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PEABODY MUSEUM OF NATURAL HISTORY, YALE UNIVERSITY

BULLETIN 13

Notes on a
Collection of Birds
from Mindoro Island, Philippines

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INTRODUCTION

The 1954 Yale Peabody Museum-Silliman University Mindoro Zoological Expedition, headed by D. S. Rabor, stayed in the field from March 21 until June 7, 1954. The party, which consisted of Silliman University Biology Department faculty, students and assistants, actually collected in the field from March 28 until May 28. The death of one member of the party on May 28 in Manila, where he was flown for treatment of his ailment four days earlier, cut short the field work.

D. S. Rabor expresses his gratitude to the John Simon Guggenheim Memorial Foundation and to the United Board for Christian Higher Education in Asia for the fellowship grants that have enabled him to come to the United States to work on this and other projects on Philippine birds. He is likewise grateful to Yale University for an additional research fellowship grant and for facilities at the Peabody Museum of Natural History. We are indebted to the authorities of the American Museum of Natural History and of the United States National Museum for the loan of comparative materials.

HISTORY OF BIRD COLLECTIONS ON MINDORO ISLAND

Among the important collectors of Philippine birds who included Mindoro as one of their collecting localities, may be mentioned the Steere Expedition, Schmacker, Platen, Bourns and Worcester, Everett, Whitehead, Mearns, Mounsey, and Porter. In addition, there were also several collectors who were officially connected with the Philippine Bureau of Science and later, the Philippine National Museum, the entities in charge of conducting the study of the Philippine avifauna. Among them were R. C. McGregor, Andres Celestino, Francisco S. Rivera, Manuel Celestino (son of Andres and at present still collecting for the National Museum), C. G. Manuel, and D. S. Rabor.

Among these collectors, Whitehead will always be remembered for the discovery of *Ducula mindorensis* and Bourns and Worcester for *Centropus steerei* and *Geokichla cinerea*, three of the four endemic species in Mindoro. Another endemic species, *Dicaeum retrocinctum*, secured by an unknown collector, was described by Gould.

Collections of birds in the Mount Halcon range were made by Worcester in April, 1891, Whitehead from October, 1895 until February, 1896, and by Mearns in November, 1906. Others like McGregor, A. Celestino, M. Celestino, F. S. Rivera and D. S. Rabor earlier, made collections at the base and foothills of the Halcon range but not at high altitudes.

Several attempts were made by various parties to climb to the top of the highest summit of the Mount Halcon Range. Some of these were solely for the prestige of reaching the highest point of this range, and others were for the collection of natural history materials for study, as well as for the incidental success of reaching the top.

Whitehead in 1895-1896 (Ogilvie-Grant, 1896: 457-477), followed the eastern approach by way of the Baco and Dulangan rivers and succeeded in reaching an altitude of only 6000 feet. Most of Whitehead's collections were

made on the slopes and ridges of Dulangan Peak, which was still a long way from the main peak. (For the routes of the various expedition parties that worked in the Mount Halcon range, see Plate 1.)

Merrill and Mearns (Merrill, 1907:179-203) succeeded in reaching the summit of the Mount Halcon range in November, 1906. They made the climb by way of the northwest approach, following the courses (at least for part of the way) of the Subaang and Alag rivers. Collections of zoological, botanical and geological materials were made on this trip.

Our 1954 Expedition approached the Halcon range by way of the south-east, for part of the way, and later followed the Bugayan-Ilong Peak trail, which was located on the ridge south of and opposite the ridge of Dulangan Peak, and separated from it by a very deep gorge. Collections were made between 3000 and 6500 feet on the slopes and ridges of Ilong Peak.

ITINERARY OF THE TRIP

March 21	Departure by steamer from Dumaguete City, Negros Oriental, via Manila, for Calapan, Mindoro.
March 26	Arrival in Calapan, Mindoro, Departure by truck for Alcate, Victoria. Arrival in Makatok, Victoria; end of the road accessible by truck.
March 27	Arrival in Alcate by tractor and on foot. Camp 1 established.
March 28-April 1	Collecting carried on from Camp 1. 50-200 feet altitude.
April 12	Departure by truck for San Luis, Naujan. Camp 2 established.
April 13-May 19	Collecting carried on from Camp 2 either by whole party or part of it. 50-100 feet altitude.
April 17	Departure on foot of two-thirds of the party for Barawan Peak. Camp 3 established (2500 feet altitude). Camp 4 established (4500 feet altitude).
April 18-28	Collecting carried on from Camps 3 and 4. 2500-4800 feet altitude.
April 29	Return to Camp 2.
April 30	Departure on foot of two-thirds of party for Ilong Peak. Night in Bugayan, a Mangyan village, 2000 feet altitude.
May 1	Arrival on foot at Ilong Peak.
May 1-14	Collecting carried on from Camp 5 covering neighboring peaks. 3000-6500 feet altitude.
May 15	Departure for Camp 2.
May 16-19	Collecting carried on by entire party from Camp 2.
May 20	Departure by truck for Barrio Lumangbayan, Naujan.
May 21	Departure by launch for Lake Naujan, about 20 kilometers up the river. Camp 6 established in Bambang, on the north shore of the lake.
May 21-28	Collecting in and around Lake Naujan from Camp 6. 25 feet elevation.
May 29	Departure by truck, launch, truck, steamer via Calapan, Mindoro, to Batangas, Batangas, to Manila, to Dumaguete City, Negros Oriental.
June 7	Arrival at Silliman University, Dumaguete City, Negros Oriental.

DESCRIPTION OF MINDORO

GEOGRAPHY AND CLIMATE

Mindoro is a compact island lying south of Luzon and oriented in a general trend of north 20° west. It is located between latitudes 12° and 14° north and longitudes 120° and 122° east. Latitude 13° north and longitude 121° east intersect near the center of the island.

From a distance two dominant peaks can be seen standing out prominently from the rest of the extensive central mountain range. Mount Halcon, altitude about 2,580 meters (8504 feet) represents the culmination of the Mount Halcon range in the north central part of the island. Mount Baco, altitude about 2487 meters (8200 feet) stands in the central portion.

The central part of the island is characterized by rugged, high mountain topography, most of the mountains still being densely covered with virgin forest. Where most of the larger islands of the Philippines have already lost their original forest, including that on their mountains, Mindoro has still retained a great deal of original forest on its mountains, and on a large area of its lowlands and foothills.

Mindoro, with an area of about 9826 square kilometers (3794 square miles) is the seventh largest island of the Philippines. It is roughly triangular in outline with its greatest length of about 176 kilometers (110 miles) extending roughly from northwest to southwest, and its greatest breadth of about 89.6 kilometers (56 miles) extending roughly northeast to southwest.

It has only been in recent years that the island has begun attracting settlers in rather large numbers, in spite of its rich plains and valleys. It was always by-passed by great numbers of settlers from Northern Luzon who preferred to settle on Mindanao. What few settlers went to Mindoro before World War II came mostly from near-by islands like Batangas, Lubang, Semirara and Tablas, mainly because they divided their time every year between Mindoro and their islands. For many years comparatively little progress had been made in opening up Mindoro. It was only on the southwestern side, especially around San José, and in the northeastern side around Calapan, that areas under cultivation have been developed. The main reason for this hesitancy of settlers to go to Mindoro has been its supposedly unhealthy climate. No other island in the Philippines has been as notorious as Mindoro for the incidence of malaria (whose deadly strain was very much exaggerated), and schistosomiasis which occurs in restricted areas around Lake Naujan, especially on the marshy western side.

The island is noted for its very heavy rainfall, as various natural history collectors, like Worcester, Whitehead, Mearns, and Merrill, have attested. Whitehead, as quoted by Ogilvie-Grant (1896:459-460) describes the Mindoro rains and leeches very aptly when he writes, "I have . . . seen a good deal

of the tropics, but I never encountered such deluges, such incessant rain, and such thousands of leeches." And Ogilvie-Grant, based on Whitehead's field notes describing the sudden floods as a result of the heavy rains, continues ". . . the expedition was nearly wrecked, the river coming down in a tremendous flood with very little warning. The camp had been pitched about 20 feet above the river, which at this part was about 200 yards wide, but in less than twelve hours, fortunately in daylight, the water was running from two to three feet deep like a mill-race through Mr. Whitehead's tent. . . ."

The northeast monsoon winds that prevail during January to April yield abundant moisture on the eastern side of the island. The high central mountain range effectively blocks this precipitation from falling on the western side. On the other hand, from June to October, the prevailing southwest monsoon winds yield a great amount of rainfall on the western half of the island and the same high central mountain range effectively blocks it from the eastern side. The northern and southern regions beyond the effective rain shadow afforded by the high central mountain range have rain practically the whole year round.

The Mount Halcon area where a greater part of the collecting activities of the 1954 Expedition were carried on is described by Merrill (1907:180) accurately when he writes, "Its location is perhaps in the most humid part of the Philippines where the rains continue for nine months in the year, in a region geographically quite unknown and inhabited by a sparse population of entirely wild and very timid people, and on an island regarding which there is a widespread and generally accepted belief as to its unhealthfulness."

The forested interior of Mindoro is occupied by the Mangyan, a primitive tribe who "are in part, of the short Mongol type with a considerable Negrito mixture, and in part predominantly Melanesian with some Malay blend" (Merrill, 1926:32).

GEOLOGY AND PALOGEOGRAPHY

Geologically, Mindoro is considered a part of the Palawan-Cuyo-Mindoro Group, which also includes the islands of Lubang, Culion, Busuanga and Balabac. This island group is considered to be a distinct portion of the Philippines and is thought to be more closely related to Borneo than to the rest of the Philippines, at least tectonically (Smith, 1924:248-261). It is the accepted opinion that Mindoro probably was connected with Luzon during the Pliocene; was separated later on and was linked to Palawan in the Pleistocene (Dickerson, *et. al.*, 1928:286).

Pre-Tertiary and Tertiary rocks have been identified in the coastal areas of the northern half of Mindoro (1953, A geologic map of the Philippines, prepared by the Philippine Bureau of Mines and the U. S. Geological Survey). Its interior remains to this day largely unknown geologically, including the Mount Halcon localities, except for Merrill's (1907:179-203) statement about Mount Halcon that "It is a mass of granite, white quartz, schist and marble." And he continues that "Halcon Range is a fold, the main range

running in a generally east and west direction, irregular in profile, but continuous for a long distance at high altitudes."

Specimens of rocks that Merrill brought from the summit of Mount Halcon, when he ascended the highest peak with Mearns in 1906, were identified by Smith (1924, *loc. cit.*) as andesite. Other than these bits of information, nothing definite is known of the geology of the interior of this island.

FLORISTIC AND FAUNAL RELATIONSHIPS OF MINDORO

Merrill recognizes definitely a Bornean flora which had come through Palawan to the west side of Mindoro but failed to cross to Luzon. He considers Mindoro as "a somewhat intermediate region between Palawan on the one hand and Luzon on the other," (Dickerson, 1928:286).

Zoologically, based mainly on data from its bird life, Mindoro is considered as one of the Marginal Districts by Delacour and Mayr (1946:12-13).

VEGETATION TYPES IN THE MOUNT HALCON RANGE

Six original vegetation types may be recognized in the collecting localities, from the lowlands and foothills up to the summits of the peaks of the Mount Halcon range.

A. *Dipterocarp forest type* (sea level—1500 feet altitude).—Typically this is a three-storied forest with the tallest storey belonging to the Dipterocarpaceae, commonly forming a close canopy. The trees of the first storey average about 120-150 feet in height. Dipterocarps have long, straight and unbranched boles for a long distance from the ground.

The ground covering is composed mainly of young trees, rattans and different species of herbaceous spermatophytes. Lianas, consisting mostly of rattan, are abundant. Epiphytes are rather scarce and are usually found only on the large branches of the trees of the tallest storey, far from the ground. A few mosses and liverworts begin to appear on some of the tree trunks, in the upper limits of the Dipterocarp zone of vegetation, which on Mindoro starts at about 1500 feet altitude.

The localities that were collected in from Camps 1 and 2 included mainly the Dipterocarp forest type of vegetation and the clearings that were made in them. This forest covered the level plains and valleys along the course of the Magasawang-Tubig River and the foothills of the Mount Halcon range up to about 1500 feet altitude.

B. *Transitional Dipterocarp-Midmountain forest type* (1500-2500 feet altitude).—Some of the trees are as high as those found in the real Dipterocarp forest type and also belong in the same family, but there is no longer the distinct three-storied character of the forest. In the upper limits of this zone the two-storied character of the forest begins to be apparent.

The localities collected in from Camp 3 had this transitional type of forest. They included mainly the foothills and lower slopes of the outer peaks of the Mount Halcon range.

C. *Midmountain forest type* (2500-4500 feet altitude).—Typically there

are two distinct stories of trees which average about 60-75 feet for the higher and 25-40 feet for the lower storey. The higher storey tends to form a closed canopy but in general is definitely much more open than that formed by the tallest storey of the Dipterocarp forest type. The undergrowth is much less dense, but there is more development of ground herbs and ferns. The epiphytes are definitely more abundant on the trunks and branches and their abundance increases with elevation.

Localities collected in about Camps 3, 4, and 5 were covered mainly with this type of vegetation.

D. Climbing Bamboo forest type (4500-6000 feet altitude). — This type of vegetation is confusing to us. In lower elevations of Philippine mountains and in the lowlands, bamboo stands, both the light and heavy types, sometimes covering large areas, are definitely a second growth type of vegetation, replacing original forests after the area has been cut, cleared by cultivation, and again neglected and allowed to develop second growth.

At about 4000 feet on the slopes leading to Ilong Peak, small clumps of climbing bamboo occur among what appeared to be untouched Midmountain forest. At about 4500 feet, especially close to and on the ridges immediately below the summit of Ilong Peak, and on the gently rolling areas on the slopes of neighboring peaks, pure stands of climbing bamboo, *Dinochloa* sp., are found. In some cases they cover extensive areas that might be close to one hundred hectares or even more in extent for each. These patches of climbing bamboo jungle extend up to about 6000 feet on the slopes of several peaks in the immediate vicinity of Ilong.

Whether these climbing bamboo stands are original growth or second growth we cannot be sure. It is, however, possible that the Mangyan in these localities cleared these slopes a long time ago, perhaps hundreds of years ago, even up to these elevations, and the climbing bamboos have taken over the cleared areas after the Mangyan settlers abandoned their clearings to move to other areas with original forest growth.¹ After all, there were places in the northern and northwestern slopes of Mount Halcon that were already cleared of the original forest growth by the Mangyan, up to about 5000 feet or even higher.

If the climbing bamboo growth happens to be original, then it is the first case where this type of original vegetation occurs on a Philippine mountain, because none of this type of vegetation has ever been observed on other Philippine peaks like Mount Malindang and Mount Dabiak, on Mindanao, Mount Canlaon and Cuernos de Negros, on Negros, and Mount Data on Luzon.

Typically, the ground underneath is devoid of any growth and can be described as clean, except for the rotting leaves and branches. The bamboo stems and branches form a very dense network, extending from one to three feet above the ground. Walking inside this jungle is difficult, unless one

¹ Dr. C. G. G. J. van Steenis, *in litt.*, 5 March, 1958, agrees with our interpretation of the *Dinochloa* thickets occupying the sites of abandoned former clearings.

crawls under the growth or walks on the network of stems and branches, with the risk of falling through.

The localities that were collected in from Camp 5 were very rich in this type of vegetation.

E. *Mossy forest type* (4500-7500 feet elevation). On the peaks where we worked, the climbing bamboo areas were followed by typical Mossy type of forest. In places where there were no climbing bamboo patches, the Mid-mountain forest merged imperceptibly into the Mossy type at about 4500-5000 feet altitude.

Typically, the Mossy forest contains only one storey of tree growth, which averages about 25-40 feet in height, equivalent to the lower storey of the typical Midmountain forest. As the elevation increases, the trees become shorter and shorter, and especially on the exposed crestline ridges, there is a definite stunting accompanied by excessive twisting of the trunks. Mountain yews, *Podocarpus*, and oaks, *Quercus*, are abundant.

The trees are thickly covered with epiphytes that add many inches to the true diameters of their trunks and branches. On the branches mosses and liverworts form the main covering of epiphytes and on the trunks extensive growths of ferns are found. Frequently there is a rather dense ground-cover of ferns and herbs and in the higher elevations mosses take over, all of them concealing very effectively the numerous cracks and crevices in the rocks and hollows among the roots, where the soil layer has been eroded. Progress on this terrain is slow and often dangerous.

The localities collected in from Camps 4 and 5 included large areas of this type of vegetation close to the crestline ridges of the Mount Halcon range.

F. *Pine forest type* (4500-8000 feet altitude)—On the eastern and southeastern sides of the Mount Halcon range that we collected in, we did not observe any Pine forest, although *Pinus merkusii* is reported to occur on the western slope of Mount Halcon.

LAKE NAUJAN AND ITS WILDLIFE RESOURCES

Lake Naujan is about 25 feet above sea level. It is a beautiful lake about 14.5 kilometers long (in a north-south orientation) and about 7.5 kilometers wide (east-west), and in many places is 10 meters and more deep, a few meters from shore. Its water is normally clear, except during flood time which is most likely to occur during November and December, when the clayey soil sediments brought by the streams and creeks that empty into it from all around make the water yellow. At its northern end, a little to the northwest, the lake empties into the Butas River, its only outlet, which winds and joins the Lumangbayan River and empties into the sea at Lumangbayan Barrio, Naujan at the northeastern coast of Mindoro after about 20 kilometers of a very tortuous route.

In 1935, when one of us. (Rabor) collected birds in its vicinity, the lake was still surrounded with large areas of virgin Dipterocarp forest, both on the hills of its northern and eastern sides and in the lowlands of its southern and

western sides. The Butas River for about the first 4 kilometers of its winding course was bordered by virgin Dipterocarp forest in many places and clearings were very few. Extensive areas of tall marsh grass grew along the river bank. Houses were few.

In 1954 the entire course of the Butas River was already cleared of its forest and its marsh grass areas. The level land along the river was well cultivated and many houses lined the river along its entire course, up to the outlet of the lake. The hills immediately surrounding the northern and eastern portions of the lake were already mostly cleared of original forest and were planted to corn and *camote* (sweet potato), or were left idle to be covered with second growth. There were very small remnant patches of Dipterocarp forest on the steep sides of a few hills. The western and southern portions of the lake were also cleared of forests and such marshes as could be used. Fortunately, the lake marshes, which were very extensive on the western and southern parts of the lake would not allow much use for farming purposes. These were in some places about one kilometer wide, from the water's edge towards the plain in the interior. Where the marshes allowed cultivation, they were drained and cleared and planted with rice. The mud in the marshes commonly reached depths of from 3 to 6 feet or even more, with water only from 2 to 6 inches. Walking or boating in this quagmire was out of the question.

Patches of water lotus of varied sizes were abundant all around the lake, extending from the edge of the water to about 5 to 100 meters into the lake. These patches provided excellent concealment for the marsh and water birds that were abundant in Lake Naujan.

These extensive marshes, especially on the western side of the lake, between the lake outlet into the Butas River, south to Mambog River, were important breeding grounds of waterfowl.

Lake Naujan, with its immediately surrounding hills and plains, has always been noted for its rich game resources in terms of fish, crocodiles, birds and game mammals, especially deer and wild hogs.

The most important commercial fishes include the three migratory marine species, *Mugil dussumieri*, *Caranx sexfasciatus* and *Lutianus argente-maculatus*, and the fresh water species, *Ophicephalus striatus*. There are also other minor species of fish. Over-fishing and ruthless exploitation of the fish resources of the lake even reach the point of non-observance of the closed seasons for these species by the concessionnaires of the Butas fisheries. By not opening the strong and massive fish corral constructed across the Butas River, fishermen thus have completely blocked the exit of these marine species in their migration to the sea to breed. Were it not that floods have occasionally helped these migratory fish species by breaking down the fish corral and thus allowing a large number of breeding fish to escape, the Lake Naujan fisheries for these marine migratory fishes would have been totally depleted a long time ago.

The crocodile, *Crocodylus mindorensis*, of Lake Naujan occurred there in large numbers prior to 1930. The pressing demand for crocodile leather

in commerce in the early thirties caused the total depletion of this species in the lake. In 1954 none of the members of the expedition party saw a crocodile in the localities collected in around the lake.

Deer, *Cervus (Rusa) barandanus*, and wild hog, *Sus celebensis philippensis*, used to be abundant in the forested localities around the lake and the immediately surrounding localities. The destruction of the original forests around the lake has almost decimated the deer and wild hog population in the area.

Lake Naujan has always been known for its great number of wild ducks, purple gallinules, moorhens, swampheens and many other species of water and marsh birds. They were breeding in large numbers, especially in the marshy areas of the western side of the lake, as late as 1941. In 1954, the adjacent river was cleared of marshy areas along its entire course. This area was the breeding place of the purple gallinule. During the entire stay of about 8 days by the collecting party at Lake Naujan, only one purple gallinule was seen and collected, and yet in the same area in 1940, dozens of them could be seen perching on the broken and flattened tops of the tufts of tall marsh grass, calling loudly to one another.

There are still a number of waterfowl, such as *Anas luzonica*, *Dendrocygna arcuata*, and *Gallinula chloropus*, that breed in the marshes of the western part of the lake, but no longer in their former numbers. This number will probably continue to diminish because of the overhunting, mostly illegal, that is going on at Lake Naujan.

REMARKS ON THE MINDORO AVIFAUNA

R. C. McGregor's *A Manual of Philippine Birds*, published in 1909, recorded 193 species of birds from Mindoro Island, representing the combined results of the various collections which had been made on the island from about 1887 until 1907. After deducting 7 species for reasons of questionable identification and synonymy, 186 species are left in the Mindoro avifaunal list as of 1909. Of this number, 154 were residents and 32 were migrants. Between that time and the 1954 Expedition, 18 species and subspecies have been added to the Mindoro avifaunal list, making a total of 204 forms, of which 161 are residents, 42 are migrants, and 1 is doubtful as a breeding form on Mindoro and the other Philippine islands where it has been recorded.

The 1954 Expedition collected a total of 1099 bird specimens, including 122 species and subspecies, of which 104 are resident, 17 are migrants and one doubtful as to status.

Ten species are recorded herewith for the first time from Mindoro, of which 9 have been collected in the present field work and one was collected by Rabor¹ at Lake Naujan in September, 1939, and was lost during the war. This record of capture of this species has not previously been reported in literature.

Five of the present new bird records are migrants:

1. *Butorides striatus amurensis*
2. *Ixobrychus eurhythmus*
3. *Tringa glareola*
4. *Cuculus micropterus micropterus*
5. *Phylloscopus borealis kennicotti*

Four are residents:

1. *Hieraaëtus kieneri formosus*
2. *Cacomantis variolosus sepulcralis*
3. *Ninox scutulata randi*
4. *Cisticola juncidis tinnabulans*

One is doubtful as to its breeding actually on Mindoro or on Mindanao where it has been recorded earlier:

1. *Zoothera andromedae*

[This species occurs also on Java, Sumatra, and Lombok where it has been proven to be a resident. Whether the Philippine record is that of a migrant from these southern islands or a resident remains to be proved.]

The 161 resident bird species and subspecies on Mindoro Island form

¹ Rabor shot a fully adult male Rufous-bellied Dwarf Eagle, *Hieraaëtus kieneri formosus*, perched on a low branch of a tree at the edge of the lake with a loudly squawking male hornbill, *Penelopides panini mindorensis*, clutched securely in its talons.

about 79 per cent of the total avifaunal list. Thus, approximately four-fifths of the island's bird records are resident.

Four species are endemic:

1. *Ducula mindorensis*
2. *Centropus steerei*
3. *Geokichla cinerea*
4. *Dicaeum retrocinctum*

In addition, 17 subspecies are endemic to the island:

1. *Gallicolumba luzonica platenae*
2. *Prioniturus discurus mindorensis*
3. *Loriculus philippensis mindorensis*
4. *Surniculus lugubris mindorensis*
5. *Centropus viridis mindorensis*
6. *Otus scops mindorensis*
7. *Ninox philippensis mindorensis*
8. *Ceyx erithacus vargasi*
9. *Penelopides panini mindorensis*
10. *Dryocopus javensis mindorensis*
11. *Lanius validirostris tertius*
12. *Hypsipetes philippinus mindorensis*
13. *Turdus poliocephalus mindorensis*
14. *Megalurus timoriensis mindorensis*
15. *Muscicapa hyperythra mindorensis*
16. *Muscicapa rufigatra mindorensis*
17. *Pachycephala plateni mindorensis*

The endemic species and subspecies total 22 forms or 13.6 per cent of the total number of residents.

Nine subspecies are found on both Luzon and Mindoro and nowhere else:

1. *Ducula carola carola*
2. *Coracina morio elusum*
3. *Lalage melanoleuca melanoleuca*
4. *Brachypteryx montana poliogyna*
5. *Phylloscopus trivirgatus benguetensis*
6. *Muscicapa panayensis nigrimentalis*
7. *Parus elegans elegans*
8. *Zosterops nigrorum aureiloris*
9. *Erythrura hyperythra brunneiventris*

A few other subspecies are found not only on Luzon and Mindoro but also on the small islands in the immediate vicinity such as Verde, Catanduanes, Alabat, Polillo, Lubang, Marinduque and Semirara.

1. *Phapitreron leucotis leucotis*
2. *Geopelia striata striata*
3. *Streptopelia tranquebarica humilis*
4. *Dendrocopos maculatus validirostris*
5. *Coracina striata mindorensis*
6. *Aethopyga shelleyi flavipectus*
7. *Lonchura punctulata cabanisi*
8. *Dicrurus balicassius balicassius*

Five species and subspecies are common to both Mindoro and the Pala-

wan Group but have not been found so far on any other island of the Philippine Archipelago.

1. *Rallina fasciata*
2. *Treron curvirostra erimacra*
3. *Pelargopsis capensis gouldi*
4. *Ceyx rufidorsus rufidorsus*
5. *Corvus enca pusillus*

The remaining forms that have been recorded from Mindoro have also been recorded from other regions of the Philippines and are of more or less widespread distribution.

A very interesting aspect of the avifauna of Mindoro is the total absence of certain genera, species and subspecies of birds that are found on nearby Luzon and other islands.

The following genera are totally absent on Mindoro, but some of them are widespread on Luzon, or both on Luzon and on some other islands, especially those of the Eastern Philippines and the Visayan Islands:

- | | |
|--------------------------|------------------------|
| 1. <i>Bolbopsittacus</i> | 9. <i>Pericrocotus</i> |
| 2. <i>Phoenicophaeus</i> | 10. <i>Irena</i> |
| 3. <i>Bubo</i> | 11. <i>Stachyris</i> |
| 4. <i>Batrachostomus</i> | 12. <i>Bradypterus</i> |
| 5. <i>Harpactes</i> | 13. <i>Orthotomus</i> |
| 6. <i>Buceros</i> | 14. <i>Sitta</i> |
| 7. <i>Chrysocolaptes</i> | 15. <i>Rhabdornis</i> |
| 8. <i>Mulleripicus</i> | |

The following species are found on Luzon and the other islands of the Philippine group but not on Mindoro:

- | | |
|-----------------------------------|----------------------------------|
| 1. <i>Phapitreron amethystina</i> | 7. <i>Copsychus luzoniensis</i> |
| 2. <i>Tanygnathus sumatranus</i> | 8. <i>Phylloscopus olivaceus</i> |
| 3. <i>Collocalia inexpectata</i> | 9. <i>Rhipidura cyaniceps</i> |
| 4. <i>Halcyon lindsayi</i> | 10. <i>Oriolus isabellae</i> |
| 5. <i>Ceyx melanurus</i> | 11. <i>Oriolus albiloris</i> |
| 6. <i>Pycnonotus urostictus</i> | |

Based on comparative numbers of bird forms that are common to Mindoro and Luzon and to the surrounding islands on the one hand, and to Mindoro and to the Palawan group on the other, it is clear that Mindoro Island is really a marginal district where the avifauna from the eastern Philippines, central Philippines, and the Palawan Group meet.

One interesting fact is that Mindoro has more elements that are of eastern Philippine relationship rather than of the Palawan Group. Another fact of great interest is that in the case of the highland forms, there is a very close relationship between birds of the northern Luzon highlands and those of the Mindoro highlands. While it is true that in some instances speciation has already proceeded and attained the stage that warrants the taxonomic separation of the Mindoro form from that of the Northern Luzon highlands, in other cases the two populations are still so very similar to each other as to be almost identical. For example, the following species that are found both in the Northern Luzon highlands and in those of Mindoro have already reached

that degree of differentiation that warrants the separation of the two populations into two distinct races or subspecies:

- | | |
|---------------------------------|--------------------------------|
| 1. <i>Lanius validirostris</i> | 4. <i>Muscicapa hyperythra</i> |
| 2. <i>Turdus poliocephalus</i> | 5. <i>Pachycephala plateni</i> |
| 3. <i>Megalurus timoriensis</i> | |

On the other hand, the following species, although at present already showing signs of differentiation in certain characters in the two populations from the highlands of both islands, have not yet attained such a degree as to warrant the separation of the two populations into distinct races. This is true in:

- | | |
|------------------------------------|--------------------------------|
| 1. <i>Brachypteryx montana</i> | 3. <i>Muscicapa panayensis</i> |
| 2. <i>Phylloscopus trivirgatus</i> | 4. <i>Parus elegans</i> |

ALTITUDINAL DISTRIBUTION OF MINDORO BIRDS

For purposes of studying the altitudinal distribution of the birds of Mindoro Island, the countryside has been divided roughly into three main regions:

- a. *Lowlands and rolling country* (sea level–1500 feet altitude).
- b. *Foothills and moderate mountain elevations* (1500-3500 feet altitude).
- c. *Highlands and mountain tops* (3500-6500 feet altitude, and upward).

These altitudinal divisions are at most approximate and based mainly on the bird forms found in them.

- a. *Lowlands and rolling country* (sea level–1500 feet altitude).—Various types of bird habitats are included in this region, chief of which are the following:

1. Sea shores and beaches.
2. Mangrove and tidal forests.
3. Beach forest.
4. Farms, gardens, orchards.
5. Coconut groves.
6. Dipterocarp forest.
7. Grasslands
8. Marshes and swamps.
9. Lake, ponds, and rivers.
10. Secondary forest.
11. New forest clearings.
12. Old, neglected forest clearings.
13. Logged areas, but still covered with forest.

In point of number of bird forms living in the area, this region is the richest among the three. The following families are well represented:

- | | |
|----------------------|------------------|
| 1. Podicipedidae | 7. Megapodiidae |
| 2. Phalacrocoracidae | 8. Phasianidae |
| 3. Ardeidae | 9. Turnicidae |
| 4. Anatidae | 10. Rallidae |
| 5. Accipitridae | 11. Jacanidae |
| 6. Falconidae | 12. Charadriidae |

- | | |
|-------------------|-------------------|
| 13. Laridae | 28. Hirundinidae |
| 14. Columbidae | 29. Laniidae |
| 15. Psittacidae | 30. Oriolidae |
| 16. Cuculidae | 31. Dicruridae |
| 17. Strigidae | 32. Artamidae |
| 18. Caprimulgidae | 33. Sturnidae |
| 19. Apodidae | 34. Corvidae |
| 20. Alcedinidae | 35. Campephagidae |
| 21. Meropidae | 36. Pycnonotidae |
| 22. Coraciidae | 37. Muscicapidae |
| 23. Bucerotidae | 38. Motacillidae |
| 24. Capitonidae | 39. Dicaeidae |
| 25. Picidae | 40. Nectariniidae |
| 26. Pittidae | 41. Ploceidae |
| 27. Alaudidae | |

b. *Foothills and moderate mountain elevations* (1500-3500 feet altitude).—This region includes several habitat types of which the most important are the following:

1. Transition Dipterocarp-Midmountain forest
2. Midmountain forest.
3. Cultivated areas.
4. New forest clearings.
5. Old, neglected forest clearings.
6. Grasslands.
7. Secondary forest.

Some families that are found in the lowlands and rolling country extend their altitudinal range up to this region. The families and forms that represent them in this region are mainly the following:

1. Accipitridae—*Accipiter virgatus confusus*
2. Columbidae—*Phapitreron leucotis leucotis*
3. Psittacidae—*Loriculus philipensis mindorensis*
4. Cuculidae—*Centropus steerei*
5. Caprimulgidae—*Eurostopodus macrotis macrotis*
6. Bucerotidae—*Penelopides panini mindorensis*
7. Picidae—*Dendrocopos maculatus validirostris*
8. Dicruridae—*Dicrurus balicassius balicassius*
9. Corvidae—*Corvus enca pusillus*, *Corvus macrorhynchus philippinus*
10. Campephagidae—*Coracina striata mindorensis*
11. Muscicapidae—*Hypothymis azurea azurea*
12. Dicaeidae—*Dicaeum trigonostigma xanthopygium*
13. Nectariniidae—*Aethopyga shelleyi flavipectus*

In addition to the above forms that extend their range from the first altitudinal region, there are also several forms that begin their range in this region and extend upward to the highlands and mountain tops. The most important of these are the following:

- Cacomantis variolosus sepulchralis*
Parus elegans elegans
Zosterops nigrorum aureiloris
Erythrura hyperythra brunneiventris

c. *Highlands and mountain tops* (3000-6500 feet altitude and upward).—The main habitat types found in this region are the following:

1. Midmountain forest.
2. Mossy forest.

3. Climbing bamboo jungles.
4. Cultivated areas.
5. New forest clearings.
6. Old neglected forest clearings.
7. Secondary forest.

The following families and subfamilies are represented by forms that range in all three regions—from the lowlands up to the highlands:

Accipitridae	<i>Spizaetus cirrhatus limnaëtus</i> (5000 feet)
Phasianidae	<i>Gallus gallus gallus</i> (5000 feet)
Columbidae	<i>Ducula poliocephala poliocephala</i> (5000 feet)
	<i>Ducula carola carola</i> (6500 feet)
	<i>Leucotreron occipitalis occipitalis</i> (4500 feet)
	<i>Columba vitiensis griseogularis</i> (5000 feet)
	<i>Macropygia phasianella tenuirostris</i> (6000 feet)
Psittacidae	<i>Prioniturus discurus mindorensis</i> (4500 feet)
Cuculidae	<i>Surniculus lugubris mindorensis</i> (4500 feet)
Caprimulgidae	<i>Caprimulgus macrurus manillensis</i> (5000 feet)
Pycnonotidae	<i>Hypsipetes philippinus mindorensis</i> (6000 feet)
Sylviinae	<i>Megalurus timoriensis mindorensis</i> (6000 feet)
Pachycephalinae	<i>Pachycephala plateni mindorensis</i> (5000 feet)
Dicaeidae	<i>Dicaeum bicolor inexpectatum</i> (4500 feet)

In addition to the forms that range from the lowlands up to the highlands, and those from the foothills and moderate mountain elevations up to the highlands, there are certain forms that are found only in the highlands and mountain tops and do not range lower than 3500 feet. They include the following:

Ducula mindorensis
Collocalia vestita mearnsi
Collocalia esculenta bagobo
Lanius validirostris tertius
Brachypteryx montana poliogyna
Turdus poliocephalus mindorensis
Zosterops andromedae
Phylloscopus trivirgatus benguetensis
Muscicapa hyperythra mindorensis
Muscicapa panayensis nigrimentalis
Parus elegans elegans
Zosterops montana montana

MANGYAN BIRD NAMES

The majority of the lowland species have been given either Tagalog, Ilocano, or Visayan vernacular names, depending on the dialect spoken by the people who have settled in the area. Tagalog settlers from Batangas Province, Luzon, and Marinduque Island, were the earliest settlers in the coastal areas and lowlands of that part of Mindoro closest to Mount Halcon. These settlements include Calapan, Naujan, Puerto Galera, San Teodoro and Baco. Consequently, the vernacular names of most bird species in the coastal regions and the lowlands in these parts of Mindoro are in Tagalog and identical with the names for the species in Batangas and Marinduque.

The Ilocano settlers from northern Luzon, who came to Mindoro in the early thirties, settled in the interior, also in parts of the lowlands which the

Tagalogs could not cultivate. The Ilocanos are at present numerous at the base and in the foothills of the Mount Halcon range. They have also given Ilocano vernacular names to the bird species that they are familiar with because they have come in contact with them in northern Luzon.

The Visayan settlers, of whom there are only a few in the Mount Halcon area, have also given Visayan vernacular names to bird species that they are familiar with in the Visayan Islands. These local names, be they Tagalog, Ilocano, or Visayan, are identical with the names of these bird species as they are known in the home regions.

In the highlands of Mount Halcon where the Tagalogs, Ilocanos, and Visayans have not yet settled, the Mangyan tribes who have been driven gradually from their lowland clearings by the coming of these Christian Filipinos, are at present settled. Being the only people who always come in contact with the highland bird species of this particular region, they have given Mangyan vernacular names to some of the species, otherwise little known or totally unknown to their Christian Filipino brothers. Below is a list of Mangyan names given to bird species in the Mount Halcon range:

Ba-la-oi'	<i>Columba vitiensis</i>
Tok-wae'	<i>Macropygia phasianella</i>
To-ris'	<i>Prioniturus discurus</i>
Pai-pa-lis'	<i>Collocalia</i> spp.
Ak-se-or'	<i>Brachypteryx montana</i>
Bi-is'	<i>Turdus poliocephalus</i>
An-ra'-bir	<i>Phylloscopus trivirgatus</i>
An-sa-sa-yao'	<i>Muscicapa hyperythra</i>
Sa-la-pia'	<i>Muscicapa panayensis</i>
Suk-lat'	<i>Pachycephala plateni</i>
Ka-ri-ring'-ao	<i>Parus elegans</i>

The same bird species are known by different Mangyan vernacular names in other parts of the mountainous interior of Mindoro where other Mangyan tribes live.

ANNOTATED LIST OF MINDORO BIRDS

FAMILY *PODICIPEDIDAE*, GREBES

Podiceps ruficollis philippensis (Bonnaterre)

Lake Naujan, 25 feet; 15 ♂ ad., 2 ♂ sub-ad., 12 ♀ ad., 4 ♀ sub-ad., two juv., one downy young; May 21-27.

Wing ♂ (13) 100-110 (av. 105.7), ♀ (12) 98-110 (av. 102.7); culmen from base ♂ (15) 29-31 (av. 29.6), ♀ (10) 26-29 (av. 27.2 mm.); weight ♂ (14) 190-250 (av. 222), ♀ (11) 175-235 (av. 203.6 gr.).

In the Mindoro series, both sexes vary extensively in the color of the upperparts and underparts. The males and females arranged in two separate series easily fall into three intergrading groups, each based on the intensity of the dark coloration of their upperparts—from light to medium to very dark blackish brown or black.

In a typical male specimen of *P. r.* "*cotabato*" from Buluan, Cotabato, Mindanao, the upperparts, when compared to the male series, easily place this specimen within the normal range of variation for this character, but definitely in the upper group of the series.

The intensity of the black color on the back of the neck and top of the head in "*cotabato*" equals the maximum for this character in the Mindoro series. A female *philippensis* from Hagonoy, Bulacan, Luzon, has the black color of the back of the neck and top of the head equal to that in "*cotabato*."

In the Mindoro series the extent of the chestnut on the neck equals that in "*cotabato*."

In the intensity of the dark color of the underparts, "*cotabato*" falls within the upper group of the Mindoro male series, although not the maximum, being similar to the ninth up to the eleventh in a series of 15. Four Mindoro males show darker underparts than the male "*cotabato*."

The extent of the black on the chin is a variable character in the Mindoro series of both sexes, and the restricted condition of the black on the chin of "*cotabato*" is found in four males and two females of the Mindoro series. A female specimen of *philippensis* from Negros shows this restricted condition of the black on the chin, as in "*cotabato*." It appears that the black on the chin becomes more restricted in older specimens.

The amount of white on the secondaries is another very variable character in the Mindoro series in both sexes. The same amount of white in the secondaries of birds from Mindanao is shown in several specimens of both sexes in the Mindoro series.

Based on the variability of the various characters on which "*cotabato*" has been described, we are inclined to consider this named form a synonym of *philippensis*.

The present series from Mindoro includes birds of various ages, showing the gradual changes in plumage, from the downy young to the full adult.

Downy young.—Upperparts brown with four longitudinal reddish buff

stripes running the whole length of the back; forehead intense black becoming duller black on crown and nape; middle of crown mottled with chestnut; a white line over eye and another white line on back of head from middle of occiput, running diagonally downward to nape; chin, throat, and face with alternate black and white stripes extending down to forebreast; forebreast, sides, and thighs gray brown; mid-breast and belly white.

Juvenal plumage.—Upperparts brown becoming blackish brown on head and nape, mottled with chestnut on occiput; three parallel white stripes on sides of head and of neck; chin and throat white; forebreast, sides, thighs and lower belly gray-brown; mid-breast and belly white.

Early sub-adult plumage.—Upperparts and top of head and nape brown; sides of head and neck dull chestnut; chin and upper throat white; a wide dull brown band around neck and forebreast; sides, thighs and lower belly brown; middle of breast and belly white.

Later sub-adult plumage.—Upperparts and top of head and nape brown; sides of head and neck chestnut; chin and throat white; a wide dull brown band around neck and forebreast; sides and thighs gray-brown; middle of breast and belly white.

The white underparts gradually become mixed with blackish brown in the adult; the white of chin and fore-throat becomes replaced with blackish brown; and in the full adult individual, the chin, fore-throat and cheeks become pronouncedly blackish; the black area on chin and fore-throat becomes more restricted the older the individual becomes.

These little grebes were very common in the lake.

Eight of 12 adult females showed enlarged ovaries in May.

Local name: *siliasir* or *siliasid*.

FAMILY PHALACROCORACIDAE, CORMORANTS, DARTERS

Anhinga rufa melanogaster Pennant

Lake Naujan, 25 feet, 5 ♂, 5 ♀; May 21-27.

Wing ♂ (5) 320-358 (av. 337.4), ♀ (5) 320-335 (av. 328.9); exposed culmen ♂ (4) 80-85.5 (av. 82.2), ♀ (5) 72.5-77.5 (av. 74 mm.); weight ♂ (5) 1100-1275 (av. 1190), ♀ (4) 1125-1350 (av. 1193.7 gr.).

Fairly abundant in Lake Naujan and we also saw as many as one dozen birds in the Lumangbayan-Butas River as we came up by launch to the lake. In the lake darters were often observed in the water with only the head and neck exposed and only for a short time, between dives. Several trees at certain places close to the lake edge were their favorite roosting places at night. Certain trees with leafless branches that overhung the lake and several half submerged logs served as favorite drying places of these birds during the day. Here several birds were frequently observed with partially opened or spread wings. The birds did not go out far into the open area of the lake, but preferred to fish in the coves often close to the patches of water lotus.

Three species of fish served as the bulk of their diet here: *Ophicephalus striatus*, *Mugil dussumieri*, and *Ophiocara aporos*.

A very dense clump of *Ficus* which grew close to the water's edge near our camp had served as a nesting site for many years. Several old nests of sticks were still found at the time we were there.

Four birds of both sexes showed enlarged gonads in May.

Local name: *kasili*.

FAMILY ARDEIDAE, HERONS

Ardea purpurea manilensis Meyen

Lake Naujan, 25 feet; 2 ♂ ad., 2 ♀ ad., 2 ♀ yg. ad.; May 21-24.

Makatok, Victoria, 50 feet; 1 ♂; March 28.

Wing ♂ (3) 368-380 (av. 376), ♀ (4) 362-379 (av. 368.7); exposed culmen, ♂ (3) 130-139 (av. 135), ♀ (4) 123-132.5 (av. 127.3 mm.); weight ♂ (2) 1100, 1125, ♀ (4) 925-1150 (av. 1018.7 gr.).

Frequently encountered in Lake Naujan, either standing motionless and erect with neck outstretched among the tall marsh grass at the edges of the lake and in the extensive marshy areas on the western part, or in full flight, with its characteristic slow and leisurely flapping of the wings, its head tucked into its shoulders and the legs projecting straight behind.

In the lowlands of Mindoro, wherever there were marshy areas grown with tall grass, adjacent to rice fields, this heron was most likely to be met with.

The present series includes two young adult females that show the characteristic immature plumage.

Young adult plumage.—Forehead and crown black with obscure edgings of pale rufous to the feathers, changing to uniform darker rufous on the nape; chin and throat white; sides of head and entire neck dull rufous; upperparts dull brownish gray; wing coverts and scapulars dull brownish gray with broad rufous edges on each feather; rectrices dark brownish gray; primaries blackish gray; flanks and axillaries gray; thighs pale rufous; underparts buff washed with rufous on the forebreast becoming definitely pale rufous; the feathers at the sides with pronounced dark brown streaks.

One male had enlarged testes and one young adult female had enlarged ovaries in May.

Local name: *kandanga-ok*.

Butorides striatus carcinophilus Oberholser

Lake Naujan, 25 feet; 2 ♂, 4 ♀; May 21-27.

Wing ♂ (2) 172, 188; ♀ (4) 163-176 (av. 168.5); exposed culmen ♂ (2) 60, 64.5, ♀ (3) 59-63 (av. 61.3 mm.); weight ♂ (2) 160, 190, ♀ (4) 180-220 (av. 203.7 gr.).

Mindoro specimens do not differ from Luzon, Mindanao, and Negros birds.

Fairly common around the lake and along the river that connected with the lake. At the river opening into the sea at Barrio Lumangbayan, several birds of this species were always observed feeding at the water's edge. When

disturbed in its feeding activities, a bird would fly, simultaneously crying "Keoo" in a loud, piercing note, almost always accompanied by white excreta being voided as the bird became air-borne.

One of 2 males and all four females had enlarged gonads in May.

Butorides striatus amurensis Schrenck

Alcate, Victoria, 200 feet; 1 ♀; March 29.
Wing ♀ 209; exposed culmen ♀ 68 mm.

The Mindoro bird does not differ from a Negros Island specimen.

This winter migrant was taken in a small creek which was heavily covered with tall trees along its sides. No other bird of this subspecies was seen elsewhere on Mindoro. As on other islands, where it had been taken, this winter migrant was rare.

This subspecies is recorded for the first time on Mindoro. It has been taken so far on Calayan, Cebu, Negros and Samar. Hachisuka (1932:361) upon checking on the specimens supposedly of this subspecies which were taken by Everett on Palawan and by Whitehead on Luzon found them to be *B. s. javanicus* (= *B. s. carcinophilus*).

Nycticorax caledonicus manillensis Vigors

Alcate, Victoria, 200 feet; 1 ♀ sub. ad.; April 3.
Wing sub. ad. ♀ 292; exposed culmen sub-ad. ♀ 66.5 mm.; weight sub-ad. ♀ 750 gr.

The single specimen collected is immature and shows the typically streaked plumage of the young of this species.

Seven birds, both adult and immature, were disturbed on their roosting tree, a tall *Nauclea orientalis* with dense foliage, growing in a cleared marshy area close to the outlet of the lake where it opened into the river that drained it to the sea. The birds flew in all directions. The next day about five birds were flushed from this same roosting tree.

Local name: *bakau*.

Ixobrychus sinensis astrologus Wetmore

Lake Naujan, 25 feet; 1 ♂, 1 ♀; May 22-23.
Wing ♂ 131, ♀ 129; exposed culmen ♂ 54, ♀ 54 mm.; weight ♂ 102, ♀ 90 gr.

Not really rare both around the lake area, and in the marshy areas in the lowlands. Several birds were often flushed one after the other, from the tall grass that grew in patches in the marshy areas at the edges of the lake.

The bird often flushed only after it was approached very closely but unknowingly. It flushed awkwardly, with its long legs dangling as it started on its almost vertical flight from among the tall grass for the first few feet, before leveling off for the flight. This little bittern always appeared to have a difficult time leaving the ground. However, once clear of the tall grass, it flew gracefully enough in level flight.

Ixobrychus eurythmus (Swinhoe)

Alcate, Victoria, 200 feet; 2 ♀ April 3-6.

Wing ♀ (1) 151; exposed culmen ♀ (1) 50 mm.; weight ♀ (2) 120, 120 gr.

This rare winter visitant is recorded for the first time from Mindoro. Previously the species has been recorded only from Mindanao and Negros.

One bird was taken very early in the morning beside a large hole left on the ground by an uprooted tall dipterocarp tree, in a newly cleared area, close to a creek. The bird was feeding in mud immediately under the overhanging roots of the uprooted tree.

The other bird was taken in a small, deeply shaded creek which was well overgrown with tall trees; it was feeding along the edge of the water.

Ixobrychus cinnamomeus (Gmelin)

Lake Naujan, 25 feet; 1 ♂; May 24.

Wing ♂ 148; exposed culmen ♂ 51 mm.; weight ♂ 140 gr.

Does not differ appreciably from birds from Mindanao and Luzon.

Not really rare around the lake and along the river that connected the lake to the sea, it was also flushed several times, in small creeks as it flew out of original Dipterocarp forest into marshy areas.

FAMILY ANATIDAE, DUCKS

Dendrocygna arcuata arcuata (Horsfield)

Lake Naujan, 25 feet; 5 ♂; May 24-27.

Wing ♂ (5) 185-204 (av. 196.4); exposed culmen ♂ (5) 42-45 (av. 43 mm.); weight ♂ (5) 450-550 (av. 530 gr.).

Mindoro birds do not show significant differences in both plumage coloration and body measurements when compared with Luzon and Mindoro specimens.

Whistling ducks were abundant and flew about the lake in several large flocks of from a dozen to fifty members, frequently in those regions of the lake adjacent to the extensive marshes. These marshy areas were covered with grass about one foot high, growing in patches, and in between these patches was water about three to six inches deep. The bottom in these marshy areas was soft mud impossible to walk on. The ordinary boat could not go far into the marshland because the water was very shallow in many places. In such inaccessible places these ducks congregated to feed in large aggregations. I estimated more than 300 in one such group. In these marshy feeding places they were safe from human as well as from other animal interference. Frequently they were too far away for effective shooting from a boat.

The ducks were breeding among the tall grass patches in these marshes.

Local name: *pato del monte*.

Anas luzonica Frazer

Makatok, Victoria, 50 feet; 2 ♂, 1 ♀; March 27.

Wing ♂ (2) 247, 254, ♀ 235; exposed culmen ♂ (2) 49, 50 mm.

The Mindoro birds show no difference from specimens from Negros and Samar.

A flock of about four dozen birds was surprised in a small pond in an extensive marsh area in Makatok, close to rice fields. After the first shot the birds took off and separated into groups of 5 to 7 members each. Apparently the birds were merely temporarily congregated in the pond at that time.

Small groups of three to five were frequently seen in flight on Lake Naujan, but the birds always alighted in the inaccessible marshy areas. Rarely, groups of about four to seven were seen to alight in the lake itself, near the patches of water lotus, but they never allowed approach to within effective shooting range. The species was quite wary in Lake Naujan because of overhunting.

One male had enlarged gonads in the latter part of March. For comparative dates, two males from Lake Balanan, Siaton, Negros Oriental, had enlarged testes in the latter part of February.

One female bird, taken in Samar Island on 29th April, had all the primaries moulted and was flightless.

FAMILY ACCIPITRIDAE, HAWKS

Pernis celebensis steerei Sclater

San Luis, Naujan, 100 feet; 1 ♀; May 18.

Wing ♀ 373; culmen from base ♀ 39.5 mm.; weight ♀ 729 gr.

The Mindoro bird resembles very closely two male specimens from Mindanao and Negros but differs in various aspects. The head in the Mindoro specimen is whitish, the individual feathers with narrow blackish shaft-streaks. The scale-like feathers on the lores and around the eye are not clear gray, but dull brown with only faint indications of gray, especially on the lores. The abdomen, thighs, crissum and under-tail coverts show distinct white and brown bars, which are absent in the Negros specimen and only faintly indicated on the thigh, crissum and under-tail coverts of the Mindanao bird.

Rare and difficult to find in the forest and clearings nearby. It was pure accident that this bird was seen perching in a second-storey tree of a three storied Dipterocarp forest at the edge of a new clearing that was made in otherwise virgin area.

Haliastur indus intermedius Blyth

Lake Naujan, 25 feet; 1 ♂; May 24.

Wing ♂ 389; culmen from base 36 mm.

The Mindoro specimen is younger than comparative material from Luzon and Mindanao, as shown by its plumage which has still retained

remnants of the juvenal feathers, especially on the chest and abdomen, and on the upper back. Some of the primaries and most of the wing coverts are worn juvenal feathers.

Rather common, especially in the lake area; several birds were frequently observed soaring low over the lake water and from time to time plunging down on the numerous dead gobies, *Ophiocara aporos*, (used as bait for murrel fishing) which were floating, whitish belly up. The birds often perched on the branches of trees close to the lake edge, to eat their dead fish.

As we came up the river to the lake, we observed several birds perching singly on tall trees on the river bank.

Local name: *lauin*.

Accipiter soloënsis (Horsfield)

Alcate, Victoria, 200 feet; 1 ♀; April 6.

Wing ♀ 204; culmen from base ♀ 23.5 mm.; weight ♀ 140 gr.

This winter migrant was rare. It was taken in a patch of virgin Dipterocarp forest which was adjacent to a newly cleared area, perched on a low tree of the lowest storey.

Accipiter virgatus confusus Hartert

San Luis, Naujan, 100 feet; 1 ♀; May 16.

Ilong Peak, Mt. Halcon, 2000 feet; 1 ♀; May 13.

One of two specimens is a full grown female, but still in immature plumage, and with the adult plumage beginning to develop on the sides. The other bird is in young adult plumage with the characteristic distinct cross bars of reddish brown and white on the middle of the breast.

The species was rare. Both birds were taken in original Dipterocarp forest on low trees of the third storey. Each bird was difficult to find among the branches and foliage of the tree where it perched, because it stayed motionless until it flew to a nearby tree.

Spizaëtus (cirrhatus) limnæetus (Horsfield)

Kabilang-Ilong, Mount Halcon, 4000 feet; 1 ♀; May 13.

The Mindoro bird is in the chocolate brown phase.

Rare and it was purely accidental that this bird was taken in a bird trap, that was especially made for it and baited with a half-grown chicken. The Mangyan who caught it related that this eagle was seen several times inside the forests close to his clearing and often perched on a particular branch of a particular tree. He set a trap for it on this perching branch and after two days he got the bird.

Haliaëtus leucogaster (Gmelin)

Lake Naujan, 25 feet; 1 ♀ ad., 1 ♀ sub-ad.; May 21-24.

Wing ♀ (2) 533, 570; culmen from base ♀ (2) 56, 63 mm.; weight ♀ (2) 2475, 2500 gr.

Not uncommon in the lake area. There were three tall trees that grew

close to the edge of the lake which were regular perches of these birds. Frequently, one or two birds were seen soaring high over the lake.

The adult female was first observed as it plunged into the lake from its soaring flight and rose with a large water snake wriggling actively in its talons. It proceeded to one of the regular tall tree perches, where it was secured.

The sub-adult female was feeding on a large dead murrel while perched on a low branch of a low tree growing close to the lake edge. After the bird was secured, the murrel was examined and found to be already foul smelling and in the early stages of decay.

There were about six birds of this species which were frequently seen soaring over the lake. The same birds also fished in the seas off the nearby coast of Naujan, about four air kilometers from the lake. A tall dead tree on top of a steep cliff that bordered the coast was a favorite perch of these birds.

We passed a fully adult bird perched on a branch of a tall tree that grew on the river bank, on our way upriver to the lake.

Ichthyophaga ichthyaetus ichthyaetus (Horsfield)

Lake Naujan, 25 feet; 1 ♀; May 21.

Wing ♀ 420; culmen from base ♀ 60 mm.; weight ♀ 2700 gr.

The gray-headed fishing eagle was not uncommon in the Lake Naujan area. Several birds were often observed to pounce together on dead murrels that were floating in the lake. After getting the fish, a bird would proceed to perch on one of the trees that were growing close to the lake edge. The bird was not one for soaring flight, unlike the White-breasted sea eagle. It was more often observed on the perch than in the air in flight. After leaving a tree, it would usually proceed to another tree not so far away, and perch on it, often selecting a branch that was well covered by foliage. It would stay here for long periods until disturbed.

FAMILY *FALCONIDAE*, FALCONS

Microhierax erythrogenys (Vigors)

Alcate, Victoria, 200 feet; 1 ♂; April 6.

Wing ♂ 107; culmen from base ♂ 16 mm.; weight, 40 gr.

The single Mindoro male specimen does not differ in plumage from birds of Luzon and Mindanao. The wing measurement, however, is larger than that of the Luzon male and equals the smallest wing measurement of the Mindanao males. It appears as if the Luzon birds are the smallest, followed by the Mindoro bird, and then by the Mindanao birds. There seems to be a gradual increase of wing length from the northern to the southern islands of the archipelago.

Not common. The single specimen taken was in a clearing, perching on a medium high tree, close to the edge, and was catching insects on the wing and returning regularly to its perching tree when first seen.

FAMILY *PHASIANIDAE*, PHEASANTS, QUAIL*Gallus gallus gallus* (Linnaeus)

Alcate, Victoria, 200 feet; 1 ♂; April 6.

Wing ♂ 222; bill from nostril ♂ 16.5 mm.; weight, 950 gr.

Fairly common, but was more often heard than seen. The challenging crows of the roosters were frequently heard answering one another in different parts of the forests, including the clearings that were newly made by the settlers at the base of the mountain range.

The Christian settlers had their native domestic chickens which were still very close to the wild stock. The native Mangyans also had their domestic fowls that frequently were of native breed. The domestic fowl had all the chances to interbreed with the wild jungle fowl in these places. In fact, it was not rare for the wild rooster to mate with native domestic hens in settlements where the clearings were immediately adjacent to the forests. However, it was a very rare case for the domestic rooster to breed with the wild hen, perhaps because the wild hen most often stayed in the forests away from the clearings. The remarkable thing about this interbreeding between the domestic chicken and the wild jungle fowl was that there was no intermediate wild-domestic population of fowls found in the foothills and forests.

Several times we met Mangyans in the mountain trails holding in their arms wild roosters that were securely tied. They used these fowls as lure in their snares that they set especially for red jungle fowls. It was strange that we never saw tamed wild roosters allowed to run loose around the houses and the clearings immediately around. It appeared that the tendency of wild roosters already tamed was still to revert to the wild state and to go back to the forest with the first opportunity to do so.

FAMILY *TURNICIDAE*, BUSTARD QUAIL*Turnix suscitator fasciata* (Temminck)

Alcate, Victoria, 200 feet; 1 ♂; April 4.

Wing ♂ 81; culmen from base ♂ 17.5 mm.

Several Bustard Quail of this species were frequently flushed from the grass and weeds at the sides of the idle rice fields in the plains of Makatok, Victoria, but no specimens were collected.

The species was occasionally flushed in the clearings at Alcate, Victoria, that were at that time left fallow and were beginning to be covered with grass and weeds. The birds unfailingly flew toward the patches of dense second growth that surrounded the clearings.

FAMILY *RALLIDAE*, RAILS*Rallus torquatus torquatus* Linnaeus

Lake Naujan, 25 feet; 1 ♂, 1 ♀; May 22-26.

Alcate, Victoria, 200 feet; 1 ♀; March 29.

Wing ♂ 140, ♀ (2) 146, 165; culmen from base ♀ (2) 39, 47 mm.; weight ♂ 290, ♀ (2) 290, 300 gr.

Compared with Luzon birds, the Mindoro specimens do not differ appreciably in plumage and measurements.

The species was commonly seen along the edges of the rivers and lake shores, close to the water's edge. On the banks of the Magasawang-Tubig River, many birds were seen as they followed the water's edge, but characteristically they would run back very fast to the tall grass that grew in dense patches along the banks.

There were ponds of varying sizes in an extensive tall grass area along the Baco River for a great part of its length. The present species was one of the commonest rails that lived in large numbers in this grass tract. Early in the morning and late in the afternoon the birds were often seen feeding on the edges of the ponds and sometimes swimming in them.

Porzana fusca fusca (Linnaeus)

Makatok, Victoria, 50 feet; 1 ♀; April 9.
Wing ♀ 95; culmen from base ♀ 20 mm.

Compared with a female from Fort William McKinley, Rizal Province, Luzon Island, the Mindoro female specimen appears to have slightly richer and darker colors on both the upperparts and underparts. However, the Fort McKinley specimen is in worn plumage and there has also been slight fading of the color due to the age of the skin. The Mindoro specimen possesses on the average, larger white spots on the under tail-coverts.

Rare, as on the few other islands where it has been recorded. The single Mindoro bird was taken in an abandoned rice field covered with weeds, adjacent to a large patch of tall marsh grass. The bird, however, was notably on drier ground which was also covered with tall grass.

Poliolimnas cinereus ocularis (Sharpe)

Lake Naujan, 25 feet; 3 ♂, 2 ♀; May 24-27.
Alcate, Victoria, 200 feet; 1 ♀; April 8.
Wing ♂ (3) 97-101 (av. 99.3), ♀ (3) 91-97 (av. 93.3 mm.); culmen from base ♂ (3) 28.5-30 (av. 29.1), ♀ (3) 26-27 (av. 26.3 mm.); weight ♂ (2) 60, 70, ♀ (1) 60 gr.

Birds from Mindoro do not show significant difference when compared with specimens from Luzon, Mindanao, and Negros. One Mindoro male possesses dull black loreal patches similar to those found in a male from Negros.

Very common along the edges of the lake and rivers, especially where there was abundance of tall grass where they could hide when disturbed. They were easily the most common bird species in the marshy and swampy areas, including nipa and mangrove swamps, along the coast and at river mouths.

Amaurornis phoenicurus javanica (Horsfield)

Lake Naujan, 25 feet; 2 ♀; May 24-27.
San Luis, 100 feet; 1 ♂; May 20.

Alcate, Victoria, 200 feet; 1 ♂; April 7.

Wing ♂ (2) 146, 153, ♀ (2) 144, 151; culmen from base ♂ (2) 34.5, 37, ♀ (2) 34.5, 37 mm.; weight (2) 183, 190, ♀ (2) 190, 190 gr.

Mindoro birds do not differ from Mindanao specimens.

Fairly common along the edges of the rivers, ponds, and around Lake Naujan in areas of tall grass. At dusk and twilight, several pairs could be seen walking along the water's edge of river, pond or lake, all the while jerking the tail up and down, and from side to side.

It has a very loud and characteristic call which sounds like "kor-wak-wak, kor-wak-wak," etc., repeated several times and frequently heard at dusk or twilight.

Gallicrex cinerea (Gmelin)

Lake Naujan, 25 feet; 1 ♂, 1 ♀; May 24-27.

Wing ♂ 230, ♀ 198; bill from posterior part of shield ♂ 65, ♀ 40 mm.; weight ♂ 300, ♀ 300 gr.

Compared with specimens from the Asian mainland in the Yale Peabody Museum, the Mindoro specimens do not differ significantly. The male has the underparts beginning to change into the breeding plumage which is typically slaty black or gray-black. The upperparts are still that of the typical non-breeding plumage of dark brown, the feathers edged with buff.

So far the plumage sequence and changes of this species have not been followed in detail in the Philippines. Whether the breeding male ever completely changes its brown and buff non-breeding plumage to one of black and slaty black throughout as is typical of the male bird in continental Asia is not yet clear.

The species was fairly common in Lake Naujan, especially in the coves where there were patches of tall grass growing in the lowlands adjacent to the lake edge.

Collecting them was difficult because they easily found concealment in the tall grass. The species was not only seen in tall grass associated with marshes, but also in drier situations.

The birds were often seen late in the afternoon and very early in the morning, each perched on a tuft of tall grass, broken down near the ends to form a rough platform to support its weight. At that time its loud, booming call, "Toob-toob," etc. repeated from time to time could sometimes be heard.

Gallinula chloropus indica Blyth

Lake Naujan, 25 feet; 5 ♂ ♂, 5 ♀ ♀; May 22-27.

Wing ♂ (5) 166-179 (av. 170), ♀ (5) 155-174 (av. 164.8); bill from posterior portion of shield ♂ (5) 36-46.5 (av. 42.7), ♀ (5) 35-42 (av. 36.4 mm.); weight ♂ (5) 289-390 (av. 320.8), ♀ (5) 220-325 (av. 257 gr.).

The Mindoro birds cannot be separated from specimens of *G. c. indica* in the Peabody Museum (7 ♂, 2 ♀, 2 sex?) from Indochina, Japan, and Okinawa, both in plumage and measurements. The black, scapulars, and wing coverts are clearly olive brown, similar to the condition in *indica*.

Peters (1939:80) identified his specimens from Lake Naujan (2 ♂, 1 ♀)

that were collected on March 7, 1937, as *indica* and commented that some individuals of this form from eastern Asia might winter in the Philippines. One of us (Rabor) has had the opportunity of observing these birds continuously on Lake Naujan for about three years and has always noted the species to be common on the lake the whole year round and breeding there. Peters (*loc. cit.*) advanced tentative conclusions that ". . . the resident birds of Mindoro and Mindanao should be called *G. ch. orientalis* Horsfield, while breeding birds from Luzon may be called *G. ch. lozanoi* Lletget. We cannot help feeling that adequate series would show the resident bird of the entire Philippine Archipelago to be inseparable from *orientalis*."

Peabody Museum has five specimens (2 ♂, 3 ♀) from Mindanao, one male of which has the plumage of typical *orientalis* with the characteristic olive brown more or less restricted to the back and the scapulars, the wing coverts being slaty like the rest of the plumage. The remaining four birds have slaty plumage on the back and scapulars with the least olive brown wash or none at all. They average smaller in measurements, especially the wing, compared to Mindoro birds. A single female specimen from near Manila, Luzon, that is in worn plumage, has the characteristic olive brown on the back, scapulars, and wing coverts, typical of *indica* or very close to it, but has smaller measurements closer to the Mindanao birds in this respect.

The identity of the Philippine form of *Gallinula* remains a problem requiring good series from the different islands to be studied and compared.

Based on observations on the birds of Lake Naujan, we are of the opinion that the moorhens of the lake are breeding birds and are *indica* or a form very close to it. Pending a more detailed study on the different populations of *Gallinula chloropus* in the various islands of the Philippines, we tentatively recognize the following breeding forms as occurring in the Philippines:

G. c. lozanoi Lletget, Luzon

G. c. orientalis Horsfield, Mindanao (intervening islands?)

G. c. indica Blyth, Mindoro (intervening islands?)

Very common in the lake, where groups of one dozen or more were frequently seen feeding in the open water close to the numerous patches of water lotus. When any group was approached, the birds either swam toward the marshes and into the tall grass growing there, or entered the nearest patch of water lotus.

Porphyrio pulverulentus Temminck

Lake Naujan, 25 feet; 1 ♀; May 24.

Wing ♀ 240; bill from posterior margin of shield ♀ 71 mm.; weight ♀ 700 gr.

The Mindoro female specimen does not differ from a Luzon female bird.

In 1938-40 this species was found in large numbers in the tall grass that grew along the Butas River, at least in the first kilometer of its extent from the lake, and in the extensive marshy areas around the lake, among the tall marsh grass. In 1954, the river was well cleared of the tall grass that grew

along its course, and the wide areas of tall marsh grass on both sides of the lake outlet were likewise gone, having been cut and the area planted to rice. In 1954, only one bird was actually seen on its platform on top of the broken tops of the tall marsh grass. A few others were heard in the inaccessible marshes on the western side of the lake.

A reason for the great decline of the purple gallinules in the lake area was overhunting. During October, November, and December each year, the strong rains raise the level of the lake water to above the top of the tall marsh grass. This leaves the purple gallinules and many other marsh birds with no place for concealment, except the trees on the hillsides of the northern and eastern sides of the lake, which by this time would be reached by the lake water. At such times, hunters used to hunt down the purple gallinules in large numbers.

Unless conservation regulations are faithfully observed, the species may disappear completely from Lake Naujan.

Local name: *bot-ot*.

FAMILY JACANIDAE, JACANAS

Hydrophasianus chirurgus (Scopoli)

Lake Naujan, 25 feet; 4 ♂, 4 ♀; May 22-25.

Wing ♂ (4) 200-205 (av. 202.2), ♀ (4) 229-240 (av. 234.5); culmen from base ♂ (4) 29.5-33 (av. 31.7), ♀ (3) 34-37.5 (av. 35.8 mm.); weight ♂ (4) 120-140 (av. 130), ♀ (3) 190-200 (av. 196.6 gr.).

Mindoro specimens do not differ in plumage color and pattern from Mindanao birds. However, the Mindoro birds average slightly larger, especially in length of wing and tarsus.

The female in this species is definitely larger than the male as shown by the larger measurements of the wing, bill, and tarsus.

Fairly common in Lake Naujan and was frequently observed going about in several small groups of five to a dozen members each. They have the habit of alighting on the floating leaves of the water lotus and walking from leaf to leaf without seeming to sink the leaves a bit.

Their loud and very characteristic call sounded like "Kawo," repeated once in a while when flying.

FAMILY CHARADRIIDAE, PLOVERS

SUBFAMILY *Scolopacinae*, SANDPIPERS, SNIPE

Tringa glareola Linnaeus

Makatok, Victoria, 50 feet; 1 ♂, 1 ♀; April 10.

Wing ♂ 122, ♀ 128; culmen from base ♂ 33, ♀ 37.5 mm.; weight ♂ 80, ♀ 60 gr.

Quite a number of winter migrant shore birds were seen in the mud flats adjacent to the marshy areas that were being prepared for rice planting. This species was fairly common.

First record of this migrant for Mindoro.

Actitis hypoleucos (Linnaeus)

Makatok, Victoria, 50 feet; 1 ♂; April 10.

Wing ♂ 108; culmen from base ♂ 29 mm.; weight ♂ 40 gr.

One of the commonest winter migrant shore birds encountered in the different localities that the collecting party worked in. Wherever there was a river, creek, lake, pond or some marshy areas, or a bit of sandy or muddy shore, this species was certain to be encountered, usually singly.

FAMILY COLUMBIDAE, PIGEONS, DOVES

Phapitreron leucotis leucotis (Temminck)

Lake Naujan, 25 feet; 1 ♂ 2 ♀; May 24-25.

San Luis, Naujan, 100 feet; 3 ♂, 3 ♀; 1 young; May 14-20.

Alcate, Victoria, 200 feet; 15 ♂, 5 ♀; March 27-April 17.

Wing ♂ (19) 132-141 (av. 135.7), ♀ (10) 130-135 (av. 133.2); culmen from base ♂ (19) 19-22 (av. 19.8), ♀ (10) 18-20 (av. 19 mm.); weight ♂ (14) 100-140 (av. 124), ♀ (5) 120-132 (av. 123.4 gr.).

Common. Encountered in virgin forest in the lowlands and up to about 2500 feet up the mountainsides. Also found in second growth and even in well cultivated areas, in the patches of trees found between cultivated fields. Its call was often heard coming from several directions in any particular forest area.

It was easily attracted by imitating its call and leaving sufficiently long intervals of silence for the bird to attempt to locate the source of the call.

Young.—Upper parts brown with rufous edges to the feathers of scapulars and back; underparts rufous, the individual feathers with gray basal half and rufous terminal half; primaries and secondaries brown with rufescent outer margins; wing coverts brown with rufous edges.

Leucotreron occipitalis occipitalis (Gray)

San Luis, Naujan, 100 feet; 1 ♂, 1 ♀; April 17-May 18.

Alcate, Victoria, 200 feet; 1 ♂; April 8.

Barawan Peak, Mount Halcon, 2500-3500 feet; 1 ♀; April 26.

Wing ♂ (2) 158, 164, ♀ (2) 156, 157; culmen from base ♂ (2) 23.5, 24, ♀ (2) 22, 24.5 mm.; weight ♂ 250, ♀ 240 gr.

Mindoro birds do not differ appreciably in plumage colors from Negros, Samar, and Mindanao specimens, but average slightly larger than the Mindanao population.

Hachisuka (1932:185) commenting on *L. o. incognitus* (Tweeddale) from Mindanao, writes "The present race is closely related to the typical race, which can be distinguished by its having a smaller amount of gray on head." Our series of specimens in the Peabody Museum from Mindoro, Negros, Samar, and Mindanao does not bear out this "smaller amount of gray on head" in the Mindanao birds. Our series, however, shows that the birds from Mindanao average slightly more yellow on the chin and throat and possess slightly shorter wings than those from Mindoro, Negros, and Samar (see Ripley and Rabor, 1956:289).

Not really rare, but difficult to find among the dense foliage of the trees where it might have called from. More often heard than seen.

One female had enlarged gonads in May.

Leucotreron leclancheri leclancheri (Bonaparte)

Alcate, Victoria, 200 feet; 1 ♂; April 7.

Wing ♂ 155; culmen from base ♂ 24 mm.; weight ♂ 200 gr.

The single Mindoro specimen does not differ significantly from Mindanao and Luzon birds. The black on the chin of the single Mindanao bird in our series, a male, seems slightly duller than that of the Mindoro bird.

Rare and with unobtrusive habits this species is difficult to observe.

Ducula aenea aenea (Linnaeus)

San Luis, Naujan, 100 feet; 3 ♂, 1 ♀; April 14.

Alcate, Victoria, 200 feet; 1 ♂, 2 ♀; April 4-8.

Wing ♂ (4) 234-249 (av. 243.5), ♀ (3) 233-249 (av. 239.3); culmen from base ♂ (4) 32.5-34 (av. 33.3), ♀ (3) 32-32.5 (av. 32.1 mm.); weight ♂ (3) 500-575 (av. 525), ♀ (3) 520-535 (av. 526.6 gr.).

The Mindoro birds are similar to specimens from Mindanao and Negros.

Fairly common in the forested lowlands. During early morning and late afternoon, large flocks habitually fed on tall fruiting *Ficus* trees that were growing at the edge of a clearing close to the camp site in San Luis, Naujan. During the hotter parts of the day, the birds were encountered singly or in pairs inside the forest nearby, oftentimes roosting in the trees of the lower stories of typical three-storied Dipterocarp forest. A bird would not even flush except when necessarily disturbed, so that it was not easy to see amidst the foliage and branches.

Ducula poliocephala poliocephala (Gray)

San Luis, Naujan, 100 feet; 1 ♂, 1 ♀; May 14-15.

Alcate, Victoria, 200 feet; 1 ♂, 1 ♀; April 7.

Wing ♂ (2) 224, 235, ♀ (2) 220, 224; culmen from base ♂ (2) 33, 36, ♀ (2) 33, 34 mm.; weight ♂ (1) 590, ♀ (1) 490 gr.

The Mindoro specimens do not differ from birds of Luzon, Negros and Mindanao.

Not common. Occasionally one or a pair of birds were observed feeding on a tall fruiting tree beside a logging road that was being constructed into the interior of the lowland forests at the base of the outer foothills of Mount Halcon. However, the loud booming sounds, characteristic of the species, were sometimes heard from a patch of virgin Dipterocarp forest at the foot of a nearby mountain peak.

On the way to Ilong Peak, the species was seen feeding on several very tall fruiting trees. The species was heard calling at about 3000 feet up Barawan Peak and Ilong Peak.

[The interesting Mindoro endemic *D. mindorensis* was never collected although seen and heard several times on the ridges of Barawan Peak at about 4800 feet, perched on low trees with deep precipices on both sides. The

call of this species, consisting of loud booming notes, was unlike the notes of any other *Ducula* in the Philippines.]

Ducula carola carola (Bonaparte)

Ilong Peak, Mount Halcon, 4000-5500 feet; 2 ♂, 2 ♀; May 6-14.

Wing ♂ (2) 208, 212, ♀ (2) 211, 216; culmen from base ♂ (2) 26.5, 27, ♀ (2) 27.5, 28.5 mm.; weight ♂ (1) 320, ♀ (1) 290 gr.

Not really rare but in the localities collected in by the expedition party, the birds were not observed in groups. In May and June, 1938, Rabor collected in Barrio Go-ob in the same vicinity which was still densely forested at the time. He saw several large groups of this species feeding on the fruiting trees close to his camp site, at the edge of a new clearing in virgin Dipterocarp forest. The birds came to the feeding trees early in the morning and late in the afternoon. The birds were not seen going about during the hotter parts of the day. However, inside the near-by forest, one or a pair of them were sometimes flushed from the trees of the second and third stories.

This species has a wide altitudinal range and is met with in the lowlands at sea level up to about 6500 feet altitude or even higher, in the mountain forests. Also, on Luzon, this species was observed to migrate daily from the highlands to lowlands and from one locality to another, depending on the occurrence of feeding trees.

One male and one female had enlarged gonads in May.

A nest with one broken egg, and the setting female bird were taken at Ilong Peak at about 5500 feet altitude. The location of the nest was very peculiar because it was inside a small hollow on the side of a high perpendicular cliff, about 12 feet from the base. Extending toward the hollow and coming very close to it was a branch of a mountain yew, *Podocarpus*, that grew at the base of the cliff. The nest was a typical pigeon nest of a loose pile of sticks and twigs on top of which was the single egg.

Columbia vitiensis griseogularis (Walden and Layard)

San Luis, Naujan, 100 feet; 1 ♀; April 20.

Ilong Peak, Mount Halcon. 400-5500 feet; 1 ♀; May 3.

Wing ♀ (2) 241, 246; culmen from base ♀ (2) 31.5, 34 mm.

Not rare but its secretive habits made the birds difficult to find in the forest. They often went about singly or in pairs and when in a feeding tree, fed with the least noise and disturbance not flying about from branch to branch like most pigeon species. One only realized that there were birds in the tree after they had flushed from it one after the other.

Macropygia phasianella tenuirostris Bonaparte

San Luis, Naujan, 100 feet; 2 ♂, 1 ♀; May 16-17.

Barawan Peak, Mount Halcon, 2000-4200 feet; 4 ♂, 1 ♀; April 20-26.

Ilong Peak, Mount Halcon, 4000-6000 feet; 6 ♂, 2 ♀; May 3-12.

Wing ♂ (12) 179-197 (av. 185.4), ♀ (4) 176-184 (av. 179); culmen from base ♂ (12) 23.5-25 (av. 24.1), ♀ (4) 20.5-21 (av. 20.6 mm.); weight ♂ (10) 155-199 (av. 170.4), ♀ (3) 160-180 (av. 172.3 gr.).

Compared with the birds from Luzon, Negros, and Mindanao, the Mindoro specimens do not differ.

Rather common and met with from sea level up to about 6500 feet altitude. It has a wide altitudinal range.

The birds were occasionally encountered in groups of about 5 to 7 or 8 members as they went about to feed. They frequented fruiting trees left standing in new clearings, at the forest edge, inside original forest, in second growth, and even in well cultivated areas with fruiting trees along the sides of the fields.

Streptopelia bitorquata dusumieri (Temminck)

Lake Naujan, 25 feet; 1 ♂; May 26

Makatok, Victoria, 50 feet; 2 ♂; April 10.

Alcate, Victoria, 200 feet; 2 ♂, 2 ♀; April 6-11.

Wing ♂ (5) 159-171 (av. 163.6), ♀ (2) 161, 168; culmen from base ♂ (5) 21-24.5 (22.6), ♀ (2) 22.5, 22.5 mm.; weight ♂ (4) 140-155 (av. 148.7), ♀ (2) 145, 150 gr.

The Mindoro birds are similar to specimens from Luzon, Mindanao, and Negros.

Fairly common in the lowlands especially in the rice fields that were left fallow while waiting for the next planting season. The birds were often seen on the ground and in the low trees around the open fields.

One of the female specimens had enlarged gonads in April.

Streptopelia tranquebarica humilis (Temminck)

Alcate, Victoria, 200 feet; 2 ♂, 1 ♀; March 28-April 11.

Wing ♂ (2) 133, 136, ♀ 133; culmen from base ♂ (2) 18.5, 20, ♀ 19.5 mm.; weight ♂ (1) 91, ♀ 100 gr.

Specimens from Mindoro have very slightly shorter wings than birds from Indo-China, otherwise both are similar.

Rather rare, unlike *S. b. dusumieri*. It was observed in open lowland country, including fallow rice fields, and in clearings with second growth patches along the sides. The birds were either on the ground or in the second growth trees.

Both males and the single female that were collected in March and April had enlarged gonads.

Chalcophaps indica indica (Linnaeus)

San Luis, Naujan, 100 feet; 1 ♀; April 14.

Alcate, Victoria, 200 feet; 2 ♂, 1 ♀; March 31-April 11.

Wing ♂ (2) 146, 150, ♀ (2) 141, 146; culmen from base ♂ (2) 22.5, 24, ♀ (1) 23.5 mm.; weight ♂ (1) 141, ♀ (2) 110, 124 gr.

Birds from Mindoro are similar to specimens from Samar, Negros, and Mindanao.

Philippine males compared to males from outside the Philippines such as Nepal, Indochina, and Batjan, do not show any significant difference. The females, however, show distinct differences, especially in the colorations of the back of the head, neck, upper back and tail feathers.

A female from Nepal has the back of the head, neck, and upper back ruf-

ous brown; the sides of the neck distinctly rufous, this color continuing around the upper breast; some tail feathers have a large amount of rufous on the upper part.

An Indochina female has the back of the head, neck, and upper back dark brown, with a slight rufous wash, becoming lighter rufous brown on the sides of the neck and on upper breast; the tail feathers are predominantly dark brown.

The Philippine and Indonesian females have the back of the head, neck and upper back very dark brown, with the slightest wash of rufous, becoming dark rufous brown on the sides of the neck and upper breast; the tail feathers are predominantly blackish brown.

On the average the upperparts of the Nepal female seem to have the most rufous mixed with brown, followed by that from Indochina, and then by those from the Philippines and Indonesia. There is a gradual decrease of the rufous wash on the underparts of the female from Nepal, to that from Indochina, and to those of the Philippines and Indonesia. Conversely, there is a gradual decrease in intensity of the dark brown underparts of the female from Indonesia, to that from the Philippines, from Indochina and from Nepal.

A more thorough study of the different populations of *C. i. indica* from different regions should be made. Hachisuka (1939, 46-47) placed the population of the Philippines in a separate race, *C. i. pileata* (Scopoli).

Nowhere abundant, but not rare. Frequently encountered singly in original forest, second growth patches, along well vegetated creeks, and even in well cultivated areas where patches of trees are found between fields.

Gallicolumba luzonica platenae (Salvadori)

San Luis, Naujan, 100 feet; 2 ♂, 1 ♀; April 14-May 17.

Alcate, Victoria, 200 feet; 1 ♀; April 1.

Wing ♂ (2) 158, 159, ♀ (2) 145, 148; culmen from base ♂ (2) 23.5, 24, ♀ (2) 24, 24 mm.; weight ♂ (2) 168, 189, ♀ (2) 180, 184 gr.

The Mindoro bleeding heart pigeon is distinct from the races on the other islands.

Not really rare, but very local in distribution. It seemed to prefer a rather dry type of forest floor, either in original or secondary forest, especially on a gently sloping hill or mountainside. Once a bird was flushed in a certain area of the forest, others were frequently seen near-by. Large areas of the forest would be covered, yet no bird could be flushed again, until the first one was seen and others were most likely near-by. The birds produced very characteristic wing sounds as they took off from the forest floor that were unlike the sounds produced by *Chalcophaps i. indica*. After hearing these wing beats, a collector soon learned to know merely by listening whether the species occurred in the area.

Typically, the bird ran very fast on the ground and was most difficult to follow in the semi-darkness of the forest, especially when it ran brokenly at different speeds. The forest floor, often mottled with variously shaped spots

of light and shadows made it still harder to detect the outline of the bird even if it was standing still.

FAMILY *PSITTACIDAE*, PARROTS

Prioniturus discurus mindorensis Steere

San Luis, Naujan, 100 feet; 2 ♂, 3 ♀; April 14-May 15.

Alcate, Victoria, 200 feet; 9 ♂, 10 ♀; March 27-April 8.

Barawanan Peak, Mount Halcon, 4500 feet; 3 ♂, 2 ♀; April 19-23.

Ilong Peak, Mount Halcon, 4000-5500 feet; 1 ♂; May 6.

Wing ♂ (14) 161-176 (av. 166.9), ♀ (14) 155-174 (av. 162.1); culmen from front margin of cere ♂ (14) 20-22.5 (av. 21.8), ♀ (14) 20.5-23 (av. 21.5 mm.); weight ♂ (14) 122-155 (av. 141.6), ♀ (10) 140-160 (av. 146.6 gr.).

The Mindoro form is one of the distinct races of *P. discurus* and cannot be mistaken for any of the others from the other islands of the Philippines.

Commonly encountered inside original forest in the lowlands and highlands up to about 5500 feet altitude. Birds were also met with in cleared areas and even in well cultivated fields where there were small remnants of forest trees in fruit or a banana grove in full fruit.

The species was often observed in small groups of five or six up to a dozen, and the whole group often alighted on a particular fruiting tree to feed. A flock could easily be heard at a distance because of the constant screechings and screamings.

In newly opened land adjoining virgin forest, Racquet-tailed Parrots were very destructive to the green maturing fruits of the banana (*Musa sapientum* and *Musa paradisiaca*) which they relished.

Three females had enlarged gonads in April.

Tanygnathus lucionensis lucionensis (Linnaeus)

San Luis, Naujan, 100 feet; 2 ♂; April 15.

Alcate, Victoria, 200 feet; 6 ♂, 5 ♀; March 29-April 11.

Wing ♂ (8) 194-201 (av. 197.2), ♀ (5) 187-198 (av. 189.6); culmen from front of cere ♂ (8) 32-35 (av. 33.1), ♀ (5) 30-31 (av. 30.3 mm.); weight ♂ (3) 221-229 (av. 225), ♀ (3) 220-211 (av. 220.3 gr.).

We have compared our series of Mindoro specimens with series from Negros (8 ♂, 8 ♀) and Mindanao (7 ♂, 3 ♀, 1 sex?) and examined one specimen from Basilan (sex?) and one specimen from Samar (♂).

We find no significant differences in coloration and plumage pattern among the birds of the different series and in the single specimens from Basilan and Samar, other than normal fluctuating variations including those of age.

The Mindoro, Samar, Negros and Basilan specimens overlap in their measurements. The Mindanao series averages much smaller wing and tail compared to the rest.

Salomonsen (1953:218-219) named the Negros population as *T. l. nigrorum*. He describes the adult male as having "The blue colour on head strong and bright, covering not only crown and nape, but extended over the forehead almost to base of bill, and over the ear-coverts, lores and cheeks." We

cannot find this distribution of the blue color as described above, in our series of Negros birds. Salomonsen also recognizes *T. l. horrisonus* Bangs and Peters for the Basilan population. We do not see any significant difference between our Basilan specimen and those from Mindoro, Negros, and Samar.

We consider *nigrorum* and *horrisonus* as synonyms of *lucionensis*.

We, however, accept Hachisuka's *koikei* for the Mindanao population based on the significant difference in wing and tail measurements which are definitely smaller when compared to birds from Mindoro, Negros, Samar, and Basilan. The amount of blue on the head is a character which we find to be very variable even in birds of the same population.

Loriculus philippensis mindorensis Steere

Lake Naujan, 25 feet; 1 ♂; May 25.

San Luis, Naujan, 100 feet; 1 ♂, 1 ♀; April 14-May 17.

Alcate, Victoria, 200 feet; 2 ♂, 2 ♀; March 20-April 11.

Barawanan Peak, Mount Halcon, 2500 feet; 1 ♀; April 21.

Wing ♂ (4) 95-101 (av. 97), ♀ (4) 95-103 (av. 98.7); culmen from front of cere ♂ (4) 15-16 (av. 15.4), ♀ (3) 15, 15, 15 mm.; weight ♂ (4) 35-40 (av. 37.2), ♀ (3) 35-42 (av. 39 gr.).

The Mindoro race is sufficiently distinct from the other races of *Loriculus philippensis*.

Fairly common and often encountered in original forest in the lowlands, and rarely in the highlands up to about 4000 feet altitude. The Hanging Parakeet was also found in second growth and even in well cultivated areas, especially in coconut groves.

Several birds of this species were often observed feeding on the fruits of *Ficus* in company with other birds, especially *Phapitreron leucotis*, *Megalaima haemacephala*, *Hypsipetes philippinus*, and *Dicaeum trigonostrigma*.

Parakeets were frequently seen and heard in the coconut groves in Calapan, among well populated areas.

The species is one of the very common cage birds in the Philippines.

FAMILY CUCULIDAE, CUCKOOS

Cuculus fugax pectoralis (Cabanis and Heine)

San Luis, Naujan, 100 feet; 1 ♂, 1 ♀; May 18.

Alcate, Victoria, 200 feet; 1 ♂; April 3.

Wing ♂ (2) 177, 184, ♀ 177; culmen from base ♂ (2) 25, 26, ♀ 25.5 mm.; weight ♂ (2) 70, 80, ♀ 68 gr.

Mindoro specimens are similar to birds from Negros.

Apparently the species begins to breed even while in its juvenal plumage, because the Mindoro female, which is still in juvenal plumage, had enlarged ovaries, and a Negros female with mixed juvenal and adult plumage had already a large oviduct egg at the time of capture. The Negros male had definitely enlarged testes while still in mixed juvenal and adult plumage.

Rare and was taken only in dense original Dipterocarp forest.

Cuculus micropterus micropterus Gould

San Luis, Naujan, 100 feet; 1 ♂; April 26.
Wing ♂ 196; culmen from base ♂ 35 mm.

First record of this rare migrant for Mindoro, and the second time for the Philippines. It was first recorded on Negros by Whitehead, and this single record served for many years as the basis for including the species in the avifaunal list of the Philippines. Since then two additional specimens have been secured on Negros by Rabor, both in juvenal plumage.

The Mindoro specimen is in juvenal plumage and shows the characteristic broad rufous tips to the wing feathers. Compared to specimens from India, the Mindoro bird agrees very well especially in the colors of the upperparts and the broad black bars on the breast, abdomen and flanks.

Cuculus saturatus horsfieldi Moore

Alcate, Victoria, 200 feet; 2 ♀; April 8-11.
Wing ♀ (2) 189, 190; culmen from base ♀ (2) 27.5, 27.5 mm.; weight ♀ (2) 80, 80 gr.

Second record of this species for Mindoro as far as we know. Peters (1939: 90) recorded *C. optatus optatus* Gould from Mindoro in April, 1937. This name is now a synonym of *C. saturatus horsfieldi*.

C. saturatus has been recorded previously from Mindanao, Negros, Palawan and Siquijor. Not a rare winter migrant in the Philippines, the species may easily be mistaken for the much rarer *C. micropterus* and *C. canorus*. In fact, it is possible that the past records of *C. canorus* in the Philippines may not all be of this species but may have included *C. saturatus*. *C. canorus* seems much rarer as a migrant in the Philippines than *C. saturatus* as more recent collections have shown.

C. saturatus is differentiated from *C. micropterus* by the slate gray upper parts and narrower black bars on the underparts. *C. m. micropterus* has typically distinct broad blackish subterminal bars on the tail feathers, contrasting clearly with the pale brown color of the proximal parts.

From *C. canorus*, the present species is distinguished by being smaller and the bill shorter and stouter; the breast and under tail coverts more buffy; the bars on underparts deeper black, broader, and more sharply defined.

Cacomantis variolosus sepulcralis (S. Müller)

Barawanan Peak, Mount Halcon, 2500-3600 feet; 2 ♂; April 20-23.
Ilong Peak, Mount Halcon, 5000 feet; 1 ♀; May 12.
Wing ♂ (2) 121, 122, ♀ 116; culmen from base ♂ (2) 23, 23, ♀ 22.5 mm.; weight ♂ (2) 20, 30 gr.

Compared with specimens from Negros, the Mindoro birds are much darker but duller chestnut on the underparts and much darker brown with much less trace of gray even on the head and neck.

Compared with birds from Mount Malindang, Zamboanga Peninsula, Mindanao Island, the Mindoro birds have a darker and duller chestnut on the underparts with a bronzy sheen instead of green.

A young male adult from Antipolo, Rizal Province, Luzon Island, also shows the dull chestnut coloration on the underparts, but compared with the Mindoro birds, it appears much brighter. However, the upperparts of both the Luzon and Mindoro birds are similar.

Arranged in a series the birds from Negros have the palest and dullest chestnut underparts, followed by those from Mount Malindang, then by those from Basilan and Cebu (with more intense and definitely brighter chestnut), then by the specimen from Luzon, and lastly by the Mindoro birds with definitely darker but duller chestnut.

Rare and difficult to find among the top branches of the taller trees in Midmountain forest. The bird often kept on calling aloud and it was no problem to locate the perching tree, but it often perched on the large branches so that from below it was easily hidden from view.

Surniculus lugubris mindorensis new subspecies

Type.—Peabody Museum of Natural History at Yale University, No. 34,685, from Alcate, Victoria (altitude 200 feet), Mindoro Island, Philippine Islands. Adult male collected March 31, 1954, by D. S. Rabor.

Diagnosis.—Like *S. l. chalybaeus* Salomonsen of Luzon Island, but differs in having definitely longer wing and tail and being more glossy on head, neck and mantle, and the entire underparts.

Measurements.—Wing ♂ (3) 132-137 (av. 134.6), ♀ 134; tail ♂ (3) 120-126.5 (av. 123.5), ♀ 120; culmen from base ♂ (2) 26, 26, ♀ 27; tarsus ♂ (3) 16.5, 16.5, 16.5, ♀ 16.5 mm.; tail index 89.5-92.3; weight ♂ (3) 40-42 (av. 41.3), ♀ 47 gr.

Salomonsen (1953:235-238) gives the measurements and the tail indices of various Philippine races of *S. lugubris* as follows:

Race	Wing Length	Tail Length	Tail Index
<i>S. l. minimus</i> (8)	118-125	112-117	93.6-94.9
<i>S. l. velutinus</i> (15)	114-121	98-108	83.1-90.0
<i>S. l. suluensis</i> (4)	123-126	115-121	93.5-96.0
<i>S. l. chalybaeus</i> (4)	122-127	109-112	88.5-94.8
<i>S. l. mindorensis</i>	132-137	120-126.5	89.5-92.3

The figures after the names show the number of specimens examined. For comparison, we added the figures for the new subspecies at the end of the list.

Color of unfeathered parts.—Iris dark brown; bill black; legs and feet lead gray; nails dark brown.

Range.—Mindoro Island, Philippine Islands.

Remarks.—The following races have been described for the species in the Philippines:

Surniculus lugubris minimus Baker; Palawan.

Surniculus lugubris velutinus Sharpe; Basilan and Mindoro.

Surniculus lugubris chalybaeus Salomonsen; Luzon.

Surniculus lugubris suluensis Salomonsen; Tawi-Tawi, Sulu Archipelago.
Surniculus lugubris mindorensis Ripley and Rabor; Mindoro.

Field notes.—The species was not rare and its very characteristic call was frequently heard from some tree of the first or second storey, in Dipterocarp forest, and in remnant patches in partly cleared areas. The bird often perched motionless on some branch staying that way for long periods, from time to time uttering its call. To a casual observer it could easily be mistaken for the Drongo, *Dicrurus balicassius balicassius* which was also found in the same habitat type.

The single female in the present series had a ripe egg in the oviduct that was broken. Apparently May is part of the breeding season of the species on Mindoro Island.

Eudynamys scolopacea mindanensis (Linnaeus)

Lake Naujan, 25 feet; 1 ♂, 1 ♀ mm.; May 24-27.

Alcate, Victoria, 200 feet; 2 ♂; April 3-11.

Wing ♂ (3) 195-206 (av. 201); culmen from base ♂ (3) 33.5-35 (av. 34.5 mm.); weight ♂ (3) 189-203 (av. 194.3 gr.).

Mindoro birds do not differ from Mindanao specimens.

Not common and when present in the vicinity, was difficult to see among the dense foliage and tangles of the tops of tall trees and vines, at the center of which the bird often stayed. The very loud notes, uttered day and night, carried far, and locating the perching tree was not a problem. However, locating the bird among the dense foliage and tangles of vines was difficult. All the while the bird would continue calling. The only way was to remain concealed and silent and wait for the bird to flush to another nearby tree.

Its call was a very loud "Kwa-hao, kwa-hao," etc. repeated many times.

Centropus steerei Bourns and Worcester

San Luis, Naujan, 100 feet; 1 ♀; May 18.

Alcate, Victoria, 200 feet; 4 ♂, 3 ♀; March 31-April 7.

Barawan Peak, Mount Halcon, 2500 feet; 1 ♂; April 24.

Wing ♂ (5) 152-165 (av. 156.6), ♀ (4) 160-166 (av. 161.7); culmen from base ♂ (5) 40.5-43.5 (av. 41.7), ♀ (4) 43.5-44.5 (av. 44.1 mm.); weight ♂ (4) 175-200 (av. 183.7), ♀ (4) 190-238 (av. 214 gr.).

Fairly common in the lowland Dipterocarp forest although occasionally it ranged as high as 2500 feet up in the mountains in transition Dipterocarp-Midmountain forest. This species was never observed in tall grass.

This species occupies the niche that *C. melanops* occupies in the islands where the latter is found.

Centropus viridis mindorensis (Steere)

Makatok, Victoria, 50 feet; 1 ♀ imm.; April 10.

San Luis, Naujan, 100 feet; 6 ♂, 1 ♂ imm., 3 ♀; April 15-May 18.

Alcate, Victoria, 200 feet; 3 ♂, 2 ♀, 1 ♂ imm.; March 30-April 7.

Wing ♂ (9) 143-158 (av. 153.7), ♀ (5) 163-175 (av. 171.8); culmen from base ♂ (9) 28-30 (av. 29.2), ♀ (5) 31-32.5 (av. 31.8 mm.); weight ♂ (6) 104-140 (av. 123.3), ♀ (2) 150, 165 gr.

This melanistic race of *C. viridis* occupies the equivalent niche on Min-

doro Island that *C. viridis viridis* occupies in the islands where it is found.

The female has definitely larger dimensions than the male in all aspects, including wing and tail length, size of culmen, tarsal length, and weight.

Some specimens show faint indications of rufous on the wing coverts. One female, Y.P.M. collection, No. 34,655, has some of the wing coverts very deep rufous, showing the close relationship between this race and *viridis*.

Found frequently in dense second growth, in tall grass especially along the river banks and even in nearby cleared areas with dense patches of second growth beginning to develop. Occasionally it was found in dense growth at the edge of the forest where a clearing had been prepared. It was not observed in the highlands.

Centropus toulou javanensis (Dumont)

Lake Naujan, 25 feet; 1 ♀; May 24.

San Luis, Naujan, 100 feet; 1 ♂; April 15.

Wing ♂ 134, ♀ 164; culmen from base ♂ 25, ♀ 29 mm.; weight ♀ 140 gr.

The Mindoro specimens are similar to a specimen from Negros Island.

Not as common as *C. v. mindorensis*. The two present specimens were collected in dense, tall grass growing in open areas, and several other birds were seen perching on the top of tall grass in the wide grassland areas along the banks of the Magasawang-Tubig River.

FAMILY STRIGIDAE, OWLS

Ninox scutulata randi Deignan

San Luis, Naujan, 100 feet; 1 ♂, 1 ♀; April 18.

Alcate, Victoria, 200 feet; 4 ♂; 1 ♀; April 2-6.

Wing ♂ (5) 230-242 (av. 234.2), ♀ (2) 218, 225; culmen from base ♂ (5) 26.5-28 (av. 27.1), ♀ (2) 26, 27.5 mm.; weight ♂ (4) 200-220 (av. 211.2), ♀ 220 gr.

This Philippine resident race of the hawk owl was frequently mistaken for *N. s. japonica* and records of its collection on several islands were mistaken for those of *japonica*. Whitehead's record of *N. s. japonica* could have been actually either this race or *japonica*.

The Mindoro specimen does not differ from typical *N. s. randi* specimens from Negros Island.

The most distinguishing features of this race that differentiate it from *japonica* are:

- a. the definitely larger bill
- b. the much darker chocolate brown and deeper rufous on both the upperparts and the underparts
- c. the much larger feet.

It is, of course, possible for both the resident *randi* and migrant *japonica* to be found on Mindoro Island, as has been the case on Siquijor, Negros, and Mindanao.

In the Ripley collection, there is a young bird from Fuga Island, north

of Luzon, collected by Mr. Graciano Castaneda on 28 June, 1936. It is definitely a resident bird judging from its age and plumage. Delacour and Mayr (1946:118) write that "It is possible that the species nests on the small islands north of Luzon (Calayan, Fuga, Camiguin North)." Compared with *randi* the Fuga Island bird is much paler on the upper parts, in this respect being very close to *japonica*. A bird of about similar age collected on Mindanao Island has the upper parts definitely much darker, and even at this early age, already shows the dark brown upper parts, similar to that of the adult of the resident *randi*.

Deignan (1951:41) comments that "A form of the species is resident on some of the small islands between Formosa and Luzon. If distinct from *florensis*, they must perhaps be called *Ninox scutulata totogo* Momiyama (Amoeba, vol. 3, nos. 1-2, p. 68: Botel Tobago). . . ." In the Peabody Museum collection is the type specimen of *N. s. yamashinae* Ripley which Mishima (1956:33-34) has synonymized with *N. s. totogo*. This bird is definitely much darker than the young bird from Fuga Island, and is even darker than *randi*.

The problem still remains that there is a pale resident race of *N. scutulata* on Fuga and the nearby islands north of Luzon, which closely resembles *japonica* but is not this race. In addition to this unknown resident race on these small islands, *japonica* also occurs there as a winter visitor.

Prefers to stay among the dense foliage of the lowest storey trees of the Dipterocarp forest. The migrant *japonica* was frequently taken in dense second growth and trees growing along the banks of dry creeks, as was the case on Negros and Siquijor. More rarely it was taken also within heavy Dipterocarp forest.

Ninox philippensis mindorensis Ogilvie-Grant

Alcate, Victoria, 200 feet; 3 ♂; 3 ♀; March 30-April 7.

Wing ♂ (3) 162-175 (av. 168), ♀ (3) 161-165 (av. 163.3); culmen from base ♂ (3) 21-23.5 (av. 22.5), ♀ (3) 22-23 (av. 22.3 mm.; weight ♂ (3) 108-118 (av. 112.6), ♀ (2) 100, 105 gr.

The Mindoro race of the boobook owl is easily distinguishable from the races on the other islands by the well developed spotting on the head, neck, and upperparts which, as a whole, gives these parts a distinctly barred look. The forms from the Visayan Islands (except Cebu, Sibuyan, Tablas) have the upperparts plain and the underparts distinctly striped. The races from the southern Philippines in general have well developed spotting on head and neck and color and pattern of upperparts that closely resemble those of *mindorensis*, but have underparts that resemble those of the races from the Visayan Islands, showing a condition roughly intermediate between those of the birds from these two regions.

Fairly common and their notes were frequently heard at night, coming especially from the forest edge and from the newly cleared areas with some forest trees still left standing. The species was frequently flushed from the darker portions of the original forest.

FAMILY *CAPRIMULGIDAE*, FROGMOUTHS, GOATSUCKERS*Eurostopodus macrotis macrotis* (Vigors)

San Luis, Naujan, 100 feet; 3 ♂; April 15-May 18.

Wing ♂ (3) 258-265 (av. 262); culmen from frontal feathering ♂ (3) 10, 10, 10 mm.; weight ♂ (3) 125-140 (av. 130.6 gr.).

Mindoro specimens compared with Mindanao and Luzon birds do not differ appreciably in plumage coloration and measurements.

Hachisuka (1935:112-114) recognized the Mindanao population, named *mindanensis* (Tweeddale) as a distinct race differing from *macrotis* of Luzon, Mindoro, and Basilan, in smaller dimensions, darker top of head, and in general, in being a more blackish form. The birds of the present series from Luzon (1), Mindoro (3), and Mindanao (7), do not support Hachisuka's criteria for Tweeddale's race.

Not infrequently flushed from the forest floor of the Dipterocarp forest in the lowlands and the rolling country. At sunset as many as half a dozen birds habitually passed and fed for about five minutes over the wide clearing where we had our main camp in San Luis, Naujan. The birds would fly back and forth and hawk insects, calling all the while. We could easily trace their course by their loud whistling notes.

Caprimulgus macrurus manillensis Walden

Ilong Peak, Mount Halcon, 4000 feet; 1 ♀, 2 downy nestlings; May 13.

Wing ♀ 177; culmen from frontal feathering ♀ 12 mm.; weight ♀ 53 gr.

The Mindoro bird does not differ appreciably from Luzon and Negros specimens.

The bird was taken from its nest of leaves on the forest floor, beside a trail that followed the edge of a clearing in original Midmountain forest. Two downy young were taken with it.

The day before, the same bird flushed when approached closely. A careful inspection of the place resulted in the finding of the nest and the young. The next day it was taken by a snare set for it on the nest.

Both of the downy young are covered with buff down and the wing feathers are still in the sheath. In one, the ends have started to come out.

Rare in the highlands, but more often encountered in the lowland forests where they were not infrequently flushed from the forest floor.

FAMILY *APODIDAE*, SWIFTSSUBFAMILY *Apodinae*, SWIFTS*Collocalia vestita mearnsi* Oberholser

Ilong Peak, Mount Halcon, 5350 feet; 1 ♀, 1 ♀ imm.; May 3.

Wing ♀ 114; tail ♀ 146; tail furcation 4; tarsus ♀ 8.5 mm.; tail index 40.3; weight ♀ 9 gr.

The single adult female specimen from Mindoro is similar to two adult males from Mindanao of this race. The feathered tarsi in all three specimens are very evident.

The present form and *C. inexpectata amelis* are indistinguishable in the field. Their plumage colors and body measurements are very close. However, when examined in detail the feathered tarsi and the brownish gray chin and throat of *C. v. mearnsi* differentiate it from *C. i. amelis* with its unfeathered tarsi and dark brown chin and throat.

We have found both forms breeding inside caverns in the highlands and making the same kind of nest which are "black nests" made mainly of moss and a sparse mixture of plant fibers, glued together with hardened saliva.

Various workers make use of the feathering on the tarsus to distinguish *C. v. mearnsi* from *C. i. amelis*, the latter form supposedly having unfeathered tarsi. However, in a series of 9 males and 9 females from the Miatan Caves in Zamboanga Peninsula, Mindanao Island, one male and three females showed various degrees of feathering on the tarsi, but accompanied by the other characters, including the dark brown chin and throat of *C. i. amelis*. It appears as if the tarsal feathering is a variable character and not really to be relied upon for distinguishing *C. v. mearnsi* and *C. i. amelis*.

The Mindoro specimens were taken inside a deep dark crevice at the foot of a cliff near the summit of Ilong Peak. Several birds flew in and out of this crevice. Three nests were found attached to the walls in a very dark place, but only one was fresh at the time. It was placed deepest inside the crevice, resting on a narrow ledge, with one egg inside.

The nest was similar to the nests of *C. i. amelis* that we collected inside the Miatan Caves in Mindanao, and was composed of moss and a mixture of plant fibers, all compactly glued together by the hardened saliva of the bird. The thickest layer of hardened saliva was at the side that attached the nest to the rock wall. The inside lining was made of feathers which appeared to be those of the birds themselves. The single egg was a large, rather blunt oval with the smaller end very slightly more pointed, and measured 20.5 x 14 mm. The shell was white and of fine texture, with practically no gloss.

The other Philippine form of *C. inexpectata* is *germani* which produces the edible nest of commerce. It seems odd to place *amelis* and *germani* together as races of the same species, considering that the former does not produce a nest that is in any way similar to that of the latter.

Collocalia esculenta bagobo Hachisuka

Ilong Peak, Mount Halcon, 5350 feet; 3 ♂, 3 ♀; May 12.

Wing ♂ (3) 102.5-104 (av. 103.5), ♀ (3) 101-104 (av. 102.6); tail ♂ (3) 37-38.5 (av. 37.6), ♀ (3) 38-40.5 (av. 39); tail furcation 1.5-2.5 (av. 2); culmen from frontal feathering ♂ (3) 4, 4, 4, ♀ (3) 4, 4, 4 mm.; tail index 36-39.3; weight ♂ (3) 4, 4, 4, ♀ (3) 4, 5, 5 gr.

The Mindoro specimens show intermediate characters between those of *bagobo* of Mindanao and *isonota* of the northern Luzon highlands, but with the tendency to be closer to *bagobo*; thus we are placing our series in the latter form.

In the intensity of the blue green color of the upper parts and the brown of the chin and throat, *isonota* is lightest and the Mindoro specimens come closest to *bagobo*, although not as intense.

In the intensity of the brown color of the feathers on the breast and abdomen, the Mindoro specimens come closest to *bagobo*.

In the extent of the white on the underparts, especially on the abdomen, *isonota* has the most and *bagobo* the least. The Mindoro specimens come closest to *bagobo*.

In tail furcation, the Mindoro specimens have the least (1.5-2.5 mm.), while *isonota* (2.5-4 mm.) and *bagobo* (2.5-4.5 mm.) are about the same.

In tail index, the Mindoro specimens (36-39.3) come closest to *isonota* (35.3-38.8), and *bagobo* (39.1-42) is definitely higher than either.

The birds were nesting in a shallow cavern that was really more of a cavity than a cave, under a huge overhanging rock, at the base of the summit of Ilong Peak. A mist net that was strung across the entrance to the cavern secured the present series of specimens.

On the walls of the cavern, in the darker parts, there were several old nests which were no different from the nests of *marginata* as described by McGregor (1909: 356) and by Rabor (1954: 53-55).

SUBFAMILY *Hemiprocniinae*, CRESTED OR TREE SWIFTS

Hemiprocne comata major (Hartert)

San Luis, Naujan, 100 feet; 1 ♂; April 14.

Alcate, Victoria, 200 feet; 2 ♂; April 2.

Wing ♂ (3) 137-139 (av. 138.3); exposed culmen ♂ (3) 5.5-6.5 (av. 6 mm.); weight ♂ (3) 18-20 (av. 19.3 gr.).

The Mindoro specimens resemble more closely the birds from Luzon. Negros birds (2 ♂, 5 ♀) have the tendency to have, on the average, slightly larger wing and tail, and slightly lighter metallic blue crown.

Based on size, the Mindanao and Basilan birds, *H. c. comata*, have the smallest measurements, followed by those from Mindanao and Luzon, and the largest are those from Negros, *H. c. major*.

The intensity of the chestnut on the ear coverts in the males varies very much within each of the different populations from the different islands.

Not common, this species showed preference for clearings made inside original forest, where the birds were occasionally encountered in pairs. They were observed perching on bare branches of the second storey or first storey trees that were left standing inside the clearings located at the forest edge.

The birds sallied forth from these high bare branches and caught insects on the wing, after which they frequently went back to their perches. Unless disturbed a great deal, a pair of these birds would be found on the same perch day after day.

Its twittering call was very characteristic.

FAMILY *ALCEDINIDAE*, KINGFISHERS

Alcedo atthis bengalensis Gmelin

Alcate, Victoria, 200 feet; 2 ♂; April 2-3.

Wing ♂ (2) 72, 72; culmen from base ♂ (2) 42.5, 44 mm.; weight ♂ (2) 30, 30 gr.

Very common along the rivers, creeks, sea shore, and around Lake Naujan.

It is strange that until now there has not been any authentic record of breeding of this species in the Philippines. However, it is probable that this species breeds in the Philippines, on the different islands where it is recorded. Delacour and Mayr (1946: 137) are of the opinion that some of the birds of this race are resident in the Philippines but write that, "Most of the Philippine birds seem to be winter visitors."

Ceyx erithacus vargasi Manuel

San Luis, Naujan, 100 feet; 1 ♀; April 14.

Wing ♀ 57 mm.; culmen (broken); weight ♀ 19 gr.

The Mindoro specimen has very few black feathers on the forehead, representing the dark spot on this part, that is characteristic of *C. erithacus*. A juvenile female, *C. e. erithacus* Upper Assam, India, in the Y.P.M. collection has this dark spot on the forehead already well developed.

The very close resemblance in coloration between *C. erithacus* and *C. rufidorsus* makes them virtual sibling species.

Delacour and Mayr (1946: 137) comment that the habits of both *C. r. rufidorsus* and *C. erithacus* are like those of *C. lepidus* in being birds of the forest. The Philippine form, *C. lepidus margarethae*, has always been observed in the forest, preferably not far from streams. Occasionally, it has been taken in second growth close to streams, but not very far from patches of original forest. We have collected both the present specimen and *C. r. rufidorsus* deep inside original forest but not near any stream.

Based on the criteria given by Voous (1951: 184) for potential hybrids, it is conceivable that this specimen might be a hybrid from the following characters:

a. practically no black frontal mark except for the lightest vestige represented by very few blackish tips to the rufous feathers of the forehead

b. presence of rufous feathers and spots of rufous on the larger upper wing coverts, and on the mantle and back.

However, lacking comparable material, we prefer for the present to identify it as a specimen of *vargasi*.

This species is at present confined only to Mindoro in the Philippines.

Ceyx rufidorsus rufidorsus STRICKLAND

San Luis, Naujan, 100 feet; 1 ♂ April 15.

Wing ♂ 72; culmen from base ♂ 36.5 mm.; weight ♂ 14 gr.

The single Mindoro specimen possesses the characters of pure *rufidorsus* without the black frontal mark, blue earpatch or black feathers on the upperparts, which, according to Ripley (1942: 58-59) and Voous (1951: 184), are hybrid characters of *rufidorsus-erithacus* progeny.

A female specimen from Borneo, in the Y.P.M. collection, has a large

black frontal mark and a small blue earpatch and shows these hybrid *rufidorsus-erithacus* characters. Other characters are similar to those of the Mindoro specimen of *rufidorsus*.

Very rare and preferred the interior of original Dipterocarp forest.

Pelargopsis capensis gouldi Sharpe

Lake Naujan, 25 feet; 4 ♂, 2 ♀; May 22-27.

Alcate, Victoria, 200 feet; 2 ♀; April 2-5.

Wing ♂ (4) 143-148 (av. 145.5), ♀ (4) 152.5-155 (av. 154.1); culmen from base ♂ (4) 83.5-87 (av. 85.2), ♀ (4) 83-91 (av. 86.8 mm.); weight ♂ (4) 143-180 (av. 154.5), ♀ (3) 182-225 (av. 205.6 gr.).

Some specimens have the tips of their bills well worn appearing rounded and blunt, instead of pointed, the part lost sometimes measuring from 5 to 7 mm. in length.

Very common along the large rivers such as the Magasawang-Tubig, Baco, and Lumangbayan-Butas rivers. It was also common around Lake Naujan.

It perched frequently on branches of trees that grew on the edge of the lake or river, selecting those branches that overhung the water directly. From here it plunged on fish below.

The species was never seen far from water.

Halcyon smyrnensis gularis (Kuhl)

Lake, Naujan, 25 feet; 1 ♀; May 27, 1954.

San Luis, Naujan, 100 feet; 1 ♂, 1 ♀; April 15-May 17.

Alcate, Victoria, 200 feet; 4 ♂, 4 ♀; March 28-April 8.

Wing ♂ (4) 125-131 (av. 127.5), ♀ (6) 126-129 (av. 126.6); culmen from base ♂ (4) 64-66 (av. 65), ♀ (6) 63.5-65.5 (av. 64.5 mm.); weight ♂ (4) 75-85 (av. 78.7), ♀ (3) 79-85 (av. 81.3 gr.).

Compared with specimens from Luzon, Negros, and Mindanao, the Mindoro birds do not differ appreciably.

Rather common and was encountered even in the well cultivated countryside, sometimes even rather far from water. It showed preference for the foothills in areas of mixed clearings and forest, both original and second growth. However, the bird was never encountered inside original forest, although it was met with often in the outskirts, preferably in clearings, near a creek or river.

FAMILY *MEROPIDAE*, BEE-EATERS

Merops viridis americanus P. L. S. Müller

Alcate, Victoria, 200 feet; 2 ♂, 1 ♀; April 6-8.

Wing ♂ (2) 116, 121, ♀ 119; culmen from base ♂ (2) 38.5, 43.5; weight ♂ (2) 30, 34, ♀ 30 gr.

The Mindoro birds do not differ appreciably when compared with specimens from Negros and Mindanao.

Not common and local in distribution. These Bee-eaters preferred wide open fields with tall grass or with small second growth patches where they

perched on trees occasionally, as they wandered about in search of food. They were even found in well cultivated fields with some tree growth along the edges. Occasionally, they were encountered in the clearings made in lowland forest, especially when a few trees were still left standing.

The female had enlarged gonads in April, showing that this month must be part of the breeding season.

FAMILY *CORACIIDAE*, ROLLERS

Eurystomus orientalis cyanicollis Vieillot

Lake Naujan, 25 feet; 1 ♀; May 22.

San Luis, Naujan, 100 feet; 2 ♀; April 18-May 18.

Alcate, Victoria, 200 feet; 4 ♂, 4 ♀; March 29-April 11.

Wing ♂ (4) 186-190 (av. 187.8), ♀ (7) 175-199 (av. 190); culmen from base ♂ (4) 33-36.5 (av. 35), ♀ (7) 31.5-36 (av. 33.8 mm.); weight ♂ (1) 130, ♀ (2) 100, 139.5 gr.

The Mindoro specimens do not differ in plumage color from Luzon, Mindanao, Samar, and Negros birds, but average slightly larger, especially in wing measurement than Mindanao and Samar birds. Mindoro birds are closer to Luzon and Negros birds in the larger wing dimension.

Common, encountered from sea level up to about 3500 feet, at the edges of or in clearings made on the mountainsides. The species preferred the open where it often selected a bare branch of a tall tree at the edge of the forest or some tree left standing in a clearing. From a perch, a bird or a pair would catch insects on the wing and in the process would show their aerial acrobatic abilities.

One female had enlarged gonads in April.

FAMILY *BUCEROTIDAE*, HORNBILL

Penelopides panini mindorensis Steere

San Luis, Naujan, 100 feet; 2 ♂, 1 ♀; April 26-May 2.

Alcate, Victoria, 200 feet; 2 ♂, 1 ♀; April 3-9.

Wing ♂ (4) 242-257 (av. 250.2), ♀ (2) 224, 237; culmen from base ♂ (4) 100-109 (av. 105.7), ♀ (2) 84.5, 93.5 mm.; weight ♂ (2) 425, 500 gr.

The Mindoro race of this Philippine endemic genus is very interesting. In this particular form the two sexes are closely similar in plumage except for the blackish forehead of the female, thus differing from the other forms on the various islands, which are distinctly sexually dimorphic.

Fairly common, and was most likely encountered inside original forest at the edges of clearings and even in second growth. Occasionally, it was met with in fruiting trees in well cultivated areas with patches of original forests nearby. It was seen in the highlands up to about 3500 feet altitude, although rarely.

One female had enlarged gonads in May.

FAMILY PICIDAE, WOODPECKERS

Dryocopus javensis mindorensis (Steere)

San Luis, Naujan, 100 feet; 1 ♂; May 16.

Alcate, Victoria, 200 feet; 1 ♂, 2 ♀; March 31-April 8.

Wing ♂ (2) 208, 208, ♀ (1) 200; culmen from base ♂ (2) 50.5, 53.5, ♀ (1) 50 mm.; weight ♂ (2) 207, 239, ♀ 197 gr.

The Mindoro form is a distinct one, coming closest to *D. j. philippinensis* from Negros Island, except that *philippinensis* has slightly broader red malar stripes, whitish edges on the terminal portion of the upper mandible, and whitish anterior half of the lower mandible, instead of the uniform blackish for both mandibles in *mindorensis*.

Not rare inside the Dipterocarp forest of the lowlands and rolling country and occasionally extended its range up to about 2500 feet altitude, in the transition Dipterocarp-Midmountain forest. Occurred also in the clearings that were close to original forest.

Dendrocopos maculatus validirostris (Blyth)

Alcate, Victoria, 200 feet; 2 ♂, 1 ♀; March 29-April 3.

Barawan Peak, Mount Halcon, 2700 feet; 1 ♂; April 23.

Ilong Peak, Mount Halcon, 3000 feet; 1 ♀; May 9.

Wing ♂ (3) 81.5-83 (av. 82.1), ♀ (2) 84.5, 86; culmen from base ♂ (3) 13-13.5 (av. 13.3), ♀ (2) 14, 14 mm.; weight ♂ (2) 20, 20, ♀ (1) 20 gr.

Not common. Encountered in clearings and inside original forest, especially where some dead trees were left standing. It was also found in Midmountain forest up to about 3500 feet altitude.

This woodpecker uttered very characteristic notes that unfaillingly identified the species the next time it was heard in the forest.

FAMILY PITTIDAE, PITTAS

Pitta erythrogaster erythrogaster Temminck

Alcate, Victoria, 200 feet; 2 ♂; April 6-8.

Wing ♂ (2) 97.5, 98; culmen from base ♂ (1) 23 mm.; weight ♂ (2) 48, 55 gr.

The Mindoro specimens are similar to birds from Negros, Mindanao, and Bongao Islands in the Y.P.M. collection.

Rare and difficult to find in its natural habitat on the forest floor of Dipterocarp forest, preferably in the darker portions. A bird would be seen at one place but its ability to hop long distances would enable it to escape fast among the trees.

FAMILY HIRUNDINIDAE, SWALLOWS

Hirundo tahitica javanica, Sparrman

Alcate, Victoria, 200 feet; 1 ♂ 1 sex?; April 7.

Wing ♂ 107.5; tail, shortest rectrix 37.5, longest rectrix 49 mm.; weight ♂ 10 gr.

Very widely distributed in the Philippines, being found in all the larger islands.

Common and was frequently seen in flight over the wide grassland areas along both sides of the Magasawang-Tubig River. In the same biotope, the migrant species, *Hirundo rustica gutturalis*, was also found. Occasionally, several birds of the resident form were seen perching on some bare branches of trees on the bank of the river. In other parts of Mindoro these birds were sometimes seen perching on telegraph wires along the roads.

Hirundo rustica gutturalis

Makatok, Victoria, 50 feet; 1 ♀; April 8.

Alcate, Victoria, 200 feet; 1 ♀; April 10.

Wing ♀ (2) 106, 108; culmen from base ♀ (2) 12, 13 mm.; weight ♀ (2) 10, 10 gr.

This migrant species was very common from the sea coast up to the mountain localities at about 3000 feet altitude.

Both specimens that were collected had the wing and tail in molt.

FAMILY *LANIIDAE*, SHRIKES

Lanius cristatus lucionensis Linnaeus

Makatok, Victoria, 50 feet; 1 ♀; April 10.

San Luis, Naujan, 100 feet; 1 ♀; April 12.

Alcate, Victoria, 200 feet; 2 ♂; April 3-6.

Wing ♂ (2) 85, 87, ♀ (3) 85.5-87 (av. 86.1); culmen from base ♂ (2) 20, 21, ♀ 20, 20, 20 mm.; weight ♀ (2) 20, 38 gr.

This bird is the most common winter migrant in the Philippines, and is very widespread among all the islands, except perhaps the smallest ones. Found from sea level up to about 5000 feet altitude in the highlands, it frequents cultivated areas including farms and gardens (even in cities and towns), second growth, parang vegetation, forest clearings and edges of original forests.

The birds begin to arrive in the Philippines usually during the second week of September. Many birds are in the mottled plumage of the young birds of the last breeding season. From an examination of 20 birds (9 ♂, 11 ♀) in the Y.P.M. collection, we have noticed that it is possible that these young birds arrive in the Philippines in their first non-nuptial plumage with a mixture of juvenal feathers. The juvenal feathers on the sides, flanks, and breast are molted mainly in September, October and November, but some may be retained as late as February, although alternatively they may almost be all lost as early as the first part of September. The post-juvenal molt of the remiges and rectrices takes place in October to early April. It is possible that the young birds of the year shortly before returning to their breeding grounds in eastern Siberia, Korea, and Manchuria in April and May, have already completed their prenuptial molt and are in their first nuptial plumage, although some of these birds of the year may still have a part of the first non-nuptial plumage mixed with the nuptial plumage at that time.

FAMILY *ORIOLIDAE*, ORIOLES*Oriolus chinensis chinensis* Linnaeus

Lake Naujan, 25 feet; 1 ♂, 3 ♀, 1 ♀ juv.; May 21-24.

San Luis, Naujan, 100 feet; 2 ♂, 3 ♀, 1 ♀ imm.; May 16-17.

Alcate, Victoria, 200 feet; 2 ♂, 1 ♂ imm., 6 ♀, 1 ♀ imm.; March 28-April 11.

Wing ♂ (5) 157-162 (av. 159.2), ♀ (12) 150-161.5 (av. 155.1); culmen from base ♂ (5) 38-41 (av. 39.6), ♀ (12) 37.5-40 (av. 38.5 mm.); weight ♂ (4) 90-115 (av. 101), ♀ (6) 89-109 (av. 92.3 gr.).

The different populations on the different islands show a great deal of variability in both plumage colorations and measurements. These measurements include both those of the usual parts measured, and those of certain characters such as:

- a. the extent or depth of the yellow forehead patch
- b. the width of the yellow tip of the central rectrices
- c. the extent of yellow on the outer web of the outer rectrices as measured along the shaft.

In addition, important color characters which have been used in attempting to clarify the systematics of this species in the Philippines, include:

- a. color of the mantle
- b. occurrence or non-occurrence of olive green especially on the central rectrices
- c. presence or absence of yellow tips to the primary coverts and the inner secondaries.

Meinertzhagen (1923: 72), Gilliard (1949b: 155-158), and Rand (1951a: 591-595) made use of all or some of the above-mentioned characters in their studies on the Philippine races of this species.

Our series of this species includes 30 adults, 11 sub-adults, and immatures, and one juvenile, coming from the following localities: Mindoro (5 ♂, 12 ♀, 3 ♂ ♀ imm., 1 ♀ juv.), Mindanao (6 ♂, 1 ♀, 2 ♂ ♀ sub-adults, 1 ♀ imm.), Negros (3 ♂, 2 ♂ ♀ imm.), Cebu (1 ♂, 1 ♀), and Luzon (3 ♂ imm.). Based on the above series and on the experience of many years of familiarity with this species in the Philippines, including examinations of the large collection of this species in Silliman University, we realize its great variability from island to island and within each of the different populations on the numerous islands. We also realize that no one collection or combination of collections in any institution can really show all the variations in colorations and measurements in this species. We are inclined to be conservative in accepting the various Philippine races of this species and agree with the treatment of Meinertzhagen and Rand in recognizing only three races—*chinensis*, *palawanensis*, and *suluensis*.

We have the following observations on this species in the Philippines.

- a. Adult males and females are bright yellow and sometimes with a tinge of golden or orange, especially on the mantle of the males, but the female, even as an adult, has always the slightly dusky olive to olive green wash on the mantle. The total absence of any trace of this dusky olive or

olive green wash on the mantle of a specimen shows that the bird is definitely an adult male, regardless of whether it has been mis-sexed as a female.

b. Both the immature and sub-adult male and female birds show this wash of dusky olive or olive green on the mantle, and the younger the specimen the more intense is this wash on the mantle.

c. The presence of green or olive green on the tail feathers, especially on the central rectrices, depends on the age of the bird. In young birds, this green color covers a large part of the central rectrices, involving both webs. In the adult birds this green color is often restricted to very faint edgings on a very small extent of the inner web, close to the base of the feather shaft, on the way to total disappearance.

d. The character of yellow tips to the inner secondaries is very variable, and varies a great deal in its presence or absence, and in its extent, even within a particular population on a certain island. In the male they are often larger and more prominent. In some male specimens these yellow tips are very well developed, while in others they are present as mere narrow edgings, and still in others, they are totally absent. Also, these yellow tips to the inner secondaries easily disappear with wear.

In the female these yellow tips are narrow and often reduced to mere edgings, or may even disappear completely.

They cannot be due to age because several young birds of both sexes do not develop them at all.

e. The extent of the yellow color on the tips of the central rectrices is another very variable character and these yellow tips easily disappear with wear.

f. The extent of the yellow color on the outer web of the outermost rectrices is also a very variable character.

g. The depth or extent of the yellow patch on the forehead is another character which varies very much within a given population. In the different islands of the Central Philippines group, especially, this variability is very well demonstrated. This results in difficulties in exactly assigning particular specimens to the particular race supposedly occurring on a certain island. We agree with Rand (1951a:595) that "... birds from the central Philippine Islands need to have their variations studied by series."

Very common in the second growth and well cultivated areas in the lowlands and rolling country. Frequently heard and seen in coconut groves. Not met with in original forest, although occasional individuals were seen at the edges close to cultivated areas.

Several males had enlarged gonads in March, April, and May. One female had enlarged gonads in March, and another one had an egg, complete with hard shell, in the oviduct, when it was secured in April.

FAMILY *DICRURIDAE*, DRONGOS*Dicrurus baliassius baliassius* (Linnaeus)

Lake Naujan, 25 feet; 1 ♀; May 26.

San Luis, Naujan, 100 feet; 5 ♂, 2 ♂ imm., 8 ♀, 1 ♀ imm.; April 18-May 20.

Alcate, Victoria, 200 feet; 7 ♂, 4 ♀; March 28-April 4.

Barawanan Peak, Mount Halcon, 2500 feet; 1 ♀; April 24.

Ilong Peak, Mount Halcon, 4000 feet; 1 ♂; May 10.

Weight ♂ (5) 65-83, ♀ (6) 65-90 gr.

Mindoro specimens are similar to Luzon birds.

Common in original and secondary forests and ranged normally from the lowlands and rolling country up to about 3000 feet altitude, although once it was encountered at about 4000 feet altitude in the highlands.

A very curious and inquisitive bird, often approaching people in the forest. Frequently, it acted as an "alarm" species, driving away accidentally other species from the neighborhood of the human intruder.

FAMILY *ARTAMIDAE*, SWALLOW-SHRIKES*Artamus leucorhynchus leucorhynchus* (Linnaeus)

San Luis, Naujan, 100 feet; 1 ♀; May 18.

Alcate, Victoria, 200 feet; 2 ♂, 1 ♀; March 28-April 4.

Wing ♂ (2) 129, 134, ♀ (2) 137, 137; culmen from base ♂ (2) 23.5, 24.5, ♀ (2) 24.5, 25.5 mm.; weight ♂ (1) 39, ♀ (2) 38, 43 gr.

Mindoro specimens are similar to birds from Luzon, Mindanao, and Negros.

Common in the lowlands and rolling country, in the cultivated areas, open fields and clearings where trees were left growing on the sides. A few birds were observed at about 1800 feet altitude in the cleared areas around the Mangyan settlements in Bugayan, Mount Halcon.

We consider the Swallow-shrike the most fearless of Philippine birds. It is not afraid to chase away from its home area, especially during the nesting time, birds much larger than itself, including hawks and crows. Even man is not feared sometimes, as proven by actual experience. A nesting pair swooped down on our heads as we crossed an old clearing in the foothills, where these birds made their home.

The species has been once observed at about 5000 feet altitude, in a large abandoned clearing on a ridge, on Mount Malindang, Zamboanga Peninsula, Mindanao Island, in the midst of virgin highland country.

One Mindoro specimen had wing molt in May. All the specimens from Luzon (5), Mindanao (10) and Negros (3) were molting on the sides in December to March.

FAMILY *STURNIDAE*, STARLINGS*Sarcops calvus calvus* (Linnaeus)

San Luis, Naujan, 100 feet; 1 ♂, 2 ♀; May 16-18.

Alcate, Victoria, 200 feet; 4 ♂, 3 ♀; March 28-April 8.

Wing ♂ (5) 130-141 (av. 134.8), ♀ (5) 131-138 (av. 132.7); culmen from base ♂ (5) 30-31.5 (av. 30.8), ♀ (5) 29-32 (av. 30.6 mm.); weight ♂ (4) 130-139 (av. 132.2), ♀ (3) 125-140 (av. 131.6 gr.).

Mindoro specimens do not differ appreciably in the color of the upper parts from Luzon birds. Three specimens (1 ♂, 1 ♀, 1?) from Aloneros, Tayabas (= Quezon Province now), southern Luzon, and two specimens from Bulacan, central Luzon, show in common with all the Mindoro birds, distinctly silvery gray sides and back of the neck, back, rump and upper tail-coverts, with the mantle dark gray. In a good series, this dark gray of the mantle stands out in contrast to the silvery gray of the remaining upper parts. Compared to a series (10 ♂, 4 ♀) of *S. c. lowii* from the Sulu Archipelago, the Luzon and Mindoro gray-backed birds differ distinctly in the dark gray mantle, whereas Sulu birds have the entire upper parts uniform silvery gray with no differentiation of the silvery gray of the mantle from the silvery gray of the remaining upper parts. In *S. c. melanonotus*, the same area that becomes dark gray in *calvus* becomes blackish gray, blackish or distinctly black. We agree with Rand (1951:59) that the color of the back is “. . . a conspicuously variable character. . . .”

The presence of occasional silvery-backed specimens among birds taken on islands which are definitely occupied by the black-backed race, and vice-versa, has been reported by several workers. Ogilvie-Grant (1906:470) writes that “In the islands of Marinduque, Guimaras, and Basilan, we find birds referable to both forms, some being typical grey-backed *S. calvus*, while others have the back distinctly blackish and approach the typical eastern form.” McGregor (1909:719) writes that “These intermediate birds occur in Basilan, Bohol, Marinduque, Tablas, and Cebu. In Luzon and Bohol, at least, both varieties and intermediate specimens have been found.” Rand (*loc. cit.*) comments that “. . . in southern Luzon both types are recorded; also occasional specimens of one type are found in the range mostly occupied by the other. . . .” Gilliard (1949a:3) writes about “a large, dark gray-backed population inhabiting Zamboanga and Basilan. . . .”

The Ripley collection has one male specimen from Basilan with the silvery gray upper parts and dark gray mantle of typical *calvus* and distinct enough from *lowii*. Its measurements compare very favorably with birds from Mindoro and Luzon. Even the almost total absence of the whitish filoplumes on the throat (a very variable character in the three races of *calvus*), is no different from some specimens from Mindoro and Luzon. Yet, Basilan Island is normally occupied by the black-backed race *melanonotus*.

There are several possibilities to explain the presence of *calvus*- or *lowii*-plumaged birds on islands normally occupied by *melanonotus*.

a. One very likely one is that caged birds of the races not normally found on the island may be brought in and accidentally released. If collected later, the birds would be different from the race expected normally on the island.

b. Caged birds of the races not normally found on the island may escape accidentally and hybridize with the local subspecies. The character for color of mantle includes silvery gray, dark gray, blackish gray, blackish, or black—and are perhaps represented by a series of three or more allelomorphic genes that behave normally, each one with complete dominance over the others. Just what is the order of dominance is not exactly known.

c. The migration of some birds of one race to islands occupied normally by birds of another race. For example, it is possible for birds from Samar (*melanonotus*) to fly over, accidentally or otherwise, to southern Luzon and hybridize in the natural state.

Thus, birds that look like typical *calvus* and typical *melanonotus* were observed in southern Luzon. Of these different possibilities, introduction as caged birds, with resulting escape and hybridization is the most likely explanation. *Sarcops calvus* is one of a few bird species that are frequently kept as cage birds and brought by migrating families from island to island, by sailboats or power boats. Other bird species that are commonly kept as caged birds include *Tanygnathus lucionensis*, *Loriculus philippensis*, *Kakatoe haematuropygia*, *Phapitreron leucotis*, and *Oriolus chinensis*.

We agree with Rand (*loc. cit.*) and Amadon (1956:36-37) in recognizing only three races of *S. calvus*:

1. *S. c. calvus* (Linnaeus).—Northern Philippines (Luzon, Polillo, Catanduanes, Mindoro) *S. c. mindorensis* Gilliard is a synonym.

2. *S. c. melanonotus* Ogilvie-Grant.—Central and southeastern Philippines, from Panay and Samar to Basilan and Mindanao. *S. c. similis* Salomonsen and *S. c. minor* Salomonsen are synonyms.

3. *S. c. lowii* Sharpe.—Sulu Archipelago.

Common, and was met with inside original Dipterocarp forest, in clearings and in second growth.

One female had an egg complete with the hard shell inside the oviduct, at the time it was collected in April.

FAMILY CORVIDAE, CROWS

Corvus enca pusillus Tweeddale

San Luis, Naujan, 100 feet; 1 ♂, 3 ♀; May 16-19.

Alcate, Victoria, 200 feet; 3 ♂, 1 ♀; 1 sex?; March 28-April 10.

Wing ♂ (4) 230-250 (av. 242.7), ♀ (4) 240-250 (av. 245); culmen from base ♂ (4) 53-55 (av. 54), ♀ (4) 50-52.5 (av. 51.8 mm.); weight ♂ (3) 250-285 (av. 265), ♀ (2) 260, 267.

C. e. pusillus from Mindoro average longer wing, tail, and tarsus than *samarensis* from Samar Island. The bills of both forms average the same length although that of *samarensis*, being definitely deeper, gives the impression of being shorter.

Not rare and was met with in virgin forest and at the edges of forest clearings. Its notes sounded like "wek-wek-wek," repeated from time to time contrasting distinctly with the "wak-wak-wak" of *C. macrorhynchus philippinus*, a species also seen in new clearings adjacent to and in original forest areas where *C. e. pusillus* normally was found.

Corvus macrorhynchus philippinus Bonaparte

Alcate, Victoria, 200 feet; 4 ♀; March 31-April 7.

Wing ♀ (4) 286-299 (av. 293); culmen from base ♀ (4) 57-62 (av. 59 mm.); weight ♀ (4) 360-430 (av. 401 gr.).

The Mindoro birds are similar to specimens from Luzon, Negros, and Mindanao.

Common in the cultivated areas, in secondary forests, and occasionally at the edges of original forests where clearings have just been made. The birds seemed to prefer the vicinity of human habitations and were seen very frequently in the trees that grew as hedges along the sides of cultivated fields, and in coconut groves. They were considered by the farm people as one of the worst enemies of their chickens, both as chicks and as eggs in the nest.

FAMILY CAMPEPHAGIDAE, CUCKOO-SHRIKES

Coracina striata mindorensis Steere

San Luis, Naujan, 100 feet; 1 ♂ 3 ♀; April 14-May 17.

Alcate, Victoria, 200 feet; 6 ♂, 4 ♀; March 28-April 8.

Barawan Peak, Mount Halcon, 2500 feet; 1 ♂, 1 ♀; April 20.

Wing ♂ (8) 157-170 (av. 164.1), ♀ (8) 159-168.5 (av. 162.4); culmen from base ♂ (8) 31.5-33 (av. 32.4), ♀ (8) 30.5-35.5 (av. 31.9 mm.; weight ♂ (5) 89-100 (av. 95.7), ♀ (6) 80-100 (av. 94.8 gr.).

The Mindoro race has the male and female in similar plumage, being uniform gray, except for the lores, nasal plumes, line around eye, jaw and chin, these parts being black in the male and gray in the female. In this respect, the Sulu race, *C. s. guillemardi*, resembles the Mindoro race. All the other races show different degrees of barring of black and white in both sexes.

In *C. s. striata* from Luzon, Lubang, and Polillo, the male very closely resembles in plumage the male of *C. s. mindorensis*, having the plumage all gray except for very faint white barring on the rump. The female of *striata* has the plumage dark gray with bold black and white barring on the rump and upper tail-coverts, abdomen, crissum, and under tail-coverts.

The plumage pattern of the male in *cebuensis* and *difficilis* resembles that of the male in *striata*, but the female differs from that of *striata* in having the rump gray, not barred.

The plumage pattern of the female of *C. s. striata* becomes the plumage pattern of the males of *panayensis* and *kochii*, and the females of these two races have the entire underparts barred black and white.

Types of differentiation in plumage pattern of the different races of *C. striata* in the Philippines can be listed in the following way: (see Plate 2)

A. Male and female possess the same or very similar uniform gray plumage, both on upper parts and underparts, with minor differences on the head region. This is the condition in *C. s. guillemardi* and *C. s. mindorensis*. We consider the uniform gray plumage in both sexes as the primitive type of plumage of the species.

B. The male continues to possess the uniform gray plumage on the upper parts and the underparts and beginnings of narrow and faint barring of white on the rump. The female still possesses the uniform gray on most of the upper parts, but on the underparts, the gray remains only from the chin down to the breast. The abdomen, crissum, and under tail-coverts have become barred black and white. This is the condition in *striata*, *cebuensis* and *difficilis*, a primarily heterogynic variation. It is worth noting that this variation does not necessarily occur only on "small" island populations *contra* Mayr (1942) who felt that feminization of male plumage seems to develop

only in well isolated and rather small populations. In this case there seems to be a general evolutionary tendency towards the assumption of a female-like plumage by the males, which asserts itself throughout the entire geographic range of the species, and only in isolated instances such as in the Philippines is it possible to trace this development back to the more primitive plumage pattern of *Coracina* (Ripley, 1941).

C. The male is uniform gray on the upper parts, and on the underparts is also gray from the chin down to the breast, then becomes barred black and white on the abdomen and crissum and under tail-coverts. The female has the upper parts uniform gray and on the underparts has patches of solid gray mixed with black and white barring on the breast, becoming clear black and white bars on the abdomen, crissum and under tail-coverts. This is the condition in *panayensis*.

D. The male is uniform gray on the upper parts. On the underparts the gray is limited to the chin, throat and breast, the belly becoming barred with black and white, extending down to the crissum and under tail-coverts. The female is also still uniform gray on the upper parts but becomes barred with black and white on the entire underparts. This is the condition in *kochii*.

E. Both sexes are uniform gray on the upper parts and entirely barred black and white on the underparts. This is the condition in the young of *kochii* and *panayensis*. This plumage persists into the adult in the female of *kochii*, but becomes a different plumage mixed solid gray and barred black and white in the female of *panayensis*.

It appears that in all the Philippine races that developed the barred black and white underparts, the females have initiated changes in the plumage ahead of the male.

The evolution of plumage differentiation in the Philippine races of *Coracina striata* seems to be towards uniform gray upper parts and uniform barred black and white underparts, from chin down to under tail-coverts in both sexes, showing both variation of sexual dimorphism and heterogynism.

Not uncommon and was found in original forest, second growth, and even among the trees inside clearings. Rarely it was encountered in the highlands up to about 3500 feet altitude.

Coracina morio elusum (McGregor)

San Luis, Naujan, 100 feet; 1 ♂; May 17.

Alcate, Victoria, 200 feet; 1 ♂, 1 ♀; March 31-April 1.

Wing ♂ (2) 133, 135, ♀ 129; culmen from base ♂ (2) 24.5, 25.5, ♀ 24.5 mm.; weight ♂ (2) 21.5, 22.5, ♀ 22 gr.

The Mindoro race is very similar to the Mindanao form, *C. m. mindanense*, except for the rump and upper tail-coverts, abdomen, and crissum, which in *elusum* are uniform with the back and breast, respectively, but are definitely much lighter in *mindanense*.

Not common and met with in the forest or at the edges, perching frequently in the trees of the tallest storey. Occasionally it was seen in Mid-mountain forest at about 4000 feet altitude.

Lalage melanoleuca melanoleuca (Blyth)

San Luis, Naujan, 100 feet; 1 ♂; May 16.

Alcate, Victoria, 200 feet; 1 ♀; April 1.

Wing ♂ 119, ♀ 119; culmen ♂ 23.5, ♀ 23.5 mm.; weight ♂ 49 gr.

The Mindoro male does not differ from a male from Los Baños, Laguna Province, Luzon.

Rare. Both specimens that were collected were taken inside original Dipterocarp forest, among the dense foliage of the trees of the tallest storey.

FAMILY PYCNONOTIDAE, BULBULS

Pycnonotus goiavier goiavier (Scopoli)

Lake Naujan, 25 feet; 1 ♂; May 24.

San Luis, Naujan, 100 feet; 2 ♂; May 15-19.

Alcate, Victoria, 200 feet; 1 ♀; March 31.

Wing ♂ (3) 79-86 (av. 83.3), ♀ 79; culmen from base ♂ (3) 18-19 (av. 18.6), ♀ 17 mm.; weight ♂ (2) 21, 30, ♀ 20 gr.

The Mindoro specimens resemble very closely the birds from Luzon in being very slightly darker brown on the upper parts as compared to Negros birds.

Common and frequently encountered in cultivated fields, open country and patches of bush, shrub or tree growth, among hedges of farms, in clearings and second growth. Found even in the gardens in towns and cities, among human habitation.

Delacour and Mayr (1946:175) comment on the species that it "Does not ascend in the hills above 3000 feet." On Mount Malindang on Mindanao, the species, represented by *P. g. suluensis*, was observed in two clearings in the midst of original Midmountain forest at about 4500 and 5000 feet altitude. It seems that the main factors determining the altitudinal range of the species are the nature of the countryside and type of vegetation, so that up to about 5000 feet altitude, the species may ascend as long as there is the much needed clearing, preferably an old one, and the plant species on which the bird feeds.

The lone female had enlarged gonads in May.

Hypsipetes philippinus mindorensis (Steere)

Lake Naujan, 25 feet; 3 ♂; 1 ♀; May 22-23.

San Luis, Naujan, 100 feet; 10 ♂, 11 ♀; April 14-May 20.

Alcate, Victoria, 200 feet; 31 ♂, 11 ♀, 2 sex?; March 29-May 22.

Barawan Peak, 2000-4500 feet; 4 ♂, 10 ♀; April 19-23.

Ilong Peak 3000-5500 feet; 2 ♂, 2 ♀; May 4-12.

Wing ♂ (22) 100.5-108 (av. 103.5), ♀ (21) 92-103 (av. 99.2); culmen from base ♂ (22) 25.5-27.5 (av. 26.7), ♀ (21) 25-27.5 (av. 26.2 mm.); weight ♂ (22) 25-45 (av. 39), ♀ 22-41 (av. 37.7 gr.).

The Mindoro race is the most distinct of the four forms that have been recognized for the species from various parts of the Philippines.

The Mindoro Bulbul is the most common bird in the original forest of Mindoro both at the edges and inside, from the lowlands to about 5500 feet altitude. It was also found in clearings, in second growth, especially in the

foothills, and even in well cultivated areas with plenty of tree growth, including coconut groves.

On the small islands off the main coast of Mindoro, such as those immediately in front of the harbor of Calapan, this species was virtually the only passerine found.

The notes of the Mindoro form sounded much harsher than those of the other three races, *philippinus*, *guimarasensis*, and *saturator*.

FAMILY MUSCICAPIDAE, BABBLERS, FLYCATCHERS, WARBLERS, THRUSHES
SUBFAMILY *Muscicapinae*, FLYCATCHERS

Muscicapa hyperythra mindorensis (Hachisuka)

Ilong Peak, Mount Halcon, 4000-4500 feet; 3 ♂, 3 ♀, 2 ♀ juv.; May 5-12.

Wing ♂ (3) 60.5-61 (av. 60.8), ♀ (3) 60-60.5 (av. 60.3); culmen from base ♂ (3) 13-14 (av. 13.5), ♀ (3) 13.5-14 (av. 13.6 mm.); weight ♂ (3) 8-9 (av. 8.3), ♀ (3) 6-9 (7.3 gr.).

The Luzon and Mindoro populations have always been placed together as *M. h. luzoniensis* by workers on Philippine birds, except Hachisuka (1935: 299) who separated the Mindoro bird as *M. h. mindorensis*. He based his recognition of the Mindoro form as distinct from *luzoniensis* on a ". . . more extensive and deeper buffish chestnut on throat and breast" which ". . . is particularly noticeable in the female, which also has more of a yellowish olive tinge throughout the upper parts, and bill more slender."

Our present Mindoro specimens compared to birds from Luzon show distinct differences, especially in the males. The Mindoro males have definitely more extensive and more intense orange buff on the throat and breast, when compared to Luzon birds. In the females the same difference is indicated but not as much as in the males.

In measurements the two populations do not show significant differences, including the length of the bill.

The buffy orange on the breast of the males increases in intensity in the order: *luzoniensis*—*mindorensis*—*nigrorum*—*malindangensis*. In the females, *luzoniensis* and *mindorensis* are olive brown on the back, while *nigrorum* and *malindangensis* are dull slate gray, with a faint wash of olive brown, on the lower back and rump.

It is interesting to note that the upper parts of the male of *montigena* from Mount Apo, Mindanao, approximate very closely the coloration of the upper parts of the females of the various Philippine races, including the female of *montigena* itself. In *montigena* the male and female differ from each other very slightly, especially on the colors of the back and tail. In the other Philippine races there is distinct sexual dimorphism.

Not rare in the highlands of Mount Halcon, but its unobtrusive habits and its preference for the dark and deeply shaded portions of the lower growths of Midmountain and Mossy forests and under climbing bamboo jungles, made it difficult to collect. Some birds even stayed on the ground itself, or close to it, often perching on the ground.

Muscicapa rufigaster mindorensis (Mearns)

San Luis, Naujan, 100 feet; 2 ♂, 1 ♀; April 15-18.

Alcate, Victoria, 200 feet; 6 ♂, 4 ♀; March 29-April 3.

Wing ♂ (8) 73-78 (av. 76), ♀ (5) 72-74.5 (av. 73); culmen from base ♂ (8) 16.5-17.5 (av. 17.1), ♀ (5) 15-17 (av. 16 mm.); weight ♂ (3) 13-18 (av. 15 gr.).

The Mindoro birds compared with specimens from Negros, Cebu, Mindanao and Basilan, show a slightly darker blue on upper parts and richer orange rufous on the throat and breast, and the under tail-coverts are pale buffy orange instead of white. The lower part of the abdomen is white in all the Philippine races.

All four Philippine races, *litoralis* (Palawan), *simplex* (Luzon, Marinduque), *philippinensis* (Sulu Archipelago, and all other islands of the Philippines except Mindoro), and *mindorensis* (Mindoro) differ from one another very slightly.

Not rare and frequently met with in the original lowland Dipterocarp forest, usually on the lower branches of the understorey trees, and preferably in the darker and well-shaded areas of the forest. Occasionally it was seen in dense second growth especially along the small creeks that were well overgrown with trees.

The bird usually uttered a sort of hissing note when disturbed, but it also had a very melodious call which was more rarely given.

Four males had enlarged gonads in March and April. One female had a broken egg in the oviduct ready to be laid in April.

Muscicapa griseisticta (Swinhoe)

Alcate, Victoria, 200 feet; 1 ♂, 1 ♀; March 29.

Wing ♂ 80, ♀ 81; culmen from base ♂ 13.5, ♀ 13.5 mm.

This winter migrant was not common. Both birds were taken at the edge of a new clearing, perching on a leafless branch of a second growth tree. From time to time the birds sallied forth from their perch after insects but always came back to the same perch.

These specimens showed molt on the head and breast and, in the female, also on the mantle in March.

Muscicapa panayensis nigrimentalis (Ogilvie-Grant)

Ilong Peak, Mount Halcon, 4500-5200 feet; 3 ♂, 4 ♀; May 3-10.

Wing ♂ (3) 75-78.5 (av. 76.8), ♀ (4) 72.5-75.5 (av. 74); culmen from base ♂ (3) 15-16 (av. 15.6), ♀ (4) 15, 15, 15, 15 mm.

The Mindoro specimens are similar to Luzon birds. *M. p. nigrimentalis* has the greatest amount of black on the head region, involving the entire face, and forming a distinct mask; *nigriloris* comes second, with the lores entirely black; *panayensis* is at most only blackish on the lores. Viewed from a certain angle, the black bases of the loreal feathers in *panayensis* do not show, and the lores appear a uniform bright azure with the rest of the face.

The underparts also vary sufficiently in the three Philippine races as to distinguish them from one another.

M. p. nigriloris from Mount Apo and Mount Malindang, Mindanao, is the most distinct of the three forms.

Rather rare and restricted to the highlands, this species preferred the higher branches and the tree tops of the taller stories. Occasionally, however, it was observed in the darker and more shaded portions of the forest, perching on the branches of the lower stories.

One male had enlarged gonads in May.

SUBFAMILY *Monarchinae*, MONARCH FLYCATCHERS

Monarcha azurea azurea (Boddaert)

Lake Naujan, 25 feet; 2 ♂, 1 ♀; May 21-22.

San Luis, Naujan, 100 feet; 1 ♂, 1 ♀; May 18-19.

Alcate, Victoria, 100 feet; 5 ♂, 3 ♀; March 29-April 5.

Barawan Peak, Mount Halcon, 2000-2600 feet; 1 ♂, 3 ♀; April 20-23.

Ilong Peak, Mount Halcon, 3000 feet; 1 ♂; May 9.

Wing ♂ (10) 65-71 (av. 67.8), ♀ (8) 62.5-69 (av. 65.3); culmen from base ♂ (19) 15-15.5 (av. 15.1), ♀ (8) 15-15.5 (av. 15.1 mm.); weight ♂ (5) 10, 10, 10, 10, 10, ♀ (3) 8-17 (av. 11.6 gr.).

The Mindoro specimens compared with birds from Luzon, Negros, and Mindanao do not show any significant difference either in plumage coloration or in measurements. The female of the species has the tendency to be slightly smaller than the male, and this difference is expressed especially in the wing measurements.

The colors of the unfeathered parts in the fresh specimens are noted as follows: Iris, dark brown; bill grayish blue, blackish at tip; legs and feet dark bluish gray; nails blackish.

Four males had enlarged gonads in April and May.

Terpsiphone cinnamomea unirufa Salomonsen

San Luis, Naujan, 100 feet; 5 ♂; April 15-May 16.

Wing ♂ (5) 84-90 (av. 87.4); culmen from base ♂ (5) 22-23.5 (av. 22.7 mm.); weight ♂ (5) 18-20 (av. 19 gr.).

Two of the five males from Mindoro have well developed streamers and the remaining three have the central rectrices just slightly elongated as compared to the next longest pair. Birds from Luzon, Lubang, Mindoro, Tablas, and Sibuyan develop these long streamers, but only in a relatively small number of males. The large collection of this species in the Philippine National Museum before the war (it was burned in 1945 with the rest of the bird collection during the liberation of Manila) contained many magnificent specimens from the northern islands with well developed and greatly elongated streamers. Nevertheless, in this collection, the males with only slightly elongated central rectrices were in the majority.

Hachisuka (1935:323) writes about this race as having “. . . a general tendency for the adult birds to attain darker rufous and only those inhabiting the northern islands acquire the long streamers. The proportion, however, is small—out of twenty-five specimens examined in the rufous stage only four

measured 190 mm., while the remainder measured 120 mm. (the central pair exceeding only by 10 mm., the next pair)."

Unirufa appears to be polymorphic on some of the northern islands as on Luzon, Lubang, Mindoro, Tablas, and Sibuyan, developing two types of male plumage—one with the elongated streamers and the other with the normal or close to normal tail feathers. The Negros population belongs to the latter, no specimens ever having been obtained with extended streamer tails. In this respect, Negros birds resemble the males on the islands of the southern Philippines—Mindanao, Basilan, and Sulu Archipelago.

Further collecting, especially on Negros, Panay, Masbate, Cebu, Bohol, Samar, and Leyte should be made to prove definitely whether the populations on these islands are distinct from the northern *unirufa* on the one hand, or the southern *cinnamomea* on the other.

Four males had enlarged gonads during April and May.

SUBFAMILY *Pachycephalinae*, THICKHEADS OR
SHRIKE-BILLED FLYCATCHERS

Pachycephala plateni mindorensis (Bourne and Worcester)

Barawan Peak, Mount Halcon, 2500 feet; 1 ♂; April 18.

Ilong Peak, Mount Halcon, 4000-5000 feet; 19 ♂, 1 ♂ imm.; 10 ♀, 3 ♀ imm.; May 3-14.

Wing ♂ (19) 81.5-88 (av. 84.6), ♀ (10) 78.5-85.5 (av. 82); culmen from base ♂ (19) 17.5-18.5 (av. 18.1), ♀ (10) 17-19 (av. 18 mm.); weight ♂ (16) 19-24 (av. 20.6), ♀ (9) 20-23 (av. 20.7 gr.).

Compared with *P. p. albiventris* from northern Luzon, the Mindoro specimens, *P. p. mindorensis*, are sufficiently distinct, being definitely darker and duller olive green on the head and upper parts, especially on the lower back and rump. Another very similar form is *P. p. crissalis* from southern Luzon.

Arranged in series, *albiventris*, *crissalis*, and *mindorensis* from a natural group that shows very close similarities among themselves. Farther south one finds *P. p. winchelli* from Tablas, Sibuyan, Masbate, Ticao, Panay, Negros, Cebu (roughly in the central Philippines), and *P. p. homeyeri* from the Sulu Archipelago, forming another group. All these races have some white on the belly in contrast to the yellow-bellied northern group belonging to the species *Pachycephala philippinensis*.

The group of *plateni* subspecies, *albiventris-crissalis-mindorensis*, resembles the *philippinensis* group in having the upper parts more or less olive green but differs distinctly in possessing the characteristic white belly. Based on the adult plumage, the various races of *plateni* fall into two natural groups, the *albiventris-crissalis-mindorensis* group and the *winchelli-homeyeri* group. Delacour and Mayr (1946:216) emphasize the distinctness of these groups by doubting "whether or not these 5 forms are actually members of a single species. . . ."

It is interesting in this connection to note that the juvenal plumages of the immature birds of both the defined species, *philippinensis* and *plateni* are similar in being chestnut.

Common in the highlands, especially between 4000 and 5500 feet altitude.

Many males and females had enlarged gonads in May.

SUBFAMILY *Sylviinae*, WARBLERS

Cisticola juncidis tinnabulans (Swinhoe)

Makatok, Victoria, 50 feet; 1 ♀; April 10.

Wing, 41.5; culmen from base, 11 mm.; weight 5 gr.

The lone Mindoro specimen does not differ appreciably from Luzon birds. The wings of Philippine birds in the Y.P.M. collection average slightly shorter than Indochina specimens, otherwise the two populations are similar.

The present species lives side by side, and is found frequently, in the same grassland tract as the next one, *C. exilis rustica*. However, *C. j. tinnabulans* is not as common as *C. e. rustica*. The former species prefers the grass and bush areas in open fields close to swamps and marshes, hence it is found more frequently near damp situations. *C. e. rustica* prefers the same type of grass and bush areas, and also in open fields but usually in drier situations such as those found on hillsides and sloping, rolling country.

It is difficult to distinguish these two races in the field. In the hand, *C. j. tinnabulans* is distinguishable from *C. e. rustica* by having less rufous on crown, and the tail feathers having wide white tips and black subterminal bars. In *C. e. rustica* the crown is rufous chestnut with or without blackish streaks, and the tail feathers are blackish with narrow buff tips (not white and wide, and with no black subterminal bars).

Cisticola exilis rustica Wallace

Makatok, Victoria, 50 feet; 3 ♂, 1 ♀; April 10.

Wing ♂ (3) 43-46.5 (av. 44.5), ♀ 45; culmen from base ♂ (3) 11-12 (av. 11.6), ♀ 12 mm.; weight ♂ (3) 18, 18, 18, ♀ 17.5 gr.

Compared with specimens from Mindanao, Negros, and Palawan, the Mindoro specimens do not differ markedly.

The four Mindoro specimens of this species were taken in the same general area where the lone specimen of *C. juncidis tinnabulans* was collected. They were all secured in idle rice fields that were left fallow for several months and by that time were already covered with a mixed growth of bushes and tall grass. There were also numerous patches of nipa palms, *Nipa fruticans*, along the small creeks which produced marshes in some places. Adjacent to one such patch, but in the open field with bush and tall grass growth, the lone specimen of *C. juncidis tinnabulans* was taken. All four species of *C. e. rustica* were taken among the bush and tall grass growth in the vacant fields quite far from the marshes and the patches of nipa palms where it was much drier.

Locustella certhiola ochotensis (Middendorf)

Makatok, Victoria, 50 feet; 1 ♀; April 10.

Wing ♀ 65; culmen from base ♀ 17 mm.; weight 9 gr.

This rare winter migrant was taken inside a dense patch of bushes at the edge of a marsh, very close to a large patch of nipa palms, in the foothills, adjacent to a wide plain, already well cultivated with rice fields.

On Negros Island this migrant was taken several times among the dense foliage of some of the low trees in Mangrove forest swamps close to the sea shore.

Megalurus timoriensis mindorensis Salomonsen

San Luis, Naujan, 100 feet; 1 ♂; April 15.

Alcate, Victoria, 200 feet; 1 ♂; March 29.

Ilong Peak, Mount Halcon, 4500-5500 feet; 5 ♂, 3 ♀; May 6-12.

Wing ♂ (7) 67.5-81.5 (av. 74.4), ♀ (3) 68.5-76 (72.6); culmen from base ♂ (6) 17.5-20 (av. 18.5), ♀ (3) 18.5-20 (av. 19 mm.); weight ♂ (6) 22-35 (av. 28.1), ♀ (3) 22-40 (av. 29 gr.).

Birds from Mindoro, *M. t. mindorensis*, average darker chestnut on crown and nape and darker olive brown on flanks, when compared with specimens from Luzon, *M. t. tweeddalei*, and with those from Mindanao, *M. t. crex*. In our series of *mindorensis* none shows the light chestnut crown and nape of *tweeddalei*. The yellowish tinge that suffuses the breast and abdomen that Salomonsen (1953:265) describes is characteristic of young adults and disappears with age. This yellowish tinge is found in all the Philippine races of *M. timoriensis*.

M. t. crex of Mindanao differs definitely from *tweeddalei* only in the presence of the obscure blackish shaft streaks in addition to the chestnut on the crown and nape, otherwise, based on the mere intensity of the chestnut on crown and nape, there is no valid difference between *tweeddalei* and *crex*. The upper parts and underparts in these two forms are similar.

Birds from Negros are intermediate between *tweeddalei* and *mindorensis* in some characters and *mindorensis* and *crex* in others. The crown and nape in the Negros population closely approach in the intensity of the chestnut, the average intensity of that in *mindorensis*, but in some specimens the vague blackish streaks are present as in *crex*. At present, based on our materials on hand we prefer to place the Negros birds with the Mindanao population, *crex*, while waiting for more specimens.

No significant differences exist in the measurements of the three Philippine races, except that *tweeddalei* tends to have a slightly larger bill, and *crex* slightly smaller, with *mindorensis* tending to be intermediate. Negros birds again come closest to the Mindanao population in measurements.

Four males and two females of our Mindoro series were molting on head and body in May. One male showed, in addition, molting of the rectrices.

Not really rare especially among the dense climbing bamboo forest in the higher elevations of Mount Halcon. However, collecting these birds in these dense climbing bamboo jungles was very difficult. The birds were more often heard than seen.

At lower elevations the species was found in tall grass, dense shrubbery and bush growth along the edges of clearings, especially close to the second growth patches.

Three males and one female had enlarged gonads in May.

Megalurus palustris forbesi Bangs

Lake Naujan, 25 feet; 1 ♂; May 22.

Makatok, Victoria, 50 feet; 3 ♂, 4 ♀; April 9-10.

Wing ♂ (4) 97-100 (av. 98.5), ♀ (4) 84-98 (av. 90.1); culmen from base ♂ (3) 22-23.5 (av. 22.6), ♀ (3) 21.5, 21.5, 21.5 mm.; weight ♂ (3) 40.5-41 (av. 40.8), ♀ (3) 40-45 (av. 42 gr.).

Mindoro specimens are similar to birds from Luzon and Mindanao.

Rather common in the open grassland areas, especially in the extensive tall grass tracts along the sides of the Magasawang-Tubig and Baco River. Also found common in the vacant rice fields that were left fallow at the time, feeding in the vicinity of grazing carabaos and cattle. Frequently one or two birds were observed feeding actively on the insects that were disturbed by the feeding bovines. The birds walked (not hopped), one foot after the other, close to the feeding cattle or carabao, even passing under the animals without fear.

When disturbed, the bird or birds usually alighted on the top bare branches of the nearest tree, where they stayed for some time, often calling actively. When things had quieted down, they flew down and resumed the feeding beside the grazing cattle.

Two birds had molted their rectrices in April and in one of them, also the remiges.

Phylloscopus trivirgatus benguetensis new subspecies

Type.—American Museum of Natural History of New York, No. 416890 from Haight's Place, Benguet, Luzon, Philippine Islands. Adult female collected April 30, 1930, by Francisco Rivera.

Diagnosis.—Like *P. t. nigrorum*, but differs in the superciliary line, throat and remaining underparts being distinctly dull greenish yellow instead of bright yellow.

Measurements.—Wing ♂ (3) 55-56.5 (av. 55.5), ♀ (3) 52.5-54.5 (av. 53); tail ♂ (3) 38.5-41 (av. 39.6), ♀ (2) 38.5, 41; culmen from base ♂ (3) 11.5-12.5 (av. 12), ♀ (3) 11.5-13 (av. 12.1); tarsus ♂ (3) 19.5-20 (av. 20), ♀ (3) 19-19.5 (av. 19.1 mm.).

Range.—The highlands of Luzon and Mindoro.

Remarks.—Mindoro birds are intermediate between Negros and Luzon specimens, in having the underparts slightly brighter yellow than in *benguetensis* from the Northern Luzon Highlands, but not as bright yellow as in *nigrorum* from Negros. The Mindoro specimens measure closest to *benguetensis* and so are placed in this race.

The following is a summary of the measurements of the different populations from Northern Luzon, Mindoro, and Negros:

	Northern Luzon	Mindoro	Negros
Wing	♂ (3) 55-56.5 (55.5) ♀ (3) 52.5-54.5 (53)	♂ (14) 53-56.5 (54.8) ♀ (13) 51-55 (52.8)	♂ (15) 55.5-60 (58.4) ♀ (16) 54.5-61 (56.8)
Tail	♂ (3) 38.5-41 (39.6) ♀ (2) 38.5-41 (39.7)	♂ (14) 35.5-39 (37.7) ♀ (13) 34.5-39.5 (36.4)	♂ (15) 36-43.5 (40.8) ♀ (16) 36.5-43 (39)
Culmen from base	♂ (3) 11.5-12.5 (12) ♀ (3) 11.5-13 (12.1)	♂ (14) 12-13.5 (12.5) ♀ (13) 12-13 (12.3)	♂ (15) 12.5-13.5 (13.2) ♀ (16) 12.6-13.5 (13.1)
Tarsus	♂ (3) 19.5-20.5 (20) ♀ (3) 19-19.5 (19.1)	♂ (14) 19-21 (19.6) ♀ (13) 18-20 (19.5)	♂ (15) 20-21.5 (20.8) ♀ (16) 19-21.5 (20.2)

Field notes.—The species was common in the Midmountain forest of the Mount Halcon highlands.

Phylloscopus borealis borealis (Blasius)

Alcate, Victoria, 200 feet; 1 ♀, 1 sex?; March 30-April 8.

Barawan Peak, Mount Halcon, 2500 feet; 1 ♂; April 19.

Ilong Peak, Mount Halcon, 4500 feet; 2 ♂; May 3-5.

Wing ♂ (3) 66.5-70.5 (av. 68.3), ♀ 68.5; culmen from base ♂ (3) 19-20 (av. 19.5), ♀ 19 mm.; weight ♂ (2) 7, 9, ♀ 8 gr.

This winter migrant was very common and ranged from the lowlands at sea level, up to the highlands at about 4000 feet altitude.

This form is one of three races of *P. borealis* that winters regularly in the Philippines, the other two being *P. b. kennicotti* and *P. b. xanthodryas*.

Four specimens showed head molt in April and May and in addition, two of the four showed molt on chin, throat and breast, primaries and rectrices.

In May, or earlier, the birds go back to their breeding areas in northern Asia. It is possible that they start their nuptial molt in their wintering grounds or may even complete it before migrating to their breeding areas.

Phylloscopus borealis kennicotti Baird

Alcate, Victoria, 200 feet; 1 ♀; March 29.

Wing ♀ 65; culmen from base, ♀ 14 mm.

First record of this race on Mindoro.

The races of the Arctic Willow Warbler are very difficult to distinguish from one another in the field. Actually, *kennicotti* is not as rare as thought to be in the Philippines. *P. b. xanthodryas* is much rarer as a winter visitor in the Philippines than either *borealis* or *kennicotti*.

SUBFAMILY *Turdinae*, THRUSHES*Brachypteryx montana poliogyna* Grant

Ilong Peak, Mount Halcon, 4000-6500 feet; 6 ♂, 3 ♀, 1 ♂ in female plumage, May 2-14.

Wing ♂ (6) 65.5-68 (av. 66.7), ♀ (3) 63-66 (av. 64.1); culmen from base ♂ (6) 16-17.5 (av. 16.6), ♀ (3) 16.5-17 (av. 16.8 mm.); weight ♂ (6) 11-15 (av. 14.8), ♀ (3) 15, 15, 18 gr.

Males of the Mindoro race differ but slightly from the males of the other forms in the Philippines. The females of the present race can easily be distinguished from those of the other races, chiefly by the differences in the intensity of the brown on the chin and throat and the blue-gray color of the underparts. The race *malindangensis* has the smallest concealed white eye-brow patches.

Not rare in the Mindoro highlands from about 4000 up to 6500 feet altitude. Its frequent melodious notes were used as a guide in locating the bird in dense forest growth, or very close to the ground. Its favorite habitat was the dense jungle of climbing bamboo that formed a definite type of vegetation on the sides and ridges of many peaks of the Mount Halcon range, from about 4500 up to about 6500 feet altitude. The Blue Shortwing was often encountered either on the ground or perching on a low stem of the climbing bamboo.

The members of the expedition party became very adept at imitating the notes of the species and often succeeded in attracting the birds to come near if they were sitting down in the dense bamboo jungle.

Several males had enlarged gonads in May.

One specimen was collected in fully adult female plumage, but the gonads proved to be testes and in slightly enlarged condition at that!

Copsychus saularis mindanensis (Boddaert)

San Luis, Naujan, 100 feet, 1 ♂; May 16.

Wing 91.5; culmen from base, 21.5 mm.; weight, 29 gr.

The Mindoro specimen is similar to birds from Luzon, Negros, and Mindanao.

Rare in the densely forested region where collecting on Mindoro was mainly carried on, although it was not uncommon in the cultivated and cleared areas in the lowlands, especially in clearings with second growth patches nearby. It was even seen in coconut groves close to the Calapan Pier, right where there were a good number of houses. Also encountered among the hedges of well cultivated fields in Naujan, close to well inhabited places.

Turdus poliocephalus mindorensis Grant

Ilong Peak, 4000-5500 feet; 7 ♂, 5 ♀; May 2-14.

Wing ♂ (7) 107-111.5 (av. 110), ♀ (5) 105-108 (av. 106.8); culmen from base ♂ (7) 22.5-24.5 (av. 23.4), ♀ (5) 23-24 (av. 23.7 mm.); weight ♂ (7) 40-58 (av. 48.8), ♀ 42-57 (av. 48.8 gr.).

The Mindoro form is the most distinct of the various Philippine races of this species. The back closely resembles that of *malindangensis* but the pattern of rich chestnut on the sides of the lower breast and flanks and pure

white on the middle of the breast and belly is unique. No other Philippine race of *T. poliocephalus* even approximates this attractive pattern. A close approach to this chestnut-and-white pattern on the underparts is exhibited by *T. obscurus* and *T. chrysolais*, both migrant forms, but with much paler chestnut coloring.

The species began to be met with at about 4000 feet altitude, and its occurrence increased in frequency with increase in the altitude in the highlands of Mt. Halcon. Most of the specimens were collected in mountain yews, *Podocarpus*, which became an abundant species above 4000 feet altitude.

Zoothera andromedae

Ilong Peak, Mount Halcon, 4000 feet; 1 ♀; May 12.
Wing 127; culmen from base 29 mm.; weight 81 gr.

First record on Mindoro for this rare species.

The bird was on the ground beside a small trail that ran through dark, dense and untouched Midmountain forest.

This is the fourth recorded specimen from the Philippines, the others having been obtained on Mindanao.

Color of unfeathered parts in the fresh specimen: Bill black; iris coffee-brown; legs, feet and nails, flesh.

We are not certain whether this species is a breeding resident or only a migrant in the Philippines from the Indonesian islands.

FAMILY *PARIDAE*, TITMICE

Parus elegans elegans Lesson

Barawan Peak, Mount Halcon, 2500-4400 feet; 6 ♂, 1 ♂ imm., 5 ♀; April 19-28.

Ilong Peak, Mount Halcon, 4000-5000 feet; 11 ♂, 8 ♀; May 2-14.

Wing ♂ (17) 64.5-68 (av. 66.3), ♀ (13) 59.5-64.5 (av. 62.5); culmen from base ♂ (15) 12-13.5 (av. 12.8), ♀ (13) 12.5-13 (av. 12.7 mm.); weight ♂ (14) 9-12 (av. 10.4), ♀ (12) 9-13 (11.5 gr.).

Our large Mindoro series consisting of 17 adult males, 1 immature male and 13 adult females as a whole agrees closest to *P. elegans elegans* of Luzon, although at the same time including several specimens which possess characters that are closest to those of supposed *P. e. montigena*.

The following characters were studied in detail in a series of seventy-four specimens from Tayabas and Baguio, Luzon (including *elegans* and "*montigena*"), Mindoro, Negros, and Mindanao.

- a. Color of the upper parts including the size of the spots.
- b. Color of the underparts.
- c. Color of stripe on sides of head.
- d. Color of the irregularly shaped nuchal patch.
- e. Color and dimensions of the light tips of the rectrices.
- f. Color and dimensions of the light spots on the outer rectrices and number of rectrices so spotted.
- g. Color of crissum and under tail-coverts.
- h. Measurements of wing, tail, bill from base, tarsus.

Below is a summary of our findings:

1. *Color of upper parts.*—There is no distinct difference in the color and pattern of the upper parts that can be used to separate the Mindoro population from both *elegans* and “*montigena*.” This character varies within normal limits in all three populations, including the size of the white spots.

2. *Color of underparts.*—The intensity of the yellow in the underparts varies a great deal from very intensely yellow typical of *elegans*, to moderately yellow, then to pale yellow “*montigena*.” When all the adult male specimens we have from Tayabas, Luzon (2), Baguio, Luzon (4), and Mindoro (17), are arranged in the order of the intensity of the yellow of the underparts, we note the following:

a. The two Tayabas males (*elegans*) are no. 1 and no. 6 in the first batch of 7 specimens with the most intense yellow on the underparts;

b. The type of “*montigena*” is no. 3 in the second batch of 7 with moderately intense yellow underparts.

c. Two other “*montigena*” are nos. 4 and 5 in the last batch of 9 with the least intense or pale yellow on the underparts.

Based on the intensity of the yellow color on the underparts, the Mindoro population includes birds with underparts of the intensity of both that of *elegans* and of “*montigena*” in its series.

3. *Color of stripe on sides of head.*—The intensity of the yellow color on the sides of the head is a variable character in both *elegans* and *montigena* and in the Mindoro population.

a. The males (*elegans*) from Tayabas, Luzon, are nos. 2 and 9 in the series of 23 adult males.

b. The males (“*montigena*”) from Baguio, Luzon, are nos. 14, 15, and 20 in the series.

4. *Color of the irregularly shaped nuchal patch.*—This is another very variable character in all three populations studied.

a. The males (*elegans*) from Tayabas, Luzon, are nos. 1 and 6 in the series of 23.

b. The males (“*montigena*”) from Baguio are nos. 10, 18, and 19 in the series of 23.

5. *Color and dimensions of the light tips of the rectrices.*—This is the character in which the Mindoro population tends to differ distinctly from those of Tayabas (*elegans*) and Baguio (“*montigena*”).

a. *Elegans* has broad white tips to the rectrices.

b. “*Montigena*” has narrow white tips to the rectrices although in one specimen, the white tips are just as broad as in *elegans*. The narrowness of the white tips may be just due to wear of the tips of the rectrices.

c. The Mindoro population has the white tips of the rectrices as broad as in *elegans* and washed with buff which varies in intensity from very pale buff (as to appear almost white), to very distinct buff.

6. *Color and dimensions of the light spots on the outer rectrices and number of rectrices so spotted.*—This is another very variable character in all three populations.

a. In *elegans* and "*montigena*" and the Mindoro population, the outer 3 or 4 rectrices bear spots which vary very much in size but which are always largest on the outermost pair and gradually decrease inward.

b. These spots are white in *elegans* and "*montigena*" but are definitely washed with buff of variable intensity in the Mindoro population.

7. *Color of crissum and under tail-coverts.*—

a. The Luzon populations of *elegans* and "*montigena*" have yellow crissum and under tail-coverts.

b. The Mindoro population ranges from yellow crissum and under tail-coverts to yellow faintly washed with buff, and then finally to definitely more buffy than yellow, which latter color is very faint. Of 15 males with the crissum and under tail-coverts intact, one has the crissum and under tail-coverts pure yellow, 7 have the crissum and under tail-coverts faintly washed with buff, and 7 have the crissum and under tail-coverts definitely buff, especially on the distal ends of the feathers. The females give one with pure yellow crissum and under tail-coverts, 7 with yellow faintly washed with buff, and 5 definitely buff, especially on the distal ends of the feathers.

8. *Measurements of wing, tail, bill from base, and tarsus.*—The measurements overlap in the three populations.

In the light of these findings we conclude that the Luzon populations of *elegans* and "*montigena*" and the Mindoro population overlap greatly in many variable characters. One could describe the Mindoro population as a distinct subspecies based on the character of a tendency to develop a buffy wash on the white tips of the rectrices, on the light spots of the three or four outer rectrices, and on the crissum and under tail-coverts, which character in itself is also very variable within the population.

There is a tendency for the Luzon lowland population to be more intense yellow on the underparts; the northern Luzon highland population to be paler yellow; and the Mindoro population to possess a very variable intensity of the yellow on the underparts and to exhibit both degrees of yellow of the Luzon lowland and highland populations and, in addition, to develop the buffy wash on light tips and spots of the rectrices and crissum and under tail-coverts.

We are inclined, however, to place the Mindoro population with the Luzon population described as *P. e. elegans*.

In view of the fact that the main characters on which the Luzon highland "*montigena*" has been separated from lowland *elegans* appear to be very variable, and indeed only tendencies at this stage of differentiation occurring haphazardly in the Mindoro population, we are compelled to consider "*montigena*" as an invalid race and hereby consider it a synonym of *elegans*. We consider the lowland and highland populations of *Parus* on Luzon and Mindoro as all *Parus elegans elegans*, *contra* Parkes (1958:97-98.)

Common in the highlands in the Midmountain and Mossy forests, from about 2500 feet altitude and upward.

FAMILY *MOTACILLIDAE*, WAGTAILS*Motacilla caspica caspica* Gmelin

Makatok, Victoria, 50 feet; 1 ♂; April 10.

San Luis, Naujan, 100 feet; 2 ♀; April 18-May 14.

Alcate, Victoria, 200 feet; 1 ♀; April 6.

Wing ♂ 82.5, ♀ (3) 82-83 (av. 82.3); culmen from base ♂ 16.5, ♀ (3) 17.5-18.5 (av. 17.8 mm.); weight ♂ 11, ♀ (3) 12, 12, 12 gr.

Very common migrant species that was encountered in almost all rivers, streams and ponds, and in wet open fields.

Motacilla flava simillima (Hartert)

Makatok, Victoria, 50 feet; 1 ♂, 1 ♀; April 10.

Wing ♂ 83, ♀ 82; culmen from base ♂ 18, ♀ 17.5 mm.; weight ♂ 12, ♀ 10 gr.

This migrant Wagtail was not common. A flock of about seven birds was seen in a newly plowed wet field that was being prepared for lowland rice planting. It was not encountered again during the rest of the collecting period of about two months.

Anthus gustavi Swinhoe

San Luis, Naujan, 100 feet; 1 ♂; April 17.

Alcate, Victoria, 200 feet; 1 ♀; March 30.

Wing ♂ 81, ♀ 82; culmen from base ♂ 16, ♀ 15.5 mm.; weight ♂ 23.5, ♀ 22.5 gr.

Another winter migrant to the Philippines, widespread especially among the larger islands, but very local in distribution and rarely met with.

An uncommon pipit, met only in forest. The few that were seen easily lost themselves among the low growths on the forest floor, by running very fast from the point where they landed after being flushed from a previous site, usually just a few feet away.

Anthus novaeseelandiae lugubris Walden

Alcate, Victoria, 200 feet; 1 ♂, 2 ♀; March 31-April 1.

Wing ♂ 84, ♀ (2) 77, 78.5; culmen from base ♂ 17, ♀ (2) 17, 19 mm.; weight ♂ 28.5, ♀ (1) 27.7 gr.

Birds from Mindoro are very similar to specimens from Luzon and Mindanao. A single Negros male is much darker brown on the upperparts than birds from Mindoro, Luzon or Mindanao.

Often seen in open fields which were grown to short grass or weeds and with open exposed ground, both in the lowlands and on hillsides, but not above 3000 feet altitude. It had the habit of perching on rocks or earth mounds or any other ground prominence even if only a few inches higher, that gave it a better view of the surrounding area. When approached, it would run very fast for short distances, then fly for a bit, then light and run fast again, to maintain what would appear to be the proper distance between the disturbing agent and itself.

FAMILY *DICAETIDAE*, FLOWERPECKERS*Dicaeum bicolor inexpectatum* (Hartert)

San Luis, Naujan, 100 feet; 5 ♂, 2 ♀; April 16-May 19.

Alcate, Victoria, 200 feet; 2 ♂, 2 ♀; March 31.

Barawan Peak, Mount Halcon, 4400-4500 feet; 2 ♂; April 26-27.

Wing ♂ (9) 50-53.5 (av. 51.7), ♀ (4) 50.5-51 (av. 50.7); culmen from base ♂ (9) 10-11 (av. 10.5), ♀ (4) 10-11 (av. 10.4 mm.); weight ♂ (5) 6-8 (av. 7), ♀ (3) 6-7 (av. 6.3 gr.).

Mindoro birds do not differ significantly in plumage from Negros specimens. The gloss on the upperparts tends to vary between bluish and greenish in both populations. There is a tendency for the Negros birds to have very slightly longer wing and bill.

Moderately common and frequented flowering and fruiting trees of all heights, in clearings at the edges of the forest and inside original forest. Occasionally birds were encountered in second growth patches. It ranged from the lowlands and rolling country up to the highlands at about 4500 feet altitude.

D. b. inexpectatum differs very slightly from *D. b. bicolor* from Mindanao in not being as deep black on the upperparts.

Two males had enlarged gonads in March and April, and one female had an egg ready for laying when it was collected in March.

Dicaeum retrocinctum Gould

San Luis, Naujan, 100 feet; 3 ♂, 3 ♀; May 15-18.

Alcate, Victoria, 200 feet; 2 ♂, 1 ♀; April 6.

Wing ♂ (5) 53-54 (av. 53.6), ♀ (4) 50-53 (av. 51.6); culmen from base ♂ (5) 13-14.5 (av. 13.6), ♀ (4) 13-14 (av. 13.5 mm.); weight ♂ (4) 6-7 (av. 6.7), ♀ (3) 5-7 (av. 6.3 gr.).

This Mindoro endemic comes closest to *D. papuense haematostictum* of Panay, Guimaras and Negros, especially in the pattern of the red and black on the chest and abdomen, but with a definitely more slender bill.

Rather common and usually found in flowering and fruiting trees inside the original lowland forest, at the edges and inside of clearings, and occasionally, even in well cultivated areas, especially in coconut groves. The habits and habit preferences are those of *D. papuense* which it replaces on Mindoro.

D. retrocinctum forms with *D. papuense* a superspecies.

Four males and one female had enlarged gonads in April and May.

Dicaeum trigonostigma xanthopygium Tweeddale

San Luis, Naujan, 100 feet; 2 ♂; April 15-19.

Wing ♂ (2) 48, 49.5; culmen from base ♂ (2) 12 mm.; weight ♂ (1) 4 gr.

The present race is distinct from other races in the Philippines in the yellow bar across the rump. Except for the yellow rump, it resembles very closely *D. t. dorsale* in the colors of both the upper- and underparts, although it is slightly smaller in measurements.

Rather rare and was met with only inside original forest, feeding on flowering and fruiting trees of low and medium height in the hill areas.

One male had enlarged gonads in April.

FAMILY *NECTARINIIDAE*, SUNBIRDS*Nectarinia sperata sperata* Linnaeus

Lake Naujan, 25 feet; 1 ♂; May 25.

Alcate, Victoria, 200 feet; 2 ♂; March 30-April 8.

Wing ♂ (3) 50-52 (av. 50.8); culmen from base ♂ (3) 18-21 (av. 19.3 mm.); weight ♂ (3) 9, 9, 9 gr.

Our Mindoro male specimens average much darker olive green on abdomen, thighs, flanks, and crissum, compared with Luzon (4) and Samar (10) males, in which the abdomen especially is more suffused with yellow. Mindoro males are most similar to Negros (6) males. The southeastern Mindanao population of *N. sperata* has been described by Delacour (1945:115) as a distinct race, *davaoensis*, based on the breast being “. . . vermilion, suffused with yellow on base of feathers,” instead of being scarlet. Ten males from Davao, southeastern Mindanao, in the Ripley collection, average distinctly paler red on the breast compared with specimens from Luzon, Mindoro, Samar and Negros, which have the breast bright scarlet. In addition, Davao specimens average much lighter olive green on the abdomen, thighs, flanks, and crissum, and in many specimens, the abdomen and crissum have more yellow than olive green. This latter condition may be due to age—the less adult the specimen, the more yellow on the abdomen and crissum.

The presence of the yellow area between the grayish black basal half and the vermilion distal half on the individual feathers of the breast of the southeastern Mindanao males of *N. sperata* is interesting, because this yellow area varies in extent in different individuals, large in some and very small in others, but is always present. This yellow spot is also present in the other populations. One of our males from Mindoro and one from southern Luzon (Tayabas = Quezon Province now) have this small yellow spot at the usual place on the individual scarlet breast feathers. Different degrees in extent of this yellow area are also found on the scarlet breast feathers of 8 out of 10 males from Samar, and 3 out of 6 males from Negros. A single specimen of *N. s. henkei* from Calayan Island, has yellow also in the usual place on the scarlet breast feathers.

It appears that the size of this yellow area between the grayish black basal half and the scarlet or vermilion distal half is variable and presumably varies with the age of the bird, the younger the male adult, the more developed, and the larger the size of this yellow spot on the individual scarlet or vermilion breast feather.

Salomonsen (1952:356) describes *N. s. manueli* from Polillo Island as distinct from *sperata*, based on slightly greater size of wing and bill of 2 males examined.

Salomonsen (1953:253-260) separates the birds from the Palawan region (including the nearby islands of Balabac and the Calamianes), Mindoro, all the Visayan Islands, and Eastern Mindanao, as *N. s. trochilus* (= *N. s. minima* preoccupied). He restricts the range of *N. s. davaoensis* to the City of Davao District, and considered it as most likely of “hybrid origin” between *N. s. sperata* and *N. s. juliae*.

Our present material, secured from both the Davao City District and out of it, but also in Davao Province, agrees with Delacour's *N. s. davaoensis*.

Measurements of birds from Luzon and the Visayan Islands show the great variability of the populations in these regions. We prefer to consider "*trochilus*" a synonym of *sperata* (part) and of *davaoensis* (part).

For the Philippine races of *N. sperata* we recognize the following:

N. s. henkei (Meyer)—Babuyan Islands and Northern Luzon as far south as Rizal Province;

N. s. sperata (Linnaeus)—Southern Luzon, Polillo, Palawan, all the Visayan Islands to northern Mindanao; *manueli* and *trochilus* (= *minima*) both of Salomonsen are synonyms.

N. s. davaoensis Delacour—Southeastern Mindanao;

N. s. juliae (Tweeddale)—Western Mindanao, Basilan, and Sulu Archipelago.

Not rare and met with in original and secondary forests, especially in the lowlands and rolling country. Also observed occasionally in coconut groves especially those close to the forest.

One male had enlarged gonads during March.

Nectarinia jugularis jugularis (Linnaeus)

Lake Naujan, 25 feet; 3 ♂; May 24-28.

Alcate, Victoria, 200 feet; 1 ♂; April 8.

Wing ♂ (4) 52.5-55.5 (av. 53.6); culmen from base ♂ (4) 20.5-22 (av. 21.1 mm.); weight ♂ (1) 8 gr.

All four Mindoro males have bright greenish-olive upper parts; two of them with rather rich yellow underparts with a slight tinge of orange on the chest, and the remaining two have moderate yellow underparts. The birds fall under Rand's (1951b: 601-605) categories of II D with underparts moderate yellow and upper parts bright greenish olive, and III D, with underparts rather richly yellow with a slight tinge of orange on the breast, and upper parts bright greenish olive.

Common in the cultivated areas including farms, coconut groves, hedges, and even in gardens. The birds were also commonly encountered in secondary forests, in clearings made in original lowland forests, and even at the edges of these forests but not deep inside.

Aethopyga shelleyi flavipectus Ogilvie-Grant

Alcate, Victoria, 200 feet; 1 ♂; 1 ♀; March 30-31.

Barawanan Peak, Mount Halcon, 2500-3000 feet; 2 ♂; April 19-20.

Wing ♂ (3) 43-46.5 (av. 44.5), ♀ 42.5; culmen from base ♂ (3) 16-17 (av. 16.6), ♀ 15 mm.; weight ♂ (3) 3-4 (av. 3.6), ♀ 3 gr.

The Mindoro males average more intense blood red on mantle and upper back compared to a male from Tayabas, Luzon (= Quezon Province now). In other characters, they are similar. The females from both islands do not differ appreciably from each other.

Rare and was found only in original forest, both Dipterocarp and Mid-

mountain types, preferring to feed on the flowering trees of the lowest stories.

The unfeathered parts as noted in the fresh specimens had the following colors: Iris, dark brown; bill, legs, and feet, blackish brown; nails, dark brown.

Two males had the gonads enlarged in April.

FAMILY ZOSTEROPIDAE, WHITEYES

Zosterops montana montana Bonaparte

Ilong Peak, Mount Halcon, 4000-5000 feet; 1 ♂, 1 ♀; May 5-12.

Wing ♂ 57, ♀ 57; culmen from base, ♀ 15 mm.; weight ♂ 9, ♀ 7 gr.

Mees (1957: 170-197) in his review of the species *Zosterops montana* recognizes three races of this species in the Philippines: *Z. m. whiteheadi*, *Z. m. pectoralis*, and *Z. m. montana*. He bases his recognition of *whiteheadi*, the population in the northern Luzon highlands on ". . . its rather small measurements and its greener upperparts, slightly greener than in at least the majority of the populations of the nominate race." On his recognition of the population in the Canlaon Volcano highland localities of Northern Negros, *Z. m. pectoralis*, he writes that it "Differs from the nominate race to which it is nearest, by the broad yellow streak over the underparts, and by the flanks which are more or less washed with yellow; here indeed, seems to be a population in the transition from pale-bellied to yellow-bellied." The other Philippine races, *halconensis* (Mindoro highlands), *vulcani* (Mount Apo, Mount Malindang, Mindanao), *diuatae* (Mount Hilog-hilog, Mount Katanglad, Diuata Mts., Agusan, Mindanao) and *finitima* (Cuernos de Negros, highlands of southern Negros), he places in the nominate race, *Z. m. montana*. He does not recognize *vulcani* because "The individual variation is so great that no nomenclatorial distinction is possible." In our study of the different Philippine populations of *Z. montana* we found Mees' observations applicable to all these populations and we found that the individual variations are very great even within one particular population on one island or in a certain region of that island.

We summarize below our findings (based on an examination of one-hundred and eighty specimens):

a. Within each of the different Philippine populations of *Z. montana* from various regions of the Philippines, the upperparts range from yellowish citrine to olive green in color. The character of supposedly slightly greener upperparts used as a character in recognizing *whiteheadi* does not hold true in large series.

b. The recognized race *pectoralis* from central northern Negros shows in large series birds that range from those with the underparts grayish white with a narrow but more or less defined yellow streak over the center of the abdomen, and with none or with a very faint wash of yellow on the flanks, to those with a broad yellow streak over the underparts and with a clear wash of yellow on the flanks.

c. The population from Cuernos de Negros, southern Negros, described

as *finitima*, shows in large series birds that range from those with a very faint and ill-defined wash of yellow on the center of the belly, to those with a well-defined yellow streak along the center of the abdomen, equivalent in extent and distinctness, to that of the average condition in *pectoralis*, but without the faint yellow wash on the flanks.

d. The populations from Mount Apo and Mount Malindang, Mindanao, show in large series, birds that range from those with no yellow at all on the abdomen to those with a more or less defined but narrow yellow streak along the center of the belly, equivalent in extent to that of the average *finitima*. The Mount Malindang population tends to develop the yellow wash on the center of the belly more frequently than the Mount Apo population.

e. Our 2 specimens of *halconensis* from Mindoro show a very faint, ill-defined yellow wash on one (male) and no yellow at all on the other (female), equivalent to the condition in the lower half of the series in *vulcani*, especially from Mount Apo, as regards the absence or presence of yellow on the belly.

f. The recognized race, *whiteheadi*, from the highlands of northern Luzon shows in series, birds that range from those without any yellow on the grayish white abdomen to those with a very faint wash of yellow on the center of the belly. In this respect, the population comes closest to the Mindoro *halconensis*. In addition, *whiteheadi* averages smaller wing measurements. However, Salomonsen (1953: 280-281) obtained similar small wing measurements for many of the birds from Mount Hilong-hilong and Mount Katanglad, Mindanao, which he describes as *diuatae*.

g. The grayish white on the belly and flanks of the different populations varies a great deal in intensity even within a single population, except for *pectoralis* which has the tendency to develop a definite yellow wash on the belly and flanks.

h. The amount of yellow on the forehead is another very variable character among the different Philippine populations, even within a single population.

i. The differences in size of the bill are not significant in the different Philippine populations.

j. Comparatively, the males have a greater tendency to develop the yellow wash or streak on the belly than the females, within a single population.

We had no specimens of the population described as *diuatae*, but the describer diagnoses the race as similar to *Z. m. vulcani* except for the conspicuous yellow wash on the upperparts, darker and brighter yellow on throat and crissum, broader yellow superciliary streak that continues across the forehead as a frontal band, and flanks slightly darker than in *vulcani*. All the characters mentioned above are variable even within a single population, so that the population described as *diuatae* must be similar to the population described as *vulcani*.

Two clines appear to be involved here which are both manifested in the development of the yellow on the underparts. One runs roughly north to south, following the islands of Luzon, Mindoro and Negros. The other ex-

tends from southern Mindanao up to the northeast and west of the island, then to southern Negros and to northern Negros where both meet in the population of *pectoralis*. It is very probable that more thorough collecting in the highlands of central and southern Luzon and Panay will yield populations of *Z. montana* which will complete the picture.

Mees (*op. cit.*: 173-174) writes: "Several other populations seem in the process of transition to a yellow belly, notably so *pectoralis* from Negros and 'oriochaes' from Celebes, which is a very variable population as regards the amount of yellow on the under surface." This same observation on *oriochaes* is very aptly applicable to the condition of the yellow on the underparts of *pectoralis* which is also very variable.

Mees (*op. cit.*: 189), in summing up his reasons for placing the Philippine races: *halconensis*, *vulcani*, *diuatae* and *finitima* in the nominate race *montana*, writes: "Summarizing the evidence, it may be said that from two neighboring populations, the specimens often seem sufficiently different to be named (and they very often have been named in the past), but that if both are compared with series from some remote locality, neither of them can be satisfactorily separated. The situation being as it is, I conclude that the only nomenclatorially sound treatment is to unite all these populations under one name."

There are birds in the different series of the various Philippine populations that resemble one another very closely and the overlap between populations is very great. For example, many specimens from the lower third of the series of *pectoralis* can be placed within the series of the southern Negros population of *finitima* and cannot be separated from them by any character. Many specimens of *finitima* can be placed in a series of *vulcani* and are indistinguishable, and so on. In each population a number of specimens may be picked out, and when placed with a series from another island, will prove indistinguishable, especially based on the amount of yellow on the underparts.

In short, the Philippine members of *Z. montana* range from those with no trace at all of yellow on the belly, which has its highest frequency in the populations in the northern Luzon and Mindoro highlands, (and to a lesser extent in Mount Hilong-hilong, Mount Katanglad, Mount Apo, and Mount Malindang), to those with a well-developed yellow streak along the center of the abdomen and with a clear wash of yellow on the flanks, which represent the highest extremes for these characters found in *pectoralis* in the Mount Canlaon localities of northern Negros.

We agree with Mees on the great variability of the different Philippine populations and so, to be consistent with his basis for placing the various Philippine populations in the nominate race *montana*, we are inclined to place all these very variable Philippine forms under the single name *montana*. We realize that the population of northern Negros "*pectoralis*" comes closest to attaining the status of a race, distinct enough from the others, if only the individuals which develop the very well defined and broad yellow streak along the center of the belly and washed with yellow on the flanks

are considered. However, there are also birds within the same series that are indistinguishable from individuals of the southern Negros highland population "*finitima*."

The northern Luzon population, "*whiteheadi*," has a tendency to have smaller measurements especially in the wing and bill and this may seem to be the most valid basis for recognizing this form, because the plumage color basis does not hold true. However, birds of the same size are also found among the population of eastern Mindanao and southern Negros. It appears as if "*whiteheadi*" merely represents one end of the very variable Philippine populations and "*pectoralis*," the other end.

The Mountain Whiteeye was rather rare in the 4000-5000 foot zone where *Z. nigrorum aureiloris* was still found normally.

Zosterops nigrorum aureiloris Ogilvie-Grant

Barawanan Peak, Mount Halcon, 2500-4400 feet; 1 ♂, 2 ♀; April 21-26.

Ilong Peak, Mt. Halcon, 3000-5000 feet; 3 ♂, 2 ♀; May 1-14.

Wing ♂ (4) 50-54.5 (av. 51.7), ♀ (4) 51.5-52.5 (av. 52.1); culmen from base ♂ (4) 13-14 (av. 13.5), ♀ (3) 12.5-13.5 (av. 13.1 mm.); weight ♂ (3) 6-7 (av. 6.6), ♀ (2) 6 gr.

Mindoro specimens are similar to birds from northern Luzon in being very bright warbler green on the upper parts and deep greenish yellow on the underparts. Mees (1957: 166-167) writes about this race as "A very bright race, easily recognized because of the peculiarities in the loreal region. . . ." This race differs sharply from the other races in the white eye-ring that is not interrupted in front and in the well defined yellow supra loreal region. In the other subspecies, *nigrorum*, *luzonica*, *meylei*, and *richmondi*, the white eye-ring is more or less interrupted in front by a dusky or blackish spot and the yellow supra loreal region is never as well defined and as distinct from the surrounding areas.

Z. n. nigrorum from Negros Island averages much duller in general coloration, and even when the brightest colored birds are selected, they still look distinctly duller when placed side by side with the Mindoro series.

It was strange that this species was encountered only at the comparatively higher elevations in the Mindoro highlands, between about 2500-5000 feet, but not in the lowlands. This species and *Z. montana* overlapped in their altitudinal ranges in the 4000-5000 foot zone of the Mindoro highlands.

On Canlaon Volcano on Negros Island, these two species were observed meeting and overlapping in their altitudinal ranges at about the 3000-3500 foot zone. Below this zone down to the lowlands, *Z. nigrorum* normally ranged, and above it, *Z. montana* was found, up to the highest peaks.

Two males and one female had enlarged gonads in April.

FAMILY PLOCEIDAE, WEAVERBIRDS

Erythrura hyperythra brunneiventris (Ogilvie-Grant)

Barawanan Peak, Mount Halcon, 4400 feet; 3 ♂; April 26.

Ilong Peak, Mount Halcon, 4500 feet; 2 ♂, 1 ♀; May 5.

Wing ♂ (5) 57.5-60 (av. 58.6), ♀ 58.5; culmen from base ♂ (5) 11.5-12.5 (av. 12), ♀ 11.5 mm.; weight ♂ (2) 10, 10, ♀ 10 gr.

The Green-tailed Parrot-Finch has been recorded only from northern Luzon and Mindoro. The species cannot be mistaken for any other including the Green-faced Parrot-Finch, *E. viridifacies*, which roughly approximates it in coloration.

Rare, and was met with only in original forest of the Midmountain and Mossy types, from about 2000 feet up to about 5000 feet altitude. On the three occasions that we had the opportunity to meet this species, the birds were observed always in groups of from five to nine and were found in low trees with heavy foliage. In Abra Province, northern Luzon, the species was often seen in clumps of light bamboo in more or less cleared countryside, but close to primary forest patches. We never found the species in the dense jungles of climbing bamboo which abounded in the elevation where they were collected in Ilong Peak.

Lonchura leucogaster everetti (Tweeddale)

Makatok, Victoria, 50 feet; 1 ♀; April 10.

Wing ♀ 50.5; culmen from base ♀ 12.5; weight ♀ 7 gr.

The Mindoro specimen does not differ from birds of Samar, Cebu and Negros, except for a very slight paleness in the brown color of the upper parts and underparts which might be attributable to age.

Rather rare and only this single specimen was encountered. It was taken in a small patch of tall grass adjacent to a marshy area along a small creek with large patches of nipa palms, that formed an uncultivated part of a rather well developed area of rice fields in the plains close to the hills.

Lonchura malacca jagori (Martens)

Lake Naujan, 25 feet; 1 ♂; May 24.

Makatok, Victoria, 50 feet; 1 ♂; April 10.

Alcate, Victoria, 200 feet; 1 ♂; 1 ♀; April 7.

Wing ♂ (3) 51-55 (av. 53.1), ♀ (52); culmen from base ♂ (3) 11.5-12.5 (av. 12), ♀ 11.5 mm.; weight ♂ (2) 5, 8, ♀ 8 gr.

Two males and one female from Mindoro have the upper parts of the head dark brown which is typical of *L. m. jagori*. One Mindoro male has the upper parts of the head slightly darker brown, almost approaching the dull black of one male from Negros Island, and one female from Zamboanga Peninsula, Mindanao Island. Another male from Negros has the upper parts of the head slightly more intense black but does not attain the intense black on the upper parts of the head of *L. m. atricapilla*.

Salomonsen (1953: 265-267) in reviewing the races of *L. malacca* identified the birds of southern Luzon, Lubang, and Ticao as *L. m. jagori*, characterized by the dark brown upper parts of the head. He assigns to his new race, *gregalis*, the area of the rest of the Philippine Islands, except northern Luzon, where *L. m. formosana* (upper parts of head grayish brown) predominates.

Our present specimens from Mindoro belong to typical *jagori*, especially based on the dark brown color of the upper parts of the head, except for the one male that approaches closely the color of the birds from Negros and Mindanao.

We are inclined to believe that the dark brown, or dull black color of the upper parts of the head, the intensity of the chestnut, and the dark brown or blackish patches on the underparts are variable characters even within a single population, and also vary with the age of the bird. We prefer to place the different and very variable populations of this species in the different parts of the Philippines under *jagori* with *gregalis* as a synonym, pending an examination of more materials from the different islands of the Archipelago.

Very common in the cultivated areas, open country, and grasslands in the lowlands and rolling country.

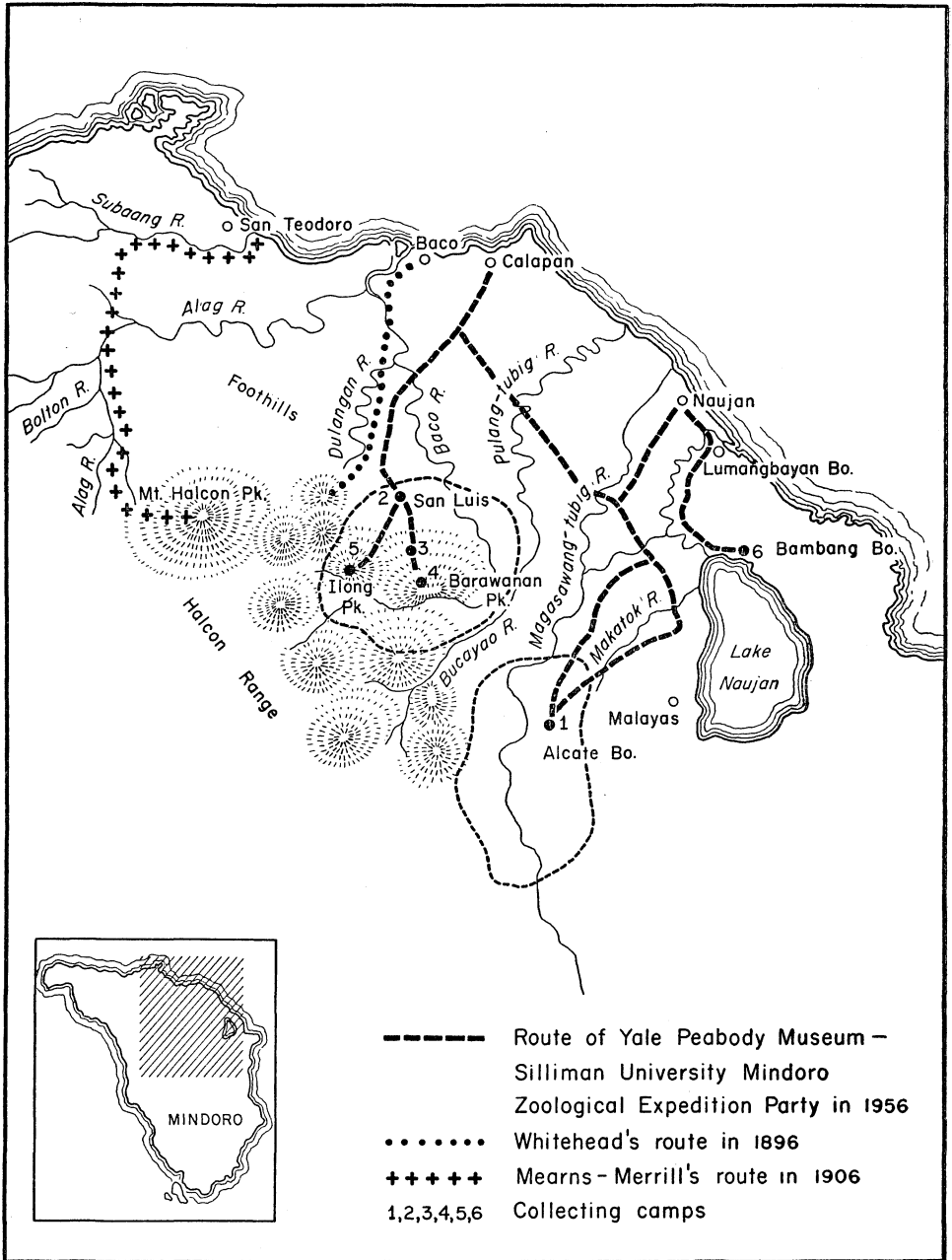


Plate 1. Mount Halcon and surrounding localities showing the approximate routes of the zoological expeditions which have explored these areas.

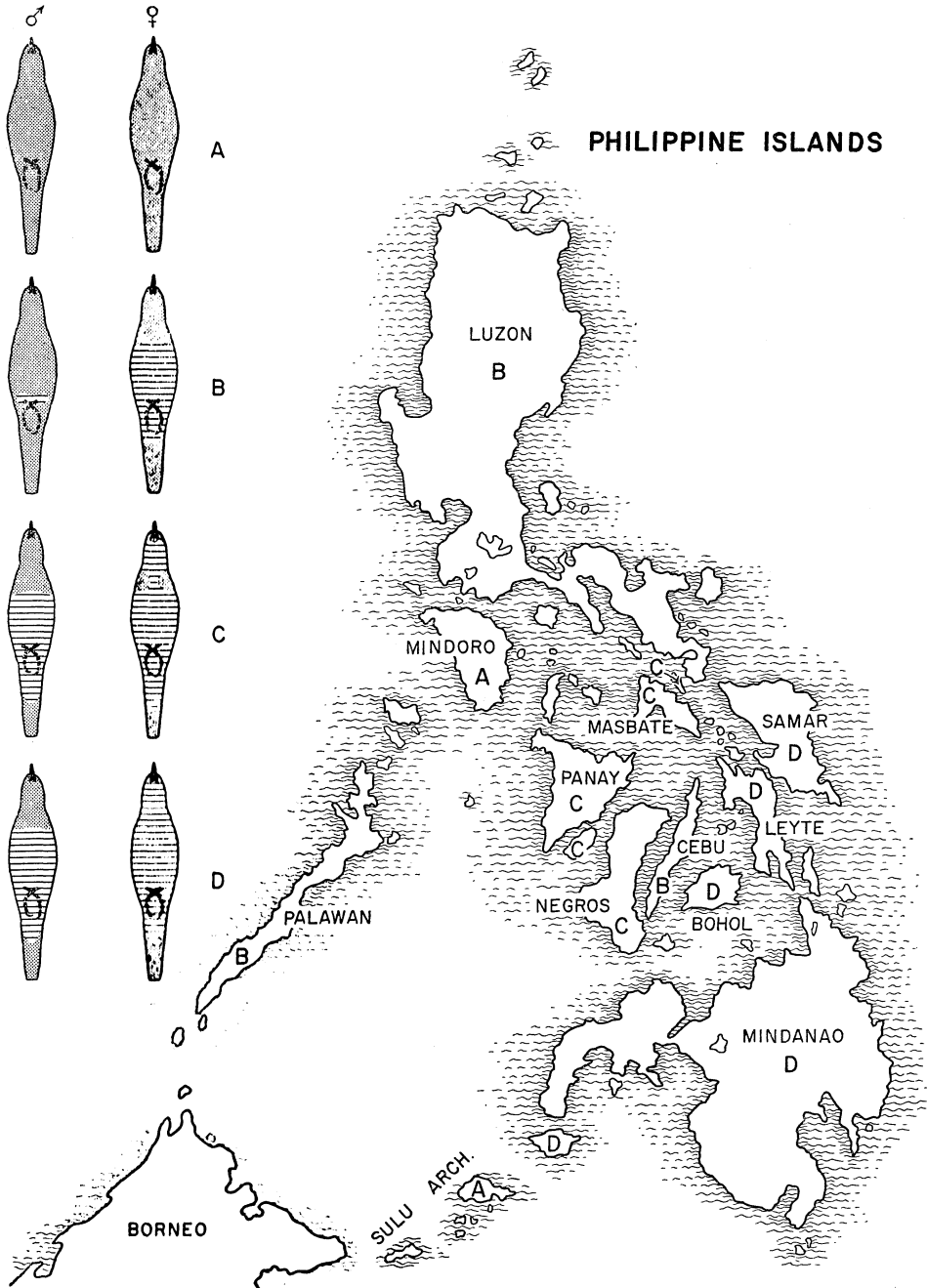


Plate 2. Plumage patterns of the Philippine races of *Coracina striata* and their distribution in the Philippines.

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