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BIRDS OF TIKAL, GUATEMALA

BY

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WITH ONE PLATE

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No. 5 — *Birds of Tikal, Guatemala*

By

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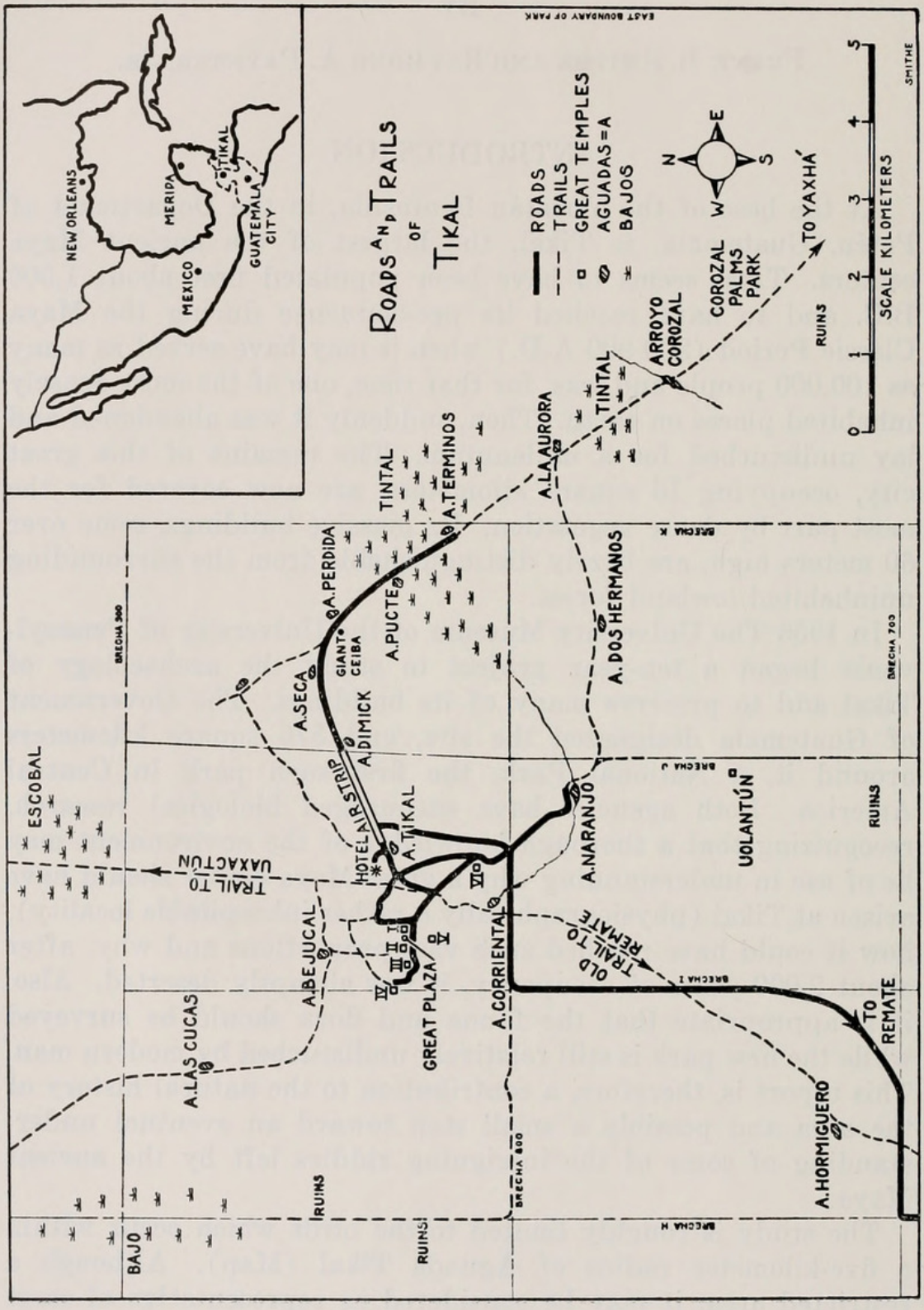
INTRODUCTION

At the base of the Yucatán Peninsula, in the Department of Petén, Guatemala, is Tikal, the largest of the ancient Maya centers. Tikal seems to have been populated first about 1,500 B.C. and to have reached its pre-eminence during the Maya Classic Period (200-900 A.D.) when it may have served as many as 100,000 people and was, for that time, one of the most densely inhabited places on earth. Then, suddenly it was abandoned and lay undisturbed for a millennium. The remains of this great city, occupying 16 square kilometers, are now covered for the most part by dense vegetation. Its massive buildings, some over 60 meters high, are barely distinguishable from the surrounding uninhabited lowland forest.

In 1956 The University Museum of the University of Pennsylvania began a ten-year project to study the archaeology of Tikal and to preserve many of its buildings. The Government of Guatemala designated the site, and 576 square kilometers around it, a National Park, the first such park in Central America. Both agencies have encouraged biological research, recognizing that a thorough knowledge of the environment may be of use in understanding why a great Maya center should have arisen at Tikal (physiographically a rather inhospitable locality), how it could have reached such vast proportions and why, after about 2,000 years of occupancy, it was abruptly deserted. Also, it is appropriate that the fauna and flora should be surveyed while the new park is still relatively undisturbed by modern man. This report is, therefore, a contribution to the natural history of the area and possibly a small step toward an eventual understanding of some of the intriguing riddles left by the ancient Maya.

The study is roughly limited to the birds which occur within a five-kilometer radius of Aguada Tikal (Map). Although a restricted area, it may be considered as representative of most of the northern Petén — a forested region with few physiographic discontinuities. Discrepancies between the avifauna of Tikal and that found at the nearby village of Uaxactun (Van


ROADS AND TRAILS OF TIKAL
NEW ORLEANS
MERIDA
TIKAL
GUATEMALA CITY
MEXICO
ROADS
TRAILS
GREAT TEMPLES
AGUADAS=A
BAJOS
SCALE KILOMETERS
SMITHE
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COROZAL PALMS PARK
ARROYO COROZAL
TINTAL
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A.PUCTE
A.PERDIDA
A.SECA
GIANT CEIBA
A.DIMICK
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A.TIKAL
GREAT PLAZA
A.BEJUCAL
A.LAS CUCAS
A.CORRIENTAL
A.NARANJO
A. DOS HERMANOS
UOLANTÚN
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ESCOBAL
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Tyne, 1935), and thirty kilometers to the south at Lake Petén Itzá (Taibel, 1955), will be considered.

Field work at Tikal was begun by Smithe in 1956, during a visit extending from 28 March to 4 April. In 1957 he remained from 8 March to 9 April, and was accompanied by Paynter for half that time. The following year field studies were conducted from 5 February to 12 March; Jorge Ibarra worked with Smithe during most of February and returned to Tikal for ten days in late November and December. In 1959 Smithe remained at Tikal from 22 April to 14 August. Paynter paid a five-day visit in late March, 1960. José Maria Marquéz, an employee of the archaeological project and a resident of Tikal, assisted Smithe in 1957 and 1959, and collected for him sporadically at other times. Unfortunately, few observations were made in the autumn and early winter. This probably has resulted in a failure to record several transient species, but they are of little significance in this study.

Approximately twelve hundred specimens were made into skins or skeletons or are preserved in alcohol. All are deposited in the Museum of Comparative Zoology.

All weights are of adult birds, unless indicated differently, and the means are accompanied by their standard errors (σ_m). The wings were measured flattened, and the bills from the base of the culmen.

ACKNOWLEDGEMENTS

We are grateful for the whole-hearted cooperation of the Government of Guatemala; we owe especial thanks to Jorge Ibarra, Director of the Museo Nacional de Historia Natural, whose enthusiasm and interest were with us throughout the study. Carlos Castaneda and Cloyd Smith of Guatemala City have been very helpful in matters pertaining to transportation and supplies.

Of course, it was at the invitation of The University Museum that we made this survey. We have been in constant debt to their "Proyecto Tikal" field party for facilities and assistance and are particularly obligated to Edwin M. Shook, Aubrey S. Trik, William R. Coe, and Robert F. Carr.

The senior author has been assisted frequently by Dean Amadon and Charles O'Brien of the American Museum of Natural History.

PHYSIOGRAPHY

What is known as the physical geography of the northern Petén has been well described by Wadell (1938). The characteristics of the Tikal region were considered by Stuart (1958). In brief, the region is one of low rolling hills, typical of mature Karst topography, and similar to most of the southern portion of the Yucatán Peninsula. The limestone is, however, of Oligocene age (Sapper, 1937) and therefore more mature and worn than that found farther north on the Peninsula. There are, for example, no *cenotes* (deep sinkholes) which are a characteristic feature of young Karst areas such as Yucatán. None of the hills is high. The altitude of the park ranges only from about 200 to 300 meters above sea level. The calcareous soil is thin and the bedrock is frequently exposed.

There are no permanent surface streams, but numerous depressions are filled in the rainy season and retain water during the early part of the dry season. The small basins are known locally as *aguadas*. Larger low-lying areas, called *bajos*, some covering several square kilometers, also become flooded in the wet months. They shrink considerably in the winter but may hold some water from one year to the next. The ancient Maya constructed reservoirs to catch the runoff from great plazas, causeways, and buildings. At the archaeologists' camp there is one of these, covering an acre or so, which has been excavated and repaired, creating a permanent pond. Aguada Tikal, as it is known, has proved to be highly attractive to birds and is undoubtedly responsible for the presence of some species which otherwise would be absent from the park. Underground streams or pools, which are often found in Karst regions, have not been discovered in spite of drilling several wells as deep as 150 meters.

CLIMATE

The climate of the Petén is tropical and relatively dry, although it is wetter than most of the Yucatán Peninsula. The annual rainfall varies considerably from year to year. For example, at El Paso Caballo, about 50 kilometers west of Tikal, a nine-year record shows an annual range from 990 to 2369 mm. (Lundell, 1937). As expected, the same variability seems true at Tikal, although as yet there are few data from here. Through the courtesy of Edwin M. Shook (*in litt.*), we have available the weather records obtained at Tikal from 1 June 1959 to 30

November 1960. For the year June 1959 through May 1960 the total precipitation was 1267 mm., but when the year is calculated from December 1959 through November 1960, thus including the 1960 rainy season, the total rises to 1623 mm.

There is a dry period from November or December through April, during which there is usually considerably less than 100 mm. of precipitation per month. Much of this occurs as heavy fog at night. The rains usually begin in May, reaching peaks in June or July and in September or October.

The mean temperature varies little throughout the year. At El Paso Caballo the averages for ten years showed January to be the coldest month with a mean of 23.9° C., and April and May to be the warmest months with a mean of 30° C. (Page, 1938). At Tikal similar ranges and patterns seem to prevail (Shook, *in litt.*).

VEGETATION

Except where disturbed by man, all of the National Park is thickly covered by semideciduous forest which attains a maximum height of 50 meters. According to Holdridge's broad classification (1956; 1957), this is a "Tropical Dry Forest" — the type of climax forest which occurs in tropical lowland where the annual rainfall is between 1,000 and 2,000 mm. and where there is a prolonged dry season. Lundell (1937) would define this as "quasi-rainforest" which, to the layman, is probably a more meaningful term than "Tropical Dry Forest."

Two main types of forest, viz "high forest" and "low forest," are readily distinguishable and are of significance in the distribution of the avifauna. The high forest is located in the better drained areas. Here the trees are sometimes as tall as 50 meters, there are numerous lianas, the forest floor is dark, and the vegetation of the understory is relatively thin. There are local differences in the composition of the high forest; in some sections there is a preponderance of *zapote* (*Achras zapota*), in other areas mahogany (*Swietenia* sp.), *ramon* (*Brosimum alicastrum*), or Spanish cedar (*Cedrela mexicana*).

A considerably smaller part of Tikal is occupied by low forest. This forest type occurs in poorly drained *bajos*. The trees rarely exceed 20 meters in height and usually are much lower, considerable light reaches the ground, and the understory is choked with thorny shrubs and vines. There are two principal types of low forest at Tikal, the *escobal* forest and the *tintal* forest.

In the former the escoba palm (*Chysosophila argentea*) and the *botan* palm (*Sabal* sp.) are common. In the *tintal*, which is the more extensive type of the low forest at Tikal, the logwood tree (*Haematoxylum campechianum*) is predominant. The birds *Amazilia yucatanensis, Cissilopha sanblasiana,* and *Granatellus sallaei* were found only in the *tintal. Vireo griseus semiflavus* was particularly common here, but also occurred in sunny, low growth near the airfield.

Around the archaeologists' camp, the airfield, and some ruins, the forest has been cleared and its place taken by grasses and shrubs in various densities and heights. This type of vegetation rarely occurred naturally prior to the current archaeological project. Many changes in the avifauna are being brought about by the creation of large tracts of this habitat.

ANNOTATED LIST

TINAMIDAE

Tinamus major percautus Van Tyne

Great Tinamou

Appears to be most abundant in the drier areas within the high forest.

Breeding activity has been noted from April to July. Small chicks were collected on July 13.

Six males ranged in weight from 916.5 to 1106.0 grams, with a mean of 1020.2 ± 28.2; three females 822.0, 1089.0 and 1135.2 grams.

Crypturellus boucardi boucardi (P. L. Sclater)

Slaty-breasted Tinamou

Prefers the more open regions surrounding the camp and the cleared ruins; common.

Reproductively active birds were found from late March to late July. Two of the specimens exhibiting enlarged gonads were in immature plumage. Van Tyne (1935) made similar observations.

The mean weight of seven males was 426.6 ± 14.3 grams, with a range from 368.5 to 467.0; two females were 463.4 and 474.1 grams.

Neither *C. soui* nor *C. cinnamomeus* has been found at Tikal, although both occur elsewhere in the Petén, the latter only 12

miles away at Uaxactun (Van Tyne, 1935). Presumably this is because there is not yet sufficient sunny, brushy cover, the preferred habitat of these species.

PODICIPEDIDAE

Podiceps dominicus brachypterus (Chapman)
Least Grebe

In regions with pronounced seasonal variation in rainfall the Least Grebe is highly mobile, taking advantage of temporary pools and departing for more favorable areas as the dry season progresses. Its extended and irregular breeding period (*vide* Gross, 1949; Paynter, 1955) and extraordinarily high reproductive potential, resulting in the production of as many as 24 fledged offspring in a year (Gross, *ibid.*), are undoubtedly adaptations which allow the species to successfully utilize transient and irregularly available habitats.

Least Grebes appear to be occasional residents at Tikal, but now that some aguadas are being made into year-round reservoirs the species should become permanently established. There is no previous record for the Petén.

A pair, with two chicks, was observed in mid-February 1958 at Aguada Tikal. The young were caught by children, and died; the adults disappeared. In the winter of 1959 a pair was again present. Two birds collected in early August 1959, at a more distant water hole, showed indications of gonadal activity. The male weighed 137.3, and the female 133.6 grams.

Podilymbus podiceps subsp.
Pied-billed Grebe

A single Pied-billed Grebe was observed by Aubrey Trik, on 8 November 1959, at Aguada Tikal. This is the first report from the Petén.

PHALACROCORACIDAE

Phalacrocorax brasilianus subsp.
Olivaceous Cormorant

For two weeks, from late October to early November 1959, a lone cormorant was present at Aguada Tikal (Trik, *in litt.*). The species was again reported in the spring and summer of 1960 (Carr, *in litt.*). A. E. Greer (*in litt.*) saw seven or eight in July 1961.

Anhinga anhinga subsp.
Anhinga

A female Anhinga came to the reservoir by the camp at the same time as the cormorant in 1959; it also disappeared about two weeks later (Trik, *in litt.*).

ARDEIDAE

Tigrisoma mexicana mexicana Swainson
Bare-throated Tiger-Heron

When the archaeological project at Tikal was begun in 1956 the Tiger-Heron was found at the aguada near the camp. Since the removal of the vegetation it has not been seen there, although it is fairly common at pools within the undisturbed forest.

A female weighed 1149.0 grams; an unsexed specimen, 1106.0 grams.

Nycticorax violaceus violaceus (Linnaeus)
Yellow-crowned Night-Heron

Yellow-crowned Night-Herons are becoming increasingly common at Tikal now that the camp aguada has been made into a reservoir. In November 1959 as many as six or eight pairs were present. This heron was not seen at Tikal, or recorded from the Petén, prior to July 1959.

A male weighed 663.1 grams.

Neither author has yet seen *N. nycticorax* at Tikal, but two visitors reported the species in March 1960 and July 1961. There is no prior record from the Petén, although the similarly patterned Boat-billed Heron (*C. cochlearius*) is known from Lake Flores. We are, therefore, hesitant to include the Black-crowned Night-Heron in this list.

Ardeola ibis ibis (Linnaeus)
Cattle Egret

A male, displaying no evidence of breeding, was collected on 25 April 1959. This appears to be the first record from the Petén of this rapidly spreading species. The Cattle Egret was first found in Guatemala in November 1958, in Alta Vera Paz (Smithe and Land, 1960).

It weighed 318.3 grams.

Butorides virescens virescens (Linnaeus)
Green Heron

A fairly common species. The single specimen in the collection was taken in mid-February. It is a male with a relatively long wing (175 mm.) and with a purple gloss on the sides of the neck. It seems referable to the nominate form and is probably a winter visitor. The breeding race of the Petén is presumably *B. v. maculatus* since Van Tyne (1935) identified a bird collected in June at Pacomón as that form and Taibel (1955) took breeding birds at Flores, which he also placed in that race.

The bird weighed 183.0 grams.

Hydranassa caerulea (Linnaeus)
Little Blue Heron

The most abundant heron at Tikal. There is no evidence that the species breeds here, although birds are found throughout the year with the largest numbers, of course, in the winter.

A female in nearly fully adult plumage weighed 291.9 grams.

Hydranassa rufescens subsp.
Reddish Egret

Three Reddish Egrets appeared at Aguada Tikal on 12 March 1958. They remained for a day and have not been observed again.

Egretta thula subsp.
Snowy Egret

A pair was noted at the Aguada Tikal on 14 May 1959. This is a new record for the Petén.

Egretta albus subsp.
Common Egret

From 5 February to 4 March 1958 a lone egret was present at Aguada Tikal.

CICONIIDAE

Mycteria americana Linnaeus
Wood Ibis

Aubrey Trik (*in litt.*) identified a single Wood Ibis at the aguada by the camp on 24 November 1959. The species had not been recorded before from the Petén.

CATHARTIDAE

Sarcoramphus papa (Linnaeus)
King Vulture

Observed fairly regularly but never more than one individual at a time.

Coragyps atratus (Bechstein)
Black Vulture

The most abundant of the vultures. There has been a gradual increase in numbers since observations were begun. Presumably this is correlated with the cutting of the forest and the growth of the village of workers associated with the Tikal Project.

Cathartes aura subsp.
Turkey Vulture

Noted regularly but only about one tenth as abundant as *Coragyps atratus.*

ACCIPITRIDAE

Elanoides forficatus subsp.
Swallow-tailed Kite

During the spring visits of Smithe in 1956, 1957, and 1958 this kite was seen only once (6 March 1958). In 1959, however, when observations extended to mid-August, birds were seen with fair regularity in June, July, and August. They usually appeared singly but occasionally as many as three were sighted at once. Paynter observed single birds on 23 and 28 March 1960.

The Swallow-tailed Kite is known to breed in the Petén (Van Tyne, 1935), but the birds observed at Tikal would seem to be migrants because of the lack of a suitable habitat.

Chondrohierax uncinatus subsp.
Hook-billed Kite

A pair of Hook-billed Kites was seen near a water hole on 27 June 1957. An adult female, weighing 251.5 grams and having a slightly enlarged gonad, was taken. This is the only record from Tikal.

The characters differentiating *C. u. uncinatus* from *C. u. aquilonis* are present only in the males, rendering identification of this specimen impossible. *C. u. aquilonis* may be the local race in view of its presence in Quintana Roo (Paynter, 1955).

Harpagus bidentatus fasciatus Lawrence
Double-toothed Kite

Three specimens of this rare hawk represent the first records from the Petén. A female was in breeding condition on 3 April 1957. An adult female weighed 189.5 grams and an immature male 174.7 grams.

Accipiter bicolor bicolor (Vieillot)
Bicolored Hawk

On 20 March 1957 a gravid female was collected. An immature male weighed 232.7 grams.

Buteo platypterus platypterus (Vieillot)
Broad-winged Hawk

An immature female was collected by Jorge Ibarra on 4 December 1958. This is the first observation of the Broad-winged Hawk in the Petén or anywhere on the Yucatán Peninsula.

Buteo magnirostris direptor (Peters and Griscom)
Roadside Hawk

The most common hawk at Tikal; probably it will increase as the forest is further cleared.

Of seven skins, three approach *B. m. conspectus;* two have the rufous tail markings reduced, and one, with the tail well washed with rufous, is generally pale and close to birds from Yucatán. Such variation is expected in view of Paynter's findings (1955) in nearby Quintana Roo.

Breeding birds were noted on 11 February and 17 March. The former date seems especially early. Late March is the earliest record from farther north on the Yucatán Peninsula (Paynter, 1955).

A juvenile female weighed 303.0 grams; an adult female 307.3 grams.

Buteo nitidus subsp.
Gray Hawk

Smithe twice observed this hawk in late March and early April 1956. There was no certain observation again until A. E. Greer, Jr. reported (*in litt.*) seeing a single bird on 20 and 21 July 1961.

Leucopternis albicollis ghiesbrechti (Du Bus)
White Hawk

Observed fairly frequently.

Two males collected on 22 March and 7 April had enlarged gonads.

Spizaetus ornatus vicarius Friedman
Ornate Eagle-Hawk

This large, trusting, hawk is uncommon, but not rare.

A specimen marked as a male, but whose large size would seem to indicate it is a female, weighed 1607.5 grams.

Geranospiza caerulescens nigra (Du Bus)
Blackish Crane-Hawk

Four specimens were collected, constituting the first records of the species from the Petén. This is usually considered to be rare in Mexico and Central America, but at Tikal it is not uncommon and is seen more frequently than *Leucopternis albicollis*.

A juvenile male weighed 358.0 grams.

Specimens were taken in March and June but no indication of breeding, other than slight gonadal enlargement, was noted.

FALCONIDAE

Herpetotheres cachinnans cachinnans (Linnaeus)
Laughing Falcon

Frequently seen and even more often heard.

A male weighed 408.0 grams.

MICRASTUR SEMITORQUATUS NASO (Lesson)
Collared Forest-Falcon

Two birds collected on 6 August 1959 are the only records from the Petén.

An immature male weighed 641.7 grams; an adult male 547.7 grams.

MICRASTUR RUFICOLLIS GUERILLA Cassin
Barred Forest-Falcon

This small Forest-Falcon was collected on four occasions. The three specimens preserved as skins show a wide variation in the amount of barring on the ventrum, a phenomenon noted frequently (e.g. Paynter, 1955).

Two males weighed 163.7 and 169.0 grams; a female 200.0 grams.

A male with enlarged testes was taken on 17 June.

FALCO DEIROLEUCUS Temminck
Orange-breasted Falcon

The Orange-breasted Falcon was first noted at Tikal by E. P. Edwards (*in litt.*) in June 1958, when a bird was seen in the vicinity of the Great Plaza. It had not been found in the Petén previously. In early May 1959 a specimen was obtained by Smithe from the top of one of the temples. It was a female, with a slightly enlarged ovary, weighing 653.7 grams. In June and July a pair was present in the Great Plaza, usually in a tree on top of one of the tallest buildings. They may have nested.

FALCO RUFIGULARIS PETOENSIS Chubb
Bat Falcon

Fairly common in open areas. A female was gravid on 25 March.

FALCO SPARVERIUS subsp.
American Sparrow Hawk

No specimens have been collected at Tikal although the species is usually present during the winter months. It is undoubtedly a migrant and winter visitant in the Petén.

CRACIDAE

Crax rubra rubra Linnaeus
Great Curassow

Common, but retreating to the undisturbed forests as the archaeological work progresses.

Birds in breeding condition have been collected in March, April, and May. A chick with its wings and tail partly feathered was taken in early May and a bird about one-quarter grown, weighing 773.1 grams, on 9 August.

Penelope purpurascens purpurascens Wagler
Crested Guan

Abundant in undisturbed regions.

Birds were collected in March, April, June, and July but the only indication of breeding was a third-grown male, weighing 824.9 grams, collected on 16 June.

An adult female weighed 2405.8 grams.

Ortalis vetula intermedia Peters
Plain Chachalaca

Chachalacas are abundant in the scrub bordering the airport and near the camp.

Breeding birds were taken in February, March, and May, and a quarter-grown juvenile on 15 June.

Three adult females weighed 399.2, 459.0 (gravid), and 525.2 grams. The last is unusually heavy.

PHASIANIDAE

Odontophorus guttatus (Gould)
Spotted Wood-Quail

Abundant and easily observed in heavy forest with open understory.

Individuals which were in breeding condition were collected from late March to the second week in June.

Four males weighed 297.6, 309.1, 317.4 and 318.0 grams; a female 284.2 grams.

Dactylortyx thoracicus sharpei Nelson
Singing Quail

A series of ten skins and two skeletons represents the first record of the species in Petén. It is not a rare bird but is excessively shy; much skill is required to collect it.

The Tikal population is clearly referable to *D. t. sharpei* and shows no approach to *D. t. paynteri* from Quintana Roo.

Breeding was noted from late April through July.

Five males weighed 195.4, 197.9, 205.5, 206.7, and 224.0 grams; five females 162.2, 177.4, 184.8, 193.8, and 195.6 grams. Sexual dimorphism is suggested by these data.

MELEAGRIDIDAE

Meleagris ocellata Cuvier
Ocellated Turkey

Turkeys are fairly common in the area about the airstrip, sometimes coming onto the field in the evening to feed.

On 30 May 1959 Smithe found a nest with eight eggs within moderately dense forest.

Basing his opinion on morphological evidence, Paynter (1955) believed it unwarranted to maintain *ocellata* in the monotypic genus *Agriocharis*. Genetic support for this can be found in successful attempts to cross-breed the two species. Leopold (1959) reports hybrids produced by poultry breeders and in 1960 Paynter saw several domestic turkey × ocellated turkey crosses which had been raised by D. B. Legters in Yucatán. While such crosses do not prove the two species congeneric, it would appear more logical to consider these as intrageneric, rather than intergeneric, crosses.

RALLIDAE

Aramides cajanea albiventris Lawrence
Rufous-necked Wood-Rail

During the first years of work at Tikal the Wood-Rail was frequently noted at the aguada by the camp. Later the surrounding vegetation was cleared and the birds have not been seen there since 1959.

A male taken in mid-June showed no indications of breeding but one taken on 31 July had very enlarged gonads. The latter weighed 515.4 grams.

Porzana carolina Linnaeus
Sora

Soras have not been reported from the Petén previously. Smithe observed the species at Aguada Tikal from 28 March to 4 April 1956, from 8 to 23 March 1957, and from 23 February to 12 March 1958. In 1959 he spent from 22 April to 14 August at Tikal but saw no Soras. This may have been because the birds had migrated north by late April or it could be because the aguada, which had been cleared of vegetation in late 1958, was no longer suitable. Paynter saw no Soras during his visit from 23 to 28 March 1960.

Laterallus ruber (Sclater and Salvin)
Ruddy Crake

Prior to the clearing of the vegetation from Aguada Tikal these little rails were common. None had been seen since 1958. The Ruddy Crake requires sunny ponds, bordered by thick vegetation. There are few habitats suitable at Tikal but the raw ditches bordering the airfield may one day develop into ideal sites.

A female collected on 20 March 1957 had an enlarged ovary. A male and a female taken on 5 and 6 April of the same year exhibited no gonadal activity.

Two females and a male weighed 44.6, 48.2, and 44.5 grams, respectively.

Porphyrula martinica (Linnaeus)
Purple Gallinule

A single Purple Gallinule was seen at Aguada Tikal from 28 March to 4 April 1956.

HELIORNITHIDAE

Heliornis fulica (Boddaert)
Sungrebe

A female collected at Aguada Tikal on 27 July 1959 is the only record of the Sungrebe from the Petén. Its gonad contained small ova.

The bird weighed 131.9 grams.

JACANIDAE

Jacana spinosa subsp.
American Jacana

Three Jacanas were present at Aguada Tikal from 28 March at least until Smithe's departure on 4 April 1956. The species has not been seen again, presumably because the pond has been cleared of floating vegetation.

CHARADRIIDAE

Charadrius vociferus vociferus Linnaeus
Killdeer

A common wintering bird, found primarily on the airstrip. As many as 28 individuals have been seen at once. The species appears to have been overlooked by earlier collectors in the Petén.

A female weighed 86.5 grams.

SCOLOPACIDAE

Tringa solitaria solitaria Wilson
Solitary Sandpiper

One or two of these sandpipers are usually at the camp reservoir during the winter and spring.

A female, collected 15 May 1959, weighed 47.5 grams.

Actitis macularia (Linnaeus)
Spotted Sandpiper

A few Spotted Sandpipers are found through most of the year. The species has been recorded as late as 15 May and as early as 23 July.

Calidris melanotos (Vieillot)
Pectoral Sandpiper

A single Pectoral Sandpiper collected on 28 February 1958 is the only record from the Petén. The specimen, a male, weighed 59.5 grams.

COLUMBIDAE

Columba speciosa Gmelin
Scaled Pigeon

The Scaled Pigeon is probably fairly common but it is seldom seen because of its habit of sitting quietly in the dense crowns of tall trees.

Birds with enlarged gonads were collected in February, June, and August, implying a prolonged breeding season.

Two males weighed 258.7 and 292.0 grams and two females 247.6 and 278.7 grams.

Columba nigrirostris Sclater
Short-billed Pigeon

Probably the most numerous of the larger pigeons, but because it frequents high trees it is difficult to observe. When Short-billed Pigeons feed in fruiting trees they may be found at more moderate heights and are rather fearless.

Breeding specimens were collected in February, April, and June.

Six females, all gravid to some degree, ranged in weight from 136.7 to 170.4 grams, with a mean of 156.9 ± 5.6. Two males weighed 168.8 and 173.0 grams.

Columbina talpacoti rufipennis (Bonaparte)
Ruddy Ground-Dove

We are following Goodwin (1959) in merging *Columbigallina* with *Columbina*.

Common about the camp and other cleared areas. Records of breeding were obtained in March, although the season is undoubtedly prolonged, if not continuous through the year.

Three males weighed 42.8, 43.2, and 44.6 grams; two females 45.0 and 60.0 grams.

Claravis pretiosa (Ferrari-Pérez)
Blue Ground-Dove

The Blue Ground-dove is abundant in shady, cleared areas. It was noted breeding from mid-February to early June.

The weight of five males was 58.3, 68.4, 70.0, 72.5, and 72.6 grams; that of three females 65.3, 72.4, and 73.0 grams.

LEPTOTILA PLUMBEICEPS PLUMBEICEPS Sclater and Salvin
Gray-headed Dove

L. plumbeiceps is relatively abundant but difficult to find in the forest.

Fledglings were taken on 25 February and 30 April; adults with enlarged gonads in February, April and May.

Three adult males weighed 135.7, 158.7 and 171.2 grams and an adult female 170.0 grams.

It is surprising that *L. verreauxi* has not yet been found at Tikal. It has been recorded elsewhere in the Petén by Van Tyne (1935) and Taibel (1955).

GEOTRYGON MONTANA MONTANA (Linnaeus)
Ruddy Quail-Dove

Found on the floor of dark forest. Fairly common, but not so abundant as *Leptotila plumbeiceps.*

Breeding was noted in April, June, and July; recently fledged birds were collected in June and August.

Three males and three females weighed 135.6, 141.1, 149.8, and 121.6, 136.1, 152.4 grams respectively.

PSITTACIDAE

ARATINGA ASTEC ASTEC (Souancé)
Olive-throated Parakeet

The parakeet occurs in the vicinity of the airstrip where the forest has been replaced by second growth.

A male and female weighed 80.0 and 85.2 grams, respectively. The female, collected on 18 May, was gravid.

PIONOPSITTA HAEMATOTIS HAEMATOTIS (Sclater and Salvin)
Brown-hooded Parrot

A shy, quiet species which is difficult to see in the high forest, its preferred habitat. It is relatively common, but appears not to have been recorded previously from the Petén.

Males with enlarged gonads were collected in May and July.

The weights of a male and a female were, respectively, 150.0 and 153.3 grams.

Pionus senilis senilis (Spix)
White-crowned Parrot

These are probably the most abundant of the parrots at Tikal. They often frequent the tall trees in the camp, as well as heavy forest.

Birds were seen going in a hole in a dead tree near Aguada Tikal in the last week of March 1960. They seemed to be preparing to nest. Two males collected at the same season three years earlier had slightly enlarged gonads.

Amazona albifrons nana Miller
White-fronted Parrot

A male with slightly enlarged testes, taken on 17 March 1959, is our only record. Probably it is not so uncommon as this implies since Van Tyne (1935) and Taibel (1955) also record the species from the Petén.

Amazona autumnalis autumnalis (Linnaeus)
Red-lored Parrot

The Red-lored Parrot, a forest bird, is moderately common. Specimens collected from March through early June exhibited gonadal activity; no specimens were taken in other months.

Three males weighed 304.6, 419.2, and 437.2 grams. Similar wide variations have been recorded before (Paynter, 1955).

Amazona farinosa guatemalae (Sclater)
Mealy Parrot

Next to *Pionus senilis,* this appears to be the most abundant parrot at Tikal. A male with enlarged gonads taken in mid-May is our only indication of the time of breeding.

The respective weights of two males and a female were 629.2, 703.1 and 649.0 grams.

CUCULIDAE

Piaya cayana thermophila Sclater
Squirrel Cuckoo

Fairly common on the edges of the heavy forest.

Evidence of gonadal activity was noted in late March and mid-May.

Two males and a female weighed, respectively, 103.2, 108.0, and 96.7 grams.

Crotophaga sulcirostris sulcirostris Swainson
Groove-billed Ani

Groove-billed Anis occur only in the vicinity of the airstrip, where there is brush. It is rather an uncommon species at Tikal, although it will doubtless greatly increase as the population expands to occupy the recently created brushy habitat.

In early April a bird had enlarged testes.

A male and a female weighed 81.2 and 70.6 grams, respectively.

Dromococcyx phasianellus rufigularis (Lawrence)
Pheasant Cuckoo

Two females, with slightly enlarged ovaries, were collected in thickets on 25 and 27 May 1959. These are the only individuals of the Pheasant Cuckoo which have been observed at Tikal. Their weights were 86.8 and 92.7 grams.

STRIGIDAE

Otus guatemalae guatemalae (Sharpe)
Vermiculated Screech-Owl

Screech-Owls quite often are heard at Tikal. The single specimen collected, a female, is clearly referable to the nominate form rather than to *O. g. thompsoni,* or an intermediate, which might have been expected.

It weighed 105.2 grams.

Ciccaba virgata centralis Griscom
Mottled Wood-Owl

The Mottled Wood-Owl is the most common owl, or at least the most conspicuous one, at Tikal. Its call, a low grunty hoot, followed by one to four (usually three) loud hoots, is frequently heard from shortly before dusk until dawn.

Three males and a female weighed 234.5, 236.6, 253.0, and 316.8 grams, respectively.

A bird collected on 2 April contained an egg.

Ciccaba nigrolineata Sclater
Black-and-White Owl

A single specimen, collected 21 March 1957, is the only record of the species from the Petén.

CAPRIMULGIDAE

Nyctidromus albicollis yucatanensis Nelson
Pauraque

Abundant about the airfield and other open areas.

Two males weighed 66.9 and 75.1 grams; five females 59.4, 67.0, 67.6, 71.6, and 77.5 grams.

A bird taken on 15 March contained an egg.

Otophanes yucatanicus (Hartert)
Yucatán Poorwill

The Poorwill is heard fairly frequently. Four specimens were taken at Tikal. One bird was found at mid-day resting on a beam under the thatch of an open-sided storehouse; two were collected on the floor of the forest during the day; one was taken on the airfield at night in company with *Nyctidromus albicollis*. They seem often to roost in trees and bushes, where they are difficult to collect.

An almost fully plumaged fledgling was collected on 7 June. An adult taken on 16 May fluttered on the ground as if a nest was nearby, but none was found.

A male and a female weighed 21.8 and 28.2 grams, respectively; the fledgling, which could not be sexed, 26.6 grams; an unsexed adult 27.5 grams.

APODIDAE

Chaetura vauxi subsp.
Vaux Swift

Swifts are present in considerable numbers but no specimen was secured. Van Tyne (1935) records *C. v. richmondi* as the form breeding at Uaxactun.

Panyptila cayennensis subsp.
Lesser Swallow-tailed Swift

Edwards (1959) reported a pair of this rare swift nesting on a tree in the Great Plaza on 9 June 1958. In March 1960 Paynter found an abandoned nest inside the chamber on top of Temple IV, but no birds were seen.

TROCHILIDAE

Phaethornis superciliosus longirostris (DeLattre)
Long-tailed Hermit

Quite often observed drinking at pools in the forest or at Aguada Tikal; conspicuous but not abundant.

A bird collected in July had very large gonads while several taken in May were only approaching breeding activity. Two males and a female weighed 5.2, 5.7, and 5.6 grams, respectively.

Phaethornis longuemareus adolphi Gould
Little Hermit

Prefers heavy rain forest, usually close to the ground. One bird was collected as it sang on a twig projecting from fallen leaves.

Birds taken on 4 April and 31 July had enlarged gonads.

Three males weighed 2.2, 2.5, and 2.5 grams.

Phaeochroa cuvierii roberti (Salvin)
Scaly-breasted Hummingbird

The species is new for the Petén. It seems to frequent flowering trees 40 feet or more above the ground, making detection difficult. One specimen was secured in February and four in July. Breeding was noted in both of these months.

The respective weights of four males and a female were 8.1, 8.1, 8.7, 9.0, and 8.0 grams.

Campylopterus curvipennis pampa (Lesson)
Wedge-tailed Sabrewing

This is a numerous and conspicuous hummingbird.

Males with enlarged testes were collected in mid-February and in mid-June; peculiarly, three males collected in mid-May had only slightly enlarged gonads.

Males with enlarged testes weighed 6.2, 6.4, 6.5, and 6.6 grams; those with slight gonadal development 6.7, 6.7, and 7.1 grams. A non-breeding female weighed 5.0 grams.

Florisuga mellivora mellivora (Linnaeus)
White-necked Jacobin

One of the least common of the hummingbirds at Tikal. A male weighed 6.8 grams.

Chlorostilbon canivetii canivetii (Lesson)
Fork-tailed Emerald

The Fork-tailed Emerald is primarily a bird of low scrub and deciduous forests. It is, as to be expected, rare at Tikal. Only two have been seen here; both were caught in a bird net placed near Laguna Dimick, a waterhole at the end of the airstrip.

A male, with very enlarged testes on 5 August, weighed 2.5 grams.

Amazilia candida candida (Bourcier and Mulsant)
White-bellied Emerald

A common species, feeding at the tops of the trees within the forest and at lower elevations outside the forest.

Birds in breeding condition were collected in mid-February and early August. Four taken in March, peculiarly, had only slightly developed gonads.

Four males weighed 3.6, 3.7, 3.9, and 4.2 grams; two females 3.2 and 3.3 grams.

Amazilia yucatanensis yucatanensis (Cabot)
Fawn-breasted Hummingbird

This hummingbird reaches its southern limit in British Honduras and the Petén. A male was collected at Tikal, on 20 July, in the low *tintal* forest. The specimen had enlarged testes and weighed 4.0 grams. We have no other records from Tikal and only one from elsewhere in the Petén (Santa Ana; Salvin and Godman, 1892).

Amazilia tzacatl tzacatl (de la Llave)
Rufous-tailed Hummingbird

An abundant and pugnacious species which occurs in most of the habitats available at Tikal.

Six specimens were collected for study skins; all proved to be males. The weights of five were 4.4, 4.4, 4.5, 5.3, and 5.7 grams.

Slightly enlarged gonads were recorded in March, May, and July.

Heliothryx barroti (Bourcier)
Purple-crowned Fairy

The species, and genus, reaches its northern limit in the Petén. It is moderately common at Tikal.

Birds in breeding condition were collected in early April and a nest was found on 28 March.

Four males weighed 4.7, 4.8, 4.8, 5.5 grams; a female 5.5 grams.

TROGONIDAE

Trogon massena massena Gould
Slaty-tailed Trogon

A common species in the forest. Two males with enlarged testes were collected in mid-March and mid-June. Three other males and two females taken about the same time in March showed only slightly enlarged gonads.

Weights of five males were recorded as 142.0, 146.0, 146.2, 151.8, and 160.7 grams; two females 141.3 and 155.6 grams.

Trogon citreolus melanocephala Gould
Citreoline Trogon

Another very abundant trogon; more prevalent in thin forest and edges than *T. massena*.

The only record from Tikal of a breeding bird is a female collected in mid-March. A newly-fledged trogon was taken on 24 July.

There is considerable individual variation in weight. Eight males weighed between 65.7 and 95.2 grams, with a mean of 74.1 ± 4.0; six females ranged from 73.8 to 81.8 grams with a mean of 76.3 ± 1.3.

Trogon collaris puella Gould
Bar-tailed Trogon

The species has not been reported from the Petén before; it is rather uncommon at Tikal.

Paynter (1957a) suggested that the population from the outer portion of the Yucatán Peninsula may be smaller in body mass, although indistinguishable in linear measurements, than birds from elsewhere within the range of *T. c. puella*. He records the weights of two Yucatán males as 47.6 and 53.5, and two females

as 41.1 and 53.9 grams; two males and a female from Chiapas weighed 63.7, 64.5 and 63.4 grams, respectively. At Tikal two males weighed 53.3 and 62.8 grams; two females 66.5 and 66.7 grams. While these new data support the hypothesis, additional documentation is required, particularly from the outer reaches of the Peninsula. Especially strong evidence is needed in view of the unusually wide variation in weight noted, above, in *T. citreolus*.

Breeding individuals were collected in mid-May and late June.

Trogon violaceus braccatus (Cabanis and Heine)
Violaceous Trogon

T. collaris and this species are about equally abundant.

A male taken on 22 February had one enlarged testis and one small; a female collected in early June was reproductively active.

Two males weighed 54.4 and 70.6 grams, once again illustrating the wide variation in weight found in trogons; two females were 58.5 and 58.8 grams.

ALCEDINIDAE

Ceryle torquata torquata (Linnaeus)
Ringed Kingfisher

A male, weighing 279.2 grams, taken in 1959, and single birds seen in 1957 and 1960 are the only records from Tikal. It may become more common as the reservoirs are enlarged and made permanent.

Chloroceryle amazona mexicana Brodkorb
Amazon Kingfisher

A female, weighing 128.6 grams, with a slightly enlarged ovary was collected on 7 March 1958. It was the only one seen at Tikal. Taibel's single record (1955) from Flores was the first from the Petén.

Chloroceryle aenea stictoptera (Ridgway)
Pygmy Kingfisher

More common than the larger kingfishers but does not yet seem to be a permanent inhabitant, although it appears to have bred here.

A male with enlarged testes, collected 10 August, weighed 17.5 grams; a non-breeding female 18.2 grams.

MOMOTIDAE

Hylomanes momotula momotula Lichtenstein
Tody Motmot

Paynter (1957a) suggested that birds from the Laguna Ocotal region of northeastern Chiapas were possibly heavier than those from the Petén. Two males and a female from Laguna Ocotal weighed 32.5, 32.7, and 29.7 grams, respectively, while five males from the Petén area were found by Van Tyne (1935) to range from 27.0 to 28.5 grams and two females to weigh 26.5 and 27.5 grams. This suggestion is given additional support by the series taken at Tikal, five males of which weighed 26.5, 26.7, 27.5, 27.9, and 29.2 grams, and two females 26.6 and 26.8 grams. The wing measurements, but not those of the tail, also suggest that the birds from northeastern Chiapas are larger, but there is some overlap. More material from Chiapas is needed.

Birds taken in May and June were in breeding condition. A fledgling was collected on 21 June.

Common, but quiet and easily overlooked in the heavy forest.

Momotus momota lessonii Lesson
Blue-crowned Motmot

Abundant. Breeding birds have been taken on 30 April and 24 May.

The weights of two males were 120.1 and 121.2 grams; three females 105.1, 113.8, and 116.8 grams.

GALBULIDAE

Galbula ruficauda melanogenia Sclater
Rufous-tailed Jacamar

An inhabitant of heavy forest; common.

Specimens collected in April and May were breeding.

Six males weighed from 27.1 to 30.2, with a mean of 28.5 ± .4 grams; a female 28.3 grams.

BUCCONIDAE

Notharcus macrorhynchos hyperrhynchus (Sclater)
White-necked Puffbird

Only one specimen of this puffbird was seen and collected at Tikal. The species had not been reported previously from the Petén.

A male, with slightly enlarged gonads, was taken on 23 February. It weighed 97.5 grams. When dissected it was found to contain a lizard about ten centimeters long, weighing 8.8 grams.

Malacoptila panamensis inornata (DuBus)
White-whiskered Puffbird

Rather uncommon but definitely not rare.

Newly fledged young were taken on 13 and 18 June.

Two adult females and a male weighed 38.0, 39.8, and 33.7 grams, respectively.

RAMPHASTIDAE

Aulacorhynchus prasinus virescens Ridgway
Emerald Toucanet

Common but not so abundant as the other two species of toucans.

A male and female, collected in mid-May, weighed 130.0 and 115.8 grams, respectively. The female had an enlarged ovary.

Pteroglossus torquatus erythrozonus Ridgway
Collared Araçari

Abundant. Breeding birds were collected in March.

A gravid female weighed 161.1 grams and a male 172.7 grams.

Ramphastos sulfuratus sulfuratus Lesson
Keel-billed Toucan

One of the most conspicuous and common birds of the heavy forest and its edges.

A three-quarter grown fledgling was collected on 21 June. A female taken on 13 February and a male on 9 August had enlarged gonads while four other birds collected in March and late June showed only slight or no gonadal development.

Two females weighed 382.6 and 454.2 grams; a male 384.3 grams.

PICIDAE

Piculus rubiginosus yucatanensis (Cabot)
Golden-olive Woodpecker

An uncommon species of the forest. Two females and a male weighed, respectively, 73.9, 75.8, and 78.8 grams. Indications of breeding were noted in late May and in June.

Celeus castaneus (Wagler)
Chestnut-colored Woodpecker

This woodpecker is usually considered to be rare to uncommon throughout its range from central Mexico to Panama. At Tikal it occurs in heavy forest where it is, for a woodpecker, fairly common.

Breeding birds were recorded in April and May.

Three males weighed 88.1, 89.3, and 90.4 grams; two females 93.3 and 96.7 grams.

Dryocopus lineatus similis (Lesson)
Lineated Woodpecker

Uncommon.

Two females and a male weighed 143.4, 157.9, and 167.4 grams, respectively.

A bird taken in mid-March had an enlarged ovary.

Centurus aurifrons dubius (Cabot)
Golden-fronted Woodpecker

Specimens from the Petén are generally darker ventrally than typical *C. a. dubius* from Yucatán, but they are much closer to this race than to *C. a. veraecrucis*.

Prefers forest edges and the more open areas. Uncommon, but doubtless will increase as the Tikal forest is cut.

A bird taken on 6 March had a slightly enlarged ovary; a male had fully developed testes on 10 August.

A female weighed 78.6 grams; two males 76.3 and 89.6 grams.

Centurus pucherani perileucus (Todd)
Black-cheeked Woodpecker

A conspicuous and unwary woodpecker of the light forest and edges which, while uncommon, definitely is not rare, as is implied by the single prior record from the Petén (Van Tyne, 1935).

An occupied nest-hole was found in July and breeding birds were collected in May.

Four males weighed 48.1, 48.9, 52.4, and 54.8 grams; a female 42.0 grams.

Veniliornis fumigatus sanguinolentus (Sclater)
Smoky-brown Woodpecker

The species is common in areas where the trees are low and the undergrowth thick.

A bird with an enlarged ovary was collected on 22 March.

Two males weighed 32.8 and 37.4 grams; five females 29.0, 30.8, 31.6, 31.6 and 32.0 grams.

Phloeoceastes guatemalensis guatemalensis (Hartlaub)
Pale-billed Woodpecker

A fairly common, noisy woodpecker found in the forest.

In July a pair was found nesting in a dead palm with a pair of *Centurus pucherani* occupying a hole about three feet lower on the same trunk. A male with very large testes was collected in mid-February. The species may breed throughout the year, as suggested by Paynter (1955).

The weight of a male and female were 221.6 and 241.8 grams, respectively.

DENDROCOLAPTIDAE

Dendrocincla anabatina anabatina Sclater
Tawny-winged Woodcreeper

An abundant species of the heavy forest.

A male collected on 19 March, which had enlarged gonads, is the only definite breeding record.

The weights of four males were 36.5, 36.5, 36.9, and 37.5 grams; two females 28.3 and 35.6 grams.

Dendrocincla homochroa homochroa (Sclater)
Ruddy Woodcreeper

This species and *D. anabatina* seem to be equally common and to prefer the same habitat.

Birds collected in May and June were breeding.

Five males weighed 34.5, 37.9, 38.0, 38.4, and 38.5 grams; two females 34.3 and 39.0 grams.

Sittasomus griseicapillus gracileus Bangs and Peters
Olivaceous Woodcreeper

Very numerous at Tikal. All the specimens in a large series from Tikal are clearly referable to *S. g. gracileus*. Van Tyne

(1935) had only two specimens from the Petén, which he called *S. g. sylvioides.* Restudy, with the abundant comparative material now available, would undoubtedly indicate that these birds are *S. g. gracileus.*

Paynter (1957a) demonstrated that *S. g. gracileus* is markedly lighter in weight than *S. g. sylvioides.* These additional data from Tikal confirm that observation. Eight males weighed 11.1 ± .4 grams, with a range of 9.5 to 12.6; three females 10.0, 10.3, and 10.3 grams.

Breeding specimens were collected in May.

Xiphocolaptes promeropirhynchus emigrans Sclater and Salvin

Strong-billed Woodcreeper

The species was observed twice at Tikal; once on 11 March 1957 and once on 1 August 1959. The bird was collected each time. The presence of this large woodcreeper in the tropical forest is unexpected since it is considered to be a subtropical or a temperate zone inhabitant, usually in pine forests. There is one previous record from the Petén, a bird collected at Poctún, a locality on the pine ridges along the British Honduras border (Salvin and Godman, 1891).

The bird taken in August had slightly enlarged testes. The other bird could not be sexed.

The male weighed 135.4 grams.

Dendrocolaptes certhia sanctithomae (Lafresnaye)

Barred Woodcreeper

One of the less common woodcreepers but not rare, as the absence of previous Petén records would seem to indicate.

Specimens were taken in March, July, and August. The July and August birds were breeding.

The weights of three males were 56.8, 63.8, and 65.7 grams; of two females 59.4 and 62.4 grams.

Xiphorhynchus flavigaster eburneirostris (Des Murs)

Ivory-billed Woodcreeper

There is a tendency toward *X. f. yucatanensis* in the series of fourteen skins collected at Tikal.

The species ranges widely through the forests, perhaps occurring most frequently in the thin, sunny forest. It is abundant.

Paynter (1955) suggested that *X. f. eburneirostris* might be heavier than *X. f. yucatanensis*. Data obtained at Tikal would seem to disprove this. However, it should be borne in mind that this series is not "typical" of *X. f. eburneirostris* and that many of the specimens weighed by Paynter (*ibid.*) on the Yucatán Peninsula were not "typical" of *X. f. yucatanensis*. Eight Tikal males weighed between 40.0 and 53.5 grams, with a mean of 47.2 ± 1.6; eight females between 36.7 and 43.3 grams, with a mean of 40.6 ± .8.

Breeding birds were collected first in early April and continued to be found until mid-July. No specimens are available from later in the year.

FURNARIIDAE

Automolus ochrolaemus cervinigularis (Sclater)

Buff-throated Foliage-gleaner

This species of the heavy forest was seen only twice.

A male with enlarged testes, collected on 21 April, weighed 43.2 grams. Another male, collected 18 June, had very small gonads and weighed 45.9 grams.

Xenops minutus mexicanus Sclater

Plain Xenops

An abundant forest species, recorded breeding in mid-February and early June. Van Tyne (1935) found nestlings in April and May.

The weight of two males was 11.0 and 11.5 grams; that of three females 9.8, 10.6, and 10.8 grams.

Sclerurus guatemalensis guatemalensis (Hartlaub)

Scaly-throated Leafscraper

This bird, a form of the heavy forest, is infrequently seen.

A specimen with very enlarged testes was collected on 1 May.

Four males and a female weighed 32.3, 33.0, 34.1, and 35.8 grams, respectively.

FORMICARIIDAE

Thamnophilus doliatus yucatanensis Ridgway

Barred Antshrike

Found principally in the thickets bordering the airfield, where it is rather uncommon.

Breeding specimens were collected in the fourth week of March and in mid-May.

There is a possibility that *T. d. yucatanensis* averages somewhat less heavy than *T. d. intermedius*, the contiguous race. Four males from Tikal weighed 22.4, 25.2, 25.5, and 26.2 grams. Paynter (1955) recorded the weight of eight males of *T. d. yucatanensis*, of the Yucatán Peninsula, as ranging from 21.4 to 27.8 grams, with a mean of 24.9 ± 0.7 grams. Two males of *T. d. intermedius* from Chiapas weighed 28.4 and 28.8 grams (Paynter, 1957a); these weights are outside the known range for *T. d. yucatanensis*. Data for females are less abundant. Three females of *T. d. yucatanensis* weighed 22.8, 26.3, and 27.0 grams (Paynter, 1955). One female of *T. d. intermedius* was found to weigh 30.0 grams (Paynter, 1957a).

Thamnistes anabatinus anabatinus Sclater and Salvin
Russet Antshrike

A pair of this rare species was collected in heavy forest on 5 July 1959, and constitutes the first record from the Petén.

The male weighed 19.5 and the female 19.2 grams; both had enlarged gonads.

Dysithamnus mentalis septentrionalis Ridgway
Plain Antvireo

The species has been considered rare in northern Middle America but it may merely be localized. Prior to 1954 the bird was known in Mexico from two specimens from southern Campeche (Traylor, 1941). However, in 1954 six were collected in Chiapas, where the species was reported to be common (Paynter, 1957a). Van Tyne (1935) collected four Plain Antvireos at Uaxactun, and considered this noteworthy, but at Tikal they are abundant in the low growth which borders the roads and trails.

Breeding individuals were taken in March, May, and June.

A series of nine males ranged from 10.9 to 13.8 grams, with a mean of 12.5 ± .1.

Four females weighed 12.2, 12.5, 12.6, and 13.2 grams.

Microrhopias quixensis boucardi (Sclater)
Dot-winged Antwren

Moderately common in brushy areas within the high forest.

Most of the specimens collected in June exhibited enlarged gonads.

The weights of two males were 8.6 and 9.0 grams; four females 7.9, 7.9, 8.6, and 9.7 grams.

Cercomacra tyrannina crepera Bangs
Dusky Antbird

Occurs in essentially the same habitat as *Microrhopias quixensis* but seems somewhat less common.

Specimens were taken in March, April, July, and August. Fully developed gonads were found in July and August.

Five males weighed 15.3, 16.1, 16.7, 16.7, and 17.2 grams; two females 13.7 and 14.9 grams.

Formicarius analis intermedius Ridgway
Black-faced Antthrush

Common but quiet and shy; most easily collected during the dry season when it can be heard among the dry forest litter.

A series of six skins from Tikal is clearly referable to *F. a. intermedius* although slight tendencies toward *F. a. pallidus*, such as ventral pallidness or reduced dorsal rufescence, are evident in some specimens.

A male collected on 1 May and one on 10 July were the only individuals reproductively active. Other specimens were taken in March and exhibited no, or only slight, gonadal activity.

The weights of four males were 58.7, 63.6, 64.8, and 65.0 grams; that of three females 57.2, 59.1, and 67.0 grams.

COTINGIDAE

Attila spadiceus flammulatus Lafresnaye
Bright-rumped Attila

A moderately common inhabitant of the forest.

Breeding birds were taken in May and June.

Three males weighed 42.5, 44.8, and 44.9 grams; three females 38.2, 39.0, and 41.7 grams.

Rhytipterna holerythra holerythra (Sclater and Salvin)
Rufous Mourner

The Rufous Mourner is fairly common at Tikal although it had not been found previously in the Petén.

Evidence of breeding was noted in March and April.

Weights of four males were recorded as 33.2, 35.4, 36.0, and 38.0 grams; that of two females 32.3 and 34.2 grams.

Lipaugus unirufus unirufus Sclater
Rufous Piha

There is no prior record of *L. unirufus* in the Petén. It is less common than *Rhytipterna holerythra* at Tikal, but not rare.

A female, collected on 19 February, had an enlarged ovary and weighed 87.2 grams. A breeding male, taken on 19 June, weighed 79.2 grams and a non-breeding male, collected on 14 July, weighed 84.4 grams.

Pachyramphus cinnamomeus fulvidior Griscom
Cinnamon Becard

An occupied nest of this common becard was found by Paynter on 27 March in a small tree in an area where the forest had been thinned to allow restoration of some ruins. Smithe observed a nest from 23 April until the birds departed about 10 May. It was built near the end of a branch hanging close to the water at Aguada Tikal.

Three males weighed 19.9, 20.3, and 20.7 grams; a female 19.3 grams.

Pachyramphus major australis Miller and Griscom
Gray-collared Becard

This is a species of lower, drier forest and rather unexpected at Tikal; there was no prior record from the Petén. It is uncommon, but as the rain forest is cut and second growth assumes more importance the population certainly will increase.

The respective weights of a male and female were 21.3 and 22.8 grams.

Pachyramphus aglaiae hypophaeus (Ridgway)
Rose-throated Becard

Platypsaris and *Pachyramphus* are much too similar to be considered separate genera. Hellmayr (1929) long ago pointed out that they were barely separable and recently Bond (1959) made the same observation.

P. aglaiae is another species for which no specific record in the Petén existed. At Tikal it is uncommon but, like *P. major,* may increase when the forest is further thinned.

Of a series of six skins, two are of adult males. There is no rose on their throats. A male which is approaching full adult plumage has a trace of rose. The females are richly colored. There is no doubt that the series is *P. a. hypophaeus.* There are three specimens from British Honduras in the Museum of Comparative Zoology which also are clearly *P. a. hypophaeus.* Paynter (1957a) recorded a single male from Laguna Ocotal, Chiapas as *P. a. sumichrasti,* but this dark bird lacks any rose on its throat and must be *P. a. hypophaeus,* as is also a male from nearby Ocosingo, Chiapas. The range of the race is, therefore, considerably farther north than had been known. The suddenness with which *P. a. sumichrasti* is replaced by *P. a. hypophaeus* is notable. Specimens of *P. a. sumichrasti,* which even display a tendency toward *P. a. yucatanensis,* have been found a mere 100 miles north of Tikal (Paynter, 1955).

A nest with young nearly ready to fledge was found on 24 June. Breeding specimens were collected in late May and early June. One of these is a male in partial juvenile plumage.

Two adult males weighed 27.7 and 29.2 grams; two adult females 31.1 and 33.8 grams; two immature males 26.5 and 29.0 grams.

Tityra semifasciata personata Jardine and Selby
Masked Tityra

Common in the crowns of high trees, particularly in those which are dead.

A breeding specimen was collected on 24 May. The gonads of birds taken on 18 June and 29 July were only slightly developed.

Three females and a male weighed 84.6, 86.7, 88.1, and 87.0 grams, respectively.

Tityra inquisitor fraserii (Kaup)
Black-crowned Tityra

An uncommon bird at Tikal.

Breeding birds were collected in mid-May; there are no data for other times of year.

Three females weighed 46.4, 48.0, and 50.3 grams.

PIPRIDAE

Pipra mentalis mentalis Sclater
Red-capped Manakin

One of the most abundant birds along the brushy trails in the forest.

Breeding birds have been collected from mid-March to mid-July. Several of these were in juvenile plumage.

Four males in adult plumage weighed 13.8, 14.4, 14.4, and 14.5 grams; seven males in juvenal plumage ranged from 12.8 to 17.5 grams, with a mean of 15.1 ± .6; five females 14.5, 16.0, 17.0, 17.2, and 17.8 grams.

Manacus candei (Parzudaki)
White-collared Manakin

The White-collared Manakin is the least common of the family at Tikal.

A male with enlarged gonads on 24 July is the only breeding evidence at Tikal but Van Tyne (1935) found an incubating bird on 6 April at nearby Uaxactun.

The weights of two males were 20.6 and 21.2 grams; two females 18.0 and 19.8 grams.

Schiffornis turdinus veraepacis (Sclater and Salvin)
Thrush-like Manakin

This shy manakin is fairly numerous at Tikal.

Its breeding season is notably prolonged. The earliest evidence of breeding was 23 February and the latest 15 July. Paynter (1955) recorded the season, farther north, from early February to early June. Smithe found a nest on 28 March in the hollow end of a palm stump about six feet above the ground. It contained two eggs.

Six males weighed between 30.0 and 32.5 grams, with a mean of 30.7 ± .3; two females weighed 33.8 and 36.2 grams.

TYRANNIDAE

Tyrannus tyrannus (Linnaeus)
Eastern Kingbird

Observed at Tikal in 1959 first on 23 April and for the last time on 8 May. It had not been reported before from the Petén, but year-round observations doubtless would show it to be a common spring and autumn transient.

Tyrannus melancholicus chloronotus Berlepsch
Tropical Kingbird

Ubiquitous in the vicinity of the airfield and clearings about the camp.

A fledgling was collected on 30 June. Birds with active gonads were taken in May and June.

Three females and a male weighed 40.9, 42.8, 44.7, and 44.1 grams, respectively.

Legatus leucophaius variegatus (Sclater)
Piratic Flycatcher

A gravid female weighing 29.3 grams, collected on 7 April 1957, is the only record from the Petén.

Myiodynastes luteiventris luteiventris Sclater
Sulphur-bellied Flycatcher

A common spring and summer bird found high in the trees on the forest edges and in those scattered through the camp.

Our observations have not been continuous. Therefore, it has not been possible to record the precise date of arrival and departure of this species. Our dates fall well within the period of 18 April to 5 August given by Van Tyne (1935) for the Petén. We recorded breeding birds on 8 and 30 June.

The weights of four males were 44.7, 46.2, 46.3, and 47.0 grams; that of two females 44.2 and 49.2 grams.

Myiodynastes maculatus insolens Ridgway
Streaked Flycatcher

M. maculatus and *M. luteiventris* seem about equally abundant. They also appear to occupy the same habitat. We have specimens from 3 May until 30 July, but the species is certainly present both earlier and later in the season.

Birds taken in May and June were breeding.

Four males and a female weighed 41.5, 45.2, 45.3, 47.8, and 49.2 grams, respectively.

Megarhynchus pitangua mexicanus (Lafresnaye)
Boat-billed Flycatcher

We have but one record from Tikal, a breeding male caught on 16 June in a trammel net placed along a trail. Doubtless

it is uncommon because of the nature of the country about Tikal, but also it is probably overlooked owing to its similarity to *Pitangus sulphuratus*.

The bird weighed 65.9 grams.

Myiozetetes similis texensis (Girard)
Vermilion-crowned Flycatcher

One of the most abundant of the tyrannids found at Tikal. Particularly numerous at the aguada at the camp.

Two males weighed 32.1 and 33.5 grams.

Pitangus sulphuratus guatimalensis (Lafresnaye)
Great Kiskadee

There exists no prior record of this bird in the Petén. Several pairs are found at Tikal in the vicinity of the camp aguada. It has been seen nowhere else but as the forest is removed its range certainly will expand.

Nesting activities have been noted from early March through May. A female weighed 57.8 grams.

Myiarchus tyrannulus cooperi Baird
Brown-crested Flycatcher

A relatively common species in areas where the forest has been thinned; particularly abundant about the camp.

Birds with enlarged gonads were collected in May and June.

Three males weighed 38.5, 39.3, and 40.5 grams.

M. cinerascens has been found elsewhere in the Petén (Van Tyne, 1935) and is to be expected as a visitor at Tikal.

Myiarchus yucatanensis Lawrence
Yucatán Flycatcher

This small flycatcher had not been found previously in the Petén. It is represented in our collection by the skins of two unsexed birds taken on 23 and 30 July 1959 and by an unsexed skeleton collected also on 23 July 1959. The last was identified in the museum by the few feathers left on the wings and tail of the roughed-out field specimen. The skins are of young birds with wide rufous margins to the wings and to the upper tail coverts.

PLATE I

The *Myiarchus* Flycatchers of the Petén

Yucatán Flycatcher
(*M. yucatanensis*)

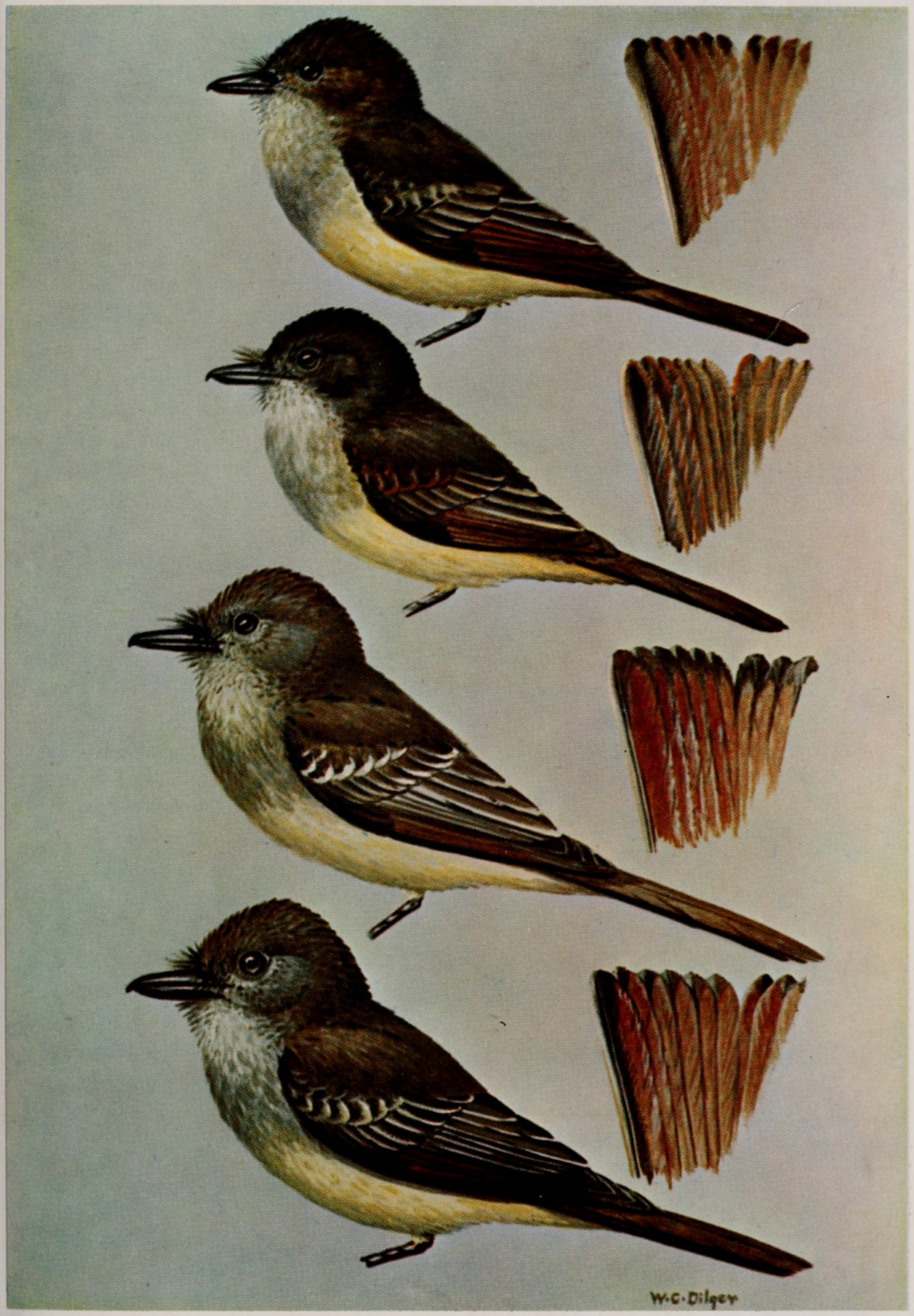
Dusky-capped Flycatcher
(*M. tuberculifer*)[1]

Ash-throated Flycatcher
(*M. cinerascens*)

Brown-crested Flycatcher
(*M. tyrannulus*)

Reduced about one-half

[1] The race depicted is *M. t. connectens*, characterized by rufous edges on the ventral side of the rectrices, rather than *M. t. platyrhynchus*, the form at Tikal, which lacks the rufous margins.


W.C. Dilger

Unfortunately, nothing is known of the relative abundance of this species. It is easily confused with *M. tuberculifer* and probably is frequently overlooked (Plate I).

Myiarchus tuberculifer platyrhynchus Ridgway
Dusky-capped Flycatcher

About as abundant as *M. tyrannulus* and seems to prefer the same habitat.

A series of five skins is quite dark, thereby approaching *M. t. connectens,* but all the specimens are small and all lack rufous markings on the underside of the rectrices.

Breeding birds were found on 27 March, 4 and 22 June, and 1 July.

Four males and a female weighed 17.1, 17.9, 18.4, 19.1, and 17.7 grams, respectively.

Contopus virens (Linnaeus)
Eastern Wood-Pewee

A very abundant transient. Our earliest spring record is 17 March and the latest, an unusually late date, is 30 May. No field work has been done in the autumn.

Three males weighed 13.2, 14.7, and 15.9 grams; two females 15.3 and 15.9 grams.

Contopus cinereus brachytarsus (Sclater)
Tropical Pewee

Most of the field work at Tikal has been done during the migration period of *C. virens,* at which time *C. cinereus* cannot be differentiated. We are, therefore, uncertain of the status of *C. cinereus.* Our two specimens were collected on 29 June and 5 August.

The June bird had a slightly enlarged ovary; the other is a young bird which could not be sexed. The latter weighed 11.2 grams.

Empidonax flaviventris (Baird and Baird)
Yellow-bellied Flycatcher

Three specimens were collected in February 1958. These are the first records from the Petén. Wintering and transient

species have not been studied intensively at Tikal. Therefore, our lack of records of this bird in other months and years is not significant.

Two males weighed 8.6 and 10.3 grams.

Empidonax minimus (Baird and Baird)
Least Flycatcher

A common winter visitor.

Terenotriccus erythrurus fulvigularis (Salvin and Godman)
Ruddy-tailed Flycatcher

Van Tyne (1935) cites two records of this species in the Petén. A single specimen was taken at Tikal. The species is at the limit of its northern range in this region and probably is rare.

The bird, a male, weighed 7.4 grams.

Myiobius barbatus sulphureipygius (Sclater)
Sulphur-rumped Flycatcher

Common and conspicuous, occurring in the lower growth within the high forest.

Birds with fully developed gonads were collected on 29 April and 26 May.

Seven males weighed between 11.0 and 12.4 grams, with a mean of 11.7 ± .2; three females 10.0, 10.4, and 11.6 grams.

Onychorhynchus coronatus mexicanus (Sclater)
Royal Flycatcher

A fairly abundant forest bird.

Breeding individuals were collected from 7 April to 19 July.

Three males weighed 20.2, 20.3, and 20.6; three females 17.0, 17.0, and 18.2 grams.

Platyrinchus mystaceus timothei Paynter
White-throated Spadebill

A common bird in the undergrowth bordering the trails in the high forest.

Eight males weighed from 7.8 to 11.7 grams, with a mean of 9.9 ± .4; three females 7.8, 9.0, and 9.6. Paynter (1955) recorded three males of this race from Quintana Roo as weighing

8.0, 8.3, and 9.8 grams, and two females as 7.5 and 10.7 grams. Van Tyne's males from Uaxactan ranged from 9.4 to 10.4 grams and females from 7.8 to 8.0 grams. These data seem to indicate that *P. m. timothei* is somewhat lighter in weight than *P. m. cancrominus*, five males of which from Chiapas were found (Paynter, 1957a) to range from 10.0 to 12.0 grams, with a mean of 11.2 ± .3 and four females of which weighed 8.7, 9.7, 9.9, and 10.2 grams.

Breeding birds were collected on 9 June and 27 July. A fledgling was taken 19 July.

Tolmomyias sulphurescens cinereiceps (Sclater)
Yellow-olive Flycatcher

Moderately numerous in the high forest. Generally found in the thin growth of shrubs and trees which occurs under a thick canopy.

A male which had enlarged testes on 1 July is the only breeding record, although specimens collected as early as 24 April exhibited slight gonadal activity.

Three males weighed 13.4, 14.3, and 14.5 grams; two females 14.8 grams each.

Rhynchocyclus brevirostris brevirostris (Cabanis)
Eye-ringed Flatbill

The species had been recorded only once from the Petén (Van Tyne, 1935) but at Tikal it is a rather common resident of the heavy rain forest.

Breeding birds were noted from early June to mid-July.

A series of eight males weighed 21.8 ± .3 grams and ranged from 20.7 to 22.9 grams; five females weighed 20.3, 20.7, 21.2, 22.6, and 25.5 grams; the latter bird had a very enlarged ovary.

Oncostoma cinereigulare cinereigulare (Sclater)
Northern Bentbill

Fairly common in the low growth along trail edges, although not previously recorded in the Petén.

Breeding specimens were taken in May and July.

Three males weighed 6.4, 6.7, and 7.5 grams.

Elaenia viridicata placens Sclater
Greenish Elaenia

The species was not noted at Tikal until the 1959 field season, suggesting that it may have immigrated to the region about that time or become more numerous. It is another open-country bird which may be expected to increase at Tikal.

Five males weighed 12.6, 12.7, 12.7, 12.8, and 12.8 grams.

Breeding males were collected from 14 May to 29 June.

Ornithion semiflavum semiflavum (Sclater and Salvin)
Yellow-bellied Tyrannulet

This small flycatcher had not been found before in the Petén. It seems very local at Tikal, preferring the sunny borders of the forest near the camp. It is, however, rather common where it does occur.

Males with greatly enlarged gonads were collected 21 February and 11 May.

Four males weighed 7.0, 7.2, 7.4, and 7.6 grams.

Leptopogon amaurocephalus pileatus Cabanis
Sepia-capped Flycatcher

This is another example of a species which elsewhere is considered to be rare but which occurs in good numbers in the forest at Tikal.

Breeding birds were collected between 19 March and 29 May.

Five males and a female weighed, respectively, 9.9, 11.3, 11.3, 11.7, 11.7, and 10.8 grams.

Pipromorpha oleaginea assimilis (Sclater)
Ochre-bellied Flycatcher

Within the heavy forest this is an abundant species.

A bird with a slightly enlarged ovary on 24 March is the earliest indication of the approaching breeding season. Breeding males were collected on 10 May and 2 July.

Four males weighed 12.2, 12.6, 13.6, and 14.4 grams; two females 11.5 and 12.4 grams.

HIRUNDINIDAE

Progne subis subsp.
Purple Martin

A single male Purple Martin was observed by Paynter on 24 March 1960. The bird was first seen early in the morning while sunning itself in the top of a dead tree in the camp area. It remained in the vicinity until mid-morning. The observer was aware of the paucity of records of this bird from Central America and is certain the bird seen was not *P. chalybea*.

Progne chalybea chalybea (Gmelin)
Gray-breasted Martin

Seen about the airfield with moderate frequency and in flocks not exceeding six birds.

A male collected 19 April had enlarged testes and weighed 40.8 grams. It was one of several apparently nesting in holes in the trunks of palms.

Stelgidopteryx ruficollis stuarti Brodkorb
Rough-winged Swallow

The species is fairly common at Tikal. Nesting takes place in the ruins during April and May.

Five birds were collected, two of which were breeding. All are referable to *S. r. stuarti* rather than to *ridgwayi*, the race which might have been expected because of the proximity of Tikal to the breeding range of *ridgwayi* on the Yucatán Peninsula. The first suggestion that *stuarti* did not breed exclusively in the mountains was to be found in the discovery of *stuarti* in the Cayo District, British Honduras, on 23 April (Paynter, 1957b). With this additional evidence from the Petén it would seem that the breeding range of *stuarti* extends to the wet lowlands of the Caribbean slope. *S. r. ridgwayi* is probably confined to the outer, drier, portion of the Yucatán Peninsula.

Four males and a female weighed 15.6, 16.0, 16.1, 16.2, and 15.1 grams, respectively.

CORVIDAE

Cissilopha sanblasiana yucatanica (Dubois)
Black-and-blue Jay

This jay is found in the *tintal* forest. It is uncommon.

Birds with active gonads were collected in mid-May, early June, and mid-July.

Two males and a female, all in adult plumage, weighed 126.9, 133.9, and 130.9 grams, respectively.

Cyanocorax yncas centralis (van Rossem)
Green Jay

Only one Green Jay has been seen during the field work at Tikal. This bird, a male weighing 74.0 grams, is not typical of *C. y. centralis*. Its wing is quite small, indicating an approach toward *C. y. maya*.

Psilorhinus morio cyanogenys Sharpe
Brown Jay

One of the most common and conspicuous birds at Tikal.

Breeding specimens were collected on 19 March and 7 April. A male weighed 241.7 grams.

TROGLODYTIDAE

Thryothorus maculipectus canobrunneus Ridgway
Spot-breasted Wren

As might be expected, Tikal specimens of this wren show an approach toward *T. m. umbrinus* in coloration. Paynter (1957a) indicated that *T. m. canobrunneus* might be lighter in weight than *umbrinus*. The weights of birds from Tikal, again as expected, fall between *canobrunneus* and *umbrinus*. Four males weighed 14.5, 15.3, 16.0, and 16.6 grams; two females 13.4 and 14.6 grams.

An active, conspicuous bird which occurs in forest undergrowth. For a wren, its altitudinal range is notable. It is usually found in low shrubs but at times ranges in vines in trees 30 feet above the ground.

Breeding specimens were collected in May and early July.

Thryothorus ludovicianus albinucha (Cabot)
Carolina Wren

This large wren is found only in the low vegetation bordering the airstrip. It is uncommon.

A male with fully enlarged testes was collected 5 August.

Two males weighed 15.8 and 16.2 grams.

Uropsila leucogastra brachyura (Lawrence)
White-bellied Wren

This is the least common of the forest-inhabiting wrens at Tikal.

Two mature males and a female weighed 9.4, 10.2, and 8.7 grams, respectively; an immature male 10.4 grams.

Six specimens were collected in February, March, May and July, but none was breeding.

Henicorhina leucosticta prostheleuca (Sclater)
White-breasted Wood-wren

Very common in the underbrush within the forest.

Birds with fully enlarged gonads have been taken from 19 March to 31 July.

A series of eight males weighed between 14.3 and 15.9 grams, with a mean of 15.0 ± .2; four females 13.3, 13.5, 13.7, and 16.2 grams.

MIMIDAE

Dumetella carolinensis (Linnaeus)
Catbird

An abundant winter visitant found as late as 2 May. A specimen collected on this date had a slightly enlarged ovary and weighed 49.6 grams; another female weighed 35.9 grams.

TURDIDAE

Turdus albicollis leucauchen Sclater
White-throated Robin

Fairly abundant in light forest and on the borders of clearings.

Van Tyne (1935) referred his Petén specimens to *T. a. parcolor*, a race described from British Honduras, but we are uncertain that this is a recognizable form.

Breeding specimens were collected in May.

Three males weighed 53.3, 63.4 and 73.0 grams; two females 61.5 and 63.1 grams.

Turdus nudigenis tamaulipensis (Nelson)
Sooty Robin

Not seen at Tikal prior to 1959 but during the field work in 1959 and 1960 it was fairly common. Alterations in the habitat almost certainly account for the increase in the population.

A male collected 8 May had slightly enlarged testes and weighed 74.0 grams; another male weighed 74.8 grams.

Hylocichla mustelina (Gmelin)
Wood Thrush

A winter visitant occurring in moderate numbers. Our latest spring record is 23 April.

Polioptila plumbea superciliaris Lawrence
Tropical Gnatcatcher

A male, with fully enlarged gonads and weighing 6.3 grams, was collected on 7 July. It is the only record from Tikal. A specimen taken at Chuntuqui (Van Tyne, 1935) was the first record from the Petén.

Ramphocaenus rufiventris ardeleo Van Tyne and Trautman
Long-billed Gnatwren

Five specimens of the gnatwren were taken at Tikal. All show a strong approach toward the nominate race. The species occurs in moderate abundance in dense undergrowth.

A breeding specimen was collected in late May.

The weights of two males were 8.9 and 9.7 grams; that of three females 8.1, 11.0, and 11.1 grams.

BOMBYCILLIDAE

Bombycilla cedrorum Vieillot
Cedar Waxwing

Cedar Waxwings were observed, in flocks containing as many as 28 birds, on 16 and 28 February 1958 and on 8 May 1959. They seem not to have been found before in the Petén.

VIREONIDAE

Smaragdolanius pulchellus pulchellus (Sclater and Salvin)
Green Shrike-Vireo

A single, non-breeding, male collected on 23 February 1958 represents the first record of the species from the Petén. Probably it is more common than the dearth of records would seem to indicate. It occurs in the crowns of the tallest trees where it is seldom noticed.

The specimen weighed 24.4 grams.

Vireo griseus griseus (Boddaert)
White-eyed Vireo

The specimen of the White-eyed Vireo was taken on 14 February 1958. Van Tyne (1935) lists a bird, collected at La Libertad, which apparently was the first of the race collected in the Petén. It would seem, as Griscom (1932) indicated, that the subspecies is a rare visitant to the Petén, although just one hundred miles to the north, in Campeche and Quintana Roo, it is common (Paynter, 1955). The lack of brushy second growth must greatly restrict the range of the species in the Petén, but there must be other causes, possibly genetic, limiting *V. g. griseus* because the resident race (*V. g. semiflavus*) is abundant where the habitat is satisfactory.

Vireo griseus semiflavus Salvin

Bond (1954) suggests that the *semiflavus* group of vireos is nearer to *V. ochraceus* than to *V. griseus* and he places that group within the former. The *ochraceus* and *semiflavus* groups are without doubt closely allied, but the *griseus* group is certainly close also, although perhaps not so near as *ochraceus* is to *semiflavus*. All the forms of *ochraceus, semiflavus,* and *griseus* are allopatric; it would seem prudent to treat the three groups as conspecific uniting them under the name of *V. griseus,* as was done by Hellmayr (1935).

The bird is common at Tikal in deforested areas and in the *tintal.*

Breeding was noted from 26 May to 6 August.

Three males weighed 9.9, 10.5, and 10.7 grams.

Vireo olivaceus olivaceus (Linnaeus)
Red-eyed Vireo

A specimen was collected on 7 August 1959, an unusually early date for the species to be in Central America. Field work during the spring and fall migrations will doubtless show this to be a common transient.

Vireo olivaceus flavoviridis (Cassin)

A rather common bird of light forest and edges, particularly about the camp. Van Tyne (1935) records the species from 5 April to 30 September.

Breeding birds were taken from 16 May to 3 July.

Three males and a female weighed 16.9, 17.8, 19.3, and 20.9 grams, respectively.

Hylophilus ochraceiceps ochraceiceps Sclater
Tawny-crowned Greenlet

Abundant in the lower levels of the forest.

Graber and Graber (1959) recently reviewed the northern population of the species and resurrected the race *pallidipectus*, a pallid subspecies named from Costa Rica, which was synonomized with the nominate form by Todd (1929) and Hellmayr (1935). We have examined a large series of the species, mainly from Costa Rica, Guatemala, and Mexico, and agree that *pallidipectus* is a distinct form worth nomenclatural recognition. Graber and Graber (1959) limit the nominate race to Mexico, but our material shows that the Petén and British Honduras must also be included in its range.

Breeding birds were collected from 17 March to 14 June.

Four males weighed 9.9, 10.9, 11.0, and 11.0 grams; four females 10.9, 11.2, 11.8, and 13.6 grams.

Hylophilus decurtatus decurtatus (Bonaparte)
Gray-headed Greenlet

Ubiquitous in the thickets in, or bordering, the forest.

Enlarged gonads were noted in specimens taken in mid-May. A fledgling was collected on 6 July.

Males weighed 8.6, 8.8, 9.0, 9.4, and 9.5 grams; two females 9.1 and 9.7 grams.

PARULIDAE

Mniotilta varia (Linnaeus)
Black-and-white Warbler

A common winterer.

Two females and a male weighed, respectively, 9.5, 9.5, and 8.2 grams.

Helmitheros vermivorus (Gmelin)
Worm-eating Warbler

A male Worm-eating Warbler, collected on 20 March 1957, represents the first record of the species in the Petén. It weighed 13.8 grams.

Vermivora peregrina (Wilson)
Tennessee Warbler

The Tennessee Warbler is an uncommon winterer, and had not been reported before from the Petén.

A male and female weighed 8.6, and 9.0 grams, respectively.

Dendroica petechia subsp.
Yellow Warbler

Smithe observed what he believed to be this species on 19 February and on 20 June 1959. The February observation seems reasonable but the other record is very questionable because of its extremely late date. Van Tyne (1935) recorded *D. p. rubiginosa* from Flores. Doubtless it is a casual visitor.

Dendroica magnolia (Wilson)
Magnolia Warbler

Magnolia Warblers are common winter visitors. A female was collected on 8 May 1958, a notably late date. The bird, which exhibited some ovarian enlargement, weighed 9.0 grams.

Dendroica coronata coronata (Linnaeus)
Myrtle Warbler

It is remarkable that the Myrtle Warbler, which is a fairly abundant bird at Tikal in the winter, had not been reported before from the Petén. It is particularly conspicuous in March when migrating flocks feed on the lawns about the camp buildings.

Four spring females weighed 10.1, 10.7, 11.4, and 11.5 grams.

Dendroica virens virens (Gmelin)
Black-throated Green Warbler

The Black-throated Green Warbler is another species not previously recorded from the Petén but which is a common winter resident.

A male weighed 7.5 grams.

Dendroica fusca (Muller)
Blackburnian Warbler

Smithe saw a male on 30 March 1956. This is the only time the species, which is a transient in northern Central America, has been seen in the Petén.

Dendroica pensylvanica (Linnaeus)
Chestnut-sided Warbler

We have two specimens collected on 6 and 14 February 1958. These are of interest not only because they are the first evidence of occurrence of the species in the Petén, but because the bird had not been known to winter farther north than Nicaragua.

A female weighed 9.2 grams; a bird presumed to be a male 8.2 grams.

Seiurus aurocapillus (Linnaeus)
Ovenbird

A moderately numerous winterer.

A female weighed 21.7 grams.

Seiurus motacilla (Vieillot)
Louisiana Waterthrush

Seems much less common than the Northern Waterthrush. Both are usually found in the vicinity of Aguada Tikal. The species is present until roughly the first week in May. The earliest fall record from the Tikal is 1 August.

A male and female weighed 20.8 and 17.6 grams respectively.

Seiurus noveboracensis notabilis Ridgway
Northern Waterthrush

A fairly common species. At least one or two birds are present at Aguada Tikal most of the year. Our latest spring date is 8 May and the earliest autumn date is 10 August.

Four males weighed 16.4, 18.4, 18.9, and 19.0 grams.

Oporornis formosus (Wilson)
Kentucky Warbler

Kentucky Warblers are among the most abundant of the wintering Parulidae.

Three males weighed 11.6, 11.9, and 15.9.

Oporornis philadelphia (Wilson)
Mourning Warbler

A Mourning Warbler, which is a transient in northern Central America, was collected on 11 May. It was a male, weighing 11.4 grams. Van Tyne (1935) took a single bird at Uaxactun. These are the only Petén records.

Geothlypis trichas brachidactyla (Swainson)
Common Yellowthroat

Yellowthroats are rather common near the aguadas and in weedy areas in the vicinity of the camp. A bird collected on 18 May is notably late.

Two females and a male weighed 9.5, 11.5, and 9.5 grams, respectively.

Icteria virens virens (Linnaeus)
Yellow-breasted Chat

An uncommon visitor. In late March and early April the chat seems to be more common. Transients from the south probably augment the wintering population.

A female weighed 28.4 grams.

Granatellus sallaei boucardi Ridgway
Gray-throated Chat

This small chat had not been found previously in the Petén. At Tikal it is confined to the *tintal bajo,* the low forest which completely loses its leaves during the dry season. This type of forest occurs about two miles east of the airstrip and covers a comparatively small area. The species is common here. Paynter (1955) noted a similar localization of the species farther out on the Yucatán Peninsula.

A series of six skins is clearly referable to *G. s. boucardi.*

Five mature males weighed 10.1, 10.5, 11.0, 11.4 and 11.5 grams; an immature male 9.6 grams; a female 11.1 grams. These

data continue to support the suggestion (Paynter, 1957a) that *G. s. sallaei* is the heavier subspecies.

Breeding specimens were collected 3 May, 9 June, and 29 June. A male in immature plumage was breeding.

Wilsonia citrina (Boddaert)
Hooded Warbler

A ubiquitous visitor. Probably the most common of the warblers.

Five males and a female weighed, respectively 9.2, 9.6, 9.8, 9.9, 10.2, and 9.3 grams.

Wilsonia pusilla subsp.
Wilson's Warbler

We have single sight records for 10 March 1957, 7 February 1958, and 28 March 1960. The bird has not been reported before from the Petén. It is probably a rare winterer in this region, as one would expect with the knowledge that it has not been reported from the Yucatán Peninsula.

Setophaga ruticilla (Linnaeus)
American Redstart

A very common species during the winter. It has been seen as late as 7 May.

A female weighed 7.4 grams.

Basileuterus culicivorus culicivorus (Deppe)
Golden-crowned Warbler

One of the most abundant birds of the wooded areas.

Reproductively active specimens were taken in May and June.

Eight males ranged in weight from 8.9 to 11.5 grams, with a mean of 9.7 ± .2; three females 8.2, 8.7, and 9.1 grams.

ICTERIDAE

Gymnostinops montezuma (Lesson)
Montezuma Oropendola

A common and conspicuous species.

On 4 May a male was collected which had enlarged gonads. It is surprising that we have not yet found oropendolas nesting in Tikal.

A male and female weighed 509.5 and 211.8 grams, respectively.

Cassidix mexicanus subsp.
Boat-tailed Grackle

A single, female Boat-tailed Grackle was seen regularly at the camp aguada during Paynter's visit in March 1960. The population undoubtedly will increase greatly if the pond is maintained in its present condition.

Dives dives dives (Deppe)
Melodious Blackbird

This is another species which is profiting by the cutting of the forest and the establishment of a village. It is one of the most conspicuous birds near the camp.

Females weighed 87.0 and 97.7 grams.

Icterus galbula (Linnaeus)
Baltimore Oriole

Apparently the Baltimore Oriole is of rare occurrence in the Petén. A young male, weighing 35.9 grams, was collected 12 February 1958 and is the first record from the region. An immature male or a female was tentatively identified by Paynter on 24 March 1960.

Icterus spurius (Linnaeus)
Orchard Oriole

Van Tyne (1935) did not record the Orchard Oriole at Uaxactun but at Tikal it is a very abundant winterer in the vicinity of the camp and airfield. Sometimes in March and April it occurs in flocks of more than 100 individuals. The species has been seen as late as 3 May, but the majority of birds leave in late April.

A female weighed 19.3 grams; two immature males 18.2 and 22.6 grams.

Icterus prosthemelas prosthemelas (Strickland)
Black-cowled Oriole

The most common of the breeding icterids, preferring the thinly wooded area and forest edges about the camp.

Birds with fully enlarged gonads were collected on 3 April and 8 July. A fledgling was taken 1 August.

A male weighed 30.1 grams; three immature females 25.8, 26.2, and 27.3 grams; two mature females 28.3 and 29.9 grams.

Icterus mesomelas mesomelas (Wagler)
Yellow-tailed Oriole

A male with enlarged gonads, collected on 30 June, is the only Tikal record. This is a species which may increase as the settlement at Tikal grows.

The bird weighed 43.6 grams.

THRAUPIDAE

Tanagra lauta lauta Bangs and Penard
Yellow-throated Euphonia

The species is abundant, particularly in the vicinity of the camp.

Breeding birds were collected from April to June.

Seven males weighed from 11.7 to 14.7 grams, with a mean of 12.8 ± .4; a female 15.9 grams.

Tanagra gouldi gouldi (Sclater)
Olive-backed Euphonia

This euphonia is more of a forest species than *T. lauta* and, therefore, not so conspicuous. Our records are limited to the months of June and July, suggesting that the bird may be absent earlier, or more likely, that it becomes more noticeable during the breeding season. The only previous record from the Petén (Van Tyne 1935) was also of a summer (August) bird.

Nearly all of the birds collected were breeding.

Five females weighed 10.8, 12.4, 12.5, 12.9, and 13.2 grams; three females 13.1, 13.2, and 14.0 grams.

Tangara nigrocincta larvata (DuBus)
Masked Tanager

Moderately abundant. Often found in company with honeycreepers fairly high in flowering trees.

A male with fully enlarged gonads was collected on 2 April. Specimens taken in June were also breeding.

Three males weighed 16.7, 17.9, and 19.5 grams.

Thraupis abbas (Deppe)
Yellow-winged Tanager

Another species which is found primarily in trees within the camp area, and which probably will increase in numbers.

Breeding specimens were taken from 28 March to early August. A newly fledged bird was collected on 7 June.

Three adult males and a female weighed 41.4, 44.8, 50.6, and 47.6 grams, respectively. The fledgling, a male, weighed 39.8 grams.

Piranga rubra rubra (Linnaeus)
Summer Tanager

There is no previous record from the Petén of this winterer, but it is fairly common, especially in shade trees about the camp.

A male weighed 27.2 grams and a female 29.6 grams.

Piranga roseogularis tincta Paynter
Rose-throated Tanager

This weakly characterized race of a species endemic to the Yucatán Peninsula, including the Petén, was uncommon. Three birds were taken, all of which were in low forest or edges.

A male in immature plumage was breeding in mid-May. An adult male had enlarged gonads on 30 June.

An adult male and a female weighed 22.2 and 24.5 grams; the immature male 22.8 grams.

Piranga leucoptera leucoptera (Trudeau)
White-winged Tanager

There exists no prior record of the species from the Petén. This tanager was noted for the first time at Tikal in 1959 when a small series was taken between April and August. The birds were found on the edges of wide trails through moderately heavy forest.

Breeding specimens were collected on 10 June and 1 August.

Three males and a female weighed 15.3, 15.6, 16.3, and 16.0 grams, respectively.

Habia rubica nelsoni (Ridgway)
Red-crowned Ant-Tanager

Surprisingly, a series of eleven skins is clearly referable to *H. r. nelsoni*, the form of the Yucatán Peninsula, rather than to *H. r. rubicoides*.

Red-crowned Ant-Tanagers are abundant within the forest and have been noted breeding from mid-March to early July.

A series of ten males weighed a mean of 33.5 ± .3 grams, with a range of 26.8 to 38.2 grams; three females 30.5, 30.8, and 33.2 grams.

Habia gutturalis peninsularis (Ridgway)
Red-throated Ant-Tanager

Seems to occur about the camp and along the edges of trails with greater frequency than *H. rubica*.

The weight of eight males ranged from 36.4 to 44.4 grams, with a mean of 39.4 ± 1.0 grams; five females were 30.1, 30.8, 31.9, 33.4, and 34.8 grams.

Breeding birds were taken in May, June, and July. A fledgling barely able to fly was collected on 17 July.

Lanio aurantius aurantius Lafresnaye
Great Shrike-Tanager

An abundant species in the forest.

Breeding birds were collected from 7 April to 3 July.

Eleven males weighed from 32.5 to 38.5 grams, with a mean of 36.1 ± .6 grams; eight females from 33.5 to 41.6 grams, with a mean of 36.7 ± .3 grams.

Eucometis penicillata pallida Berlepsch
Gray-headed Tanager

Wherever army ants are swarming the Gray-headed Tanagers are to be found.

It is a fairly common bird at Tikal, usually occurring in bushy areas bordering the trails.

A male taken on 24 May had fully developed gonads.

Two males weighed 24.2 and 27.2 grams; six females ranged from 24.7 to 31.5 grams, with a mean of 27.0 ± 1.0.

Cyanerpes cyaneus carneipes (Sclater)
Red-legged Honeycreeper

The honeycreeper is common in the crowns of flowering trees, or in those with flowering epiphytes.

Breeding specimens were collected from 23 April to 4 June.

The weights of a series of six males were 11.1 to 13.9 grams, with a mean of 12.3 ± .4; those of five females 10.0, 13.0, 13.1, 14.4, and 15.3 grams.

FRINGILLIDAE

Saltator atriceps atriceps (Lesson)
Black-headed Saltator

This saltator is liimted to brushy trailsides and to the vicinity of the camp and airfield, where there is much second growth.

Breeding males were taken on 6 May and 6 June.

Two males weighed 76.6 grams, each; a female 83.8 grams.

Caryothraustes poliogaster poliogaster (DuBus)
Black-faced Grosbeak

A moderately common species which occurs in flocks within the forest.

Birds collected from 28 May to 7 July were breeding.

The weights of a series of five males were 39.4, 39.9, 41.7, 42.2, and 44.8 grams; of two females 39.9 and 44.8 grams.

Richmondena cardinalis flammigera (Peters)
Cardinal

A few cardinals have been seen at Tikal in the scrub at the eastern edge of the airfield. A male, in breeding condition, was collected on 28 June and is the second specimen of the species from Guatemala, the first having been taken at Flores, Petén (Taibel, 1955).

Taibel (*ibid.*) described *R. c. petenensis* on the basis of his one specimen and without reference to *flammigera* or *yucatanica*, two races of obvious importance. We have not examined the type of *R. c. petenensis* but expect it will be found to agree with *R. c. flammigera*, the race to which our Tikal specimen is clearly referable.

The bird weighed 32.9 grams.

GUIRACA CAERULEA subsp.
Blue Grosbeak

Has been seen on a few occasions, particularly in the spring.

CYANOCOMPSA PARELLINA PARELLINA (Bonaparte)
Blue Bunting

We are unable to appreciate the characters said to distinguish *C. p. dearborni* from the nominate form and, contrary to Van Tyne (1935), place our Petén specimens in *C. p. parellina.*

Blue Buntings are abundant in the weeds and scrubs bordering the airstrip and camp.

Eight males weighed between 13.2 and 17.7 grams, with a mean of 15.5 ± .5 grams; three females were 13.8, 14.1, and 16.3 grams.

CYANOCOMPSA CYANOIDES CONCRETA (DuBus)
Blue-black Grosbeak

Fairly common in the heaviest forest.

Breeding specimens were found on 28 May and 10 August.

Two males and a female weighed 30.5, 32.8, and 29.5 grams, respectively.

PASSERINA CYANEA (Linnaeus)
Indigo Bunting

Indigo Buntings are found throughout the winter in the weeds bordering the airstrip.

Two immature males weighed 13.6 and 13.7 grams.

PASSERINA CIRIS CIRIS (Linnaeus)
Painted Bunting

This is another winter visitor which is common in the vicinity of large clearings.

A mature male weighed 16.9 grams; two immature males 15.4 and 16.7 grams; three females 16.2, 19.4, and 21.7 grams.

SPIZA AMERICANA (Gmelin)
Dickcissel

Dickcissels have been seen at Tikal only in April and very early May when large migrating flocks pass through.

Three males weighed 26.9, 27.3, and 27.4 grams.

Sporophila torqueola morelleti (Bonaparte)
White-collared Seedeater

The White-collared Seedeater is confined to weedy growth at the airfield and camp.

Breeding specimens were collected in June and early July and a nest with young was found on 8 July. The season is undoubtedly much more prolonged than indicated by our few records.

An immature male weighed 8.7 grams; three mature males 7.3, 8.0, and 8.2 grams; a female 7.8 grams.

Oryzoborus funereus Sclater
Thick-billed Seed-Finch

This is the least common of the seed finches occurring at Tikal, and like *Sporophila torqueola* and *Volatinia jacarina* is found only in the vicinity of the airfield and camp.

A bird collected in mid-May had fully enlarged gonads.

Three males weighed 12.0, 12.5, and 13.2 grams.

Volatinia jacarina splendens (Vieillot)
Blue-black Grassquit

Like *Sporophila torqueola*, found at Tikal only near human habitation and the airstrip.

Two immature males weighed 8.7 and 9.2 grams; an adult male 8.6 grams and two females 9.0 and 9.2 grams.

Arremonops conirostris chloronotus (Salvin)
Green-backed Sparrow

A very common species in the underbrush bordering trails within the forest.

Breeding was noted in April, May and June.

The weights of a series of nine males ranged from 23.2 to 28.9 grams, with a mean of 26.8 ± .6; a female weighed 25.6 grams.

The sibling species, *A. rufivirgatus*, has not yet been found at Tikal but may be expected to appear now that a considerable area has been cleared of heavy forest. There seems to be no published record of *A. rufivirgatus* from anywhere in Guatemala. However, Jorge Ibarra collected a single, unsexed, specimen at La Libertad, Petén, on 27 April 1956. The bird was sent to Paynter who identified it as *A. r. verticalis*, the subspecies known before only from Yucatán, Campeche, and Quintana Roo.

DISCUSSION

Two hundred and thirty-one species of birds, with an aggregate of 233 species and races, have been found at Tikal. Eight of these forms are transients during the spring or fall: *Calidris melanotus; Tyrannus tyrannus; Contopus virens; Progne subis; Vireo o. olivaceus; Dendroica fusca; Oporornis philadelphia; Spiza americana.* Future field work may treble the number of species recorded in this category.

Seventeen per cent (37 forms) of the avifauna consists of visitants (Table I), all of which are common Central American

TABLE I

WINTER VISITORS

Butorides v. virescens (?)	Dendroica c. coronata
Hydranassa rufescens	Dendroica v. virens
Buteo platypterus	Dendroica pensylvanica
Falco sparverius	Seiurus aurocapillus
Porzana carolina	Seiurus motacilla
Charadrius v. vociferus	Seiurus noveboracensis notabilis
Tringa s. solitaria	Oporornis formosus
Actitis macularia	Geothlypis trichas brachidactyla
Empidonax flaviventris	Icteria v. virens
Empidonax minimus	Wilsonia citrina
Dumetella carolinensis	Wilsonia pusilla
Hylocichla mustelina	Setophaga ruticilla
Bombycilla cedrorum	Icterus galbula
Vireo g. griseus	Icterus spurius
Mniotilta varia	Piranga r. rubra
Helmitheros vermivorus	Guiraca caerulea subsp.
Vermivora peregrina	Passerina cyanea
Dendroica petechia subsp.	Passerina c. ciris
Dendroica magnolia	

winterers. In addition, in the winter some northern birds, chiefly herons, probably augment the local populations, but without banding records it is impossible to be certain which species are involved.

A total of 173 forms are known to breed at Tikal or, because of their sedentary nature, are assumed to breed there. *Butorides virescens* might be added to this total, but to date our only specimen seems to be a wintering bird. Furthermore, 15 species (Table II) which breed in northern Guatemala (except possibly

TABLE II

LOCAL SPECIES NOT KNOWN TO BREED AT TIKAL

Podilymbus podiceps (winterer?)	Mycteria americana
Phalacrocorax brasilianus	Elanoides forficatus
Anhinga anhinga	Chondrohierax uncinatus
Nycticorax violaceus	Porphyrula martinica
Ardeola ibis (wanderer?)	Ceryle torquata
Hydranassa caerulea	Chloroceryle aenea
Egretta thula	Cassidix mexicanus
Egretta albus	

Podilymbus podiceps and *Ardeola ibis*) have been recorded at Tikal but probably have not yet bred there. These birds are dependent on water and doubtless have been attracted to Tikal by the newly-made reservoirs; eventually most may become permanent residents.

From the work of Van Tyne (1935) and Taibel (1955) we have a good knowledge of the avifauna of the northern part of the Petén. When the records of these two workers are compared with the results of the survey at Tikal, it is seen that 46 species which breed in the Petén have not as yet been found at Tikal (Table III). Some of these birds are uncommon in northern Central America, as for example *Lepidocolaptes souleyetii* or *Todirostrum sylvia*, but in time they may be discovered at Tikal, just as some rare forms found at Tikal were not previously known from the Petén. In both instances continued observations undoubtedly will reveal their presence. However, the vast majority of the species listed in Table III require habitats differing from those now present in the National Park, or at least

TABLE III

BREEDING SPECIES RECORDED FROM PETÉN BUT NOT AT TIKAL

Crypturellus soui	Empidonax albigularis
Crypturellus cinnamomeus	Todirostrum cinereum
Cochlearius cochlearius	Todirostrum sylvia
Ictinia plumbea	Elaenia flavogaster
Rosthramus sociabilis	Camptostoma imberbe
Hypomorphnus urubitinga	Tachycineta albilinea
Busarellus nigricollis	Campylorhynchus zonatus
Colinus nigrogularis	Troglodytes aedon
Aramus guarauna	Henicorhina leucophrys
Columba cayennensis	Dumetella glabrirostris
Columbina minuta	Chamaethlypis poliocephala
Leptotila verreauxi	Coereba mexicana
Ara macao	Amblycercus holosericeus
Tyto alba	Psomocolax oryzivorus
Pulsatrix perspicillata	Tangavius aeneus
Nyctibius griseus	Agelaius phoeniceus
Anthracothorax prevosti	Sturnella magna
Chloroceryle americana	Tanagra affinis
Melanerpes formicivorus	Thraupis episcopus
Lepidocolaptes souleyetii	Piranga bidentata
Gymnocichla nudiceps	Saltator coerulescens
Pyrocephalus rubinus	Tiaris olivacea
Muscivora tyrannus	Arremon aurantiirostris

some of the existing biotopes must be more extensive if they are to support these birds. Certain of the species need ponds and marshes but most require large cleared areas with open fields or low second growth — the type of habitat ocurring around towns and villages. Thus, as the human population increases at Tikal we should see a corresponding increase in the avifauna. It will be of great interest to learn how long it will take some of the more sedentary birds to discover this island of low vegetation lying within a vast quasi-rainforest.

Tables II and III also illustrate that there are relatively few water-dependent species recorded from the Petén which have not already been found at Tikal, even though the reservoirs are small and were built only a few years ago. The birds requiring water which still are not known at Tikal are mostly those that inhabit larger bodies of water or streams. Thus, it may be seen that water-dependent species are quick to discover a newly created habitat, even though it may be well isolated from similar habitats. The fact that these birds frequently wander after the breeding season undoubedly explains this phenomenon.

Lying well south of the driest part of the Yucatán Peninsula, and a moderate distance north of the wet foothills of Alta Vera Paz, one would expect the avifauna of Tikal to be transitional between that found in each of the two contrasting regions, with a pronounced tendency toward the latter type.

Confining our discussion to the breeding species, and eliminating aquatic birds and the wide-ranging vultures *Coragyps atratus* and *Cathartes aura,* we are left with a total of 164 forms. Employing the lists presented by Paynter (1955: 300-303), who divided the land birds of the Yucatán Peninsula into two broadly generalized, and admittedly subjective, groups based on whether they were characteristic of more humid areas or of drier regions, we find that at Tikal 86 of the 164 birds are typical of more humid regions, 55 are typical of drier areas, and 23 have not been found on the peninsula north of the Mexican border and thus do not appear on Paynter's lists. These 23 species (Table IV) are all characteristic of moderately wet to very wet areas; therefore, about two-thirds (109 forms) of the Tikal avifauna is composed of forms typical of more humid regions, confirming what was expected on geographical considerations alone.

For the entire peninsula of Yucatán north of the Mexican border the general habitat preferences of the 217 land birds are divided almost evenly, with 112 forms (51.6 per cent) characteristic of drier regions and 105 species (48.4 per cent) typical of more humid areas. It is not possible, of course, to compare the relative figures for the entire Yucatán Peninsula with those for the limited area of Tikal, although they are useful in intraregional analyses.

The mainland of the Yucatán Peninsula, from the wet forest of the Guatemala-Mexico border north to the arid scrub at the tip, possesses 70 endemic, or nearly endemic, species and races. Sixty-eight of these are land birds of which 50 (73.6 per cent),

TABLE IV

SPECIES BREEDING AT TIKAL WHICH ARE NOT KNOWN FROM MEXICAN PORTION OF YUCATÁN PENINSULA

Leucopternis albicollis
Falco deiroleucus
Panyptila cayennensis
Phaethornis superciliosus
Phaeochroa cuvierii
Florisuga mellivora
Heliothryx barroti
Malacoptila panamensis
Centurus pucherani
Xiphocolaptes promeropirhynchus
Automolus ochrolaemus
Thamnistes anabatinus
Rhytipterna holerythra
Lipaugus unirufus
Pachyramphus cinnamomeus
Terenotriccus erythrarus
Ornithion semiflavum
Leptopogon amaurocephalus
Tangara nigrocincta
Piranga leucoptera
Turdus albicollis
Smaragdolanius pulchellus
Oryzoborus funereus

including seven full species, are characteristic of drier areas and 18 (26.4 per cent) prefer more humid regions. As has been pointed out by Paynter (1955), the drier region of the peninsula is isolated from similar areas in Middle America by the quasi-rainforest at the base of the peninsula and the much greater proportion of endemism occurring in the dry area avifauna is to be expected.

At Tikal there is a sharp reduction in the peninsular elements in the avifauna. North of the Mexican border peninsular endemics make up 31.3 per cent (68 forms) of the land bird fauna; at Tikal they comprise only 14 per cent (23 forms) of that fauna (Table V). Concomitant with this reduction there is, as to be expected, a marked difference in the proportion of humid region to dry region endemic elements within the fauna. North of the Mexican border 44.6 per cent of the birds typical of drier regions are endemic, and 17.1 per cent of the species of more humid regions are endemic; at Tikal only 7.2 per cent of the birds characteristic of drier areas are peninsular endemics while the 27.2 per cent of the humid region element is endemic to the Yucatán Peninsula.

TABLE V

YUCATÁN PENINSULA ELEMENT AT TIKAL

Buteo magnirostris direptor	Playtrinchus mystaceus timothei
Ortalis vetula intermedia	Cissilopha sanblasiana yucatanica
Dactylortyx thoracicus sharpei	Thryothorus maculipectus canobrunneus
Meleagris ocellata	
Otophanes yucatanicus	Thryothorus ludovicianus albinucha
Campylopterus curvipennis pampa	Uropsila leucogastra brachyura
Amazilia yucatanensis yucatanensis	Ramphocaenus rufiventris ardeleo
Pteroglossus torquatus erythrozonus	Granatellus sallaei boucardi
Sittasomus griseicapillus gracileus	Piranga roseogularis tincta
Thamnophilus doliatus yucatanensis	Habia rubica nelsoni
Myiarchus yucatanensis	Habia gutturalis peninsularis
Myiarchus tuberculifer platyrhynchus	Richmondena cardinalis flammigera

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