *grayi*.

MYADESTES UNICOLOR UNICOLOR Sclater

Myiadestes unicolor P. L. Sclater, Proc. Zool. Soc. London, 1856 (Jan. 26, 1857), p. 299 (Córdoba, Veracruz).

Above 2,000 feet on Cerro de Tuxtla Carriker found this to be a common bird. On March 11 he took two specimens, with others on March 13 and 29 and April 3. At his first visit they were in full song, but he thought that actual nesting did not come until April. On Volcán San Martín he secured two on April 20, and considered this the most common bird at the higher altitudes. He recorded many on the rim of the crater where he heard at its best the beautiful song. The species is known as *jilguero* on Tuxtla and as *clarin* on San Martín. There is a female in the National Museum taken by Nelson and Goldman on May 12, 1894, marked "Volcano Tuxtla." The label states that this bird was found with a nest containing two eggs. The latter apparently did not reach the Museum as they are not to be found in the collection now.

HYLOCICHLA MUSTELINA (Gmelin): Wood Thrush

Turdus mustelinus Gmelin, Systema naturae, vol. 1, pt. 2, 1789, p. 817 (New York).

On March 23, 1939, I heard the familiar call of the wood thrush in swampy woodland near the Laguna del Tular and called two into

the open where I could see them. One of these I shot but by mischance destroyed it.

In 1940 Carriker secured one from a boy at Tres Zapotes on January 26 and shot another in heavy forest on March 3. Two more were collected on Cerro de Tuxtla on March 11 and 29 between 1,000 and 2,500 feet elevation.

HYLOCICHLA USTULATA USTULATA (Nuttall): Russet-backed Thrush

Turdus cestulatus [=*ustulatus*] NUTTALL, A manual of the ornithology of the United States and Canada, ed. 2, vol. 1, 1840, pp. 400, 830, and vi (Fort Vancouver, Wash.)

It is a matter of special interest to examine a female taken by Carriker at Tres Zapotes on January 29, 1940.

HYLOCICHLA USTULATA ALMAE Oberholser: Western Olive-backed Thrush

Hylocichla ustulata almae OBERHOLSER, Auk, Oct. 1898, p. 304 (east Humboldt Mountains, Nev.).

Carriker shot a male on April 16, 1940, between 2,500 and 3,500 feet elevation on Volcán San Martín.

CATHARUS MEXICANUS MEXICANUS (Bonaparte)

Malacocychla mexicana BONAPARTE, Compt. Rend. Acad. Sci. Paris, vol. 43, 1856, p. 998 (Jalapa, Veracruz).

Carriker found these birds on the Sierra de Tuxtla, where he secured his first specimen on March 29, 1940, at about 2,000 feet elevation on Cerro de Tuxtla. This individual flushed from the ground in thick underbrush and alighted nearby on the ground. On Volcán San Martín he secured a pair on April 16 between 2,500 and 3,500 feet elevation. They seemed more common here but, as usual, were shy and difficult to secure. They were building nests at this time.

Family SYLVIIDAE

POLIOPTILA CAERULEA CAERULEA (Linnaeus): Blue-gray Gnatcatcher

Motacilla caerulea LINNAEUS, Systema naturae, ed. 12, vol. 1, 1766, p. 337 (Philadelphia, Pa.).

As migrants from the north, we secured specimens of the blue-gray gnatcatcher at Tres Zapotes on March 8, 1939, and January 18 and March 4, 1940. Carriker shot one at Tlacotalpam on February 7, and another at 1,800 feet elevation on Cerro de Tuxtla on March 19. The specimens have the following measurements: Two males, wing 51, 51.4, tail 46.9, 49 mm.; three females, wing 50, 50.2, 51.4, tail 46.2, 48.4, 49.5 mm.

POLIOPTILA CAERULEA DEPPEI van Rossem

Polioptila caerulea deppei VAN ROSSEM, Bull. Mus. Comp. Zoöl., vol. 77, 1934, p. 402 (Río Lagartos, Yucatán).

Four specimens of this resident race were taken at Tres Zapotes on January 20 and 26, March 26, and April 2, 1940. Measurements are as follows: One male, wing 48.5, tail 41.1 mm.; three females, wing 47.9, 48.2, 48.7, tail 46.2, 46.5, 47.2 mm. The difference in size that marks this race actually is little but seems diagnostic. It appears to me also that the gray of the upper surface is slightly lighter than in the average of the northern bird. Carriker noted that the male, taken on April 2, was in breeding condition.

Van Rossem (loc. cit.) has found that the type of Bonaparte's *Culicivora mexicana* described in the Conspectus Generum Avium, vol. 1, 1850, page 316, from Oaxaca is a female of *Polioptila c. caerulea* and has given the resident race of gnatcatcher of the lowlands of southern Mexico the name *deppei*.

RAMPHOCAENUS RUFIVENTRIS RUFIVENTRIS (Bonaparte)

Scolopacinus rufiventris BONAPARTE, Proc. Zool. Soc. London, 1837 (June 14, 1838), p. 119 (San José de Guatemala, Guatemala [58]).

This is a resident species around Tres Zapotes, where we secured specimens on March 10, 11, and 15 and April 1, 1939, and January 26, 29, February 27, 28, and April 11, 1940. The birds were found in dense thickets and masses of vines usually at the border of forest where they remained in dense cover, so that it was difficult to see them except when they were close at hand. Marked by the long, slender bill, they hopped quickly among the twigs, jerking the narrow tail up and down and at times cocking it over the back like a wren. The song, heard frequently in sunny thickets, is a rapid, prolonged trill that rises in tone at the end.

The syrinx is oscinine and in the pterylosis the dorsal tract is definitely interrupted below the median rhomboid.

Family CYCLARHIDAE

CYCLARHIS GUJANENSIS FLAVIVENTRIS Lafresnaye

Cyclaris flaviventris LAFRESNAYE, Rev. Zool., vol. 5, 1842, p. 133 (Santa Cruz= ?Veracruz, Mexico).

The small series was taken near Tres Zapotes on March 18 and 23, 1939, and March 4, 6, and 14 and May 3 and 6, 1940. Carriker did not record these birds until they began to sing in March. In my own observations, attention was drawn to them at the same period by

[58] Designated by van Tyne and Trautman, Occ. Papers Mus. Zool. Univ. Michigan, No. 439, July 1, 1941, p. 10.

their singing, which I recorded at intervals until my departure on April 15. They ranged in leafy cover, sometimes in tree tops projecting above the surrounding growth, and sometimes along thicket lined trails, or in more open trees near the village. They moved along rather quickly and kept under shelter.

Family VIREONIDAE

VIREO GRISEUS GRISEUS (Boddaert): White-eyed Vireo

Tanagra grisea Boddaert, Table des planches enluminéez, 1783, p. 45 (Louisiana).

This familiar bird is a common winter resident in the thickets bordering the milpas about Tres Zapotes. In March I found them singing regularly and for a time it almost seemed that they were on their breeding grounds, but by the end of the month they had begun to decrease in abundance. On April 11, 1939, I noted that they were far less conspicuous, so that by then the majority apparently had moved north. The song was puzzling as it differed somewhat from that given in their breeding grounds, being not so emphatic or loud. Carriker found them abundant from late January to March, when they disappeared. Our specimens are all of the northern form.

VIREO FLAVOVIRIDIS FLAVOVIRIDIS (Cassin)

Vireosylvia flavoviridis Cassin, Proc. Acad. Nat. Sci. Philadelphia, vol. 5, 1851, p. 152 (San Juan de Nicaragua, Nicaragua).

This bird in 1939 apparently arrived late in its return from its winter home to the Tres Zapotes region, as I found none to the date of my departure on April 15. The following year Carriker secured the first one April 3 on Cerro de Tuxtla, followed by another from Hueyapa April 8. They were common on Tuxtla, where additional specimens were taken April 9 and May 4, and were found in smaller numbers in the lowlands. Carriker shot one at El Conejo on May 15 and one at Tlacotalpam on May 17.

Vireo flavoviridis differs from *Vireo olivaceus* in the distinctly yellowish-green sides and under tail-coverts, so that the two may be distinguished at a glance. The yellowish-green color is as evident in very young *flavoviridis* in full juvenal plumage as it is in adults. In *Vireo olivaceus*, adult and juvenal, there is never more than a trace of this brighter color, and where present this is duller, more greenish, perceptible only on close scrutiny. I have examined considerable series of both birds without finding indication of intergradation, so that I am forced to conclude that the two are specifically distinct in spite of current treatment of them where *flavoviridis* has been listed as a geographic race of *olivaceus*.

Vireo flavoviridis hypoleucus van Rossem and Hachisuka[59] is a race of *flavoviridis* marked by duller green above, and slightly paler, less greenish sides, and is in no sense an intergrade toward *olivaceus*. Nor is there any indication of intergradation in a series of *flavoviridis* that I have seen from Tamaulipas.

Van Rossem[60] has suggested that the type locality of *flavoviridis*, named by Cassin from specimens from Panamá and from San Juan de Nicaragua should be placed in "western Nicaragua." It seems better, however, to accept the more definite designation of Zimmer[61] of San Juan de Nicaragua, since that is one of the places from which Cassin had material. Examination of the good series in the National Museum upholds Zimmer's decision that the supposed southern race *insulanus* named by Bangs is inseparable from *flavoviridis*.

VIREO FLAVIFRONS Vieillot: Yellow-throated Vireo

Vireo flavifrons VIEILLOT, Histoire naturelle des oiseaux de l'Amérique septentrionale, vol. 1, 1807 (1808), p. 85, pl. 54 (eastern United States).

Carriker collected a male at Tres Zapotes on February 24, 1940.

HYLOPHILUS OCHRACEICEPS OCHRACEICEPS Sclater

Hylophilus ochraceiceps P. L. SCLATER, Proc. Zool. Soc. London, 1859 (Feb. 1860), p. 375 (Playa Vicente, Oaxaca).

On April 12, 1939, I found a pair working quickly through the denser undergrowth in heavy forest at Arroyo Corredor. Carriker secured two here on April 1 and 6, 1940. In the Sierra de Tuxtla he found them more common, taking specimens on Cerro de Tuxtla on March 23, April 9, and May 7 and 11 and on Volcán San Martín on April 16 and 23. They ranged to 3,000 feet elevation.

HYLOPHILUS DECURTATUS DECURTATUS (Bonaparte)

Sylvicola decurtata BONAPARTE, Proc. Zool. Soc. London, 1837 (June 14, 1838), p. 118 (Guatemala).

This was a common species in forested areas. Our series was taken near Tres Zapotes on April 4, 6, 10, and 12, 1939, and February 23 and 28, March 26 and April 6, 1940; on Cerro de Tuxtla on March 19 and May 9; and at Tapacoyan on May 5, 1940. In the mountains Carriker found them to about 1,500 feet elevation.

I observed them especially in the great forest at Arroyo Corredor and in the swampy woods below the Cerro Chico Zapote. Their calls were low and rather harsh, given with slight emphasis, while the song

[59] *Vireo olivaceus hypoleucus* van Rossem and Hachisuka, Proc. Biol. Soc. Washington, vol. 50, Sept. 30, 1937, p. 159 (San Francisco Canyon, eastern boundary of Sonora, Mexico, lat. 27° N., 1,200 feet elevation).

[60] *Ibid.*, p. 160.

[61] Amer. Mus. Nov., No. 1127, June 26, 1941, p. 2.

may be represented by the syllables *re seek re seek re seek*, reminiscent of that of *Hylophilus aurantiifrons saturata* as I have heard it in northern Venezuela, but lower and less clear in tone. They feed in active fashion through the small leafy twigs of the middle and upper branches, suggesting small warblers in their movements.

The geographic treatment of this bird has varied from its division into three subspecies to its listing as a species without races. The series in the U. S. National Museum indicates clearly that it should be divided. The following is my understanding of the races to be recognized:

Hylophilus decurtatus decurtatus (Bonaparte):

Sylvicola decurtata Bonaparte, Proc. Zool. Soc. London, 1837 (June 14, 1838) p. 118 (Guatemala).

Duller green above and on the sides and under tail-coverts; breast and foreneck more grayish.

Córdoba, Veracruz, to Costa Rica (except lowlands of northern Guanacaste, and Talamanca).

Hylophilus decurtatus pallidus (Dickey and van Rossem):

Pachysylvia decurtata pallida Dickey and van Rossem, Proc. Biol. Soc. Washington, vol. 40, Jan. 8, 1927, p. 4 (Puerto del Triunfo, Department Usulután, El Salvador).

Lighter throughout; crown paler gray, back lighter, more yellowish green; breast and foreneck whiter; sides and under tail-coverts lighter, more yellowish green.

Pacific slope of southern Central America from western El Salvador to northern Guanacaste (Liberia), Costa Rica.

Hylophilus decurtatus pusillus Lawrence:

Hylophilus pusillus Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 323 (Atlantic side, Isthmus of Panamá).

Crown definitely darker; duller green above and on sides, averaging duller than *decurtatus*.

Talamanca, Costa Rica, and Chiriquí through western Panamá to the Canal Zone.

Hylophilus minor and its subspecies *darienensis* have the head green, concolorous with the back, instead of gray as in *decurtatus* in all its races, and are therefore to be held specifically distinct.

Family COEREBIDAE

CYANERPES CYANEUS CARNEIPES (Sclater)

Coereba carneipes P. L. Sclater, Proc. Zool. Soc. London, 1859 (Feb. 1860), p. 376 (Playa Vicente, Oaxaca).

On March 29, 1939, near Tres Zapotes at the border of the low hills back of Laguna Larga, I secured the male of a pair of these honeycreepers as the two birds rested in the breeze in the top of an open-limbed tree that projected above the heavy forest. On April 6 I shot a female from a tall tree in heavy, swampy woodland below the Cerro Chico Zapote. It was interesting to note the elongate, somewhat flattened, and rather heavy body in these birds as compared with *Coereba*, and also the large stomach and the wide diameter of the intestines. It seems not impossible that these two genera should be placed in separate subfamilies. The male mentioned had eaten three drupes as large as medium-sized peas, which were held in the throat. Carriker found these birds fairly abundant over the lower slopes of Cerro de Tuxtla about old clearings and in second growth. He collected specimens on March 19 and May 5, 8, 9, 10, and 11.

Mrs. Hobart M. Smith, when at Finca Juárez in Chiapas, Mexico, during investigations there by Dr. Smith under the Walter Rathbone Bacon Traveling Scholarship, collected for the U. S. National Museum 2 males and 3 females of the blue honey-creeper at the type locality of *Cyanerpes cyaneus striatipectus* Brodkorb.[62] Three females appear to have slightly heavier bills than most *carneipes* seen but are equaled in this by two of those from Tres Zapotes. The color is matched by occasional birds from elsewhere in the range. Two males are not to be distinguished in bill size or color from a considerable series of *carneipes* from Mexico to Panamá. After a prolonged examination of a large series of specimens of *Cyanerpes cyaneus* throughout its entire range, I incline to believe that more material is required to prove that *striatipectus* is definitely distinct in view of the individual variation in this group.

COEREBA FLAVEOLA MEXICANA (Sclater)

Certhiola mexicana P. L. Sclater, Proc. Zool. Soc. London, 1856 (Jan. 26, 1857), p. 286 (southern Mexico).

This bird was rather rare. On March 15, 1939, I found two at a flowering tree near camp and shot a female. I recorded others on March 21 and 29. Carriker in 1940 secured specimens at Tres Zapotes on January 29 and February 27, at between 800 and 1,200 feet elevation on Cerro de Tuxtla on May 4, and at about 3,500 feet on Volcán San Martín on April 16.

The specimen from which Sclater drew his description was without locality but was part of a considerable collection brought by Auguste Sallé from a journey in southern Mexico. The birds were obtained principally near Córdoba in Veracruz, with some from else-

[62] *Cyanerpes cyaneus striatipectus* Brodkorb, Occ. Papers Mus. Zool. Univ. Michigan, No. 369, Apr. 11, 1938, p. 5 (Finca Juárez, Chiapas, altitude 900 meters).

where in the southern part of that province and a few from adjacent Puebla. Should need arise at any time for a more definite type locality for this race of the honey-creeper, it appears quite certain that the type came from near Córdoba.

Family COMPSOTHLYPIDAE

MNIOTILTA VARIA (Linnaeus): Black and White Warbler

Motacilla varia Linnaeus, Systema naturae, ed. 12, vol. 1, 1766, p. 333 (Hispaniola).

In 1939 I noted single birds near Tres Zapotes regularly from March 15 to April 11, taking specimens on March 20 and April 4 and 5. In 1940 Carriker shot one at Tlacotalpam on February 9 and one at El Conejo on May 15.

HELMITHEROS VERMIVORUS (Gmelin): Worm-eating Warbler

Motacilla vermivora Gmelin, Systema naturae, vol. 1, pt. 2, 1789, p. 951 (Philadelphia, Pa.).

Near Tres Zapotes in 1939 I saw one on March 15 and shot one on March 28. The following year Carriker collected specimens on February 23 and 28 and March 7.

VERMIVORUS PINUS (Linnaeus): Blue-winged Warbler

Certhia Pinus Linnaeus, Systema naturae, ed. 12, vol. 1, 1766, p. 187 (Philadelphia, Pa.).

A beautiful male was taken near camp at Tres Zapotes, March 11, 1939.

VERMIVORA PEREGRINA (Wilson): Tennessee Warbler

Sylvia peregrina Wilson, American ornithology, vol. 3, 1811, p. 83, pl. 25, fig. 2 (banks of the Cumberland River in Tennessee).

Carriker shot a female on April 20, 1940, at 5,400 feet elevation on Volcán San Martín.

VERMIVORA CELATA CELATA (Say): Orange-crowned Warbler

Sylvia celatus Say, in Long, Expedition to the Rocky Mountains, vol. 1, 1823, p. 169 (Omaha, Nebr.).

The two obtained were secured at Tlacotalpam on February 9 and Tres Zapotes March 26, 1940.

COMPSOTHLYPIS AMERICANA PUSILLA (Wilson): Northern Parula Warbler

Sylvia pusilla Wilson, American ornithology, vol. 4, 1811, p. 17, pl. 28, fig. 3 (Philadelphia, Pa.).

Though not present in large numbers, as a winter resident and migrant this warbler is not rare around Tres Zapotes. It is found in scattered groves as well as in the forest. In 1939 I recorded it until

March 22, taking specimens on March 7, 13, 17, and 18. Carriker collected it in 1940 on January 20, February 22, and March 27.

The status of the parula warbler as regards its division into subspecies appears to me unsatisfactory at present. The treatment here is in accord with that of the fourth edition of the A. O. U. Check-list.

COMPSOTHLYPIS PITIAYUMI INORNATA (Baird)

Parula inornata BAIRD, Review of American birds, 1864, p. 171 (Choctum, Guatemala).

Though we did not encounter this warbler because of its rarity in the general area, it is of interest to record a male received from A. E. Colburn, taken at Buena Vista, Veracruz, May 18, 1901. This bird while slightly intermediate toward *nigrilora* is decidedly nearer to *inornata*.

DENDROICA PETECHIA RUBIGINOSA (Pallas): Alaska Yellow Warbler

Motacilla rubiginosa PALLAS, Zoographia Rosso-Asiatica, vol. 1, 1811, p. 496 (Kodiak Island, Alaska).

Among the yellow warblers there are three that are identified as the present form distinguished from *D. p. amnicola* by duller, more greenish dorsal color, and in the male by less yellow on the forehead.

On April 6, 1939, I shot an adult female at Tres Zapotes, this bird having nearly completed the molt. Carriker secured a male at Hueyapa in the Tres Zapotes area April 2, 1940, with the molt nearly at an end. He also took a female at El Conejo on May 15, this being an outstanding example of the late date to which some migrants from the far northern parts of North America may linger within the Tropics.

J. W. Aldrich[63] has demonstrated recently that the yellow warblers and golden warblers are conspecific, so that all are to be grouped under the name *petechia*.

DENDROICA PETECHIA AMNICOLA Batchelder: Newfoundland Yellow Warbler

Dendroica aestiva amnicola BATCHELDER, Proc. New England Zoöl. Club., vol. 6, Feb. 6, 1918, p. 82 (Curslet, Newfoundland).

The present form, though not included in the fourth edition of the A. O. U. Check-list (1931), in my opinion is to be recognized. As has been indicated by Oberholser,[64] it is separable from *D. p. rubiginosa* by the more yellowish dorsal surface, with the forehead yellow in the male. The female has the upper surface lighter. It differs from typical *aestiva* by being darker above, with the yellow on the

[63] Auk, 1942, pp. 447–449.

[64] Louisiana Dept. Conservation Bull. 28, 1938, pp. 530–531.

forehead of the male duller and the edgings on the remiges duller. As pointed out by Oberholser, it is not restricted to Newfoundland but extends across Canada to central Alaska. No doubt it is this bird, which must be numerically far more abundant than the Alaska yellow warbler, that has been the basis of part of the records of *D. p. rubiginosa* at various localities in the eastern part of the United States.

Specimens identified as *amnicola* were secured as follows: Tres Zapotes, March 20, 21, 30, and 31 and April 13, 1939, January 17 and March 15, 1940; Tlacotalpam, February 19, 1940. Several of these are in various stages of molt between the first fall plumage and the nuptial dress. Identification of some of these immature individuals is a difficult problem.

Further collecting should reveal others of the eight recognized forms of the *aestiva* group in this region.

DENDROICA MAGNOLIA (Wilson): Magnolia Warbler

Sylvia magnolia Wilson, American ornithology, vol. 3, 1811, p. 63, pl. 23, fig. 2 (Fort Adams, Miss.).

This is the most common of the migrant warblers that come to the Tres Zapotes region. Carriker recorded it in January on his arrival, and in 1939 I found it in numbers until April 13. Carriker secured specimens at Tlacotalpam on February 5 and April 8. Immature males were molting into adult body dress in March. The species was found everywhere in groves and woodland.

DENDROICA CORONATA HOOVERI McGregor: Alaskan Myrtle Warbler

Dendroica coronata hooveri McGregor, Bull. Cooper Orn. Club., vol. 1, 1899, p. 32 (Palo Alto, Calif.).

On March 22, 1939, I shot a myrtle warbler near camp at Tres Zapotes, the only one that I saw in this vicinity. Carriker collected two at Tlacotalpam on February 5 and 8, 1940, reporting that the birds were common in trees and bushes in the marshy lands. On April 20 he secured a female on the summit of Volcán San Martín at 5,400 feet elevation.

These four specimens all belong to the Alaskan form, which is distinctly grayer brown above than the eastern subspecies in the plumage stages of fall, winter, and early spring.

DENDROICA VIRENS VIRENS (Gmelin): Black-throated Green Warbler

Motacilla virens Gmelin, Systema naturae, vol. 1, pt. 2, 1789, p. 985 (Philadelphia, Pa.).

Carriker collected males near Tres Zapotes on March 25 and 27 and on the summit of Volcán San Martín on April 20. The latter was in

company with other migrant warblers. All three are examples of the typical race, marked from *D. v. waynei* by larger bill and brighter dorsal color.

DENDROICA DOMINICA ALBILORA Ridgway: Sycamore Warbler

Dendroica Dominica var. *albilora* Ridgway, Amer. Nat., vol. 1, Oct. 1873, p. 606 (Belize, British Honduras).

In spring migration we secured this bird near Tres Zapotes on March 20, 1939, and March 16 and 25, 1940.

SEIURUS AUROCAPILLUS AUROCAPILLUS (Linnaeus): Ovenbird

Motacilla aurocapilla Linnaeus, Systema naturae, ed. 12, vol. 1, 1766, p. 334 (at sea about 30 miles from Hispaniola).

The ovenbird is rather rare in forested areas as a winter resident and passage migrant. Near Tres Zapotes in 1939 I found one recently dead on March 24, and shot one on April 8. The following year Carriker secured specimens March 3 and April 1, and on February 10 he collected one at El Conejo.

SEIURUS MOTACILLA (Vieillot): Louisiana Water-thrush

Turdus motacilla Vieillot, Histoire naturelle des oiseaux de l'Amérique septentrionale, vol. 2, 1807 (1808?), p. 9, pl. 65 (Kentucky).

Near Tres Zapotes I saw one in swampy woods on March 17 and another March 23. March 25 I recorded several along the Arroyo del Sitio, and shot an adult male that was as fat as any bird that I have ever handled.

SEIURUS NOVEBORACENSIS NOTABILIS Ridgway: Grinnell's Water-thrush

Sciurus naevius notabilis Ridgway, Proc. U. S. Nat. Mus., vol. 3, 1880, p. 12 (Como, Carbon County, Wyo.).

Near Tres Zapotes these birds were common from March 27 to April 13, 1939, two being taken on March 28 and April 13. Carriker in 1940 found them abundant at Tlacotalpam in February and prepared specimens on February 6 and 8. He also shot one at El Tular at 3,200 feet elevation on Volcán San Martín. The five taken are all of the race *notabilis*.

OPORORNIS FORMOSUS (Wilson): Kentucky Warbler

Sylvia formosa Wilson, American ornithology, vol. 3, 1811, p. 85, pl. 25, fig. 3 (Kentucky).

The Kentucky warbler, found in thickets and forest, is more common than the hooded warbler in the region. Our specimens were taken as follows: Near Tres Zapotes, March 21 and 25 and April

8, 1939, and January 19, February 28, and March 4, 1940; between 1,000 and 2,500 feet elevation on Cerro de Tuxtla, April 1, 1940.

OPORORNIS PHILADELPHIA (Wilson): Mourning Warbler

Sylvia Philadelphia WILSON, American ornithology, vol. 2, 1810, p. 101, pl. 14, fig. 6 (within a few miles of Philadelphia, Pa.).

Carriker secured three of these birds, all males, near Tres Zapotes on May 3, and on the lower slopes of Cerro de Tuxtla on May 7 and 10, 1940. Their winter home apparently is farther south, and because of the time of migration they have been missed in Mexico by most collectors. Ridgway [65] knew of no valid records. Recently the National Museum has received another male from A. E. Colburn taken by P. W. Shufeldt in southern Veracruz, but without certain data. The late dates for the Tres Zapotes specimens indicated rapid northward migration for this species.

GEOTHLYPIS TRICHAS TRICHAS (Linnaeus): Maryland Yellowthroat

Turdus trichas LINNAEUS, Systema naturae, ed. 12, vol. 1, 1766, p. 293 (Maryland).

Four specimens assigned to the typical race were secured at Tlacotalpam on February 6, 1940, and near Tres Zapotes on March 21, 1940, and April 11, 1939. These are lighter, less greenish above, and lighter yellow below than the other races secured at this point. All are males, with wing measurements of 51.4, 52, 54, and 54.5 mm.

GEOTHLYPIS TRICHAS BRACHIDACTYLA (Swainson): Northern Yellowthroat

Trichas brachidactylus SWAINSON, Animals in menageries, 1838, p. 295 (northern provinces of the United States).

The four obtained were collected at Tres Zapotes on March 18, 1939, and March 27, 1940, and Tlacotalpam on February 16 and 19, 1940. These are distinguished from *trichas* by more greenish color above and by more extensive yellow below.

GEOTHLYPIS TRICHAS TYPHICOLA Burleigh: Athens Yellowthroat

Geothlypis trichas typhicola BURLEIGH, Proc. Biol. Soc. Washington, vol. 47, Feb. 9, 1934, p. 21 (Athens, Ga.).

The four skins obtained were all secured at Tres Zapotes, January 18, 20, and 29 and March 5, 1940. These are decidedly deeper yellow below, with darker flanks and darker dorsal surface than any of the other yellowthroats secured. Their presence as winter migrants here in southeastern Mexico is of interest in view of the present known range of the subspecies in the southeastern United States. Oberholser [66] has reported *typhicola* as casual in southern Louisiana as a migrant and in winter.

[65] U. S. Nat. Mus. Bull. 50, pt. 2, 1902, p. 629.
[66] Louisiana Dept. Conservation Bull. 28, 1938, p. 561.

Yellowthroats are common as winter visitors to weed grown fields and grassy pastures, though sometimes difficult to see as they keep well under cover. Unless clearly observed at times they are hard to distinguish from the *Chamaethlypis* that frequent the same coverts. The three races of *trichas* identified seem to range together. Our 12 specimens of all include 11 males and 1 female.

CHAMAETHLYPIS POLIOCEPHALA PALPEBRALIS (Ridgway)

Geothlypis (*Chamaethlypis*) *palpebralis* Ridgway, Manual of North American birds, 1887, pp. 526, 592 (Mirador, Veracruz).

This is a resident species, common in the Tres Zapotes region wherever bushes are scattered through the grasslands. They kept under cover ordinarily, flying out occasionally as I passed, or were seen as they sang from the tops of bushes or tall grass stems. The song is a low, rather inconsequential warble of several notes. I had a better view of them at times in crossing these savannas on mule back, as then from the elevation of the saddle I could see about more, and the birds were less wary. They tend always to be inconspicuous and to slip aside. They suggested the yellowthroats of the north in most of their habits.

We secured a series at Tres Zapotes, while Carriker shot one at Tapacoyan and one between 1,000 and 2,000 feet elevation on Cerro de Tuxtla, both on May 5. He collected two more at about 2,500 feet on Volcán San Martín, April 21. All these are typical of the race *palpebralis*.

On comparison of material in the U. S. National Museum it is evident that specimens from near Brownsville, Tex., in the lower Rio Grande Valley, differ from typical *poliocephala* in significantly paler color, with less yellow on the lower surface. They are to be separated therefore as *Chamaethlypis poliocephala ralphi* (Ridgway) [67] in spite of the fact that Ridgway in his last account of the species [68] placed the Texas birds under typical *poliocephala*. With a good series of skins the differences are clearly evident.

ICTERIA VIRENS VIRENS (Linnaeus): Yellow-breasted Chat

Turdus virens Linnaeus, Systema naturae, ed. 10, vol. 1, 1758, p. 171 (South Carolina, 200 or 300 miles from the sea).

Our small series from Tres Zapotes includes birds taken between January 17 and March 10. I recorded them in 1939 until April 9.

Carriker found chats abundant in January but noted some decrease later. They were seen regularly around camp, and occasionally they

[67] *Geothlypis poliocephala ralphi* Ridgway, Proc. U. S. Nat. Mus., vol. 16, Feb. 5, 1894, p. 692 (Brownsville, Tex.).

[68] U. S. Nat. Mus. Bull. 50, pt. 2, 1902, p. 689.

came out into open branches to rest with jerking tail and clucking notes. The habit seemed curious in view of their secretive nature in the north. I observed one at camp with the forehead and an irregular ring around the neck light yellow. On March 10 I saw one driving another through a thicket, possibly through some territorial reaction.

GRANATELLUS SALLAEI SALLAEI (Bonaparte)

Setophaga sallaei "Bp. et Sclater," Bonaparte, Compt. Rend. Acad. Sci. Paris, vol. 42, May 1856, p. 957 (Córdoba, Veracruz).

On March 11, 1939, near Tres Zapotes I took one male of two that were moving about with tails wide spread on twigs and logs above the ground in a wet thicket. Carriker shot another male among small trees in rather open forest toward Tapacoyan on February 24. This species is not common in collections.

WILSONIA CITRINA (Boddaert): Hooded Warbler

Muscicapa Citrina Boddaert, Table des planches enluminéez, 1783, p. 41 (Louisiana).

This species is not uncommon as a winter resident in the lowland forests and thickets where it ranges near the ground. Dates on which we secured specimens are as follows: March 30, 1939, and January 19, February 9 and 23, and March 3 and 18, 1940.

WILSONIA PUSILLA PUSILLA (Wilson): Wilson's Warbler

Muscicapa pusilla Wilson, American ornithology, vol. 3, 1811, p. 103, pl. 26, fig. 4 (southern New Jersey).

One male and two females of the typical race of this warbler were taken at Tres Zapotes on March 4 and 26 and on the summit of Volcán San Martín on April 22.

WILSONIA PUSILLA PILEOLATA (Pallas): Northern Pileolated Warbler

Motacilla pileolata Pallas, Zoographia Rosso-Asiatica, vol. 1, 1811, p. 497 (Kodiak Island, Alaska).

Specimens of the northern pileolated warbler were taken at Tres Zapotes on January 27, February 26, and April 2 and at Tlacotalpam on February 6, 1940. It would appear that this form is a regular winter resident in this area.

WILSONIA PUSILLA CHRYSEOLA Ridgway: Golden Pileolated Warbler

Wilsonia pusilla chryseola Ridgway, U. S. Nat. Mus., Bull. 50, pt. 2, 1902, p. 714 (Red Bluff, Calif.).

The golden pileolated warbler is represented by a female taken on March 8, 1939, and by a male shot on March 26, 1940.

WILSONIA CANADENSIS (Linnaeus): Canada Warbler

Muscicapa canadensis LINNAEUS, Systema naturae, ed. 12, vol. 1, 1776, p. 327 (Canada).

Carriker shot one on the higher slopes of Volcán San Martín on April 16, 1940, and another on Cerro de Tuxtla, May 7. Both are males.

SETOPHAGA RUTICILLA (Linnaeus): American Redstart

Motacilla Ruticilla LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 186 (Virginia).

The redstart was fairly common near Tres Zapotes, where Carriker shot one on January 27, 1940, indicating its presence through the winter. In 1939, through March and until April 10, I recorded the species nearly every day. Carriker saw it in the Sierra de Tuxtla up to 2,000 feet elevation. In one adult male taken the wing spot is small, while in two others it is decidedly more extensive, illustrating the usual variation in this regard.

Redstarts came regularly to small trees in the little clearing in which stood the houses of our camp, so that I noted them constantly from the porch under which I prepared my specimens. On March 19 and 20 one female, marked by ragged feathering, ranged within a space 35 feet long by 20 feet wide around a small group of shrubs and little trees at the border of the clearing mentioned. Once I saw it fly across to another clump of trees to join a flock of passing migrants made up of parula and magnolia warblers, but soon it was back, going over and over its selected area in search for insects. The very limited space that it chose was remarkable, especially since to my eye there was nothing to single out the few square feet of territory that it selected from miles of similar country on all sides. It seemed an indication of rather sedentary habit on the part of one of our birds from the north when in its winter home.

MYIOBORUS MINIATUS MOLOCHINUS Wetmore

Myioborus miniatus molochinus WETMORE, Proc. Biol. Soc. Washington, vol. 55, Aug. 13, 1942, p. 105 (between 3,000 and 4,000 feet elevation on Volcán San Martín, Sierra de Tuxtla, Veracruz, Mexico).

Carriker found this bird above 2,500 feet elevation on Volcán San Martín but did not record it on the Cerro de Tuxtla. It was active and conspicuous in the taller undergrowth and smaller trees of the forest. Male and female were taken on April 16 and other males on April 17 and 23.

When compared with *Myioborus m. miniatus* (Swainson), which is found in the main mountain ranges to the west and northwest, *molochinus* differs in the darker dorsal surface, including the wings and the sides of the head and neck, the brighter brown crown patch, the

brighter red of the breast and abdomen, the less extensive white of the under tail-coverts, and in the length of the tail, which is shorter than the wing instead of the reverse. In three males the average length of the wing is 66.7 and the tail 64.2 mm., and in one female these dimensions are 62.4 and 61.5 mm., respectively.

BASILEUTERUS CULICIVORUS CULICIVORUS (Lichtenstein)

Sylvia culicivora LICHTENSTEIN, Preis-Verzeichniss mexicanischer Vögel, 1830, p. 2 (Jalapa, Veracruz).

Carriker found this warbler to be one of the most common birds on Cerro de Tuxtla, where he secured specimens on March 11, 19, and 29, April 1, 3, and 9, and May 6, 1940. It was found mainly above 1,000 feet elevation, ranging in the undergrowth and lower trees. In the lowlands it is a straggler, as Carriker secured one near Tlacotalpam on February 7 and one at Tres Zapotes on January 26.

BASILEUTERUS BELLI SCITULUS Nelson

Basileuterus belli scitulus NELSON, Auk, 1900, p. 268 (Todos Santos, Huehuetenango, Guatemala).

Carriker secured two males and a female on the higher slopes of Volcán San Martín on April 20 and 22, 1940. They were found from 3,500 feet elevation to near the summit, in undergrowth and the smaller trees of the forest.

These birds are listed here under the name *scitulus* though with more material the birds of Volcán San Martín may prove distinct. They are definitely darker above than *B. b. belli*, agreeing in this with *scitulus*, but appear slightly smaller, the wing in the two males being 56.3 and 57 mm. and in the female 53.2, dimensions that are within the lower limits of the other forms. This is another case where a species from this mountain shows affinity with mountain forms of Chiapas and Guatemala rather than with those of the Mexican tableland proper.

BASILEUTERUS RUFIFRONS SALVINI Cherrie

Basileuterus salvini CHERRIE, Proc. U. S. Nat. Mus., vol. 14, Sept. 4, 1891, p. 342 (Cobán, Vera Paz, Guatemala).

Specimens were obtained at Tres Zapotes, March 24 and 28 and April 6, 1939, and January 20 and April 5 and 8, 1940; Tapacoyan, May 5, 1940; on Cerro de Tuxtla, May 4, 1940; and on Volcán San Martín, April 21, 1940. In the mountains they occurred to 3,000 feet elevation. They range in thickets, keeping well under cover and occasionally venturing out into growths of weeds. On April 6 I shot a breeding pair, and on April 9 I saw two more that were obviously mated.

All these birds have the abdomen partly yellow, this condition ranging from a faint wash to a condition of quite solid color. They

represent definitely the style of coloration recognized under the name *salvini* and are all identified as that race. Variation among them is due probably to intergradation toward *rufifrons*.

Family ICTERIDAE

GYMNOSTINOPS MONTEZUMA (Lesson)

Cacicus Montezuma Lesson, Centurie zoologique, livr. 2, Oct. 1830, p. 33, pl. 7 (Mexico).

Carriker saw a pair near camp at Tres Zapotes late in February 1940, and on March 8, Modesto, his assistant, shot a male near Hueyapa. The species is rare in this area.

AMBLYCERCUS HOLOSERICEUS HOLOSERICEUS (Lichtenstein)

Sturnus holosericeus Lichtenstein, Preis-Verzeichniss mexikanischer Vögel, 1830, p. 1 (Alvarado, Veracruz).

Our series includes specimens from Tres Zapotes, March 8, 10, and 30, 1939, and January 26 and February 23, 1940, and from Tlacotalpam, February 6, 7, 15, and 19. Usually these birds were found in heavy forest, where they were shy and difficult to see. Carriker noted them more commonly at Tlacotalpam in low, tangled woodland around the ponds so numerous there. In March, when the corn ripened, they came into the fields from the surrounding thickets, keeping under cover in the main and not flying in the open like the marauding blackbirds. At any alarm they flew precipitately to heavy cover. Sometimes I found small flocks resting low down in the thickets bordering the milpas, singing musically, but though I heard them near at hand it was difficult to see them. The natives consider them destructive. Because of the light-colored bill they call them *pico de hueso* or *pico cerillo*, cerillo being the common name for light-colored matches made of wax.

TANGAVIUS AENEUS AENEUS (Wagler): Red-eyed Cowbird

Psarocolius aeneus "Licht." Wagler, Isis von Oken, vol. 22, 1829, col. 758 (Laguna, Veracruz, Mexico).

Birds taken by Carriker at Tlacotalpam on February 15 and at Tres Zapotes on March 3 are all in immature dress. On April 8, 1939, I killed three adult males at the latter point and found them in partial molt. Carriker saw the species at Tapacoyan.

Red-eyed cowbirds were found in small flocks, regularly at the village, and also around the lagoons. As the corn matured they spread out through the fields to feed on the grain in company with *Cassidix*, and at times I saw them in such localities in flocks. When the ears were ripened the natives went into the fields to bend or break

the stalks at an abrupt angle below the ears, so that these instead of standing upright were turned down toward the ground and were covered by the stalks above. Whole fields treated in this way presented a curious appearance. The theory was that the ears were thus hidden so that they were protected from damage by birds. Before this, while grain was in the milky stage, men and boys went out at dawn to the fields armed with slings and slingshots, or with clods to be thrown by hand. They stood on small elevated platforms of poles that gave them clear view across the corn, where by shouting and by casting missiles they kept the birds moving and so prevented damage.

On April 12 early in the morning a flock passed traveling north, and on April 14 three bands of 50 to 75 each traveled in the same direction, with their wings making a loud rushing sound. As there had been no indication for some time of morning and evening flight, I was of the opinion that these were migrants bound for the more northern parts of the breeding range. On April 15, on the morning of our departure, I recorded one more group.

The natives called this species *tordo*. Often as they rested in the sun I noted the reddish-brown color of the eyes of these cowbirds.

MOLOTHRUS ATER ATER (Boddaert): Eastern Cowbird

Oriolus ater Boddaert, Table des planches enluminéez, 1783, p. 37 (South Carolina).

The only one recorded is a female taken by Carriker at Tlacotalpam on February 16, 1940. This bird, here as a migrant, is representative of the eastern race, having the following measurements: Wing 101.4, tail 66.5, culmen from base 15, tarsus 26 mm.

CASSIDIX MEXICANUS MEXICANUS (Gmelin)

Corvus mexicanus Gmelin, Systema naturae, vol. 1, pt. 1, 1788, p. 375 (Veracruz, Veracruz, Mexico[69]).

I shot a pair at Tres Zapotes on March 16, 1939, and Carriker secured 3 males and 3 females at Tlacotalpam on February 8, 9, and 16, 1940.

This is one of the conspicuous birds of the region. In Veracruz City I found them in parks and along the boulevards, as well as in the suburbs. In Alvarado they were common and familiar along the waterfront street, and from Tlacotalpam to Boca San Miguel they were seen constantly. During March at Tres Zapotes a number occupied a roost near the village, so that there was regular morning

[69] Designated by G. H. Lowery, Jr., Occ. Papers Mus. Zool. Louisiana State Univ., No. 1, May 4, 1938, p. 4.

and evening flight of little flocks past our camp. By the end of the month they were divided in pairs. On March 17 I saw a female carrying nesting material to a crotch 40 feet from the ground in a tree in the village, and on March 23 a pair was seen at a nest in a palm top at Laguna del Tular. About the houses they were most familiar, especially near the arroyo. While they ranged throughout the fields to feed they were most frequent near water. The natives called them *picho*.

DIVES DIVES DIVES (Lichtenstein)

Icterus Dives LICHTENSTEIN, Preis-Verzeichniss mexicanischer Vögel, 1830, p. 1 (Mexico).

This fairly common species is represented by skins taken at Tres Zapotes on March 24 and 31, 1939, and March 3 and 4 and April 6, 1940. Carriker shot one at Tlacotalpam on February 16, 1940.

Sumichrast's blackbird, while resembling many other blackbirds in its uniform dark coloration, is more like an oriole in habits, as it ranges mainly in trees and thickets and seldom comes down on the ground. It was found in pairs and small flocks, usually in woodland, but in March when corn was ripe I saw them occasionally flying over the fields. One pair ranged among scattered palms in an area of abandoned milpas near camp, where often in the heat of the day I saw them resting on shaded perches, panting with open bills. Near the village I found pairs at the border of open groves, and they sometimes came into dead trees at the edge of woodland. As they moved about the tail was jerked up and down constantly in a decidedly greater arc of movement than in other blackbirds. The song is musical and pleasing.

The contention of Hellmayr[70] that this bird of Central America is conspecific with *Dives warszewiczi* and *D. kalinowskii* of Ecuador and Perú is one that may be accepted but one that should be scrutinized to determine whether it is entirely correct. The first species mentioned is so much smaller in all dimensions that its differences are easily evident as a series of birds is laid out for examination. It is obviously a dwarf member of the group and may possibly be specifically separable. The disparity in size for example is almost as great as that existing between an ordinary rusty blackbird (*Euphagus carolinus*) and a grackle (*Quiscalus*). *Dives kalinowskii* is somewhat larger than the northern bird. It is not impossible that when the three are better known all may prove to be distinct species.

[70] Publ. Field Mus. Nat. Hist., zool. ser., vol. 13, Apr. 12, 1937, pp. 96–99.

ICTERUS GALBULA (Linnaeus): Baltimore Oriole

Coracias Galbula LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 108 (Virginia).

This oriole was not common in 1939. I saw one on March 18, and shot an adult male April 10 at Tres Zapotes. Carriker secured females here in 1940 on January 18 and 25, and an adult male on Cerro de Tuxtla, April 9.

ICTERUS SPURIUS (Linnaeus): Orchard Oriole

Oriolus spurius LINNAEUS, Systema naturae, ed. 12, vol. 1, 1766, p. 162 (South Carolina).

Near Tres Zapotes this oriole was common and was present through the winter, as Carriker secured a male on January 20 and a female on January 26. We took a number of specimens in March and April. In 1939 I noted definite migratory movement among them from March 20 to 22, when they were present in abundance through the thickets and the overgrown abandoned milpas. On March 31 another migration wave passed with the birds everywhere from low brush to the tree tops. On April 6 and 10 they were seen in large numbers sometimes in flocks, and on April 13 they were noted in small loosely formed flocks at the Arroyo Teponaguasapan. I saw them on April 15 on my last day in the field. On the days when they were in migration they were so widespread that it was necessary to scrutinize carefully every bird that I collected to avoid taking orchard orioles that I did not want. They called but I heard none singing.

ICTERUS FUERTESI Chapman

Icterus fuertesi CHAPMAN, Auk, 1911, p. 3, pl. 1 (Paso del Haba, south shore of Río Tamesi, 35 miles northwest of Tampico, Tamaulipas).

Among the orioles secured by Carriker there is a fine adult male of this bird taken at Tlacotalpam, May 17, 1940. This is in full plumage and agrees closely in the light, buffy brown color of the under surface and rump with the plate accompanying the original description. It is, however, definitely larger than the specimens obtained by Dr. Chapman in Tamaulipas, being similar in size to the smaller individuals of *Icterus spurius*. The measurements are as follows: Wing 76, tail 65.6, culmen from base 17.5, tarsus 21.2 mm.

A female collected by Carriker on May 15, 1940, near the coast at El Conejo I have also identified as *fuertesi*. It is in slightly worn plumage and when compared with *Icterus spurius* in similar stage differs in faintly paler hue of the under surface and the rump. Like the male from Tlacotalpam it is larger than the female described by Dr. Chapman from Tamaulipas, as it measures as follows: Wing 72.5,

tail 62.5, culmen from base 17.4, tarsus 21.5 mm. Its dimensions therefore come within those of *spurius*.

These two records seem to indicate a range for this type of oriole extending along the coastal plain from southern Veracruz to southern Tamaulipas. The color difference between *fuertesi* and *spurius* appears analogous to that noted recently by Burleigh in the barn swallow, where he has described as *Hirundo rustica insularis*[71] the birds lightly pigmented with brown that nest on islands along the Gulf coast of the United States from southeastern Louisiana to western Alabama.

ICTERUS PROSTHEMELAS (Strickland)

Xanthornus prosthemelas Strickland, Contributions to ornithology, 1850, p. 120, pl. 62 (Guatemala).

Although this is the rarest of the orioles in this section, we secured several at Tres Zapotes on April 10 and 12, 1939, and February 22, 1940, and at El Conejo on February 12, 1940. I found them in forest trees where these bordered milpas. In flight they appear noticeably longer-tailed in proportion to their size than other species of the genus found here. Four of the seven taken have the greenish-yellow back of what is considered second year dress, while the remaining three have the dorsal surface entirely black.

Hellmayr's thesis[72] that this oriole is specifically related to *Icterus northropi* Allen of Andros, Little Andros, and Abaco Islands in the Bahamas is interesting but is one that requires more consideration before acceptance. Unquestionably the two are closely related, but the Bahaman birds to me seem merely to preserve a coloration that may be more primitive. Proportions are quite similar except that *northropi* has a longer bill and is less richly colored, the yellow being lighter and more greenish, and the black on the breast less extensive.

ICTERUS MESOMELAS MESOMELAS (Wagler)

Psarocolius mesomelas Wagler, Isis von Oken, 1829, col. 755 (Mexico).

Our specimens come from Tres Zapotes, March 11, 23, and 27, 1939, and February 23 and March 14, 1940, and from Tlacotalpam, February 7 and 15, 1940. This bird, known as the *calandria*, a name given to all orioles, is not common. It ranges under cover of leaves and so is easily missed, except when seen in flight. I found it among groves in open pastures, and in the thickets that covered abandoned fields. One came to the clearing at our camp to give a mellow, warbling song, quite different from that of our northern orioles.

[71] *Hirundo rustica insularis* Burleigh, Occ. Papers Mus. Zool. Louisiana State Univ., No. 11, Mar. 4, 1932, p. 179 (Ship Island, 16 miles offshore from Gulfport, Miss.).

[72] Publ. Field Mus. Nat. Hist., zool. ser., vol. 13, pt. 10, Apr. 12, 1937, pp. 115–117.

ICTERUS GULARIS TAMAULIPENSIS Ridgway

Icterus gularis tamaulipensis Ridgway, Proc. Washington Acad. Sci., vol. 3, Apr. 15, 1901, p. 152 (Alta Mira, Tamaulipas).

Taken at Tres Zapotes, March 9 and April 11, 1939, February 24 and March 25, 1940; at Tlacotalpam, February 7 and 19, 1940; and at El Conejo, February 12, 1940.

These birds were found through the tree tops in heavy forest, in the lines of trees bordering fields and streams, and in scattered groves through the pastures. They were the most common of the orioles and were often kept as cage birds. The song is a quick repetition of two or three notes without the clear tone of that of the Baltimore oriole or the troupial, though the alarm calls are like those of the northern orioles. On April 11 I recorded two nests under construction, one placed conspicuously in the top branch of a small tree in a pasture and the other at the end of a branch in a huge tree growing over the arroyo at the village. Both were of the usual purselike, hanging type and were of large size.

This oriole is generally similar to *Icterus mesomelas mesomelas* but is marked by much larger size, more orange-yellow color, and much heavier bill, particularly in the lower mandible.

AGELAIUS PHOENICEUS RICHMONDI Nelson

Agelaius phoeniceus richmondi Nelson, Auk, 1897, p. 58 (Tlacotalpam, Veracruz).

Our excellent series includes two males from Tres Zapotes, April 11, 1939, and a series of males and females from Tlacotalpam, February 5, 7, 9, 19, and 20, 1940. In 1939 near Boca San Miguel I found red-winged blackbirds common on March 6 and April 15. At Tres Zapotes I noted a flock of a hundred along the arroyo at the village, and at the end of the month I located a little colony at Laguna Larga a short distance from town. Here the birds remained in the main in the sedges growing in locations where I could not reach them because of the depth of the mud. Finally on April 11 I shot two adult males that came out to feed on the fruits of a palo mulato on higher ground. Though I heard them singing a typical redwing song, this was not their breeding season, as the sexual organs were not active. Carriker found redwings abundant along the river and through the ponds and marshes at Tlacotalpam.

Our series comes mainly from the type locality of the race at Tlacotalpam, while the two from Tres Zapotes are only a short distance away. The females are obviously different from those of *A. p. megapotamus* from southern Texas and northeastern Mexico, and the males average a little smaller. Measurements of available topotypes of *richmondi* are as follows:

Thirteen males, wing 104.6–116.5 (110.3), tail 74.9–87.2 (82), culmen from base 25.4–27.2 (25.6), tarsus 28.3–30.9 (29.7) mm.

Five females 85.6–92.5 (88.3), tail 63.3–73.3 (66.88), culmen from base 22–23.2 (22.4), tarsus 24.5–26.9 (25.3) mm.

In the National Museum there is a small series of redwings from Montecristo, Tabasco, in the drainage of the Río Usumacinta about 40 miles in an airline farther inland from Palizada, Campeche, type locality of the recently described *A. p. matudae*.[73] As a matter of interest I have checked these against the Tlacotalpam series. Their measurements are as follows:

Three males, wing 104.1, 111.5, 114.4, tail 72.6, 80.7, 84.8, culmen from base 25.1, 25.5, 25.6, tarsus 28, 28.2, 29.8 mm.

Seven females, wing 89.6, 90.9, 92, 92.2, 92.5, 93.2, 93.5, tail 64.7, 64.9, 64.9, 66.3, 66.8, 68.6, 70.9, culmen from base (6 only) 20.6 20.6, 20.6, 20.8, 20.8, 20.9, tarsus 23.2, 24.2, 24.5, 24.7, 24.9, 25.5, 26 mm.

These dimensions coincide so closely with those given for *richmondi* as to indicate no evident difference. The females taken by Nelson and Goldman at Montecristo on May 10, 1900, are in rather more worn plumage than part of the birds from Tlacotalpam, but when compared with the worn specimens from that point they are closely similar in color.

STURNELLA MAGNA MEXICANA Sclater

Sturnella mexicana P. L. Sclater, Ibis, 1861, p. 179 (Jalapa, Veracruz).

In 1939 I found occasional meadowlarks on the little savanna below our camp, taking pairs on April 5 and 10. At this time they were in song and were preparing to nest, their song, call notes, and habits being similar to those of the meadowlark of the eastern United States. They are resident in this vicinity, as Carriker, in 1940, secured specimens on January 25, as well as later on March 6 and 7. He shot two near Tlacotalpam on February 16. The bird is known locally as *frijolera*.

Family THRAUPIDAE

TANAGRA LAUTA LAUTA Bangs and Penard

Tanagra lauta lauta Bangs and Penard, Bull. Mus. Comp. Zoöl., vol. 63, 1919, p. 35 (Guatemala).

Near our camp at Tres Zapotes these euphonias were common. Carriker noted that they were much in evidence in January about clumps of mistletoe in trees in the pastures. His three specimens were secured on January 18 and 20. In March and April, 1939, I shot several, finding them in heavy woods and also in more open

[73] *Agelaius phoeniceus matudae* Brodkorb, Auk, 1940, p. 548 (Palizada, Campeche).

areas near camp. They fed on mistletoe berries mainly, but I also observed them working through leaves and smaller branches in the trees and over the seed heads of palms standing in open fields. Males in partly immature dress taken on March 25 and April 6 had the testes about one-half developed. During April I heard their calls constantly near camp but seldom saw them, as they are small in size and remained quiet without much movement. This seemed to be their nesting season. The flight is somewhat undulating where they are observed in the open. Their chattering calls and whistled notes seemed to be somewhat less musical than those of the West Indian forms with which I have been most familiar.

TANAGRA GOULDI GOULDI (Sclater)

Euphonia Gouldi P. L. Sclater, Proc. Zool. Soc. London, June 6, 1857, p. 66, pl. 124 (Guatemala).

On Cerro de Tuxtla, on March 29, 1940, Carriker found a pair with a band of forest birds and collected the male. This bird and another male that was taken by Nelson and Goldman at Motzorongo, Veracruz, March 3, 1894, the only two available from the extreme northern part of the range, have definitely heavier bills than any others seen. The difference is especially noticeable when comparison is made with Costa Rican specimens.

THRAUPIS EPISCOPUS DIACONUS (Lesson)

Tanagra (*Aglaia*) *diaconus* Lesson, Rev. Zool., June 1842, p. 175 (Realejo, Nicaragua).

This tanager is here not far from its northern limit, and in the region that we worked it occurred sparingly. In 1939 I recorded only a few, securing my first specimen on April 11 from a tree top high above the arroyo at the village, and another at the Arroyo Tepanaguasapan on April 13. Carriker in 1940 shot two at Tres Zapotes on March 25 and May 2 and two at El Conejo on February 12. He saw a few at Tlacotalpam in May.

THRAUPIS ABBAS (Lichtenstein)

Tanagra Abbas Lichtenstein, Preis-Verzeichniss mexicanischer Vögel, 1830, p. 2 (Oaxaca,[74] Mexico).

This is a common forest bird around Tres Zapotes, and is represented by a series taken throughout the period of our work. Usually it is a forest species, being found in little flocks of 6 or 8 that remain fairly close together. In more open areas they come to small trees where these are in fruit. Carriker found a pair at El Conejo on May 15 in a small clump of trees growing in the open at a distance from

[74] See van Rossem, Bull. Mus. Comp. Zoöl., vol. 77, 1934, p. 419.

forest. They are heavy-bodied birds with relatively small heads, often showing the yellow spot in the wing distinctly when in flight.

PHLOGOTHRAUPIS SANGUINOLENTA SANGUINOLENTA (Lesson)

Tanagra (Tachyphonus) sanguinolentus LESSON, Centurie zoologique, 1831, p. 107, pl. 39 (Mexico).

Our series includes birds from Tres Zapotes, March 9 and 16, 1939, February 24, March 15 and 18, and April 1, 1940. Carriker shot one on the lower slopes of Cerro de Tuxtla on May 7. This beautiful tanager is an inhabitant of dense coverts, either in heavy forest or in thickets bordering fields. Its contrasted color pattern of black and red and its light bill attract the eye immediately when it appears. It is shy and may be more common than our records indicate.

PIRANGA RUBRA RUBRA (Linnaeus): Summer Tanager

Fringilla rubra LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 181 (South Carolina).

On March 12, 1939, a fine male came to the grove of little trees at our Tres Zapotes camp, and apparently this same individual was recorded here almost daily until April 2. On April 3 I shot an adult female and on April 6 a particolored male. I recorded the last one on April 8. Carriker shot a male partly in immature dress on Volcán San Martín on April 22, 1940.

PIRANGA LEUCOPTERA LEUCOPTERA Trudeau

Pyranga leucoptera TRUDEAU, Journ. Acad. Nat. Sci. Philadelphia, vol. 8, 1839, p. 160 (Mexico).

Our only record is of two beautiful adult males taken by Carriker on March 23, 1940, on the high, exposed ridge forming the lower summit of Cerro de Tuxtla.

HABIA RUBICA RUBICOÏDES (Lafresnaye)

Saltator rubicoïdes LAFRESNAYE, Rev. Zool., 1844, p. 41 (Mexico).

Around Tres Zapotes Carriker and I found this bird occasionally, sometimes at least mixed with the larger species that occurs in this same area. I shot one on April 4, 1939, from such a mixed flock at Arroyo Corredor. Carriker took others in the Tres Zapotes area on January 17, February 26, and March 3, 1940. On Cerro de Tuxtla he found them common to 2,500 feet and collected a good series. They seemed less numerous on Volcán San Martín. Two males from Tuxtla, taken on April 1 and 9, were in breeding condition but were still in immature dress in which they resemble the female except for slightly darker color. These tanagers range in undergrowth and the smaller trees in the forest, rarely going high above the ground. They travel in little flocks.

HABIA SALVINI SALVINI (Berlepsch)

Phoenicothraupis salvini Berlepsch, Ibis, 1883, p. 487 (Vera Paz, Guatemala).

This is one of the most common tanagers around Tres Zapotes, being represented in our collection by an excellent series. They were found in small flocks in heavy forest, where they ranged through the bushes and lower trees, chattering and calling as they moved along. They were readily decoyed and sometimes came up very close to me. Often I recorded several flocks in the course of a day. On Cerro de Tuxtla Carriker secured specimens on March 13 and May 9, finding them rather rarely to 2,500 feet elevation. He shot one breeding male on May 9 in full immature dress.

Our series agrees with *salvini* in general and shows no approach to *littoralis*. I am not certain that this form and its close relatives are specifically allied to the more southern *gutturalis*. It is interesting that the smaller species, *H. r. rubicoïdes*, with dull-orange crown spot in the female and black-bordered crown spot in the male, was common in the mountains and rare in the lowlands, while with the present bird the reverse was true.

LANIO AURANTIUS Lafresnaye

Lanio Aurantius Lafresnaye, Rev. Zool., 1846, p. 204 (Guatemala).

Carriker found this one of the more abundant birds in the Sierra de Tuxtla, where it ranged in wandering bands, usually high in the trees. He noted that the call note was loud. On Cerro de Tuxtla he took specimens on March 19, 23, and 29, April 3 and 9, and May 4 and 6. He recorded them also on Volcán San Martín. Apparently they may wander somewhat during the colder weather, as he shot specimens at Tres Zapotes on January 26 and February 28.

That *Lanio leucothorax* in its geographic variation includes *melanopygius* and related subspecies is easily evident. But Hellmayr's treatment of all these as conspecific with *Lanio aurantius* has no basis in fact. At present there appear to be no forms of *aurantius*, though it may be noted that females in the present series from Veracruz appear a little duller on the dorsal surface than a few old skins from Guatemala.

EUCOMETIS PENICILLATA PALLIDA Berlepsch

Eucometis spodocephala pallida Berlepsch, Auk, 1888, p. 451 (Yucatán).

On March 31, 1939, Ramón brought one from the village that his brother had killed with a stone. I saw one several times at camp where it came out of a little thicket to snatch berries growing at the border and then slipped back into cover.

There is another specimen in the National Museum collection from Buena Vista, Veracruz, taken on June 4, 1901, received from A. E.

Colburn. These seem to constitute the first published records for this area and mark an extension of the known range. The two specimens, both females, appear very slightly paler yellow below than the few skins I have seen from Yucatán.

CHLOROSPINGUS OPHTHALMICUS OPHTHALMICUS (Du Bus)

Arremon ophthalmicus Du Bus, Bull. Acad. Roy. Sci. Belgique, vol. 14, 1847, p. 106 (Mexico).

Carriker found this species in fair number on Volcán San Martín, where he took four specimens at above 3,500 feet elevation on April 18, 20, and 22. Apparently in the colder period it may wander to the lowlands, as he shot one near our camp at Tres Zapotes on January 17.

Family FRINGILLIDAE

SALTATOR ATRICEPS SUFFUSCUS Wetmore

Saltator atriceps suffuscus Wetmore, Proc. Biol. Soc. Washington, vol. 55, Aug. 13, 1942, p. 106 (Tres Zapotes, Veracruz, Mexico).

This is one of the common resident species around Tres Zapotes that is recorded almost daily. Strangely enough, the birds of this region differ from others of the species throughout its extensive range from Tamaulipas to Panamá in having the throat deep brown, a mark so prominent as to be readily evident in life. I noted this in 1939, and the following season Mr. Carriker devoted definite attention to the matter with the result that we assembled an excellent series, which demonstrates that a well-marked form is concerned.

The peculiarity of the brown throat has been noted rather casually in a few specimens by other authors but for various reasons has been considered an individual variation. P. L. Sclater [75] described *atriceps* as having "a large white (sometimes dark chestnut) guttural patch," remarking further that the "throat-spot, clear white in most specimens, is dark chestnut in some Mexican examples, and in others tinged with rufous." Salvin and Godman [76] wrote that "a rarer form of variation is in the color of the throat, which in some specimens, usually Mexican, is of a rich chestnut instead of white; but intermediate forms occur connecting the two." Ridgway [77] noted of *atriceps* that "this white throat patch is sometimes tinged with tawny or chestnut, and according to Dr. Sclater is even occasionally dark chestnut." I have seen no other statements on this subject.

The color of the throat is easily seen in these birds in life as remarked above, and the brown color is characteristic in the Tres Zapotes area. In our 24 skins from this point there is one male (No. 360403) with the

[75] Catalogue of the birds in the British Museum, vol. 11, 1886, pp. 283–284.
[76] Biologia Centrali-Americana, Aves, vol. 1, Feb. 1884, pp. 326–327.
[77] U. S. Nat. Mus. Bull. 50, pt. 1, 1901, p. 661.

throat completely white, one female (No. 360407) with the throat white except for a slight ticking of brown in two or three feathers on the lower margin of the patch, and one male (No. 360404) with the brown suffusion covering the lower half of the patch with a brownish wash extending beyond. All others have the throat area deep brown. There are in addition in our collections two skins from Paso Nuevo near the Río San Juan, about 35 miles southeast of Tres Zapotes, that are typical *suffuscus*. A skin from the same locality is found in the Museum of Comparative Zoölogy. One in the National Museum from Buena Vista, about 15 miles farther up the valley of the San Juan, has the throat white, as does another without certain locality that probably comes from near this same point. These two, with one from Frontera, Tabasco, are very slightly paler than *atriceps*, indicating intergradation toward the pale breasted *S. a. raptor* of the Yucatán Peninsula. The brown-throated *suffuscus* seemingly is restricted to a region between Tres Zapotes and Paso Nuevo, extending for an undetermined distance toward Catemaco, and so occupies a very limited range that remains to be outlined fully. In the collection of P. W. Shufeldt I have seen five specimens of *atriceps* from La Buenaventura, Acayucan, Veracruz, of which four are typical *atriceps*, while one, a female, has the throat brown, of a paler shade than typical *suffuscus*. It seems to represent an intermediate. In the collection of the Academy of Natural Sciences of Philadelphia there is one old specimen, No. 7816, with the brown throat of *suffuscus*, a female without locality, from the Rivoli (Massena) collection presented by Dr. T. B. Wilson. We have one bird from Motzorongo that has a very slight suffusion of brown on the throat, the quantity being sufficient to be worth remark especially since this locality is near the area of the brown-throated birds.

In summary, in specimens throughout the range of *atriceps* occasional individuals show a little brown, usually in the lower margin of the throat patch. In the Tres Zapotes region this tendency becomes intensified to a point where the brown submerges the normal white color of the throat. The whole anterior part of the body tends to be more heavily pigmented also, since the black breast band averages heavier than in other sections. This latter character, however, is one subject to much individual variation.

These saltators were found spread through woodland as well as along the lines of trees and thickets that border the fields. While they live in heavy cover their presence is usually made known by their loud, strange calls. The usual note is an explosive *chuh chuh*, given with emphasis, and often followed by a loud warbling song of rough notes. If one can imagine the song of a Bell's vireo broadcast through an amplifier the effect can be understood. While found near the ground saltators ranged also through the tree tops.

They were noisy and conspicuous through March and early April, evidently the mating season, and then became more retiring. Sometimes during light fogs early in the morning I saw them resting in the tops of low trees over the trails, but more often noted them moving under cover in the thickets, or flying with bounding flight through the forest, the green back and black head showing conspicuously.

SALTATOR MAXIMUS GIGANTODES Cabanis

Saltator gigantodes CABANIS, Museum Heineanum, vol. 1, Oct. 1851, p. 142 (Mexico).

Our specimens were secured near Tres Zapotes on March 23 and 28, 1939, and January 17, and 20 and March 7, 1940. This was decidedly the rarest of the three kinds of saltators around Tres Zapotes. In general habits it suggested the larger *Saltator atriceps suffuscus*, but lived in heavier forest and kept more closely under cover. Most of the few that I saw were in leafy tree tops where they fed early in the morning. One came to sing in a low tree near the border of our camp clearing where I sat writing, the loud, slurred notes being entirely different from those of the other species, suggesting in part the song of a *Cyclarhis* and in part the notes of an oriole.

SALTATOR COERULESCENS GRANDIS (Lichtenstein)

Tanagra grandis LICHTENSTEIN, Preis-Verzeichniss mexicanischer Vögel, 1830, p. 2 (Jalapa, Veracruz).

Our specimens were taken at Tres Zapotes on March 14, 21, and 25, 1939, and January 25, and March 4, 5, and 8, 1940, and at Tlacotalpam, February 7, 9, 15, and 19, 1940. The species is one of wider general distribution than the other two as is shown by its occurence in the scattered thickets about Tlacotalpam. Carriker noted it also among the dunes at El Conejo.

Near the Tres Zapotes camp these birds were common, being recorded daily, apparently occurring in greater number than *S. a. suffuscus*. They were found in the brush bordering old fields and were shy and retiring. In March and early in April I heard them singing a clear, loud warble suggestive of a grosbeak, with occasional ringing notes that bring to mind the ecstasies of the northern bobolink.

CARYOTHRAUSTES POLIOGASTER POLIOGASTER (Du Bus)

Pitylus poliogaster DU BUS, Bull. Acad. Roy. Sci. Belgique, vol. 14, 1847, p. 105 (Guatemala).

Specimens were secured by Carriker at Tres Zapotes on February 23, and March 3 and 18, and on Cerro de Tuxtla on March 13, and

29, and May 8, 1940. This is a forest bird that ranges high in the trees.

RICHMONDENA CARDINALIS COCCINEA (Ridgway)

Cardinalis virginianus var. *coccineus* Ridgway, Amer. Journ. Sci., Jan., 1873, p. 39 (Mexico).

The cardinal is widely distributed through the shrubbery of old fields, along the borders of forest, and in more open woodland. Among our specimens are two from El Conejo, with a small series from Tres Zapotes, where it ranged into the foothills of the Sierra de Tuxtla. These cardinals, with all the usual mannerisms of this bird in the north, remained under cover in the main except when the males came out to sing in the tree tops, usually early in morning. The nesting period seemed under way by the middle of March, and males then were in full song. The notes resemble those of the northern bird but are given decidedly more slowly.

The bird of this area is definitely *coccinea*, with no evident approach to *littoralis* which has Puerto México (Coatzacoalcos) for its type locality.

HEDYMELES LUDOVICIANUS (Linnaeus): Rose-breasted Grosbeak

Loxia ludoviciana Linnaeus, Systema naturae, ed. 12, vol. 1, 1766, p. 306 (Louisiana).

On March 30, 1939, I saw one in the forest near Tres Zapotes.

GUIRACA CAERULEA INTERFUSA Dwight and Griscom: Western Blue Grosbeak

Guiraca caerulea interfusa Dwight and Griscom, Amer. Mus. Nov., No. 257, Mar. 14, 1927, p. 4 (Fort Lowell, Ariz.).

The single specimen is a male taken in the weeds of an old milpa at Tres Zapotes, March 21, 1939. This bird is molting around the forepart of the head. It is a little small, having the wing 86.8 mm., but has the brighter blue and the paler wing bands of *interfusa*.

CYANOCOMPSA PARELLINA PARELLINA (Bonaparte)

Cyanoloxia parellina Bonaparte, Conspectus generum avium, vol. 1, 1850, p. 502 (Alvarado, Veracruz).

A female was taken by Carriker in heavy forest at about 1,000 feet elevation on the lower slopes of Cerro de Tuxtla, May 9, 1940.

CYANOCOMPSA CYANOIDES CONCRETA (Du Bus)

Cyanoloxia concreta Du Bus, Bull. Acad. Roy. Belgique, vol. 22, 1885, p. 150 (Playa Vicente, Veracruz).

Our specimens were taken at Tres Zapotes, March 16, 1939, and January 26 and March 26, 1940. One comes from about 1,000 feet

elevation on Cerro de Tuxtla, March 29. They were found in heavy undergrowth in forest, sometimes coming out to feed in fairly open growth.

PASSERINA CYANEA (Linnaeus): Indigo Bunting

Tanagra cyanea LINNAEUS, Systema naturae, ed. 12, vol. 1, 1766, p. 315 (South Carolina).

In 1939 I recorded males on March 22 and 25 and April 5, 6, and 10, taking a bird in full plumage on April 10. One shot and destroyed on April 6 was molting. Carriker secured the first one in 1940 on March 25 and another on the following day. Until the middle of April he recorded them frequently. Apparently they winter elsewhere, at least in any considerable number.

PASSERINA CIRIS CIRIS (Linnaeus). Eastern Painted Bunting

Emberiza Ciris LINNAEUS, Systema naturae, ed. 10, vol. 1, 1758, p. 179 (South Carolina).

An adult male was taken at Tres Zapotes by Carriker on March 4, 1940. The bird was found in a brushy locality.

PASSERINA CIRIS PALLIDIOR Mearns: Western Painted Bunting

Passerina ciris pallidior MEARNS, Proc. Biol. Soc. Washington, vol. 24, Oct. 31, 1911, p. 217 (Fort Clark, Kinney County, Tex.).

Our skins include a male taken April 6, 1939, and two females January 23, 1940. The two females are well-marked examples of the western race, characterized by paler coloration and slightly larger size. The male is slightly intermediate but is nearer *pallidior*. The species is rare in this vicinity.

There is no reason to consider that the western race of the painted bunting is migrant only to western Mexico. The two forms are mingled in their winter quarters.

TIARIS OLIVACEA PUSILLA Swainson

Tiaris pusillus SWAINSON, Phil. Mag., June 1827, p. 438 (Temascáltepec and Real del Monte).

Our seven specimens were taken near Tres Zapotes on March 28, 1939, and March 25 and April 11, 1940, and on the lower slopes of Cerro de Tuxtla May 6, 9, and 10, 1940. The species was scarce across the level areas but was more common in the rolling country from Cerro Chico Zapote across to the mountains.

SPOROPHILA TORQUEOLA MORELLETI (Bonaparte)

Spermophila morelleti Bonaparte, Conspectus generum avium, vol. 1, 1850, p. 497 (Petén, Guatemala).

This is one of the common species of the region, represented by a small series. The birds were found in pastures and the borders of cultivation, often in company with *Volatinia jacarina atronitens.* As I passed they flew into the cover of low weeds or thickets and immediately were gone. Though I saw them daily, they are birds easily overlooked because of these retiring habits and their small size. At the beginning of April they were nesting, and I heard them singing a pleasant warbling song. Carriker found them in the Tuxtla range as high up as clearings had been made.

It seems reasonable to place this form as a race of *Sporophila torqueola.*

ORYZOBORUS FUNEREUS Sclater

Oryzoborus funereus P. L. Sclater, Proc. Zool. Soc. London, 1859 (Feb. 1860), p. 378 (Suchapam, Oaxaca).

Carriker shot a male January 25, 1940, in a clump of bushes growing in a marshy spot in the savanna near camp, our only record.

VOLATINIA JACARINA ATRONITENS Todd

Volatinia jacarini atronitens Todd, Proc. Biol. Soc. Washington, vol. 33, Dec. 30, 1920, p. 72 (Campeche, Campeche).

At Tres Zapotes these little birds were common in groups sometimes containing 25 or 30 individuals that ranged through weeds and grassy growth in the fields and little clearings. When startled they flew rapidly into the adjacent thickets and there slipped away so quickly that it was seldom that I flushed one a second time. At camp they came out into the edge of the clearing to feed, moving quickly and nervously and occasionally flitting the wings. They are found across the level lowlands, being common to the base of the mountains. In 1939 I saw them in flocks until my departure on April 15, though males were coming into breeding dress at the end of March. Specimens were taken on March 7, 15, 22, 23, and 24 and April 8, 1939, and March 4, 1940.

ATLAPETES APERTUS Wetmore

Atlapetes apertus Wetmore, Proc. Biol. Soc. Washington, vol. 55, Aug. 13, 1942, p. 108 (Cerro de Tuxtla, Sierra de Tuxtla, Veracruz, Mexico).

Carriker secured five specimens of this fine bird on Cerro de Tuxtla on March 19 and on Volcán San Martín on April 16 and 17, 1940. They were found in the forests to the summit of the mountains, from about 2,500 feet upward, sometimes in pairs that ranged on the ground around rotting logs and fallen trees. Usually they were

rather shy. They seemed to be more common on San Martín than on the neighboring peak of Tuxtla.

This is one of the most remarkable of the discoveries that have come from the careful exploration of the Sierra de Tuxtla and one that offers an especially interesting problem for consideration in connection with Dr. Chapman's detailed and enlightening study of the characters of this group written 20 years ago.[78]

Briefly, *Atlapetes brunnei-nucha brunnei-nucha* has an extended range in the subtropical zone from central Veracruz south through mountainous areas to southern Perú (with a closely allied subspecies *xanthogenys* in the mountains from Caracas to Mérida in Venezuela). The birds from the sections just outlined are marked by a distinct black band across the breast. In the subtropical zone of western Ecuador, in the mountains drained by the Chimbo and Chanchan Rivers, there is found a closely allied form, *Atlapetes inornatus*, without the black breast band but on the dorsal surface closely similar to the ordinary type. And now in southeastern Veracruz we have *Atlapetes apertus*, quite like *brunnei-nucha* above but also lacking the black band across the breast. We have then a widely ranging group of birds, living under definitely restricted zonal conditions, with plain-breasted representatives in isolated areas near either end of the vast range in which the band-breasted type is encountered.

The three forms are generally similar in pattern and style of coloration, being marked by a combination of brown and black in the crown. They differ, however, appreciably from one another as the following will indicate:

Atlapetes brunnei-nucha (Lafresnaye): A black band across the chest, brown of pileum extending back on to the hindneck, bordered laterally by a line of golden brown. (The subspecies *xanthogenys* differs from the typical form only by having a longer, more slender bill, and a whiter under surface.)

Atlapetes inornatus (Sclater and Salvin): Breast without a black band, under surface more extensively white; brown of crown extending back only to back of head, not reaching the hind neck (but bordered as in *brunnei-nucha* by a line of golden-brown).

Atlapetes apertus Wetmore: Breast without black band, brown of pileum extending to hindneck with no lateral line of golden-brown.

From this it may be supposed that in *inornatus* and *apertus* we have the descendents of an ancient species from which the band-breasted *brunnei-nucha* has evolved and become dominant to spread until it has swamped out the parent stock. Of this parent stock we find now two isolated remnants, one in Veracruz and one in Ecuador. Dr. Chapman has suggested the interesting possibility of an origin

[78] Chapman, F. M., Mutation among birds in the genus *Buarremon*. Bull. Amer. Mus. Nat. Hist., vol. 48, Oct. 15, 1923, pp. 243–278, figs. 1–3, pls. 14–17.