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ORNITHOLOGICAL INVESTIGATIONS IN EASTERN GUATEMALA

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DISSERTATION COMMITTEE

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ORNITHOLOGICAL INVESTIGATIONS IN EASTERN GUATEMALA

CHAPTER I

INTRODUCTION

From July 7, 1958, to April 3, 1959, I conducted a field study of the bird life in a portion of eastern Guatemala. The major contribution of the study, additions to our knowledge of Central American bird taxonomy and distribution, is contained in the final section of this report, the species accounts. The introductory chapters emphasize the complexity of the ornithology of Central America by pointing out the remarkable faunal contrast in three contiguous areas.

Guatemala is the westernmost of the Central American countries. It is bordered by México to the west and north, British Honduras to the northeast, Honduras to the southeast, and El Salvador to the south. The Caribbean Sea washes the short eastern coast of the country, while the Pacific Ocean forms over 150 miles of beach to the southwest. Thus is this small republic bordered by four countries and two oceans.

Topographically complex, Guatemala can be divided into three areas. The northern third of the country, the Petén,

a nearly level plain just above sea level, is characterized by a limestone substrate and decreasing rainfall to the north. The central portion, about half of the area of the country, is mountainous. The southern portion, the Pacific coastal plain, is, like the Petén, relatively flat.

In the mountainous central portion of the country three subdivisions are recognizable. Along the southern edge of the highlands a chain of volcanoes parallels the Pacific coast. The highest of these are near the Chiapas, México, border and elevations decrease to the east. There are eight volcanic peaks over two miles above sea level. The eastern highlands, where the study area is located, consist of long mountainous ridges and deep valleys running east-west. The Sierra de las Minas is the major mountain mass of this area. The western half of the Altos, or highlands, is a high plateau with considerable area above 10,000 feet.

The study area, 60 by 100 miles in extent, can be divided into three natural regions, the highlands or Sierra de las Minas, the arid interior, including the Motagua Valley to the south of the highlands and the Plains of Salamá to the west, and the humid tropics, consisting of the Polochíc Valley north of the mountains, the Lake Izabál region and the lower Motagua Valley.

CHAPTER II

THE STUDY AREA

Highlands

It has been said about the Sierra de las Minas that "Few Indians and no white men have ever seen the top." This statement, which is valid even today, gives an indication of the remoteness of the range. Following a plane crash in 1957 in the central part of the mountains, five days by mule were required to reach the survivors.

Eighty miles long, twenty miles wide, and rising almost two miles above sea level, the "Mountain of the Mines" extends from San Jerónimo and Tactic in the Vera Paz highlands east to the village of Izabál. Just south of this lowland village, at 1100 feet elevation, it merges with the Sierra del Mico (a minor range reaching eastward forty miles more before dipping into the Caribbean Sea).

Within the last five years two lumber roads were bulldozed up the south slope to elevations of about 7000 feet. The effect of these lumbering operations on the pine forests is, so far, minor and local. Of greater importance in the destruction of the original vegetation is the sporadic corn

farming of the mountain's scattered human inhabitants. On the north slope only a few foot-trails exist. The best of these, winding over the ridge from Río Hondo to Zarco, is kept open by rum-runners.

Geologically the Sierra de las Minas is made up of Paleozoic and Mesozoic deposits. Along with the Chiapas highlands and the altos of western Guatemala, this ancient elevated area formed an island for the survival of plant and, later, animal genera during periods of inundation and volcanic activity in the remainder of Central America. The higher parts of the range have been available for continuous plant occupation since the end of the Cretaceous. As might be expected, many ancient genera of plants have survived here and a similar situation is apparent in the bird life (a discussion of this is given in a later chapter.)

There is little seasonal change in the climate of the Sierra de las Minas. Temperatures vary with elevation from as high as 100 degrees Fahrenheit in the foothills to below 50 degrees Fahrenheit on the ridges, but there is little change from summer to winter. The northeast trade winds, which sweep in from the Caribbean continuously, deposit as much as 200 inches of rain each year on the windward side of the mountains. On the leeward slopes the rainfall decreases with reducing elevations as the air mass drops into the arid Motagua Valley.

Five collecting stations were utilized in the highlands.

Because of the paucity of villages above 3000 feet, several of the localities are identified by the place name of a lowland town (Usumatlán, San Jerónimo and Salamá, used here in this manner, also appear as collecting stations in the arid interior region).

By far the greatest amount of field work was done on the south slope of the Minas above Usumatlán. At this locality we were able to climb to 9400 feet, the highest peak in the immediate area. From here it was possible to see peaks in Honduras and El Salvador to the south and the highests crests in the Minas (slightly over 10,000 feet) to the north. The highest visible ridges, including the ridge in the collecting area, appeared to be forested with open pine. There is no alpine tundra in eastern Guatemala.

The other four collecting stations in the highlands, all situated along the highway leading around the west end of the Sierra de las Minas, were utilized only in passing.

Highland Collecting Stations

(1) Usumatlán. Field work on the south slope of the Minas above Usumatlán was carried on during the following periods: July 27 to August 7, August 26 to September 9, November 28 to December 24, March 3 to March 8. Four major habitats occurred at elevations from 4000 feet to 9400 feet. Heavy brush, the direct result of recent farming and lumbering operations, extended from 4500 to 6500 feet. Oak-pine,

a brushy woodland covering much of the south slope of the mountains in the rain shadow of the higher ridges, was scattered from 4000 to 8000 feet. Cloud forest is the major forest type on the north side of the range. In the collecting area on the south slope only a local pocket existed supported by edaphic conditions. The forest was located on a nearly level shelf sloping from 6400 to 7000 feet. Poor drainage kept the soil sufficiently moist to support a luxuriant growth. The final habitat is a magnificent pine forest with a grassy understory forming a "park" on top of the Sierra de las Minas from 8000 to 9400 feet.

(2) San Jerónimo. The well-drained slopes of the ridge just south of San Jerónimo support an open pine forest; the top itself is more mesic, and deciduous trees including oaks, sweet gum, and maple dominate. Collecting was carried on from 3500 to 5000 feet on September 29, November 14, and January 10.

(3) Salamá. The high terrain north of Salamá, the capital of the department of Baja Vera Paz, is covered by an extensive open pine woodland from 4500 to 6500 feet. Specimens were taken in this area on September 30, November 13, January 11, February 24, and March 27.

(4) Paruhla. The only collecting in this locality was carried out in a narrow valley, the floor of which is nearly

covered by a marsh several miles long. To the east this marsh drains into the Polochíc Valley and, by way of Lake Izabál and the Río Dulce, reaches the Caribbean Sea. To the west water trickles into the watershed of the Río Negro, then northwest across the Yucatán Peninsula into the Gulf of México. Two habitats received attention here, the marsh and the brushy hillsides, both at 5000 feet. Collecting dates were September 30, November 13, January 11, February 24 and March 27.

(5) Tactic. Only a few records were made along the road near Tactic, mostly in humid forest from 4800 to 5000 feet. Specimens were taken on January 11 and February 24.

Arid Interior

In the Motagua Valley south of the Sierra de las Minas, Guatemala's longest river, the Motagua, flows eastward to the Caribbean Sea. The upper part of the valley has the distinction of being the driest part of the country. This area, plus the broad valley in southern Baja Vera Paz where San Jerónimo and Salamá are located (the "Plains of Salamá"), forms the arid interior section of the study area.

Rainfall in the Motagua Valley is restricted to a definite season lasting from May to August. During this period, late afternoon or evening storms blow layers of rain and dust horizontally across the fields, turning the dust to mud. Usually, however, only a small amount of rain reaches the

ground. The yearly rainfall recorded in this region is as low as six inches. During the summer water again flows down from the higher slopes where rainfall is also being augmented. The streams in the valley fill and the scrubby countryside enjoys a short, green, growing season.

By September only a few wet spots remain in the smaller streams (the larger watercourses flow year-around), and the countryside assumes its normal brown color. Rain may not fall again for months, but limited irrigation eases the farming problems of the natives.

The vegetation, controlled by aridity and sandy soil, consists of opuntias and other cacti plus thorny scrubs of several families, notably Leguminosae. Along the streams a more mesic flora occurs.

The "Plains of Salamá" is an extensive area ringed by steep ridges. The cities of Salamá and San Jerónimo are located in the level floor of the valley at 3000 feet elevation. In climate the area is similar to the upper Motagua. Vegetatively, however, it is somewhat different, in that grasses form the major part of the ground cover.

We collected at ten different localities, but three-fourths of the work was carried out near one station, Usumatlán.

(1) Usumatlán. Three major habitats occurred at 800 feet in the valley floor near Usumatlán. Present and past

farming activities (mostly tomatoes and corn) have created cleared areas and overgrown meadows. The original predominant growth was scrubby woodland. This woodland still extends up the south slope of the Sierra de las Minas where it merges with oak-pine at about 4000 feet. Along the streams grows a rich forest to which many species of birds retire in the heat of mid-day. A limited shorebird habitat is also available. Specimens were taken at Usumatlán during the following periods; July 9 to July 19, August 12 to August 25, September 12, September 25 to September 28, November 22 to November 28, March 2, March 9.

(2) Quirigua. West of the tropical village of Quirigua the oak-pine woodland, characteristic of the highlands, dips down on the south slope of the Minas into the Motagua Valley. Here it forms the transition between the scrubby arid upper Motagua and the rain forests of the Caribbean lowlands. In the valley the pines are small and very widely spaced, dense scrub predominating. Elevations in this habitat range from 400 to 800 feet. Specimens were taken only on January 6 and March 15.

(3) Santiago. Several miles west of Quirigua the valley takes on the almost desert-like aspect found throughout most of its length. Along the highway at 600 feet elevation, we took a few specimens on September 22.

(4) Zacapa. The Motagua Valley widens at Zacapa, forming a plain 10 miles across. In the outskirts of the city I saw my first Scissor-tailed Flycatcher of the expedition perched, appropriately, on the wall of the "futbol" stadium (actually a soccer field). We collected here on July 7 at 800 feet elevation.

(5) Teculután. Located five miles east of our headquarters at Usumatlán, Teculután is one of the larger towns along the new "Route to the Atlantic", a paved road running from Guatemala City to Puerto Barrios, the major Caribbean port. Residents of Teculután term their village the tomato capital of Guatemala. Water for year-around fruit farming is furnished by the Teculután River, which flows from a deep valley in the heart of the Minas. The vegetation of the area is scrubby woodland and farm land. The elevation is 800 feet. Collection dates were September 27 and March 11.

(6) El Rancho. This town is a highway and railway junction. The surrounding countryside is similar to the rest of the valley. Specimens were taken at 1000 feet on September 28.

(7) Progreso. Located on the highway leading to Guatemala City, this town is important in the ornithological history of the arid interior. The vegetation is arid, but not as arid as at El Rancho or Morazón. On July 24 we collected

a few specimens four miles west of Progreso at 2300 feet elevation.

(8) Morazón. Located in a side valley north of the Motagua, this locality is the driest in the study region. Specimens were taken at 1200 feet on September 29, November 14, and January 10.

(9) San Jerónimo. At the southern edge of the Plains of Salamá, this village stands amid irrigated fields and scrubby grassland. We collected here on January 10 at 3000 feet.

(10) Salamá. This small city is centered in the arid plains at 3000 feet. We took specimens five miles north of town on February 24.

Humid Tropics

The Polochíc valley north of the Sierra de las Minas, the region about Lake Izabál, and the lower Motagua Valley east of Quirigua constitute the humid tropics of the study area. Though essentially lowland, this region includes a few high areas (up to 4500 feet) whose biotas are similar to that of the lowland.

The upper Polochíc Valley is a geologically young gorge beginning near Tactic at 5000 feet and dropping rapidly to under 1000 feet at Pancajché. Facing east, the valley intercepts the moist Caribbean winds so that rain is frequent and

heavy. Fog or clouds perpetually shade the forest and the coffee fincas. In this humid environment live avian species which are normally limited to lower elevations.

The nearly level floor of the lower Polochíc Valley is triangular in shape, with Pancajché at the apex. The width of the valley at Pancajché is only a few hundred yards, while at the mouth of the river, at the west end of Lake Izabál, it is over 12 miles wide.

The heaviest rainfall occurs at the lower end of the valley and on the south edge at the foot of the Sierra de las Minas. Consequently, the densest forest is near Lake Izabál, while at La Tinta the vegetation is more open.

The temperature and humidity in the valley are relatively high. Rain falls throughout the year, but with greater frequency in summer than at other seasons. A swamp at Panzós, knee-deep in water in the fall, was dry by January.

Lake Izabál, less than 50 feet above sea level, is 30 miles long and 12 miles wide. Its shores are sparsely populated. Along over 100 miles of shore there are only a few villages and only two of these have over 200 inhabitants. The area near the west and south shore of the lake is predominantly rain forest. Many of the plants in these humid forests range from Veracruz, México, to Colombia. In fact, most of the genera and many of the species of trees occur also in the Brazilian jungles (Steyermark, 1950, 370).

The lowlands of the Motagua Valley are vegetatively

similar to the lower Polochíc Valley, with the addition of a few large patches of grassland. The effects of civilization are more pronounced in the Motagua Valley, however.

Eleven localities served as collecting stations in the humid tropics. Three of these were fincas rather than villages. The major part of the work took place at Panzós, but considerable time was spent at Izabál and Zarco.

(1) Panzós. In this area observations were made over much of the hectarage of two fincas. One, Finca Boca Nueva, covers several square miles of the valley floor from the gravel highway (the only through road in the valley) to the Polochíc River, all at 200 feet elevation. The other, Finca Miramar, lies north of the road and extends up to 2000 feet. Several major habitats can be found in this extensive area. The timetable of work included these dates: October 2 to November 10, January 12 to January 29, February 4 to February 12, March 18 to March 24. Specimens were taken in these areas:

(a) Moist Woodland - the nearest approach to the dense rain forests found farther east, 200 feet.

(b) Cane and Brush - dense and difficult to penetrate, in some cases originating through farming, 200 to 300 feet.

(c) Meadows and Milpas (corn fields) - open areas directly resulting from farming, 200 feet.

(d) Marshes - several sloughs and oxbow lakes near the river. They are generally difficult to reach. 200 feet.

(e) Open Palm Forest - the major habitat on the north slope of the Polochíc Valley. 300 to 2000 feet.

(f) Cafetal - a Spanish word meaning a grove of coffee trees. Because of the necessity of shading the coffee, many of the original forest trees are left standing. In addition, banana trees are usually planted, for both the fruit and additional shade. Thus three layers exist in the cafetal, the upper canopy, 40 to 100 feet above the ground, the banana trees, 10 to 15 feet tall, and the coffee bushes, 3 to 6 feet tall. The complex forms a good habitat for bird life. 1300 to 1800 feet.

(2) Tamahú. Located in the humid gorge of the upper Polochíc River, habitats here include brush and cafetal. 2100 to 4800 feet.

(3) Tucurú. The center of the coffee industry in the upper Polochíc. The finca owners are Spanish speaking Europeans and the workers are Kekchi Indians, who retain their tribal garb and language. 1500 to 2000 feet.

(4) Westfalia. Located on the north slope of the Sierra de las Minas, this coffee finca does not receive as much rainfall as points farther east. Specimens taken here were

labled "Baja Vera Paz, Pancajché, 5 mi. S.E." since the finca is not well known. The habitats included brushy rain forest and cafetal. Collecting was carried out from October 28 to November 10 at elevations from 2000 to 3000 feet.

(5) La Tinta. In the floor of the valley at the dry west end the terrain is dominated by farmland. On October 1, 2, and 27 specimens were taken at 400 feet.

(6) Senahú. Perched in the hills north of the Polochíc Valley, this village is located in an area dominated by the brushy subtropical woodland covering much of the Vera Paz high country. On February 10 we collected at 1500 feet.

(7) Tenejas. On February 12 we stopped briefly at this finca at the foot of the Sierra de las Minas across the valley from Panzós. The elevation is 200 feet.

(8) Zarco. This is a remote finca a dozen miles east of Tenejas that can be reached only by a circuitous route. On leaving the highway six miles southwest of Panzós, the traveller crosses the Polochíc Valley on a railway flatcar powered by a one cylinder engine. The rails for the flatcar, roughly parallel, were of the narrowest gauge I have ever seen. At the river, passengers, baggage, and the one cylinder engine were paddled across in a hollow log to another waiting flatcar. At Finca Tenejas four hoofs replaced the four ancient wheels, and a four hour ride, in which two

rivers were forded, brought us to Zarco. We were told that Margaret was the first white woman to enter this part of the valley.

Rain forest was the dominant growth at Zarco but it has been cut into for the growing of cacao, corn, bananas of several varieties, and other fruits. Though the slopes of the Sierra above the finca were ideal for coffee cultivation, civilization had not progressed that far. Habitats included the banks of the clear, cool Zarco River, the orchards of cacao and other crops, the rain forest, and extensive brushy areas. We stayed in this area from February 13 to February 22, finding rich collecting on the valley floor at 150 feet elevation and up the Minas to 1400 feet.

(9) El Estór. The largest village on Lake Izabál, El Estór is located at the northwest corner of the lake at the east end of the road down the Polochic Valley. It is not a port of any consequence, however, for the coffee grown at the head of the valley is loaded on barges at Panzós and by-passes El Estór as it crosses the lake directly enroute to the sea.

Thirteen miles west of the village, and bordering the highway, is an area of rain forest as dense as any I saw on the expedition. North of the town is a dry oak woodland. The lake shore and a marshy area two miles west of El Estór provided unique habitats. These last two areas could be

reached only with a cayuca (a crude canoe). We visited this part of the humid tropics on October 25, January 29 to February 2, March 25 and March 26. Elevations ranged from 50 to 200 feet.

(10) Izabál. South of the town of Izabál, the low crest of the Sierra de las Minas is covered with rich rain forest. Some of the most productive collecting of the expedition was carried out here in the forest and the brushy edges at 1000 and 1100 feet. Dates of collecting were September 22 to September 25, December 29 to January 5, and March 12 to March 14.

(11) Quirigua. At this station we experienced our only contact with the humid lower Motagua Valley. The habitats given attention were brushy areas along the road and a large meadow, knee-deep in grass and over a mile in extent. We paused here on January 6 and March 14. The elevation is 200 feet.

CHAPTER III

PAST ORNITHOLOGICAL WORK IN THE STUDY AREA

The earliest record of any ornithological work in Guatemala was a publication by Bonaparte in 1837 based upon two weeks of field work by a Colonel Leon. From 1842 on, the flow of trade skins from Indian hunters began. Though many of these skins came from Vera Paz and thus could have been collected within the study area, the custom was not to include definite localities on the labels.

Prévost collected a few specimens in Guatemala before 1850, but he recorded no definite localities. Around 1850 Ure Skinner took specimens at Salamá and in other parts of Vera Paz.

In 1859 Sclater and Salvin summarized all of the early work done in the country in a publication listing 382 species recorded from Yucatán to Honduras. Salvin's field work began in 1857. By way of the Dulce River, he entered Lake Izabál, then crossed the low ridge into the Motagua Valley. In 1859 he collected at San Jerónimo and in other parts of Vera Paz.

In 1861 Salvin and Godman collected at Izabál, Quirigua,

and Zacapa, and in other parts of the Motagua Valley. After work in the southern part of the country, they returned to Salamá and Cobán. In entering or leaving the country Salvin and Godman often traveled by way of Zacapa and Lake Izabál, adding further information to our knowledge of these areas. Various plantation owners and Indian hunters continued to collect after Salvin and Godman had returned to England. In the arid interior Robert Owen continued to take specimens from the hills east of San Jerónimo. Felipe Sierra was the major collector in the Polochíc Valley and in the vicinity of Tactic. (It is worth noting that Federico Sierra, a finca owner in the Polochíc Valley, led us to Nyctibius grandis and other unusual species. Since I did not know of Felipe Sierra until my return, I was unable to ask Don Federico if they were related). In The Ibis for 1866 Salvin reported on this work, listing 612 species for the entire country.

In 1873 Salvin made his last visit to Guatemala, spending a short time at San Jerónimo and Cobán. Three more expeditions, supported financially by Salvin and Godman, took place in 1879-1881, 1889-1890, and 1897 (to the Sierra de las Minas).

In 1906 Ned Dearborn collected in the Caribbean lowlands and at El Rancho. In 1915 Rhoads and Poole worked at Quirigua and Gualán. A. W. Anthony began 4½ years of work in Guatemala in 1924. In my area he collected at Quirigua and Progreso. Wetmore's work in the Guatemalan highlands,

reported in 1941, did not touch on the Sierra de las Minas but some interesting comparisons can be made (see page 27). In 1953 Tashian published the results of his collecting expedition to southeastern Guatemala. He did some work in the Motagua Valley near Teculután.

As can be seen in this brief historical account, most of the past work in my area was limited to the Motagua Valley and, to a lesser extent, the Polochíc Valley. The Sierra de las Minas received attention only once, by W. B. Richardson in July, 1897. This collection, first published upon by Griscom (1935: 807-817), contains 114 species, all from the broad locality "Sierra de las Minas", but including records from the valleys to the north and south. Faced with the problem of having no specific localities and few labelled elevations, Griscom attempted to place each bird on the north or south slope of the mountain, or in the high country, on the basis of known habitat requirements of the species. In his list for the arid tropics (south slope of the Sierra and the Motagua Valley), he included Thyrothorus modestus and Thraupis abbas, which I found common in the humid tropics north of the Minas and completely lacking in the arid interior. Conversely he listed Turdus grayi and Sporophila torqueola for the humid tropics only. My records show these species to be common in both valleys. Minor differences of this sort serve to show the incompleteness of the data available to Griscom and make more regrettable the lack of specif-

ic data on Richardson's material.

During the years preceding the present study, 75 species were collected that were not found on my 1958-1959 expedition. Of these species, 37 are known only from trade skins from Cobán and Vera Paz. The bulk of these skins came from north of the study area though some were taken in the Polochíc Valley and the adjacent highlands. By way of giving a complete picture of the bird life of the study area, these 75 species are listed below. Species names follow Eisenmann (1955).

Podiceps dominicus (Cobán)
Podiceps caspicus (Vera Paz)
Dichromanassa rufescens (Polochíc River)
Hydranassa tricolor (Polochíc River below Panzós)
Nycticorax nycticorax (abundant on the Polochíc River)
Nyctanassa violacea (Polochíc River)
Heterocnus mexicanus (near Quirigua)
Ixobrychus exilis (Cobán)
Botaurus lentiginosus (Cobán, Polochíc River)
Anas discors (Cobán)
Mareca americana (San Jerónimo)
Aythya collaris (Cobán)
Harpagus bidentatus (Vera Paz)
Ictinia misisippiensis (Cobán)
Accipiter bicolor (Vera Paz)
Buteo albicaudatus (San Jerónimo, Progreso)
Buteo brachyurus (Cobán)
Hypomorphnus urubitinga (Cobán, San Jerónimo
Harpyhaliaetus solitarius (San Jerónimo)
Harpia harpyja (Vera Paz, Cobán)
Circus cyaneus (San Jerónimo)
Porzana carolina (Vera Paz, Cobán)
Porphyrula martinica (Vera Paz)
Fulica americana (Cobán)
Eurypyga helias (Vera Paz, mountains near Cobán)
Numenius borealis (San Jerónimo, now extinct)
Limnodromus griseus (San Jerónimo)
Erolia minutilla (near Quirigua)
Burhinus bistriatus (San Jerónimo)

Chlidonias niger (Cobán)
Otus trichopsis (Cobán, upper Motagua Valley)
Otus barbarus (San Jerónimo)
Lophostrix cristata (Vera Paz, Cobán)
Glaucidium minutissimum (Cobán)
Speotyto cunicularia (San Jerónimo, Gualán, El Rancho)
Asio stygius (Cobán)
Chordeiles minor (Cobán)
Panyptila sancti-hieronymi (San Jerónimo)
Campylopterus curvipennis (Cobán)
Colibri delphinae (Cobán)
Hylocharis eliciae (Cobán)
Eupherusa eximia (Cobán)
Heliothrix barroti (Panzós)
Sclerurus mexicanus (Cobán)
Grallaria guatimalensis (Cobán, Vera Paz)
Muscivora tyrannus (Cobán, San Jerónimo)
Tyrannus vociferans (Salamá)
Myiodynastes maculatus (Vera Paz)
Myiarchus cinerascens (near Morazón, El Rancho)
Myiarchus nuttingi (El Rancho, Progreso)
Empidonax virescens (near San Jerónimo)
Camptostoma imberbe (Progreso)
Laniocera rufescens (Cobán)
Pachyramphus major (Cobán)
Riparia riparia (Izabál)
Iridoprocne bicolor (San Jerónimo)
Cyanolyca cucullata (Cobán)
Thryothorus rufalbus (Cobán)
Thryothorus pleurostictus (Gualán)
Salpinctes obsoletus (Salamá)
Turdus migratorius (Cobán)
Myadestes unicolor (Cobán)
Catharus mexicanus (Cobán)
Vireo olivaceus (Cobán)
Vireo flavoviridis (Progreso)
Parula americana (Gualán, Cobán)
Dendroica caerulescens (Cobán)
Dendroica coronata (San Jerónimo, Cobán, near Quirigua)
Granatellus sallaei (Tactic)
Basileuterus culicivorus (Cobán)
Tanagra minuta (Cobán)
Pheucticus chrysopeplus (El Rancho, Progreso)
Cyanocompsa parellina (near Quirigua)
Tiaris olivacea (north of La Tinta)

In the analysis of the avifauna in the chapters that follow, these species are not included because of a paucity of precise localities and altitudes.

CHAPTER IV

ANALYSIS OF THE AVIFAUNA BY REGIONS

In this chapter the distribution within the study area of the 417 migrant and resident species recorded during the 1958-1959 expedition is discussed.

Migratory Species. During the course of the expedition 76 non-resident species were listed (one of these was seen, but no specimen was taken; the others were collected). All of these species are transient or wintering birds from North America and México. The following list gives the number of species by families.

Accipitridae	1	Hirundinidae	4
Charadriidae	1	Mimidae	1
Scolopacidae	4	Turdidae	2
Laridae	1	Sylviidae	1
Columbidae	1	Bombycillidae	1
Cuculidae	1	Vireonidae	5
Caprimulgidae	1	Parulidae	29
Trochilidae	1	Icteridae	3
Alcedinidae	1	Thraupidae	3
Picidae	1	Fringillidae	4
Tyrannidae	10		

It is interesting that, while over three-fourths of the flycatchers and wood warblers that migrate through México

reach Guatemala, less than a third of the migrating fringillid species move this far south.

A list by regions shows that the humid lowlands support the greater number of these non-resident birds. The following break-down includes birds that were found in one region only.

Highlands

Empidonax hammondi
Bombycilla cedrorum
Dendroica auduboni
Dendroica chrysoparia
Dendroica occidentalis
Melospiza lincolni

Arid Interior

Vireo belli

Humid Tropics

Buteo platypterus
Charadrius vociferus
Erolia melanotos
Sterna hirundo
Caprimulgus carolinensis
Tyrannus tyrannus
Contopus virens
Empidonax traillii
Hylocichla ustulata
Polioptila caerulea
Vireo griseus
Vireo flavifrons
Vireo philadelphicus
Protonotaria citrea
Helmitheros vermivorus
Vermivora chrysoptera
Dendroica fusca
Dendroica dominica
Dendroica pensylvanica
Dendroica castanea
Seiurus noveboracensis
Oporornis formosus
Wilsonia canadensis
Setophaga ruticilla
Icterus spurius
Piranga olivacea
Piranga ludoviciana
Passerina ciris

The predominance of species from eastern North America in the humid tropics is evident. Warbler "waves", similar to those seen in the eastern part of the United States, were encountered several times in the *cafetal* at Finca Miramar.

Eight transient species occurred in all three regions in the study area.

Vireo gilvus	Wilsonia pusilla
Mniotilta varia	Piranga rubra
Dendroica magnolia	Pheuticus ludovicianus
Oporornis tolmiei	Passerina cyanea

Of the remaining transient species, three were shared by the highlands and arid interior, twelve by the arid interior and humid tropics, and nineteen by the humid tropics and highlands.

Resident Species. A total of 341 resident species were recorded in the course of the expedition. Since I did not obtain actual nesting data on most of these forms, residency was determined from other sources (notably Eisenmann, 1955). As with the migrants, more species resided in the humid tropics than in the other regions. The following chart compares the total number of resident species recorded in each of the three regions. Also listed is the number limited to only the named region, and a percentage designed to indicate the degree of "endemism."

Table 1. Resident species in each region.

Region	Total Residents	Limited Species	% Limited
Highlands	122	73	60
Arid Interior	76	35	46
Humid Tropics	228	166	73

About 80% of the breeding species recorded during the nine months of the study did not inhabit more than one region. The figure for migratory species was lower (45%). This discrepancy can be accounted for largely by the necessary tolerance of many species for varying habitats in the course of migration. On their breeding or wintering grounds these species are usually more restricted. The humid lowlands not only support a varied avifauna but almost three-fourths of the forms breeding in the lowlands are limited to this region.

In listing the breeding birds of each of the three regions no breakdown is attempted beyond the family level because of the numbers involved. As above, the number of "limited" species in each family is given. Indicated with an asterisk are families which were recorded in one region only.

Table 2. Families and Species Numbers in the Highlands.

Family	Total Species	Limited Species	Family	Total Species	Limited Species
Ardeidae	1	0	Trochilidae	12	10
Cathartidae	3	0	Trogonidae	3	2
Accipitridae	2	1	Alcedinidae	1	0
Falconidae	1	0	Momotidae	1	1
Cracidae	2	1	Ramphastidae	1	0
Phasianidae	2	2	Picidae	6	2
Rallidae	1	0	Dendrocolaptidae	4	3
Columbidae	4	1	Furnariidae	2	1
Psittacidae	2	1	Formicariidae	1	0
Cuculidae	2	0	Cotingidae	1	0
Strigidae	2	1	Tyrannidae	12	6
Caprimulgidae	2	0	Hirundinidae	1	1
Apodidae	2	1	Corvidae	4	3

Table 2. (continued).

Family	Total Species	Limited Species	Family	Total Species	Limited Species
Certhiidae	1	1	Vireonidae	3	3
Troglodytidae	5	2	Coerebidae	2	1
Mimidae	1	1	Parulidae	9	7
Turdidae	8	8	Icteridae	4	2
Ptilogonatidae*	1	1	Thraupidae	2	2
Cyclarhidae*	1	1	Fringillidae	11	6

Based upon the total number of species and the number limited to the region, the Trochilidae, Tyrannidae, Turdidae, Parulidae and Fringillidae stand out as characteristic highland families. It is interesting that very few hawks breed in the highlands.

The list above could be applied not only to the Sierra de las Minas but, with minor changes, to the mountains of western Guatemala, Honduras, and Chiapas, México. The highlands of eastern Guatemala (the study area) are very similar faunistically to this general region. To the list of 158 resident and migrant species recorded in the highlands during this study, Wetmore's work (1941) in western Guatemala adds only five:

Psaltriparus melanotis *Pipilo erythrophthalmus*
Regulus satrapa *Junco alticola*
Spinus atriceps

Baepler (1960) in a thorough study of the Soloma region, Huehuetenango, in northwestern Guatemala, adds seven more species:

Oreophasis derbianus *Cyanolyca cucullata*

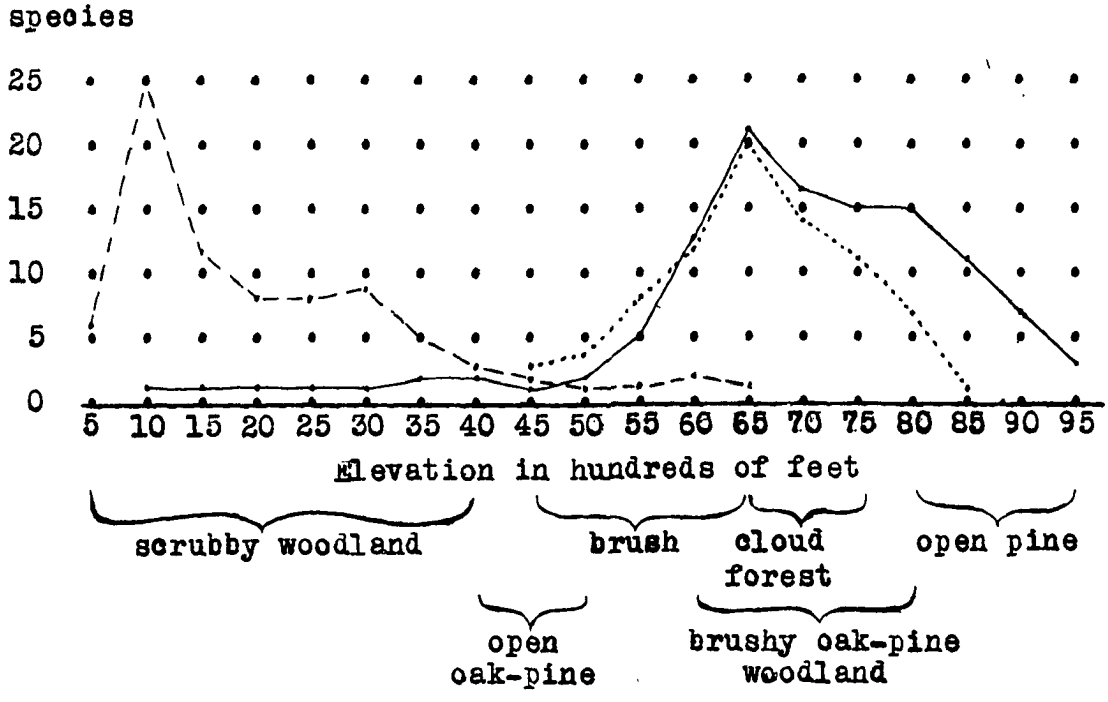
Dactylortyx thoracicus *Vireo flavoviridis*
Bartramia longicauda *Dendroica coronata*
Empidonax oberholseri

Of these 12 species, three have been taken in eastern Guatemala by other workers. Thus the avifauna of the western Guatemalan highlands includes only nine species (six per cent) not found in the Sierra de las Minas. It is surprising that *Psaltriparus*, *Pipilo*, and *Junco*, common in the altos of western Guatemala, have not been found in the Sierra de las Minas.

In this discussion of the highlands I have made no attempt to divide the Sierra de las Minas into Subtropic and Temperate Zones. Griscom (1932: 33) points out that the Subtropic Zone is poorly developed in Guatemala; this is certainly true of the south slope of the Sierra de las Minas. The following chart (labeled *Table 3* for convenience) compares the elevational records of three selected groups of birds. These groups, based upon Griscom (1932: 47, 54, and 67), are made up of species characteristic of the high Temperate Zone, the Subtropic Zone, and the Arid Tropical Region. On the chart the solid line joins points indicating the number of species from the Temperate Zone list that were recorded in the field in each 500 feet of elevation. The dotted line similarly locates the subtropical species, and the dashed line the species characteristic of the arid Motagua Valley. Below the chart I have indicated the major habitat types

found on the south slope of the Sierra de las Minas in the area where field work was carried out.

Table 3. Life Zones in the Sierra de las Minas.



In analyzing the chart the distinctness of the arid interior versus the highlands is evident. However, the subtropic and temperate populations reside in nearly the same areas. Only in the pine forest above 8000 feet do the subtropic species begin to thin out.

At first glance it would appear that from 4000 to 5000 feet almost no birds are to be found. Actually, interpretations of this sort are not possible. The time spent in the field at each listed elevation was not the same; records from 1500 to 5000 feet were made only on trips up and down

the mountain. Also, since the curves were drawn from selected lists of resident species, other species were seen that were not recorded on the chart. Similarly, 6500 feet is not necessarily the richest level but merely the best worked. (It is, however, probably the richest as well, due to the variety of habitats available.)

It is safe to say that from 4500 to 7500 feet an observer is as likely to see a species characteristic of the Temperate Zone as of the Subtropic Zone. Thus I have not made use of these terms in discussing the avifauna of the highlands.

Table 4. Families and Species Numbers in the Arid Interior.

Family	Total Species	Limited Species	Family	Total Species	Limited Species
Ardeidae	2	0	Trogonidae	1	1
Ciconiidae	1	0	Alcedinidae	1	0
Threskiornithidae*	1	1	Momotidae	2	2
Cathartidae	3	0	Picidae	3	0
Accipitridae	4	0	Cotingidae	1	0
Falconidae	3	1	Tyrannidae	8	0
Phasianidae	3	1	Corvidae	3	2
Charadriidae	1	1	Troglodytidae	1	1
Columbidae	5	3	Mimidae	1	1
Psittacidae	3	3	Turdidae	1	0
Cuculidae	4	2	Sylviidae	1	1
Tytonidae*	1	1	Parulidae	1	0
Strigidae	2	1	Icteridae	6	4
Caprimulgidae	3	2	Thraupidae	2	2
Apodidae	2	1	Fringillidae	6	3
Trochilidae	2	1			

Of 31 families the Columbidae, Psittacidae, Icteridae, and Fringillidae stand out to some extent and might be called characteristic. The starred families were seen only once.

Table 5. Families and Species Numbers in the Humid Tropics.

Family	Total Species	Limited Species	Family	Total Species	Limited Species
Tinamidae*	2	2	Alcedinidae	4	2
Podicipedidae*	1	1	Momotidae	2	2
Phalacrocoracidae*	1	1	Galbulidae*	1	1
Anhingidae*	1	1	Bucconidae*	2	2
Ardeidae	6	4	Ramphastidae	3	2
Cochleariidae*	1	1	Picidae	9	4
Ciconiidae	1	0	Dendrocolaptidae	8	7
Anatidae*	1	1	Furnariidae	5	4
Cathartidae	3	0	Formicariidae	9	8
Accipitridae	12	8	Pipridae*	4	4
Pandionidae*	1	1	Cotingidae	9	8
Falconidae	3	2	Tyrannidae	24	12
Cracidae	3	2	Hirundinidae	2	2
Rallidae	3	2	Corvidae	2	2
Heliornithidae*	1	1	Cinclidae*	1	1
Jacanidae*	1	1	Troglodytidae	5	3
Columbidae	11	9	Turdidae	2	1
Psittacidae	6	5	Sylviidae	2	2
Cuculidae	4	2	Vireolaniidae*	1	1
Strigidae	4	2	Vireonidae	3	3
Nytibiidae*	2	2	Coerebidae	4	3
Caprimulgidae	1	0	Parulidae	2	0
Apodidae	1	0	Icteridae	10	7
Trochilidae	13	10	Thraupidae	13	13
Trogonidae	4	3	Fringillidae	14	10

Of 50 families, the local representatives of 20 do not occur outside of the humid tropics. On the basis of numbers, the Trochilidae, Tyrannidae, Thraupidae, and Fringillidae stand out. Equally characteristic, however, are the Bucconidae, Furnariidae, Formicariidae, Pipridae and some of the marsh families (Cochleariidae, Heliornithidae, Jacanidae). The large number of breeding hawks is noteworthy, compared to the highlands and arid interior.

It is odd to see Cinclus listed as a breeding bird found exclusively in the humid tropics. However, in the

area of the study the species was found only in the humid gorge of the upper Polochíc River from 2300 to 3900 feet. Elsewhere in Guatemala, Cinclus is a highland form.

Notable is the fact that no resident parulid was recorded below 2000 feet, while 26 transient or wintering parulids were found in the lowlands. It is also interesting that the resident nyctibiids outnumber the caprimulgids in the Polochíc Valley.

Summary of Regional Analysis. In this brief look at bird distribution within the study area, it is evident that the lowlands support large numbers of species, both resident and migratory, and the arid interior relatively few species. Equally evident is the great difference in the number of niches available in the two areas. A scrubby woodland does not provide the variety of microhabitats available in and along the edge of a dense rain forest.

Also evident from the statistics given above, is the distinctness of the avifauna of the three divisions of the study area. Only 20% of the resident species were recorded in more than one region. Of these, only a handful were regular in occurrence in more than one area.

The Fringillidae stand out as characteristic in all three region, evidence of the variability and success of this widespread family. The Trochilidae and Tyrannidae appear in the list of important families for both the highlands and humid tropics.

CHAPTER V

ORIGINS AND AFFINITIES

In the preceding chapter I have pointed out the great differences in the species composition of the bird life of the three study regions. Two considerations help to explain these differences. The first is implicit in the discussion of the variety of environments given in Chapter II. However, North America has areas of greater environmental contrast, yet these are not inhabited by such a rich and distinct avifauna as that of eastern Guatemala. This line of thought leads to our second consideration: the opportunities forms have had to spread into the study area.

Geologically the first period of importance in an analysis of the present-day avifauna is the Cretaceous. Early in this period Central America formed a land bridge connecting the Americas. Later, however, submergence began and ocean water cut the land bridge in as many as three places (Isthmus of Tehuantepec, southern Nicaragua, and Panama). This condition, which persisted into the Oligocene, gave enough time for species isolated in the Central American highlands to evolve along unique lines.

In the Miocene, North and South America rejoined. Climate during this period was relatively warm and movement was from south to north, bringing in new South American forms. The next event of importance was the general lowering of temperatures in the Pleistocene. As might be expected, northern forms moved south. This was the period during which most of the present-day mammals of South America reached that continent.

In the Central American lowlands a re-influx from the south probably accompanied each warm period between the four major glacial advances. In recent postglacial (or perhaps interglacial) times the latest invasion is probably still in progress.

The effect of these geologic changes and invasions can be noted in the composition of the current avifauna of the three study regions.

Highlands. In this region one segment of the present bird population consists of endemic forms with many distinct species, and even a few unique genera (e.g., Xenotriccus and Notiochelidon), the relicts of an ancient avifauna surviving in this geologically persistent mountain mass. A second segment is a small neotropical element. Most of the South American genera in the highlands are represented by distinct species, a circumstance indicating a relatively early (preglacial) arrival. The remainder of the highland population

is made up of glacial arrivals from the north, most of which are only subspecifically distinct from forms in México and North America. The postglacial movement from the south has apparently had little effect on the highlands.

Arid Interior. This area contains species both northern and southern in origin and exhibits a high degree of endemism. Since the southern forms are, for the most part, specifically distinct, it is supposed they were present prior to the ice age. The northern forms, about two-thirds of the total, probably arrived during the Pleistocene. Over two-thirds of the species are endemic to the Central American arid region (Isthmus of Tehuantepec to northwest Costa Rica).

The northern element is the dominant one in the origins of this fauna. Many of the genera range into México and the United States. Such genera as Geococcyx, Thryothorus, Passerina, and Aimophila reach their southern limit in the Central American arid tropics.

The post-glacial invasion from the south has not contributed materially to the arid interior fauna because of habitat barriers. Species moving into northern Central America in the Recent Period are predominantly forest and brush birds of humid areas. Presumably, not enough time has elapsed for their adaptation to arid situations.

Humid Tropics. During the warming of the Caribbean

lowlands accompanying the latest retreat of the glaciers, a great invasion of plant and animal forms has been moving north. Thus the bulk of the humid lowland fauna is South American in origin. This migration is so recent that few of the forms have differentiated even at the subspecific level. Families South American in origin, and of relatively recent dispersal northward, tend to show progressively fewer species to the north, e.g., the Formicariidae and Pipridae.

Table 6. The Formicariidae and Pipridae in Central America.

	Formicariidae	Pipridae
México	9	4
Guatemala	11	5
Honduras	14	4
Nicaragua	21	6
Costa Rica	29	9
Panamá	39	11

The bulge in the Guatemalan piprids is due to the discovery of Piprites griseiceps on this expedition. Presumably this species also occurs in Honduras. Even as the number of species decreases to the northward, so does the number of individuals tend to decrease as well.

It is logical to assume that birds are continuing to move northward today at as great a rate as ever. Three of the species added to the Guatemalan list by the 1958-1959 expedition support such an assumption. These species may very well represent the continued spread northward of present-day southern forms.

Table 7. Three Additions to the Guatemalan Check-List.

	former northern limit	status this expedition
Piprites griseiceps	Nicaragua	Rare; could have been overlooked in the past
Nyctibius grandis	Panamá	Uncommon; easily overlooked
Picumnus olivaceus	Honduras	Fairly common at Panzós

It is difficult to imagine that *Picumnus olivaceus* could have been missed by early workers if it were present then in its current abundance.

Additional evidence of successful invasion or, perhaps, continued migration is furnished by indications of increased abundance of some of the species of southern origin. Here are a few such examples.

Table 8. Four Species Increasing in Abundance.

	status in Griscom (1932)	specimens taken in 1958-1959
Xenops minutus	Uncommon to rare	9
Sclerurus guatemalensis	Three specimens from Guatemala up to 1930	3
Myrmotherula shisticolor	Exceedingly rare north of Nicaragua	4
Gymnocichla nudiceps	Has been collected three times north of Nicaragua	3

The total time spent in the field by the present expedition in the tropical rain forest totaled only a few weeks, whereas Griscom's statements are based upon the voluminous collections of Salvin and Godman and the more recent work of

Anthony and others. Tens of thousands of specimens were taken in the rain forests of northern Vera Paz alone. It is inconceivable that our feeble efforts could produce the results shown above unless these species are increasing in abundance, further evidence of the continuing success of these southern "immigrants."

If the changes outlined above have indeed taken place in less than a century, then the rate of movement would seem to be quite rapid, possibly as rapid as at its inception. Similar northern spread possibly correlated with warmer winters has been noted in the Cardinal (Richmondena cardinalis) and other species (Krause and Froiland: 1956, Burns: 1958, and others).

To return to an analysis of the origins of the bird life of the humid tropics, in addition to the preponderance of southern forms, a few species occur which are limited to northern Central America and southern México, while others (e.g., Psilorhinus mexicanus) have their affinities farther to the north. These species probably spread into the lowlands during glacial times and have not been completely displaced.

Summary of Origins and Invasions. The table below summarizes the contributions made by each of the major avian invasions to the three regions of the study area. The symbol (x) is used to indicate relative abundance and is very approximately equal to 25 species.

In all of this discussion little mention has been made of the presence in all areas of certain species of such wide distribution and uncertain origin (e.g., Cathartes aura) that they could not be conveniently or meaningfully categorized.

Table 9. Summary of Origins and Invasions

Time of arrival	ancient	preglacial	glacial	post-glacial
Source of invasion	uncertain	south	north	south
Highlands	x	x	xxx	
Arid Interior		x	xx	
Humid Tropics	x		x	xxxxxx

CHAPTER VI

SPECIES ACCOUNTS

The following species accounts cover all of the forms collected or recorded in my 1958-1959 expedition to eastern Guatemala. The localities at which birds were collected or observed are grouped under three headings: highlands, arid interior, and humid tropics. I have previously discussed these major divisions as well as each collecting station.

For each species the material is organized thus: following the scientific name are given (1) the regions of major occurrence and, parenthethically, the localities at which specimens were taken and observations made (collecting stations are underlined); (2) altitudinal range of species (in forms occurring near sea level only the maximum elevation is given); (3) a statement indicating relative abundance and major habitats; (4) a summary of nesting data, gonad-size, molts, and subspecific characters.

No attempt is made in these accounts to include information obtained, or to list specimens collected, on previous expeditions to eastern Guatemala. A brief summary of the work done by other ornithologists in eastern Guatemala is

presented in an earlier section of this dissertation (Chapter III).

With the exception of Chaetura richmondi, which I treat as a race of C. vauxi (see Sutton, 1941), species names follow Eisenmann (1955).

ORDER TINAMIFORMES

FAMILY TINAMIDAE

Tinamus major (Gmelin). Humid Tropics (Izabál). 1000 feet. Uncommon; inhabited dense rain forest.

In sooty crown, lack of occipital crest, and coloration intermediate between T. m. fuscipennis and T. m. percautus, the specimen lines up with T. m. robustus Sclater and Salvin. 1 male (March 12, enlarged testes).

Crypturellus soui (Hermann). Humid Tropics (Panzós, El Estór, Pancajché). Up to 2400 feet. Fairly common in open rain forest, cafetal, and brushy second-growth. The tremulous call was heard throughout the winter. My only specimen was taken in flight on October 18 as it burst quail-like from a clump of vegetation in a brushy woodland.

Since this specimen has considerable rufous on the upper tail coverts, secondaries, and tertials, and is brightly rufescent below, I assign it to the race C. s. meserythrus (P. L. Sclater). 1 female (ovary somewhat enlarged).

ORDER PODICIPEDIFORMES

FAMILY PODICIPEDIDAE

Podilymbus podiceps (Linnaeus). Humid Tropics (El Estór). 50 feet. I shot one of a group of four birds seen swimming and diving in shallow water near the shore of Lake Izabál, February 1.

The specimen represents the nominate race (wing, 129 mm.). 1 male.

ORDER PELECANIFORMES

FAMILY PHALACROCORACIDAE

Phalacrocorax olivaceus (Humbolt). Humid Tropics (Panzós, El Estór). Up to 200 feet. Fairly common along the lower Polochíc River and on Lake Izabál. The only specimen, a male of the year collected on October 2, was molting in the tail.

In wing-length (254 mm.), bill-length (47.5), and paleness of upper wing coverts and scapulars, my specimen represents the small northern race P. o. mexicanus (Brandt). 1 male.

FAMILY ANHINGIDAE

Anhinga anhinga (Linnaeus). Humid Tropics (El Estór, Panzós). Up to 200 feet. Fairly common along the marshy edges of the lake and on small, slow-flowing tributaries. On the only specimen, collected February 1, the entire tail is only partly grown.

The specimen is smaller than the nominate form (wing, 324 mm.) and is assigned to the race A. a. leucogaster (Vieillot). 1 males.

ORDER CICONIIFORMES

FAMILY ARDEIDAE

Ardea herodias Linnaeus. Humid Tropics (Panzós). 200 feet. One was seen flying above the Polochíc River on October 5.

Butorides virescens (Linnaeus). Humid Tropics (El Estór, Panzós, Zarco); Highlands (Paruhla); Arid Interior (Usumatlán). Up to 4600 feet. In the Polochíc Valley this species was the commonest of the herons in winter, though we never saw it in great numbers. We found it mostly in marshy areas or along streams. The highland record was of a bird seen on September 30 in a swampy valley. The Motagua records were made in late November.

My two specimens, a male (wing, 176 mm., tail, 66, culmen, 65, tarsus, 47) taken January 31 and a female (wing, 169, tail, 66, culmen, 56, tarsus, 46) taken October 4, represent, respectively, the nominate race and B. v. maculatus, the latter differing from the nominate race principally in being smaller. Dr. Alexander Wetmore assisted me in identifying these two birds. 1 male, 1 female.

Florida caerulea (Linnaeus). Humid Tropics (Panzós, Zarco, El Estór, Tucurú); Arid Interior (Quirigua). Up to 800 feet.

Fairly common in wet fields and marshes and on larger bodies of water. Four specimens, one taken on October 7, the others in February and March, were in the dark adult plumage. A dark male taken March 20 had enlarged testes.

I follow Hellmayr (1949) is recognizing no races. 5 males.

Casmerodius albus (Linnaeus). Humid Tropics (El Estór). 50 feet. Recorded January 31 and February 1 at Lake Izabál. - A male (without nuptial plumes) collected on February 1 was not compared with specimens of the nominate race, but on the basis of geographical distribution it should be C. a. egretta (Gmelin). 1 male.

Leucophoyx thula (Molina). Humid Tropics (Panzós, El Estór). Up to 200 feet. Seen occasionally from October 5 to February 1 in wet meadows and along streams.

My single specimen, whose sex was not determined, is probably unidentifiable as to subspecies. Its tarsus measures 97.5 mm. Bailey (1928) gives a tarsal average of 97.3 for females of L. t. brewsteri and of 97.1 for males of the nominate race. 1 ?.

Bubulcus ibis (Linnaeus). Humid Tropics (Panzós). 200 feet. From October 15 to March 18 a flock of up to fifty birds fed regularly in and about a small herd of cattle in an extensive meadow. This rapidly spreading species has not been reported heretofore from Guatemala.

Since wintering birds cannot be identified to race with certainty (Witherby et al., 1948, 3:144), the specimens are assigned to the nominate form on geographic grounds only (see A.O.U. Check List, 1957:45). 1 female, 1 ?.

FAMILY COCHLEARIIDAE

Cochlearius cochlearius (Linnaeus). Humid Tropics (El Estór, Panzós). Up to 200 feet. Uncommon; seen along the waterways and lake front in the lower Polochic Valley. A male taken March 21 had partially enlarged testes.

My specimen, which is lavender gray above and cinnamon on the foreneck, represents the race C. c. zeledoni (Ridgway). 1 male.

FAMILY CICONIIDAE

Mycteria americana Linnaeus. Humid Tropics (Panzós); Arid Interior (Zacapa). Up to 8000 feet. Not uncommon in the Polochic Valley in swampy situations. Often seen circling over the valley in flocks of up to 25. On July 8 I saw a group of six along the Motagua River.

FAMILY THRESKIORNITHIDAE

Ajaia ajaja (Linnaeus). Arid Interior (Zacapa). 800 feet. On July 8 I saw five with a small group of Mycteria americana along the Motagua River.

ORDER ANSERIFORMES

FAMILY ANATIDAE

Cairina moschata (Linnaeus). Humid Tropics (Panzós, El Estór). Up to 200 feet. On February 8 one was flushed from a marsh near Panzós; the bird lit in a tree, where it stood for several minutes on a horizontal limb 30 feet above the ground. Another was seen near El Estór on March 24.

ORDER FALCONIFORMES

FAMILY CATHARTIDAE

Cathartes aura (Linnaeus). Humid Tropics (Panzós, Pancajché, Zarco, Izabál); Highlands (Salamá, Usumatlán, Paruhla); Arid Interior (Usumatlán, San Jerónimo, Salamá). Up to 8000 feet. As can be seen from the above localities, this species is virtually ubiquitous. It seems to be more common than Coragyps atratus in the highlands and arid interior though I never saw more than a few in a group.

My one specimen, an adult male (wing 498 mm., tail 255), represents the nominate race, though it is a trifle large for that form. The greatest wing-length found by Friedmann (1950: 35) in seven male C. a. aura handled by him was 497 mm., the greatest tail-length, 255. 1 male (August 24).

Coragyps atratus (Bechstein). Humid Tropics (Quirigua, Panzós, Pancajché, El Estór, Zarco); Highlands (Paruhla, Usumatlán); Arid Interior (Usumatlán, Salamá). Up to 5900 feet. Fairly numerous in the lowlands. More common than

Cathartes aura in the humid tropics. A few were seen in the mountains in early March. Most of the flocks numbered fewer than 20 birds, the largest 25. 1 male (January 6, enlarged testes).

Sarcoramphus papa (Linnaeus). Humid Tropics (El Estór, Panzós, Zarco, Izabál); Arid Interior (Usumatlán); Highlands (Usumatlán). Up to 8300 feet. Fairly common in the lower Polochíc Valley. The only record above 1900 feet was of two immature birds perched on a dead limb near the top of an 80 foot pine tree on one of the highest ridges in the Sierra de las Minas, December 15. 1 male (February 1).

FAMILY ACCIPITRIDAE

Elanoïdes forficatus (Linnaeus). Humid Tropics (Panzós). 2000 feet. On January 26 a single bird was seen circling over cafetal.

Ictinia plumbea (Gmelin). Humid Tropics (Panzós, Zarco). Up to 1200 feet. A few birds were seen in February and March circling over the rain forest 200 to 500 feet above the ground. 1 female (March 18, completed shell in oviduct).

Rostrhamus sociabilis (Vieillot). Humid Tropics (Panzós). 200 feet. An immature male was taken October 24 in a swampy meadow.

The bird measures 365 mm. in wing chord and 191 in tail length which puts it into the size range of the race R. s.

major Nelson and Goldman. 1 male.

Accipiter chionogaster (Kaup). Highlands (Usumatlán). 6200 to 8500 feet. Fairly common resident in cutover and mature pine forest. All records, except two seen circling on September 4, were of single birds.

Friedmann (1950: 202) is followed in listing this species separately from A. striatus. The nominate race, to which the specimens are assigned, differs from the South American forms in having nearly immaculate white breast. 2 females.

Buteo jamaicensis (Gmelin). Highlands (Usumatlán); Arid Interior (Morazón, Teculután); Humid Tropics (Panzós). Up to 9500 feet. Uncommon except in the highlands where a pair or two were recorded regularly. I saw the species in the Motagua Valley November 14 and December 25, in the Polochíc Valley in late January and early February.

Buteo platypterus (Vieillot). Humid Tropics (El Estór, Panzós, Izabál). Up to 1700 feet. On March 14 at Izabál several loose flocks totaling 150 birds circled over moving north. On the following day a "kettle" of 75 was sighted in the same area. On March 25 a group of 20 moved northwest over the Panzós area. Skutch (1945) has reported similar movements involving larger numbers of birds in Costa Rica.

My specimen measures: wing, 286 mm., tail 171, which

is slightly above the average given by Friedmann (1950: 309) for females of the nominate race, largest of the races. 1 female.

Buteo magnirostris (Gmelin). Humid Tropics (Panzós, El Estór, Zarco); Arid Interior (Usumatlán). Up to 800 feet. Fairly common resident in both valleys in open or cultivated areas. A male taken on February 2 had enlarged testes. An immature male was collected on February 14.

My specimens, on which the pale interspaces of the basal half of the outer rectrices are washed with tawny, represent the race B. m. direptor (Peters and Griscom). 2 males, 2 females.

Buteo nitidus (Latham). Humid Tropics (El Estór, Panzós); Arid Interior (Usumatlán, Quirigua). Up to 800 feet. Found in both valleys but less common than Buteo magnirostris. A male in immature plumage was collected on October 5 at Panzós. Copulation was observed near El Estór on February 2.

In size my specimens (1 adult male, wing 241 mm., tail 147, culmen 20.5, 1 adult female, wing 259, tail molting, culmen 23) line up with the race B. n. micrus (Miller and Griscom). My specimens show only one complete bar in the tail. 2 males, 1 female.

Leucopternis albicollis (Latham). Humid Tropics (Panzós, Izabal). Up to 1700 feet. Uncommon resident along the

Polochíc, usually seen circling high above the valley. Two specimens were taken above 1000 feet on the north slope of the valley, one in open rain forest, the other in cafetal. In the male taken March 24 snake remains were found in the crop and stomach.

My two specimens are virtually immaculate white on the inner primaries and secondaries; I therefore assign them to the race L. a. ghiesbreghti (Du Bus). 1 male, 1 female.

Busarellus nigricollis (Latham). Humid Tropics (Panzós). Up to 200 feet. This fish-eating hawk, which apparently is not uncommon on marshes and oxbow lakes, I saw in January and early February. A streaked immature male, collected February 6, lacks most of the rusty color of the adult.

An adult female agrees in size (wing, 397 mm.) with the nominate form. 1 male, 1 female.

Buteogallus anthracinus (Lichtenstein). Humid Tropics (Panzós, El Estór); Arid Interior (Usumatlán). Up to 800 feet. Uncommon resident in both valleys.

I follow Hellmayr and Conover (1949: 191, footnote) in recognizing no races of this species. 2 females.

Spizastur melanoleucus (Vieillot). Humid Tropics (El Estór). 100 feet. On March 22 Dr. Richard R. Graber saw a single Black-and-white Hawk flying over the rain forest.

Spizaëtus ornatus (Daudin). Humid Tropics (Izabal). 1100

Seen January 3 and March 15 in heavy rain forest; the call of one of these birds resembled the gobbling of a young turkey.

Spizaëtus tyrannus (Wied). Humid Tropics (Panzós). 1500 feet. One was seen perched high in a tree in cafetal on March 19.

FAMILY PANDIONIDAE

Pandion haliaetus (Linnaeus). Humid Tropics (El Estór, Panzós). Up to 200 feet. Seen occasionally on Lake Izabál and the larger rivers from October 24 to March 22.

FAMILY FALCONIDAE

Herpetotheres cachinnans (Linnaeus). Humid Tropics (Panzós, El Estór, Zarco); Arid Interior (Usumatlán). Up to 800 feet. Resident; possibly the most conspicuous falconid of the region; seen in both valleys. Its favorite habitat was open woodland and cultivated areas. A female taken August 18 had enlarged gonads.

According to Friedmann (1950: 552 to 558) the race H. c. chapmani is distinguished from the nominate form by lighter coloration, 6 to 8 tail bands rather than 5 or 6, and larger size. In measurements (male, wing 284 mm., tail 226, female, wing 291, tail 224) my specimens are larger than the averages given for chapmani but are within the stated range. Thus I am assigning my material to the race H. c. chapmani,

although I can count only 5 tail bands in my female specimen. 1 male, 1 female.

Polyborus cheriway (Jacquin). Arid Interior (Usumatlán, Teculután, Zacapa). Up to 800 feet. Fairly common in the upper Motagua Valley in open scrubby areas.

Falco deiroleucus Temminck. Humid Tropics (Panzós). 1700 feet. A male was taken near dusk on January 14 while it was perched atop a 60-foot dead tree-trunk in a cafetal. The testes were enlarged. 1 male.

Falco albigularis Daudin. Humid Tropics (El Estór, Zarco, Panzós, Quirigua). Up to 400 feet. Fairly common resident; usually seen perched in or near the rain forest or coursing out over the meadows. A female collected March 17 had a very worn breast and abdomen, the pattern suggesting that three eggs were being incubated; the ovary was quite large.

The nominate form, to which I am assigning my specimens, differs from the race F. a. petrophilus in having plumbeous-black instead of plumbeous slate upperparts. 1 male, 2 females.

Falco sparverius Linnaeus. Humid Tropics (Panzós, Westfalia, El Estór, Zarco); Arid Interior (Usumatlán, Zacapa); Highlands (San Jerónimo, Tamahú). Up to 4800 feet. Following the influx of wintering birds, this species became the commonest hawk in both valleys and it continued to be so

throughout our stay. On March 11, in driving from Teculutan to Quirigua, we saw an average of almost one bird per mile.

Six of the eight specimens were identified as the nominate race by virtue of their larger size (wing: two males, 182, 190 mm., four females, 184, 194, 194, and 195) and hazel crown-patch. This is probably the form that winters abundantly in the lowlands. A female of this race taken October 27 was molting in the throat. Two male specimens collected in the highlands (San Jerónimo) on September 29 and January 10 are small (wing: 177, 166) and lack the hazel patch in the crown. They line up with the race F. s. tropicalis (Griscom), which is a fairly common resident in the dry open pine forests. 4 males, 4 females.

ORDER GALLIFORMES

FAMILY CRACIDAE

Crax rubra Linnaeus. Humid Tropics (El Estór). 100 feet. Though we did not see this species in the wild we were given a mounted head from a kill made in October by a native in the rain forests of the lower Polochíc valley. We also saw as adult male that had been raised from a chick by Indians 13 miles west of El Estór.

Penelope purpurascens Wagler. Humid Tropics (El Estór). 200 feet. A group of four or five were seen moving through the tree-tops in an open rain forest on January 30.

Ortalis vetula (Wagler). Humid Tropics (Panzós, El Estór); Highlands (Paruhla). Up to 5000 feet. Fairly common in the Polochíc Valley and in the highlands at the head of the valley in heavy brush, cane stands, brushy woodland and thickets. When the birds became vociferous in March, we realized they were more common than we had supposed. On October 16 a nest (2 eggs; 15 feet up) was found in heavy brush in a cutover moist woodland (1800 feet). The eggs hatched the next day. A male was taken February 8 from a group of five.

The race O. v. plumbiceps (Gray), to which my specimen belongs, is olivaceous above and the tips of the rectrices are bicolored (the basal part ochraceous tawny, the distal grayish fulvescent). 1 male.

Penelopina nigra (Fraser). Highlands (Usumatlán, Paruhla). 5000 to 8000 feet. Resident in the moist mountain forests. A female taken December 16 had an enlarged ovary (one ovum several mm. in diameter).

The naked skin around the eyes of my male specimens was purplish, not brownish red; the cast in their plumage is greenish, not bluish; I therefore assign all three of my specimens to P. n. nigra. 2 males, 1 female.

FAMILY PHASIANIDAE

Dendrortyx leucophrys (Gould). Highlands (Usumatlán, Paruhla). 5500 to 8000 feet. The species was heard calling a few times in March; one was flushed from the brushy

understory of an open pine forest.

Colinus leucopogon (Lesson). Arid Interior (Usumatlán, Teculután, El Rancho). 800 feet. Fairly common resident; the call is identical to that of C. virginanus. On August 12 a female and several chicks were seen in an overgrown field. Two specimens were taken - a young bird August 21, an adult female from a covey of 15, March 11.

The race C. l. incanus Friedmann, to which I assign my specimens, can generally be identified by its lighter upperparts. 2 females.

Cyrtonyx ocellatus (Gould). Highlands (Usumatlán). 8100 to 8300 feet. Uncommon resident in the grassy understory of the open pine forest topping the ridges of the Sierra de las Minas. Three specimens were taken in December, each from a covey of about 10 birds. A pair was flushed in March.

I follow Friedmann (1946: 403) as well as Hellmayr and Conover (1942: 287) in not recognizing C. o. differens Griscom, described from Honduras. 2 males, 1 female.

ORDER GRUIFORMES

FAMILY ARAMIDAE

Aramus guarauna (Linnaeus). Humid Tropics (Panzós). 200 feet. A single limpkin was seen in moist second-growth on March 18.

FAMILY RALLIDAE

Aramides cajanea (P.L.S. Muller). Humid Tropics (Panzós). 200 feet. Larry Wolf saw a wood rail walking on the floor of a moist woodland on January 17.

Laterallus ruber Sclater and Salvin. Humid Tropics (Panzós); Highlands (Paruhla). Up to 5000 feet. Fairly common in wet fields and canes in the Polochíc Valley. A single bird was flushed from the marsh near Paruhla on March 17. A gray-brown immature female was taken October 24.

My specimens (culmen 18), which are extensively rufous, represent the nominate form. 2 females.

FAMILY HELIORNITHIDAE

Heliornis fulica (Boddaert). Humid Tropics (Panzós, El Estór). Up to 200 feet. Uncommon; seen only along the quiet tropical streams and marshes; heard calling in February. On January 31 several single individuals were seen along the banks of Lake Izabál. A male taken October 17 was molting in the tail. 1 male, 1 female.

ORDER CHARADRIIFORMES

FAMILY JACANIDAE

Jacana spinosa (Linnaeus). Humid Tropics (Panzós, El Estór). Up to 200 feet. Fairly common on marshes and waterways. A young bird (white below) was collected on January 31 at El Estór. Several young birds were seen walking about

on the shore of a stream, February 8.

In wing-size (male, 115, 121 mm.; female, 135) my series represent the *nominate* race. 2 males, 1 female.

FAMILY CHARADRIIDAE

Charadrius collaris Vieillot. Arid Interior (Usumatlán). 800 feet. On August 23, in an arid area, I collected a single bird which flushed from a small muddy pond and lit on bare ground nearby. 1 male.

Charadrius vociferus Linnaeus. Humid Tropics (Panzós, La Tinta, Zarco). Up to 400 feet. Fairly common in winter in suitable habitat. My earliest fall record was October 25. Killdeer were heard quite frequently at *night*.

My two females (wing, 166, 167 mm.; tail, 98,96) represent the large nominate race. 2 females, 1 ?.

FAMILY SCOLOPACIDAE

Tringa solitaria Wilson. Humid Tropics (Panzós, La Tinta); Arid Interior (Usumatlán). Up to 800 feet. Recorded October 7 to November 10 in the Polochic Valley; seen most often in a flooded meadow. My only Motagua Valley record is of a bird taken August 23.

In size my two female specimens (wing, 125, 131 mm., tail, 50, 55) fit the range given by Ridgway (1919: 359) for the nominate form. My male (wing 131, tail 59) represents the race T. s. cinnamomea Brewster. 1 male, 2 females.

Actitis macularia (Linnaeus). Humid Tropics (Panzós, El Estór, Zarco, Tamahú, La Tinta); Arid Interior (Usumatlán). Up to 800 feet. The most common shore bird of both valleys throughout the winter. My earliest fall date was August 18. Three birds collected in August are in the spotted summer plumage; one obtained November 24 is lightly spotted. Specimens lacking spotting were taken from September 30 to February 1. 2 males, 4 females, 2 ?.

Capella gallinago (Linnaeus). Highlands (Paruhla). Up to 5000 feet. About 25 common snipes wintered in the marsh near Paruhla. Groups of up to four were flushed on various occasions in January and March.

In the possession of 16 tail feathers, heavily barred axillaries, and transverse pectoral markings, my specimen, taken January 11, represents the race C. g. delicata (Ord). 1 male.

Erolia melanotos (Vieillot). Humid Tropics (Panzós). 200 feet. I collected a male on October 8 in a flooded portion of a meadow. 1 male.

FAMILY LARIDAE

Sterna hirundo Linnaeus. Humid Tropics (Panzós). 200 feet. I collected a male January 24 on a rapid stream 20 to 40 feet wide .

On geographic grounds the expected race is S. h. hirundo. 1 male.

ORDER COLUMBIFORMES

FAMILY COLUMBIDAE

Columba livia Gmelin. Arid Tropics (Teculután); Highlands (Usumatlán). 800 to 5800 feet. A few groups of white or largely white semi-feral birds were noted at the above localities. No populations were found established in the wild.

Columba cayennensis Bonnaterre. Humid Tropics (Panzós, El Estór). Up to 200 feet. Uncommon resident in second-growth woodland and cane along streams and larger bodies of water. A female taken October 2 had an ovary with two enlarged ova. A male collected February 5 had enlarged testes.

My four specimens are very pale on the lower belly and crissum and, throughout the series, the tail is brown, so I assign them to the race C. c. pallidicrissa Chubb. 2 males, 2 females.

Columba fasciata Say. Highlands (Usumatlán); Humid Tropics (Westfalia). 2400 to 8500 feet. Fairly common resident in pine forest topping the Sierra de las Minas; usually seen in flocks of 10 to 25 in flight or perched high on exposed limbs. At Westfalia, on the north slope of the Minas, a flock of 20 was seen flying rapidly over the cafetal on November 25. A male taken December 23 had enlarged testes.

The nominate form, to which I am assigning my material, is characterized by larger size, less pointed wing, and more brownish color above. My specimens measure: male, wing, 194

to 210 mm. (202.3), tail, 132 to 146 (140.7); female, wing 197, tail, missing. 3 males, 1 female.

Columba speciosa Gmelin. Humid Tropics (El Estór). 50 feet. I collected two specimens, one January 31, another the following day, from the top of trees along the swampy shore of Lake Izabál. 1 male, 1 female.

Columba nigrirostris Sclater. Humid Tropics (Izabál, Panzós). 1000 to 1800 feet. Uncommon resident in the denser woodland and cafetal. Males taken February 7 and March 13 had enlarged testes. 3 males, 1 female.

Zenaidura macroura (Linnaeus). Arid Interior (Usumatlán); Highlands (Usumatlán). 800 to 6600 feet. Uncommon winter visitor in the scrubby open woodland in the Motagua Valley and on the south slope of the Sierra de las Minas. In spring the species became much more common. A male collected March 7 was molting some of the body feathers.

The race Z. m. marginella (Woodhouse), to which I assign my specimens, is relatively large and pale. The specimens measure: wing, 151, 153 mm., tail, 144, 151. 2 males.

Zenaida asiatica (Linnaeus). Arid Interior (Usumatlán, El Rancho, Teculután, Morazón, San Jerónimo); Highlands (San Jerónimo, Usumatlán); Humid Tropics (Panzós). Up to 5100 feet. Abundant resident in upper Motagua Valley; recorded once in the Polochíc Valley. A small flock was seen March

3 in open pine at 5100 feet on the south slope of the Sierra de las Minas. Birds taken in late August were undergoing a general molt, while October and November specimens were generally in fresh plumage.

My specimens (male, wing average, 158.8 mm., female, 157) represent the nominate race, which is relatively small and dark. 3 males, 4 females, 1 ?.

Scardafella inca (Lesson). Arid Interior (Usumatlán, Teculután, El Rancho, Morazón, San Jerónimo, Quirigua). 800 to 4000 feet. The Inca Dove is possibly the commonest resident species in open parts of the upper Motagua Valley. Individuals seen at 3500 and 4000 feet were along the edge of open pine forest. On July 9 a nest with two eggs was discovered six feet up in an isolated 12-foot fruit tree. A male taken July 19 had enlarged testes. 3 males.

Columbigallina passerina (Linnaeus). Arid Interior (Usumatlán, Teculután, El Rancho, Morazón, Salamá, Quirigua). Up to 4500 feet. Resident in the dry Motagua Valley; somewhat less common than Scardafella inca. Both species inhabited open areas. On September 12 a nest (two well-developed young) was found at Usumatlán about five feet up in a thorny tree. On September 30 a nest (two eggs) was found in the crown of a five foot cactus. A pair taken March 2 had enlarged gonads (one ovum 5 mm.).

My specimens, which are relatively pale and have the

basal portion of the bill red, not yellow or orange, represent the race C. p. pallescens (Baird). 1 male, 1 female, 1 ?.

Columbigallina minuta (Linnaeus). Humid Tropics (Panzós, Quirigua). Up to 400 feet. Fairly common in areas from which forest had been cleared. A female taken October 14 was molting in the primaries; another female taken two days later was in fresh plumage.

The race C. m. interrupta (Griscom), to which I am assigning my material, is more grayish above, less vinaceous below (in the male), and more extensively white on the chin than the nominate form. 3 males, 3 females.

Columbigallina talpacoti (Temminck). Humid Tropics (Panzós, Zarco, La Tinta, El Estór). Up to 300 feet. The common resident ground dove in the Polochíc Valley. Adults collected in October and February had enlarged gonads. A juvenile female was taken February 6.

My series, which is well marked by rufous wing coverts and extensively rufous remiges, represents the race C. t. rufipennis (Bonaparte). 5 males, 5 females.

Claravis mondetoura (Bonaparte). Highlands (Usumatlán). 5700 to 6300 feet. A flock of 10 to 20 birds wintered in a section of brushy open woodland a mile or so wide. A female collected August 1 had two large ova (one almost fully

formed) in its ovary.

C. m. salvini Griscom is said to be slightly smaller, more extensively white on the abdomen, and more uniformly slaty on the underwing than C. m. mondetoura. In color my four males are salvini except that the only fully adult male is partly brown on the underwing; in size (wing, 110, 110, 110, 111) they are smaller than four males (wing, 110 to 114) handled by Griscom (1930). 4 males, 4 females.

Leptotila verreauxi (Bonaparte). Arid Interior (Usumatlán). 800 feet. Uncommon resident in woodland along streams. A male taken August 20 was undergoing a general molt. A female was collected November 24.

The race L. v. fulviventris Lawrence, to which I am assigning my material, is characterized by buffy underparts. 1 male, 1 female.

Leptotila plumbeiceps Sclater and Salvin. Humid Tropics (Panzós). 200 feet. A single bird was obtained February 8 15 feet above the ground in a brushy rain forest.

My specimen represents the nominate race; it is more olive above than races found in Panamá. 1 male.

Leptotila cassini (Lawrence). Humid Tropics (Panzós, Zarco). Up to 600 feet. Uncommon resident; found in swampy woodland and cane areas. The gonads of specimens taken in February were in breeding condition. Birds collected in

October were molting, though a male taken October 10 had enlarged testes. A juvenile was obtained October 17.

My specimens represent the race L. c. cerviniventris Sclater and Salvin, which is distinguished by the vinaceous tone of its breast. 3 males, 2 females, 1 ?.

Geotrygon montana (Linnaeus). Humid Tropics (Panzós, Izabál). 200 to 1700 feet. Uncommon; found in moist woodland and cafetal on the slopes of the Polochic Valley. A female taken October 18 was molting in the wings.

My five specimens represent the small, light-colored, mainland race, G. m. montana. In my two males the wing measures: 135, 145 mm. Ridgway's (1916: 476-484) average for the wing of the nominate race is 136.6 mm., for G. m. martinica of the Lesser Antilles, 151.6. 2 males, 3 females.

ORDER PSITTACIFORMES

FAMILY PSITTACIDAE

Ara macao (Linnaeus). Humid Tropics (Zarco). 200 feet. On February 12 we saw two birds in flight and heard several others in open rain forest at the foot of the Sierra de las Minas.

Aratinga holochlora (Sclater). Highlands (Usumatlán); Arid Interior (Usumatlán, Progreso). 800 to 6100 feet. Uncommon resident found in cultivated areas and scrubby woodland. All specimens from the arid interior were collected in July

and August. In the highlands a bird taken August 1 had enlarged testes. Another highland male, taken December 14, was molting in the primaries.

The five specimens collected in the arid interior (male, wing, 155 to 173 mm. (166), tail, 122 to 137 (127.3), culmen, 25 to 28 (26.4)) are decidedly larger than the highland birds (male, wing, 157, 160; tail, 116, 122; culmen, 24, 24). In addition the two highland males have considerable red on the throat and upper breast. On the basis of these differences, I am assigning the lowland specimens (4 males, 1 female) to the race A. h. strenua (Ridgway) and the highlands specimens (2 males) to the race A. h. rubitorquis (Sclater). 6 males, 1 female.

Aratinga astec (Souance). Humid Tropics (Panzós, Izabál, Westfalia, Zarco). Up to 2400 feet. Common in cultivated areas, cafetal, and open rain forest. Two specimens taken September 23 were molting in the wings.

My specimens are darker and browner (less green) overall than the race A. a. vicinalis; I assign them to the nominate race. 6 males, 4 females.

Pionopsitta haematotis (Sclater and Salvin). Humid Tropics (Izabál, Panzós). Up to 1000 feet. Common resident in open woodland, rain forest, and cafetal.

My specimens, which represent the nominate race, lack the red admixture of feathers on the foreneck and chest

characteristic of P. h. coccinicollaris. 3 males, 2 females.

Pionus senilis (Spix). Highlands (Usumatlán); Humid Tropics (Panzós, Westfalia, El Estór). Up to 7200 feet. Widespread but not common; flocks of two to eight (up to 25) were seen occasionally in brushy woodland, cutover rain forest, cafetal, and open pine. Two specimens (taken September 6 and August 1) are molting on the throat. A female collected January 1 had an enlarged ovary.

The nominate race, to which I assign my material, is a brighter form than P. s. decoloratus Griscom, and has redder under tail coverts. 2 males, 5 females, 1 ?.

Amazona albifrons Miller. Arid Interior (Usumatlán). 800 to 1000 feet. During July and August flocks of up to 20 birds were seen daily flying into the foothills of the Sierra de las Minas in the morning and returning at dusk to the woods along the river. A molting male was collected on August 23.

I am assigning my four males (wing, 156 to 165 mm. (159.2), tail, 68 to 80 (74)) to the small race A. a. nana. 4 males.

Amazona autumnalis (Linnaeus). Humid Tropics (Panzós, El Estór, Zarco). Up to 200 feet. Uncommon resident in second-growth woodland and rain forest. A pair collected on March 19 had enlarged gonads (one ovum fully formed).

The nominate race, which my material represents, differs from A. a. salvini in having more yellow on the sides of the head and a broaded red area on the forehead. 2 males, 1 female.

Amazona farinosa (Boddaert). Humid Tropics (Izabál, Panzós, El Estór, Zarco). Up to 1100 feet. Fairly common and conspicuous in the denser forests in the lower Polochíc Valley. On September 22 south of Izabál at 5 p.m., a tremendous din attracted us to a section of dense rain forest in which about 200 parrots of this species were going to roost. Several flocks of up to 20 individuals were circling into the area. The group roosted in the same place the following night but were not there when we returned three months later.

ORDER CUCULIFORMES

FAMILY CUCULIDAE

Coccyzus americanus (Linnaeus). Humid Tropics (Panzós); Arid Interior (Morazón). Up to 1000 feet. Two males were obtained, at Panzós, October 26, in the Motagua Valley, November 14, respectively.

The specimens line up with C. a. americanus in being small (wing, 140 mm., 136, tail, 140, 130, culmen, 23, 21.5). 2 males.

Piaya cayana (Linnaeus). Humid Tropics (Izabál, Panzós, Westfalia, Zarco, El Estór); Arid Interior (Usumatlán,

Morazón); Highlands (Usumatlán). Up to 6300 feet. A truly ubiquitous species in eastern Guatemala. The only woodland habitat not utilized by this species was the pine forest on top of the Sierra de las Minas. A specimen taken July 30 was molting in the primaries; another, collected October 12, was undergoing a general molt. A female obtained February 21 was in breeding condition.

The race P. c. thermophila Sclater, to which I am assigning my specimens, is similar to the nominate race but is lighter above and darker below, and the white tail-tipping is broader. 5 males, 4 females.

Crotophaga sulcirostris Swainson. Humid Tropics (Panzós, Zarco, Westfalia, El Estór, Tamahú); Arid Interior (Usumatlán, Teculután, Quirigua, Morazón, San Jerónimo); Highlands (Paruhla). Up to 5000 feet. An abundant and conspicuous resident in the Motagua Valley; found in open fields along the edges of the deeper woods. Equally abundant in the Polochíc Valley, though it was seldom seen in the rain forest. Specimens taken from August 12 to November 24 were molting. A stub-tailed juvenile female was collected on August 20.

My specimens represent the nominate race. The paler, less iridescent race, C. s. pallidula, from Baja California, may be extinct (Friedmann et al., 1950: 134). 6 males, 8 females.

Tapera naevia (Linnaeus). Humid Tropics (Panzós). 200 feet.

Uncommon resident in second-growth and cultivated areas; because of its shyness we were not aware of its presence until it began calling in late January.

The race T. n. excellens, to which I am assigning my specimen (wing, 114 mm., tail 159, culmen 17), is much larger than T. n. naevia of South America. 1 female (February 5).

Morococcyx erythropygus (Lesson). Arid Interior (Usumatlán, Morazón). 800 to 1200 feet. Two specimens were taken in scrubby woodland, respectively, August 17 and September 29.

M. e. macrourus Griscom, described from the Motagua Valley, is said to be paler and longer-tailed than M. e. erythropygus. My two specimens are not paler than examples of the nominate race available for comparison, and their tail-length (133 mm., 134) is below that given by Griscom (1930) for either male or female macrourus. 2 ?.

Dromococcyx phasianellus (Spix). Humid Tropics (Panzós). 200 feet. A single bird was flushed in a brushy area on January 12.

Geococcyx velox (Wagner). Arid Interior (Usumatlán, Morazón, Salamá). 800 to 3000 feet. Uncommon resident in open, arid habitat in the upper Motagua Valley and the Plains of Salamá. The ovary of a female taken March 26 was slightly enlarged.

My specimens represent the race G. v. affinis Hartlaub.

Affinis is paler than the nominate race and it possesses a narrow subterminal black bar on the outer rectrix (Moore, 1934). This bar is broad in G. v. velox and G. v. melanchima, and missing in G. v. longisignum. 2 females.

ORDER STRIGIFORMES

FAMILY TYTONIDAE

Tyto alba (Scopoli). Arid Interior (Usumatlán). 800 feet. One was seen at 10 a.m. on July 15 in a large tree in a brushy field. When alarmed the bird flew 150 feet into the top of a palm and later into heavy woods.

FAMILY STRIGIDAE

Otus guatemalae (Sharpe). Humid Tropics (Westfalia, Panzós, Izabál). 1000 to 2400 feet. Fairly common on the heavily forested slopes of the Polochíc Valley. Screech Owls heard at night at Izabál March 13 and 14 and at Usumatlán (5700 feet) on the night of March 8 were probably of this species. A male and female collected March 25 were in breeding condition.

My specimens represent the nominate race. All are dark; all are heavily vermiculated below; and in all three both webs of the outer primaries are barred (Moore and Peters, 1939: 50). 1 male, 2 females.

Bubo virginianus (Gmelin). Arid Interior (Usumatlán). 800 feet. Uncommon; found in scrubby woodland.

Glaucidium brasilianum (Gmelin). Arid Interior (Usumatlán, Morazón, Quirigua); Humid Tropics (Panzós, Zarco, Westfalia, Izabál). Up to 3500 feet. Common in both valleys; in habitat ranging from scrubby woodland to open rain forest. Two specimens, taken, respectively, August 21 and September 29, were molting. A male taken February 17 had enlarged testes.

My five specimens represent the race G. b. ridgwayi (Sharpe), in which the wing is longer, the tail shorter and the color darker than in G. b. cactorum. My males measure: wing, 92 to 98 mm. (94.8), tail 57 to 61 (58.8). 4 males, 1 female.

Ciccaba virgata (Cassin). Humid Tropics (Panzós, Izabál, La Tinta); Highlands (Usumatlán). Up to 5700 feet. Fairly common in the Polochic Valley in moist woodland, moving at night into more open areas. A female obtained March 19 was in breeding condition.

According to Kelso (1932) the race C. v. centralis, to which I am assigning my material, is lighter than the nominate form and has buffy, irregularly barred (and heavily streaked) upperparts. 1 male, 3 females.

Ciccaba nigrolineata Sclater. Humid Tropics (Panzós). 200 feet. I saw two birds in a swamp October 14 and collected one of them. 1 male.

Strix fulvescens (Sclater and Salvin). Highlands (Usumatlán).

6500 to 7500 feet. First recorded March 5 when Dr. Richard R. Graber collected two in cloud forest. Others were heard calling in the same area on March 6 and March 8. 1 male, 1 female.

ORDER CAPRIMULGIFORMES

FAMILY NYCTIBIIDAE

Nyctibius grandis (Gmelin). Humid Tropics (Panzós). 200 feet. Rare; recorded only in humid cultivated areas at night. My one specimen was taken from a dead tree in a field of corn stubble on the night of January 21. A potoo heard at Zarco on February 18 could have been this or the following species. So far as I know this species has not been reported north of Panamá.

The specimen is larger (wing, 406 mm., tail 283) than any specimen of N. grandis available for measurement in the museums of this country.

Nyctibius griseus (Gmelin). Humid Tropics (Panzós). 200 feet. Recorded in January and February in cultivated areas and farm yards. We were told that this potoo was slightly more common than Nyctibius grandis. A female collected on February 4 had an enlarged ovary (one ovum 10 x 12 mm.). A male was taken January 26.

My specimens represent the race N. g. mexicanus Nelson; they measure: male, wing 303 mm., tail 209, culmen (from nostril) 12; female, wing 311, tail 219, culmen 13. N. g.

lambi is a considerably larger race (Davis, 1959). The races to the south are smaller than mexicanus, the wing generally less than 300 mm. 1 male, 1 female.

FAMILY CAPRIMULGIDAE

Chordeiles acutipennis (Boddaert). Highlands (Usumatlán); Arid Interior (Usumatlán). 800 to 8200 feet. A male specimen taken August 22 at 800 feet on a rocky hillside in the Motagua Valley measures: wing 156 mm., tail 98. These dimensions are within the size-range of the race C. a. micromeris Oberholser.

On March 7 a migrating group of 8 to 10 nighthawks circled through the open pine at dusk on top of the Sierra de las Minas. Three males (wing, 184 to 193 mm. (188.3), tail, 109 to 112 (110.3), taken from this flock, I assign to the race C. a. texensis Lawrence. 4 males.

Nyctidromus albicollis (Gmelin). Humid Tropics (Panzós, El Estór, Zarco, Izabál, Westfalia); Arid Interior (El Rancho, Usumatlán); Highlands (Usumatlán). Up to 5700 feet. Common and heard calling throughout the year in the lowlands; rare in the mountains, where it was heard only in December. On October 25 on the road from El Estór to Panzós, an average of ten birds were seen per mile from 6 p.m. (dusk) to 8:30 p.m. This species was seen and heard in open woods, fields, and bare areas. Molting was noted in four specimens taken September 23 to November 23. A female collected February 16

and a male taken March 21 are in breeding condition.

In measurements my series (male, wing, 156 to 164 mm. (160.2), tail, 134 to 157 (149), female, wing, 154 to 163 (158), tail, 138 to 141 (139.5) is intermediate between the nominate race and N. a. yucatenensis. 5 males, 5 females.

Caprimulgus carolinensis Gmelin. Humid Tropics (Panzós). 200 feet. A specimen was collected from a fence post in a meadow on the night of January 21. 1 male.

Caprimulgus ridgwayi (Nelson). Arid Interior (Usumatlán). 800 feet. Specimens were taken on July 13 and August 22 on a rocky hillside covered with scrubby vegetation. Both birds were molting.

I assign my specimens (wing, male, 143 mm., female, 152) to the race C. r. troglodytes described by Griscom from interior Guatemala. 1 male, 1 female.

Caprimulgus vociferus Wilson. Humid Tropics (Izabál); Highlands (San Jerónimo, Usumatlán). 1000 to 8000 feet. Fairly common resident in the brushy pine forests in the highlands (5700 to 8000 feet). A female taken here on March 16 was in breeding condition (one very large ovum).

A single specimen netted in rain forest on March 13 represents the nominate race. The highland specimen I am assigning to the race C. v. chiapensis, which is darker and has greatly reduced light markings on the webs of the outer primaries. 2 females.

ORDER APODIFORMES

FAMILY APODIDAE

Streptoprocne zonaris (Shaw). Humid Tropics (Panzós, El Estór, Zarco, Izabál); Highlands (Usumatlán); Arid Interior (Usumatlán). Up to 6100 feet. We saw a flock of 30 to 40 birds in the Motagua Valley September 22; thereafter, the species became common in the lowlands, especially in the Polochíc Valley. Individuals often gathered in wheeling flocks, as many as 400 being in each whorl. A small flock was seen December 10 in the highlands. A male taken September 22 was molting its flight feathers.

I am assigning my material (male, wing, 197, 205; tail, 76, molting) to the race S. z. mexicana, in which the forehead is grayish sooty and the chin is paler than the rest of the head. 2 males, 1 ?.

Chaetura vauxi (Townsend). Arid Interior (Usumatlán). 800 feet. One specimen was taken September 28 from a flock of 40 or more swifts. The bird's skull was not ossified. A female Cypseloides rutilus was taken from the same flock.

My specimen (wing 112 mm., tail 40) represents the race C. v. richmondi, which is noticeably smaller and darker than the nominate form. 1 female.

Cypseloides rutilus (Vieillot). Arid Interior (Usumatlán). 800 feet. Seen occasionally in flocks of 10 to 20 during late summer. The latest observation was September 28. A

male collected July 12 had enlarged testes.

I am assigning my material to the race C. r. brunneitorques Lafresnaye, which lacks a rufous chin and throat and is relatively dark in coloration. 1 male, 1 female.

Aëronautes saxatalis (Woodhouse). Highlands (Usumatlán). 8000 feet. Seen in the air over a pine-covered ridge on September 6 and March 7. The fall group was a loose flock of 12 to 15 individuals; the spring records a flock of three and, later in the day, one of five.

FAMILY TROCHILIDAE

Phaethornis superciliosus (Linnaeus). Humid Tropics (Izabál, Panzós, Zarco, El Estór). Up to 1000 feet. Common resident in rain forest; often heard calling (a single "chip") at midday. A male taken February 20 had slightly enlarged testes. On March 14 an adult was seen feeding two fledged young.

Lighter coloration, no barring below, and buffy tips to the lateral rectrices distinguish the race P. s. longirostris (De Lattre) to which my specimens belong. 3 males, 2 females, 1 ?.

Phaethornis longuemareus (Lesson). Humid Tropics (Izabál, Zarco, Panzós, El Estór). Up to 1100 feet. Common resident in open rain forest and brushy edges, in more open situations than the preceding species.

The coloration of the race P. l. saturatus Ridgway, to which I am assigning my specimens, is intermediate between the paler, Mexican, P. l. adolphi and the darker races of southern Central America. 1 male (February 16, testes somewhat enlarged), 1 female, 2 ?.

Phaeochroa cuvieri (Delattre and Bourcier). Humid Tropics (Panzós, Zarco). Up to 200 feet. Seen only in February. The specimens were taken 25 feet above the ground in edge situations.

The race P. c. roberti, to which my specimens belong, differs from the races to the south in that the mandible is wholly dusky, the lateral rectrices bronze-green on the base only, if at all. 1 male (February 11, testes enlarged), 2 females.

Campylopterus hemileucurus (Lichtenstein). Humid Tropics (Zarco). 150 feet. Seen only in mid-February; the habitat was brushy rain forest. 1 male, 1 female.

Florisuga mellivora (Linnaeus). Humid Tropics (Izabál, Zarco). Up to 1000 feet. Recorded in February and March in open rain forest, usually quite high in the trees.

My specimen (wing 71 mm., tail 40, culmen 19) represents the nominate race. 1 male (March 15, testes enlarged).

Colibri thalassinus (Swainson). Highlands (Usumatlán). 5700 to 7800 feet. Fairly common resident in brush and second-

growth; heard frequently in December but not heard at all in March. A female collected March 7 was molting in the wing.

The nominate race, to which I am assigning my specimens, lacks the blue on the upper chest and lores found in the more southern races. 1 male, 2 females, 1 ?.

Anthracothorax prevosti (Lesson). Humid Tropics (Panzós, Zarco, El Estór). Up to 200 feet. Though not recorded in fall this species was seen fairly often in February and March in open woodland and brush, usually 25 to 30 feet above the ground. The testes of males taken February 15 and February 17 were enlarged.

I am assigning my material (bill, male, 25, 28, broken, female, 28) to the nominate form, which is characterized by long bill, light under tail-coverts, and golden green upperparts and sides. 3 males, 1 female.

Paphosia helenae (De Lattre). Humid Tropics (Panzós). 1800 to 2000 feet. Uncommon; observed only in the cafetal at Finca Miramar. A male taken January 26 had enlarged testes. Another male was taken the same day and a female March 25. 2 males, 1 female.

Chlorostilbon caniveti(Lesson). Humid Tropics (Zarco, El Estór, Panzós); Arid Interior (Usumatlán). Up to 800 feet. Seen in February and March in the Polochic Valley; recorded in the Motagua Valley only on March 11, when a specimen was

taken. The habitat was shrubby woods.

I am assigning my specimens to the race C. c. osberti Gould which has a shorter and less deeply forked tail than the other forms of this species. My two measurable specimens (a male and a female) have tails of 28 mm. The narrowness and indistinctness of the gray tipping on the middle rectrices alleged to be diagnostic of male osberti may indicate immaturity (Dickey and van Rossem, 1938: 253). 3 males, 3 females.

Thalurania colombica (Bourcier). Humid Tropics (Izabál, Panzós, Zarco, Westfalia). Up to 2400 feet. Fairly common in and along the brushy edges of open rain forest. Only the Zarco record was below 1000 feet. A male taken October 30 was molting in the wing. Males collected January 26 and February 14, and a female taken March 14, had enlarged gonads.

Throughout my series the breast and abdomen are green, not violet-blue; they therefore represent the race T. c. townsendi Ridgway. 4 males, 2 females, 1 ?.

Hylocharis leucotis (Vieillot). Highlands (Usumatlán). 5700 to 8100 feet. Abundant in the mountains in open pine-oak woodland and brushy areas. A male collected August 31 was molting both rectrices and remiges.

I assign my specimens (male, wing, 50 to 56 mm., (54), tail, 30 to 35 (32.7) to the nominate race. 13 males, 3

females.

Amazilia candida (Bourcier and Mulsant). Humid Tropics (Westfalia, Panzós, Zarco, Izabál, El Estór). Up to 2600 feet. Common in cafetal, cacao groves, and moist woodland. Molting birds were collected October 12 and November 10. Males taken in January had somewhat enlarged testes; a female taken March 13 was almost in breeding condition.

My specimens (male, wing, 50 to 52 (50.8), tail, 28 to 30 (29.6)) line up with the nominate form. 9 males, 1 female, 2 ?.

Amazilia cyanocephala (Lesson). Highlands (Usumatlán); Humid Tropics (Westfalia, Izabál). 1000 to 6500 feet. Fairly common in the mountains in second-growth and brush, usually within 15 feet of the ground. Two males collected, respectively, September 5 and November 30 were molting, the former in the wing, the latter in the tail. Males taken in July and early September had enlarged testes.

The tail and upper tail-coverts of the race A. c. guatemalensis (Gould), to which I am assigning my material, are more bronzy than in the nominate form. 10 males, 6 females, 3 ?.

Amazilia beryllina (Lichtenstein). Highlands (Usumatlán). 4900 feet. A female was taken December 24 in brushy second-growth next to a field.

The specimen represents the race A. b. devillei (Bourcier and Mulsant) in that the primaries and terminal half of the secondaries are dusky. 1 female.

Amazilia rutila (De Lattre). Arid Interior (Usumatlán, Quirigua). 400 to 800 feet. Uncommon resident in the upper Motagua Valley in scrubby woodland. We collected four males, November 22 to March 2; none of these had enlarged gonads.

The nominate race, to which I am assigning my specimens, is intermediate in color between the dark A. r. coralliros-tris of the Pacific slope of Guatemala and A. r. diluta of northwestern México. 4 males.

Amazilia tzacatl (De la Llave). Humid Tropics (Panzós, Tamahú, Izabál, La Tinta, El Estór, Zarco). Up to 2100 feet. The commonest hummingbird in the Polochíc Valley; found in rain forest, open woodland, second-growth, and brushy edges. A female was observed building a nest at Zarco; on February 17 it was a shallow cup of twigs; by February 22 it was complete. Three specimens collected in late January had enlarged gonads.

The nominate race, to which I am assigning my specimens (male, wing, 55 to 57 (56.5 mm.), tail, 32 to 35 (33.5), female, wing, 55 to 57 (56.7), tail, 30 to 33 (31.4)) has a paler abdomen and darker upper mandible than A. t. jucunda and is larger than A. t. fuscicaudata, both of these races being South American. 4 males, 5 females, 3 ?.

Lampornis amethystinus Swainson. Highlands (Usumatlán). 6000 to 6300 feet. Recorded only in December, when the species was fairly common in brush and second-growth.

The race L. a. salvini Ridgway, to which I assign my specimens (male, wing, 63 to 67 mm. (65), tail, 38 to 41 (39.5)), is relatively dark and small, has a reddish-violet throat patch (violet in L. a. margaritae), and has a black line above the white postocular area. 5 males, 5 females.

Lampornis viridi-pallens (Bourcier and Mulsant). Highlands (Usumatlán). 5700 to 7000 feet. Resident in open brushy woods and cloud forest. Conspicious during December, when a specimen molting its flight feathers and three other specimens with slightly enlarged gonads were taken.

The nominate race, to which my material belongs, is distinguished by light upperparts, speckled green sides, dull white underparts, and bluish tail. 14 males, 6 females.

Lamprolaima rhami (Lesson). Highlands (Usumatlán). 7200 to 8000 feet. A small flock seen in brushy woodland just below the pine ridges on several occasions in December and March were feeding in the top of a flowering tree. A male collected December 10 was molting.

My specimens (male, wing 68 mm., tail 47, female, wing, 64 to 68 (66.8), tail, 41 to 45 (42.2)) represent the nominate race. 1 male, 5 females.

Eugenes fulgens (Swainson). Highlands (Usumatlán). 6100 to 8200 feet. Fairly common in summer on the ridge at 8000 feet in open pine forest; in December, common in woodland and brush below 6300 feet; in March, again seen in the pines at 7700 feet. This is a good example of altitudinal migration. Specimens collected September 6 and in early December were molting.

I am assigning my specimens (culmen: male, 28 to 33 mm. (29.8), female, 32, 34) to the relatively long-billed E. f. viridiceps Boucard. 11 males, 2 females.

Heliomaster constanti (Delattre). Arid Interior (Usumatlán). 800 feet. Larry Wolf collected a male in an arid meadow on November 23.

Since this specimen is paler than the nominate race and the red of the throat is more restricted, I am assigning it to the race H. c. leocadiae (Bourcier and Mulsant). 1 male.

Doricha enicura (Vieillot). Highlands (Usumatlán, Paruhla). 4700 to 5000 feet. Rare; inhabitated heavy brush. 1 male, 1 female.

Tilmatura duponti (Lesson). Highlands (Usumatlán), 6200 feet. Humid Tropics (Panzós), 1800 feet. The highlands bird, molting in the tail and with slightly enlarged testes, was taken August 28, the lowland specimen on January 26.

I follow Peters (1945; 133) in not recognizing T. d.

xenoura Griscom. 2 males.

Archilochus colubris (Linnaeus). Humid Tropics (Panzós, El Estór, Zarco); Highlands (Usumatlán). Up to 7300 feet. The earliest fall record was a specimen taken August 29 in the Sierra de las Minas. The species wintered sparingly in the Polochíc Valley in open woodland, orchards, and cafetal. A specimen taken January 26 was molting the remiges. 3 males, 4 females.

Atthis ellioti Ridgway. Highlands (Usumatlán). 8300 feet. A specimen was taken September in a brushy part of an oak-pine forest.

In the nominate race, to which I am assigning my specimen (culmen 11.5 mm.), the tip of the outermost primary is not narrowed in width, the bill is slightly smaller, and the sides of the head are more reddish than in A. e. heloisa. 1 ?. (female plumage).

Selasphorus platycercus (Swainson). Highlands (Usumatlán). 8000 feet. A specimen was collected on September 3 in a brushy area in open pine.

My specimen represents the small race S. p. guatemalae Griscom. It measures: wing 46 mm., tail 28, culmen 17.5. 1 ? (female plumage).

ORDER TROGONIFORMES

FAMILY TROGONIDAE

Pharomachrus mocinno de la Llave. Highlands (Usumatlán). 6400 to 7000 feet. Quetzals were fairly common in the cloud forest. They were particularly noisy and conspicuous in December. A female collected August 6 was molting in the tail.

The nominate race, to which my three specimens belong, is larger and has longer, more golden green supercaudal plumes than P. m. costaricensis. 2 males, 1 female.

Trogon massena Gould. Humid Tropics (Panzós, Izabál, El Estór, Zarco). Up to 1700 feet. Fairly common in rain forest and cafetal.

My specimens (male, wing, 189, 189 mm., tail, 178, 184, female, wing, 175, 180, tail, 166, 177) represent the large nominate race, in which the upper surface of the middle pair of rectrices is bronze green. 2 males, 2 females.

Trogon citreolus Gould. Humid Tropics (Panzós, Zarco, El Estór, La Tinta). Up to 1800 feet. Common in moist woodland and open rain forest. Two specimens taken in early October were molting. A female collected on February 17 had an enlarged ovary.

In the race T. c. melanocephala Gould, to which my series belongs, the back and tail are bluish in cast, the iris brown (not yellow), and the head dark. 4 males, 5 females.

Trogon mexicanus Swainson. Highlands (Usumatlán); Humid Tropics (Izabál). 1000 to 8000 feet. Uncommon resident in the cloud forest and open brushy woodland. A male collected September 5 was molting both remiges and rectrices; two females taken in early December were molting their body plumage. A female collected at Izabál March 15 was my only lowland record.

Adult males of the nominate form, to which I assign my material (male, wing, 138, 146 mm., tail, 194, 195, female, wing, 126 to 135 (131), tail, 143 to 156 (150.7)), are larger and more bluish above than T. m. lutescens of Honduras; female T. m. mexicanus are less pale and gray on the chin, throat, and chest than female T. m. clarus of central Mexico. 2 males, 3 females.

Trogon elegans Gould. Arid Interior (Usumatlán). 800 feet. Uncommon resident in scrubby woodland. On July 9 a female was observed carrying food into a hole 15 feet up in a 20-foot dead stub. A male was nearby. A female taken August 29 was molting in the body.

My specimens are similar to the females of the Mexican races but the narrow black tips on the middle rectrices and broad black bars on the lateral rectrices place them in the little known nominate race. 2 females.

Trogon collaris Vieillot. Highlands (Usumatlán); Humid Tropics (Westfalia, Izabál, Panzós). 1000 to 6500 feet.

Uncommon resident; inhabited cloud forest principally; also found at lower elevations on the slopes of the Polochíc Valley. Specimens taken in July and August were molting. A female collected March 6 in the highlands was ovulating.

The narrow white tipping of the rectrices identifies my material as the northernmost race, T. c. puella Gould. 6 females.

Trogon violaceus Gmelin. Humid Tropics (Izabál, Panzós, Zarco). Up to 1800 feet. Fairly common in open rain forest and cafetal. On March 15 at Izabál a pair were seen going into an opening 50 feet above the ground in a dead tree. A male collected October 6 was molting its primaries. A male taken February 20 had somewhat enlarged testes.

I assign my material (male, wing, 122 to 127 (124.2), tail, 117 to 126 (122.8)) to the northernmost race, T. v. braccatus, in which the pileum is black (not blue or violet). 5 males.

ORDER CORACIIFORMES

FAMILY ALCEDINIDAE

Ceryle torquata (Linnaeus). Humid Tropics (Panzós, Zarco, El Estór). Up to 200 feet. Fairly common resident in the Polochíc drainage.

My specimens represent the nominate form in that the outer webs of the secondaries lack distinct white spots or bars. 2 males, 1 female (January 22, ovary enlarged).

Ceryle alcyon (Linnaeus). Highlands (Paruhla, Tactic, Tamahú); Humid Tropics (El Estór, Panzós). 50 to 5000 feet. Fairly common in winter in suitable habitat in the Vera Paz highlands and the Polochíc Valley.

I assign my specimen (wing, 61 mm., tail 88, culmen 51) to the eastern race C. a. alcyon. 1 male.

Chloroceryle amazona (Latham). Humid Tropics (Panzós, Zarco, El Estór). Up to 200 feet. Fairly common resident. On February 20 a pair were observed making alternate trips to a nesting hole five feet up in a seven-foot dirt bank overhanging the Zarco River. Three birds taken in early October were molting. A male collected on February 20 had enlarged testes.

The race C. a. mexicana Brodkorb, to which I am assigning my material, is distinguished b relatively long wing, short tail, and reduced or absent white supraloral streak. My males measure: wing, 136 to 144 (139.3), tail, 77 to 79 (77.7). 3 males, 1 female.

Chloroceryle americana (Gmelin). Humid Tropics (Panzós, El Estór, Izabál, Zarco, Tamahú); Arid Interior (Usumatlán); Highlands (Paruhla). 100 to 5000 feet. Widespread and common in the Polochíc Valley along small streams. My only highland record was a specimen taken at the marsh near Paruhla September 30. The species was recorded several times in the Motagua Valley; a specimen was taken on November 25.

Molting specimens were taken from September 30 to November 25. A male collected February 2 had enlarged testes.

My specimens have the large size and light coloration of C. a. septentrionalis, but approach C. a. isthmica in having an obvious submalar stripe. My specimens measure: male, wing, 82 to 86 mm. (83.7), tail, 57 to 59 (58), female, wing, 82 to 88 (84.5), tail, 53 to 61 (57). 3 males, 8 females.

Chloroceryle aenea (Pallas). Humid Tropics (Panzós, El Estór). 200 feet. Fairly common in swampy woodland and along small wooded streams. One bird was seen with a 2½ inch fish in its bill. A male taken October 13 was molting its remiges.

My specimens (wing: male, 57 to 60 mm. (58.3), female, 60) represent the race C. a. stictoptera, in which the white spots on the secondaries are large and tend to form bars. 3 males, 2 females.

FAMILY MOMOTIDAE

Hylomanes momotula Lichtenstein. Humid Tropics (Panzós). 1000 feet. A female, with slightly enlarged ovary, was taken March 23 in brushy rain forest.

The rufous of the pileum, the lighter hindneck, the lighter brown of the forehead, and the paler underparts identify the specimen as the nominate race. 1 female.

Aspatha gularis (Lafresnaye). Highlands (Usumatlán). 6500

to 8100 feet. Rarely seen resident in cloud forest; seen once, September 5, in open pine. A female taken August 5 and a male August 6 were molting heavily. A single bird was seen March 4. 1 male, 1 female.

Eumomota superciliosa (Sandbach). Arid Interior (Usumatlán). Fairly common in scrubby woodland (800 feet). Two specimens collected in late August were molting. In March birds were seen flying to and from nesting holes in sandy embankments and road cuts. On July 11 a bird was observed carrying food.

I am assigning my material to the pale race E. s. vanrossemi Griscom. 3 males, 1 female.

Momotus mexicanus Swainson. Arid Interior (Usumatlán, Morazón, El Rancho). 800 to 1200 feet. Common in scrubby woodland. In March, birds were seen flying to and from nesting holes in the sandy road cuts. Molting specimens were taken from August 19 to November 29.

I assign my specimens, which have uniform black lores, relatively dark pileum, and a streak of greenish white beneath the black suborbital area, to the race M. m. castaneiceps Gould. 2 males, 4 females.

Momotus momota (Linnaeus). Humid Tropics (Panzós, Izabál, Zarco, Westfalia, El Estór). Up to 2600 feet. Fairly common in open rain forest, cacao, and cafetal. A female

collected January 14 had an enlarged ovary.

My specimens are too large for M. m. lessoni but a trifle small for M. m. goldmani (male, wing, 138 to 149 mm. (143), tail, 229 to 258 (241.5), culmen, 41 to 45 (42.6); female, wing, 130 to 137 (134.7), tail, 219 to 227 (223), culmen, 39 to 44 (42)). I agree with Griscom (1932: 182-183) that the differences between these two races are very slight. 5 males, 3 females, 1 ?.

ORDER PICIFORMES

FAMILY GALBULIDAE

Galbula ruficauda Cuvier. Humid Tropics (Panzós, Zarco, Izabál, El Estór). Up to 1000 feet. Fairly common in open rain forest and moist woodland along streams; usually seen in pairs throughout the winter. On March 14 at Izabál, two birds were flushed from a hole in the side of a road cut. Two males taken in early October were molting the remiges.

My specimens represent the Central American race, G. r. melanogenia, the Black-chinned Jacamar. 6 males, 2 females.

FAMILY BUCCONIDAE

Notharchus macrorhynchos (Gmelin). Humid Tropics (Zarco). 150 feet. Recorded on several occasions in open rain forest in mid-February; a specimen was taken February 13.

In having a broadly white forehead with the white involving the superciliary region, the specimen lines up with N.m. hyperrhynchus (Sclater). 1 male.

Malacoptila panamensis Lafresnaye. Humid Tropics (Izabál, El Estór, Zarco). Up to 1000 feet. Fairly common, but not often seen, resident of the denser rain forests. A male collected December 30 and a female taken January 3 were molting their rectrices.

The indistinctly striped breast and sides, and the ochraceous buff chest, identify the specimens as M. p. inornata (Du Bus). 4 males, 3 females.

FAMILY RAMPHASTIDAE

Aulacorhynchus prasinus (Gould). Highlands (Usumatlán), 6000 to 8000 feet. Humid Tropics (Izabál, Panzós), 1000 to 1700 feet. Fairly common on the Sierra de las Minas; seen in the lowlands only in March. The major habitat was cloud and rain forest. Two specimens taken in August and one in December were molting. The ovary of a specimen collected at Izabál March 12 was somewhat enlarged.

I am assigning my material to the nominate form. In describing A. p. stenorhabdus, Dickey and van Rossem (1929) state that the mandibular tomium has a narrower dark margin than in A. p. prasinus (1.5 to 3 mm. as opposed to 4 to 8 in the nominate form) and a wider embossed ridge at the base of the bill. In my three males the mandibular dark area averages 4.17 mm. in width; in my four females 4.25, so they fit within the limits of prasinus. However, in the width of the embossed ridge my birds lean toward stenorhabdus. Since

the boundary between these two races falls within Guatemala, it is not surprising that my specimens are intermediates. One immature male was not included in the measurements. 4 males, 4 females.

Pteroglossus torquatus (Gmelin). Humid Tropics (Panzós, El Estór, Westfalia, Izabál, Zarco). Up to 2600 feet. Fairly common resident in open rain forest, cafetal, and second-growth.

In size (wing, 149 to 150, tail 152, culmen 97, 99), narrow basal white embossed lamina on the bill, small pectoral spot, and dark back, the specimens agree with the nominate form. 2 females.

Ramphastos sulfuratus Lesson. Humid Tropics (Panzós, El Estór, Westfalia, Izabál, Zarco). Up to 2000 feet. Fairly common in dense rain forest. In a specimen taken October 18 the remiges were molting.

The two specimens represent the nominate form, which has only a trace of red below the yellow of the breast, and is large billed (my male has a culmen of 154 mm.). 1 male, 1 ?.

FAMILY PICIDAE

Picumnus olivaceus Lafresnaye. Humid Tropics (Panzós, Zarco). Up to 200 feet. Fairly common; found in moist woodland. On February 8 a female was flushed from a newly

excavated hole near the top of a fence post. In two female specimens, collected October 15 and March 18, the remiges were molting. Males taken in late February had enlarged testes. This species is an addition to the Guatemalan check-list.

My specimens represent the race P. o. dimotus (Bangs) in having scarlet crown spots and dark back. 6 males, 5 females.

Colaptes cafer (Gmelin). Highlands (Usumatlán, Paruhla). 5000 to 9200 feet. Fairly common in open pine and brushy woodland.

I am assigning my specimens, which have the pileum and hindneck uniform deep cinnamon-rufous, the wing coverts black, barred with brown, and the red malar stripe with a black bar on the middle portion, to the race C. c. mexicanoides Lafresnaye. 4 males.

Piculus rubiginosus (Swainson). Highlands (Usumatlán, Salamá, Paruhla); Humid Tropics (Zarco). 600 to 6400 feet. Uncommon; found in open or brushy woodland. The gonads of two males taken in late February were enlarged.

My three specimens, all males, measure: wing, 121 to 132 mm. (126), tail, 67 to 78 (72), culmen, 25 to 29 (27.3); they represent the race P. r. yucatanensis (Cabot), which is not as large as P. r. maximus of the Pacific cordillera. 3 males.

Celeus castaneus (Wagler). Humid Tropics (Panzós, El Estór, Zarco, Izabál). Up to 1800 feet. Fairly common in open rain forest and cafetal. The remiges of a female taken October 18 were molting; in a female collected February 21 the ovary was enlarged. 4 males, 2 females.

Dryocopus lineatus (Linnaeus). Arid Interior (Usumatlán); Humid Tropics (Izabál, Panzós, Zarco); Highlands (San Jerónimo). Up to 3200 feet. Fairly common in both valleys in open rain forest, moist woodland, and scrubby woodland; occasionally seen on an exposed tree in a brushy area. A pair taken together on July 9 were both molting. The remiges of a female collected December 30 were molting. A female collected February 21 was in breeding condition.

In my series, which I assign to the race D. l. similis (Lesson), the bill is pale horn color, the suborbital and subauricular white stripe is distinct and continuous, and the measurements are large: male, wing, 171, 180 mm., tail, 99, 112, culmen, 37, 39; female, wing, 170 to 178 (174.7), tail, 108, 115, culmen, 33 to 37 (34). 2 males, 3 females.

Melanerpes formicivorus (Swainson). Highlands (Usumatlán, San Jerónimo); Arid Interior (Quirigua); Humid Tropics (Pancajché). 600 to 9000 feet. The most common woodpecker in the open pine forest on the Sierra de las Minas; less common where the pines reach into lower country - to the southeast at Quirigua (600 feet, March 11); and to the north at

Pancajché (1000 feet, March 17). A female collected in the highlands on July 29 had an enlarged ovary.

In my specimens, which I assign to the race M. f. lineatus (Dickey and van Rossem), the entire pectoral region is narrowly striped with black and white, the upperparts are glossed with greenish, the throat patch is pale yellowish, and the proximal portion of the remiges is marked with an extensive white patch. 1 male, 7 females.

Centurus aurifrons (Wagler). Arid Interior (Usumatlán, Salamá); Humid Tropics (Tamahú, Panzós, Westfalia, Izabál, Zarco). Up to 3300 feet. Abundant in second-growth and open woodland.

The specimens from the Motagua Valley are large: seven males, wing, 129 to 140 mm. (134.8), tail, 70 to 81 (77.3), one female, wing 128, tail 71; and are yellow to yellow-orange on the abdomen and post-nasal region. I assign them to the race C. a. santacruzi Bonaparte. The several birds from the Polochíc Valley measure: seven males, wing, 123 to 130 (125.8), tail, 69 to 76 (73.2), five females, wing, 116 to 122 (119.4), tail, 61 to 69 (66.2); and are red-orange to red on the abdomen and post-nasal region and represent the race C. a. pauper Ridgway. 14 males, 6 females.

Centurus pucherani (Malherbe). Humid Tropics (Izabál, Panzós). 1000 to 1700 feet. Found in the rain forest edge; uncommon.

The race C. p. perileucus, to which I am assigning my material, is more broadly barred on the back and more heavily spotted and barred with white on the wing coverts than the nominate form. 3 males, 1 female.

Sphyrapicus varius (Linnaeus). Highlands (Usumatlán); Humid Tropics (Zarco). 1100 to 8500 feet. Recorded in the mountains on December 20 and from March 4 to 7. A specimen was taken at Zarco on February 18.

The whitish nape and small size (wing, 129, tail 76, culmen 25 mm.) declare the specimen to be of the nominate race. 1 female.

Veniliornis fumigatus (Lafresnaye and D'Orbigny). Humid Tropics (Izabál, Panzós, Zarco). Up to 1000 feet. Uncommon resident; found in dense woodland and rain forest. A male collected September 24 was molting its flight feathers.

In the small race V. f. sanguinolenta, to which I am assigning my material, the sides of the head are not conspicuously paler than the general color; the orbital region, chin, and upper throat are buffy brown; and the coloration is deep and bright. My specimens measure: male, wing, 86 to 91 mm. (88.5), tail, 43 to 49 (46), culmen, 20 to 23 (21.3), female, wing, 87 to 89 (88), tail, 49 to 53 (50.7), culmen, 20 to 21 (20.7). 4 males, 3 females.

Dendrocopos villosus (Linnaeus). Highlands (Usumatlán).

5700 to 7200 feet. Not uncommon in the cutover pine and oak forests of the Sierra de las Minas; not found, however, in the open pine on top of the ridges. Molting birds were taken from July 30 to December 2. The testes of a male collected March 6 were enlarged.

All of my 11 specimens have the dark brown underparts and small size of D. v. sanctorum (Nelson). The males measure: wing, 104 to 111 mm. (107.5), tail, 59 to 63 (60.8), culmen, 24 to 27 (25.4); the females, wing, 102 to 109 (104), tail, 57 to 63 (60.7), culmen, 23 to 24 (23.2). 7 males, 4 females.

Phloeoceastes guatemalensis (Hartlaub). Highlands (Usumatlán); Humid Tropics (Izabál, Panzós, Zarco, El Estór). Up to 6700 feet. Fairly common in the heavier forests of eastern Guatemala; seems to prefer larger trees and denser forests than those inhabited by Dryocopus lineatus. Birds collected August 4 to November 30 were molting. A male taken February 8 had somewhat enlarged testes.

My specimens, which represent the nominate race, are small; the black of their plumage is sooty black; and the stripes along the sides of the back are yellowish rather than white. They measure: males, wing, 193 to 196 mm. (194), tail, 102 to 109 (106.2), culmen, 48 to 51 (49.5); females, wing, 184 to 187, tail, 100, culmen, 47. 4 males, 2 females.

ORDER PASSERIFORMES

FAMILY DENDROCOLAPTIDAE

Dendrocincla anabatina Sclater. Humid Tropics (Izabál, El Estór, Zarco, Panzós). Up to 1100 feet. Fairly common in rain forest. A male obtained March 12 had enlarged testes.

My specimens have a tawny nape and are dark brown. I assign them to the nominate form. 4 males, 3 females, 1?.

Dendrocincla homochroa (Sclater). Humid Tropics (Izabál). 1000 feet. Rare resident; found in rain forest. A female taken March 12 had an enlarged ovary.

In the nominate race, which my specimens represent, the general color is strongly rufescent and the back and underparts are chestnut. 1 male, 1 female.

Sittasomus griseicapillus (Vieillot). Humid Tropics (Izabál, El Estór). Uncommon; found in rain forest; specimens taken January to March.

The race S. g. sylvioides Lafresnaye, to which I am assigning my material, is small. My male measures: wing, 79 mm., tail 73, culmen 14. 1 male, 4 females.

Glyphorynchus spirurus (Vieillot). Humid Tropics (Izabál, Panzós, El Estór). Up to 1700 feet. Fairly common in the open rain forests as well as in cafetal and moist woodland. A female collected January 14 was undergoing a general molt.

I am assigning my specimens, which have dark upperparts,

a conspicuously marked chest, and a deep buff throat and chin, to the race G. s. pectoralis Sclater and Salvin. 6 males, 4 females.

Xiphocolaptes promeropirhynchus (Lesson). Highlands (Usumatlán); Humid Tropics (Izabál). 1000 to 7200 feet. Uncommon resident in the Sierra de las Minas at the edge of the cloud forest and in open oak-pine woodland. Of two birds seen together at Izabál on March 14, one, a male, was collected. A female taken August 5 was molting. Two males taken in early March were nearly in breeding condition.

My specimens are small. The males measure: wing, 136 to 146 (141.7), culmen, 47 to 50 (48.5); females, wing 134, 143, culmen, 46, 52. They represent the race X. p. emigrans Sclater and Salvin, in which the wing and culmen are small. 4 males, 2 females.

Dendrocolaptes certhia (Boddaert). Humid Tropics (Izabál, Panzós, El Estór). Up to 1000 feet. Uncommon resident; found in rain forest. A female collected February 14 had a moderately enlarged ovary.

In my five specimens, which I assign to the race D. c. sancti-thomae (Lafresnaye), the pileum is more rufescent than the back and the barring above and below is broad. 2 males, 3 females.

Dendrocolaptes picumnus Lichtenstein. Highlands (Usumatlán).

6000 to 7500 feet. Not uncommon in open cutover woodland and cloud forest. A female collected August 6 was molting. A male taken March 5 was in breeding condition.

My specimens are of the race *D. p. punctigollis* Sclater and Salvin; the pileum is blackish with narrow buffy streaks, and the chest is pale. 3 males, 5 females.

Xiphorhynchus flavigaster Swainson. Humid Tropics (*Panzós, Izabál, El Estór, Zarco*). Up to 1100 feet. Common resident in swampy woodland and rain forest. A female collected in October was molting.

Throughout my 12 specimens the general color is dark brown and the throats are immaculate; the series represents the race *X. f. eburneirostris* (Des Murs). 8 males, 4 females.

Xiphorhynchus erythropygius (Sclater). Highlands (*Usumatlán*). 6500 to 7800 feet. Rare; found in cloud forest and open pine. A male taken December 17 had enlarged testes; a female collected March 8 had a slightly enlarged ovary; a third specimen was taken December 2.

My three specimens, which I assign to the nominate form, are paler brown above, less buffy on the chin and throat, and more heavily streaked on the back than *X. e. parvus* Griscom; the wing in my two males measures: 114, 127 mm. 2 males, 1 female.

Lepidocolaptes souleyeti (Des Murs). Humid Tropics (Panzós, Izabál, Zarco). Up to 1000 feet. Uncommon; inhabits heavy second-growth, moist woodland and rain forest. Two females collected in October and a male collected in February were molting.

The broad pale buffy streaks both above and below, and the strongly buffy throat of my specimens declare them to be of the race L. s. insignis (Nelson). 3 males, 6 females.

Lepidocolaptes affinis (Lafresnaye). Highlands (Usumatlán). 6500 feet. The common woodcreeper of the cloud forest; often seen with flocks of smaller birds. A specimen taken July 31 was molting.

I assign my specimens, whose underparts are narrowly streaked and whose throat-color is pale buff, to the nominate form. 5 males, 4 females, 1 ?.

FAMILY FURNARIIDAE

Synallaxis erythrothorax Sclater. Humid Tropics (Panzós, Zarco, Quirigua). Up to 400 feet. Because of its persistent song, this species was conspicuous in the second-growth woods and brushy areas in the upper Polochíc and lower Motagua valleys. A molting specimen was taken October 8.

The nominate form, to which I am assigning my specimens, is darker than S. e. pacifica and has a black, not a gray, throat. 4 males, 1 female, 3 ?.

Anabacerthia variegaticeps (Sclater). Humid Tropics (Westfalia); Highlands (Usumatlán). 2400 to 6500 feet. Two specimens were taken in dense forest, one at Westfalia, October 31, the other in the highlands, December 7. 2 ?.

Automolus rubiginosus (Sclater). Highlands (Usumatlán). 6000 to 7600 feet. Resident in cloud forest and brushy oak woodland; rare. A nest was found in the process of construction on December 9. The remiges of a female collected August 30 were molting.

In my specimens, which represent the nominate form, the pileum is darker than, not concolor with, the back. I follow Miller et al. (1957: 53), in considering A. r. veraepacis (based on specimens from eastern Guatemala) a synonym of A. r. rubiginosus. 1 male, 2 females.

Automolus ochrolaemus (Tschudi). Humid Tropics (Izabál, Panzós). 1000 to 1800 feet. Fairly common in the rain forests at Izabál; recorded at Panzós only on March 23. The remiges of a specimen taken September 24 were molting. A female collected March 12 had slightly enlarged gonads.

The race A. o. amusos Peters, to which I assign my material, is paler than A. o. cervinigularis and darker than A. o. exsertus. 2 males, 3 females, 2 ?.

Xenops minutus (Sparrman). Humid Tropics (Panzós, Izabál, El Estór). Up to 1100 feet. Fairly common resident; found

in moist woodland and rain forest. A pair was seen feeding young out of the nest on March 22 at El Estór. A male taken January 22 had enlarged testes.

My specimens, whose rectrices are less extensively black basally and whose general coloration is more rufous than that of X. m. ridgwayi, I assign to the race X. m. mexicanus Sclater. 5 males, 4 females.

Sclerurus guatemalensis (Hartlaub). Humid Tropics (Izabál). 1000 to 1100 feet. The three specimens were netted in dense rain forest on March 14 and 15.

I assign my material to the nominate form, which is paler than S. g. salvini of South America. 3 females.

FAMILY FORMICARIIDAE

Taraba major (Vieillot). Humid Tropics (Panzós). 200 feet. Fairly common in brush and second-growth west of Panzós. Two birds taken in October were molting.

The black under tail coverts distinguish the race T. m. melanocrissus Sclater, to which I assign my material, from forms to the south. 5 males, 2 females.

Thamnophilus doliatus (Linnaeus). Humid Tropics (Panzós, Zarco, El Estór, Quirigua); Highlands (Usumatlán). Up to 6300 feet. Common in brush and thickets, heard more often than seen. A male collected October 20 was molting its remiges and a female taken February 9 was molting its rectrices.

A female taken July 29 had an enlarged ovary (one egg in the oviduct).

My specimens, which I assign to the race T. d. intermedius Ridgway, are dark in the male with broad black bars below. 5 males, 5 females.

Thamnophilus punctatus (Gmelin). Humid Tropics (Zarco, El Estór, Izabál). Up to 1000 feet. Fairly common in February and March in and near the rain forest. Specimens taken in late February had enlarged gonads.

The race T. p. atrinucha, to which I assign my specimens, is darker than races to the south. 4 males, 3 females.

Thamnistes anabatinus Sclater and Salvin. Humid Tropics (Izabál). 1000 feet. A single male, taken in dense rain forest on December 31, represents the nominate form. It is pale and ochraceous and has rufescent secondaries. 1 male.

Myrmotherula schisticolor (Lawrence). Humid Tropics (Izabál). 1000 feet. Resident in rain forest; rare. A female collected March 14 was in breeding condition.

My male specimens are too extensively black and my females are too brown for any of the South American races; they belong to the nominate race. 2 males, 2 females.

Microrhopias quixensis (Cornalia). Humid Tropics (Izabál, El Estór, Zarco). Up to 1100 feet. Common in the rain forest; also seen in the brushy edges of the forest. On March

24 a female was seen chasing a male and displaying the white on her back.

My 11 specimens have the slate-colored flanks and the narrow white tipping of the lateral rectrices (6 to 8 mm. on the males) characteristic of M. g. boucardi (Sclater). 6 males, 5 females.

Cercomacra tyrannina (Sclater). Humid Tropics (Panzós, Zarco). Up to 1700 feet. Fairly common in dense undergrowth in the rain forest edges and openings. Four specimens taken in October were molting. A female collected February 15 had a somewhat enlarged ovary.

I am assigning my specimens to the race C. t. crepera Bangs, which is darker than the nominate form. 12 males, 8 females.

Gymnocichla nudiceps (Cassin). Humid Tropics (Zarco, Panzós). Up to 200 feet. Recorded twice in late February and once in late March in brushy rain forest. A male collected March 22 had enlarged gonads.

On my specimens, which I assign to the race G. n. chiroleuca Sclater and Salvin, the anterior margin of the lesser wing-covert area is broadly white and the bill is light in the male; the upper wing-coverts are blackish in the female. 1 male, 2 females.

Formicarius analis (D'Orbigny and Lafresnaye). Humid

Tropics (Panzós). Up to 1900 feet. A male (with enlarged testes) taken March 23, in dense brush, has the dark coloration in general, the rufescent sides of the neck, and the slightly rusty under tail coverts of F. a. moniliger Sclater. 1 male.

FAMILY PIPRIDAE

Piprites griseiceps Salvin. Humid Tropics (Izabál). 1100 feet. A single male specimen taken January 2 in dense rain forest was part of a flock of small birds, mostly Microrhopias quixensis. This is the first record north of Nicaragua. 1 male.

Pipra mentalis Sclater. Humid Tropics (Panzós, Izabál, Zarco, El Estór). Up to 1700 feet. The common manakin of the Polochic Valley; found in various woodland habitats from brush to rain forest. A female with skull not fully ossified was taken September 25.

Throughout my series, which I assign to the nominate form, the inner webs of the remiges are edged with pale yellow, the head is light red, paler in front than on the crown and occiput, and the thighs are pale yellow. 6 males, 9 females.

Manacus candei (Parzudaki). Humid Tropics (Panzós, Zarco, El Estór). Up to 1800 feet. Resident and rather common in dense undergrowth of open rain forest. Considerable

courtship activity was observed in mid-February. A male with enlarged testes was taken February 18. Males in first winter plumage were secured on October 11 and 12. 10 males, 1 female, 1 ?.

Schiffornis turdinus (Maximilian). Humid Tropics (Izabál, El Estór). Up to 1100 feet. Uncommon resident; found in the rain forest understory. A female collected March 13 and a male taken March 15 had enlarged gonads.

On my specimens, which I assign to the race S. t. verae-pacis (Sclater and Salvin), the throat is brownish olive, the remainder of the bird greenish olive. 2 males, 2 females, 1 ?.

FAMILY COTINGIDAE

Cotinga amabilis Gould. Humid Tropics (Panzós). Up to 1800 feet. A population moved into the open woodland and cafetal at Finca Miramar in mid-winter; by March most of the birds had gone, though two females were seen as late as March 23. Three specimens taken in January and February were molting. 6 males, 2 females, 1 ?.

Attila spadiceus (Gmelin). Humid Tropics (Izabál, Panzós, Zarco). Up to 1400 feet. Uncommon resident found in cut-over rain forest and cacao. The testes of a male taken February 13 were somewhat enlarged. On March 23 at Finca Miramar I saw a pair in a vine tangle. One of the birds was

carrying nesting material.

My specimens, which I am assigning to the race A. s. flammulatus Lafresnaye, are large, dark, brown in the tail, russet brown on the back, and ochraceous yellow on the rump; the males measure: wing 93 to 94 mm. (93.3), tail 76 to 83 (79.3). 3 males, 1 ?.

Rhytipterna holerythra (Sclater and Salvin). Humid Tropics (Izabál, El Estór, Zarco). Up to 1100 feet. Uncommon; found in dense rain forest. A male taken September 25 was molting both remiges and rectrices.

The nominate form, to which my specimens belong, is paler than R. h. rosenbergi of South America. 5 males, 3 females, 1 ?.

Lipaugus unirufus Sclater. Humid Tropics (Izabál). 1000 feet. A female taken January 3 in rain forest is pale and large (wing, 137, tail, 109); I assign it to the nominate form. 1 female.

Pachyramphus cinnamomeus Lawrence. Humid Tropics (Izabál). 1000 feet. One specimen was taken in rain forest on September 25. Three were seen in the same area on March 13.

My specimen compares favorably in color with specimens of P. c. fulvidior Griscom in the American Museum of Natural History in New York. 1 male.

Pachyramphus polychopterus (Vieillot). Humid Tropics

(Panzós, Zarco). Up to 200 feet. Fairly common in orchards, brushy woodland and edges of pastures. A male taken October 13 was molting into the adult gray plumage.

My specimens have the clear gray underparts of P. p. cinereiventris (Sclater). 4 males, 5 females.

Platypsaris aglaiae (Lafresnaye). Humid Tropics (Izabál). 1000 to 1100 feet. Rare; found in rain forest. A male taken September 23 was molting.

The race P. a. hypophaeus (Ridgway), to which my specimens belong, is black on the back and the entire throat is slate color, without rose coloration. 2 males, 1 female.

Tityra semifasciata (Spix). Arid Interior (Usumatlán, San Jerónimo); Humid Tropics (Izabál, Panzós, Panoajché, Zarco, Westfalia); Highlands (Usumatlán). Up to 6400 feet. Common resident in the lowlands in many types of woodland. Males with enlarged testes were taken March 6 in open pine at 6400 feet and August 19 in the Motagua Valley. Birds obtained August 21 and November 14 were molting.

My specimens, which I assign to T. s. personata Jardine and Selby, are dark gray on the back, pale gray below, and small; the males measure: wing, 120 to 130 (126.8), tail, 73 to 78 (75.1). 8 males, 3 females, 1 ?.

Tityra inquisitor Lichenstein. Humid Tropics (Panzós, El Estór, Zarco). Up to 1800 feet. Uncommon; inhabited rain

forest, cafetal, and open woods.

My specimens appear to me to be of the race T. i. fraseri (Kaup); they are dark and large (male, wing, 110 mm., tail, 65, female, wing, 105, 109, tail, 65, 67). 1 male, 2 females.

FAMILY TYRANNIDAE

Sayornis nigricans (Swainson). Highlands (Salamá); Humid Tropics (Zarco, Tamahú, Panzós). Up to 4900 feet. Fairly common along the rapid streams of the Polochíc drainage from near the headwaters into the floor of the valley.

The dusky under tail-coverts, lack of white in the wings, and slaty back place the specimens as S. n. aquatica Sclater and Salvin. 2 males, 2 females, 1 ?.

Muscivora forficata (Gmelin). Humid Tropics (Panzós); Arid Interior (Zacapa, Usumatlán). Up to 800 feet. Uncommon transient; rare winter resident; seen at Zacapa on December 28 and January 6 and at Usumatlán in good numbers in early March. The only Polochíc valley record was a single bird collected October 26. 1 male.

Tyrannus tyrannus (Linnaeus). Humid Tropics (Panzós). 200 feet. Two immature specimens were collected October 25; one of these had an oddly chopped-off tail as if cut with scissors. 1 male, 1 female.

Tyrannus verticalis Say. Humid Tropics (Westfalia); Arid

Interior (Morazón, Usumatlán). 800 to 2400 feet. Specimens were taken October 29, November 14 (molting), and November 25. 1 male, 2 females.

Tyrannus melancholicus Vieillot. Arid Interior (Usumatlán, Quirigua, Teculután, Morazón, San Jerónimo); Humid Tropics (Panzós, El Estór, Zarco, Izabál); Highlands (Paruhla). Up to 5000 feet. Fairly common and widespread in the Motagua and Polochíc Valleys. As with many flycatchers, the large number of localities listed above is due more to the conspicuousness of perches than to actual abundance of the birds. A female taken February 18 and a male from March 17 had enlarged gonads.

My specimens, which I assign to the race T. m. chloronotus Berlepsch, are pale and small; males measure: wing, 114 to 123 mm. (116.4), tail, 97 to 103 (100); females: wing, 111 to 114 (112), tail, 90 to 98 (93.3). 5 males, 3 females.

Myiodynastes luteiventris Sclater. Arid Interior (Usumatlán, Teculután); Humid Tropics (Panzós). Up to 800 feet. Recorded in the Motagua Valley in July and September; the Polochíc Valley specimen was collected in March. Birds taken July 10 and March 23 had enlarged testes.

The nominate form, to which my material probably pertains, is more richly colored and heavily streaked than M. l. swarthi, but the two races are very close. 3 males, 1 female.

Megarynchus pitangua (Linnaeus). Arid Interior (Usumatlán, San Jerónimo, Quirigua); Humid Tropics (Izabál, Tamahú, Panzós, Zarco). Up to 2400 feet. Fairly common in both valleys. Birds taken from August 22 to November 23 were molting.

My specimens from the Motagua Valley are much darker yellow below and more olive above than three specimens of M. p. deserticola in the American Museum of Natural History; they are, indeed, indistinguishable from my series from the Polochíc Valley (Humid Tropics) and from the race M. p. mexicanus (Lafresnaye). Griscom described deserticola as a pale form from the arid interior of Guatemala; he based his description upon specimens from Sacapulas in the Río Negro Valley of northern Guatemala, and it appears to me that the form is restricted to this area. 4 males, 4 females.

Myiozetetes similis (Spix). Humid Tropics (Panzós, Zarco, El Estór); Highlands (Paruhla). Up to 500 feet. Fairly common in dense brush, second-growth and cafetal. The remiges of two birds taken in early October were molting.

On my specimens, which I assign to the race M. s. texensis (Giraud), the inner webs of the remiges are edged with pale yellowish buff and the wing-size is large: male, 96 to 98 mm. (97.3), female, 86 to 92 (89.7). 4 males, 6 females, 1 ?.

Pitangus sulphuratus (Linnaeus). Arid Interior (Usumatlán, Quirigua, Morazón); Humid Tropics (Panzós, El Estór, Zarco).

Up to 2000 feet. Common and conspicuous in both valleys in farm land, second-growth, and swampy woodland. Molting specimens were taken from July 13 to October 15; another, taken January 13 was molting its upper tail-coverts. A male collected July 11 had enlarged testes.

My specimens, which are of the race P. s. guatimalensis (Lafresnaye), are dark and small; the males measure: wing, 111 to 126 mm. (117.9), tail, 82 to 95 (90.1). 8 males, 3 females.

Myiarchus crinitus (Linnaeus). Humid Tropics (Panzós, El Estór, Izabál); Arid Interior (Usumatlán, Morazón). Transient and winter visitor in both valleys; found in all sorts of forest from scrubby woodland to rain forest. Specimens were taken from October 20 to November 26 and on February 1.

My specimens represent the not very strongly marked race M. c. boreus Bangs, the wing and tail being longer and the bill shorter than in M. c. crinitus. My males measure: wing, 102 to 109 (104.6), tail, 90 to 95 (93.4), culmen, 18 to 20 (19). 5 males, 1 female.

Myiarchus tyrannulus (Muller). Humid Tropics (Panzós, Zarco); Arid Interior (Usumatlán). Up to 800 feet. Recorded in November and February. A male taken February 15 had enlarged testes.

The race M. t. cooperi, to which I assign my material is smaller than M. t. magister. My males measure: wing, all

102 mm., tail, 91 to 97 (93.7). 3 males, 1 female.

Myiarchus tuberculifer (D'Orbigny and Lafresnaye). Highlands (Usumatlán). Humid Tropics (Panzós, El Estór, Zarco). Up to 6300 feet. Common resident in the Polochíc Valley in rain forest, moist woodland, second-growth, and cafetal. A single specimen was taken December 18 in the highlands.

My 26 lowland specimens represent the race M. t. connectens Miller and Griscom; in the males the wing measures 77 to 86 mm. (81.1). My single highland bird (male, wing 86) is paler and more olivaceous on the back than any of the lowland birds, and may be assigned to M. t. lawrenceii (Giraud). 18 males, 6 females, 3 ?.

Nuttallornis borealis Swainson. Highlands (Usumatlán); Humid Tropics (Izabál). 1000 to 8200 feet. Uncommon winter visitor in the highlands; seen at Izabál on March 14; usually seen perched in exposed dead trees in brushy areas or in open pine woodland. A bird collected in December was molting and a male taken March 7 had slightly enlarged testes. 6 males, 1 female.

Contopus virens (Linnaeus). Humid Tropics (Izabál, Panzós). Up to 1000 feet. Two females were taken respectively September 24 and October 9 in brushy rain forest. Pewee calls were heard throughout the day at Izabál September 24 and 25.

The specimens have lighter wing linings and are slightly more greenish than my specimens of C. richardsoni. 2 females.

Contopus richardsoni (Swainson). Highlands (Usumatlán); Arid Interior (Usumatlán); Humid Tropics (Panzós, Westfalia). Up to 8700 feet. Fairly common transient; recorded from August 18 to October 30. Two specimens taken in late August had slightly enlarged gonads.

I assign my specimens to the nominate race; the males measure: wing, 83 to 92 mm. (86.1), tail, 62.5 to 71 (65.3), the females: wing, 80 to 85 (82.8), tail, 61 to 63 (62.3). 9 males, 4 females.

Contopus cinereus (Spix). Humid Tropics (Panzós). 1700 feet. A single specimen was taken January 19 in second-growth. The race C. c. brachytarsus (Sclater), to which my specimen belongs, is more olive above and yellow below than the races to the south. 1 ?.

Contopus pertinax Cabanis and Heine. Highlands (Usumatlán, Salamá). 3500 to 7600 feet. A fairly common resident, generally seen well above the ground on exposed perches in cut-over or open oak and pine woodland. Two immature birds were taken in late July. A specimen collected March 11 was molting.

I am assigning my material to the nominate race, which is more deeply colored in general, and more strongly yellow on the abdomen, than C. p. pallidiventris. 2 males, 6 females, 1 ?.

Empidonax flaviventris (Baird and Baird). Humid Tropics (Panzós, Westfalia, Izabál, El Estór, Senahú, Zarco); Highlands (Usumatlán). Up to 8000 feet. Abundant in winter in the Polochic Valley; specimens were taken in the highlands only July 31 and September 3. The remiges of specimens taken October 17 and March 23 were molting. 19 males, 16 females, 5 ?.

Empidonax trailli (Audubon). Humid Tropics (Panzós). 200 feet. Recorded February 6 to 9 in moist woodland and brushy second-growth.

I assign my specimens to the nominate form, which is more greenish olive on the back, grayer on the pileum and hindneck, and smaller-billed than E. t. brewsteri. In each of my four specimens the culmen measures 13 mm. 2 males, 2 ?.

Empidonax minimus (Baird and Baird). Arid Interior (Usumatlán, Morazón, San Jerónimo, Quirigua); Humid Tropics (Panzós, Westfalia, Zarco). Up to 2400 feet. Abundant in winter in both valleys. My earliest fall date was August 18 (one specimen). The habitat ranged from weedy fields to open rain forest. Molting birds were taken from August 25 to October 20. 21 males, 11 females, 12 ?.

Empidonax hammondi (Xantus). Highlands (Usumatlán). 5900 to 6600 feet. Fairly common in brush and second-growth from December 2 to March 8. 7 males, 5 females, 1 ?.

Empidonax flavescens Lawrence. Highlands (Usumatlán). 6300 to 7200 feet. A fairly common resident of the cloud forest and its brushy edges. Two males taken December 3 and March 5 respectively, had incompletely ossified skulls. Four specimens collected in early March had enlarged gonads.

My specimens are purer green above than E. f. flavescens and lack the fulvous wash that is so noticeable on the chest of that form; they represent the race E. f. dwighti (Dickey and van Rossem). 6 males, 5 females, 1 ?.

Empidonax albigularis Sclater and Salvin. Highlands (Usumatlán); Arid Interior (Usumatlán); Humid Tropics (Panzós). 200 to 5900 feet. Recorded in July and August in the highlands, in September in the Motagua Valley, and throughout the winter in the Polochic Valley. Immature specimens were taken in the highlands on July 30 and August 6. Molting birds were collected February 9 and September 12.

My seven specimens, all of which are richly colored, represent the race E. a. axillaris Ridgway. 2 males, 3 females, 2 ?.

Empidonax fulvifrons (Giraud). Highlands (Paruhla). 5000 feet. Seen in a marshy meadow in mid- and late winter. A male taken March 17 had enlarged testes.

My specimens belong to the richly colored race E. f. fuscioeps Nelson, 2 males, 1 female.

Xenotriccus callizonus Dwight and Griscom. Highlands (Paruhla). 5100 feet. Larry Wolf took a female of this rare species in heavy brush January 11. The specimen has a darker crown than the type (which is possibly a sub-adult) in the American Museum of Natural History. 1 female.

Mitrephanes phaeocercus (Sclater). Highlands (Usumatlán). 6000 to 8500 feet. A fairly common resident in oak, pine, and cloud forest. An immature bird was taken August 28. The remiges and rectrices of a specimen taken September 3 were molting. The ovary of a female collected March 4 was somewhat enlarged.

My specimens are dark and richly colored, clearly belonging to the race M. p. quercinus Dickey and van Rossem. 5 males, 1 female, 1 ?.

Terenotriccus erythrurus (Cabanis). Humid Tropics (Izabál, El Estór, Zarco). Up to 1000 feet. Rare; found only in or near the rain forest.

I assign my four specimens, whose underparts are tawny and whose upperparts are grayish olive, to the race T. e. fulvigularis (Salvin and Godman). 1 male, 1 female, 2 ?.

Myiobius sulphureipygius (Sclater). Humid Tropics (Izabál). 1000 to 1100 feet. Uncommon resident; found only in the rain forest. A male taken March 15 had enlarged testes.

My specimens have the dark olive back and dusky-centered

pale yellow under tail-coverts of the nominate form. 4 males, 1 ?.

Onychorhynchus mexicanus (Sclater). Humid Tropics (Panzós, Westfalia, Izabál, Zarco, El Estór). Up to 2400 feet. Found in cafetal and brushy rain forest; uncommon. The ovary of a female taken March 14 was somewhat enlarged.

My specimens represent the nominate race; the males measure: wing, 85 to 89 mm. (87), tail, 71 to 75 (72.5), culmen, 23 to 26 (24.8). 4 males, 2 females.

Platyrinchus mystaceus Vieillot. Humid Tropics (Izabál, El Estór, Panzós). Up to 1300 feet. Uncommon resident; found in the rain forest understory. A male taken March 14 had enlarged testes.

My specimens, which represent the race P. m. cancrominus Sclater and Salvin have no yellow crown-patch; the bills are small: culmen, 10 to 11 mm. (10.2), bill width, 8 to 9.5 (8.8). 2 males, 1 female, 1 ?.

Tolmomyias sulphurescens (Spix). Humid Tropics (Panzós, Tamahú, Zarco); Arid Interior (Usumatlán). Up to 3600 feet. A fairly common resident in the Polochíc Valley; found in cafetal and moist woodland. The Motagua Valley specimens were taken on November 25 and in early March. A specimen taken October 9 was molting. A male collected March 23 had enlarged testes.

In all my specimens the chest, pileum, and hindneck are gray and the greater wing coverts are edged with yellow-olive; the series represents the race T. s. cinereiceps (Sclater). 11 males, 5 females, 3 ?.

Rhynchocyclus brevirostris (Cabanis). Humid Tropics (Izabál, El Estór, Zarco). Up to 1000 feet. Uncommon resident; found in rain forest. A female collected March 14 was in breeding condition.

My specimens have the olive-green chest and olive-margined wing coverts of the nominate form. 3 males, 2 females, 1 ?.

Todirostrum cinereum (Linnaeus). Humid Tropics (Panzós, Zarco). Up to 200 feet. Uncommon resident; found in dense second-growth and heavy brush.

My specimens are small and have the dark upperparts of the race T. c. finitimum Bangs; the males measure: wing, 39 to 43 mm. (41.2), tail, 31 to 35 (32.8). 5 males, 1 female, 2 ?.

Todirostrum sylvia (Desmarest). Humid Tropics (Panzós). 200 feet. Two specimens were taken, one in dense cane October 10 and the other in moist woodland February 11.

My specimens represent the race T. s. schistaceiceps Sclater; in both of them the sides, flanks, and under tail-coverts are strongly tinged with greenish yellow. 1 female, 1 ?.

Oncostoma cinereigulare (Sclater). Humid Tropics (Izabál, Panzós, Westfalia, Zarco); Arid Interior (Usumatlán). Up to 2000 feet. Common; found in rain forest, moist woodland and cafetal. The Motagua Valley specimen was taken November 25. A male collected March 15 had somewhat enlarged testes. 5 males, 7 females, 4 ?.

Elaenia flavogaster (Thunberg). Humid Tropics (Panzós). 200 feet. Two males taken in mid-October in a cultivated area had slightly enlarged testes. The remiges of one of the specimens were molting.

On my specimens, which represent the race E. f. subpagana Salvin and Sclater, the underparts are deep yellow, the back dark brown, and the chest pale gray. 2 males.

Elaenia frantzii Lawrence. Highlands (Usumatlán). 6200 feet. A male taken December 23 in brushy woodland is browner above and darker below than the nominate form; it represents the race E. f. ultima Griscom. 1 male.

Myiopagis viridicata (Vieillot). Humid Tropics (Izabál, El Estór, Zarco). Up to 1000 feet. Rare; found in brushy woodland.

I assign my specimens, whose wing-coverts lack pale edgings and whose general coloration is dark, to the race M. v. placens (Sclater). 2 males, 1 female.

Tyranniscus vilissimus (Sclater and Salvin). Humid Tropics

(Panzós, Zarco, El Estór); Highlands (Usumatlán). Up to 8000 feet. Fairly common resident in the lowlands; found in brushy woodland and cafetal. Less common in the highlands in open pine and mixed woodland in December, when seven specimens were taken.

My series of 17 represents the nominate race; the males measure: wing, 57 to 63 mm. (60). 11 males, 6 females.

Leptopogon amaurocephalus Tschudi. Humid Tropics (Panzós, Izabál, Zarco). Up to 1000 feet. Uncommon resident; found in open rain forest. A male collected February 21 had enlarged testes.

My specimens have the deep brown pileum and light green back of L. a. pileatus Cabanis. 4 males, 1 ?.

Pipromorpha oleaginea (Lichtenstein). Humid Tropics (Izabál, Panzós, Westfalia, El Estór, Zarco). Up to 2400 feet. Common; found in rain forest, cafetal, and brushy woodland. The ovary of a female collected February 15 was enlarged.

My specimens, which are grayish on the chin and upper throat, and large, represent the race P. o. assimilis (Sclater). The males measure: wing, 64 to 70 mm. (66.5), tail, 50 to 55 (52.6); the females: wing 60 to 63 (61), tail, 47 to 51 (48.3). 11 males, 3 females.

FAMILY HIRUNDINIDAE

Progne chalybea (Gmelin). Humid Tropics (Panzós). 200 feet.

March 18 I collected from a small flock a female whose size (wing, 131 mm., tail 65) indicates the nominate race. 1 female.

Petrochelidon pyrrhonota (Vieillot). Arid Interior (Usumatlán, Morazón); Humid Tropics (Panzós). Up to 1200 feet. Mixed flocks of up to 75 migrating swallows, about half of them Barn Swallows, the remainder mostly Cliff Swallows, were seen moving down the Motagua Valley in late September. A small mixed flock of this sort was seen at Panzós on October 19. The skulls of three Cliff Swallows taken in late September were not completely ossified.

My six Cliff Swallows have pale foreheads, and the breasts are tinged with ochraceous buff; I assign the series to the nominate race; in the males the wings measure: 109 to 117 mm. (113). 4 males, 2 females.

Hirundo rustica Linnaeus. Arid Interior (Usumatlán, Teculután); Humid Tropics (Panzós). Up to 1000 feet. A transient, common in the Motagua Valley from mid- to late September and fairly common in the Polochíc Valley from October 2 to October 24. One was seen in the Motagua Valley March 2.

My three specimens, all males, are small, intensely colored below, and without the black chest band; and represent the race H. r. erythrogaster; they measure: wing 116 to 117 mm. (116.7), tail 56 to 64 (60.8). 3 males.

Stelgidopteryx ruficollis (Vieillot). Humid Tropics (Panzós); Highlands (Tamahú, Paruhla). Up to 5000 feet. Uncommon winter visitor; specimens collected October 25, November 13, and January 11 were molting.

Four dark specimens whose under tail-covert shafts are subterminally dark, I am assigning to the race S. r. fulvipennis (Sclater). The remaining four specimens, all of them somewhat paler and with immaculate white crissum, I assign to S. r. serripennis (Audubon). None of my specimens have dark tipped under tail-coverts or are as dark generally as the race S. r. stuarti, which is said to breed in the Vera Paz highlands. 5 males, 3 females.

Notiochelidon pileata (Gould). Highlands (Usumatlán, Tactic). 4800 to 7500 feet. Uncommon resident in the highlands; nesting in cutaway earthen banks and road-cuts. At Tactic on January 11 at least eight birds were seen going in and out of the same hole, which was near the top of a road-cut 35 feet high. An immature specimen was collected August 6. Two specimens taken in early December were molting. 1 male, 2 females, 2 ?.

Iridoprocne albilinea (Lawrence). Humid Tropics (Panzós, El Estór). Up to 200 feet. Apparently of regular occurrence along the shores of Lake Izabál and up the Polochíc River at least as far as Panzós. A male collected February 1 had enlarged testes.

I assign my material to the nominate form in which the upperparts are greenish and the white supraloral streak is narrow and inconspicuous. 3 males, 1 female.

Tachycineta thalassina (Swainson). Highlands (Usumatlán); Arid Interior (Usumatlán, Morazón, El Rancho). Up to 5900 feet. Common in winter in the Motagua Valley and on the south slope of the Sierra de las Minas; usually seen in large flocks of up to 50 individuals. The remiges of three males taken in early December were molting.

My specimens as a series probably represent the race T. t. lepida Mearns, but in rump coloration some of them are intermediate between T. t. lepida and T. t. thalassina. The males measure: wing 112 to 117 mm., (116), tail, 44 to 48 (46); the females: wing, 111 to 113 (112.3), tail, 43 to 45 (44.3). 8 males, 3 females.

FAMILY CORVIDAE

Corvus corax Linnaeus. Arid Interior (Usumatlán). 800 to 3500 feet. Seen occasionally in flight on the arid south slope of the Sierra de las Minas.

Calocitta formosa (Swainson). Arid Interior (Usumatlán, Morazón, Quirigua). 800 to 1500 feet. Fairly common resident in the scrubby woodland of the upper Motagua Valley. Two specimens, taken respectively July 12 and August 17, were immature; the rectrices of the latter were molting.

I assign my four specimens to the race C. f. pompata Bangs, whose back is less distinctly blue than that of C. f. formosa; the males measure: wing 175 to 195 (182.3), tail, 240 to 283 (259.3). 3 males, 1 ?.

Psilorhinus mexicanus (Ruppell). Humid Tropics (El Estór, Tamahú, Panzós, Westfalia, Quirigua). Up to 2400 feet. Common resident in open rain forest, cafetal, and cultivated areas. The ovary of a female taken January 13 was somewhat enlarged. In two females collected in October the remiges were molting.

I assign my specimens (male, wing, 195 to 207 mm. (199), tail, 185 to 206 (192), culmen, 26 to 28 (27.3); female, wing, 191 to 195 (193.6), tail, 183 to 201 (191), culmen, 24.5 to 27 (26); the white tip of the inner web of the outermost rectrix measures: male, 31 to 35, female, 28 to 33) to the race P. m. cyanogenys Sharpe. 3 males, 3 females.

Cyanocorax yncas (Boddaert). Humid Tropics (Zarco, Westfalia, Izabál, Panzós). Up to 2600 feet. Fairly common resident on the slopes of the Polochíc Valley in brushy rain forest and cafetal; recorded once in the valley floor. A juvenile male was taken October 29.

My specimens (adult males, wing 122, 126, tail, 147, 135) are small, nearly pure yellow below, and had a yellow iris (gray-brown in the juvenile); I assign them to the race C. y. centralis (van Rossem). 3 males, 3 females.

Cissilopha melanocyanea (Hartlaub). Highlands (Usumatlán, San Jerónimo, Paruhla, Tactic); Arid Interior (Usumatlán, Salamá). 1500 to 6500 feet. Fairly common in the highlands in open deciduous woodland and second-growth; seen occasionally in the cloud forest. Yellow-billed immature birds were taken in August and December. Molting birds were taken in August, September, and December.

My ten specimens have the rather pale blue coloration and somewhat restricted black areas of the nominate race. 5 males, 4 females, 1 ?.

Cyanolyca pumilo Strickland. Highlands (Usumatlán). 5700 to 7000 feet. Recorded three times: twice in the cloud forest in early March, again on July 29, when as immature was taken in a net in dense second growth.

The immature plumage cannot be identified with certainty, but on geographic grounds my specimen is probably of the nominate race. 1 male.

Aphelocoma unicolor (Du Bus). Highlands (Usumatlán). 5700 to 8000 feet. The most common jay in the highlands; found in open pine, cutover oak-pine, and cloud forest. Yellow-billed immature birds were taken in July and December. Two males collected March 4 were in breeding condition. Two specimens taken in July were molting.

My specimens measure: male, wing 155 to 168 mm. (162.3), tail, 144 to 155 (151), female, wing, 156 to 159 (157.3),

tail, 140 to 150 (146); I assign them to the nominate race. 7 males, 3 females, 1 ?.

Cyanocitta stelleri (Gmelin). Highlands (Usumatlán). 5100 to 8800 feet. Rare resident; seen mostly in open pine. The only specimen, taken July 27, was molting its flight feathers.

In the race C. s. ridgwayi Miller and Griscom, to which my specimens belong, the upper back is nearly concolor with the lower back, the white chin area is extensive, and the lower eyelid is marked with a white spot. 1 female.

FAMILY CERTHIIDAE

Certhia familiaris (Linnaeus). Highlands (Usumatlán). 5900 to 8400 feet. Fairly common resident; found in open pine and cutover oak-pine woodland. A specimen taken in September was molting. A male collected March 5 had partially enlarged testes.

My specimens (male, wing, 62 to 65 mm. (63), tail, 54 to 62 (59), culmen, all 17), which represent the race C. f. pernigra, are large and dark. 5 males, 2 females, 2 ?.

FAMILY CINCLIDAE

Cinclus mexicanus (Swainson). Humid Tropics (Tamahú). 2300 to 3900 feet. Seen regularly in the steep canyons of the upper Polochic River where the current is swift and turbulent.

I collected two male specimens, in both of which the dark brown of the head contrasts with the gray of the rest

of the plumage. They represent the race C. m. anthonyi. 2 males.

FAMILY TROGLODYTIDAE

Campylorhynchus zonatus (Lesson). Humid Tropics (Panzós, Zarco, Izabál); Highlands (Usumatlán, San Jerónimo). Up to 8300 feet. Fairly common; found in brushy woodland and second-growth. Specimens taken in July, August, and October were molting.

In five specimens from the humid tropics the rufous of the abdomen extends forward onto the breast, the ventral spotting is profuse, and the back is less rufous than in the rest of my series; these five birds I call C. z. restrictus (Nelson). The remaining nine specimens (6 males, 3 females), all taken in the highlands, I assign to the race C. z. vulcanius (Brodkorb). 7 males, 7 females.

Campylorhynchus rufinucha (Lesson). Arid Interior (Usumatlán, Morazón). 800 to 3300 feet. Fairly common resident in the upper Motagua Valley and on the arid south slope of the Sierra de las Minas; found in brush, scrubby meadows, and hedge-rows. A male and female taken in mid-August had enlarged gonads. Molting specimens were collected in August and November.

The specimens, which are rufous above, lightly spotted with black and white, represent the race C. r. castaneus Ridgway. 5 males, 1 female.

Thryothorus modestus (Cabanis). Highlands (Usumatlán); Humid Tropics (Panzós, Zarco). Up to 6400 feet. Fairly common in the less humid parts of the Polochíc Valley; uncommon in the highlands; found in brushy areas. Males taken August 1, February 17, and February 18 had enlarged testes. Molting specimens were collected in October.

The race T. m. pullus (Ridgway), to which I assign my material, is not very strongly characterized; the upperparts are olivaceous. 7 males, 7 females.

Thryothorus maculipectus Lafresnaye. Humid Tropics (Izabál, Panzós, Zarco, Westfalia, El Estór). Up to 2400 feet. Fairly common resident; found primarily in the brushy edges of the rain forest. March 12 a nest containing 2 eggs was found in a clump of saw grass. March 13 the nest contained 3 eggs. Birds collected in January showed some gonadal enlargement. Two females taken in February were nearly in breeding condition. In a male collected October 16 the remiges were molting.

The race T. m. umbrinus, to which my specimens belong, is smaller and brighter than T. m. varians of Pacific Guatemala. My males measure: wing 54 to 62 mm. (58.4), tail, 45.5 to 53.5 (49.4); female, wing, 54 to 61 (56.8), tail, 45.5 to 46.5 (46). 4 males, 6 females, 1 ?.

Troglodytes musculus (Naumann). Highlands (Usumatlán, Paruhla); Humid Tropics (Zarco, Izabál); Arid Interior

(Quirigua). Up to 9300 feet. Fairly common in the highlands; recorded in the lowlands only in late February and March. Two males collected July 28 had enlarged testes. A male taken December 9 was molting its flight feathers.

The specimens, which are dark and small, represent the race T. m. intermedius Cabanis. The males measure: wing, 48 to 52 mm. (50), tail, 38 to 41 (39.7); the females: wing, 48 to 49 (48.7), tail, 36 to 40 (38.3), 4 males, 4 females.

Troglodytes rufociliatus Sharpe. Highlands (Usumatlán). 5900 to 8400 feet. Fairly common resident; found in brush and cutover pine-oak woodland. A juvenile was taken September 1.

The nominate form, to which I assign my material, is paler and brighter than T. r. nannoides, and the flanks are less marked with black. 6 males, 3 females, 3 ?.

Henicorhina leucosticta (Cabanis). Humid Tropics (Izabál, Westfalia, Zarco, Panzós, El Estór). Up to 1200 feet. Fairly common; found in rain forest undergrowth. A female taken March 13 had a somewhat enlarged ovary. In a female collected September 24 the remiges were molting.

The race H. l. prostheleucus (Sclater), to which I assign my specimens, is similar to H. l. tropaea, but the back, crown, and flanks are less rufescent and the breast more grayish than in that more southern race. 5 males, 3 females.

Henicorhina leucophrys (Tschudi). Highlands (Usumatlán). 4700 to 6700 feet. Fairly common resident; inhabited the undergrowth of the cloud forest. A female taken near a new nest on March 15 was in breeding condition. A male collected September 1 was molting.

In my specimens, which I assign to the race H. l. castanea Ridgway, the bill is small, the back dark chestnut, and the crown brown medially. My males measure: culmen, 14.5 to 15 mm. (14.7); my females: culmen, 12.5 to 14 (13.5). 3 males, 5 females.

FAMILY MIMIDAE

Melanotis hypoleucus Hartlaub. Highlands (Usumatlán, Tactic). 5900 to 7900 feet. Fairly common; found in heavy brush and second-growth. 3 males, 1 female.

Dumetella carolinensis (Linnaeus). Humid Tropics (Panzós, Izabál, El Estór, Zarco, Westfalia); Highlands (Usumatlán). Up to 5900 feet. Common in winter in the Polochíc valley; a single bird was collected in the highlands December 23. The habitat was heavy brush and second-growth. 5 males, 8 females, 3 ?.

Mimus gilvus (Vieillot). Arid Interior (Usumatlán, Salamá, Morazón). 800 to 2800 feet. Resident but rather rare; found in scrubby woodland and arid meadows.

I assign my specimens to the race M. g. gracilis, which

has dark brownish gray upperparts. 1 male, 2 females.

FAMILY TURDIDAE

Turdus rufitorques Hartlaub. Highlands (Usumatlán). 5900 to 8600 feet. Fairly common resident; found in cutover mixed forest, open pine, and cloud forest. In December flocks of 15 to 20 were a common sight. Specimens in immature plumage were taken December 2 and March 8. 4 males, 2 females.

Turdus assimilis Cabanis. Humid Tropics (Westfalia, Izabál, El Estór). Up to 2400 feet. Common in the foothills of the Sierra de las Minas; uncommon in the floor of the Polochíc Valley. The habitat was the brushy edges of the rain forest. The rectrices of a male taken October 29 were molting.

The race T. a. leucauchen Sclater, to which I assign my material, is dark grayish olive above and dark gray below. 6 males, 1 female.

Turdus grayi Bonaparte. Arid Interior (Usumatlán, San Jerónimo, Quirigua, Morazón); Humid Tropics (Panzós, Westfalia, El Estór, Zarco, Izabál). Up to 3000 feet. The common robin in both valleys and up the mountain slopes to about 3000 feet. The habitat in the arid Motagua Valley was mesic woodland along streams; in the Polochíc Valley, cafetal, moist woodland and rain forest edge. Spotted juveniles were taken in the Motagua Valley August 12 and August 17, and in

the Polochíc Valley October 11. Molting specimens were collected in August and October.

The nominate form to which my specimens belong, is intermediate in color between the darkest race, T. g. umbrinus, and the palest, T. g. tamaulipensis. 11 males, 6 females, 1 ?.

Turdus plebejus Cabanis. Highlands (Usumatlán). 6300 to 6400 feet. Two specimens were taken in late December along the brushy edge of the cloud forest.

I assign my two specimens, which are paler than the nominate form, to the race T. p. differens (Nelson). 2 females.

Turdus infuscatus (Lafresnaye). Highlands (Usumatlán). 6200 to 6500 feet. Two specimens were collected in mid-December from a brushy area at the edge of the cloud forest. 1 male, 1 ?.

Myadestes obscurus Lafresnaye. Highlands (Usumatlán, San Jerónimo). 4700 to 7300 feet. Fairly common resident in the highlands; found in cloud forest and brushy woodland. A male collected March 6 was in breeding condition. Specimens taken in August were molting.

I assign my specimens, which measure: male, wing, 98 to 100 mm. (98.7), tail, 95 to 101 (98.7), culmen, 10.5 to 11.5 (11), to the race M. o. oberholseri Dickey and van Rossem. 3 males, 7 females.

Hylocichla mustelina (Gmelin). Humid Tropics (Westfalia, Izabál, Panzós, Zarco, El Estór); Highlands (Usumatlán). Up to 7300 feet. Common in winter in the Polochíc Valley; found in brushy rain forest and cafetal; recorded in the highlands December 4 and March 6. The first spring song was heard February 17. 4 males, 4 females.

Hylocichla ustulata (Nuttall). Humid Tropics (Zarco, Westfalia, Izabál). Up to 2400 feet. Uncommon winter visitant; found in brushy rain forest and cafetal. The earliest fall record was September 25.

The race H. u. swainsoni (Tschudi), to which I assign my specimens, is similar to the nominate form but grayer and more olivaceous, with broader and darker chest-spots. 2 males, 2 females, 1 ?.

Catharus dryas (Gould). Highlands (Usumatlán). 6500 to 7300 feet. Rare resident; found in the cloud forest. A pair taken August 1 in a net had enlarged gonads though the male's remiges were molting.

I assign my material to the nominate race, which differs from C. d. maculatus of South America in having fewer black spots below and in being more olivaceous on the back. 2 males, 2 females.

Catharus frantzi Cabanis. Highlands (Usumatlán). 6300 to 7800 feet. Uncommon resident found in cloud forest and

brush. Birds taken in August and early March had enlarged gonads.

In all of my specimens the back is olivaceous; the series appears to represent the race C. f. alticola Salvin and Godman. 4 males, 1 female, 1 ?.

Catharus aurantiirostris (Hartlaub). Highlands (Usumatlán). 5500 to 5900 feet. Uncommon resident; seen mostly in patches of pines in brushy areas. A male taken August 6 was molting in the remiges.

The race C. a. bangsi Dickey and van Rossem, to which I assign my specimens, has strongly rufescent upperparts and is extensively dark gray below. 3 males, 1 female.

Sialia sialis (Linnaeus). Highlands (Usumatlán, Paruhla, Tactic). 4900 to 9200 feet. Fairly common resident; found in cutover woodland on the south slope of the Sierra de las Minas as well as in open pine on top of the ridges. A juvenile male was taken August 29.

My specimens, which I assign to the race S. s. guatemalae Ridgway, are large (adult male, wing, 103, 104, tail, 64, 66), purplish blue above, and extensively dark cinnamon-rufous below. 3 males, 7 females.

FAMILY SYLVIIDAE

Polioptila caerulea (Linnaeus). Humid Tropics (Panzós, Westfalia, Zarco). Up to 2400 feet. Fairly common winter

resident in cafetal and open rain forest. Three specimens taken in October were molting.

I assign my specimens to the nominate race; they measure: male, wing, 49 to 54 (52), tail, 50, female, wing, 50 to 53 (51.2), tail, 46 to 51 (48.8). 5 males, 5 females, 1 ?.

Polioptila albiloris Sclater and Salvin. Arid Interior (Usumatlán, Morazón). 800 to 1200 feet. Fairly common throughout the year; found in scrubby woodland. Males with enlarged testes were taken March 11 and August 19.

I assign my seven specimens to the nominate form; in all of them the loral region is white and the tail is long: males, 45 to 47 mm. (46), females, 45 to 49 (47). 4 males, 2 females, 1 ?.

Polioptila plumbea (Gmelin). Humid Tropics (Izabál, El Estór, Zarco, Panzós). Up to 1700 feet. Fairly common; found in rain forest and moist woodland. Specimens were taken January to March.

The race P. p. superciliaris Lawrence, which my specimens represent, is more grayish below than the races to the south. 3 males, 2 females.

Ramphocaenus rufiventris (Bonaparte). Humid Tropics (Izabál, Zarco, Panzós). 500 to 1900 feet. Uncommon resident recorded in the rain forest understory on the slopes of the Polo-

chío Valley but not on the floor of the valley.

I assign my specimens, which are brightly rufescent and small, to the nominate race; the males measure: wing, 51, 51, tail, 41, 43; the females: wing, 49, 52, tails, missing. 2 males, 2 females.

FAMILY BOMBYCILLIDAE

Bombycilla cedrorum Vieillot. Highlands (Usumatlán, Salamá). 5500 to 6600 feet. A few flocks of 20 to 30 birds were seen in late winter; one specimen, a female, was taken March 8. 1 female.

FAMILY PTILOGONATIDAE

Ptilogonys cinereus Swainson. Highlands (Usumatlán). 5800 to 7500 feet. Common resident; conspicuous in the tree tops of the cutover pine woodland. A male taken December 16 had somewhat enlarged testes. Specimens collected in August and September were molting.

I assign my specimens, which are darker than the nominate form, to the race P. c. molybdophanes Ridgway. 7 males, 2 females.

FAMILY CYCLARHIDAE

Cyclarhis gujanensis (Gmelin). Highlands (Usumatlán, Paruhla). 5000 to 6500 feet. Two specimens were taken, one among young pines December 7, the other in second-growth in a swampy valley March 17.

The specimens, which are completely yellow below and bright green above, represent the race C. g. flaviventris Lafresnaye. 1 male, 1 female.

FAMILY VIREOLANIIDAE

Smaragdolanius pulchellus (Sclater and Salvin). Humid Tropics (Izabál). 1000 to 1100 feet. Rarely seen but often heard; noted only in the rain forest. A female taken March 15 was approaching breeding condition.

On the specimens the pileum and hindneck are blue and the center of the crown is green; they represent the nominate race. 1 male, 1 female.

FAMILY VIREONIDAE

Vireo griseus Boddaert. Humid Tropics (El Estór, Panzós). Up to 200 feet. Rare winter resident found in moist situations. A specimen was taken February 1.

The race V. g. noveboracensis (Gmelin), to which I assign my specimen, has bright upperparts and deep greenish yellow sides and flanks. 1 female.

Vireo pallens Salvin. Humid Tropics (El Estór). 50 feet. A specimen collected January 31 along a swampy portion of the shore of Lake Izabál is bright greenish yellow below. It represents the race V. p. semiflavous Salvin (wing 56, tail 43.5 mm.). 1 female.

Vireo huttoni Cassin. Highlands (Usumatlán). 6000 to 6500

feet. Found in brushy woodland. Specimens taken in September and December have the uniformly olive-green back and nearly uniform yellowish olive underparts of the race V. h. vulcani Griscom. 3 males, 2 females, 1 ?.

Vireo belli Audubon. Arid Interior (Usumatlán). 800 feet. Found in second-growth; three specimens taken (one November 23, two March 26) represent the nominate form, the back being uniform olive, the underparts olive-yellow, the tail short (female, 42, 44 mm.). 1 male, 2 females.

Vireo flavifrons Vieillot. Humid Tropics (Westfalia, Panzós, Zarco). Up to 2400 feet. Rather rare winter visitor found in cafetal and open woodland. 2 males, 1 ?.

Vireo solitarius (Wilson). Humid Tropics (Panzós, Westfalia); Highlands (Usumatlán, Salamá); Arid Interior (Usumatlán). 800 to 7100 feet. Fairly common and widespread in winter; habitats ranged from rain forest to dry open woodland.

Most of my specimens (male, wing, 73 to 81 mm. (77), tail, 52 to 55 (53.2), female, wing, 73, 76, tail, 50) are of the nominate race. A female (wing, 68, tail, 51) taken in the highlands March 3, is dull and greenish and seems to be close to V. s. montanus van Rossem. 5 males, 3 females, 3 ?.

Vireo philadelphicus (Cassin). Humid Tropics (Westfalia, Panzós, Zarco). 700 to 2400 feet. Fairly common in winter

on the lower slopes of the Polochíc Valley; seen mostly in cafetal. A male taken January 19 was molting on the throat. 3 males, 3 females, 1 ?.

Vireo gilvus (Vieillot). Arid Interior (Usumatlán); Highlands (Usumatlán); Humid Tropics (El Estór). Up to 7300 feet. Seen and heard singing in the highlands and in the Polochíc Valley in March; the one specimen taken in the arid interior (November 25, in scrubby woods) is of the nominate race. The specimen measures: wing 70 mm., tail 50, culmen 10, and has a gray crown and a grayish olive back. 1 female.

Vireo leucophrys (Lafresnaye). Highlands (Usumatlán). 6300 feet. A female collected December 18 in open woodland has a brownish olive back and closely resembles the type of the Chiapas subspecies, V. l. strenuus Nelson, to which I am assigning it. This species is new for Guatemala. 1 female.

Hylophilus ochraceiceps Sclater. Humid Tropics (Izabál, El Estór). Up to 1000 feet. Fairly common; inhabits the tree tops in the dense rain forest. A pair taken in mid-March were in breeding condition. A female collected September 25 was undergoing a general molt.

The nominate form, to which I am assigning my specimens, is browner (less green) than races to the south. 6 males, 6 females.

Hylophilus decurtatus (Bonaparte). Humid Tropics (Izabál,

El Estór, Panzós, Zarco). Up to 1800 feet. Common; resident in moist woodland, cafetal, and rain forest. A male collected March 25 had somewhat enlarged testes. A female collected September 25 was molting its remiges.

The nominate form, which my specimens represent, is the greenest of the four races currently recognized. 6 males, 8 females, 2 ?.

FAMILY COEREBIDAE

Diglossa baritula Wagler. Highlands (Usumatlán). 5500 to 9300 feet. Common resident; found in brush and dense second-growth. A male collected August 2 had enlarged gonads. Several specimens taken in December were molting.

My specimens differ noticeably from a similar series of D. b. montana taken in western Guatemala by Baepler (1960) in being darker on the head, deeper cinnamon on the breast, shorter-billed, and smaller in wing and tail. My males measure: wing, 54 to 57 mm. (55.5), tail, 43 to 45 (44.2), culmen, 9 to 10 (9.2). I am assigning my material to the race D. b. parva Griscom, a series of which (American Museum of Natural History) compares favorably with my specimens. 7 males, 6 females, 1 ?.

Chlorophanes spiza (Linnaeus). Humid Tropics (Panzós, Zarco). Up to 1700 feet. Uncommon, found in cafetal and moist woodland, primarily on the slopes of the Polochíc Valley.

The race C. s. guatemalensis Sclater, to which I assign my specimens, is large and deep green. My males measure: wing, 72 to 78 mm. (74.3), tail 45 to 51 (47.7), culmen 17. 3 males, 4 females.

Cyanerpes cyaneus (Linnaeus). Humid Tropics (Izabál, Panzós, Zarco, Westfalia); Highlands (Usumatlán). Up to 6300 feet. Fairly common resident on the slopes of the Polochíc Valley; recorded in the highlands December 9. A female taken September 25 was molting.

In the race C. c. carneipes, to which my material belongs, the pale blue cap of the male is more restricted than is the nominate race and the female is more yellowish below than females of C. c. cyaneus. 6 males, 6 females.

Cyanerpes lucidus (Sclater and Salvin). Humid Tropics (Zarco). 800 feet. An immature male taken February 21 in moist woodland appears to represent the nominate race. It measures: wing, 56 mm., tail 29, culmen 19. 1 male.

Coereba flaveola (Linnaeus). Humid Tropics (Panzós, Zarco). Up to 200 feet. Fairly common resident in the floor of the Polochíc Valley. A nest (bulky structure with the opening ventral) found 25 feet above the ground in a thorny tree October 9 contained two young. Three males collected from February 6 to February 19 had enlarged testes.

In the race C. f. mexicana (Sclater), to which I assign

my material, the superciliary stripe is white, the throat pale gray, the back olive, and the wing small. In my series the wing measures: male, 53 to 56 mm. (54.8), female, 54, 55.5. 4 males, 2 females, 2 ?.

FAMILY PARULIDAE

Mniotilta varia (Linnaeus). Highlands (Usumatlán, Salamá, San Jerónimo); Humid Tropics (Panzós, Westfalia, Izabál, El Estór, Zarco); Arid Interior (Usumatlán). Up to 7300 feet. Abundant winter visitor in most types of woodland; seen in the Motagua Valley only on August 22, my earliest fall record. 7 males, 11 females, 5 ?.

Protonotaria citrea (Boddaert). Humid Tropics (Panzós). 200 feet. Two specimens were taken together in swampy woodland October 17. This is the first Guatemalan record for this species. 2 ?.

Helmitheros vermivorus (Gmelin). Humid Tropics (Panzós, Zarco) Up to 1700 feet. Uncommon winter visitor; seen in rain forest and cafetal. Specimens were taken in October, January, and February. 1 male, 2 females, 1 ?.

Vermivora chrysoptera (Linnaeus). Humid Tropics (Panzós, Izabál). Up to 1300 feet. Rare winter visitor; seen in moist woodland and cafetal. Specimens were taken in October, December, and February. 1 male, 2 females.

Vermivora pinus (Linnaeus). Humid Tropics (Panzós); Highlands (Usumatlán). Up to 6500 feet. Uncommon winter visitor; seen in moist woodland and second-growth. My only highland record was of one bird seen (collected) December 16. Specimens were taken in the lowlands in October, January, and February. 2 males, 1 female, 2 ?.

Vermivora peregrina (Wilson). Highlands (Usumatlán); Humid Tropics (Panzós, La Tinta, Zarco). Up to 6300 feet. Fairly common winter visitor; found in second-growth and cacao; recorded October 18 to March 23. 6 males, 6 females.

Vermivora ruficapilla (Wilson). Highlands (Usumatlán); Humid Tropics (Panzós). Up to 6300 feet. Inhabited heavy brush; recorded in December and January.

The race V. r. ridgwayi van Rossem, to which I assign my material, is bright yellow on the chin, throat and breast, whitish on the abdomen, and olive above. 2 males, 1 ?.

Vermivora superciliosa (Hartlaub). Highlands (Usumatlán). 6100 to 8500 feet. Fairly common resident; found in cloud forest and open pine woodland. The six specimens (males) collected by me have the blackish auriculars and dark upperparts of the nominate race. 6 males.

Peucedramus taeniatus (Du Bus). Highlands (Usumatlán). 6200 to 8600 feet. Uncommon resident found mostly in the open pine forest.

My specimens have the rich coloring and dark upperparts of the nominate race. 4 males, 2 females.

Dendroica aestiva (Gmelin). Arid Interior (Usumatlán); Humid Tropics (Panzós, Westfalia, Zarco, El Estór). Up to 3000 feet. Common in winter in both valleys.

Two of my male specimens are lightly streaked on the breast; the remainder are virtually or completely unstreaked; their identification to race is therefore open to question. All of the specimens are dark-backed, in this character resembling D. a. rubiginosa of Alaska or D. a. amnicola of northern North America. Five males with at least some streaking measure: wing, 61 to 65 mm. (63.3), tail 43 to 48 (45.9). 12 males, 4 females, 2 ?.

Dendroica magnolia (Wilson). Highlands (Paruhla); Humid Tropics (Panzós, Westfalia, Izabál, Zarco, El Estór); Arid Interior (Usumatlán, Quirigua). Up to 4600 feet. Abundant in winter in the lowlands; recorded in the highlands once: September 30, one immature female seen (collected). This was my earliest fall record for the whole area. 12 males, 9 females, 7 ?.

Dendroica auduboni (Townsend). Highlands (Usumatlán). 7900 to 8500 feet. Recorded in December and March in the open pine forest covering the ridge.

My specimens, which I assign to the race D. a. memora-

bilis Oberholser, are large and have considerable black below and on the sides of the head. My specimens measure: males, wing, 81 to 82 mm. (81.5), tail, 61 to 63 (61.7); female, wing 71.5 to 74 (73), tail, 55.5 to 57.5 (56.5). 3 males, 4 females, 2 ?.

Dendroica virens (Gmelin). Highlands (Salamá, Usumatlán); Humid Tropics (Panzós, Westfalia, Tamahú, Zarco, Izabál). Up to 7000 feet. Common throughout the winter in the Sierra de las Minas and the Polochic Valley; found in open woodland, cafetal, and rain forest.

My material has the extensive black throat patch, bright yellow facial patch, and large bill of the nominate race. The culmen of my males measures: 9 to 10.5 mm. (9.8). 11 males, 3 females, 3 ?.

Dendroica chrysoparia Sclater and Salvin. Highlands (Usumatlán). 5900 to 8400 feet. Recorded in August and December in pine forest, open deciduous woods and second-growth. 3 males, 2 females, 1 ?.

Dendroica occidentalis (Townsend). Highlands (Usumatlán). 6200 to 8400 feet. Uncommon in winter; found in pine forests. 2 males, 3 females.

Dendroica fusca (Muller). Humid Tropics (Panzós). 1300 to 1400 feet. Specimens were taken October 18 and October 20 from transient groups of warblers moving through the cafetal.

1 female, 2 ?.

Dendroica dominica (Linnaeus). Humid Tropics (Panzós). 400 to 500 feet. Larry Wolf saw one bird in open rain forest on January 12, another on January 25.

Dendroica graciae Baird. Highlands (Salamá, Usumatlán). 3800 feet. The Salamá specimen was taken September 30 and the Usumatlán specimen, one of two seen, on March 3. The habitat was open pine woodland.

My specimens, which I assign to the race D. g. decora Ridgway, are small (female, wing, 57, 59.5, tail, 45.5, 48.5), the yellow superciliary stripe is short, and the yellow of the chest is extensive. 2 females.

Dendroica pensylvanica (Linnaeus). Humid Tropics (Panzós, Izabál, Zarco). Up to 1700 feet. Common in winter; found in cafetal, swampy woodland, rain forest, and second-growth. The species was first seen October 16 (several seen, one collected). 8 males, 4 females, 4 ?.

Dendroica castanea (Wilson). Humid Tropics (Panzós). 1300 feet. A specimen was taken October 20 from a group of migrating warblers in the cafetal. 1 ?.

Seiurus aurocapillus (Linnaeus). Highlands (Usumatlán); Humid Tropics (Panzós, El Estór, Zarco, Tamahú). Up to 6300 feet. Fairly common throughout the winter; found in the

brushy parts of the forest.

Two of my specimens (a male taken October 9 and an unsexed specimen taken December 17) with brownish olive backs, I am assigning to the race S. a. furvior, while the remainder have the greenish upperparts of the nominate form. Thomas D. Burleigh aided in the identification. 5 males, 4 ?.

Seiurus noveboracensis (Gmelin). Humid Tropics (Panzós, El Estór, Zarco). Up to 600 feet. Common in winter; found along small streams through rain forest and second-growth.

My specimens, which I assign to the nominate form, are smaller billed than S. n. notabilis. The culmen of my males measures: 11 to 12.5 mm. (11.8). 5 males, 3 females, 3 ?.

Seiurus motacilla (Vieillot). Highlands (Usumatlán); Humid Tropics (Panzós, Izabál, Zarco). Up to 6000 feet. Uncommon in winter; generally seen along streams through rain forest and woodland; recorded in the highlands only on December 13 (one shot). 1 male, 2 females.

Oporornis formosus (Wilson). Humid Tropics (Panzós, El Estór, Zarco, Izabál). Up to 1100 feet. Uncommon in winter; found in open rain forest and heavy brush. 2 females, 2 ?.

Oporornis tolmiei (Townsend). Highlands (Usumatlán); Humid

Tropics (Tamahú); Arid Interior (San Jerónimo). 2000 to 8000 feet. Fairly common in winter; found in brushy areas in the highlands. We took one at Tamahú November 13 and one at San Jerónimo November 14.

Following the criteria of Phillips (1947), four of the specimens (1 male, tail, 54mm., difference between tail and wing 6; 3 specimens, sex unknown, tail, 52 to 53.5 (53), difference, 4.5 to 6.5) taken in the highlands represent the nominate form. Nine specimens (3 males, tail 54 to 61 (57), difference between wing and tail, .5 to 5.5, 5 females, tail, 53 to 57.5 (55.5), difference, .5 to 6.5, 1 sex unknown, tail 53.5, difference, 4.5), which are less green in the back, I assign to the race O. t. monticola. 4 males, 5 females, 4 ?.

Geothlypis trichas (Linnaeus). Highlands (Paruhla); Humid Tropics (Panzós, El Estór, Quirigua). Up to 5000 feet. Common in winter in the Polochíc Valley; two specimens were taken (others seen) at Paruhla January 11, the only record for the highlands.

Most of my specimens, which represent the nominate race, are whitish on the abdomen and have a gray post-facial area. Two males are more yellowish on the abdomen and could belong to the race G. t. brachidactyla (Swainson). I cannot place the adult females and birds in first winter plumage with certainty. 10 males, 6 females, 3 ?.

Chamaethlypis poliocephala (Baird). Humid Tropics (Quirigua); Arid Interior (Usumatlán). 200 to 2300 feet. We took two male specimens in brush on November 28 and March 16 respectively.

On the basis of bright coloration and smallness (wing, 56, 57 mm., tail 58, 64), I assign my material to the race C. p. caninucha (Ridgway). The specimen taken at Usumatlán lacks white on the eyelids and could be referred to the race C. p. palpebralis. However, I follow Friedmann et al. (1957) in considering palpebralis a synonym of caninucha. 2 males.

Icteria virens (Linnaeus). Humid Tropics (Panzós, Zarco, Izabál, El Estór); Arid Interior (Usumatlán). Up to 1800 feet. Common in winter; found in brushy rain forest; recorded in the Motagua Valley only November 26. A specimen taken October 8 was molting.

The shortness of tail in my specimens (68 to 75 mm., av., 71.8) declares the series to be of the nominate race. 6 females, 4 ?.

Wilsonia citrina (Boddaert). Humid Tropics (Izabál, Panzós, Zarco, El Estór); Highlands (Usumatlán). Up to 7300 feet. Common in winter in the Polochic Valley; the habitat was rain forest, cafetal, and brushy areas. One was seen in the highlands March 4. 4 males, 3 females, 4 ?.

Wilsonia pusilla (Wilson). Highlands (Usumatlán, Paruhla,

San Jerónimo); Humid Tropics (Westfalia, Panzós, Tamahú, Zarco, Izabál, El Estór). Up to 8300 feet. Abundant in winter in the highlands and the Polochic Valley.

Eight male and three female specimens, which I assign to the western race W. p. pileolata (Pallas), are brighter and more yellowish above than the nine males and six females representing the eastern W. p. pusilla. Immature birds and specimens not sexed cannot be assigned with certainty. 17 males, 9 females, 9 ?.

Wilsonia canadensis (Linnaeus). Humid Tropics (Izabál, Panzós). Up to 1000 feet. We took two specimens in rain forest undergrowth - one on September 25, the other on October 12. 1 female, 1 ?.

Cardellina rubrifrons (Giraud). Highlands (Usumatlán). 6500 to 8700 feet. Uncommon in winter; found in cloud forest and pine woodland. My earliest fall date was August 29 (one bird). 2 males, 1 female.

Setophaga picta Swainson. Highlands (Usumatlán, Salamá). 3500 to 9300 feet. Common; found in pine forest and open woodland.

The race S. p. guatemalae Sharpe, which my specimens represent, is similar to the nominate form but the third rectrix has only a touch of white at the tip and the light edgings of the innermost secondaries are much reduced. 3

males, 9 females.

Myioborus miniatus (Swainson). Highlands (Usumatlán, Paruhla); Humid Tropics (Westfalia). 2400 to 7900 feet. Common in the highlands; found in cloud forest, pine, and cutover woodland. Birds were singing and courtship behavior was noted in early March. A specimen was taken at Westfalia November 2.

The underparts of my specimens are orange-red and the white on the outer tail feathers is restricted. The series represents the race M. m. intermedius (Hartlaub). 9 males, 3 females.

Ergaticus versicolor (Salvin). Highlands (Usumatlán). 6300 to 9400 feet. Fairly common resident; found in cloud forest, pines and second-growth. 3 males, 3 females, 3 ?.

Basileuterus belli (Giraud). Highlands (Usumatlán). 6100 to 7800 feet. Fairly common; found in cloud forest and brushy areas.

My specimens, which I assign to the race B. b. scitulus Nelson, are larger and darker than the nominate form and the lores are at least partially chestnut. My males measure: wing, 59 to 60 mm. (59.7), tail, 56 to 57 (56.5), my females, wing, 56 to 61 (59.9), tail, 52 to 57 (54.9). 3 males, 10 females, 1 ?.

Basileuterus rufifrons (Swainson). Highlands (Usumatlán,

Paruhla, Tactic); Humid Tropics (Panzós). 2000 to 6600 feet. Fairly common in the highlands; found in brushy areas. One was seen near Panzós March 23.

In one of my male specimens (Paruhla, March 17) the abdomen is whitish; all the other specimens are completely yellow below. The male with white abdomen belongs to the race B. r. rufifrons, the others to B. r. salvini. 3 males, 5 females, 3 ?.

FAMILY ICTERIDAE

Zarhynchus wagleri (Gray and Mitchell). Humid Tropics (Izabál, Panzós, Westfalia, Tamahú, El Estór). Up to 2600 feet. Abundant resident found in rain forest and cafetal; seen in flocks of up to 75 individuals. Several nesting trees were found in the cafetal. Molting specimens were secured from September 24 to November 7.

The head, rump, and flanks of my specimens are dark chestnut and the frontal shield is not strongly arched; the series represents the nominate race. 4 males, 4 females.

Gymnostinops montezuma (Lesson). Humid Tropics (Panzós, El Estór, Zarco, Quirigua). Up to 1700 feet. Fairly common; found in moist woodland, cafetal, and open woods. Nesting trees, often large ceibas, were usually in the open, standing above second-growth and brush. Psomocolax oryzivorus were seen in the nesting colonies. Molting specimens were taken as late as January 30. 4 males, 4 females.

Amblycercus holosericeus (W. Deppe). Humid Tropics (Panzós, Zarco). Up to 1900 feet. Fairly common; found chiefly in dense undergrowth and canes. A molting specimen was obtained October 8.

My specimens represent the nominate race. The males measure: wing, 95 to 104 (100), tail, 92.5 to 100 (96.8), culmen, 30 to 32.5 (31.6). Throughout the series the bill is greenish yellow, brighter at the tip. 3 males, 7 females, 1 ?.

Psomocolax oryzivorus (Gmelin). Humid Tropics (Zarco, Panzós, El Estór). Up to 200 feet. Recorded only in the spring; in March the species became conspicuous in the nesting colonies of Gymnostinops montezuma. Two males taken in mid-February were in breeding condition.

My specimens represent the race P. o. impacifus Peters. The males measure: wing, 188 to 208 (200.2), tail, 138 to 153 (146.7). All four males are uniformly glossed with violet. 4 males, 1 female.

Tangavius aeneus (Wagler). Arid Interior (Usumatlán); Humid Tropics (Panzós). Up to 800 feet. Uncommon; seen sporadically in flocks of a dozen or more individuals; recorded in the Motagua Valley only on July 13, when a male with enlarged testes was taken. An immature male was taken August 22. Molting specimens were collected in October and November.

The violet gloss on the rump of the males and the large

size: male, wing 111, 118 mm., tail, 75, 79, female, wing, 98 to 108 (104.6), tail, 72 to 77 (74.8) identify the specimens as the nominate race. 2 males, 7 females.

Cassidix mexicanus (Gmelin). Arid Interior (Usumatlán, Teculután); Highlands (Tamahú, Paruhla); Humid Tropics (El Estór, Panzós, La Tinta). Up to 5500 feet. Fairly common in both valleys; absent only from the heights of the Sierra de las Minas; seen often in villages and cultivated areas. A molting immature male was taken August 24.

In my only adult male specimen (wing 190 mm., tail 201), tha tail is longer than the wing and the entire body is glossed with purplish. My females measure: wing, 151, 158, tail, 141, 161. I assign my series to the nominate race. 2 males, 2 females.

Dives dives (Deppe). Highlands (Usumatlán); Humid Tropics (Panzós, Westfalia, Izabál, El Estór, Zarco, Tamahú). Up to 6100 feet. Common at low elevations where it is found in second-growth, cafetal, and rain forest; less common in the highlands. Specimens taken in August and October were molting.

My specimens represent the nominate race. The males measure: wing, 125 to 131 mm. (127.8), tail, 109 to 118 (113); the females: wing, 110 to 121 (117.7), tail, 100 to 109 (104.5). 5 males, 6 females.

Icterus spurius (Linnaeus). Humid Tropics (Panzós, La Tinta, Izabál, Zarco). Up to 1100 feet. Common winter visitant; found in brushy fields. Several specimens taken in October were molting. 8 males, 4 females, 1 ?.

Icterus prosthemelas (Strickland). Humid Tropics (Panzós, Izabál). Up to 1200 feet. Uncommon; found in brushy rain forest. A male taken March 19 had enlarged testes. Two molting specimens were obtained in October.

I assign my specimens to the nominate form, which is shorter in the wing and bill than I. p. northropi of the Bahamas. My males measure: wing, 89 to 90 (89.3), culmen, 17.5 to 19 (18.5), female, wing, 80 to 85 (83.3), culmen, 18 in all three specimens. 3 males, 3 females.

Icterus wagleri Sclater. Highlands (Usumatlán). 5700 to 6500 feet. Rare resident; found in brushy second-growth. Two males taken, respectively, August 6 and December 7 were molting.

My specimens are small (wing, 100, 102, tail, 104, 101) and dull below, with only a trace of chestnut on the breast; I assign them to the nominate form. 2 males.

Icterus mesomelas (Wagler). Humid Tropics (Panzós, Tamahú). Up to 2100 feet. Uncommon; found in second-growth and edges of pastures. A male collected October 1 was molting.

The nominate form, to which my specimens belong, is

small, the inner secondaries being edged with yellowish white. 2 males, 2 females.

Icterus chrysater (Lesson). Highlands (Usumatlán, Westfalia, Paruhla). 2600 to 6100 feet. Uncommon; found in brush and second-growth. A male taken October 31 was undergoing a general molt.

My specimens represent the large, brightly colored nominate race. They measure: wing, 102 to 110 (107), tail, 108, 109, molting. 3 males.

Icterus pectoralis (Wagler). Arid Interior (Usumatlán). 3000 feet. One was seen March 3 in a small open grove of trees.

Icterus gularis (Wagler). Arid Interior (Teculután, Usumatlán). 800 feet. Fairly common resident; found in arid woodland and along streams.

I assign my five specimens to the race I. g. xerophilus Griscom, which was described from the upper Motagua Valley. The bright parts of my adults are cadmium-orange. My specimens measure: male, wing, 125 mm., tail 113, female, wing 121 to 126 (123), tail, 100 to 113 (105.2). 1 male, 4 females.

Icterus galbula (Linnaeus). Humid Tropics (Panzós, Izabal, El Estor, Zarco); Highlands (Usumatlán, Salamá). Up to 8700 feet. Common in winter in many habitats. 10 males, 5 fe-

males, 1 ?.

Icterus bullocki x Icterus galbula. Humid Tropics (Westfalia). 2400 feet. An adult male close to I. galbula but with orange on the sides of the neck and in a line over the eye was taken October 30. 1 male.

Icterus bullocki (Swainson). Highlands (Usumatlan). 7800 feet. A single adult male was seen in a flowering tree in a brushy woodland, March 7.

Icterus solateri Cassin. Arid Interior (Usumatlan). 800 to 900 feet. Common resident; found in arid woodland and meadows. Molting specimens were obtained in August and September.

Throughout my series the back is almost solid black and the size is large. I assign my material to the race I. s. altiocla Miller and Griscom. 5 males, 4 females.

Agelaius phoeniceus (Linnaeus). Humid Tropics (Panzos). Up to 200 feet. Rare and local; two specimens were taken in February. They represent the small race A. p. richmondi in which the female is pale. My specimens measure: male, wing 112 mm., tail 88, female, wing 90, tail 69. 1 male, 1 female.

Sturnella magna (Linnaeus). Arid Interior (Salama). 3000 feet. A loose flock of eight to ten meadowlarks, from which

one specimen was taken, was seen March 26 moving northeast across the Plains of Salamá in company with large numbers of Guiraca caerulea.

The specimen (wing 101 mm., tail 68) represents the race S. m. alticola Nelson, in which the yellow of the throat extends up onto the middle of the malar stripe. 1 female.

FAMILY THRAUPIDAE

Chlorophonia occipitalis (Du Bus). Humid Tropics (Panzós). 1800 feet. A flock of 15, from which five specimens were taken, was encountered in cafetal, January 26.

Throughout my series, which represents the nominate race, the forehead, superciliary region, and hindneck are green. 1 male, 4 females.

Tanagra elegantissima (Bonaparte). Arid Interior (Usumatlán). 800 feet. Several were seen in scrubby woodland along a stream, March 11.

Tanagra affinis Lesson. Humid Tropics (Panzós). 200 feet. Fairly common; found chiefly in cultivated areas.

My specimens belong to the nominate race; in all three the under tail-coverts are yellow. 2 male, 1 ?.

Tanagra lauta Bangs and Penard. Humid Tropics (Panzós, El Estór). Up to 1700 feet. Fairly common; found in brushy rain forest and swampy woodland.

Throughout my series, which represents the nominate form, the bill is small and distinctly bluish above. The culmens of my males measure: 8 to 9 mm. (8.6), of my female, 7.5. 4 males, 1 female, 1 ?.

Tanagra gouldi (Sclater). Humid Tropics (Izabál, El Estór, Zarco). Up to 1100 feet. Uncommon resident; found in rain forest.

My specimens, which are large and extensively chestnut in the abdominal area, I assign to the nominate form. They measure: male, wing, 59 to 61 mm. (59.7), tail, 30 to 31 (30.7), female, wing 56, tail 27. 3 males, 1 female.

Tangara larvata (Du Bus). Humid Tropics (Izabál, Zarco). Up to 1000 feet. Uncommon resident; found in rain forest. A male collected March 12 was in breeding condition. Two specimens taken in September were molting. 3 males, 2 females.

Thraupis episcopus (Bonaparte). Humid Tropics (Panzós). 200 feet. Seen occasionally in brushy pastures and second-growth. A female collected October 11 was molting the remiges and rectrices.

I assign my specimens to the race T. e. diaconus (Lesson). which is grayer than races to the south. 3 males, 4 females.

Thraupis abbas (W. Deppe). Humid Tropics (Panzós, Westfalia,

Izabál, El Estór, Zarco). Up to 2400 feet. Fairly common; found in second-growth, cafetal, and open rain forest. Specimens taken in October and February had enlarged gonads. Three molting specimens were obtained in October. 5 males, 6 females.

Ramphocelus passerini Bonaparte. Humid Tropics (Panzós, Zarco). Up to 400 feet. Fairly common; found in brush and second-growth. Two males taken respectively February 9 and February 20 had enlarged testes. Two specimens taken in October were molting.

My specimens are small. The males measure: wing, 69 to 81 (76.4), tail, 65 to 74 (69.8), the females: wing, 75 to 76 (75.3), tail 68 to 74 (71). The series belongs to the nominate race, which is smaller than R. p. costaricensis. 10 males, 3 females.

Phlogothraupis sanguinolenta (Lesson). Humid Tropics (Tucurú, Panzós, Zarco, Westfalia). Up to 1700 feet. Uncommon; found in second-growth, cane, and brushy woodland. A bird collected October 1 was molting.

My male specimen measures: wing 89 mm., tail 78. All four specimens probably represent the nominate race. 1 male, 3 ?.

Piranga rubra (Linnaeus). Humid Tropics (Panzós, La Tinta, Westfalia, El Estór, Izabál, Zarco); Arid Interior (Usumat-

lán, Quirigua); Highlands (Usumatlán). Up to 6300 feet. Abundant in winter in the Polochíc Valley; uncommon in the Motagua Valley; recorded in the highlands only on December 6. Specimens taken in October and March had somewhat enlarged gonads.

My specimens are smaller and brighter than P. r. cooperi and represent the eastern race, P. r. rubra. They measure: male, wing, 89 to 97 mm. (92.8), tail, 68 to 74 (71), female, wing, 88 to 93 (89.7), tail, 67 to 72 (69.1). 5 males, 9 females.

Piranga flava (Vieillot). Arid Interior (Usumatlán). 3500 to 3800 feet. A male specimen was taken in dry open woodland March 3. Three or four others were seen nearby.

I assign my specimen (wing 96 mm., tail 80) to the race P. f. figlina Salvin and Godman. 1 male.

Piranga olivacea (Gmelin). Humid Tropics (Panzós). 1500 feet. Two males in full winter feather were obtained October 18 in cafetal. 2 males.

Piranga ludoviciana (Wilson). Humid Tropics (Panzós). A male was obtained in open cafetal on March 23. 1 male.

Piranga bidentata (Swainson). Highlands (Usumatlán). 6500 to 7300 feet. A male with enlarged testes was collected in cloud forest on March 4. Others were seen in the same area March 6.

The head and neck of my specimen are of a richer shade of red than that found in the nominate form; the specimen represents the race P. b. sanguinolenta (Lafresnaye). 1 male.

Habia rubica (Vieillot). Humid Tropics (Izabál). 1000 to 1100 feet. Uncommon resident; found in rain forest. Specimens taken in early January had partly enlarged gonads.

Throughout my series, which represents the race H. r. confinis (Bangs), the back is dark in both males and females, the throat bright scarlet, conspicuously brighter than the chest in the males. 3 males, 3 females.

Habia fuscicauda (Cabanis). Humid Tropics (Panzós, Westfalia, Izabál, El Estór, Zarco). Up to 2400 feet. Common; found in rain forest edge and brushy woodland. Females taken February 2 and February 13 had enlarged ovaries.

On my male specimens, which identify my series as H. f. salvini (Berlepsch), the back is deep brownish red and the throat scarlet. 7 males, 6 females, 2 ?.

Lanio aurantius Lafresnaye. Humid Tropics (Izabál, El Estór, Zarco). Up to 1100 feet. Uncommon; found in rain forest. Females collected in early February had partially enlarged ovaries. A molting female was taken September 25.

The rump of my male specimen is yellow, the throat black; in my females the throat is gray. I assign my

series to the nominate race. 1 male, 6 females.

Eucometis penicillata (Spix). Humid Tropics (Panzós, El Estór). Up to 200 feet. Uncommon; found in rain forest and moist woodland.

My specimens probably represent the race E. p. pallida Berlepsch, but the larger of the two males approaches E. p. spodocephala in size (wing 89, tail 74). 2 males, 1 female.

Chlorospingus ophthalmicus (Du Bus). Highlands (Usumatlán). 5700 to 7800 feet. Abundant; found principally in cloud forest understory, occasionally in brushy second-growth and thickets. A male collected March 4 had enlarged testes.

Throughout my series, which represents the race C. c. dwighti Underdown, the back is dark, the pileum gray with blackish lateral border. 9 males, 7 females.

FAMILY FRINGILLIDAE

Saltator atriceps (Lesson). Humid Tropics (Panzós, Westfalia, Tamahú, El Estór, Izabál, Zarco). Up to 4300 feet. Common; found in cafetal, second-growth, and brush. Specimens taken in late October and early November were molting.

Throughout my series, which represents the nominate race, the black pectoral collar is narrow and partially broken by white feathers and the auriculars are black. 5 males, 1 female, 1 ?.

Saltator maximus (P.S.L. Muller). Humid Tropics (Panzós,

Izabál, El Estór, Zarco). Up to 1800 feet. Fairly common; found in brush, second-growth, and moist woodland. An immature male was taken October 24. Other specimens taken in October were molting.

In my specimens, which I assign to the race S. m. magnoides Lafresnaye, the black jugular collar is broad, the pileum grayish green. 7 males, 4 females.

Saltator coerulescens Vieillot. Humid Tropics (Panzós). 200 feet. Recorded only in October and March in brush and second-growth; a molting female specimen was taken October 13.

The specimen (wing 99 mm., tail 98) represents the race S. c. grandis (W. Deppe), which is smaller and paler than S. c. hesperis of the Pacific slope of Guatemala. 1 female.

Caryothraustes poliogaster (Du Bus). Humid Tropics (Izabál). 1000 to 1100 feet. Fairly common in and near the rain forest, occasionally seen moving through the trees in large active flocks.

My specimens are large, the males measure: wing, 92 to 97 mm. (94), tail, 71 to 73 (72.2), and the scapulars and rump are gray. I assign them to the nominate race. 4 males, 2 females, 1 ?.

Pheucticus ludovicianus (Linnaeus). Highlands (Usumatlán); Humid Tropics (Panzós, Izabál); Arid Interior (Morazón,

Usumatlán). 600 to 7000 feet. Widespread and fairly common in winter; found in brush and forest edge; seen more often in the highlands than in the lowlands. Specimens were taken from October 14 to March 6; all were in winter feather. 11 males, 6 females.

Guiraca caerulea (Linnaeus). Arid Interior (Usumatlán, Salamá); Humid Tropics (Panzós, El Estór). Up to 3000 feet. Resident in the Motagua Valley in overgrown fields; seen in the Polochíc Valley in migration. On March 26 a scattered flock of several dozen moved northeast across the Plains of Salamá in company with other migrants.

According to Storer and Zimmerman (1959) the races G. c. chiapensis and G. c. lazula inhabit areas respectively to the north and south of Guatemala; the only Guatemalan specimen listed by these workers they considered "probably intermediate" between the two races. In my series of four birds taken in the Motagua Valley, the only male, an adult taken August 20 (wing, 95 mm., tail 74, culmen 14.5) is not as bright as lazula and seems closer to chiapensis as described in the above paper. A dark male collected at Panzós October 14 apparently is not chiapensis but it is in such poor condition that it cannot be identified with certainty. 2 males, 3 females.

Cyanocompsa cyanoides (Lafresnaye). Humid Tropics (Izabál, Panzós, Zarco, El Estór). Up to 1800 feet. Uncommon; found

in brush and at the edge of the rain forest. My four specimens are duller than races to the south; I assign them to C. c. concreta (Du Bus). 2 males, 2 females.

Passerina cyanea (Linnaeus). Arid Interior (Usumatlán, San Jerónimo); Highlands (Usumatlán); Humid Tropics (Izabál, Panzós, Zarco, El Estór). Up to 6000 feet. Abundant winter resident; found in brushy meadows and second-growth. Three specimens taken in late November were molting. My only completely blue male was taken February 15; males taken earlier in the year were partly in winter feather. 15 males, 4 females, 1 ?.

Passerina versicolor (Bonaparte). Arid Interior (Usumatlán). 800 feet. Recorded in July and September in scrubby open woodland. Males were singing on territory in July; a female taken July 19 had an enlarged ovary. We collected a molting male September 12.

I assign my specimens (male, wing, 63, 65 mm., tail, shot away on one specimen, 53 on the other; female, wing 61, 63, tail, shot away, 52), which are smaller and duller than the nominate form, to P. v. purpurascens Griscom. 2 males, 2 females.

Passerina ciris (Linnaeus). Humid Tropics (Panzós, Zarco, Izabál). Up to 1000 feet. Uncommon winter visitant; found in second-growth and brush. Three males collected were

bright adults; one taken March 19 was in dull female-like plumage, though with a few blue feathers behind one eye. 4 males.

Hesperiphona abeillei (Lesson). Highlands (Usumatlán). 7000 to 7500 feet. Rare; found in cutover pine and cloud forest edge; recorded August 6 (specimen with enlarged testes taken), December 10, and March 4.

The race H. a. cobanensis Nelson, which the specimen represents, is brighter yellow, especially on the breast, than the nominate form. My specimen is similar to the type in color (U.S. National Museum), but the wing is a trifle longer (117 mm.). 1 male.

Sporophila torqueola (Bonaparte). Arid Interior (Usumatlán); Highlands (Usumatlán, Paruhla); Humid Tropics (Panzós, Izabál, Zarco, Quirigua, El Estór). Up to 5900 feet. Abundant resident in brushy meadows. A stub-tailed juvenal was taken October 18. Molting specimens were taken August 28 and in February.

On my adult males, which identify my series as S. t. morelleti (Bonaparte), the chin, throat, and rump are immaculate white. 19 males, 3 females, 1 ?.

Sporophila aurita (Sclater). Humid Tropics (Panzós, Zarco). Up to 200 feet. Uncommon; found in brush and along forest edge. A heavily molting individual was taken October 11.

We took a male in breeding condition March 18.

Males of the race S. a. corvina (Sclater), which my specimens represent, are wholly black except for the white concealed in the wing. 4 males, 3 females.

Oryzoborus funereus Sclater. Humid Tropics (Panzós, El Estór). Up to 200 feet. Uncommon; found in pasture and brush. The testes of a male taken October 10 were somewhat enlarged. 2 males, 2 females.

Volatinia jacarina (Linnaeus). Arid Interior (Usumatlán); Highlands (Usumatlán); Humid Tropics (Panzós, Quirigua, La Tinta); Up to 6000 feet. Common resident in the highlands and the Polochic Valley; found in meadows and brush; common in the arid interior during the summer only. Two males, taken respectively December 6 and February 5, were molting into the glossy blue-black adult plumage. We collected specimens in breeding condition in July and August. A young bird was collected October 11.

In my adult males the axillars and under wing-coverts are almost entirely black, the remiges black. I assign my material to V. j. splendens (Vieillot). 13 males, 7 females.

Spinus notatus (Du Bus). Highlands (Usumatlán, Paruhla). 3500 to 8200 feet. Fairly common; found in pine forest, mixed woodland, and brushy second-growth. In males collected August 7, December 18, and January 11 the testes were

enlarged. An immature male collected July 30 was undergoing a general molt.

My specimens represent the nominate race, a form characterized by the brightness of its yellow. 3 males, 2 females, 3 ?.

Spinus psaltria (Say). Arid Interior (Usumatlán); Highlands (Paruhla, Salamá). 800 to 5000 feet. A few small flocks of up to 40 birds were seen in overgrown fields during July and August.

My specimens represent the race S. p. colombianus (Lafresnaye); the inner webs of their rectrices are only partly white. 4 males, 1 female, 3 ?.

Loxia curvirostris (Linnaeus). Highlands (Usumatlán). 8000 to 8800 feet. Two specimens were taken December 10 and March 7, respectively, each from a group of two or three birds. Both are very large (wing, 92, 95 mm., tail, 53, 55). They obviously belong to the "Mexican" race L. c. stricklandi Ridgway. 2 males.

Atlapetes gutturalis (Lafresnaye). Highlands (Usumatlán). 5700 to 7900 feet. Fairly common; found in brushy areas. Specimens in breeding condition were taken from July 27 to September 8. We took a young bird, streaked on the breast, August 31. Two molting specimens were obtained in December.

Throughout my series, which belongs to the race A. g. griseipectus Dwight and Griscom, the yellow gular area is

pale and extensive, the breast buffy or grayish. 8 males, 2 females, 3 ?.

Atlapetes brunnei-nucha (Lagresnaye). Highlands (Usumatlán). 6500 to 6900 feet. Uncommon resident; found in cloud forest understory. Two molting birds were taken in August. We collected a male and female in breeding condition March 6.

My specimens resemble A. b. macrourus of western Guatemala in color but are too small for this form. They measure: male, wing, 78 to 89 mm. (83.7), tail, 81 to 91 (85), female, wing, 79 to 87 (82.5), tail, 82 to 86 (84.8). 3 males, 4 females.

Arremon aurantiirostris Lafresnaye. Humid Tropics (Panzós, Zarco). Up to 1800 feet. Uncommon; found in rain forest edge. A nest (two eggs) was found on the ground in dense cane October 13. We took an immature female October 15.

The race A. a. saturatus Cherrie, to which I assign my specimens, is large, the black pectoral band is wide, and the sides and flanks are dark. My males measure: wing, 80 to 86 mm. (83), tail, 70 to 72 (71); females: wing, 74, 77, tail, 65, 60. 4 males, 2 females.

Arremonops conirostris (Bonaparte). Humid Tropics (Panzós, Zarco). Up to 200 feet. Uncommon; found in thickets and brushy woodland. A male with enlarged testes was collected February 14.

My specimens, which represent the race A. c. chlorono-tus (Salvin), are small, especially in the bill. The males measure: wing 65 to 69 mm. (67.2), tail, 54 to 60 (56.2), culmen, 13.5 to 14.5 (14). 5 males, 2 ?.

Melozone biarcuatum (Prevost and Des Murs). Highlands (Usumatlán, Paruhla, Tactic); Humid Tropics (Tamahú). 2100 to 5800 feet. Uncommon; found in brushy second-growth. An immature bird, still being fed by an adult, was collected October 1.

I assign my specimens to the nominate form, in which the breast is immaculate, the sides of the head are largely white, and the posterior half of the auricular region is mainly chestnut. 1 male, 2 females, 1 ?.

Ammodramus savannarum (Gmelin). Humid Tropics (Quirigua). 400 feet. Several Grasshopper Sparrows were seen in an extensive savannah on March 16. A female in good plumage (wing, 52 mm., tail 37) taken in this area represents the very dark and little known race, A. s. oracens (Bangs and Peck). 1 female.

Aimophila ruficauda (Bonaparte). Arid Interior (Usumatlán, Morazón). 800 to 900 feet. Common; found in overgrown fields and hedge rows. Specimens taken in July and November had enlarged gonads.

In being grayish above and rufescent on the tail my

specimens represent the race A. r. connectens Griscom. 4 males, 1 female, 1 ?.

Aimophila rufescens (Swainson). Highlands (Usumatlán, San Jerónimo); Humid Tropics (Quirigua). 400 to 8500 feet. Fairly common on the Sierra de las Minas in summer; found in brushy second-growth and open pine forest; a specimen taken March 16 in an extenxive grassland was the only bird seen in the lowlands.

I assign my specimens to the dark race A. r. pyrgitoides (Lafresnaye). They measure: male, wing, 72 to 78 mm. (75.2), tail, 77 to 86 (80.5), female, wing, 73, 71, tail, 67, 65. 6 males, 2 females.

Zonotrichia capensis (P.L.S. Muller). Highlands (Usumatlán, Salamá, Paruhla). 4700 to 5900 feet. Fairly common; found in brushy fields. Specimens taken from July 27 to September 9 were in breeding condition; males were still occupying singing perches and performing vociferously in early September. We took an immature bird December 16.

In my specimens the streaking is less heavy and rufous nuchal collar is less sharply defined than in Z. c. costaricensis; they represent the race Z. c. septentrionalis Griscom. 6 males, 3 females, 2 ?.

Melospiza lincolni (Audubon). Highlands (Usumatlán). 5800 to 5900 feet. A small population wintered in an extensive

brushy meadow about half a mile in diameter. Here we took an immature male December 1.

My specimens represent the large race M. l. alticola (Miller and McCabe); my adult males measure: wing 64, 67, tail, 55, 60; my females: wing, 59 to 63 (60.7), tail, 53 to 58 (55). 3 males, 3 females, 2 ?.

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