BIRDS OF THE PHILIPPINE ISLANDS:
SIQUIJOR, MOUNT MALINDANG, BOHOL,
AND SAMAR

AUSTIN L. RAND

AND

DIOSCORO S. RABOR

FIELDIANA: ZOOLOGY
VOLUME 35, NUMBER 7
Published by
CHICAGO NATURAL HISTORY MUSEUM
OCTOBER 26, 1960
BIRDS OF THE PHILIPPINE ISLANDS:
SIQUIJOR, MOUNT MALINDANG, BOHOL, AND SAMAR

AUSTIN L. RAND
Chief Curator, Department of Zoology

AND

DIOSCORO S. RABOR
Field Associate, Department of Zoology
Department of Biology, Silliman University

FIELDIANA: ZOOLOGY
VOLUME 35, NUMBER 7
Published by
CHICAGO NATURAL HISTORY MUSEUM
OCTOBER 26, 1960
Edited by Lillian A. Ross
# CONTENTS

<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>225</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>225</td>
</tr>
<tr>
<td>Birds of Siquijor Island</td>
<td>228</td>
</tr>
<tr>
<td>Birds of Mount Malindang, western Mindanao</td>
<td>260</td>
</tr>
<tr>
<td>Birds of Bohol Island</td>
<td>310</td>
</tr>
<tr>
<td>Birds of Samar Island</td>
<td>363</td>
</tr>
<tr>
<td>Comments on special species</td>
<td>414</td>
</tr>
<tr>
<td>References</td>
<td>440</td>
</tr>
</tbody>
</table>
Birds of Siquijor, Mount Malindang, Bohol, and Samar

INTRODUCTION

The 7100 Philippine Islands have been an interesting and attractive field for the study of tropical birds for many ornithologists. As a result of their efforts, our knowledge of Philippine birds has gradually grown with the years, although many problems in Philippine ornithology remain unanswered.

Professor Dioscoro S. Rabor of the Biology Department of Silliman University, in collaboration with Dr. Austin L. Rand of Chicago Natural History Museum and Dr. S. Dillon Ripley of the Peabody Museum of Natural History, has carried on, since 1947, studies of Philippine birds, and with the joint support, in terms of funds, equipment and supplies, of Chicago Natural History Museum, Peabody Museum of Natural History, and Silliman University, has explored numerous islands, especially in the highlands, which in the past were often inaccessible to collectors. The present paper sets forth the ornithological results of the explorations carried on by Rabor and his colleagues, assistants and students, on the islands of Siquijor, Bohol, Samar and Mindanao.

New species keep cropping up in Philippine ornithology, even from islands or particular regions on certain islands, which have been supposedly thoroughly worked in the past; and there are still many regions in the Philippines that are virgin fields for the student and collector.

ACKNOWLEDGMENTS

The results set forth in this paper have been made possible only through the invaluable aid of many people, only a few of whom it is possible to mention below.

We are grateful to Messrs. Ananias Kinilitan, Filomeno Empeso, and Domingo Empeso, Laboratory Assistants in the Biology Department of Silliman University, for their very efficient help as field collectors on these zoological explorations; without their untiring
efforts, our bird lists for the various islands would not have been as extensive. We also thank many Silliman students, former students and colleagues in the Biology Department, for their efficient aid in zoological explorations on various islands; among them are Messrs. Rodrigo Pepito, Avelino Torres, Rodolfo Gonzales, Jesus Sumangil, and Valfredo Rabor, all of whom, at one time or another, took charge of camps and collecting parties. We are grateful to Mrs. Lina Florendo-Rabor, who, on several occasions, was an important member of the expedition party and took charge of the camp activities other than those of collecting, thus allowing the collecting members of the party all the time to do their work. We also express our gratitude to various people on several islands, who gave us of their time and services, and even the use of their properties, to make possible the success of our work. Among them are Mr. William Anderson, Comptroller of Silliman University, who, on two occasions, enabled Professor Rabor to make preliminary surveys of various prospective collecting regions, with the use of his personal plane, which he himself flew. To the late Mr. Ismael Fortich and Mrs. Juliana Fortich of Sierra Bullones, we owe much for the help that they gave us when the collecting party was working in the interior of Bohol. To Mr. Lao Hian Beng and his family, of Catbalogan, the capital of Samar, we owe a great deal for the aid that they gave the party when we were in that town. By lending us their jeeps they made it possible for us to save most of our field equipment and supplies during the great 1957 fire that burned three-fourths of this capital town, including the entire business section. The Lao family helped us save our property during this unfortunate happening when the party had just arrived from Dumaguete City, Negros Oriental, and had stopped in Catbalogan temporarily, on the way to the interior of Samar.

In the Mount Malindang work, on Mindanao, the officials of the Bureau of Forestry were extremely kind in supplying information and help to the field party. The District Forester’s office in Dipolog attached Mr. Vincent Torres, the Forest Ranger in charge of the area, to the party, and our best thanks are due him and his office.

We are indebted to Messrs. H. Deignan and T. Gilliard, and Dr. Charles Vaurie, and their respective institutions, the United States National Museum and the American Museum of Natural History, for the loan of comparative materials that were used in the present study.

Professor Rabor expresses his great indebtedness to the John Simon Guggenheim Memorial Foundation, Chicago Natural History Museum, Yale University, and the United Board for Christian
Higher Education in Asia, for the research fellowships and travel grants that made it possible for him to come to the United States and work on the bird collections from various islands of the Philippines, at present in Chicago Natural History Museum and Peabody Museum, with the advice of or in collaboration with Dr. Rand and Dr. Ripley.
Birds of Siquijor Island

Introduction and History of Collecting

This is a study of a small, badly deforested central Philippine island, with special reference to the possible faunal effects of the small size of this island. Most of the studies on distribution of Philippine birds have approached the question from the viewpoint of classical zoogeography; relationships and proximity; changes in land masses; and faunal areas.

However, a number of students in various parts of the world have pointed out ecological differences between faunas and populations of small islands and those of near-by larger land masses. These differences appear to be correlated with small islands and can well be called "small island effects." The Philippines provide a wonderful field for such studies; no understanding of the avifauna can be reached without an evaluation of small island effects as well as the more usual zoogeographical aspects. We hope that the few observations recorded here will soon be augmented by others from other islands.

The earliest collection of birds on Siquijor Island was made by the Steere Expedition to the Philippines in 1887-88, when the collecting party worked on this island in February, 1888. Thirty-seven bird forms were recorded, including three endemics: *Loriculus philippensis siquijorensis*, *Hypsipetes s. siquijorensis* and *Dicaeum trigonostigma besti*.

F. S. Bourns and D. C. Worcester of the Menage Expedition to the Philippines (1890-93) next collected on Siquijor. They recorded 81 forms of which 44 were additions to the island's avifaunal list, including one more endemic, *Zosterops everetti siquijorensis*, the fourth on the island. This collection raised the total known bird forms on Siquijor to 87.

Andres Celestino next collected on the island in September, 1907, and in April and May, 1908, for the Philippine Bureau of Science. He collected a total of 62 bird forms of which 9 were additions to the island's avifaunal list, making a total of 96 bird forms known from Siquijor as of 1907.
Recently collections have been made on the island on several occasions by parties from Silliman University, headed by Professor Rabor and sponsored mainly by Chicago Natural History Museum. The island was visited in December, 1952, May–June, 1953, December–January, 1953, and December, 1954. Dr. Rand was with the collecting party in December–January, 1953. Collecting was done chiefly at Lilo-an and Tag-ibo, in and near patches of forest, but collections were also made along the Po-o River (Lazi municipality) from near the coast up to Barrio Cangumantang in the interior, close to the center of the island. These most recent collecting activities yielded 67 bird forms collected and 5 sight records. Of the number collected, 13 forms have been added to the avifaunal list of the island—9 resident and 4 migrant. A new subspecies of the yellow-bellied thickhead, *Pachycephala philippinensis siquijorensis*, was described, representing a fifth endemic subspecies.

After deleting several doubtful records such as *Cuculus canorus* and *Cacomantis merulinus* the Siquijor list stands as 107 forms (106 species plus 1 subspecies); of these 83 are Philippine forms and 24 are migrants.

The list of migrants may be considerably extended by future work, but the list of resident species is probably fairly complete.

The only separate paper on the birds of Siquijor is that of McGregor (1908, Notes on a collection of birds from Siquijor, Philippine Islands, Phil. Jour. Sci., 3: 275–281), based on the collection of Celestino, but a discussion of the island is contained in a number of papers, especially that of Worcester and Bourns (1898, Proc. U. S. Nat. Mus., 20: 551–566, 581), and the earlier Siquijor records were all incorporated into McGregor’s *A Manual of Philippine Birds* (1909).

**Geography**

Siquijor is a small coral island, about 235 square kilometers in area, situated just within the entrance of an arm of the Sulu Sea. The island lies about 19 kilometers east of the nearest point on southern Negros, 25 kilometers southeast of Cebu, 30 kilometers southwest of Bohol, and 45 kilometers north of Zamboanga Peninsula of Mindanao.

Siquijor is predominantly hilly and in many places the hills reach the sea, producing precipitous cliffs. At the center Mount Malahahoc (locally known as Bandila) reaches about 628 meters in elevation, the highest point on the island. Three marine terraces can be roughly traced—especially in the vicinity of Tag-ibo on the southwestern part
of the island, a *barrio* of San Juan municipality—from the seacoast up into the central part.

Siquijor is definitely coralline, and in the plowed fields fossils of the giant clam, *Tridacna*, are often encountered. On the hilltops there are numerous shells of molluscan species that are at present living in the seas around the island. Siquijor must have been formed quite recently, geologically speaking.

**Vegetation**

Siquijor is a common type of island in the Philippines: well cleared of forest and with a population too large to be supported by the island under the present system of farming, in which most of the people are engaged. However, a small manganese mine is operated in the central hilly part of the island. Recently there has been a steady migration of hill farmers to the government land settlement projects on the near-by islands of Negros and Mindanao.

At the present time the greater part of the island, from coast to hilltop, is covered with cultivated fields, patches of second growth, and grasslands. The second growth patches, of various ages, represent a stage in cultivation—cultivated fields that have been left fallow to grow up to brush which will in time be cleared again while more cultivated fields will be left to grow up to brush for a time. The country of mixed grassland, second growth and cultivated areas, the *parang* type of vegetation, is especially common on the level places and on the bases of the hills.

The soil is generally impoverished and in many places in the hills erosion has left only thin layers. In Tag-ibo and vicinity many hill-sides are bare rock. Streams are few and short, and most of them are dry for much of the year except after rains. These streams must have been better supplied with water when the island was covered with forest, as it probably was. Locally, pools persist in the Tag-ibo River near the wooded patches on its upper reaches. Second growth is well developed along the dry watercourses.

Corn is the staple crop, although limited areas, mostly near the coast, are planted to lowland rice. The fields are terraced, to use water from the rainy season. In the hills *camote* (sweet potatoes), *camoteng-cahoy* (cassava), and a very little tobacco are planted. Coconuts are planted locally throughout. Carabaos, cattle, horses, and goats of the farmers graze on grasslands.

Remnants of the original forest exist at only two places: Lilo-an, municipality of Maria, and Tag-ibo, municipality of San Juan; in both of these the forest has been much modified by cutting.
At Lilo-an, close to the sea and about 50 meters above it (to the edge of the sea cliff), are about 400 hectares of forest. This is growing on what is presumably the newest marine terrace, which extends, with minor breaks, about 2 kilometers inland here. This forest is dwindling, as it is the source for local building material. Though the area is protected as a government reserve, cutting continues. Most of the taller, more valuable trees have been cut. Sometimes logs are dropped over the cliff into the water whence they are recovered and transported by sea, making the task of the government guard very difficult.

The other forest patch, in the hills of Tag-ibo about 5 kilometers from the coast, covers about 500 hectares on hillsides at about 300 meters altitude. As in the Lilo-an reserve, the better trees have been cut. Sawing places were found in well-hidden nooks in the hills just outside the reservation.

Both of these patches of original forest belong to the modified dipterocarp-molave type of closed, evergreen forest. Originally there must have been extensive forest growth of one type or another, from the seacoast up to the mountain tops. From the remnants now, one can postulate that there probably were narrow strips of the mangrove type of forest in some places along the coast, and patches of the beach type of forest in places where the land slopes gently into the sea. The hills and the mountains, especially on their sides, must have been occupied by the molave type of forest, and in the rather level places and on the gentle slopes of the hills and mountains there must have been the modified dipterocarp-molave type of forest that did not quite become real dipterocarp forest.

Compared with other islands the habitats on Siquijor are much like those on Bohol and on Samar, though on both of these larger islands there are more forest and more swamps and water, actually and probably proportionately. However, Cebu is perhaps poorer in habitats than Siquijor, and it is doubtful if any forest is now existing there.

By comparison Negros and Mindanao are much richer and more varied. Besides second growth, cultivated fields, water and marsh there are still large areas of original dipterocarp forest in the lowlands and up the mountain slopes to an altitude of about 600–700 meters. Above that are mid-mountain forests that extend up to about 1700–1900 meters, and above that is mossy forest, where the mountains rise higher.
Zoogeography

The division of the Philippines into faunal areas serves two purposes: it indicates areas whose faunas have had at least somewhat different histories, and it is a convenience in discussing distribution. Of course it has the merits (and demerits) of any classification, with difference of opinion as to how many categories to use in interpreting the varying patterns of different groups of animals.

A certain degree of endemism in the birds occurs in many Philippine islands. Some of these can be grouped together when their birds are more closely related than are those of another group of islands. Inger (1954, Systematics and Zoogeography of Philippine Amphibia, pp. 468–471) would recognize only two faunal areas for amphibians: (1) the Balabac–Palawan–Calamian chain, and (2) the rest of the Philippine archipelago. Delacour and Mayr (1946, Birds of the Philippines, pp. 9–15) recognized three main faunal areas: (1) the Palawan group; (2) the eastern Philippine group, and (3) the central or Visayan provinces, with certain marginal areas—Mindoro, Luzon Strait and Sulu Archipelago—as districts. The latter classification we feel is a useful concept, though the units included in each area are not uniform. However, when we deal with an island such as Siquijor, with an impoverished fauna, its allocation is not clear.

Siquijor as an island has probably had an independent existence since before the Pleistocene at least, for Pliocene limestone and Miocene limestone and shales are known. There is no evidence that the island has been connected with Negros or Cebu, though the 100-fathom line includes Siquijor with them. The depths between Siquijor and Bohol and Mindanao are in the neighborhood of 350 fathoms, indicating less possibility of land connections. Certainly no land connections were necessary to account for the avifauna of Siquijor.

It would seem that Siquijor's avifauna could have colonized it from the surrounding islands, but prevailing winds could have been influential though the distances are short. The winds of the north-east monsoon prevail from December to May; those of the southwest monsoon from June to November. The typhoons in the Philippines usually originate over the Pacific Ocean east of the Ladrone Islands and pass over the Philippines in a west-northwest or west by north path. The course of the winds would favor a colonization of Siquijor from the west and northwest (i.e., the direction of Bohol).

The following data apply to Siquijor. It has a small avifauna—82 resident species, as known. There are no endemic genera or species. There are five fairly well-defined endemic subspecies: Loriculus
*philippensis siquijorensis* (extinct?), *Hypsipetes s. siquijorensis*, *Pachycephala philippinensis siquijorensis*, *Dicaeum trigonostigma besti*, and *Zosterops everetti siquijorensis*.

The relationships of these Siquijor endemics point in various directions. *Loriculus philippensis* is a widespread species, with the Siquijor form most like the distant Mindoro form; *Hypsipetes siquijorensis* has only two other races, one on Cebu (a little known bird) and another on Romblon and Tablas, all of the Visayan group; *Zosterops everetti* ranges in the Philippines from Sulu and Mindanao north only to Samar and west only to Cebu and Siquijor (replaced on Negros by another species). *Dicaeum trigonostigma* is a widespread species, but the Siquijor race is closest to the Bohol-Samar-Mindanao race, not the Negros-Cebu forms. *Pachycephala philippinensis* is an eastern Philippine species, replaced on Negros by another species. The race *P. p. siquijorensis* is most closely related to the Samar-Bohol-Mindanao bird.

The relationships of a few other, non-endemic subspecies are pertinent. The rail *Rallus torquatus sanfordi*, of Siquijor, is the same as that of Mindanao, not *R. t. torquatus*, of Negros, Bohol and northward. However, this allocation is based on longer bill size, possibly a small island effect not indicating real relationship. The Siquijor race of the owl *Ninox philippensis* is *centralis*, very similar to the Negros-Bohol bird and quite different from the Mindanao *spilocephala*. The Siquijor race of the brown fruit dove *Phapireron leucotis* is *albifrons*, which also occurs on Samar, Leyte, and Bohol and is closest to the races on Luzon and Mindanao and quite different from the Negros subspecies.

For the rest, the resident bird avifauna is of widespread Philippine species that give little guide to the origin or relationship of the fauna. The many strongly characteristic birds of Mindanao, Samar-Leyte-Bohol (eastern province) and Negros (Visayan province) are lacking. Presumably some may be lacking because of lack of suitable habitats (see p. 234).

We can best conclude that Siquijor is a small island with an impoverished fauna. Its avifauna probably came to it over seas and from various directions. The slight preponderance of eastern Philippine relationship (via Bohol) in the few pertinent data might cause one to include it in the eastern province. However, it probably should be considered a marginal island, between the eastern and central provinces.
Ecological Aspects

Zoogeography proper is not the only aspect of bird distribution to consider in studying the avifauna of a small island like that of Siquijor. While its avifauna undoubtedly was derived from that of the adjacent larger land masses and was influenced by ease of colonization from them, the ecology of a small island, probably in part an effect of its small size, also has something to do with the nature of its avifauna.

Size of the Avifauna

In general, small islands have smaller avifaunas than larger islands. That this is true of Siquijor is well shown by the following table:

<table>
<thead>
<tr>
<th></th>
<th>Area sq. km</th>
<th>Breeding Birds No. of species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siquijor</td>
<td>235</td>
<td>83</td>
</tr>
<tr>
<td>Bohol</td>
<td>3,973</td>
<td>138</td>
</tr>
<tr>
<td>Cebu</td>
<td>4,390</td>
<td>130</td>
</tr>
<tr>
<td>Negros</td>
<td>12,699</td>
<td>183</td>
</tr>
<tr>
<td>Mindanao</td>
<td>95,587</td>
<td>259</td>
</tr>
</tbody>
</table>

Distance from Larger Land Masses

In general, the farther an island is from its “source of supply” the smaller its avifauna, but because of their geographical arrangement our islands cannot be compared in this respect. However, if we are correct in assuming that much of the colonization of Siquijor came from Bohol we should note that it is not the nearest island. The distance from Siquijor to Negros is 19 kilometers; to Cebu, 25 kilometers; to Bohol, 30 kilometers; to Zamboanga Peninsula of Mindanao, 45 kilometers. Evidently factors other than distance affect colonization. In this case it seems to be prevailing winds (see p. 232).

First Arrivals Excluding Other Colonists

The manner in which quite distinct-looking but obviously related forms replace each other on island after island is a conspicuous feature of Philippine avifauna. Steere (1894, Ibis, p. 420) was impressed with this phenomenon to the extent of putting forward the generalization that “no two species structurally adapted to the same conditions will occupy the same area.” Of course Steere recognized only species, and many of his “species” are now considered subspecies. However, this idea has been elaborated since, especially in various publications by David Lack. It often appears now as follows: Two species of the
same genus can not occupy the same area unless their habitat requirements are different. Otherwise they act as barriers to each other's spread. 

There are two species reaching Siquijor which have representative species common on Negros: Pachycephala philippinensis (with P. plateni on Negros) and Zosterops everetti (with Z. migrorum on Negros). Both sets of species colonize small islands and occupy similar habitats elsewhere in the Philippines. It is possible that the early presence of the eastern Philippine species on Siquijor, colonists from Bohol, has prevented the colonization of Siquijor by the Negros species.

The bulbul Hypsipetes siquijorensis on Siquijor has habits very similar to those of the similar but somewhat smaller H. philippinus of Negros, etc. The similarity of the two species in life is striking. Their ranges do not overlap. Possibly the same mutually exclusive factor has kept H. philippinus, which has colonized many small islands, from colonizing Siquijor.

It should be pointed out that a number of largely representative forms, such as Hypsipetes rufigularis and H. everetti, and Phapitreron amethystina and P. brunniceps, once thought to be only well-marked subspecies, have since been found to live together on Mindanao and accordingly are definitely species. One species of each pair of birds, evolved in isolation, has been able to re-invade the range of its nearest relative. Difference in habitat may be found when the birds are studied.

Occurrence of Two Species in a Genus

There are some instances of two species in a genus living on the same island, but each with a different way of living; for example, the pigeons of the genus Treron. T. pompadora on Negros is a bird of the original forest, T. vernans of the second growth and cultivated land. On Siquijor both species live with considerable overlaps in habitat due to the degeneration of the forest habitat. Of the two rails, Rallus striatus and R. torquatus, the former prefers damper habitats, and of the two slaty rails, Amaurornis phoenicurus and A. olivacea, the same is true, the former favoring wetter places. The pittas, Pitta erythrogaster of the forest, and P. sordida of the second growth, present a similar case.

The kingfishers of the genus Halcyon present on Siquijor a picture of three habitats, each occupied by a species: H. chloris lives along the seashore or in clearings and fields, often far from water; H.
smyrnensis lives along streams and in open country near water; H. winchelli is a forest bird. A fourth, H. coromanda, is a winter visitor and lives in the forest, where it has an unusual diet of snails.

However, there are a few pairs of species in which habitat differences were not apparent: for example, the grassland mannikins in Lonchura (leucogaster and malacca).

**Birds of Higher Altitudes Living at Lower Ones on Small Islands**

This is a surprising but apparently a very real phenomenon in the Philippines. The fruit pigeon Ptilinopus merrilli is a mountain bird on the large island of Luzon, but it occurs unchanged on adjacent, small Polillo Island, where it lives at sea level; Columba vitiensis seems to be a high mountain bird in most of the Philippines but it lives at low altitudes on the small islands north of Luzon. The flycatcher Muscicapa hyperythra in general is a mountain bird but lives at low altitudes on Calayan. Pachycephala plateni has a similar type of distribution.

In Zamboanga the brush cuckoo, Cacomantis variolosus, is a bird of the mountains, while below it lives another species, C. merulinus; on Siquijor only C. variolosus is known, living far below its normal range. The pigeon Columba vitiensis is a mountain bird in Negros and Mindanao; on Siquijor it occurs near sea level.

To speculate, one could postulate that the range of mountain birds in the Philippines is really a series of small islands (in mountain habitats) surrounded by lowlands (of other habitats) and that it bears a similarity to small islands surrounded by the sea. Perhaps when C. variolosus occupied Siquijor it prevented C. merulinus from establishing a foothold. This then would be another case of first arrivals—one species excluding other colonists (see p. 234). However, the fruit pigeons of the genus Ducula present a different picture. Both the lowland forest Ducula aenea and the mountain forest D. carola occur.

**Species of Small Islands**

There are a number of species which have a very wide range—from India to New Guinea—but live only on small islands. Even the larger islands of the Philippines seem unsuitable as breeding places, though they may visit the coasts of some to feed.

The nutmeg pigeon Ducula bicolor and the Nicobar pigeon Caloenas nicobarica are the most obvious Philippine examples of this.
Though both have been taken on Siquijor, but only occasionally, they also are taken occasionally on larger islands. Evidently Siquijor is not small enough, or has no suitable habitat for them to be permanent residents.

Another small island Philippine species is the gray imperial pigeon *Ducula pickeringi* that lives only on small islands off Borneo and Mindanao. It might have been expected on Siquijor but does not occur.

*Change of Habitat on Small Islands*

When a species lives on a small island it may live in a habitat somewhat different from that in which it ordinarily makes its home on larger land masses. In Siquijor the following such differences were noted (see p. 235): *Treron p. axillaris, Pitta erythrogaster, Columba vitiensis*, and *Cacomantis variolosus* lived in broken forest and near-by brush; on Negros the first two species lived in forest and the others were found in deep mountain forest. It is possible that the change from living in forest to living in broken forest and brushland has taken place in the last two or three hundred years, since the Filipinos have begun to raise corn and denude the island of forest.

*Absences of Certain Groups of Birds*

The non-occurrence of certain groups of birds on Siquijor is very noticeable. There are no records of such forest birds as hornbills (Bucerotidae), barbet (Capitonidae), woodpeckers (Picidae), titmice (Paridae), nuthatch (Sittidae), or drongo (Dicruridae). All of these might be expected in the small patches of forest that are left on Siquijor, as all are found on Negros and on Mindanao. Perhaps some or all of them did occur formerly and have disappeared as the forest decreased in size. Perhaps they never inhabited the island.

However, there are certain grassland species that might be expected to occur but have never been found, for example, the button quail (*Turnix*) and the lark (*Mirafra*). While the first is often scarce and difficult to find, the second is common and conspicuous on many islands but seems to be actually absent from Siquijor. Perhaps the two genera may yet colonize it, for the extensive grasslands are probably in the order of 200 years old only.

*Patterns of Variation*

Ordinarily, within a genus, similarity in color, pattern, and measurements is taken to indicate relationships. This is probably usually
true, but there are indications that it may not always be so. Particularly within a species, characters may repeat themselves in widely separated parts of the range.

**LARGE BILL OF ISLAND FORMS:** This is a common phenomenon in many parts of the world. Why it should be, we don’t know. In Siquijor only one of the endemic races, that of *Pachycephala philippinensis*, is characterized by a large bill, though the local population of *Nilava rufigastra* tends also to have a larger bill—a difference of less than subspecific value.

The Siquijor specimens of *Rallus torquatus* have long bills, like *R. t. sanfordi* of Mindanao. Hence they are referred to that race, though the longer bill may have arisen independently as a small island effect.

**OTHER CHARACTERS:** The main characters shown by the other Siquijor endemics seem to point in no special direction: less yellow in upper parts (*Loriculus*); darker, blacker-headed (*Hypsipetes*); grayer, less yellow throat (*Dicaeum*); paler (*Zosterops*).

It is interesting to point out, however, that the endemic race of flower-pecker (*Dicaeum*) is more unlike the Negros form (the nearest geographically) than is the Bohol-Mindanao bird, which is somewhat intermediate in color between the other two despite the range.

The endemic race of hanging parakeet (lacking yellow on the hind crown) is more like the Mindoro race than it is like its nearest neighbors.

On Siquijor there occur two other species whose populations would be recognizable as subspecies if they were compared only with their nearest neighboring populations: *Kakatoe haematuropygia* and *Tanygnathus lucionensis*. However, elsewhere in the Philippines, on more distant islands, the characters of the Siquijor populations reappear. The geographical pattern given by characters is thus a checkerboard one, and the usefulness of naming subspecies that can be recognized only by geography seems doubtful.

In another Siquijor species, *Oriolus chinensis*, what seems to be a small island effect is not apparent. The species shows an increase in size in Fuga and Calayan islands, in Busuanga and Cuyo islands, and in the Sulu islands. Each population seems to have acquired larger size independently. Variation in other characters permits recognition of two races (see Rand, 1951, *Fieldiana*, Zool., 31: 591), and in these characters the Siquijor *Oriolus* fit into the general pattern that
seems to represent a north-south cline in being less yellow to the south.

**Migrants**

The list of migrants known from Siquijor is small, and all of them come from Asia. They are: *Gorsachius goisagi*, *Butastur indicus*, *Squatorola squatorola*, *Pluvialis dominica fulva*, *Charadrius alexandrinus dealbatus*, *C. leschenaultii*, *Numenius phaeopus variegatus*, *Tringa totanus eurhinus*, *T. glareola*, *Actitis hypoleucos*, *Charadrius alexandrinus dealbatus*, *C. leschenaultii*, *Numenius phaeopus variegatus*, *Tringa totanus eurhinus*, *T. glareola*, *Actitis hypoleucos*, *Heteroscelus brevipes*, *Arenaria i. interpres*, *Gallinago megala*, *Clamator coromandus*, *Cuculus saturatus horsfieldi*, *Ninox scutulata japonica*, *Halcyon coromanda* bangsi, *Hirundo rustica gutturalis*, *Motacilla cinerea melanope*, *Anthus gustavi*, *Lanius cristatus lucionensis*, *Monticola solitaria philippensis*, *Phylloscopus b. borealis*, and *Muscicapa griseisticta*. Probably this list could be much lengthened, especially in regard to migrant shore birds.

An interesting point arises in regard to several species that occur. Several migrants from Asia were found more commonly on Siquijor than would be expected, judging by Rabor’s experience on other islands. Four specimens of *Gorsachius goisagi* were taken in the limited work on Siquijor, compared with only two other specimens in the Chicago Museum collection from all the other Philippine field work.

Even more striking is the case of *Halcyon coromanda bangsi*, of which we have eight specimens from Siquijor, taken in two months. It is otherwise known only from two Negros specimens taken by Rabor recently. The other race, major, has been recorded from many stations. Can this indicate that certain species or subspecies have restricted winter ranges in the Philippines?

**Post-Breeding, Wandering Sea Birds**

Sea birds are not common in most of the Philippines, though big colonies of terns, boobies, and frigate birds do nest in the islets in the Sulu Sea or north of Luzon. The only such species listed as visitors to Siquijor are the terns, *Thalasseus bergii* and *Sterna fuscata*.

**LIST OF SPECIES**

The specimens in the following list are in Chicago Natural History Museum except those labeled S.U., which are in the Silliman University collection.
The habitat preferences are based not only on Rabor's Siquijor work, but on a composite of his experience with the species on various islands.

The data on previous collections have been taken from McGregor (1909, Manual of Philippine Birds) and are listed first, in parentheses, followed by Rabor's observations and a list of specimens collected by him.

It seems unnecessary to give the precise locality and date for the individual specimens unless for some special reason. Hence they are recorded in condensed form.

In a few cases, more discussion of a species is pertinent than was advisable to insert in the list of species. This material has been assembled into a separate section at the end of the report, and the relevant species are marked with asterisks indicating such additional data.

The list of 106 species and 1 subspecies recorded for Siquijor is as follows:

**Family ARDEIDAE**

*Egretta garzetta garzetta* (Linn.)

(Coll.: Bourns and Worcester).

Habitat: in marshes or along shallow rivers, and on tide flats.

*Demigretta sacra sacra* (Gm.)

(Coll.: Bourns and Worcester).

Habitat: along exposed, rocky beaches.

*Bubulcus ibis coromandus* (Boddaert)

(Coll.: Celestino).

Rabor: 1 ♂ (S.U.).

Habitat: in rice fields especially near the coast.

*Butorides striatus carcinophilus* Oberholser

(Coll.: Bourns and Worcester).

Rabor: 1 ♂; December 27, 1954 (S.U.).

Habitat: along deeply shaded streams; also feeds on exposed beach at low tide.
Nycticorax caledonicus manillensis Vigors
Habitat: spends the day roosting, always several individuals together, in the foliage of tall trees in original forest or on isolated clumps of forest trees; feeds at night in fish ponds and along rivers.

Gorsachius melanolophus kutteri (Cabanis)
(Coll.: Bourns and Worcester).
Habitat: spends the day roosting in groups of individuals in densely foliaged trees of original forest or forest clumps; at night feeds actively along streams in forest.

*Gorsachius goisagi* (Temminck)
Rabor: 2 ♂, December 21, 26, 1954 (also 2, S.U.). Wing, 257, 266; exposed culmen, 40, 37 mm.
Migrant.
Habitat: spends the day on the ground in dark and deeply shaded parts of the forest, or under a dense clump of trees near a stream.

A new record for Siquijor. It is noteworthy that our four specimens from the small island of Siquijor were taken during only limited field work there, while the extensive collecting by Rabor on Negros has yielded only one specimen.

Family ANATIDAE

Dendrocygna arcuata arcuata (Horsfield)
Habitat: frequents lakes and ponds in flocks of various size; occasionally frequents fish ponds near the coast.

Anas luzonica Fraser
(Coll.: Steere Exp.).
Habitat: ponds and even carabao wallows; sometimes in small streams in original forest.

Family ACCIPITRIDAE

Haliastur indus intermedius Blyth
(Coll.: Steere Exp., Celestino).
Rabor: 1 ♀.
Habitat: the coast and cultivated and second growth areas.
Accipiter virgatus confusus Hartert
   Rabor: 1 ♀, subadult.
   Habitat: dense second growth.
   A new record for the island.

Butastur indicus (Gm.)
   (Coll.: Steere Exp., Bourns and Worcester).
   Migrant.
   Habitat: frequents fields, clearings, and second growth.

Spizaetus philippensis Gould
   (Coll.: Bourns and Worcester).
   Habitat: a bird of original forest, perching in the tallest trees.

Family FALCONIIDAE

Falco peregrinus ernesti Sharpe
   (Coll.: Celestino).
   Though none were collected by Rabor’s parties, one was seen while Rand was at Lilo-an in January, 1954. It was a single, very dark bird of this species which flew by the village just after dawn on several mornings. It was apparently on its way from the forest on the coast where it probably slept, to the open fields of the interior of the island.

Falco severus (Horsfield)
   (Coll.: Bourns and Worcester).
   Habitat: forest and second growth.

Family PHASIANIDAE

Excalfactoria chinensis lineata (Scopoli)
   (Coll.: Celestino).
   Habitat: grassland and rice fields.

*Gallus gallus gallus (Linn.)
   (Coll.: Steere Exp., Celestino).
   Habitat: forest and forest edge.
Rabor’s parties found the jungle fowl only in the 500-hectare forest reserve near San Juan. It was missing from the 400-hectare forest reserve near Maria and is probably on the verge of disappearance from the island, following the reduction of the forests which seem necessary for its existence.

Family RALLIDAE

Rallus striatus striatus Linn.
(Coll.: Bourns and Worcester).
Habitat: prefers grassland near swamps.

Rallus torquatus sanfordi Gilliard
(Coll.: Bourns and Worcester, Celestino).
Rabor: Tag-ibo; 1 ♂; December 28, 1954.
Bill from lateral feathering: 38 mm.
Habitat: dry second growth and grassland, as well as marshes.
In the longer bill this bird agrees with sanfordi of Mindanao, while Bohol and Negros birds agree better with torquatus of Luzon. This may indicate relationship or may be a small island effect on Siquijor.

*Poliolimnas cinereus ocularis* (Sharpe).
(Coll.: Steere Exp., Bourns and Worcester).
Habitat: lowland marshes and swamplands along the coast.

Amaurornis olivacea olivacea (Meyen)
(Coll.: Bourns and Worcester).
Habitat: dry grassland, in lowlands and hills.

Amaurornis phoenicurus javanica (Horsfield)
(Coll.: Bourns and Worcester, Celestino).
Habitat: marshes, often feeding along edge of open water.

Family ROSTRATULIDAE

Rostratula benghalensis benghalensis (Linn.)
(Coll.: Bourns and Worcester).
Habitat: in marshes and wet rice fields.
Family CHARADRIIDAE

Squatarola squatarola (Linn.)
Migrant.
Habitat: seacoast.

Pluvialis dominica fulva (Gm.)
Rabor: 1 ♂, 1 ♀; December 24, 1954; another, December 28 (S.U.).
Migrant.
Habitat: seacoast and inland on short grass areas and plowed fields.

Charadrius alexandrinus dealbatus (Swinhoe)
(Coll.: Steere Exp.).
Migrant.
Habitat: beaches and tide flats.

Charadrius peronii peronii Schlegel
(Coll.: Steere Exp., Bourns and Worcester).
Habitat: beaches and muddy shores.

Charadrius leschenaultii Lesson
(Coll.: Bourns and Worcester).
Migrant.
Habitat: sandy and muddy flats.

Family SCOLOPACIDAE

Numenius phaeopus variegatus (Scopoli)
(Coll.: Steere Exp., Bourns and Worcester).
Migrant.
Habitat: mud flats and mangrove swamps.

Tringa totanus eurhinus (Ober.)
(Coll.: Steere Exp., Bourns and Worcester).
Migrant.
Habitat: sand and mud flats.
Tringa glareola Linn.
(Coll.: Steere Exp., Bourns and Worcester).
Migrant.
Habitat: coastal flats and estuaries.

Actitis hypoleucos (Linn.)
(Coll.: Celestino).
Rabor: 2 ♂ ; December 27, 29, 1952 (S.U.).
Migrant.
Habitat: along the coast and also along rivers and streams.

Heteroscelus brevipes (Vieillot)
(Coll.: Steere Exp., Bourns and Worcester).
Rabor: 2 ♂ , 2 ♂ ; December 27, 28, 1952 (S.U.).
Migrant.
Habitat: coastal tidal flats and swamps.

Arenaria interpres interpres (Linn.)
(Coll.: Bourns and Worcester).
Migrant.
Habitat: sandy and muddy flats and mangrove forest.

Gallinago megala Swinhoe
(Coll.: Bourns and Worcester).
Migrant.
Habitat: a bird of marshes and wet rice fields when the plants are short.

Family LARIDAE

Sterna fuscata nubilosa Sparrman
(Coll.: Bourns and Worcester).
Migrant.
Habitat: seacoast.
A post-breeding visitor, presumably from its breeding grounds in the Sulu Sea.

Thalasseus bergii cristatus (Stephens)
(Coll.: Bourns and Worcester, Celestino).
Habitat: seacoast.

Found in great numbers about the coastal fish corrals of nearby Zamboanga Peninsula of Mindanao during the sardine and herring season, October to January, indicating a post-breeding visitor from its breeding grounds on Sulu Sea reefs.

Family COLUMBIDAE

Treron pompadora axillaris (Bonaparte)
(Coll.: Bourns and Worcester, Celestino).
Rabor: 2 ♂, 1 ♀; wing, ♂ 157, 160; ♀ 164 mm.
Habitat: chiefly forest but comes into clearings to feed in fruiting trees.

Treron vernans vernans (Linn.)
Rabor: 6 ♂, 6 ♀.
Habitat: chiefly dense second growth and lantana along streams and cultivated fields.

Phapitreron leucotis albifrons McGregor
(Coll.: Bourns and Worcester, Celestino).
Rabor: 5 ♂, 3 ♀; wing, ♂ 127–134; ♀ 122–129 mm.
Habitat: forest and second growth.

This race, of Samar, Leyte, Bohol and Siquijor, is more closely related to leucotis of Luzon and Mindoro and to brevirostris of Mindanao than it is to the more different nigrorum of nearby Negros and Cebu.

McGregor listed brevirostris as well as albifrons from Siquijor, but apparently only the latter occurs.

Ptilinopus leclancheri leclancheri (Bonaparte)
Rabor: 1 ♀ (+ 3 S.U.).
Habitat: forest, also dense second growth.

First record for Siquijor. This lowland species is evidently common on Negros, whence we have 14 specimens, but is much scarcer on Mindanao whence we have but a single specimen (from Davao).
Ducula aenea aenea (Linn.)
(Coll.: Bourns and Worcester, Celestino).
Habitat: forest; also tall trees in cultivated areas; usually travels in small parties.

Ducula bicolor (Scopoli)
Rabor: 1 ♀.
Habitat: chiefly small island forests.
One would expect this bird of small islands to occur more frequently than Rabor found it on Siquijor. Ordinarily a bird of forests on small islands; sometimes on the coast of larger islands; a flocking species.

Ducula carola subsp.?
Rabor: 1 ♀.
Habitat: forest and forest edge; a flocking species.
New for Siquijor.

Columba vitiensis griseogularis Walden and Layard
Rabor: 1 ♀, December 27, 1954.
Habitat: forest.
First record for Siquijor. Its occurrence here is of interest in being a lowland, small island record of a species that on Negros and Mindanao lives only in mountain forest. It is usually seen singly or in pairs.

Macropygia phasianella tenuirostris Bonaparte
Rabor: 1 ♀.
Habitat: forest and second growth.
A new record for Siquijor, but not surprising as it is a widespread species. It is usually solitary or in pairs.

Streptopelia bitorquata dusumieri (Temminck)
Rabor: 1 ♂.
Habitat: second growth and cultivated areas. Often feeds on freshly harvested rice fields and in the edge of corn fields.
Chalcophaps indica indica (Linn.)
(Coll.: Bourns and Worcester, Celestino).
Rabor: 2 ♂, 1 ♀.
Habitat: a ground bird of forest and second growth.

Caloenas nicobarica nicobarica (Linn.)
(Coll.: Celestino).
Rabor: 1 ♂, 1 ♀; both immature.
Habitat: forest floor on small islands.
This species is scarce on Siquijor, but still scarcer on Negros where Rabor has taken but one, and we have none from Mindanao.

Family Psittacidae

*Kakatoe haematuropygia (Müller)
(Coll.: Bourns and Worcester, Celestino).
Rabor: 3 ♂, 4 ♀.
Habitat: forest, forest edge and second growth; also corn fields for ripening grain.
The irregularities in the pattern of geographical variations (size) permit no subspecies to be recognized.

*Tanygnathus lucionensis talautensis Meyer and Wiglesworth
(Coll.: Bourns and Worcester, Celestino).
Rabor: 4 ♂, 3 ♀.
Habitat: forest and second growth; also into grain fields to feed.
The geographical variation in this species in central and southern Philippines does not fall into patterns permitting recognition of subspecies.

Loriculus philippensis siquijorensis Steere
Extinct?
Habitat: forest and coconut groves.
This subspecies is known only from Siquijor. Ordinarily this species is a common and conspicuous bird in the lowlands of Negros (race regulus). As the three earlier collecting parties found it on Siquijor, the same presumably was true there. However, the earlier
Rabor parties on Siquijor found no trace of the species and they began to wonder whether it had become scarce or had disappeared. Then, on December 25, 1954, they collected an adult male of the species but it was an example of the quite different *L. p. regulus* whose range is Negros-Guimaras. *L. p. regulus* has the red forehead bordered with a wide area of yellow on the crown, and has a narrow orange-yellow band on the hind neck. *L. p. siquijorensis* has no yellow between the red forehead and green crown, and no orange-yellow band on the hind neck (McGregor). It seems most like the Mindoro race, *mindorensis*.

As this species is often caged by Filipinos and carried from island to island, it seems probable that the *regulus* collected was from this source.

The species is primarily a forest bird, wandering out into second growth and into coconut palms to feed; it may be that the race *siquijorensis* became extinct with the dwindling of the forest.

Family **CUCULIDAE**

**Clamator coromandus** (Linn.)

(Coll.: Bourns and Worcester).

Migrant.

Habitat: forest, thickets, and dense second growth.

**Cuculus fugax pectoralis** (Cabanis and Heine)

Rabor: 1 immature, December 24, 1954; wing, 171 mm.

Habitat: forest, in densely foliaged tops of the trees.

A new record for Siquijor.

**Cuculus saturatus horsfieldi** (Moore)

Rabor: 1 ♂, Tag-ibo, December 24, 1954; wing, 209 mm.

Migrant.

Habitat: forest and second growth.

A new record for Siquijor; following Junge (1937, *Temminckia*, 2: 202) we refer these winter migrant birds to this larger northern race (wing, 192–215 mm.).

*[Cuculus canorus* Linnaeus

saturatus (optatus of authors; see also Peters, 1939, Bull. Mus. Comp. Zool., 86: 90) so that his records are suspect. Certainly a specimen from Calayan, in our collection, recorded by McGregor as canorus is really saturatus.

From the literature one might judge that C. canorus was a more common winter visitor to the Philippines than was saturatus, but in Chicago Natural History Museum we have no Philippine specimens of canorus while we have 15 specimens of saturatus from Calayan, Samar, Siquijor, Bohol, and Negros.]

[Cacomantis merulinus merulinus Scopoli
Though recorded for Siquijor by McGregor, he did not distinguish between this species and variolosus, and its occurrence, though not surprising, needs to be substantiated.]

Cacomantis variolosus sepulcralis (Müller)
Rabor: 1 ♂ adult.
Habitat: forest.
A new record for Siquijor of this widespread species. As it tends to be a higher altitude species than merulinus it is perhaps surprising that variolosus rather than merulinus was found by Rabor.

Eudynamys scolopacea mindanensis (Linn.)
(Coll.: Bourns and Worcester, Celestino).
Rabor: 9 ♂, 2 ♀; January, December (+ 1 S.U.); wing, ♂ 182–208; ♀ 187, 189.
Habitat: tops of forest and second growth trees.
One of the Siquijor females is just completing its moult from the black, male-like immature plumage.

Centropus viridis viridis (Scopoli)
(Coll.: Bourns and Worcester, Celestino).
Rabor: 5 ♂; 3 ♀ (+ 4 S.U.).
Habitat: second growth, bamboo thickets and even shrubbery along edges of cultivated fields.

Centropus toulou javanensis Dumont
(Coll.: Bourns and Worcester).
Habitat: dense tall grass and shrubbery of hedge rows and along dried-up streams.
Family **TYTONIDAE**

*Tyto capensis amauronota* (Cabanis)

(Coll.: Steere Exp.).

Habitat: grassland especially of *cogon* (*Imperata*) and *talahib* (*Saccharum*) grass.

Family **STRIGIDAE**

*Ninox scutulata japonica* (Temminck and Schlegel)

Rabor: 1♂, 1♀; December, January; wing, ♂ 221; ♀ 238 mm. Migrant.

Habitat: forest and dense second growth especially along streams. A new record for Siquijor of this widespread Asiatic migrant.

While Rabor collected two of these on Siquijor we otherwise have only three from Negros, one from Mindanao, one from Fuga and one from Calayan. They were taken between August 31 (Fuga) and January 29. They measure: wing, (6) 216–235; culmen from base, (6) 22–25 mm.

*Ninox scutulata randi* Deignan

Lilo-an, Maria: 30 meters altitude; 1♂; January 4, 1954; wing, 230; culmen from base, 27 mm.

Habitat: dense forest.

A new record for Siquijor.

We consider this specimen as belonging to the resident race because it closely resembles two specimens from Mindanao (May 31 and June 17), in the darker and more rufous wash on the plumage especially on the upper parts, in the lesser amount of feathering on the distal end of the tarsus, and in the larger size of the bill. Wing, ♂ 240, ♀ subadult 222; culmen, ♂ 29, ♀ subadult 27.

*Ninox philippensis centralis* Mayr


Rabor: 2♂, 1♀; January, May.

Habitat: forest and second growth, especially along dried-up streams.

This race is like the Negros-Bohol birds and quite different from the Mindanao form.
Family **APODIDAE**

Collocalia troglodytes Gray
Rabor made several sight records of this very distinct species.
Habitat: vicinity of caves in limestone country.

Family **ALCIDINIDAE**

Alcedo atthis bengalensis Gmelin
(Coll.: Bourns and Worcester, Celestino).
Habitat: usually streams and the seashore.

Ceyx lepidus margarethae Blasius
(Coll.: Bourns and Worcester).
Habitat: forest, forest edge and second growth along fresh water.

Halcyon smyrnensis gularis (Kuhl)
(Coll.: Bourns and Worcester, Celestino).
Rabor: 1 ♂, 1 ♀.
Habitat: along rivers and streams, and even in cultivated fields near water.

*Halcyon coromanda bangsi* (Oberholser)
Rabor: 2 ♂, 6 ♀; December–January.
Migrant. A new record for Siquijor and for the Philippines.
Habitat: forest, where it perches on low branches and feeds on snails, breaking them open on a favorite rock (see p. 422).

Halcyon winchelli Sharpe
(Coll.: Bourns and Worcester).
Habitat: usually a species of forest and forest edge.

Halcyon chloris collaris Scopoli
(Coll.: Bourns and Worcester, Celestino).
Rabor: 5 ♂, 7 ♀.
Habitat: open country near or far from water; also the seashore.

Family **MEROPIDAE**

Merops philippinus Linn.
Rabor: 1 ♂, 2 ♀.
Migrant.
Habitat: open country.

Family **CORACIIDAE**

*Eurystomus orientalis cyanocollis* Vieillot
(Coll.: Steere Exp., Bourns and Worcester).
Rabor: 1 ♂, 1 ♀; January, December (+1 S.U.).
Habitat: second growth and fields, where it sits on commanding perches.

Geographical variation in wing length and bill size exists in the Philippines, but the patterns shown make recognition of any races difficult.

Family **PITTIDAE**

**Pitta erythrogaster erythrogaster** Temminck
(Coll.: Bourns and Worcester).
Rabor: 1 ♂, 2 ♀; all immatures.
Habitat: on the ground in forest; less commonly in second growth.

**Pitta sordida sordida** (Müller)
Rabor: 2 ♂, 2 ♀ (+1 S.U.).
Habitat: largely in second growth, on the ground.

Family **HIRUNDINIDAE**

**Hirundo tahitica javanica** Sparrman
(Coll.: Bourns and Worcester, Celestino).
Rabor: sight records of birds nesting under the pier at Larena.
Habitat: open country.

**Hirundo rustica gutturalis** Scopoli
(Coll.: Bourns and Worcester).
Rabor: sight records.
Migrant.
Habitat: open country and seashore.
Family **MOTACILLIDAE**

Motacilla cinerea melanope Pallas  
(Coll.: Celestino).  
Rabor: 1 ♂, 1 ♀ (S.U.).  
Migrant.  
Habitat: edges of streams.

**Anthus gustavi** Swinhoe  
(Coll.: Celestino).  
Rabor: 2 ♂, 1 ♀.  
Migrant.  
Habitat: the forest floor where undergrowth is dense; often runs to escape, and generally disappears.

**Anthus novaeseelandiae lugubris** Walden  
Rabor: 1 ♂, 1 ♀.  
Habitat: open country where grass is short or sparse.

Family **CAMPEPHAGIDAE**

Lalage nigra nigra (Forster) (*L. n. chilensis* of authors).  
(Coll.: Bourns and Worcester, Celestino).  
Rabor: 4 ♂, 3 ♀ (+3 S.U.).  
Habitat: second growth, cultivated areas, and gardens.

Family **LANIIDAE**

Lanius schach nasutus Scopoli  
Rabor: 5 ♂, 2 ♀ (+2 S.U.).  
Habitat: open country with scattered shrubbery.

Lanius cristatus lucionensis Linn.  
(Coll.: Celestino, Bourns and Worcester).  
Rabor: 5 ♂, 3 ♀ (+4 S.U.).  
Migrant.  
Habitat: second growth, and open fields with trees and shrubs.
Family **ARTAMIDAE**

*Artamus leucorhynchus leucorhynchus* (Linn.)
Rabor: 8 ♂, 4 ♀, 1 sex? (+ 3 S.U.).
Habitat: clearings, forest edge and open country where there are tall trees on which it can perch.

Family **PYCNONOTIDAE**

*Hypsipetes siquijorensis siquijorensis* (Steere)
Habitat: forest and forest edge and tall second growth.
This is a Siquijor endemic, represented otherwise by other races on (a) Cebu and (b) Tablas and Romblon. It is replaced on Negros by a different but very similar species, *H. philippinus*.

Family **TURDIDAE**

*Copsychus saularis mindanensis* (Boddaert)
(Coll.: Bourns and Worcester, Celestino).
Rabor: 2 ♂ adults, 1 ♂ immature, 2 ♀.
Habitat: forest edge, second growth, and patches of brush in cultivated areas.

*Saxicola caprata caprata* (Linn.)
(Coll.: Bourns and Worcester, Celestino).
Rabor: 1 ♀.
Habitat: open country, perching on bushes or rocks.
Our material is too insufficient to allow comment on the race *anderseni* Salomonsen 1953, from Mindanao.

*Monticola solitaria philippensis* (Müller)
(Coll.: Bourns and Worcester, Celestino).
Rabor: 1 ♀, January 6.
Migrant.
Habitat: rocky seashore and cliffs.
Family SYLVIIDAE

Megalurus timoriensis tweeddalei McGregor
(Coll.: Bours and Worcester).
Habitat: tall grass country and hedgerows.
New material should be secured to compare with M. timoriensis crex, Salomonsen 1953, from Mindanao.

Cisticola exilis rustica Wallace
(Coll.: Bourns and Worcester, Celestino).
Rabor: 1 ♂, 1 ♀ (+ 1 S.U.).
Habitat: open tall-grass country.

Phylloscopus borealis borealis (Blasius)
(Coll.: Celestino).
Rabor: 4 ♂.
Migrant.
Habitat: forest, second growth and scattered trees in open country.

Family MUSCICAPIDAE

Rhipidura javanica nigritorquis Vigors
(Coll.: Bourns and Worcester, Celestino).
Rabor: 3 ♂, 6 ♀.
Habitat: second growth, patches of trees, and bamboo groves; common in the brush along dry streams.

Muscicapa griseisticta (Swinhoe)
(Coll.: Bourns and Worcester, Celestino).
Rabor: 1 ♂, 3 ♀; December 2–27 (+ 7 S.U.).
Migrant.
Habitat: forest edge and scattered trees in open and cultivated areas.

Niltava rufigastra philippinensis (Sharpe)
(Coll.: Bourns and Worcester, Celestino).
Rabor: 4 ♂, 8 ♀ (+ 6 S.U.).
Habitat: forest and second growth where it favors deeply shaded places among the low branches.
Siquijor birds have bills which average slightly longer than do those of Negros birds: \( \sigma 17-18 \) vs. \( 15.5-17 \) mm., perhaps a small island effect.

**Hypothymis azurea azurea** (Boddaert).

(Coll.: Bourns and Worcester, Celestino).

Rabor: 7 \( \sigma \), 4 \( \varphi \) (+ 9 S.U.).

Habitat: forest, second growth, bamboo clumps and patches of trees in open country.

Family **PACHYCEPHALIDAE**

*Pachycephala philippinensis siquijorensis* Rand and Rabor


Rabor: 6 \( \sigma \), 5 \( \varphi \).

Habitat: forest.

The relationships of this bird are with the race *apoensis* (of Samar, Leyte, Dinagat, Bohol, Mindanao) and *basilanica* (of Basilan) rather than with the browner race *philippinensis* of Luzon or the still browner races of farther north. Negros is occupied by another species, *P. plateni* Blasius. (This name *plateni*, Braunschw. Anz. no. 52, March 1, 1888, p. 467, has priority over *P. whiteheadi* Sharpe, a name often used for the species; see Ibis, 1888, p. 372.)

Family **DICAELIDAE**

*Dicaeum pygmaeum pygmaeum* (Kittlitz)

(Coll.: Bourns and Worcester, Celestino).

Rabor: 1 \( \varphi \).

Habitat: forest and second growth.

*Dicaeum trigonostigma besti* Steere


Rabor: 10 \( \sigma \), 10 \( \varphi \).

Habitat: a very common bird of the forest and second growth; gathers in numbers to fruiting trees to feed.

This endemic Siquijor subspecies is quite unlike the yellow-throated *dorsale* of Negros and *pallidius* of Cebu in having only the chin yellow, and the throat gray. In this it is closer to the race *cinereigulare* of Samar, Leyte, Bohol and Mindanao, but compared
with males from the last two localities it is seen to be a valid race, with the yellow on the chin reduced and the gray on the throat more extensive, and it also differs in having a larger bill (10 ♂, 13–14.5, vs. Samar and Bohol, ♂, 12–13.5; Mindanao, 6 ♂, 11.5–13 mm.), but not a larger wing.

Family NECTARINIIDAE

*Nectarinia sperata davaoensis* Delacour
(Coll.: Bourns and Worcester, Celestino).
Rabor: 3 ♂, 2 ♀ (+ 2 S.U.).
Habitat: widely distributed in trees and shrubbery from forest to scattered trees in open country.

*Nectarinia jugularis jugularis* (Linn.)
(Coll.: Bourns and Worcester, Celestino).
Rabor: 10 ♂, 10 ♀.
Habitat: second growth and scattered shrubbery and trees in open country; rather common in coconut groves, where it feeds on the flowers.

Family ZOSTEROPIDAE

*Zosterops everetti siquijorenensis* Bourns and Worcester
(Coll.: Bourns and Worcester, Celestino).
Rabor: 4 ♂, 7 ♀ (+ 10 S.U.).
Habitat: forest, second growth, and scattered tree growth in cultivated areas.

We have not seen Cebu (*everetti*) or Camiguin South (*forbesi*) birds, but compared with Samar, Mindanao and Basilan (*basilanicus*) and Bohol (*boholensis*) specimens, this Siquijor endemic race is quite distinct on the basis of the paler green upper parts, yellower forehead, slightly paler throat and slightly paler gray flanks.

Rabor (1952, *Auk*, 69: 257) has shown that this subspecies does not occur on Negros, though sometimes said to do so. Another species, *Z. nigrorum*, replaces it there.

Family STURNIDAE

*Aplonis panayensis panayensis* (Scopoli)
Rabor: 10 ♂, 10 ♀.
Habitat: forest edge, second growth and cultivated areas.

**Sarcops calvus melanonotus** Grant
(Coll.: Celestino).
Rabor: 5 ♂, 3 ♀ (+ 2 S.U.).
Habitat: forest, second growth and cultivated areas.

**Family PLOCEIDAE**

**Lonchura malacca jagori** (Mertens)
(Coll.: Bourns and Worcester).
Rabor: 1 ♀, 1 immature (+ 1 S.U.).
Habitat: open country, in grassland and cultivated areas.

**Lonchura leucogastra manueli** Parkes
Rabor: 1 ♀ (+ 3 S.U.).
Habitat: grasslands.
A new record for Siquijor of this widespread species, which is not as common as the preceding one.

**Family ORIOLIDAE**

**Oriolus chinensis chinensis** Linn.
Rabor: 5 ♂, 10 ♀ (+ 4 S.U.).
Habitat: forest edge, second growth and scattered trees and coconut groves.

**Family CORVIDAE**

**Corvus macrorhynchos philippinus** Bonaparte
Rabor: 1 ♂, 1 ♀ (S.U.).
Habitat: forest edge to cultivated areas.
Birds of Mount Malindang, Western Mindanao

Introduction

Mount Malindang has been the least explored of the five Philippine mountain masses known to support a peculiar mountain avifauna. These areas are in Luzon (northern highlands, 9613 feet); Mindoro (Mount Halcon, 8481 feet); Negros (Mount Canlon, 8088 feet); and Mindanao ([a] eastern highlands, Mount Apo, 9690 feet, etc.,1 and [b] Mount Malindang, 7965 feet, in the western peninsula of Zamboanga).

Mount Malindang has been climbed only once before, by Dr. E. A. Mearns, in 1906. He made a collection of birds, but we know nothing about its bird life except for a number of novelties he described. Rabor undertook an expedition to this isolated peak in 1956 to provide material for a report on what Mearns' findings indicated was an extremely interesting mountain avifauna.

Mount Malindang and Its Surroundings

Mount Malindang rises about 7965 feet above sea level and towers over the remaining parts of the low cordillera that extends the whole length of the Zamboanga Peninsula.

Topographically, Zamboanga Peninsula is in a stage of early maturity, with old volcanic stocks such as Mount Malindang, Mount Panubigan, and Mount Dapiak dominating what is generally upland country of moderate elevation. The Mount Malindang range extends in a general north–south direction and is rather long but narrow. Warren D. Smith (1924, Geology and Mineral Resources of the Philippine Islands, pp. 211, 216 and 227) describes Mount Malindang as "... a very imposing pile of andesite and basalt..." and "... evidently an old volcanic stock and shows signs of extensive erosion; it has probably not been in eruption since the Pleistocene." It has never been part of any other mountain mass.

The Malindang range, for the greater part of its length and width, and, on the average, for the upper half of its elevation, is still covered with dense virgin forest.

1 See Salomonsen (in press).
In general, the country west of Malindang is very rugged, characterized by numerous peaks with varied elevations but with a tendency to get higher from west to east, culminating in two very conspicuous but low peaks, marked in the maps of the region as Mount Dapiak and Sugar Loaf Mountain, which are immediately due west of the main peak of Mount Malindang. North of Malindang, the terrain is likewise very mountainous, and the mountains even reach the sea in some places. East of the Malindang range there is a coastal plain of varying width, estimated to be from 1 to 12 kilometers wide. This plain begins just a little north of Plaridel and extends eastward and southward toward Oroquieta, Jimenez, Clarin and Misamis City, or a little south of it. Viewed from the east, the Malindang range presents a line of peaks of varying heights, from north to south, culminating in the main peak of Mount Malindang. There seems to be a gradual increase in the height of the peaks from north to south. Along the greater extent of its north–south axis (actually northwest–southeast), the Mount Malindang locality appears to be split into two parts by the deep gorge of the Dapitan River. In most maps of the region, the river represented as extending farthest into the Malindang locality is called the Dipolog but it is actually the Dapitan; its source is on a very high peak, immediately north of the main peak and separated from it by a deep canyon. After the Expedition party was already on the summit of the peak next in height to the main peak they found this deep, sheer canyon, about 2500 feet deep, with the ridge of the Dapitan River headwaters peak curving westward toward the Dapitan River gorge, which was about 2000 feet below them toward the west. The Subanos in the region know the main peak of Mount Malindang as Salog, and from here the Salog River arises and flows to the south of the Mount Malindang locality.

History of Bird Study and Exploration

The only previous bird work on Mount Malindang, by Mearns, has been documented only by the description of the new forms. As this publication includes also a mention of the only previously recorded climb to the top of the mountain, it seems advisable to give an account of Mearns' trip from the manuscript reports in the United States National Museum, which Mr. H. E. Deignan kindly lent us.

1. Prioniturus malindangensis (=P. montanus malindangensis).
2. Malindangia mcgregori (=Edolisoma m. mcgregori).
4. Merula malindangensis (=Turdus poliocephalus malindangensis).
5. Geocichla mindanensis (=Zoothera andromedae).
6. Pseudotharrhales malindangensis (=Bradypterus caudatus malindangensis).
7. Cryptolophia malindangensis (=Phylloscopus trivirgatus malindangensis).
9. Zosterops goodfellowi malindangensis (=Apoia g. malindangensis).
10. Pyrrhula steeri (=P. leucogenys steeri).

Field Work, 1906, by Major E. A. Mearns, U.S.A.

The party left Misamis May 9, 1906; May 10 they left Tangob, on the coast, and the same day they reached Catagan, 1100 feet, at the foothills of the mountain.

The search for a route up the steep, broken slopes was carried out by various groups from Mearns’ party. Camps were made on lower slopes and peaks, and birds collected. Not until June 4 did a party reach the summit of Mount Malindang. June 7–9, the whole party returned to Catagan, and on June 11, 1906, to Tangob and Misamis.

Mearns’ catalogue list indicates that some 185 specimens of about 75 species of birds were collected, from altitudes from 1100 feet (Catagan) to 9000 feet (summit of Grand Malindang, as the Mearns party recorded its elevation).

The following, from the manuscript account of the expedition written by Robert Schroder and now in the United States National Museum, gives the route in detail. It should be remembered that the forested valleys and ridges through which Mearns searched for a way in 1906 are today (1956) cleared of forest up to 4000 feet or more, and this is the only available description of the lower southeastern slopes of the mountain when they were forested.

The Biological and Geographical Reconnaissance of the Malindang Mountain Group, commanded by Major Mearns, U.S.A., left the old fort of Misamis on May 9, 1906, after getting cargadores and a guide for Tangob. Passing through Misamis, a town inhabited by about 7000 Filipinos and 600 Moros, we followed the shore for about 1½ miles until we reached the Labu River, which at this place is about 200 feet wide. An old pile bridge leads across it, and a small Filipino settlement is located at its mouth. From here we followed the trail to Tangob, which is very clearly marked by much travel. The ground is rolling, rough and rocky, covered by woods and underbrush, occasionally broken by a clearing, where the natives have cut and burned the timber and planted hemp. This continued for about 4 miles. From here the travel was much better, leading through large clearings covered with grass. At 4:00 P.M. we reached the Diguan River, and as there was
Map Showing Routes of Expeditions of Major Mearns and Chicago Natural History Museum.
plenty of running water we went into camp. At 8:00 A.M., May 10, we broke camp, and after following the trail for about 2 1/2 miles more we crossed the Magguiaguay River near Tangob and arrived at the President's house at 10 A.M. There 8 carabao were secured to carry the largest portion of the rations, which had arrived by boat from Misumis, and after engaging a new guide the party left at noon for Catagan, passing through Tangob, which is a town of about 3000 inhabitants, mostly Filipinos, and followed a trail much used by Subanos, which was mostly northwest for 4 miles. The ground is almost level, rising hardly noticeably to an elevation of 200 feet. On both sides of the trail are large clearings covered with grass, and up to this point, which is actually the foot of the Malindang group, travelling is very easy. Here we crossed the Malabug River, which at this point is about 50 feet wide and has running water. About one mile east of this point, the water of the Malabug River disappears between the rocks underground. From here the trail is rocky, over rolling ground and through dry ravines, timber, and underbrush on both sides. Just before reaching Catagan we passed through a large hemp grove. At 3 P.M. our party reached Catagan, a small Subano settlement, altitude 1100 feet. The casas are built on the slope of the mountain and surrounded by hemp groves. The largest casa in the settlement, about 100 x 40 feet, belongs to Datto Anib, the chief of the settlement. This Subano tribe, and especially the Datto, an old man, did everything in their power to make it comfortable for the party; the Datto even moved his family into another shack and gave us possession of his own casa. Later on, he provided the party with rice, chickens and eggs, which were very cheap. The religion of this tribe is sun worship; and one of their customs is to vacate a casa after its master has died, which accounted for several empty shacks which we found in the neighborhood.

On May 15, Major Mearns, Captain Jervey, and Lieutenant Earle made a reconnaissance north of Catagan and reached the peak of Mount Lebo, elevation 5750 feet. This is the mountain which Captain C. C. Smith ascended in 1904. On the same day, Major Mearns, descending west of Mount Lebo, found a narrow ridge leading west; this the party followed the next morning for about two miles and came to the foot of another mountain which they ascended. This peak has the same elevation as Mount Lebo (5750 feet); barometer readings one hour apart. This very prominent conical peak was named Mount Bliss. From it a very good view is offered of Grand Malindang Peak; but as a canyon 2500 feet deep made any further progress impossible, after taking readings on the different mountain peaks and sizing up the general locality, Mearns camped on Mount Bliss, returning to Catagan May 17, 1906.

On May 18, 1906, Privates West and Mott left Catagan for the purpose of finding a passage through the canyon north of Mount Lebo. They ascended this mountain, and after camping there they descended the northern slope of Mount Lebo on May 19; after a perilous climb down the canyon about 2500 feet, they arrived at an unknown river which came from the northwest. This river they followed for about two miles east, and on finding it not passable for cargadores they camped there. On May 20, West and Mott followed the river to its source and found it leading up to a high divide between Mount Bliss and Mount Bentad. Here they ascended Mount Bliss over the divide, which they found comparatively easy, and having thus successfully explored the gorge, and found plenty of water, they returned to Catagan, May 22, 1906.

On the advice of Datto Anib, Lieutenant Wood, with a detachment of constabulary, started May 18 for the Moro town of Balinsang to find a guide for
GRAND MALINDANG, but found none. He then explored several rivers entering into Misamis Bay, but found all impracticable for cargadores with the exception of the Malabug. This river Lieutenant Wood followed north on May 20. At the elevation of 2400 feet he came to a Subano settlement of 4 or 5 casas, but the inhabitants knew of no trail to Grand Malindang. From here he followed the river to 3000 feet elevation, where a small tributary came from the north into the Malabug. From here Lieutenant Wood climbed to the peak of Mount Lebo to take observations, as it was almost impossible to determine the locality from the gorge of the Malabug. On May 21 he again descended to the river and followed it up to an elevation of 3350 feet, where it divided, one branch going north, the other northwest. He followed the larger one to an elevation of 3810 feet and found it impossible to go further, on account of the roughness of the country. So he decided to ascend Mount Bliss, which he found to be very difficult. Here he camped, returning to Catagan, May 22, 1906.

On May 23, Hutchinson and Private West started out to find a way of getting to the summit of Grand Malindang by following the lower course of the Bliss River (so we named the river which West and Mott discovered). A Subano guide led them northeast from Catagan through the Subano settlements Binot and Kapata- gan across several rivers (which are located on the new map). No trail leading any further north, they followed through the forest, going mostly 20° west of north. This course they kept for nearly 3 hours, when the rim of the gorge was reached; elevation 3200 feet. A thousand feet below, they beheld the Bliss River, impossible to reach, as the slopes were almost perpendicular. The party camped here, and on the next day tried in vain to find a way to go down to the river; so they followed the gorge for some distance south and then by a compass route returned until they struck the Naculan Trail, where they camped, returning the next day by way of Binat to Catagan, arriving May 25, 1906.

On May 19 Captain Jervey and Lieutenant Earle, with Privates Bentley, Cragan and Egbert, returned to Misamis, and here Captain Jervey engaged a guide for Jimenez, a town northeast of Misamis, to inquire about a trail, which, the Subanos said, led from that town to the foothills of Grand Malindang. But on arriving at Jimenez, CaptainJervey and Lieutenant Earle received telegraphic instructions from Department Headquarters to return to Zamboanga. Before leaving Misamis, Lieutenant Earle and Private Bentley laid off a base line on the beach and took readings by transit for triangulation on the peak of Grand Malindang.

Captain Jervey and party returned then by vinta to Camp Overton, leaving Misamis May 22. On May 25, Lieutenant Wood had been ordered to Iligan, and he left Catagan the same day.

The party having thus been reduced to almost one half of its original strength, Major Mears decided to reach Grand Malindang by crossing the Great Gorge north of Mount Bliss. Therefore, on May 26, the party started from Catagan at 8:15 A.M. and followed a trail mostly 340°, with high grass on both sides for about a mile, then woods and underbrush. Finally we struck the Balinsang Trail; this we followed for some distance, and then found the bed of a dry river; after following this for some time we crossed another small ridge and struck the bed of the Malabug River. This we followed for 300 yards. The river is about 60 feet wide, but the amount of water would not make more than a 6-inch stream. After leaving the river, we followed the long ridge, which led at an almost continuous slope of from 15–20° for 8 miles, to the top of Mount Lebo. It was here fairly good travel-
ling, as underbrush was not very dense but there was more high timber, with trees from 100–200 feet tall and from 2–5 feet in diameter. At 2:15 P.M. we reached Mount Lebo, and from here followed over a narrow ridge about 20 feet wide, for two miles west until we reached the foot of the peak of Mount Bliss, reaching its summit at 3:45 P.M. May 26.

Here the party went into camp, and as the vegetation was very bountiful and mountain birds abundant, Major Mearns decided to stay there for several days. On May 28 Private Daniel W. West, with Sergeant Pasandalan, constabulary, and 4 cargadores, started to reconnoiter the gorge and if possible to find a trail to the summit of Grand Malindang. He went down to the Bliss River, north of Mount Bliss, and after following it for several miles, ascended the ridge to the north, supposing that it was a foothill of Grand Malindang. He followed this ridge until he got to a peak from where he could get some bearings, and found that Grand Malindang was almost due north. Therefore he continued along the ridge, climbing higher and higher until he reached the very peak on May 29; there he found to his disappointment that he had climbed the wrong peak, although it was only about 800 feet lower than Grand Malindang, and that mountain was only a mile away. Seeing that he could not reach this one peak, which had become the mecca of our hopes by this time, as there was a gorge about 5000 feet deep separating the two mountains, and not being able to continue any further, West and Pasandalan camped that night on top. Sergeant Pasandalan shot a deer which replenished their stores somewhat and turned out, later on, to be a new species of its kind, as West saved the skin and skull and brought them back to camp. The next day, the party started on the return trip and descended the mountain to the left; at an elevation of 5000 feet they found several springs, and they followed the small creek which led from one of them. As it was the easiest way of travel they kept following the river it entered into for about 6 miles, when, at a lucky moment, they got a view of Mount Bliss; following then the compass, they climbed over a ridge and reached the Bliss River and hence returned to the camp on Mount Bliss in the afternoon, May 31.

On June 1 the main party started from Mount Bliss and followed over a hogsback down the north slope to the ridge which connects Mount Bentad partly with Mount Bliss. This ridge we followed until the water was plainly heard from below, and here we descended to the Bliss River. This river we followed for about 2 miles. It was from 50 to 70 feet wide, with water enough to make a 10-inch stream.

The grandeur of the foliage on the banks of this river was very striking. Palms, ferns and vines constituted the undergrowth, while mighty narra and numerous soft wood trees rose to a height of more than 100 feet. At a point blazed by West on his expedition, the party turned to the north and from 3200 feet elevation at the Bliss River we climbed to the peak of this ridge at an elevation of 4900 feet. From here, instead of following the ridge as West had done, we descended on the north side, which was very steep, and at an elevation of 3800 feet, struck the Malindang River at 6:15 P.M. There we camped and became very closely acquainted with quite a few land leeches, which inhabited this river gorge as thickly as mosquitoes at Zamboanga. These leeches are so peculiarly constructed as to be able to grow, at your expense, to about ½ inch in diameter, without being discovered. At 8:40 A.M. June 2, we started to ascend the Malindang River. It was from 50 to 60 feet wide, and contained from 6 inches to 2 feet of water. The river-bed was continually rising at a 5°–8° incline. The water came down in continual rapids. The scenery of this river was very beautiful, especially in some places where the
river came through narrow canyons with perpendicular rock walls on both sides, from 100–200 feet high, covered with moss of varied descriptions and flowers wherever your eyes might turn. In some places, mighty trees, growing on opposite sides of the river, joined their branches, and vines and orchids, which were everywhere, completed the most gorgeous of arches. From the right, as also from the left, several small tributaries entered the Malindang River, over falls from 40 to 60 feet high.

Thus we continued for about 6 miles, when, at 1:45 P.M., we reached the place where the Malindang River branched into two forks, one coming from the north, the other from the west. We followed the one from the north, the smaller of the two, and named it Raspberry Creek because we had to chop our way with bolos through a mass of raspberry bushes, which grew on both sides of the creek and had joined hands across it. We climbed over several falls. Here, also, we found species of violets—the same as in the United States—growing on the banks of the creek from 20 to 30 feet high, and then came to one about 50 feet high which we could not reach. Here we branched off to the right and climbed up to a main ridge. We found, at 6100 feet, a level spot, and went into camp at 3:15 P.M., June 2; we named it McMurray Flats after Jackson C. McMurray, Hospital Corps, U.S.A. The next morning we got a fine view of Malindang Peak from a high tree at McMurray Flats, and as the rest of the climb looked favorable, decided to start for the peak the next day.

At 9 A.M., June 4, Major Mearns, W. C. Hutchinson and myself started for the top. We followed a narrow ridge at an angle from 40° to 50°, first going north-west and then north. It proved to be the hardest climb of the whole expedition, as, in many places, we had to climb hand over hand almost straight up. The last 1500 feet from the summit was covered by a heavy tundra. Moss covered everything, in some places a foot and more thick; and branches 2 inches in diameter, looking like the trunk of a tree, or immense roots, made climbing dangerous. Among these moss-covered branches grew the most beautiful white and red orchids and many other kinds of small white, yellow and blue flowers. In some places on the side of the mountain and on the ridge were large patches of cogon grass. At 11:30 A.M. we reached the peak of Grand Malindang; but it was so foggy that we couldn’t see 50 yards anywhere; but as the ridge did not lead any further, we concluded that we had reached our goal.

Mr. Hutchinson, in scouting around on top, discovered a small spring not more than 100 yards from the peak; and by digging a hole as a reservoir, we were provided with ice-water, as the temperature never went above 58° and not below 50°, air temperature. We next proceeded to build a big fire, as it was bitter cold and damp from the thick fog, and established the camp. Major Mearns returned to McMurray Flats that day, for the purpose of bringing up more provisions and mammal traps. Mr. Hutchinson and myself stayed on top to take observations, when the atmosphere should become clear. The clouds disappeared about 4:00 P.M. and the atmosphere became very clear. We climbed a large tree, which had fallen partly over the edge of the peak and gave us therefrom a view to all sides, a view too grand for description. Down before our eyes lay Mindanao, like one great miniature, mountains 3000 feet high looking like small hills, and beyond them, from the coast, very clearly defined, stretched the ocean in its calm magnificence to the very horizon, many hundred miles away. I took readings on all the prominent points, compass, and clinometer. After supper, we watched for sunset; it came later than usual. The atmosphere was as clear as crystal; only a few clouds
were floating far beneath. The sight alone was worth the climbing of grand old Malindang. The following day Major Mearns returned. Privates Mott and McMurray and Señor Estrellas also climbed to the top that day, but returned in the afternoon. That day we erected on top a stone monument 3 feet high; and on top, in the monument, was put a bottle with the itinerary of the expedition. Major Mearns stayed on the summit for 3 days, and collected a good many birds, animals, and botanical specimens.

June 7 we descended to McMurray Flats. On June 8 the whole party returned to the camp on Mount Bliss, and June 9 marched from there to Catagan, where we rested for one day. June 11 we bade farewell to our friend Datto Anib, who had so hospitably received and entertained us, and went down to Tangob. From there we returned to Misamis by vinta, arriving at 4:00 P.M., June 11.

Field Work, 1956, by D. S. Rabor

The aerial survey that Rabor conducted in March, thanks to Mr. Anderson, showed that the lower slopes of Mount Malindang had been extensively deforested, especially on the south and southeastern sides of the mountain, where the slopes are cleared and planted, with well-marked trails, up to 4000–4500 feet. Thus the difficult foothills that Mearns found forested and which caused him so much trouble in finding a way up this approach from the southeast, would now be comparatively easy to cross.

However, two aspects of the west and northwest slopes of Mount Malindang led Rabor to select that approach. First, the greatest extent of virgin forest was there, the original forest having been cleared up to only about 2700 feet (in 1956). Thus the fauna of this lower forest belt, already gone, with the forests, from the southeastern face, could be investigated. Secondly, a national road, under construction for the last five years, now extended from the town of New Piñan to the northwestern base of Mount Malindang and made this route practical. Ten years ago, where this road now runs was unbroken virgin forest, and this approach would have been impractical.

The Expedition party of fifteen members, headed by Rabor, included an Instructor of the Biology Department, Rodolfo Gonzales, as Assistant Head of the party, and students and assistants of the Biology Department of Silliman University.

The party left Dumaguete City, Negros Oriental, March 25, 1956, by boat and arrived at Pulawan Port, Zamboanga del Norte, the same day. A specially chartered truck took the party and equipment to the Office of the District Forester of the Bureau of Forestry, at Dipolog, to secure information on the area in which to collect. As a guide for the party the District Forester’s Office assigned Mr. Vincent Torres, the Forest Ranger in charge of the Mount Malin-
dang area that fell under the jurisdiction of Zamboanga del Norte. Mr. Torres became a very important member of the Expedition party from then on. The truck brought the party to Salvacion that same night.

On March 26, the party proceeded to Barrio Buena-Suerte, which is about 9 kilometers from Salvacion, and from which Mount Malindang can be seen in the distance. The main part of the load now was taken in carts and on carabao-back, and the personal packs were carried on the backs of the members of the party, who went on foot. The national road was passable by truck only to Salvacion, and from the latter to Buena-Suerte; here it was being constructed, and was not yet fit for use by heavy vehicles.

On March 27 the party proceeded to Sitio Gumay, 2700 feet altitude and about 6 kilometers from Buena-Suerte, at the very edge of the forest of Mount Malindang. Below Gumay the countryside was well cleared and planted to corn or sweet potatoes, or left to tall grasses, cogon (Imperata cylindrica) and talahib (Saccharum spontaneum). The country was rolling and the climb proceeded gradually upward from hill to hill. The load was now carried on the backs of carabaos and people. A camp was set up in Gumay where the equipment and supplies, which could not be transferred in one trip from Buena-Suerte, were temporarily stored. An advance party of five expedition members and five porters, went ahead and established the main camp at Sitio Masawan, about 4300 feet elevation, in a small abandoned clearing not far from the Dapitan River gorge, and on its western side. The gorge at this point was easily more than 1500 feet deep and sheer in most places. A small house in an abandoned clearing in dense forest was repaired and was used as sleeping quarters by some members of the party.

It took several days to transfer all the loads to Masawan from Gumay, a distance of about 18 kilometers. It was mostly a gradual climb, but two abandoned clearings were filled with the fallen tree trunks and dense second growth. Here we had to walk on the fallen crisscrossed tree trunks. On March 30 the party and all the load finally reached Masawan. Collecting activities began this day, and continued until April 14. Collecting covered Masawan and surrounding localities for about 10 kilometers around, both on the western and eastern sides of the Dapitan River gorge, including Penacio, Canon, and Bulongkot.

On April 14, the main party established a sub-camp at Gandawan, 4500 feet elevation, about 8 up-and-down kilometers from Masawan.
and still farther southeast in the direction of the main peak. Two people were left in the Masawan camp to take care of the equipment and supplies and to continue collecting.

The camp at Gandawan was a small Subano hut, one of three in a beautiful valley surrounded by towering mountains with elevations from 5500 to 6200 feet. Here the Subanos grew their sweet potatoes. This valley contained about 200 hectares of plain and gradually sloping land but at the time only about 10 hectares were cultivated and the Subanos lived permanently in Canon, a barrio near Buena-Suerte, in cleared areas, at the base of Mount Malindang. They came periodically to plant, clean their fields, and harvest their sweet potatoes. There was a family of five who lived in the valley most of the time, because the father was mainly a hunter and he depended more on the wild game that he got with the aid of his dogs than on the sweet potato crop that his wife and children looked after mostly. All around this valley was virgin forest except close to the cultivated areas where new clearings were being made; here the fallen giant forest trees, many freshly cut, were still on the ground. Sitio Gandawan was at the boundary between Zamboanga del Norte and Misamis Occidental Provinces, but it belonged to the former. Collections were carried on in Gandawan and the surrounding localities for about 5 kilometers radius, including Sitios Bulongkot and Napangan. Both the eastern and western sides of the Dapitan River gorge were collected in.

On April 20, the party divided. One half stayed in Gandawan to continue the work there, and the other half proceeded towards the main peak, the source of the headwaters of the Dapitan River. A sub-camp was established in a small valley that nestled among very high peaks; one of them, the highest, toward the east, was one of the two main peaks of Mount Malindang, the northern peak or Dapitan Peak, 7450 feet in elevation. The camp, about 5100 feet in elevation, was right at the base of the abrupt climb toward the northern peak. At this point, the Dapitan River was a small, shallow mountain brook about 4 feet across, with its bank about 4 feet above the water surface. About 200 meters farther up, the same river became a smaller and shallower brook, about 3 feet wide and with banks hardly a foot above the water surface. The gorge of the river was about 2 kilometers below our camp site. Here the river, still small, descended close to 1000 feet and here the gorge began and extended down to the very base of the Mount Malindang mountain range.
The distance between the northern peak and our sub-camp at
5100 feet was too great for effective collecting, so a small camp was
made on the ridge of the main slope toward the summit of the northe-
ern peak, at an elevation of about 6500 feet. Water had to be carried
up, in a five-gallon can, from the Dapitan River headwaters, about
1400 feet below. From this small camp, it took about 2½ hours of
difficult climbing to reach the flat top of the northern peak. From
the summit we could see a canyon, easily about 2500 feet deep, that
separated the lower northern peak from the much higher southern
one, locally known as Salog Peak, where the south-flowing Salog
River begins.

From April 20 to May 5, collections were made in Dapitan River
headwaters localities, including the areas around Lake Duminagat,
a mountain lake about 8 hectares in area, nestling among high peaks.
(Incidentally, this mountain lake is not on maps of the Mount Mal-
indang localities and is not known except by Subano hunters.) On
May 5, in the afternoon, this party broke camp and went back to
rejoin the others in Gandawan.

On May 6, the whole party went back to the main camp in Mas-
awan. Here collections were made in the surrounding localities of
Penacio and Canon, and in the areas between Gumay and Masawan,
about 3500 feet in elevation.

On May 10 the party came down to Gumay and established camp.
Collections were carried on from Gumay up to about 3500 feet ele-
vation, in the original forest areas, in the localities that were hardly
touched from the Masawan camp, and below, in the cleared areas
down to about 2000 feet, for a radius of about 5 kilometers.

On May 18 the party left Gumay for Buena-Suerte, where we
stayed overnight. On May 19 we proceeded on foot, the loads in
carabao carts, to Salvacion, where a specially chartered truck took
both loads and men to Dipolog, then to Pulawan Port to wait for
the steamer. The steamer was delayed one day, so it was not until
May 20 that we left Pulawan Port for Dumaguete City.

The rains were almost continuous throughout the entire stay of
the Expedition party in the high Mount Malindang localities, except
for four days when the sun stayed bright from early morning to sun-
set; even then it rained at night.

At lower altitudes during the last few days of March up to about
April 15, the sun was always bright from early morning until about
1 or 2 o’clock; then rain clouds would develop, soon followed by
strong rain for about 2 hours. Immediately before sunset, the rain
would stop and the sun would shine again through a cloudless sky. From about April 15 until April 30, the sun would shine from early morning until about 11 o'clock; then heavy dark clouds would develop, soon followed by rain until about 4 o'clock. The sunset was most often sunny but only for a short time. Usually there was no rain during the night until about 3 or 4 o'clock, at dawn, when the showers, from light to heavy to a real rain, would start. Usually they ended about 6 o'clock, and the sun would come up bright. From about May 1 to May 10, the sun as usual would come up bright and stay so for about 1 or 2 hours; then dark clouds would develop and rain would soon follow, continuing until about 4 o'clock. Again, there was often no rain until dawn. From about May 10 until May 17, when we had to go down to Buena-Suerte, there was already almost continuous rain—not very hard, but continuous—that made collecting very difficult.

From May 10 until May 18, when the party was working in Gumay, we could see that there was still continuous sunshine in the lowlands in distant Dipolog and New Piñan. In fact, when we were forced to wait for the steamer in Pulawan Port, we passed a very hot day at the wharf. People in the lowlands told me that the rains would begin about the end of June in the lowlands, but that Mount Malindang would always be covered with dense mists as early as May.

Description of Collecting Localities

1. Buena-Suerte (2000–2700 feet elevation). A well-settled barrio of Christians and Subanos, in rolling country (actually the foothills of Malindang), with numerous cultivated farms and houses. The houses were mainly located along the route of the prospective national road. There was no more original forest within 4 or 5 kilometers of it. At the time that we were there, the newly constructed national road stopped about 3 kilometers from the barrio proper, in the direction of the west coast, but a very well-developed trail for both men and carabao carts led to it. Many clearings were left to tall grass, and here and there were dense patches of second growth—clearings that had been neglected during the last five years or so.

2. Gumay (2700–3000 feet elevation). A very tiny sitio with about five Subano houses that formed a cluster on top of a well-cultivated hill, close to the edge of the original forest of Malindang. Gumay was about 5 or 6 kilometers from Buena-Suerte. Like the latter, it was already well cleared and cultivated on the side toward the lowlands, but with virgin forest toward the mountain of Malindang.
The forest in this area, up to about 3500 feet, was dipterocarp rain forest type, with the typical three-storied character of the trees very well shown. There were extensive patches of dense second growth immediately adjoining the forest edge.

3. Penacio (3000–3500 feet elevation). This was the largest barrio of the Subanos that we saw. The main group of houses was at the very edge of the forest, with some houses scattered in the cleared areas below, which were mostly planted to crops of corn and sweet potatoes. Interspersed among the untouched forest there were also patches of cleared areas which undoubtedly were new clearings that had only been planted once or twice, because the half-burned trunks were still in evidence. In addition, there were newly cleared areas with the felled trees still unburned, for they were not dry enough to burn. Then there were patches deep inside the dipterocarp forest and rather far up the slope, where the underbrush was already being cut so that the forest was very clean below. This was in preparation for the cutting of the taller growth, including the giant, dominant dipterocarp trees. Some of the hills near the group of houses were covered with tall grass and patches of second growth very difficult to penetrate.

4. Masawan (3500–4500 feet elevation). On the way to Masawan from Gumay, the trail passed through unbroken dipterocarp rain forest, up to about 3500 feet elevation (after about 10 kilometers gradual climb), beyond which the three-storied character of the tree growth began to be indistinct. Also, this was the beginning of the appearance of the Manila copal tree (*Agathis alba*) which the Subanos called *Dingan*. The forest was what might be called a transition type between real dipterocarp rain forest and real mid-mountain forest.

Nearer Masawan, we traversed two clearings, each about four or five hectares in area. Apparently, these clearings had never been planted, because the felled giant trees, lying in all directions, had not been burned.

The main camp was located in a small abandoned clearing and here again many large trees were still standing while the lower tree growths had already been cut down. The camp site was surrounded with transition dipterocarp–mid-mountain type of forest.

The terrain was very rough, as at lower elevations, with numerous draws, deep creeks, and steep mountain sides, all densely covered with original forest.

5. Gandawan (4500–5500 feet elevation). The way to Gandawan from Masawan was very rough; for the greater part the trail
passed under virgin forest of the transition type, except for a small abandoned clearing on top of the ridge of the main elevation (6000 feet) that we had to cross before going down rather abruptly to the valley where Gandawan was located.

Gandawan itself, just a small cleared place surrounded by forest, was on level land and on land that gradually sloped upward to the surrounding mountains. The Dapitan River gorge, on the northeast of the clearing, was no longer very deep at this point. The forests in the valley and up the lower parts of the mountain slopes were transition dipterocarp–mid-mountain type, but about half way up the mountains and on the ridges the forest was mid-mountain type, with the characteristic two-storied tree growth and no very tall trees. Also, a luxuriant growth of epiphytes and mosses began to appear on the trunks and branches of the trees.

6. Napangan (5500–6200 feet elevation). The trail leading to Salog Peak, the main peak of Mount Malindang, passed through this place. This was along the chain of peaks that started from Masawan and connected with one another by ridges that dipped into shallow draws between peaks. The forest was typical mid-mountain type.

7. Bulongkot (5500–6500 feet elevation). We crossed the Dapitan River gorge and exactly opposite Napangan was Bulongkot. The area was very rough and the peaks were all covered with mid-mountain forest.

8. Dapitan River headwaters (5100–7450 feet elevation). The whole area from 5100 up to about 6500 feet was covered with mid-mountain forest. From 6500 feet up to the top of the peak, the ridge and the steep sides were all covered with mossy forest. The trail sometimes passed over very crooked trunks of trees that had inclined or had been blown down by the strong winds and which connected with the trunks of other blown-down trees. On both sides were sheer drops: on one side was a deep canyon 2000–2500 feet deep and on the other a small valley about 1000–1500 feet deep, the source of the Dapitan River. The ground and the dwarfed and twisted trees were heavily covered with moss.

On the top of the peak was a narrow level area about 50 feet wide in some places and densely covered with dwarfed trees. Again, on both sides were sheer drops.

9. Duminagat (5300–5500 feet elevation). There was a small lake by this name in this region. Its area was easily about 6 to 8 hectares (1 hectare is 10,000 square meters), and the water was muddy and deep. The sides were sheer and gave the impression of
an old water-filled crater. Except for a small creek that was very much filled up with debris there seemed to be no outlet of this small mountain lake. The forests on the mountain sides all around were mid-mountain type, becoming mossy type on the high ridges. The area was very rough.

On one side there was a narrow area of sloping land, and on it was an abandoned wooden house that had been built by the Subanos. The steep roof was made of palm leaves. Once upon a time this had been a worship house, but at the time that we were there it was no longer used as such, so anybody who happened to be in the vicinity of the lake could sleep there.

The lake was rich in a species of eel, most likely the common *Anguilla pacifica* that habitually goes up fresh-water streams, deep in the interior of the various islands, and even high up in the mountains. There were several Subano fish traps of the basket type that were placed in the water close to the house and baited with the intestines of birds. The owner came all the way from Gandawan to set these traps.

**The Habitats on Mount Malindang**

The area considered here is the northwestern aspect of the mountains, from Barrios Salvacion and Buena-Suerte to the summit.

*Grassland and second growth.*—From Dipolog, at sea level, to the Buena-Suerte area, about 2500 feet, most of the country is already cultivated and a large part is covered with tall grass or second growth, though perhaps only ten years ago, before the construction of the national road, much of this was lowland forest. Tongues of original forest extend down below these altitudes, and new patches of clearing extend into the forest commonly to 3500 feet, so that precise delineation is impossible. Above 3500 feet, clearings are few and of limited extent.

*Lowland forest.*—This originally covered the slowly rising plain to 1500 feet and the gently rolling country to 2500 feet, but that area is now second growth and grass. Above this the country becomes rough, and original lowland forest still exists as a solid band at about 3000-3500 feet altitude, though it is much cut up by clearings at its lower edge.

This is three-story dipterocarp forest.

*Transition forest* (3500–5000 feet).—This is transition dipterocarp–mid-mountain forest, where the three-story character of the forest is no longer very distinct.
Mid-mountain forest (5000–6500 feet).—This is two-storied forest, lacking tall trees that give the third upper story of the lowland forests. Luxuriant epiphytes and mosses begin to grow on the tree trunks and branches. Actually, the type of forest at about 6200–6500 feet represents a sort of transition mid-mountain–mossy forest type, and the two-story character of the forest is no longer clearly shown.

Mossy forest (6500 to near the summit, 7965 feet).—This ridge top forest is of low twisted trees, heavily covered with moss.

Habitats and Altitudinal Distribution of Birds

The grasslands and the second growth, so extensive in the lowlands and already encroaching on the Mount Malindang forests, carry a bird fauna so different from that of the forests that it is advisable to consider them separately.

The forest birds, judged by their altitudinal distribution, fall into three main groups:

Birds of lowlands: sea level to 3000 feet.
Birds of hills: 3000 to 6200 feet.
Birds of mountains: 3500 feet to near summit (7965 feet).

It must, of course, be understood that these altitudes are average and approximate. Local terrain affects this; higher altitude conditions descend on ridges; lower altitude conditions ascend in valleys. It must be remembered also that this is a pioneer work on Malindang and further work may modify altitudinal limits in some cases. Refinement of groupings is also probable.

The single most important dividing line between altitudinal distributions seems to be between 3000 and 3500 feet; a great many lowland-ranging species do not go higher. Above this are two groups of birds: one of the hills and lower mountains and one occurring only where high mountains exist, though both overlap widely on the lower slopes of high mountains.

Birds of the Grasslands: Sea Level to 2700 Feet

*Exalfactoria chinensis, Lanius schach, Megalurus palustris, M. timoriensis, Lonchura leucogaster.*

Most of the birds of the grassland also enter or perch in second growth shrubbery or isolated shrubs, but only incidentally. One species, *Lanius schach*, while living almost entirely in the grasslands,
where it gets its food, needs shrubs or small trees for perches and for nesting. Many second growth birds range more or less commonly into the shrubbery-grassland.

As most of the grasslands of the Philippines are secondary—the result of forest destruction, burning, and cultivation—the present extent of their habitat is obviously recent. Since there are endemic Philippine subspecies of some of these grassland birds, it is equally obvious that they have lived a long time in the Philippines in small, scattered bits of open habitat such as occur under primitive conditions (see discussion below).

There is no Mount Malindang endemism in this group.

*Birds of the Second Growth: Sea Level to about 2500 Feet*

The following species are typical of the second growth and are not found commonly in the forests except on its margins; naturally most of them go out into hedgerows, scattered shrubs and isolated trees: *Centropus viridis* (also grasslands), *Eurystomus orientalis*, *Lalage nigra*, *Pycnonotus goiavier*, *Oriolus chinensis* (sight record).

A longer list of forest species commonly go into the shrubbery, such as *Phapitreron leucotis*, *Macropygia phasianella*, *Chalcophaps indica*, *Loriculus philippensis*, *Dendrocopus maculatus*, *Coracina striata*, *Orthotomus atrogularis*, *Hypothymis azurea*, *Dicaeum hypoleucum*, *D. trigonostigma*, *Dicrurus hottentottus*, *Zosterops everetti*, *Sarcops calvus*.

When forest has been cut down, and the land has been used as corn fields and then abandoned, there is usually a series of changes from grassland to shrubbery; finally, the forest slowly reclaims the area. This may be complicated by impoverished soil that makes forest regrowth difficult; hedgerows may be left between the fields, or solitary trees, or groves. In this confused habitat, most species of the adjacent forest and those of the grassland may occur occasionally.

This transition stage between grassland and forest has only a few species common in it. Some actually live in the thick second growth cover, while others such as *Eurystomus* occupy conspicuous perches from which to hawk for insects; *Oriolus chinensis* is a clearing and, at most, a forest edge species.

Second growth, often of a semi-permanent nature, like the grasslands, is becoming an increasingly common type of habitat in the Philippines. Some second growth, along beaches, along the winding courses of streams, on erosion gullies, and about marshes, has probably always existed. The birds restricted to this type of habitat are
few, but a certain amount of endemism exists. With the increased area of second growth, a few adaptable forest species also live in it.

**Birds of the Lowlands and the Mountain Forests: Sea Level to 6200 Feet at Least**

A few species seem to range widely from the lowlands and up through the mountains, with little regard to habitat: *Gallus gallus*, *Spilornis cheela*, *Macropygia phasianella*, *Loriculus philippensis*.

**Birds of the Lowland Forest: Sea Level to about 3000 Feet**


Much of the lowland forest has disappeared in the Philippines generally, and the area about the base of Mount Malindang is no exception. Presumably it was three-storied dipterocarp forest. In 1956 Rabor visited it only from 2700 feet upward. Consequently this list of lowland birds, as far as their lower limit is concerned, is filled in from Rabor’s earlier work in the lowlands of Zamboanga Peninsula.

**Hill Birds: Those Restricted to the Lower and Mid-Mountain Slopes, 3000 to 6200 Feet**


The species marked with an asterisk have the general distribution of true mountain birds. It is interesting that only a few of the birds on this list are more or less true mountain birds and occur only where
mountains rise to 7000 feet or higher, with a corresponding characteristic pattern of distribution (Mindanao, east and west; Negros, Mindoro, Luzon).

Most of these birds do not require mountain forest, though here they range well up into it. Elsewhere in the Philippines they live where there are no high mountains, and though they seem to favor some altitude they often occur near sea level elsewhere.

*Birds Restricted to Mid- and High-Mountain Slopes: 3500–7000 Feet*


Species marked with an asterisk are most often met with in the higher elevations, especially on the ridges of the higher peaks. Only one species on this list, *Cacomantis variolosus*, is a hill bird, rather than a true mountain bird. The rest occur only where high mountains exist, even though the birds range down to 3500 feet.

**Paleogeography**

In the early Pleistocene, Mindanao was probably divided into five smaller islands that formed an island group comparable to that of the present-day Visayan group. The limits of these Pleistocene Mindanao islands coincided closely with the present elevated parts of Mindanao. The present lowlands correspond to the early Pleistocene seas and straits (Moody, *in* Dickerson, 1928, p. 86).

Each of these early Pleistocene Mindanao islands occupied what today is an upland part of Mindanao and each contained a prominent peak; that of Zamboanga included Mount Malindang, then a dominant volcano which was belching both lava and ashes.

The other early Pleistocene Mindanao islands also comprised prominent peaks that persist as such today. One, in present Agusan and part of Davao provinces, contained Mount Apo, etc.; one in the present Surigao province included the Diuata Range; one in present Bukidnon and part of Lanao provinces comprised the high plateau and the peaks near Lake Lanao, and one the prominent peaks of Cotabato province.

When the level of the ocean lowered, perhaps as much as 90 or 100 meters (Kuenen, 1950; Umbgrove, 1929), the seas and straits
between these five islands became plains and lowlands. At the maximum regression of the Pleistocene seas, Mindanao was larger than it is today; to the north, land connected it with southern Luzon, a land connection that included at least Samar, Leyte and Bohol, while to the south, land connected the then Mindanao via an enlarged Zamboanga Peninsula with Basilan and the Sulu Archipelago, at least. Subsequent raising of the sea level separated them as they are now.

The mountains of Mindanao are thus old and have long existed as isolated masses. This has resulted in endemic mountain forms.

Mount Malindang and the eastern Mindanao mountains are presumably younger than the Luzon highlands. Possibly this accounts for the lack in Mindanao of north temperate zone elements of flora and fauna that occur in the highlands of northern Luzon; for example, the pine (Pinus) forests and the crossbills (Loxia).

**Endemism on Mount Malindang**

The few subspecies of hill birds now known from Mount Malindang only, probably will be found to range more widely when more is known about them. Such are *Sitta frontalis zamboanga*, *Rhabdornis inornatus zamboanga*, and *Arachnothera clarae malindangensis*.

There is no genus of bird endemic to Mount Malindang, nor is there any endemic species. Thus it has less endemism than do either the Luzon mountains or the eastern Mindanao mountains. We recognize 15 endemic subspecies of mountain birds, all found with other subspecies on other mountains:

1. *Trichoglossus johnstoniae pista* Rand and Rabor
2. *Prioniturus montanus malindangensis* Mears
3. *Coracina mcgregori mcgregori* Mears
4. *Lanius validirostris quartus* Rand and Rabor
5. *Brachypteryz montana malindangensis* Mears
6. *Turdus poliocephalus malindangensis* (Mears)
7. *Bradypterus caudatus malindangensis* (Mears)
8. *Phylloscopus trivirgatus malindangensis* (Mears)
9. *Rhipidura nigrocinamomea hutchinsoni* Mears
10. *Ficedula hyperythra malindangensis* Rand and Rabor
11. *Dicaeum anthonyi masawan* Rand and Rabor
12. *Aethopyga boltoni malindangensis* Rand and Rabor
13. *Apoia goodfellowi malindangensis* Mears
14. *Hypocryptadius cinnamomeus malindangensis* Rand and Rabor
15. *Pyrrhula leucogenys steerei* Mears
Thus Mount Malindang is an important part of the mountain pattern of bird distribution in the Philippines, but its fauna is apparently of less age than that of the mountains of Luzon or of eastern Mindanao, as endemism has proceeded only to the subspecies level.

The species probably did not develop in situ in Mount Malindang. Probably they arrived as colonists over seas or over lowlands. Some may have evolved, as species, in the eastern Philippines, or they may have colonized from farther afield. This last possibility is suggested by seven species whose relationships lie in several directions: some to the north, some to the southwest, some to the southeast.

Mount Malindang may properly be considered a mountain island projecting above water and lowlands. It has received its mountain bird species as present-day species by colonizations from other mountains. The clue to their further origin lies in an analysis of the mountain birds of Luzon and eastern Mindanao, a study that one of us, Rabor, has in hand.

In only a few cases the mountain birds of Mount Malindang do not show subspecific differentiation as compared with the nearest populations elsewhere in the Philippines. This is illustrated by Columba vitiensis, Zoothera andromedae, Muscicapa panayensis, Ficedula westermanni, and Dicaeum ignipectus.

**Relationships of the Mountain Birds**

There are about 20 species of mountain birds occurring on Mount Malindang, with a number more doubtfully classified as hill birds. Both the endemic and the non-endemic mountain birds have representatives on one or more of the other important high mountains in the Philippines (in eastern Mindanao, Negros, Mindoro, northern Luzon), and a few are found elsewhere.

None of the mountain birds is closely enough related to lowland birds now living at the base of Mount Malindang to suggest the possibility that any of them has arisen in situ from present-day lowland representatives.

On the other hand, the occurrence of the endemic Philippine species on several Philippine mountains, none of which has been part of one mountain chain, the way most of them stay at their altitudinal range, and the range of the non-endemic species on mountains outside the Philippines strongly suggest that colonization of the mountain has provided Mount Malindang with its avifauna. Part of this could have come from eastern Mindanao, judging by the Mindanao en-
demic species represented, such as Trichoglossus johnstoniae, Coracina mcgregori, Aethopyga boltoni, Apoia goodfellowi, and Hypocryptadius cinnamomeus.

Though the rest could also have colonized by way of eastern Mindanao, their more distant relationships are obvious. Part could have come from the Sunda Islands, as indicated by the non-endemic Zosterura andromedae; part from the islands to the south and east, as indicated by Turdus poliocephalus and Phylloscopus trivirgatus; and part from the north, as indicated by Ficedula westermanni, which also ranges in southern Asia, where the inter-specific relatives of Lanius validirostris and Pyrrhula leucogenys also live. The several Philippine endemic species that range on the more northern islands could also have colonized Malindang directly from the northern islands.

List of Species

The collection made in 1956, containing 92 species represented by about 900 specimens, is now in Chicago Natural History Museum and is reported on here. A few duplicates (not listed here) were retained in the Silliman University collection.

The lowland collection—of birds that normally do not range above 3000 feet—is incomplete, as most of the party’s efforts were directed toward collecting the birds from 3000 feet up. Good series were secured of most of them, though a few continue as rarities, such as Bradypterus caudatus malindangensis, Pyrrhula leucogenys steerei, and Lanius validirostris quartus.

Family ARDEIDAE. Herons.

*Gorsachius goisagi* (Temminck)

Specimen: 1 ♂ adult; 3500–4500 feet altitude.

Wing, 261; exposed culmen, 87 mm. Weight, 527.1 grams.

This is an adult with the crown dull black. It has the measurements (long wing, short bill) and the black and rufous axillaries of this species.

The specimen, the only one seen, was taken on the ground in dense forest, by a small stream.

Family ACCIPITRIDAE. Hawks.

*Accipiter virgatus confusus* Hartert

Specimen: 1 ♀ subadult; 3500–4500 feet altitude.

Wing, 170 mm. Weight, 131.3 grams.
Pithecophaga jefferyi Ogilvie-Grant
Specimen: 1 ♂ adult; 4500–5500 feet altitude.
Wing, 581 mm. Weight, 4041.2 grams.
Shot from a high tree in original forest. Only one other was seen, a male collected at Masawan and now in Silliman University collection. It was being mobbed by a number of hornbills.

Spilornis cheela holospilus (Vigors)
Specimens: 1 ♂ adult, 1 ♀ adult, 1 sex?; 3500–5500 feet altitude.
Wing, ♂ 350; ♀ 361; sex? 373 mm. Weight, ♂ 762; sex? 680.5 grams.
In the oviduct the female had an egg ready to be laid.
Two of these birds are dark, like other Mindanao birds available for comparison. The male is paler and is similar to darker specimens of panayensis from Negros, but has the larger size of other Mindanao birds.

Family PHASIANIDAE. Pheasants, quail, etc.

*Gallus gallus gallus* (Linn.)
Specimens: 1 ♂ juvenile, 2 ♀ adults; 4500–7450 feet altitude.
Wing, ♀ 206, 207 mm.
Fairly common at these altitudes, but not as common as it usually is in the lowlands.

Excalfactoria chinensis lineata (Scopoli)
Specimen: 1 ♀; 2700–3000 feet altitude.
Wing, 70 mm. Weight, 20.1 grams.
Taken in grassland on the lower edge of the forest.

Family COLUMBIDAE. Pigeons.

Phapitreron leucotis brevirostris Tweeddale
Specimens: 2 ♂, 2 ♀; 2700–4500 feet altitude.
Wing, ♂ 121, 127; ♀ 122, 125 mm. Weight, ♂ 103, 121; ♀ 113, 128 grams.
All these birds were in breeding condition, March–May.
This is a lowland species and at these altitudes it was not common.
Phapitreron amethystina mindanaoensis Manuel

Specimens: a series; 2700–7450 feet altitude.

Wing, 18 ♂, 143–151 (av. 146) mm. Weight, 15 ♂, 125–178 (av. 154) grams.

This was a common species throughout the forest. Though generally a solitary bird, numbers congregate in feeding trees.

Many of these specimens had enlarged gonads, indicating breeding (March–May).

These birds compare well with Mount Apo and Mount McKinley birds.

These Mindanao birds confirm the distinctiveness of this subspecies, type locality Butuan, Agusan, northeastern Mindanao, but on somewhat different characters from those in the original descriptions. Mindanao birds, compared with 11 Samar birds (the latter presumably *P. a. amethystina*, type locality Luzon), differ in having the top of the head darker and clearer gray (not lighter gray with a brownish tinge); in having more of a vinaceous wash on throat and breast; and in having paler under tail coverts.

Phapitreron cinereiceps brunneiceps Bourns and Worcester

Specimens: 2 ♂, 1 ♀; 2700–4500 feet altitude.

Wing, ♂ 137, 143; ♀ 136 mm. Weight, ♂ 131, 159; ♀ 147 grams.

This species was much scarcer than *P. amethystina*, but both occurred in the same habitat, with the same behavior, and both were taken from the same fruiting tree where they were feeding.

We have already shown (1952, Nat. Hist. Misc., [Chicago], no. 107, pp. 1, 2) that *P. cinereiceps* occurred in eastern Mindanao along with *P. amethystina* and that the two should be considered species. The present three specimens are very similar to Mount McKinley specimens of *P. cinereiceps* except for slightly paler under tail coverts, and corroborate the species status of the two.

Ptilinopus occipitalis Gray

Specimens: 10 ♂, 6 ♀; 3500–5500 feet altitude.

Wing, ♂ (10) 150–160 (av. 155.4); ♀ (6) 148–157 (av. 151.1) mm. Weight, ♂ (8) 229.2–273.8 (av. 244); ♀ (6) 185–258.8 (av. 238) grams.

Several specimens exhibited enlarged gonads, so the species must breed during March, April and May.

This pigeon lives in original forest.
Columba vitiensis griseogularis Walden and Layard
Specimen: 1 ♀ adult; 4500–5500 feet altitude.
Wing, 246 mm. Weight, 511 grams.
Rare on Mount Malindang.

Macropygia phasianella tenuirostris Bonaparte
Specimens: 2 ♂ adults, 1 ♂ subadult, 1 ♀ adult, 1 ♀ subadult; 3500–4500 feet altitude.
Wing, ♂ 172, 176; ♀ 171 mm. Weight, ♂ 199, 187; ♀ 168 grams.
These specimens showed no difference from *M. p. tenuirostris* from Mount Apo and Mount McKinley, Mindanao. Not really rare in the localities collected in but difficult to find unless it came to feed in the fruiting trees where *Phapitreron amethystina mindanaoensis* was feeding commonly.

Chalcophaps indica indica (Linn.)
Specimen: 1 ♀ adult; 3500–4500 feet altitude.
Wing, 142 mm. Weight, 125 grams.
The single specimen taken showed enlarged gonads so that May must be one of the breeding months of the species on Mount Malindang.

Family PSITTACIDAE. Parrots.

Trichoglossus johnstoniae pistra Rand and Rabor
Specimens: 7 ♂, 6 ♀; 3500–5500 feet altitude.
Wing, ♂ (7) 105–111 (av. 107.9); ♀ (6) 106–110 (av. 108) mm.
Weight, ♂ (6) 54.7–62.1 (av. 57); ♀ (5) 48–55.5 (av. 53) grams.
Compared with birds from Mount Apo, Mount Malindang specimens average duller rosy red in fore-crown, face and chin, and darker-colored on the band from bill, over the eyes and around the nape; and it is on these characters that we separated this form from that of Mount Apo.
This species was found in deep forest and often went around noisily in flocks of varied numbers, sometimes as many as 15 birds in one group.
One male and one female showed enlarged gonads, indicating breeding in the March–May period.

Prioniturus montanus malindangensis Mearns
Specimens: 10 ♂, 3 ♀; 2700–5500 feet altitude.
Wing, ♂ (9) 154–162 (av. 158.4); ♀ (3) 148–157 (av. 152) mm.
Weight, ♂ (9) 116–142 (av. 126); ♀ 102–120 (av. 111) grams.
This subspecies has hitherto been known only from the type, an immature. Compared with *P. m. waterstradti* from Mount McKinley and Mount Apo, Mindanao, the Mount Malindang specimens are lighter blue on forehead and fore-crown; brighter green on occiput and nape; and with a brighter and lighter blue wash on sides of face.

The species was common, often forming small flocks that were very noisy in flight. Taken in fruiting trees where pigeons also feed.

**Loriculus philippensis apicalis** Souancé

Specimens: 5 ♂, 1 ♀; 3500–5500 feet altitude.

Wing, ♂ (5) 92–96 (av. 94.1); ♀ 96 mm. Weight, ♂ (4) 30.7–37.2 (av. 33) grams.

The specimens from Mount Malindang do not differ appreciably from those of Mount Apo except for a very slight decrease in the intensity of the orange wash on the upper back. Mount Malindang birds average a slightly more intense orange wash on the upper back when compared to Bohol and Samar *L. p. worcesteri*, to which they are otherwise very similar.

The birds frequented fruiting trees in deep forest and fed silently on the fruits together with pigeons. Two of the males taken in April showed slight enlargement of the gonads.

**Family CUCULIDAE.** Cuckoos.

**Cuculus fugax pectoralis** Cabanis and Heine

Specimens: 1 ♂, 1 ♀, 1 sex?; 3500–7450 feet altitude.

Wing, 1 sex?, 179; 1 ♂ (subadult) 173 mm. Weight, 84, 84.9 grams.

The bird usually perches motionless among the higher branches of the trees in original forest and is very difficult to locate, even if it gives forth its characteristic loud call all the while.

**Cacomantis variolosus sepulcralis** (Müller)

Specimens: 11 ♂, 5 ♀; 3500–6200 feet altitude.

Wing, ♂ (10) 112–124 (av. 118.7); ♀ (3) 109–120 (av. 114.3) mm. Weight, ♂ (10) 24.4–39.5 (av. 34); ♀ 30 grams.

The species is more often heard than seen, its notes coming loud and clear from among the dense foliage of some tall tree. Locating the bird from among the branches is difficult, although it is usually perched motionless and in full view all along.

One female showed enlargement of the gonads, so April must be part of the breeding season.
Surniculus lugubris velutinus Sharpe

Specimen: 1 ♂; 2700–3000 feet altitude.
Wing, 120 mm. Weight, 37.4 grams.

This Mount Malindang bird did not differ from specimens collected in Zamboanga lowlands and in Cotabato, Mindanao, or from three taken on Bohol.

The bird stays preferably in original forest, in the lowlands up to about 3000 feet. It has a very characteristic call which is loud and clear.

Centropus melanops Lesson

Specimens: 1 ♂, 1 ♀, 2 ♀ imm.; 2700–3000 feet altitude.
Wing, ♂ 170; ♀ 168 mm. Weight, ♂ 196; ♀ 236 grams.

The species was not encountered in the Mount Malindang localities above 2800 feet altitude. It prefers lowland forest.

Centropus viridis viridis (Scopoli)

Specimens: 1 sex? (imm.); 2700–3000 feet altitude.
Weight, 105.6 grams.

The species is common in the lower elevations of Mount Malindang, especially in the mixed grasslands and second growth patches, below 2700 feet, where the original forest begins.

Family STRIGIDAE. Owls.

Otus bakkamoena everetti (Tweeddale)

Specimen: 1 ♂; 2700–3000 feet altitude.
Wing, 172 mm. Weight, 126.9 grams.

At the lower elevation, especially near Gumay, the characteristic "hook-hook-hook" notes of the species were occasionally heard at the forest edge at night. None was heard in the higher elevations.

Ninox philippensis spilocephala Tweeddale

Specimen: 1 ♂ subadult; 3500–4500 feet altitude.
Wing, 170 mm. Weight, 137.2 grams.

This species was heard calling in the evening, rather commonly enough, but locating the birds among the dense forest growth, even with the aid of a head lamp, was difficult.
Family **APODIDAE.** Swifts.

*Collocalia esculenta bagobo* Hachisuka

Specimens: 2 ♂, 1 ♀; 5400 feet altitude.

Wing, ♂ (2) 95, 98; ♀ 102 mm. Weight, ♂ 7.5, 7.2; ♀ 8.1 grams.

The Mount Malindang birds compared well with specimens from Mount Apo. The species was not uncommon, flying over the mountain lake, Lake Duminagat. Several birds were nesting on the underside of the steep roof of the tribal worship house in Duminagat and the nests were typically made of moss, as were those of *C. e. marginata* of Negros and Cebu, where nests were found glued to the walls of shallow caverns and overhanging rocks, singly or in scattered groups of up to five nests.

Family **HEMIPROCNIDAE.** Crested Swifts.

*Hemiprocne comata comata* (Temminck)

Specimens: 1 ♂, 1 ♀; 3500-4500 feet altitude.

Wing, ♂ 131; ♀ 133 mm. Weight, ♂ 21.7; ♀ 26 grams.

The species was not common. The two birds were taken from bare branches, close to the top of a very tall forest tree at the edge of an abandoned clearing. The birds were flying after insects and unfailingly came back to their previous perches, time and again.

The May male had slightly enlarged gonads.

Family **TROGONIDAE.** Trogons.

*Harpactes ardens ardens* (Temminck)

Specimens: 1 ♂, 2 ♀; 2700-5500 feet altitude.

Wing, ♂ 147; ♀ 145, 150 mm. Weight, ♂ 113.9; ♀ 99, 105 grams.

This species was more common in the lower elevations of its range and was always found in forest.

Family **ALCEDINIDAE.** Kingfishers.

*Halcyon hombroni* (Bonaparte)

Specimens: 7 ♂ adults, 2 ♂ immatures, 3 ♀; 3500-6200 feet altitude.
Wing, $\sigma$ (7) 121–128 (av. 125.1); $\delta$ (3) 124–127 (av. 125.6) mm. Weight, $\sigma$ (6) 107.9–123.6 (av. 115); $\delta$ (3) 106.4–147.2 (av. 120) grams.

These birds stayed in original forest and were not uncommon. They usually perched in the low branches of trees of the lower story in deeply shaded parts of the forest. The habitat preference reminded one of that of *H. lindsayi*.

Three males showed enlargement of the gonads, indicating breeding activities in March, April, and May.

Two young male birds resembled the adult male in plumage except that the crown was clearer blue, not deep purple-blue as in the adult.

**Family CORACIIDAE.** Rollers.

*Eurystomus orientalis cyanocollis* Vieillot

Specimen: 1 $\sigma$ adult; 2700–3000 feet altitude.

Wing, 178 mm. Weight, 144.3 grams.

The species was not uncommon at the forest edge and in the cleared areas.

**Family BUCEROTIDAE.** Hornbills.

*Penelopides panini affinis* Tweeddale

Specimens: 1 $\sigma$ adult; 2700–3000 feet altitude.

Wing, 234 mm. Weight, 456.3 grams.

The species was not met with inside the dense forest of Mount Malindang above 3000 feet elevation. It was seen and heard more frequently in the second growth patches in the cleared areas below Gumay and inside the original forest immediately adjacent to the clearings. This bird and *Aceros l. leucocephalus* were quite common in the heavily forested, isolated hill, about 2500 feet elevation, between Salvacion and Buena-Suerte.

*Aceros leucocephalus leucocephalus* (Vieillot)

Specimens: 3 $\sigma$; 2700–4500 feet altitude.

Wing, 330, 332, 352 mm. Weight, 1012, 1106, 1140 grams.

The species was more common below 3000 feet and stayed in original forest.

*Buceros hydrocorax mindanensis* Tweeddale

Specimens: 8 $\sigma$, 7 $\delta$; 2700–4500 feet altitude.
Wing, ♂ (7) 383-410 (av. 393.5); ♀ (7) 362-385 (av. 374.8) mm. Weight, ♂ (6) 1345.4-1612.6 (av. 1574); ♀ (6) 1413.4-1662 (av. 1557) grams.

The species used to feed on certain tall fruiting trees with large fruit of which there were several close to the camp site. As many as one dozen birds fed in one such tree at the same time and often there were a lot noisily flying about and transferring from branch to branch.

Family **PICIDAE.** Woodpeckers.

**Mulleripicus funebris fuliginosus** Tweeddale

Specimens: 1 ♂, 1 ♀; 2700-3000 feet altitude.
Wing, ♂ 162; ♀ 153 mm. Weight, ♂ 164.3; ♀ 159.9 grams.

Mount Malindang specimens are similar to birds from the lower elevations of Zamboanga and from Samar.

The species was rare and preferred to stay in original forest but not in high elevations.

**Dryocopus javensis multilunatus** (McGregor)

Specimens: 2 ♂, 2 ♀; 2700-3500 feet altitude.
Wing, ♂ 216; ♀ 213 mm. Weight, ♂ 278; ♀ 261 grams.

The bills of the young adult birds have very sharp-pointed tips while those of the adult have chisel-shaped tips.

This is a lowland species, found up to only 3500 feet.

**Dendrocopos maculatus fulvifasciatus** (Hargitt)

Specimens: 3 ♂; 2700-5500 feet altitude.
Wing, ♂ (3) 83-91 (av. 87.3) mm. Weight, ♂ (3) 25.4-30.3 (av. 28) grams.

The species was not common. It preferred to stay in trees in the clearings or at the edges of the forest, where its very characteristic notes could be heard easily enough, although locating the bird was rather difficult, until it moved.

**Chrysocolaptes lucidus lucidus** (Scopoli)

Specimens: 3 ♂, 3 ♀; 3500-7450 feet altitude.
Wing, ♂ (3) 139-141 (av. 140); ♀ (1) 136 mm. Weight, ♀ (1) 127.4 grams.
Family CAMPEPHAGIDAE. Cuckoo Shrikes.

Coracina striata kochii (Kutter)
Specimens: 1 ♂, 1 ♀; 2700–3000 feet altitude.
Wing, ♂ 158; ♀ 150 mm. Weight, ♂ 103.6; ♀ 98.2 grams.
These birds preferred the edges of forests and the patches of second growth in the lowlands and up to about 3200 feet elevation, where they were not uncommon.

Coracina mcgregori mcgregori (Mearns)
Specimens: a series; 3500–7450 feet altitude.
Wing, ♂ (18) 105–109 (av. 107); ♀ (12) 100–106 (av. 103.3) mm. Weight, ♂ (12) 39–47.1 (av. 43); ♀ (9) 39.5–47.5 (av. 42) grams.
This species, which was known only from Mount Malindang, was thought to be the only endemic species, until Salomonsen found another race, C. m. peterseni, on Mount Katanglad in central Mindanao.
This species was common from 4000 feet and up, but was seldom seen below. The birds went about usually in pairs. In addition to the ordinary and rather harsh call, they possessed a soft and very musical song of many varied notes that reminded one of the whisper songs of Lanius.

Two males and one female had enlarged gonads and another female had an egg ready to be laid, indicating breeding in April and May.

Coracina morio mindanense (Tweeddale)
Specimens: 1 ♂, 1 ♀; 2700–3000 feet altitude.
Wing, ♂ 123; ♀ 117 mm. Weight, ♂ 59.3; ♀ 55.6 grams.
The species was rare in the Mount Malindang area and seemed to prefer forests of lower elevation, down to the lowland.

Lalage nigra nigra (Forster)
Specimen: 1 ♀; 2000–2700 feet altitude.
Wing, 95 mm.
The species was common in the cultivated areas and second growth patches in the abandoned clearings, but not in original forest. May must be one of the breeding months because the single female that was collected had enlarged gonads.

Family LANIIDAE. Shrikes.

Lanius validirostris quartus Rand and Rabor
Specimen: 1 ♂; 5300–5500 feet altitude.
Wing, 93; culmen, 22 mm.

The discovery of this population on Mount Malindang raises the number of subspecies to four as follows:

1. *validirostris*, Luzon; wing, ♂ 89, 89, 90, ♀ 84, 85; culmen, ♂ 20–21.5, ♀ 19.5, 19.5 mm.

2. *tertius*, Mindoro; smaller, with flanks, crissum, and under tail coverts deeper and darker; breast and abdomen more washed with pale rusty; wing, ♂ 88, ♀ 88 mm. (ex Salomonsen).

3. *hachisuka*, Mount Apo, Mindanao; breast and abdomen heavily rusty; wing, ♂ 88, ♀ 88 mm.; culmen, ♂ 21, ♀ 19.5 mm.

4. *quartus*, Mount Malindang; size large, especially culmen; compared with all the above races upper parts darker gray; pale area of forehead and superciliary less conspicuous, almost obsolete; breast and abdomen white, barely tinged buffy; under tail coverts white.

The species was rare and only the bird collected was met with. It was perched at the end of a broken stump, about 12 feet from the ground close to the side of the mountain lake, Lake Duminagat, incidentally not placed in maps of the area.

**Lanius schach nasutus** Scopoli

Specimen: 1 ♀; 2000–2700 feet altitude.

The species was rather common in the cleared areas that were left to tall grass, and in the cultivated areas. Several birds could be seen in different farm lots, perched on hedges or on fence posts or on bushes in clearings left fallow.

**Lanius cristatus lucionensis** Linnaeus

Specimen: 1 ♀; 3000–3500 feet altitude.

Wing, 86 mm. Weight, 36.2 grams.

This common winter migrant to the Philippines was taken on a stump inside a new clearing in original forest.

Family **PYCNONOTIDAE.** Bulbuls.

* Irena cyanogaster hoogstraali Rand

Specimens: 2 ♂, 4 ♀; 2700–4500 feet altitude.

Wing, ♂ (2) 124, 126 (av. 125); ♀ (4) 122–130 (av. 125) mm. Weight, ♂ (2) 72, 76 (av. 74); ♀ (4) 69.4–78.4 (av. 75) grams.
The Mount Malindang specimens do not show any difference when compared to specimens from other parts of Zamboanga Peninsula, and from Davao.

The species stayed in dense original forest where it was easily located by means of its rather loud and very characteristic songs. Birds were easily made to come near the collector if he whistled an imitation of their song.

*Pycnonotus urostictus philippensis* Hachisuka

Specimens: 2 ♂; 2700–3000 feet altitude.

Wing, ♂ (2) 82, 83 (av. 82.5) mm. Weight, ♂ (1) 25 grams.

The species was encountered more commonly in the forest edge and in the second growth patches.

*Pycnonotus goiavier suluensis* Mearns

Specimens: 1 ♂, 1 ♀; 4500–5500 feet altitude.

Wing, ♂ 85 mm. Weight, ♂ 34 grams.

Compared with specimens from various parts of Mindanao, the Mount Malindang birds do not show any difference.

The species was found in the clearing—never in dense original forest. It was rather common in the cleared areas of the lower elevations of Gumay, Buena-Suerte and Salvacion, especially among the hedges.

*Hypsipetes philippinus rufigularis* (Sharpe)

Specimens: 13 ♂, 3 ♀; 2700–5500 feet altitude.

Wing, ♂ (4) 119–121 (av. 120); ♀ (3) 110–115 (av. 113) mm. Weight, ♂ (3) 47.8–71 (av. 59); ♀ (2) 56.5, 60 (av. 58) grams.

Compared with specimens from other parts of Zamboanga and from Basilan, the Mount Malindang birds do not differ.

The species was a deep forest bird and was often seen among the branches of the top story trees.

For reasons for considering this a race of *philippinus*, see Rand and Rabor (1959, Auk, 76: 103).

Family TURDIDAE. Thrushes, Chats, etc.

*Brachypteryx montana malindangensis* Mearns

Specimens: 1 ♂ adult, 1 ♂ immature, 1 ♀ adult; 3500–5500 feet altitude.
Wing, ♂ 66, 67; ♀ 64 mm. Weight, ♂ 22.2, 23.75; ♀ 21 grams.

Compared to a male adult bird from the east slope of Mount McKinley, Davao, Mindanao (mindanensis) the Mount Malindang adult male did not show any difference. The female Mount Malindang bird, however, differs from the female specimen from the Mount McKinley area in having (a) a slightly darker rusty brown forehead that does not extend as far back as that of the bird from Mount McKinley; (b) slightly darker brown on the chin and throat; (c) brownish black instead of rusty under tail coverts.

The bird was not really rare because its beautiful notes were often heard proceeding from dense low underbrush in deeply shaded parts of the forest in many places. The song of this race is very melodious and is easily much nicer than that of B. m. brunneiceps of Negros. In fact, this bird can easily be included among the first ten beautiful singing birds of the Philippines.

**Turdus poliocephalus malindangensis** (Mearns)

Specimens: 12 ♂ adults, 2 ♂ immatures, 8 ♀; 4500–6200 feet altitude.

Wing, ♂ (12) 119–131 (av. 125.7); ♀ (8) 120–123.5 (av. 122) mm. Weight, ♂ (1) 75; ♀ (2) 84.6, 86.3 grams.

This race was rather common in the higher elevation from about 5000 feet and up. The bird was frequently flushed in the lower story trees of the two-story mid-mountain forest and in the low trees in mossy forest. Its notes were similar to those of T. p. nigrorum of Negros.

April and May must be part of the breeding season because many males and at least one female show enlarged gonads.

**Zoothera andromedae** Temminck

Specimens: 1 ♂, 1 ♀; 4500–7450 feet altitude.

Wing, ♂ 132; ♀ 122 mm. Weight, ♂ 108 grams.

Compared to a bird from Mount Apo, the Mount Malindang specimens do not show any difference.

The species was very rare; sometimes a bird was accidentally flushed from the forest trail or near-by, where it was feeding on the ground in the dark places of the forest. Collecting a bird was difficult because after it was flushed it frequently alighted on the ground, and, although often not very far from the original place where it was flushed, it hopped fast among the dense low undergrowth and was easily lost.
Family TIMALIIDAE. Babblers.

*Macronus striaticeps mearnsi* Deignan

Specimens: 6 ♂ adults, 1 ♂ immature, 6 ♀; 2700–5500 feet altitude.

Wing, ♂ (5) 62–65 (av. 63.7); ♀ (6) 58–63 (av. 61.3) mm. Weight, ♂ (4) 18.5–19.7 (av. 19); ♀ (6) 18–20 (av. 19) grams.

One nestling was taken in Gandawan on April 16, showing that March and April were part of the breeding season of the bird in this locality.

The bird was common and preferred to stay among the lower branches of the low trees, shrubs, and bushes inside the forest. Sometimes groups numbering from six to about a dozen individuals were encountered.

**Stachyris plateni plateni** (W. Blasius)

Specimen: 1 ♂; 2700–3000 feet altitude.

Wing, 54 mm. Weight, 8.3 grams.

Hitherto this bird has been known only from eastern Mindanao. It was rare. It was taken among the branches of a tree of the lowest story, inside virgin dipterocarp rain forest.

**Stachyris capitalis** (Tweeddale)

Specimens: 1 ♂, 1 ♀; 2700–3000 feet altitude.

Wing, ♂ 70.5; ♀ 72 mm. Weight, ♂ 15; ♀ 14 grams.

Compared to a specimen from a lower elevation of Zamboanga, and to one from Basilan, the Mount Malindang birds do not differ at all. Compared to two specimens from Cotabato, the Mount Malindang birds differ in having the crown only slightly more intense rufous chestnut.

The species was taken in original forest, among the branches of the lower tree stories of a typical dipterocarp rain forest. It was rare.

Family SYLVIIDAE. Warblers.

**Bradypterus caudatus malindangensis** (Mearns)

Specimens: 1 ♀ adult, 1 ♀ immature; 4500–7450 feet altitude.

Wing, 62; tail, 75 mm.

Three races of this Philippine endemic mountain species are known: one from Luzon, two from Mindanao.
Compared to two specimens of *B. c. caudatus* from the highlands of central northern Luzon (Mountain Province), the Mount Malindang bird is very similar, especially on the upper parts, but it has definitely more white on chin and throat, and a shorter tail.

We did not have *B. c. unicolor* from Mount Apo for comparison, but from the description of that race, the Mount Malindang specimen differs from it in the definitely whiter throat without any tinge of buff; otherwise both forms are very similar, even in measurements.

The bird was very rare and stayed among the dense undergrowth in mid-mountain and mossy forests, and in the deeply shaded portions. Being of a dark color, it was difficult to see.

**Megalurus palustris forbesi** Bangs

Specimen: 1 ♂; 2000–2700 feet altitude.
Wing, 97 mm.

The species was rather common in the cultivated areas and in the clearings that were allowed to revert to grasslands. Birds were often seen perched on bare branches of trees in the open, or among hedge rows.

**Megalurus timoriensis crex** Salomonsen

Specimens: 2 ♂; 2000–3000 feet altitude.
Wing, 72.5, 73 (av. 72.7) mm. Weight, 29.2 grams.

The race was not rare because its very characteristic notes could be heard often from the dense hedges and second growth of neglected clearings, which were covered with tall grass.

**Phylloscopus trivirgatus malindangensis** (Mearns)

Specimens: a series; 3500–7450 feet altitude.
Wing, ♂ (15) 55–59 (av. 57); ♀ (12) 51–57 (av. 54.1) mm. Weight, ♂ (10) 8.5–9.4 (av. 9); ♀ (10) 8.1–10 (av. 9) grams.

Compared to *P. t. mindanensis* from Mount Apo and Mount McKinley, the Mount Malindang birds are really distinct in the much paler and brighter yellow under parts and in the superciliary stripe (yellow or whitish) extending much farther back.

The bird was common and stayed among the foliage of the lower story of typical mid-mountain forest, sometimes in company with other small birds of a feeding group. It was the most common bird on the summit of the high ridges.
Several specimens of both sexes had enlarged gonads, showing definite breeding activities for the months of April and May.

**Phylloscopus olivaceus olivaceus** (Moseley)

Specimens: 4 ♂, 3 ♀; 2700–4500 feet altitude.

Wing, ♂ (4) 61–64 (av. 62); ♀ (3) 53–57 (av. 55) mm. Weight, ♂ (4) 10.9–12 (av. 11.5); ♀ (3) 10.3–10.4 grams.

The birds were found in original forest, and they preferred the trees of the lower stories. Sometimes they were observed with feeding groups of various species.

**Phylloscopus borealis borealis** (Blasius)

Specimen: 1 ♀; 4500–5500 feet altitude.

Wing, 65 mm. Weight, 10.3 grams.

This common migrant has a very wide altitudinal range in the Philippines; it was found in the lowlands and even close to the top of high mountain peaks.

**Orthotomus atrogularis frontal**is Sharpe

Specimens: 1 ♂, 1 ♀; 2700–3000 feet altitude.

Wing, ♂ 47.5; ♀ 44 mm.

Mount Malindang birds do not differ from specimens from other parts of Zamboanga Peninsula, Cotabato and Davao, Bohol and Samar. Below is a summary of the wing measurements (in millimeters):

<table>
<thead>
<tr>
<th>Location</th>
<th>♂ Measurements</th>
<th>♀ Measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zamboanga</td>
<td>(13) 42–47.5 (av. 45.7)</td>
<td>(9) 41–46 (av. 43.5)</td>
</tr>
<tr>
<td>Davao and Cotabato</td>
<td>(2) 47–47.5 (av. 47.2)</td>
<td>(2) 43–46 (av. 44.5)</td>
</tr>
<tr>
<td>Samar</td>
<td>(16) 45–49 (av. 46)</td>
<td>(14) 41–46.5 (av. 43.8)</td>
</tr>
<tr>
<td>Bohol</td>
<td>(♂) 47, 47; ♀ 45.5</td>
<td></td>
</tr>
</tbody>
</table>

Differences in measurements of birds from western Mindanao, southern Mindanao, Bohol and Samar are not enough to warrant recognizing the birds of southern Mindanao as a separate race, *O. a. davao* Salomonsen, which we consider a synonym.

The bird stayed in dense second growth and at the forest edge, usually selecting the lower branches of bushes, and forest undergrowth. It was more often heard than seen. In the cultivated areas, it stayed among the dense bushes in the hedges.
Orthotomus cinereiceps obscurior Mayr

Specimens: 1 ♂, 1 ♀; 2700–3000 feet altitude.

Wing, ♂ 47; ♀ 46.5 mm. Weight, ♂ 9.3; ♀ 8.8 grams.

The Mount Malindang birds do not differ from specimens taken from other parts of Zamboanga Peninsula.

The birds were found deep inside original forest, far from the edge. They stayed in the dense undergrowth not far from the ground but always perched on the branches. They were rare.

Family MUSCICAPIDAE. Flycatchers.

Rhipidura superciliaris apo Hachisuka

Specimens: 3 ♂, 2 ♀; 2700–4500 feet altitude.

Wing, ♂ (3) 80–86 (av. 83); ♀ (2) 71, 72 mm. Weight, ♂ (3) 12–16.8 (av. 15.6); ♀ 12 grams.

When these specimens were compared with a male and a female from Davao, and a male and a female from Cotabato, there seemed to be no difference. Two unsexed specimens, presumably females, available from Basilan, are slightly paler above, giving some support to the recognition of apo as a race with darker blue upper parts than superciliaris of Basilan.

The bird was not common. It was more often encountered in the deep forest at the elevation below 3000 feet, staying in the lower branches of the lowest tree story in very dark places.

Rhipidura nigrocinnamomea hutchinsoni Mearns

Specimens: a series; 3500–7450 feet altitude.

Wing, ♂ (13) 74.5–80 (av. 76.9); ♀ (13) 68.5–75 (av. 72.4) mm. Weight, ♂ (10) 12–13.6 (av. 13.4); ♀ (12) 10.5–14.5 (av. 12.7) grams.

The bird was very common from about 3500 feet up to the summit of the highest peaks. It was very rarely met with below 3500 feet, where R. superciliaris was already encountered but was not yet common.

These birds frequented the branches of all the tree stories of the various forest types.

Many males and females of the series showed enlarged gonads, proving that the birds were breeding during April and May.

*Rhinomyias ruficauda zamboanga* Rand and Rabor

Specimens: 1 ♂ adult, 1 ♂ immature, 1 ♀ adult; 2700–3000 feet altitude.
Wing, ♂ 78; ♀ 77 mm. Weight, ♂ 20.8; ♀ 19.5 grams.

This subspecies is restricted to the Zamboanga Peninsula. It is the darkest and the dullest (olive brown not rufous brown) of the Philippine races and has a faint brownish breast band. *R. mindanensis* Mearns, type locality Pantar, near Lake Lanao, is a synonym of the more red-brown *samarensis* of eastern Mindanao, Samar, etc. Though Mearns also had Zamboanga specimens and based his description on them in part, his selection of type locality is binding.

The bird was not common. It stayed among the lower branches of the lower story trees and often low growths in dipterocarp rain forest, preferably in the dark and deeply shaded places.

One young bird of the season was taken during May, so that the breeding time of the species must be about February or March.

**Ficedula hyperythra malindangensis** Rand and Rabor

Specimens: 12 ♂, 5 ♀; 3500–7450 feet altitude.

Wing, ♂ (12) 59–64 (av. 62.3); ♀ (5) 59–60 (av. 59.3) mm. Weight, ♂ (4) 9.7–12.1 (av. 11); ♀ (2) 10, 10.4 grams.

This is a mountain bird hitherto known on Mindanao only from the southeastern mountains (race *montigena*). The Mount Malindang race strangely is more like the Negros race (*nigrorum*) than it is like the eastern Mindanao *montigena*. Compared with *nigrorum* the present race differs in the male in the lores, sides of the face and edge of chin and throat being more intensely black; in the ochraceous-buff of the under parts being more extensive posteriorly; and in the under tail coverts being definitely ochraceous-buff (not white or whitish).

The thicket flycatcher was not rare. It was usually in the undergrowth and among the lower branches of the forest, where it preferred the darker places. Several males and females had enlarged gonads, indicating breeding in April and May.

**Ficedula basilanica basilanica** (Sharpe)

Specimen: 1 ♂; 2700–3000 feet altitude.

Wing, 70.5 mm. Weight, 16.1 grams.

Compared to a male bird from another region of Zamboanga Peninsula, the Mount Malindang specimen does not differ.

The bird was very rare. It preferred the dense undergrowth of original forest, staying in the dark, deeply shaded places, perching on branches not very far from the ground. The single male specimen taken in May had enlarged testes.
Ficedula westermanni westermanni (Sharpe)

Specimens: 8 ♂, 5 ♀; 3500-6200 feet altitude.

Wing, ♂ (8) 55–58 (av. 56.4); ♀ (5) 52.5–56 (av. 54.8) mm.
Weight, ♂ (8) 6.8–8.1 (av. 7.5); ♀ (5) 7.3–10 (av. 8.3) grams.

The Mount Malindang birds do not differ from specimens from Mount McKinley and Mount Apo.

The species was found in deep forest and was often seen in high trees, perching on the top branches, although sometimes it went down as far as the trees of the lower story and perched there. It was easier to collect the bird on the ridges in higher elevations because the trees were lower and it stayed among the branches of the stunted trees.

Some April and May males and females showed enlarged gonads. One female had an egg ready for laying. An immature female, produced during the breeding season that year, was taken.

Muscicapa panayensis nigriloris (Hartert)

Specimens: 15 ♂, 13 ♀; 3500–7450 feet altitude.

Wing, ♂ (15) 77–82 (av. 79); ♀ (13) 73–79 (av. 76.8) mm.
Weight, ♂ (13) 17.7–21.7 (av. 20); ♀ (10) 18.5–20.8 (av. 20) grams.

Compared to specimens from Mount McKinley and Mount Apo, Mindanao Island, the birds from Mount Malindang do not show any difference.

The species was rather common and was found in the treetops from the tallest tree story in the transition dipterocarp–mid-mountain rain forest type, to the lowest tree story. It was even seen in the undergrowth of the two-storied forest, especially in the deeply shaded places.

Several birds of both sexes had enlarged gonads, showing unmistakable breeding activities. However, the peak of the breeding season must have been earlier because two immature birds several weeks old were secured in April.

Culicicapaheliantheapanayensis(Sharpe)

Specimens: 2 ♂; 2700–3000 feet altitude.

Wing, 58.5, 61 mm. Weight, 8.2, 9 grams.

The species was not common. The two birds were collected in original forest, but not very far from the forest edge. They were perching on the branches of third-story trees, the lowest story of a typical dipterocarp forest type.
Both birds showed enlarged gonads so that May must have been part of the breeding season of the species.

**Hypothymis azurea azurea** (Boddart)

Specimens: 1 ♀ adult, 2 ♀ immatures; 2700-3000 feet altitude.

Wing, ♀ adult 67.5 mm. Weight, 10.8 grams.

The species was rather common in the second-growth patches of the cleared areas in the lower elevations. It was also encountered inside original forest but not very far from the edge.

**Family PACHYCEPHALIDAE.** Whistlers.

*Pachycephala philippinensis apoensis* (Mearns)

Specimens: a series; 2700-7450 feet altitude.

Wing, ♂ (14) 81.5–88.5 (av. 84.2); ♀ (17) 79–84 (av. 80.9) mm. Weight, ♂ (12) 21.9–25.1 (av. 23); ♀ (14) 20–28.8 (av. 23) grams.

The species was common in the forest, usually among the branches of the lower tree stories. Many birds showed enlarged gonads during April and May.

**Family PARIDAE.** Titmice.

*Parus elegans mindanensis* (Mearns)

Specimens: 3 ♂ adults, 1 ♂ immature, 2 ♀ adults, 1 ♀ immature; 2700-4500 feet altitude.

Wing, ♂ (3) 61.5–64 (av. 62.8); ♀ (2) 58, 61.5 mm. Weight, ♂ (3) 11.4–12.2 (av. 12); ♀ (2) 12.2, 12.6 grams.

The species is recorded for the first time from the Mount Malindang locality. Mearns secured specimens of the subspecies from the Mount Apo locality at about 6200 feet altitude.

This bird was not uncommon in the forest. In the lower elevation it was observed both inside the forest and inside a dense patch of second growth that was adjacent to original forest. A specimen with enlarged gonads indicates breeding in May.

**Family SITTIDAE.** Nuthatches.

*Siitta frontalis zamboanga* Rand and Rabor

Specimens: 5 ♂, 3 ♀; 3500–5500 feet altitude.

Wing, ♂ (5) 77–83 (av. 78.9); ♀ (3) 71–75 (av. 73) mm. Weight, ♂ (4) 15.5–16.3 (av. 15.9); ♀ (2) 14.3, 16 grams.
This Mount Malindang endemic subspecies differs from *S. f. apo* of eastern Mindanao in being darker cinnamon brown washed with lilac on the under parts, and in having a greater amount of lilac wash on hind neck and foreback.

The bird was not rare. Several individuals were frequently seen accompanying other species of small birds in mixed feeding flocks, high up among the crowns of the trees of the highest story in both dipterocarp and mid-mountain forest types. Several males had enlarged gonads, indicating breeding in April and May.

**Family CERTHIIDAE.** Creepers.

*Rhabdornis inornatus zamboanga* Rand and Rabor
Specimens: a series; 3500–5500 feet altitude.
Wing, ♂ (19) 86.5–93 (av. 89.1); ♀ (18) 84.5–91 (av. 86.2) mm.  
Weight, ♂ (18) 34.1–47.2 (av. 41); ♀ (18) 37.5–46 (av. 40) grams.

Compared to *R. i. alaris* from Mount McKinley, Mindanao Island—the closest form—the Mount Malindang birds are much paler on the upper parts, lacking the reddish wash of the former race.

This bird was apparently rare but many individuals congregated in certain feeding trees that were very tall and belonged to the highest story of the dipterocarp and the transition dipterocarp–mid-mountain forest types. The collectors used to climb up these tall flowering and fruiting trees to secure the specimens; otherwise, very few or none could have been collected. An April female had an enlarged ovary.

**Family DICAEIDAE.** Flowerpeckers.

*Prionochilus olivaceus olivaceus* (Tweeddale)
Specimens: 1 ♂, 1 ♀; 2700–3000 feet altitude.
Wing, ♂ 55.5; ♀ 53.5 mm.  
Weight, ♂ 7.9; ♀ 10.8 grams.

The species was rare and the two birds that were secured were in low trees that belonged to the lowest tree story of a typical dipterocarp rain forest. Both specimens had enlarged gonads, showing breeding activities in May.

*Dicaeum anthonyi masawan* Rand and Rabor
Specimens: 2 ♂; 3500–4500 feet altitude.
Wing, 57, 57; culmen, 12, 12 mm.  
Weight, 12.1, 13 grams.
Iris brown; bill black; feet dark brown.

These two birds from Masawan on the slopes of Mount Malindang are the most interesting find of the expedition.
Dicaeum hypoleucum hypoleucum Sharpe
Specimens: 5 ♂, 5 ♀; 2700-4500 feet altitude.
Wing, ♂ (5) 51-56 (av. 53.6); ♀ (5) 51-53 (av. 52.2) mm. Weight, ♂ (5) 7.7-8.8 (av. 8); ♀ (5) 7.8-9.6 (av. 9) grams.
The bird was not uncommon but was difficult to secure because it frequented the tall flowering trees of the forest. With other flower-peckers, especially D. n. nigilore, several individuals of D. h. hypoleucum would feed on a particular flowering or fruiting tree, and keep coming back for many days, as long as the tree had flowers or fruit on it. The species was also found on flowering and fruiting trees of the second story.

Dicaeum nigilore nigilore Hartert
Specimens: a series; 3000-7450 feet altitude.
Wing, ♂ (10) 57-60 (av. 58.5); ♀ (10) 53-59 (av. 56.1) mm. Weight, ♂ (10) 10-11.8 (av. 11); ♀ (10) 9.5-12.4 (av. 11) grams.
This seems to be one of the rare mountain Philippine birds in collections, but it is common locally in the mountain forests.
The Mount Malindang birds are slightly larger than eastern Mindanao birds, but the difference is not great enough to merit subspecific separation.
The birds were very common but they frequented the tall fruiting trees, so that to secure them the collectors had to climb these trees of the first story in dipterocarp-mid-mountain forest.
Many birds of both sexes had enlarged gonads in April and May.

Dicaeum ignipectus apo Hartert
Specimens: 3 ♂, 1 ♀; 3500-4500 feet altitude.
Wing, ♂ (3) 54.5-57 (av. 55.5); ♀ (1) 56 mm. Weight, ♂ (3) 8.6-8.8 (av. 8.7); ♀ (1) 8 grams.
The species was rare. All the specimens were collected on a flowering tree in the clearing in our main camp site. The tree belonged to the second story of a three-storied forest.

Dicaeum trigonostigma cinereigulare Tweeddale
Specimen: 1 ♂; 2700-3000 feet altitude.
Wing, 51 mm. Weight, 7.1 grams.
The species was common in the second growth patches and inside the original forest, not far from the edge. It was even seen in low fruiting plants in the cultivated areas.
The single male that was taken had enlarged gonads, showing breeding activities in May.
Family NECTARINIDAE. Sunbirds.

Aethopyga boltoni malindangensis Rand and Rabor
Specimens: 11 ♂, 11 ♀; 3500–7450 feet altitude.
Wing, ♂ (8) 52–57 (av. 54.2); ♀ (9) 49.5–53 (av. 50.9) mm.
Weight, ♂ (5) 7.5–8.7 (av. 8); ♀ (6) 6.1–7.4 (av. 6.7) grams.

This mountain species was formerly known only from eastern Mindanao.

Compared with Ae. b. boltoni from Mount Apo and Mount McKinley, the Mount Malindang birds have decidedly brighter orange and yellow on the under parts in both sexes, and the male has more iridescence on the forehead and crown.

The birds were not really rare but they frequented the lowest story and lower growth of the forest, often in the deeply shaded part, so that they were difficult to see; hence they were often missed.

Several birds had enlarged gonads during April and May, showing they were breeding during these months, although they must have started earlier as young birds of the season were often encountered.

Aethopyga pulcherrima pulcherrima Sharpe
Specimens: 1 ♂, 1 ♀; 3000–4500 feet altitude.
Wing, ♂ 50; ♀ 48 mm. Weight, ♂ 6.9; ♀ 6.4 grams.

The species was found in deep forest and along the edges. It was rare.

The male bird had enlarged gonads, showing breeding activities in May.

Arachnothera clarae malindangensis Rand and Rabor
Specimens: 5 ♂, 2 ♀; 3500–4500 feet.
Wing, ♂ (5) 86–92 (av. 90); ♀ 84, 87 mm. Weight, ♂ (5) 28–34.8 (av. 31); ♀ 27.5, 29.4 grams.

This race has the forehead feathered as in A. c. clarae of southeastern Mindanao, but it is grayer below and duller green above.

These birds were found in original forest at 3500–4500 feet altitude, and were rare. They stayed among the trees of the lowest story of a typical three-storied dipterocarp rain forest, usually in rather deeply shaded places. Some birds were observed inside the original forests at about 2700 feet altitude, close to the cultivated areas of Gumay.

Breeding must have started in the area, because several males showed enlarged gonads during April and May.
Family ZOSTEROPIDAE. White-Eyes.

**Zosterops everetti basilanica** Steere

Specimens: 4♂, 1♀; 2700–3000 feet altitude.

Wing, ♂ (4) 57–58; ♀ 54 mm. Weight, ♂ (3) 10.6–11.1 (av. 10.8); ♀ 12 grams.

Birds from Basilan, Mindanao, and Samar are progressively slightly brighter on throat and paler on flanks, a tendency which culminates in the different *boholensis* of Bohol and *siquijorensis* of Siquijor.

The species was common at the forest edge and in the second-growth patches.

The male birds collected had enlarged gonads and the single female had an egg ready for laying. April and May must be part of the breeding season.

**Zosterops montana montana** Bonaparte

Specimens: a series; 2700–7050 feet altitude.

Wing, ♂ (12) 55–59 (av. 56.5); ♀ (12) 54–58 (av. 56.2) mm. Weight, ♂ (10) 9.4–11.8 (av. 10); ♀ (10) 9.9–12.6 (av. 11) grams.

These may well be the commonest birds in the locality from about 3000 feet up to the highest peak. They were feeding in large numbers on the flowers and fruit of the tall trees of the top story in a typical three-storied dipterocarp rain forest, and it was in these feeding trees that most of the specimens were collected. Other birds also fed on the same trees, chief among them being *Rhabdornis inornatus* and *Apoia goodfellowi*.

Many of the birds taken had enlarged gonads and in several cases females had eggs ready to be laid in April and May.

**Apoia goodfellowi malindangensis** Mearns

Specimens: a series; 3400–7450 feet altitude.

Wing, ♂ (12) 65–69 (av. 67.8); ♀ (13) 65–70 (av. 66.6) mm. Weight, ♂ (9) 18.2–21.5 (av. 20); ♀ (9) 19.2–22.3 (av. 20) grams.

Compared with a series of *A. g. goodfellowi* from Mount Apo and Mount McKinley this series demonstrates that *malindangensis* is a very distinct race.

The species was very common from about 3500 feet up to the summit of the highest peak. It was frequently encountered in groups of about six to a dozen feeding on a particular plant which was found from the very tall first-story trees of the typical dipterocarp rain forest down to the two other lower stories.
The species frequented the tall flowering and fruit trees in our main camp site at Masawan, and was taken with *Zosterops montana*.

Both sexes had enlarged gonads, showing that April and May were part of the breeding season.

**Hypocryptadius cinnamomeus malindangensis** Rand and Rabor

Specimens: a series; 3500–7450 feet altitude.

Wing, $\sigma$ (12) 89–96 (av. 92); $\varphi$ (12) 89–96 (av. 91.2) mm. Weight, $\sigma$ (10) 27.6–31.5 (av. 30); $\varphi$ (12) 24.7–31 (av. 30) grams.

This race differs from *H. c. cinnamomeus* of the mountains of southeastern Mindanao in having the upper parts brighter cinnamon, the breast tinged with brighter cinnamon, and the abdomen and under tail coverts whiter (less grayish).

The species was rather common from about 3500 feet up to the top of the highest peak. The birds used to go about in flocks numbering from six to a dozen. Occasionally they were seen to alight directly on the bark and behave like nuthatches but never for long. They gave out a characteristic note as they fed.

Some birds had the gonads enlarged during April.

**Family FRINGILLIDAE.** Finches, etc.

**Pyrrhula leucogenys steerei** Mearns

Specimens: 1 $\sigma$, 1 $\varphi$; 5500–7450 feet altitude.

Wing, $\sigma$ 80; $\varphi$ 76 mm. Weight, $\sigma$ 19 grams.

These are topotypes.

Three races of this Philippine mountain endemic have been described: *leucogenys* Grant 1895 (Luzon), *steerei* Mearns 1909 (Mount Malindang), and *apo* Hachisuka, 1941 (Mount Apo). On the basis of our scant material all seem valid as follows:

*leucogenys*: Wing, $\sigma$ 81, 82; $\varphi$ 82. Exposed culmen, $\sigma$ 11, 12; $\varphi$ 11.5 mm. More or less yellow in base of mandible (3 specimens).

*steerei*: Wing, $\sigma$ 80; $\varphi$ 77. Exposed culmen, $\sigma$ 10; $\varphi$ 10 mm. Differs from *leucogenys* in having a smaller, all black bill, and in having the under parts generally darker (2 specimens).

*apo*: Wing, $\sigma$ 80; $\varphi$ 78. Exposed culmen, $\sigma$ 10.5; $\varphi$ 10.5 mm. Like *steerei* in having a small, all black bill but it is still darker, more intensely colored below, and the back is darker (2 specimens).

The species was rare and was found only in mossy forest, usually on the ridge of the high peaks. It was easy enough to tell that a bird
or several birds were feeding on some mountain yews because they gave out a characteristic note which was easy enough to hear but not very helpful in locating the birds.

Family **STURNIDAE.** Starlings.

*Sarcops calvus melanonotus* Ogilvie-Grant

Specimens: 1 ♂, 1 ♀; 2000–2700 feet altitude.

Wing, ♂ 124; ♀ 121 mm.

These birds were rather common in the cleared areas and were often seen on some dead tree left standing in a clearing. They were often encountered in pairs.

Family **PLOCEIDAE.** Weaver-Birds.

*Lonchura leucogastra manueli* Parkes

Specimen: 1 ♀; 2700–3000 feet altitude.

Wing, 52 mm. Weight, 12.3 grams.

The species was seen occasionally going about among the grassland areas in small flocks containing from 5 to 10.

Family **DICRURIDAE.** Drongos.

*Dicrurus hottentottus striatus* Tweeddale

Specimens: 2 ♂ adults, 2 ♂ immatures, 1 ♀ adult, 4 ♀ immatures; 2700–4500 feet altitude.

Wing, ♂ (3) 131–136 (av. 133.6) mm. Weight, ♂ (2) 59.5, 61.1 grams.

The species was not very common in elevations above 3000 feet.

Family **ORIOLIDAE.** Orioles.

*Oriolus xanthonotus basilanicus* Ogilvie-Grant

Specimen: 1 ♂, 2700–3000 feet altitude.

Wing, 117 mm. Weight, 56.5 grams.

The single Mount Malindang bird comes closest to *O. x. basilanicus* from Basilan, so it is tentatively placed in this subspecies. Paucity of specimens makes evaluation of subspecies impossible at present.

The bird was not seen or heard in the elevation above 3000 feet. It was very rare and the few times we had the chance to encounter it, it was heard from some first-story tree, among the dense foliage.

The single male, collected in May, had enlarged gonads.
Family **CORVIDAE.** Crows.

**Corvus macrorhynchos philippinus** Bonaparte

Specimen: 1 ♀; 2000–2700 feet altitude.

Wing, 308 mm.

The species was rather common in the cultivated areas, especially where there were patches of coconut palms.

---

**SUBANO NAMES FOR MOUNT MALINDANG BIRDS**

<table>
<thead>
<tr>
<th>Subano Name</th>
<th>English Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bi-lik-bi lik</td>
<td>Coracina striata</td>
</tr>
<tr>
<td>Bo-bon-dil'</td>
<td>Piedidae hyperythra</td>
</tr>
<tr>
<td>Bo-ka'</td>
<td>Halepyon hombroni</td>
</tr>
<tr>
<td>Bo-lo-ca-kai</td>
<td>Irena cyanosaster</td>
</tr>
<tr>
<td>Bon-bon'</td>
<td>Columba vitienis griseogularis</td>
</tr>
<tr>
<td>Bo-ting-il</td>
<td>Dendrocopos maculatus</td>
</tr>
<tr>
<td>Bu-la' Ma-ta'</td>
<td>Pachycephala philippinensis</td>
</tr>
<tr>
<td>Bu-la' tok</td>
<td>Dryocopus javensis</td>
</tr>
<tr>
<td>Bra-yep'</td>
<td>Chrysocolaptes lucidus</td>
</tr>
<tr>
<td>Da-lik Ma-nok'</td>
<td>Apoia goodfellowi</td>
</tr>
<tr>
<td>Da-la Ma-no-bo</td>
<td>Harpactes ardens</td>
</tr>
<tr>
<td>Da-ra-gum'</td>
<td>Rhipidura superciliaris</td>
</tr>
<tr>
<td>Du-yan'</td>
<td>Muscicapa panayensis</td>
</tr>
<tr>
<td>Gu-pa'</td>
<td>Hypothymis azurea</td>
</tr>
<tr>
<td>Ka-lam-bang-ai</td>
<td>Hypocryptadius cinnamomeus</td>
</tr>
<tr>
<td>La-la-si</td>
<td>Hypocryptadius nigrocinnamomea</td>
</tr>
<tr>
<td>Lam-bong-on</td>
<td>Parus elegans</td>
</tr>
<tr>
<td>Li-bod-il-bod</td>
<td>Macronus striateiceps</td>
</tr>
<tr>
<td>Li-mu-con</td>
<td>Centropus melanops</td>
</tr>
<tr>
<td>Lo-ki-lok</td>
<td>Sitta frontalis</td>
</tr>
<tr>
<td>Man-o-tot</td>
<td>Phapitleron leucotis</td>
</tr>
<tr>
<td>Mang-git'</td>
<td>Phapitleron amethystina</td>
</tr>
<tr>
<td>Pi-pit'</td>
<td>Accipiter species</td>
</tr>
<tr>
<td>Pi-tras'</td>
<td>Dicrurus species</td>
</tr>
<tr>
<td>Sa-ki-kap</td>
<td>Nectarinia species</td>
</tr>
<tr>
<td>Si-ao'</td>
<td>Trichoglossus johnstoniae</td>
</tr>
<tr>
<td>Si-wil'</td>
<td>Dichorus hotentottius</td>
</tr>
<tr>
<td>Su-lak'</td>
<td>Zosterops species</td>
</tr>
<tr>
<td>Ta-li-sa-l'</td>
<td>Phylliscopos species</td>
</tr>
<tr>
<td>Ta-li-sen'</td>
<td>Mulleripicus funebris</td>
</tr>
<tr>
<td>Ti-bay'</td>
<td>Megalurus species</td>
</tr>
<tr>
<td>To-ko-wao'</td>
<td>Coracina species</td>
</tr>
<tr>
<td>Tong-ga-ek'</td>
<td>Coracina species</td>
</tr>
<tr>
<td>Tong-i-lao</td>
<td>Hypsiphex species</td>
</tr>
<tr>
<td>Tong-ga-ek'</td>
<td>Macropygia phasianella</td>
</tr>
<tr>
<td>Tong-i-lao</td>
<td>Prioniturus species</td>
</tr>
<tr>
<td>Tong-i-lao</td>
<td>Oriolus xanthonoros</td>
</tr>
</tbody>
</table>
SUBANO NAMES FOR MOUNT DAPIAK BIRDS

Al-pi-sao’ ..................  Dicrurus hottentottus
A-lo’ ........................  Bolbopsittacus lunulatus
Ba-ba-ša ....................  Ixobrychus cinnamomeus
Be-ned’ ......................  Microhierax erythrogenys
Bu-wa-wa ....................  Pitta erythroura
Da-lam-bung-an .............  Centropus melanops
Da-lang-gi-tan ..............  Arachnothera clarae
Du-ma-lan ...................  Collocalia species
Ma-ne’ ........................  Orthotomus atrogularis
Pi-pit’ ........................ { Dicaecum species
Si-bu-kok ....................  Centropus viridis
Ta-gip-tip’ ..................  Penelopides panini
Ta’-men-tes ..................  Halcyon species
Ung-ek’ .....................  Aceros leucocephalus
Birds of Bohol Island

Introduction

The 1955 Chicago Natural History Museum–Silliman University Bohol Zoological Expedition, headed by D. S. Rabor, worked in the field from March 28 to May 18. The hard rains which began in earnest about the middle of May cut short the collecting activities of the party. The members of the Expedition were mainly Silliman University Biology Department faculty, students and assistants.

Itinerary of the Expedition

March 27: Departure by steamer from Dumaguete City, Negros Oriental (Silliman University), for Tagbilaran, Bohol; arrival in Tagbilaran in the afternoon; arrival by truck in Sierra Bullones late in the evening.

March 28: Departure by truck for Sandayong (altitude 300–350 meters), about 5 kilometers from Sierra Bullones, where camp was established.

March 28–April 13: Collecting conducted by party in Sandayong and surrounding localities within a radius of about 5–8 kilometers, including the sitios and barrios of Canlangit, Luyo-Wahig, Lataban, Danicop, Duwao, Pamaksalan, and Abakhanan.

April 13: Main collecting party transferred on foot to a subcamp in Barrio Cantaub (altitude 700–750 meters), about 10 kilometers farther in the mountainous areas of Sierra Bullones. At Sandayong, in the main camp, three members were left behind to requisition supplies, continue collecting, and keep the flow of needed supplies to Cantaub subcamp.

April 13–May 12: Collecting conducted by party in Cantaub and adjacent localities including the sitios and barrios of Danicop, Abakhanan, Anislagan, all of Sierra Bullones; Badiang and Cogonon, of the municipality of Guindulman; and Mayana, of the municipality of Jagna.

May 12: Departure of party on foot early in the morning for the main camp at Sandayong; arrival late in the afternoon.

310
May 13–18: Collecting conducted by party in Sandayong and surrounding localities within a radius of 10 kilometers.

May 19: Departure by truck for Sierra Bullones in the afternoon; arrival in the poblacion in the evening.

May 20: Departure by truck for Tagbilaran early in the morning; arrival there at noon; departure by steamer in the afternoon; arrival in Dumaguete City, Negros Oriental, late in the evening.

Description of Collecting Sites

SANDAYONG CAMP (300–350 meters altitude). The main camp was established at Sitio Sandayong, about 5 road kilometers from the town of Sierra Bullones, among the hills. The tents were set under a large balete tree (Ficus sp.), beside the Jagna-Sierra Bullones road, which was under construction at the time. This tree was the only one of its kind that was left standing in the area, which otherwise was cleared and cultivated, or was overgrown by tall grass. Because of its interesting history and the numerous superstitions connected with it, this tree was never touched by the laborers of the road project. In fact, the road was made to swerve a little from its true course so the tree would be left unharmed. Fairies and spirits, both good and evil, were reputed to have lived in the tree. The people used to offer gifts every time that they passed it on their way to and from the town. Passersby said that they had heard beautiful music coming from it. Others claimed to have seen queer animals under it. The collecting party unintentionally put a stop to all these beliefs when without knowing the local stories the camp was established under the tree.

Two hundred meters from the camp site, there was a patch of well-logged original forest, about 30 hectares in area, that covered the side and ridge of a high hill that rose about 50 meters above the level of the camp site. Immediately around the site was a small level area drained by a creek originating in the forest patch nearby. Part of this area contained rice fields about one hectare in size. The rice plants were growing luxuriantly at the time that we were there, in spite of the fact that it was very dry and hot in surrounding places that did not have the benefit of this small creek.

The entire area had been originally a government forest preserve and had been much larger five years earlier. Gradually, the people had cut down the forest and prepared kaìning clearings and planted the cleared areas, at least for a few seasons, to sweet potato, cassava, corn and rice, in the favorable spots near water.
The remaining forest patch was transition dipterocarp-molave type, and throughout the years the people had logged the valuable timber trees for use in the construction of their houses, in spite of the government regulations against cutting down any of the forest. The forest patch was the only one of some size in the locality, although there were other patches of original forest on the distant hilltops, but of very much smaller areas. All around were grass and clearings that were often left to grow to second growth or to grass.

Collecting was carried on mainly in this forest patch and in other small forest patches for a radius of about 5 to 8 kilometers, at altitudes varying between 200 and 600 meters.

Cantaub Subcamp (700–750 meters altitude). Camp was established in the one-room schoolhouse, which was not occupied, since it was vacation time. This building was situated on a low hill, at the edge of the forest and was set apart from the rest of the barrio houses. Two hundred meters away, the forest began. This forest was also the transition dipterocarp-molave type.

Cantaub is really located on a plateau which must be a part of the oldest marine terrace in the interior of the island. The forested hills represent the ridges of old hills which have been eroded, and the erosion material deposited between them has formed small, level valleys. All the places with enough water were cultivated into wet rice fields. The drier areas were covered with tall grass; both cogon (*Imperata cylindrica*) and talahib (*Saccharum spontaneum*) were abundant. From time to time, the residents burned down these grass tracts and planted them to corn, sweet potato or cassava. Then, after two or three seasons, they abandoned the cleared areas again.

On the ridges and sides of the low hills and mountains, original forests formed an elongated tract about 10 kilometers in length and about 1 kilometer or less in width. In places, clearings had been made in this forest. It is possible that the forest tract covered some five thousand hectares, but the area was rapidly getting smaller because people were making clearings for *kaingin* cultivation.

On the ridges of the higher hills and mountains, the forest approached the mid-mountain type, but the altitude was not high enough for the development of a real mid-mountain forest. There were tracts of *Casuarina* sp. on the ridges and mountain sides, mixed with other species but dominant. The forest was nowhere distinctly three-storied as would be the case of real dipterocarp forest, but there was a very close approach to it. The area was limestone and the molave-dipterocarp forest type flourished best in this type of country.
There were several caves and tunnels, as would be expected in limestone areas, and these were duly explored and collected in.

The greater part of the forest tract belonged to the town of Sierra Bullones and small parts to Guindulman and Jagna.

**History of Bird Collections**

A. H. Everett and his brother were the first collectors who worked on Bohol Island. Everett himself collected in Talibon, in the northern part of Bohol, and in the adjacent localities for only about one week. Then he left for Palawan, leaving his brother to continue collecting in the interior during October and November, 1877. Here the brother "found a country covered with grass 12 feet high, and with no forest except on the tops of a few hills. Birds were scarce; and he had to return stricken with fever" (Tweeddale, 1878, p. 708). Representatives of 47 species were collected by the Everetts in northern Bohol.

In March, 1888, some members of the Second Steere Expedition collected on Bohol. Fourteen species were taken, of which 7 were new records for the island.

In March and April, 1906, Celestino and Canton collected on Bohol, and later on, in May, McGregor joined them. The party worked in the localities around Tagbilaran, where they found no more forest. They moved to Corella, Sevilla and Balilijan, where there were still small remnant patches of forest on some of the mountain tops. Finally they moved to Guindulman, on the southeastern part of the island, and collected in a remnant patch of original forest on top of a limestone ridge. Ninety-one species were collected, including 5 which were supposedly new; many new records for the island were established, raising the number of birds known on Bohol to 147 (McGregor, 1907). Of this number 117 were resident, 28 migrant, and 2 of doubtful status.

The 1955 expedition party collected in the remnant forest patches on the hills and mountains of Sierra Bullones, especially around Sitio Sandayong and Barrio Cantaub and the adjacent localities, in an area that roughly approximated a triangle, formed by the municipalities of Sierra Bullones toward the interior and Guindulman and Jagna toward the coast, all in the southeastern part of Bohol Island.

A total of 1250 bird specimens was collected, including 109 forms, of which 98 are resident and 11 migrant. Twenty-five forms are recorded for the first time from Bohol; of these 21 are resident and
4 migrant. The present collecting has increased the avifaunal list of Bohol to 172 forms, of which 137 are resident, 32 migrant, and 3 of doubtful status.

Five new races have been described from Bohol in other papers (Rand and Rabor, 1957, 1959). Four of the species to which these races belong were included in the list of McGregor, and one was collected for the first time on the island by the 1955 collecting party.

The following is a list of the resident forms which have been recorded for the first time from Bohol Island:

1. Anas luzonica
2. Pernis celebensis steerei
3. Accipiter virgatus confusus
4. Falco severus
5. Excaftactoria chinensis lineata
6. Rallus torquatus torquatus
7. Rallina eurizonoides eurizonoides
8. Treron pompadora axillaris
9. Ptlinopus occipitalis
10. Cacomantis variolosus sepulcralis
11. Surniculus lugubris velutinus
12. Ninox philippensis centralis
13. Batrachostomus septimus septimus
14. Eurostopodus macrotis macrotis
15. Collocalia inexpectata amelis
16. Hemiprome comata comata
17. Ceyx argentatus flumenicolus
18. Eurylaimus stearii samarensis
19. Irena cyanogaster ellae
20. Pilociichla mindanensis fortichi
21. Oriolus xanthonotus samarensis

The newly recorded migrant forms are the following:

1. Gallinago megala
2. Cuculus saturatus horsfieldi
3. Monticola solitaria philippensis
4. Locustella lanceolata

Geography

Bohol Island, lying directly east of the southern half of Cebu, is roughly ovate in form. It measures about 85 kilometers along its east-west axis and 60 kilometers along its north-south axis. It is tenth in size of the larger islands of the archipelago, with an area of about 3973 square kilometers (1534 square miles).

Of the 30 to 40 larger and medium-sized islands, Bohol is one of three which have no high mountain peaks (Samar and Masbate are the other two). From a central height of about 800 meters altitude, the island is well drained on all sides. Because of the absence of any high mountain range, it receives a more or less well-distributed rainfall throughout the year. Since it is sheltered from the full effects of the northeast monsoon by Leyte and from those of the southwest monsoon by Negros and Cebu, the resulting precipitation is much less than that of Samar.

Bohol is one of three larger islands which have been excessively deforested and rendered barren throughout the past years (Cebu and Panay are the other two). At present a greater part of the land
area is covered with grass, the result of man's activities. Worcester and Bourns (1898, Proc. U. S. Nat. Mus., 20, no. 1134, p. 580) aptly express this deforested condition of Bohol when they write: "The relationship of the birds of Bohol is difficult to determine, as the last trace of virgin forest seems to have long since been swept from the island, and with its disappearance a considerable part of the record of Bohol's past, as furnished by its birds, has been forever blotted out."

Up to the present, however, there are still two important areas of remnant original forest in the interior of Bohol and several small patches on scattered hills and mountain tops, also in the interior. None of these tracts is visible from the sea, thus making the island appear entirely deforested and barren when viewed from a ship, and very discouraging from the ornithological collecting point of view. This unpromising appearance may explain the small number of ornithological collectors who were attracted to work on Bohol, and hence the lack of collected material from this island, even up to 1955.

**Geology and Paleogeography**

Bohol, together with Cebu, Negros, Panay and Mindoro rests on the Central Philippine Platform or Central Plateau (Bailey Willis, 1937, see map).

Willis (1937, p. 34), commenting on the geology of Bohol, writes: "It has a central mass of plutonics, which is to a large extent covered by Pliocene and Recent coral. It is obviously raised. Flying over its southwestern coast I observed the flatness of the plateau, which represents the level of the coral reef as it grew beneath the sea. It is not a peneplain. Erosion has produced the well known 'haycock hills' whose even summits represent hard masses in the original level, now isolated from one another by erosion of valleys between them. The valley floors were cut out to a common level that was controlled by sea level during a pause in the progress of the uplift. Hence the uniformity in height and general form of the 'haycocks.'"

"The apparent flatness of Bohol seems to indicate that the conditions of elevations have differed from those that have affected Cebu. Instead of arching the island the uplift seems to have been more uniform."

Dickerson (1928, p. 36) writes: "In all probability Bohol, like Samar, has been rather recently elevated from the sea, and the streams have not yet been able to remove completely the traces of marine plains that border these islands."
Terraces about 120 or 150 meters in elevation occur on Bohol. The abundance of coralline limestone and marl and the presence of a well-marked marine terrace over the southern half of Bohol indicate that only a small part of Bohol was above sea level during the Pleistocene. It is possible that most of Bohol was covered during the early Pleistocene by the shallow water of a sea (Dickerson, loc. cit.). After the succession of uplifts in the middle or late Pleistocene, Bohol began to assume its present form.

In the mountainous regions of the eastern and southeastern parts of Bohol, in an area that is bounded on the west by an imaginary straight line that passes inland and extends between the towns of Ubay in the northeast and Valencia in the south, plutonic rocks occur that have been positively identified as serpentine (Irving, 1953). The same type of rock has been identified in the mountains between the towns of Jagna and Sierra Bullones.

In the central parts, middle Miocene conglomerates, middle Miocene sandstones, and Pliocene limestone have been identified. The mountains of Sierra Bullones, the site of a greater part of the collecting in 1955, are upper Miocene limestone. In the coastal areas Pliocene limestone and Pleistocene undifferentiated sediments occur (Irving, op. cit.).

Dickerson (1928) visualizes the Philippine Islands some time during the Pleistocene as comprised of a few large islands, only four or five in number, among which was one which included what at present are northeastern Mindanao, Bohol, Leyte, Samar, and the entire southern part of Luzon, from the narrow neck of Quezon Province southward, including the islands of Marinduque and Catanduanes.

It is, however, possible that at the maximum regression of the Pleistocene glaciers, when the level of the oceans was lowered in this part of the world by as much as 90–100 meters (Kuenen, 1950; Umbgrove, 1929), a much larger area was exposed than what is now occupied by present-day Mindanao and the nearby islands of Bohol, Leyte, Samar, and other much smaller ones. At about this time, land connections probably were existing between the Bohol-Leyte-Samar land mass (all connected at the time) and Luzon in the north (through southern Luzon), and Mindanao in the south. The connections were with Samar, through northwestern Samar and southern Luzon in the north, and southeastern Samar and northeastern Mindanao in the south. At that time Bohol formed the terminal half of a peninsula that jutted out of a large eastern island consisting of part of Luzon, Samar, Leyte, Bohol, Mindanao, Basilan and the Sulu
Archipelago. This peninsula was formed of what is now the southern half of Leyte and the plain that was then occupying what is now the sea between present-day Leyte and Bohol, and Bohol itself, forming the end part. Also, Zamboanga Peninsula, then much broader and longer than it is at present, was continuous with Basilan and with Sulu Archipelago, which then was one continuous land mass. So this Pleistocene island extended from the present-day northern Luzon, to Samar-Leyte-Bohol, to northeastern Mindanao, to the present-day Mindanao Island, down to Zamboanga Peninsula, to Basilan, and to the Sulu Archipelago as one continuous land mass, located mainly on the eastern part of what is now the Philippines and curving south-westward and coming very close to Borneo. Subsequent developments resulted in the separation of the various islands as they are today.

With this paleogeographic picture in mind, the close relationships in the avifaunas of the different islands of the Eastern Province, which at present consists of Luzon, Samar, Leyte, Bohol, Mindanao and Basilan, and the small islands immediately adjoining—Polillo, Catanduanes, Marinduque, Biliran, Panaon, Dinagat, Siargao and Camiguin South—will be better understood.

At about the time that Bohol, Leyte and Samar formed the middle portion of the great eastern island, another large island existed in the central Visayas. This island consisted of Negros, Panay, Guimaras, Masbate, Ticao, Tablas, Romblon, Sibuyan and Bantayan. Between these two large islands lay Cebu, which at the time was a string of small coral islands, remaining as such until late Pleistocene, when they united into present-day Cebu Island.

Zoogeography

McGregor (in Dickerson, 1928, pp. 198–213) considered the islands of Bohol, Leyte and Samar, and the small islands that are adjacent, such as Biliran and Panaon, as forming a distinct subprovince, based on the similarity of their avifaunas. Delacour and Mayr (1946, pp. 9–12) grouped several of the original subprovinces of McGregor, consisting of the islands along the eastern part of the Philippine archipelago from Luzon down to Mindanao and Basilan and the islands between them, and placed them under a larger category, the Eastern Province, as separated from the Central or Visayan Province, the Palawan Province and the Marginal Districts, comprised of the islands on the periphery of the Philippines that come in contact with the main faunal areas that comprise the provinces.
Grouping the original hydrographic units comprising Samar, Leyte, Bohol, Camotes, Biliran and Panaon, with the rest of the islands of the Eastern Province, does not in any way detract from the fact that the above-mentioned islands show among themselves the closest relationship in their avifaunas, when compared to other islands nearby, such as Luzon and Mindanao and Basilan, which also belong to the same zoogeographic province. Based on the fact that Mindanao and Basilan used to be important components of the southern portion of the large Pleistocene island which also included Bohol, Leyte and Samar, and Luzon in the north, close relationships between the avifaunas of these three subdivisions are to be expected. Thus, bird forms should be closer among the Luzon unit (Luzon and nearby small islands of Polillo, Catanduanes, Marinduque), the Bohol-Leyte-Samar unit (and the small islands nearby), and the Mindanao-Basilan unit (and the small islands nearby), than between any one of these three units and any other province, either the Central Province or Palawan Province.

Eleven forms are found only on Bohol, Leyte and Samar: Loriculus philippensis worcesteri, Harpactes ardens linae, Ceyx argentatus flumenicolus, Buceros hydrocorax semigaleatus, Penelopides panini samarensis, Dendrocopos maculatus leyensis, Eurylaimus steerii samarensis, Coracina striata boholensis, Irena cyanogaster ellae, Orthotomus samarensis, and Rhipidura superciliaris samarensis.

Three forms are found on Bohol, Leyte, Samar, and the nearby islands of Biliran and Panaon, which by their present location are really part of the Bohol-Leyte-Samar hydrographic unit: Dryocopus javensis pectoralis, Chrysocolaptes lucidus rufopunctatus, and Dicaeum hypoleucum pontifex.

Eight forms are found on Bohol, Leyte, Samar, Mindanao and Basilan and may also be found on the small islands between, such as Panaon and Dinagat: Centropus melanops, Otus bakkamoena everetti, Batrachostomus s. septimus, Orthotomus atrogularis frontalis, Prietonchilus o. olivaceus, Dicaeum trigonostigma cinereigulare, Arachnothera longirostris flammifera, and Dicrurus hottentottus striatus.

Only one form is found on Bohol, Leyte, Samar, Luzon and the small islands near them, such as Polillo, Marinduque, Panaon and Dinagat: Phapitreron amethystina amethystina.

Two forms are found on Bohol which are definitely Central Province in relationship: Spilornis cheela panayensis and Ninox philippensis centralis.
One form is found on Bohol, Luzon, Mindoro, Panay and Mindanao: *Porphyrio pulverulentus*.

One form is found on Bohol, Leyte, Samar, Biliran and Siquijor: *Phapitreron leucotis albifrons*.

The closely related form, *P. l. brevirostris*, is found on Mindanao.

Only one form is found on Bohol and Luzon: *Acrocephalus stenotereus harterti*.

Seven forms are recognized as endemic on Bohol: *Turnix sylvatica celestinoi*, *Ptilocichla mindanensis fortichi*, *Macronus striaticeps boholensis*, *Stachyris nigrocapitata boholensis*, *Rhinomyias ruficauda boholensis*, *Aethopyga pulcherrima decorosa*, and *Zosterops everetti boholensis*.

All the endemic races on Bohol are represented by closely related forms on the nearby islands of Leyte, Samar, Mindanao and Basilan: *Turnix sylvatica masaaki* (Mindanao), *Ptilocichla mindanensis minuta* (Leyte, Samar), *P. m. mindanensis* (Mindanao), *P. mindanensis basilanica* (Basilan), *Macronus striaticeps cumingi* (Samar), *M. striaticeps mearnsi* (eastern Mindanao, west to Mount Malindang in Zamboanga Peninsula), *M. striaticeps mindanensis* (southern part of Zamboanga Peninsula of Mindanao), *M. s. striaticeps* (Basilan), *Stachyris n. nigrocapitata* (northern Leyte, Samar), *Rhinomyias ruficauda saramensis* (Samar, Leyte, eastern Mindanao), *R. ruficauda zamboanga* (western Mindanao), *R. r. ruficauda* (Basilan), *Aethopyga p. pulcherrima* (Leyte, Samar, Dinagat, Mindanao, Basilan), and *Zosterops everetti basilanica* (Leyte, Samar, Dinagat, Mindanao, Basilan).

Since Bohol is at the tip of what was once a peninsula, it may have afforded a good place for subspeciation to take place relatively undisturbed by the mixture of populations that occurred on what later became Leyte and Samar, which were in more direct contact with Mindanao on one end and Luzon on the other. Leyte and Samar must have separated later because even to the present day the very narrow San Juanico Strait that separates Leyte and Samar is not an effective barrier for bird exchange between the two islands.

The absence of *Parus* and *Sitta* on Bohol is remarkable. *Parus* is also absent on the nearby islands of Leyte and Samar. *Sitta*, however, has been recorded on both Leyte and Samar. It will not be strange if the genus is eventually found on Bohol.

*Rhabdornis inornatus* has not been recorded so far from Bohol although it has been found on Leyte and Samar. It may eventually be found on Bohol.
The Eastern Province, based on the affinities of the bird forms found on the various islands comprising the unit, may easily be shown to contain three subdivisions:

1. Luzon (together with Marinduque, Polillo, Catanduanes and other small islands nearby).
2. Bohol-Leyte-Samar (together with Biliran, Panaon, Dinagat).
3. Mindanao-Basilan (together with small islands nearby).

List of Species

The 172 forms recorded from Bohol are listed below. The earlier records are from McGregor (1909).

Family PODICIPEDIDAE. Grebes.

Podiceps ruficollis philippensis (Bonnaterre)
Collected by McGregor.

Family ARDEIDAE. Herons, Bitterns, etc.

Ardea sumatrana Raffles
Collected by McGregor.

Ardea purpurea manilensis Meyen
Collected by McGregor.

Egretta intermedia intermedia (Wagler)
Collected by Steere Exp.

Egretta garzetta garzetta (Linnaeus)
Collected by Everett and McGregor.

Demigretta sacra sacra (Gmelin)
Collected by Steere Exp. and McGregor.

Bubulcus ibis coromandus (Boddaert)
Collected by Everett and McGregor.

Butorides striatus carcinophilus Oberholser
Collected by McGregor.

Nycticorax caledonicus manillensis Vigors
Collected by McGregor.
Ixobrychus cinnamomeus (Gmelin)
Collected previously by McGregor.
Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂, 1 ♀ immature, May 5–10.
Wing, ♂ 141; ♀ immature 139. Culmen from frontal feathering, ♂ 46.5; ♀ immature 48.5 mm. Weight, ♂ 106.2; ♀ immature 116 grams.

Family CICONIIDAE. Storks.

Dissoura episcopus episcopus (Boddaert).
Collected by Steere.

Family ANATIDAE. Ducks.

Dendrocygna arcuata arcuata (Horsfield)
Collected by Everett and McGregor.

Anas luzonica Fraser
Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂, 1 ♀; May 11.
Wing, ♂ 256; ♀ 240. Culmen from frontal feathering, ♂ 53; ♀ 49 mm. Weight, ♂ 803.5; ♀ 764 grams.
First record of the species from Bohol.
Bohol birds do not differ from Negros, Mindanao and Samar specimens.
The female has the rectrices molting in May. The male has the testes enlarged in May.

Family ACCIPITRIDAE. Hawks.

Elanus caeruleus hypoleucus Gould
Collected by McGregor.

Pernis celebensis steerei Sclater
Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂; April 8.
Wing, 363. Culmen from base, 37.5 mm. Weight, 696.5 grams.
First record of the species from Bohol.
The Bohol male does not differ significantly from Negros and Mindanao males.
In a fully adult male from Ayuquitan, Negros Oriental, the entire under parts are white and the dark brown streaks on the forehead and forecrown have disappeared except for the dark brown on the feather shafts. Apparently the rufous parts of the feathers on the head gradually wear off, leaving only the blackish brown and black streaks on the shaft and part of the vanes on the terminal part of the feathers. These, too, gradually wear off, leaving only the dark brown shafts on the terminal parts, but the white parts of the feather on the basal parts are intact. The feathers on the throat and fore-breast gradually lose their dark brown or blackish brown streaks on the center of the terminal half, leaving only the white basal half and the blackish brown or dark brown feather shaft. The fully adult male does not have any brown barring on the flanks and thighs.

The female has the well-pronounced black or blackish brown streaks on the head and on the breast; the younger the specimen the more pronounced these streaks. The flanks, thighs, and under tail coverts show clear barring of brown.

In the series of six males and three females in Chicago Natural History Museum, three males and one female show molt only in the primaries in April, May and June; one female shows molt in the primaries in October; two males and one female show molt only in the rectrices in May and June, and one female shows molt in the rectrices in October.

Color of unfeathered parts when fresh: iris bright yellow; legs and feet bright yellow; nails blackish brown; upper mandible dark brown, lower mandible dark brown, very pale brown at basal part.

**Haliastur indus intermedius** Blyth

Collected by Steere Exp. and McGregor.

**Accipiter virgatus confusus** Hartert

Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂; April 3. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂; April 27.

Wing, ♂ (2) 151.5, 157. Culmen from base, ♂ (2) 19, 19 mm. Weight, ♂ (2) 94.5, 93.6 grams.

Recorded for the first time from Bohol.

The two Bohol males are in fresh full adult plumage. The barring on the under parts is represented by very faint remnants on the abdomen. The brownish line along the center of the chin and throat is very much reduced.

Both Bohol birds were taken inside original forest patches.
Butastur indicus (Gmelin)
Collected by Everett and by Steere Exp.

Haliaeetus leucogaster (Gmelin)
Collected by McGregor.

Circus melanoleucos (Pennant)
Collected by McGregor.

Spilornis cheela panayensis Steere
Collected by McGregor.
Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂; April 1.
Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♀; May 3.
Lataban, Sierra Bullones, 700–750 meters altitude; 1 ♀; May 10.
Wing, ♂ 325; ♀ 324, 329. Culmen from base, ♂ 36; ♀ 36, 36 mm. Weight, ♂ 522; ♀ 484.5, 564 grams.

One male and one female from Bohol fall within a series of 14 specimens of S. c. panayensis from Negros and Romblon. Another female from Bohol is much darker and approaches a series of 13 specimens of the darker-colored S. c. holospilus from Mindanao.

The measurements of the 3 Bohol birds most closely approach those of S. c. panayensis.

Family FALCONIDAE. Falcons.

Microhierax erythrogenys (Vigors)
Collected by McGregor.

Falco severus Horsfield
Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂, 1 ♀; March 29.
Wing, ♂ 221; ♀ 238.5. Culmen from base, ♂ 23.5; ♀ 24.5 mm.
Weight, ♂ 183; ♀ 249.2 grams.
First record for Bohol.

Family PHASIANIDAE. Pheasants, Quail, and Jungle Fowl.

Excalfactoria chinensis lineata (Scopoli)
Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♀; April 19.
Wing, 70. Culmen from base, 11.5 mm. Weight, 23.1 grams.
First record of the species from Bohol.
*Gallus gallus gallus* Linnaeus

Collected previously by McGregor.
Canlangit, Sierra Bullones, 300–350 meters altitude; 1 ♂ immature; May 16. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♀; May 11.

Wing, ♀ 188 mm. Weight, ♀ 666.2 grams.

The half-grown male can easily be mistaken for the half-grown male of the native domestic breed.

Family **TURNICIDAE**. Button-Quail.

*Turnix sylvatica celestinoi* McGregor

Collected by McGregor.

Family **RALLIDAE**. Rails, etc.

*Rallus torquatus torquatus* Linnaeus

Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♀; May 17.

Wing, 152. Culmen from base, 41.5 mm. Weight, 241 grams.

Recorded for the first time from Bohol.

The Bohol specimen is similar to specimens from Negros, even in measurements; hence it is placed in the race *torquatus*.

The species was fairly common among the grassland areas in the localities in which we worked, but it was more often heard than seen.

*Rallina eurizonoides eurizonoides* (Lafresnaye)

Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂; April 15.

Wing, 137. Culmen from base, 27.5 mm. Weight, 111.7 grams.

First record of the species from Bohol.

The unfeathered parts when fresh have the following colors: iris reddish orange; bill blackish on upper portion of upper mandible to tip, olive green on lower portion and lower mandible; legs, feet and nails dark gray.

*Poliolimnas cinereus ocularis* (Sharpe)

Collected by McGregor.

*Amaurornis olivacea olivacea* (Meyen)

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 2 ♂, 1 ♀, sex? immature; April 1–3.
A young downy chick, at most a few days old, was collected on April 3 along the side of a new road that was made on the shoulder of a hill. Tall grass covered the whole area. The chick apparently fell down the steep side of the cut bordering the new road, and both parents in their concern came out into the road, where they were all captured.

These birds seem to prefer the drier parts of grassland areas because they have been taken far from any creek or water area.

**Amaurornis phoenicurus javanica** (Horsfield)

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300-350 meters altitude; 2 ♀; May 15-17.

Wing, 134, 140. Culmen from base, 33, 34 mm. Weight, 166.5, 180.5 grams.

The species prefers tall grass in swampy and marshy areas. Cogonales, where there are small creeks crisscrossing the area, are favorite habitats.

**Gallicrex cinerea** (Gmelin)

Collected previously by McGregor.

Cantaub, Sierra Bullones, 700-750 meters altitude; 7 ♂, 3 ♀ adults, 1 ♀ young adult; April 14-May 11.

Wing, ♂ (7) 212-242 (av. 228.6); ♀ (3) 199-225 (av. 208) mm. Weight, ♂ (7) 476-650 (av. 546.1); ♀ (3) 297.5-434 (av. 355.5) grams.

The male birds from Bohol are in different degrees of changing to summer plumage. One male taken on May 5 had the change to summer dress almost completed except for parts of the back, abdomen, crissum, and under tail coverts. Male birds taken in Chekiang, China, were in complete breeding plumage in May and June.

A fully adult male taken in Negros Island on August 2 has the breeding plumage mixed with the non-breeding plumage. It should be an interesting study to find out if the Philippine birds of this species ever attain a full breeding dress like that of the Chinese birds.

Four males and one female had enlarged gonads in April and May.

**Gallinula chloropus orientalis** Horsfield

Collected by McGregor.
Porphyrio pulverulentus Temminck
   Collected by McGregor.

Family CHARADRIIDAE. Plovers.

Squatarola squatarola (Linnaeus)
   Collected by McGregor.

Pluvialis dominica fulva (Gmelin)
   Collected by Everett.

Charadrius dubius dubius Scopoli
   Collected previously by Everett.
   Canlangit, Sierra Bullones, 300–350 meters altitude; 1 ♀; May 14.
   Wing, 109.5. Culmen from base, 20 mm. Weight, 31.7 grams.
   The species was met with occasionally in the gravelly beds of the
   shallow streams of the area.

Charadrius alexandrinus dealbatus (Swinhoe)
   Collected by Everett and by Steere Exp.

Charadrius peronii peronii Schlegel
   Collected by Everett.

Charadrius mongolus mongolus Pallas
   Collected by Everett.

Charadrius leschenaultii Lesson
   Collected by Everett and by McGregor.

Family SCOLOPACIDAE. Snipe, Sandpipers, etc.

Numenius phaeopus variegatus (Scopoli)
   Collected by McGregor.

Numenius madagascariensis (Linnaeus)
   Collected by McGregor.

Limosa lapponica baueri Naumann
   Collected by Everett and by McGregor.
Tringa totanus eurhinus (Oberholser)
Collected by Everett and by McGregor.

Tringa nebularia (Gunnerus)
Collected by McGregor.

Tringa ochropus Linnaeus
Collected by McGregor.

Tringa glareola Linnaeus
Collected previously by Everett.
Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♀; April 2.
Wing, 123.5. Culmen from base, 33.5 mm. Weight, 70 grams.
This winter visitor was fairly common in the small valleys planted
to rice and drained by a small creek with a small area of marsh
beside it.

Xenus cinereus (Güldenstaedt)
Collected by Everett.

Actitis hypoleucos (Linnaeus)
Collected by Everett.

Heteroscelus brevipes (Vieillot)
Collected by Everett and by McGregor.

Arenaria interpres interpres (Linnaeus)
Collected by Everett.

Gallinago megala Swinhoe
Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♀; April 14.
Wing, 141. Culmen from base, 71 mm. Weight, 149.2 grams.
Recorded for the first time from Bohol.
This species is easily the most common and widely spread of the
three species of snipe that winter in the Philippines. It was often
flushed from the marshy, grassy sides of creeks in the cultivated
areas, and in the wet rice fields left fallow at the time.

Gallinago gallinago gallinago (Linnaeus)
Collected by Everett.
Erolia ruficollis (Pallas)
     Collected by Everett and by McGregor.

Limicola falcinellus sibirica Dresser
     Collected by Everett.

     Family LARIDAE. Gulls and Terns.

Thalasseus bergii cristatus (Stephens)
     Collected by Everett and by McGregor.

     Family COLUMBIDAE. Pigeons and Doves.

Treron pompadora axillaris (Bonaparte)
     Cantaub, Sierra Bullones, 700–750 meters altitude; 2 ♂, 2 ♀; April 29.
     Wing, ♂ 158, 162; ♀ 160, 162. Culmen, ♂ 23, 23; ♀ 23, 23.5 mm.
     Weight, ♂ 218.3, 244; ♀ 227.7, 257.1 grams.
     First record of the species from Bohol.
     Bohol birds do not differ from specimens from Negros, Siquijor, Samar and Mindanao.
     In original forest and at the edges the species went in flocks containing from six to a dozen members.

Treron vernans vernans (Linnaeus)
     Collected by Everett and by McGregor.

Phapitreron leucotis albifrons McGregor
     Collected previously by Steere Exp. and by McGregor.
     Luyo-Wahig, Sierra Bullones, 200 meters altitude; 1 nestling; May 16. Sandayong, Sierra Bullones, 300–350 meters altitude; 6 ♂, 3 ♀; March 30–April 16. Cantaub, Sierra Bullones, 700–750 meters altitude; 6 ♂, 9 ♀; April 7–May 8.
     Wing, ♂ (12) 123–133 (av. 127.2); ♀ (12) 121–131 (av. 127.5) mm. Culmen, ♂ (12) 18–20 (av. 19); ♀ (12) 18–20 (av. 19) mm.
     Weight, ♂ (10) 90–117 (av. 107.8); ♀ (12) 103.9–135.6 (av. 114.2) grams.
     The Bohol specimens do not differ from Samar and Siquijor birds.
     The species was one of the most common forms on Bohol. It was found in second growth, original forest, and even in well-cultivated areas inside the mixed tree and shrub growths along the hedges.
Many males and females had enlarged gonads in April and May. One nestling a few weeks old was taken on May 16.

**Phapitreron amethystina amethystina** Bonaparte

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂, 1 ♀; April 7–14. Cantaub, Sierra Bullones, 700–750 meters altitude; 9 ♂, 6 ♀; April 14–May 4. Mayana, Jagna, 700–750 meters altitude; 1 ♂; May 5.

Wing, ♂ (11) 143–156 (av. 150.5); ♀ (7) 140–151 (av. 144.7). Culmen from base, ♂ (11) 26.5–29 (av. 27.8); ♀ (7) 25–28 (av. 26.6) mm. Weight, ♂ (10) 131–149.4 (av. 141.1); ♀ (6) 111.5–144.5 (av. 128.3) grams.

Birds from Bohol average slightly darker on the under parts compared to Samar birds, but there is a great deal of overlap between the two populations. The Bohol birds were described by Manuel as *P. a. celestinoi*, which we consider a synonym.

**Ptilinopus occipitalis** Gray

Cantaub, Sierra Bullones, 700–750 meters altitude; 4 ♂, 3 ♀; April 19–May 7.

Wing, ♂ (4) 151–161 (av. 156); ♀ (3) 143.5–159 (av. 151.8). Culmen from base, ♂ (4) 22–23 (av. 22.5); ♀ (3) 22–23 (av. 22.3) mm. Weight, ♂ (4) 204–260.5 (av. 228.1); ♀ (2) 209.4, 223.8 grams.

First record of the species from Bohol.

**Ptilinopus leclancheri leclancheri** (Bonaparte)

Collected by McGregor.

**Ducula aenea glaucocauda** Manuel

Collected by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 2 ♂; April 12–May 3.

Wing, ♂ 234, 245. Culmen, ♂ 33, 33.5 mm. Weight, ♂ 545.8 grams.

The species was rather scarce in the localities in which we collected but was reported to be quite common in the lower elevations. The birds were taken in tall trees at the edge of the well-logged remnant patch of original forest in an area otherwise grassland and cultivated.
[Ducula bicolor (Scopoli)]

Included by Worcester and Bourns (1898, p. 551, species no. 29) in the Bohol list but McGregor (1907, p. 318) himself commented that “... this species is given as being found in Bohol but I find no original record of the species from this island and it was not observed by us.”

Macropygia phasianella tenuirostris Bonaparte

Collected previously by McGregor.

Cantaub, Sierra Bullones, 700–750 meters altitude; 3 ♂, 1 ♀; April 20–27.

Wing, ♂ (3) 180–184 (av. 182); ♀ 177. Culmen, ♂ (3) 21–23 (av. 22.3); ♀ 21.5 mm. Weight, ♂ (3) 177.4–180.6 (av. 178.7); ♀ 170 grams.

A female bird secured on April 25 had an egg with hard shell in the oviduct ready for laying.

Streptopelia bitorquata dusumieri (Temminck)

Collected previously by Everett, Steere Exp., and McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 2 ♂; May 12. Pawaksalan, Sierra Bullones, 300–350 meters altitude; 2 ♂, 1 ♀; May 17.

Wing, ♂ (4) 160–164 (161.7); ♀ 160. Culmen, ♂ (4) 22–22.5 (av. 22.1); ♀ 23 mm. Weight, ♂ (4) 145.5–173.7 (av. 158.5); ♀ 158.5 grams.

Three males from Bohol show both wing and tail molt in May, and one shows only the wing molt in the same month.

The single female had enlarged gonads in May.

Chalcophaps indica indica (Linnaeus)

Collected previously by McGregor.

Luyo-Wahig, Sierra Bullones, 200 meters altitude; 1 ♂; May 16. Sandayong, Sierra Bullones, 300–350 meters altitude; 2 ♂, 4 ♀; April 2–May 15. Canlangit, Sierra Bullones, 300–350 meters altitude; 1 ♂; May 14. Abakahanan, Sierra Bullones, 300–350 meters altitude; 1 ♀; May 17.

Wing, ♂ (4) 145–153 (av. 148); ♀ (5) 132–146 (av. 140.8). Culmen from base, ♂ (4) 23–24 (av. 23.5); ♀ (5) 21.5–23 (av. 22.5) mm. Weight, ♂ (4) 119.5–133.7 (av. 126.5); ♀ (4) 108.1–125.5 (av. 118.5) grams.
One male and two females had enlarged gonads in May. One female showed wing molt in May. One young bird just out of the nest was taken on May 12. It must have come from an egg laid in the latter half of March.

Family **PSITTACIDAE**. Parrots, Lories, Cockatoos, etc.

*Kakatoe haematuropygia* (Müller)
Collected by McGregor.

**Prioniturus discurus whiteheadi** Salomonsen
Collected previously by McGregor.
Anislagan, Sierra Bullones, 300–350 meters altitude; 1 ♂; May 8. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♀; April 29.
Wing, ♂ 158; ♀ 158.5. Culmen from base, ♂ 27; ♀ 26.5 mm. Weight, ♂ 127.2; ♀ 167.5 grams.

The Bohol specimens come closest to *P. d. whiteheadi* from Negros, especially in the blue patch on the head, which does not form a sharply defined area but shades gradually into the green color of the rest of the head and nape. The wing measurements are those for the minimum of the range of *whiteheadi*, 158–170 (av. 164.3) mm., as given by Salomonsen.

*Tanygnathus lucionensis talautensis* Meyer and Wiglesworth
Collected by McGregor.

**Loriculus philippensis worcesteri** Steere
Collected previously by Everett and by McGregor.
Anislagan, Sierra Bullones, 300–350 meters altitude; 1 ♀; May 8. Cantaub, Sierra Bullones, 700–750 meters altitude; 9 ♂, 6 ♀; April 17–May 7.
Wing, ♂ (9) 92–96 (av. 94.2); ♀ (7) 92–98 (av. 95.1). Culmen from base, ♂ (8) 17.5–18 (av. 17.8); ♀ (7) 17–18 (av. 17.5) mm. Weight, ♂ (8) 32.3–38.8 (av. 34.5); ♀ (5) 38–39.5 (av. 86) grams.

Bohol and Samar birds are similar.

This race comes closest to the Mindanao race, *L. p. apicalis*, and differs from the latter only in having less orange on the nape and a much lighter golden wash on the back. However, two males in the present series resemble some of the birds from Mindanao in these few characters.
Several males and females had enlarged gonads in April and May.
Three helpless nestlings, with the feathers still in sheath, were taken from the nest-hole in the trunk of a standing dead tree, at the edge of a small clearing in original forest. The tree had to be cut down because the nest-hole was about 40 feet from the ground.

Family CUCULIDAE. Cuckoos.

*Cuculus fugax pectoralis* (Cabanis and Heine)

Collected previously by McGregor.

Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂, 1 ♀, 1 sex?; April 17–21.

Wing, ♂ 171; ♀ 182. Culmen from base, ♂ 25; ♀ 26.5 mm. Weight, ♂ 78.5; ♀ 89.2 grams.

Bohol birds are similar to specimens from Mindanao and Negros. All three birds were taken in original forest.

The female had enlarged gonads.

*Cuculus saturatus horsfieldi* Moore

Cantaub, Sierra Bullones, 700–750 meters altitude; 3 ♂, 1 ♀; April 14–May 10.

Wing, ♂ (3) 197, 209, 213; ♀ 187. Culmen from base, ♂ (3) 25, 26, 29; ♀ 25.5 mm. Weight, ♂ (3) 80, 91.9, 112.5; ♀ 80.6 grams.

First record of the species from Bohol.

This winter visitor was taken in original forest and in second growth patches.

[Cacomantis merulinus merulinus (Scopoli)]

Collected by Everett and by McGregor.

*Cacomantis variolosus sepulcralis* (Müller)

Cantaub, Sierra Bullones, 700–750 meters altitude; 2 ♂; April 16–27.

Wing, 118, 118. Culmen from base, 20, 22 mm. Weight, 32.6, 32.7 grams.

First record of the species from Bohol.

Colors of unfeathered parts taken when fresh: iris yellowish brown, eye ring yellow; bill black on upper mandible and grayish black on lower mandible; legs and feet light brown, nails blackish brown.
**Surniculus lugubris velutinus** Sharpe

Sandayong, Sierra Bullones, 300–350 meters altitude; 2 ♂, 3 ♀; April 9–May 18. Cantaub, Sierra Bullones, 700–750 meters altitude; 2 ♂, 2 ♀; April 18–May 8.

Wing, ♂ (4) 118–123 (av. 120.7); ♀ (5) 117–126 (av. 120.2). Culmen from base, ♂ (3) 21.5, 22.5, 23; ♀ (5) 22–23.5 (av. 22.9) mm. Weight, ♂ (3) 32.6, 33.6, 36.5; ♀ (4) 33.8–36.6 (av. 34.9) grams.

Recorded for the first time from Bohol.

Bohol birds possess the characteristic velvety black head, neck, mantle and entire under parts without gloss, but average slightly larger than Mindanao birds.

One male had enlarged testes in April; each of three females had a large egg in the oviduct ready for laying, in April and May.

One young female bird was taken in May. A few black body and head feathers of the adult were beginning to appear among the brown feathers of the juvenile plumage. The rectrices were definitely those of the adult.

**Eudynamys scolopacea mindanensis** (Linnaeus)

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 2 ♂, 2 ♀; April 2–May 13. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♀; April 23.

Wing, ♂ 194, 204; ♀ 194, 195, 198. Culmen from base, ♂ 33, 35; ♀ 34.5, 34.5, 35 mm. Weight, ♂ 133, 212; ♀ 191.5, 215, 244 grams.

Two females had enlarged gonads.

**Centropus melanops** Lesson

Collected previously by McGregor.

Cantaub, Sierra Bullones, 700–750 meters altitude; 3 ♂, 3 ♀; April 19–May 7.

Wing, ♂ 160, 161, 167; ♀ 165, 168, 172. Culmen from base, ♂ 40, 40, 40; ♀ 40, 40, 43 mm. Weight, ♂ 194.8, 212.7, 213.3; ♀ 182.5, 205.5, 243.4 grams.

The 6 specimens from Bohol, compared with 17 specimens from Samar and 10 specimens from Mindanao (6 from Zamboanga, 4 from Davao), average very slightly more intense buff on breast and mantle, but this character is influenced by the state of wear of the plumage.
Hachisuka (1935, p. 221) recognizes *C. m. banken* from Samar based on more abundant superciliary black feathers, particularly noticeable on the forehead; lower extension of the buff portion so as to cover the entire breast; and larger size.

In our present series we did not find these differences among the three populations. The series from the three islands give the following measurements: Bohol, (6) ♂♀, wing 160–172, tail 222–237, culmen 40–43, tarsus 41–43.5; Samar, (17) ♂♀, wing 159–172, tail 200–242, culmen 40–46, tarsus 42–45; Mindanao, (10) ♂♀, wing 160–185, tail 235–258, culmen 38–43, tarsus 42–47 mm. The measurements in the three populations present a great deal of overlap.

We consider *C. m. banken* a synonym.

The species *melanops, steerei*, and *unirufus* have similar habits and prefer original forest and dense second growth with abundant thickets but never grasslands. They replace each other geographically.

**Centropus viridis viridis** (Scopoli)

Collected previously by Everett and by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂, 6 ♀; April 3–May 13. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂, 1 ♀; April 28–May 11.

Wing, ♂ 151, 151.5; ♀ (7) 161–174 (av. 167.8). Culmen from base, ♂ 29, 31; ♀ (7) 31–33.5 (av. 32.5) mm. Weight, ♂ 114.9, 117.5; ♀ (6) 158.1–171.5 (av. 162.9) grams.

The species was common in the tall grass and patches of second growth, especially at the edges.

Four females had very large ovarian eggs, and one female when taken in April had an egg in the oviduct ready for laying.

One male has the primaries and rectrices in molt, and one female has only the rectrices in molt, both in April.

**Centropus toulou javanensis** Dumont

Collected previously by Everett and by McGregor.

Luyo-Wahig, Sierra Bullones, 200 meters altitude; 1 ♂, 1 ♀, 1 ♀ immature; May 13–16. Sandayong, Sierra Bullones, 300–350 meters altitude; 2 ♂; May 12. Pamakalan, Sierra Bullones, 300–350 meters altitude; 1 ♂; May 17. Abakhanan, Sierra Bullones, 300–350 meters altitude; 1 ♀; May 18.

Wing, ♂ (4) 134–142 (av. 136.2); ♀ 154, 157.5. Culmen from base, ♂ (4) 24–26 (av. 24.6); ♀ 28, 28 mm. Weight, ♂ (4) 82–94 (av. 88); ♀ (1) 152 grams.
Family **STRIGIDAE.** Owls.

**Otus bakkamoena everetti** (Tweeddale)

Collected previously by McGregor.

Abakhanan, Sierra Bullones, 300–350 meters altitude; 1♂, 1♀; April 7.

Wing, ♂ 162; ♀ 166. Culmen from base, ♂ 25; ♀ 25 mm. Weight, ♂ 114.7; ♀ 191 grams.

McGregor (1907, p. 323) described *O. boholensis* from a single female specimen that was taken in the interior of Bohol. The unique type specimen was later burned during the liberation of Manila in 1945.

Both the present specimens from Bohol do not show any difference when compared to birds from Zamboanga and Cotabato Provinces, Mindanao.

We consider *O. boholensis* a synonym of *O. b. everetti*.

* *Ninox philippensis centralis* Mayr

Sandayong, Sierra Bullones, 300–350 meters altitude; 1♂; April 28. Anislagan, Sierra Bullones, 300–350 meters altitude; 1♂; May 8.

Wing, 171, 180. Culmen from base, 21.5, 21.5 mm. Weight, (1) 125 grams.

First record of the species from Bohol.

Bohol birds do not differ from Negros specimens either in plumage coloration or in measurements.

Family **PODARGIDAE.** Frogmouths.

* *Batrachostomus septimus septimus* Tweeddale

Sandayong, Sierra Bullones, 300–350 meters altitude; 1♀; April 5. Cantaub, Sierra Bullones, 700–750 meters altitude; 1♂; April 18.

Wing, ♂ 154; ♀ 153. Culmen from base, ♂ 28; ♀ 27 mm. Weight, ♂ 90; ♀ 81.7 grams.

First record of the species from Bohol.

Color of unfeathered parts when fresh: iris golden yellow; bill dirty yellow at basal half, brown at terminal half; legs, feet, and nails yellow.

A nest with one egg was found in original forest. The nest was a small, shallow cup, made of moss and coated on the outside with plant down. It was very ingeniously placed on a small horizontal
twig about 4 meters from the ground and about 1 cm. in diameter, where three branches grew from it and helped support the nest very securely. At a glance it appeared that the branch pierced the nest but actually it did not. The nest was about 1 meter from the trunk, so that it was safe from most predators. Immediately above it was a cluster of leaves that grew from another branch higher up and served as an effective umbrella. The nest measured: outside diameter 70, inside diameter 30, depth at deepest part of cavity 10 mm.

A single egg was occupying the nest and almost filled it. The egg was a long oval, white, with fine texture. It was broken when the bird, which later proved to be the male, was shot while on the nest.

Family **CAPRIMULGIDAE.** Nightjars.

**Eurostopodus macrotis macrotis** (Vigors)

Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♀; May 6.

Wing, 274. Weight, 151 grams.

Recorded for the first time from Bohol.

The species was often seen and heard near the main camp at Sandayong, at sunset, when several birds used to fly over the rice field in the small valley which contained the well-logged remnant forest. Also, several birds were often flushed in daytime from the forest floor inside the virgin forest in Cantaub.

The single female specimen taken had enlarged gonads.

**Caprimulgus macrurus manillensis** Walden

Collected by McGregor.

Family **APODIDAE.** Swifts.

[**Collocalia whiteheadi whiteheadi** Ogilvie-Grant]

Collected by McGregor.

**Collocalia inexpectata amelis** Oberholser

Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂; May 3.

Badiang, Guindulman, 700–750 meters altitude; 2 ♀; May 5.

Wing, ♂ 118; ♀ 118, 122. Exposed culmen, ♂ 5; ♀ 5, 5 mm.

Weight, ♂ 15.5; ♀ 15.7, 17.9 grams.

Recorded for the first time from Bohol.

The birds were taken inside two caves, in completely dark places. The nests and nest locations inside the caves were similar to
those inside the Galakting caves of Miatan, Zamboanga Peninsula, Mindanao, as described by Rabor (1954, Silliman Journal, 1, no. 1, pp. 45-49).

**Collocalia troglodytes** Gray

Collected previously by McGregor.

Cantaub, Sierra Bullones, 700–750 meters altitude; 10 ♂, 4 ♀, 3 ♀ immature; May 8.

Wing, ♂ (10) 90–99 (av. 95.6); ♀ (4) 92–97.5 (av. 95.4). Exposed culmen, ♂ (10) 3.5–4 (av. 3.9); ♀ (4) 3.5–4 (av. 3.9) mm. Weight, ♂ (10) 4.5–6.3 (av. 5.4); ♀ (4) 5–5.8 (av. 5.3) grams.

A small colony of this species was found inside a small cave produced by a stream which had sunk and dissolved its way through the rocks for about 10 meters underground before it came again to the surface. It was totally dark inside where the birds stayed.

Three young birds of the season were taken. They must have been hatched from eggs laid in February.

**Collocalia esculenta marginata** Salvadori

Collected by McGregor.

**Cypsiurus parvus pallidior** (McGregor)

Collected by McGregor.

**Family HEMIPROCNIDAE.** Crested or Tree Swifts.

**Hemiprocne comata comata** (Temminck)

Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂; April 6. Wing, 136. Culmen from base, 12 mm. Weight, 22 grams.

First record of the species from Bohol.

The single Bohol bird is inseparable from Mindanao specimens in plumage coloration and measurements.

**Family TROGONIDAE.** Trogons.

**Harpactes ardens linae** Rand and Rabor

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–450 meters altitude; 3 ♂, 1 ♀; April 5–12. Cantaub, Sierra Bullones, 700–750 meters altitude; 2 ♂, 3 ♀; April 16–22. Badiang, Guindulman, 700–750 meters altitude; 1 ♂, 1 ♀; May 5.
Wing, ♂ (6) 139–147 (av. 143.5); ♀ (5) 138–145 (av. 142.2).
Culmen from base, ♂ (6) 22.5–26.5 (av. 24.3); ♀ (5) 22.5–27.5 (av. 24.3) mm.

The Bohol and Samar race resembles H. a. luzoniensis of Luzon in the general coloration of plumage in both sexes, but it possesses a decidedly heavier bill, not so much in length as in width. It differs from H. a. ardens in the coloration of the plumage, which in the male is decidedly blacker on the head with less reddish purple, and with the upper parts darker and duller orange brown. The same differences in plumage coloration are also indicated in the females but to a much less extent.

The species was found only in the patches of original forest.

Family ALCEDINIDAE. Kingfishers.

Alcedo atthis bengalensis Gmelin

Collected by Everett and by McGregor.

Ceyx argentatus flumenicolus Steere

Canlangit, Sierra Bullones, 200–250 meters altitude; 1 ♂; May 14.
Danicop, Sierra Bullones, 300–350 meters altitude; 1 ♀; May 5.
Badiang, Guindulman, 700–750 meters altitude; 1 ♀; May 13.

Wing, ♂ 58.5; ♀ 60, 60. Culmen from base, ♂ 38.5; ♀ 38.5, 38.5 mm. Weight, ♂ 14.7; ♀ 18.9, 18.3 grams.

Recorded for the first time from Bohol.

Bohol specimens are similar to Samar birds. The male specimen has a moderate wash of buff on chin and throat, and both females have this wash but it is more intense and of larger extent.

The species was found along both large and small streams, provided the banks were well wooded either with original forest or second growth.

Pelargopsis capensis smithi (Mearns)

Collected by McGregor.

Halcyon smyrnensis gularis (Kuhl)

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–450 meters altitude; 4 ♂, 3 ♀; April 3–May 15. Canlangit, Sierra Bullones, 200–300 meters altitude; 1 ♂, 3 ♀; May 4–16. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂; April 16.
Wing, ♂ (6) 126-131 (av. 128.3); ♀ (5) 125-127 (av. 125.8). Culmen from base, ♂ (6) 63-69 (av. 66); ♀ (6) 61.5-67.5 (av. 65.3) mm. Weight, ♂ (6) 80.5-90 (av. 86.2); ♀ (5) 81.1-98.5 (av. 90.9) grams.

A very common species in the hill areas.

**Halcyon winchelli** Sharpe

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300-450 meters altitude; 2 ♂, 1 ♀; April 1-6. Cantaub, Sierra Bullones, 700-750 meters altitude; 1 ♀.

Wing, ♂ 99.5, 102; ♀ 100, 101.5. Culmen from base, ♂ 52, 53.5; ♀ 53, 54 mm. Weight, ♂ 59.5, 64.1; ♀ 67, 80 grams.

The species was found only in original forest.

**Halcyon chloris collaris** (Scopoli)

Collected previously by Everett.

Sandayong, Sierra Bullones, 300-450 meters altitude; 2 ♀, 1 sex?; April 3-12. Cantaub, Sierra Bullones, 700-750 meters altitude; 1 ♂; May 6.

Wing, ♂ 102.5; ♀ 103, 108; sex? 101. Culmen from base, ♂ 51; ♀ 50, 52; sex? 53 mm. Weight, ♂ 58; ♀ 61, 62.5; sex? 53.8 grams.

A very common species in the well-cleared areas.

One female had enlarged gonads in April.

**Family MEROPIDAE.** Bee-Eaters.

**Merops philippinus** Linnaeus

Collected previously by Everett and by McGregor.

Sandayong, Sierra Bullones, 300-350 meters altitude; 1 ♂; April 2.

Wing, 130. Culmen from base, 42.5 mm. Weight, 38.2 grams.

Seen from time to time among the tree and shrub growth at the edges of grasslands or on top of the tall grass.

**Merops viridis americanus** Müller

Collected by McGregor.

**Family CORACIIDAE.** Rollers.

**Eurystomus orientalis cyanocollis** Vieillot

Collected previously by McGregor.
Sandayong, Sierra Bullones, 300–350 meters altitude; 5 ♂, 5 ♀; March 30–April 12. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂, 1 ♀; April 14.

Wing, ♂ (6) 184–192.5 (av. 187.5); ♀ (6) 187–194 (av. 191) mm. Weight, ♂ (6) 115–127.5 (av. 122.1); ♀ (6) 117–154.1 (av. 135.1) grams.

Two females had enlarged gonads in April; one had a mature egg in the oviduct but with no shell as yet, and another one had an egg complete with shell in the oviduct and ready for laying, both also in April.

The egg was broadly ovate, one end slightly more pointed, and the shell of rather fine texture. It measured 37×28 mm.

Family BUCEROTIDAE. Hornbills.

Penelopides panini samarensis Steere

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 5 ♂ adults, 1 ♂ young adult, 3 ♀ adults; March 30–April 30. Cantaub, Sierra Bullones, 700–750 meters altitude; 5 ♂ adults, 1 ♂ young adult, 4 ♀ adults; April 15–May 4. Cogonon, Guindulman, 700–750 meters altitude; 1 ♂ adult; May 7.

Wing, ♂ (13) 241–253 (av. 244.8); ♀ (7) 229–242 (av. 233.5). Culmen from base, ♂ (11) 96–113 (av. 105.4); ♀ (7) 84–93 (av. 87.5) mm. Weight, ♂ (11) 452.9–583.5 (av. 508.5); ♀ (7) 335–505.5 (av. 421.6) grams.

Bohol birds are similar to Samar birds.

Two males and two females were molting the rectrices in April and May; one male was molting both the primaries and rectrices in April; and another male only the primaries, also in April.

Buceros hydrocorax semigaleatus Tweeddale

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂ adult; April 2. Cantaub, Sierra Bullones, 700–750 meters altitude; 6 ♂ adults, 2 ♀ adults, 1 ♀ young adult, 1 ♂ immature, 1 ♀ immature; April 15–May 10.

Wing, ♂ (7) 366–410 (av. 397.4); ♀ (3) 365–384 (av. 375.3). Culmen from nostril, ♂ (7) 145–167 (av. 157.9); ♀ (3) 137–145 (av. 141.5) mm. Weight, ♂ (7) 1185–1550.3 (av. 1356.5); ♀ (3) 1016.5–1200 (av. 1136.4) grams.
One male and three females had molted the middle pair of rectrices in April and May.

Family **PICIDAE.** Woodpeckers.

**Dryocopus javensis pectoralis** (Tweeddale)

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂, 1 ♀; March 31. Abakhanan, Sierra Bullones, 300–350 meters altitude; 1 ♀; April 7. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♀; April 18.

Wing, ♂ 216; ♀ 209, 210, 210. Culmen from base, ♂ 56.5; ♀ 48.5, 49, 50 mm. Weight, ♂ 240; ♀ 243.5, 251, 251.2 grams.

Bohol birds possess very slightly lighter crimson nuchal crest and malar patch in the male and slightly brighter nuchal crest in the female when compared to specimens from Samar; in other respects they are similar.

**Dendrocopos maculatus leytensis** (Steere)

Collected by McGregor.

*Chrysocolaptes lucidus rufopunctatus* Hargitt

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 2 ♂, 5 ♀; April 1–16. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂, 2 ♀; April 15–25. Mayana, Jagna, 500–600 meters altitude; 1 ♂; May 5.

Wing, ♂ 146, 146, 146; ♀ (8) 140–149 (av. 144.2). Culmen from base, ♂ (3) 44.5–46 (av. 45.1); ♀ (8) 38–46 (av. 41.9) mm. Weight, ♂ 135.4, 137.6; ♀ (7) 125–150.9 (av. 135.9) grams.

Bohol birds are similar to Samar specimens.

All three males and six of the eight females were molting primaries in April; one male and two females were molting rectrices in April.

Family **EURYLAIMIDAE.** Broadbills.

**Eurylaimus steerii samarensis** (Steere)

Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♀; May 10.

Wing, 78. Culmen from base, 22 mm. Weight, 37.5 grams.

Recorded for the first time from Bohol.
The single Bohol specimen does not differ from Samar specimens. The species was very rare and was found only in original forest.

Family PITTDIAE. Pittae.

**Pitta erythrogaster erythrogaster** Temminck
Collected previously by McGregor.
Sandayong, Sierra Bullones, 300–350 meters altitude; 1♂, 2♀; March 30–May 13. Cantaub, Sierra Bullones, 700–750 meters altitude; 1♀; April 29.
Wing, ♂ 101; ♀ (3) 96.5–100 (av. 98.1). Culmen from base, ♂ 24.1; ♀ (3) 21.5–23.5 (av. 22.5) mm. Weight, ♂ 62.2; ♀ (3) 59.2–65 (av. 61.4) grams.

**Pitta sordida sordida** (Müller)
Collected by McGregor.

**Pitta steerii** (Sharpe)
Collected previously by McGregor.
Anislagan, Sierra Bullones, 350–450 meters altitude; 1♂; May 8. Cantaub, Sierra Bullones, 700–750 meters altitude; 2♂, 1♀; 1 sex?; April 15–May 10. Mayana, Jagna, 700–750 meters altitude; 1♂; May 5.
Wing, ♂ (4) 123–129 (av. 125.7); ♀ 127; sex? 121. Culmen from base, ♂ (4) 28–30 (av. 29.1); ♀ 31; sex? 29 mm. Weight, ♂ (4) 96.8–100.7 (av. 98.7); ♀ 113; sex? 83.8 grams.

The species was found only in the dark, dense and rocky parts of the original forest area.

Family ALAUDIDAE. Larks.

**Alaua gulaga wattersi** Swinhoe.
Collected by Everett and by McGregor.

Family HIRUNDINIDAE. Swallows.

**Hirundo tahitica javanica** Sparrman
Collected by Everett and by McGregor.

**Hirundo rustica gutturalis** Scopoli
Collected by McGregor.
Hirundo striolata striolata Temminck and Schlegel
Collected by McGregor.

Family MOTACILLIDAE

Motacilla cinerea melanope Pallas
Collected previously by McGregor.
Sandayong, Sierra Bullones, 300–350 meters altitude; 1 sex?; March 31. Danicop, Sierra Bullones, 300–350 meters altitude; 1 sex?; May 13.
Wing, 79, 83. Tail, 89, 90. Culmen from base, 16, 16 mm. Weight, 17, 21.3 grams.

Motacilla flava simillima Hartert
Collected by Everett.

Anthus gustavi Swinhoe
Collected previously by McGregor.
Cantaub, Sierra Bullones, 700–750 meters altitude; 4 ♂; March 30–April 26.
Wing, 82.5–86 (av. 84.5). Culmen from base, 15–16.5 (av. 15.8) mm.
This winter migrant was found only inside original forest, feeding on the forest floor, preferably in dark areas.

Anthus novaeseelandiae lugubris (Walden)
Collected previously by Everett, Steere Exp., and McGregor.
Luyo-Wahig, Sierra Bullones, 200 meters altitude; 1 ♂; May 13. Sandayong, Sierra Bullones, 300–350 meters altitude; 10 ♂, 3 ♀, 1 sex?; April 2–7. Cantaub, Sierra Bullones, 700–750 meters altitude; 5 ♂, 1 ♀; April 23–May 8. Abakahanan, Sierra Bullones, 700 meters altitude; 1 ♀; May 17. Badiang, Guindulman, 700 meters altitude; 1 ♀; May 5.
Wing, ♂ (15) 80–85 (av. 82.7); ♀ (6) 79–85.5 (av. 80.7). Culmen from base, ♂ (14) 17–19 (av. 17.7); ♀ (6) 17–18.5 (av. 17.7) mm. Weight, ♂ (13) 23–26.3 (av. 24.6); ♀ (6) 22.2–25.1 (av. 23.4) grams.
The species was very common on hillsides and level places covered with short grass, or in rice fields which had been left fallow.
The males and most of the females that were collected had enlarged gonads.
Family CAMPEPHAGIDAE. Cuckoo-Shrikes.

Coracina striata boholensis Rand and Rabor
Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 2 ♂, 2 ♀; March 30–April 6. Anislagan, Sierra Bullones, 300–350 meters altitude; 1 ♂, 1 ♀; May 8. Cantaub, Sierra Bullones, 700–750 meters altitude; 3 ♂, 3 ♀; April 14–May 7.

Wing, ♂ (5) 162–163 (av. 162.4); ♀ (5) 153–159.5 (av. 156.4). Culmen from base, ♂ (6) 32–35 (av. 34); ♀ (5) 30.5–34 (av. 32.3) mm. Weight, ♂ (5) 103–112.6 (av. 108.9); ♀ (4) 101.3–120.5 (av. 111.6) grams.

One female had an egg in the oviduct ready for laying, on April 14. The egg was a blunt oval with one end slightly smaller. The shell, of fine texture, had a slight gloss. Its ground color was pale green, blotched irregularly with coffee brown and dark purple, with paler brown undermarkings. The egg measured 32×21 mm.

Lalage nigra nigra (Forester)
Collected previously by Everett and by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 3 ♂, 2 ♀; April 2–May 15. Canlangit, Sierra Bullones, 300–350 meters altitude; 1 ♂, 1 ♀; May 14–16. Abakanan, Sierra Bullones, 300–350 meters altitude; 1 ♂; May 17. Cantaub, Sierra Bullones, 700–750 meters altitude; 4 ♂, 1 ♀; April 24–May 3.

Wing, ♂ (9) 92.5–96.5 (av. 93.9); ♀ (4) 91.5–95.5 (av. 93.1). Culmen from base, ♂ (9) 19–21 (av. 19.5); ♀ (4) 19–20 (av. 19.5) mm. Weight, ♂ (8) 24–30.9 (av. 28.2); ♀ (4) 27.9–31.3 (av. 28.9) grams.

A very common species in clearings, second growth, farms and gardens.

Family LANIIDAE. Shrikes.

Lanius schach nasutus Scopoli
Collected previously by Steere Exp. and by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 10 ♂, 7 ♀; April 12–May 15. Danicop, Sierra Bullones, 300–350 meters altitude; 1 ♀; May 13. Cantaub, Sierra Bullones, 700–750 meters altitude; 3 ♂, 6 ♀; March 30–May 11.

Wing, ♂ (13) 90–95 (av. 92.6); ♀ (13) 88–94 (av. 90.8). Culmen from base, ♂ (13) 20–22.5 (av. 21.4); ♀ (13) 20–22.5 (av. 21.44) mm. Weight, ♂ (13) 30–41 (av. 37.8); ♀ (13) 30–45 (av. 39.1) grams.
The majority of the males and two females had enlarged gonads in April and May. One nestling was taken from the nest in a low tree at the edge of a wide grassland tract in April.

**Lanius cristatus lucionensis** Linnaeus

Collected previously by Everett and by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 2♂, 2♀; April 2–10. Cantaub, Sierra Bullones, 700–750 meters altitude; 2♂; April 10–25.

Wing, ♂ (4) 88–93 (av. 90.4); ♀ 87.5, 92.5. Culmen from base, ♂ (4) 20–21 (av. 20.4); ♀ 20, 20 mm. Weight, ♂ (4) 31–34.7 (av. 32.8); ♀ 33.5, 34 grams.

All the birds taken were molting on the head, chin, throat, back, rectrices and primaries, and wing and tail coverts. It is possible that this winter migrant completes its molt, or a greater part of it, in the Philippines, before starting on its migration to the summer breeding areas.

**Family ARTAMIDAE**

**Artamus leucorhynchus leucorhynchus** (Linnaeus)

Collected previously by Everett and by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 4♂, 1♀; March 30–April 4. Cantaub, Sierra Bullones, 700–750 meters altitude; 2♂, 2♀; April 20–25. Abakhanan, Sierra Bullones, 700–750 meters altitude; 1♂; April 18.

Wing, ♂ (7) 132.5–136.5 (av. 134.6); ♀ (3) 132–138 (av. 134.6). Culmen from base, ♂ (7) 23.5–25.5 (av. 24.6); ♀ (3) 23.5–24.5 (av. 23.8) mm. Weight, ♂ (6) 36.4–44 (av. 40.3); ♀ (3) 41.5–44.2 (av. 43.2) grams.

**Family PYCNONOTIDAE.** Bulbuls, Leafbirds and Fairy Bluebirds.

*Irena cyanogaster ellae* Steere

Anislagan, Sierra Bullones, 300–350 meters altitude; 1♂; May 8. Cantaub, Sierra Bullones, 700–750 meters altitude; 8♂, 7♀; April 15–May 7. Badiang, Guindulman, 700–750 meters altitude; 2♂; May 5.

Wing, ♂ (11) 130–137 (av. 134.1); ♀ (6) 127–136 (av. 130.6). Culmen from base, ♂ (11) 29–32.5 (av. 30.7); ♀ (6) 28.5–31 (av. 29.9) mm. Weight, ♂ (11) 71.04–83.3 (av. 79.6); ♀ (5) 76.5–89.7 (av. 82.5) grams.

First record of the species from Bohol.
*Pycnonotus urostictus urostictus* (Salvadori)

Collected previously by McGregor.

Anislagan, Sierra Bullones, 300–350 meters altitude; 1 ♀; May 8. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂; April 17.

Wing, ♂ 80; ♀ 79. Culmen from base, ♂ 15.5; ♀ 15.5 mm. Weight, ♂ 23.1; ♀ 28.1 grams.

**Pycnonotus goiavier**

Hitherto two races of this species have been recognized in the Philippines. However, the good series that Rabor has collected from the central islands indicates that there is additional unrecognized variation which makes it advisable to name yet a third race. The three races are:

1. **Pycnonotus goiavier goiavier** Scopoli, 1786; type locality Manila. Auriculars dark brown and this color of considerable extent; eyebrow stripe narrow; breast faintly streaked; flanks lightly tinged brownish; size larger.

   Specimens from Luzon, Mindoro, Negros and Panay.

2. **Pycnonotus goiavier samarensis**, new subspecies

   Type.—Chicago Natural History Museum no. 247,668, from Matuguinao, Samar, Philippine Islands. Adult male, collected April 18, 1957, by D. S. Rabor.

   Diagnosis.—Like *P. g. goiavier* but differs in the heavier streaking on the breast, the darker flanks, the darker more blackish crown and ear coverts, and the slightly smaller size.

   Measurements.—See below.

   Specimens.—Samar, a series; Bohol, 12; Cebu, 6. Leyte birds probably belong here.

   Remarks.—Samar birds have the characters of the subspecies most pronounced. Bohol and Cebu birds seem to average more white in the superciliary, i.e. a tendency toward the next race in this, but not in the dark crown or in the dark ear coverts. Cebu birds seem to have somewhat less streaking on the breast, an approach to *P. g. goiavier*.

3. **Pycnonotus goiavier suluensis** Mearns, 1909; type locality Jolo, Sulu Archipelago. Ear coverts much paler than in either of the above, and the brown area restricted in extent; eyebrow stripe wider posteriorly; crown brownish as in *P. g. goiavier*; breast streaking only slightly heavier and flanks only slightly darker than in *P. g. goiavier*; size smaller, as in *samarensis*. 
Specimens from Mindanao (28); Basilan and Sulu birds were not seen.

### Wing Measurements

**P. g. goiavier**

<table>
<thead>
<tr>
<th>Location</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luzon</td>
<td>(5) 86-89 (av. 87)</td>
<td>(4) 80.5-87 (av. 83.1)</td>
</tr>
<tr>
<td>Mindoro</td>
<td>87</td>
<td>81</td>
</tr>
<tr>
<td>Negros</td>
<td>(10) 82-91 (av. 85.6)</td>
<td>(3) 86-89 (av. 87.5)</td>
</tr>
<tr>
<td>Panay</td>
<td></td>
<td>81.5</td>
</tr>
</tbody>
</table>

**P. g. samarensis**

<table>
<thead>
<tr>
<th>Location</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samar</td>
<td>(14) 77-83.5 (av. 80.2)</td>
<td>(10) 74-78 (av. 76.5)</td>
</tr>
<tr>
<td>Bohol</td>
<td>(6) 82-84 (av. 83.1)</td>
<td>(6) 79-80 (av. 79.5)</td>
</tr>
<tr>
<td>Cebu</td>
<td>80, 82.5, 85</td>
<td>77.5, 79</td>
</tr>
</tbody>
</table>

**P. g. suluensis**

<table>
<thead>
<tr>
<th>Location</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mindanao</td>
<td>(9) 80.5-84.5 (av. 82.7)</td>
<td>(8) 76.5-85 (av. 79.7)</td>
</tr>
</tbody>
</table>

**Hypsipetes philippinus philippinus** (Forster)

Collected previously by Steere Exp. and by McGregor.

Sandayong, Sierra Bullones, 300-350 meters altitude; 6 ♂, 2 ♀; March 30–April 12. Cantaub, Sierra Bullones, 700-750 meters altitude; 3 ♂, 3 ♀, 1 nestling; April 14–May 4.

Wing, ♂ (9) 96.5–104.5 (av. 100.3); ♀ (5) 92–100 (av. 95.3). Culmen from base, ♂ (9) 23.5–25.5 (av. 24.3); ♀ (5) 23–24.5 (av. 23.8) mm. Weight, ♂ (9) 37–43.6 (av. 41.5); ♀ (5) 36.2–42.4 (av. 40) grams.

Five males and one female had enlarged gonads in April. One nestling was taken on April 24.

**Family TURDIDAE.** Thrushes, Chats, etc.

**Copsychus saularis mindanensis** (Boddaert)

Collected previously by McGregor.

Canlangit, Sierra Bullones, 300–350 meters altitude; 1 ♂; May 11. Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♀; April 1. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♀; May 3.

Wing, ♂ 94; ♀ 89.5, 93. Culmen from base, ♂ 22.5; ♀ 20, 21 mm. Weight, ♂ 36.7; ♀ 32, 33.5 grams.

**Saxicola caprata caprata** (Linnaeus)

Collected previously by Everett and by McGregor.

Luyo-Wahig, Sierra Bullones, 300 meters altitude; 1 ♀; May 16. Sandayong, Sierra Bullones, 300–350 meters altitude; 7 ♂ adults, 2 ♀ adults, 1 ♂ immature, April 2–May 12. Canlangit, Sierra Bul-
lones, 300–350 meters altitude; 1 ♂; May 14. Abakhanan, Sierra Bullones; 300–350 meters altitude; 3 ♂, 1 ♀; April 7–May 17.

Seven males have enlarged gonads.

**Monticola solitaria philippensis** (Müller)

Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♀; April 2.

Wing, 112. Culmen from base, 27.5 mm. Weight, 49.8 grams.

First record of this migrant species on Bohol.

**Family TIMALIIDAE.** Babblers.

**Ptilocichla mindanensis fortichi** Rand and Rabor

Cantaub, Sierra Bullones, 700–750 meters altitude; 9 ♂, 1 ♀, 1 ♀ immature; April 15–May 4.

Wing, ♂ (9) 68–76 (av. 71.9); ♀ 73.5 mm. Culmen from base, ♂ (8) 18.5–20 (av. 19.5); ♀ 20 mm. Weight, ♂ (9) 26.3–31 (av. 29.7); ♀ 29.3 grams.

The discovery of this new subspecies provided the first record of the species from Bohol.

Bohol birds are most like *P. m. minuta* of Samar but differ in: (a) black edgings (not dark brown) of feathers of crown and upper back; (b) black or mostly black (not dark brown) lower back and rump; (c) whiter and more conspicuous streaking of upper parts and less tinged with fulvous; (d) darker and more blackish edgings of feathers of under parts, especially on flanks.

Bohol birds average very slightly longer in wing and tail.

Color of the unfeathered parts: iris, orange; bill, blackish upper mandible, gray lower mandible; legs, feet, nails brown.

The bird was found only on the ground in dense original forest.

A very young female, most probably about five weeks old, was taken on April 20. The bird must have hatched from an egg that was laid about the first week of March.

**Macronus striaticeps boholensis** Hachisuka

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 3 ♂, 5 ♀; April 1–11. Cantaub, Sierra Bullones, 700–750 meters altitude, 9 ♂ adults, 1 ♂ immature, 9 ♀ adults, 1 ♀ immature, 1 sex? immature; March 30–May 11. Cogonon, Sierra Bullones, 700–750 meters alti-
tude; 1 ♂, 1 ♀, 1 sex? immature; May 7. Matin-aw, Sierra Bul-
lones, 700–750 meters altitude; 1 ♂; May 6. Mayana, Jagna, 600
meters altitude; 1 ♂; May 5.

Wing, ♂ (10) 61–65 (av. 62.9); ♀ (10) 58–63 (av. 59.8). Culmen
from base, ♂ (10) 16.5–17 (av. 16.8); ♀ (10) 15–17 (av. 15.6) mm.
Weight, ♂ (8) 14.3–18 (av. 15.3); ♀ (7) 14.4–17.8 (av. 16) grams.

Three very young birds were taken in the latter part of April and
May. By their age these young birds must have hatched from eggs
laid in the early part of March.

On April 21 a nest with two eggs was found beside a seldom-used
forest trail, built inside a clump of cogon grass, close to the ground.
The nest was a large ball of cogon grass, not very tightly made. The
eggs were sharply ovate, one end decidedly more pointed than the
other, the shell of fine texture, creamy white in color, and slightly
glossy. Small reddish-brown markings were scattered all over but
tended to form a ring around the broader end. They measured
20 × 14 and 20.5 × 13.5 mm.

If one of the parent birds was disturbed inside the nest it used to
jump suddenly through the nest opening into the nearby dense forest
undergrowth and disappear from view very fast. The first time that
it was accidentally disturbed, it shot fast from the cogon clump into
the nearby undergrowth, and its action appeared more like that of a
rat than that of a bird. Examination of the cogon clump yielded the
nest, which was very securely hidden.

Stachyris nigrocapitata boholensis Rand and Rabor
Collected previously by McGregor.

Cantaub, Sierra Bullones, 700–750 meters altitude; 3 ♂, 5 ♀;
March 30–May 8.

Wing, ♂ (3) 70–72.5 (av. 70.8); ♀ (5) 65–70 (av. 67.5). Culmen
from base, ♂ (3) 15.5–16 (av. 15.8); ♀ (5) 15–16 (av. 15.6) mm.
Weight, ♂ (2) 14.5, 15.1; ♀ (5) 13–15 (av. 14.2) grams.

Bohol birds are most like S. n. nigrocapitata of Samar but differ
in the following characters: (a) reduced chestnut stripe (length and
width) on each side of throat; (b) clear saffron yellow on chin and
throat, without streaks of dark chestnut; (c) much reduced dark
chestnut patch behind each eye; (d) lack of chestnut tinge on nape.

A nest of this species was found in original forest, in a deeply
shaded area, on April 19. It was cup-shaped and deep and was sus-
pended on a bush, between two small twigs, about 65 mm. apart,
about 4 feet from the ground. The outer framework was made of moss and the inner lining of fine fern roots. The nest measured: outer diameter, 85; inner diameter of cup, 55; outside depth, 50; inside depth, 43 mm.

The three ovate eggs had one end decidedly more pointed, with shell of fine texture, slightly glossy, and of pale greenish-blue color. They measured 18×14, 19×14, and 18×14 mm.

**Family SYLVIIDAE. Warblers.**

*Megalurus palustris forbesi* Bangs

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 6 ♂, 3 ♀; April 1–May 13. Canlangit, Sierra Bullones, 300–350 meters altitude; 1 ♂, 1 ♀; May 14. Danicop, Sierra Bullones, 300–350 meters altitude; 1 ♂; May 18. Cantaub, Sierra Bullones, 700–750 meters altitude; 4 ♂, 8 ♀ adults; 3 ♀ immatures; March 30–May 8. Abakhanan, Sierra Bullones, 300–350 meters altitude; 2 ♂; March 30–May 17.

Wing, ♂ (13) 94–100 (av. 97.6); ♀ (12) 82–87.5 (av. 85.2). Culmen from base, ♂ (11) 21.5–24 (av. 23); ♀ (12) 21–22.5 (av. 21.5) mm. Weight, ♂ (13) 48–56.8 (av. 53); ♀ (12) 32.4–41.8 (av. 36.7) grams.

Six males and four females had enlarged gonads in April and May. One female had a large egg without shell in the oviduct, and another one had an egg complete with shell on March 30. Three very young birds taken in April and May apparently had been hatched from eggs laid during the early part of March.

*Megalurus timoriensis crex* Salomonsen

Collected previously by Steere Exp. and by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂, 1 ♀; April 11–May 16.

Wing, ♂ 75; ♀ 72.5. Culmen from base, ♂ 18.5; ♀ 17.5 mm. Weight, ♂ 37.4; ♀ 27 grams.

The two birds from Bohol are intermediate between *M. t. tweeddalei* from Luzon and *M. t. crex* from Mindanao, in measurements, in the color of the crown and nape, and in the nature of the obscure darkish shaft-streaks on the crown and nape, but are closer to crex.
Cisticola juncidis tinnabulans (Swinhoe)

Collected previously by Everett.

Abakhanan, Sierra Bullones, 300–350 meters altitude; 1 ♂; May 17.

Wing, 49. Culmen from base, 12 mm. Weight, 7.2 grams.

This is a much rarer bird than C. exilis rustica; both were found in the same grassland area, although exilis stayed on hillsides and the drier parts of any grassland tract, and tinnabulans in the small valleys and level land.

Cisticola exilis rustica Wallace

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 2 ♂; May 15–17. Canlangit, Sierra Bullones, 300–350 meters altitude; 1 ♂; May 14. Abakhanan, Sierra Bullones, 300–350 meters altitude; 2 ♂; May 17–18. Cantaub, Sierra Bullones, 700–750 meters altitude; 5 ♂, 1 ♀; March 30–May 11.

Wing, ♂ (10) 44–45.5 (av. 44.9); ♀ 45.5. Culmen from base, ♂ (10) 11–12 (av. 11.3); ♀ 12.5 mm. Weight, ♂ (8) 6.5–7.5 (av. 7.1); ♀ 7.3 grams.

A very common species on the grassy hillsides and in the rolling grassland country.

Locustella certhiola ochotensis Middendorf

Collected by McGregor.

Locustella lanceolata (Temminck)

Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♀; April 23.

Wing, 53. Culmen from base, 19 mm. Weight, 12.5 grams.

First record of this rare winter migrant on Bohol.

Acrocephalus stentoreus harterti Salomonsen

Collected by McGregor.

Phylloscopus olivaceus olivaceus (Moseley)

Collected previously by McGregor.

Cantaub, Sierra Bullones, 700–750 meters altitude; 10 ♂, 8 ♀ adults, 1 ♀ immature, 1 sex? immature; April 15–May 11. Cogonon, Sierra Bullones, 700–750 meters altitude; 1 ♂; May 7.
Wing, ♂ (11) 58–64 (av. 60.7); ♀ (8) 51–56 (av. 53.6). Culmen from base, ♂ (11) 13.5–14.5 (av. 14.2); ♀ (8) 13–13.5 (av. 13.4) mm. Weight, ♂ (10) 8.7–11.1 (av. 10); ♀ (8) 7–11.2 (av. 9.2) grams.

Bohol birds are indistinguishable from those of Mindanao, Samar and Negros.

Eight males had enlarged gonads in April and May. One female had, in the oviduct, one large egg without the hard shell, on April 19. Two immature birds were taken in May. They must have been hatched from eggs laid in the early part of March.

**Phylloscopus borealis borealis** (Blasius)

Collected previously by McGregor.

Cantaub, Sierra Bullones, 700–750 meters altitude; 3 ♂, 1 ♀; April 19–24.

Wing, ♂ (3) 67–68 (av. 67.5); ♀ 67. Culmen from base, ♂ (3) 14–15.5 (av. 14.8); ♀ 15 mm. Weight, ♂ (3) 8.8–10.6 (av. 9.7); ♀ 10.8 grams.

**Orthotomus atrogularis frontalis** Sharpe

Collected previously by Everett and by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 2 ♂, 1 ♀, 1 sex?; April 9–12.

Wing, ♂ 47, 47; ♀ 45.5. Culmen from base, ♂ 18, 19; ♀ 19 mm. Weight, ♂ 8.5, 9.7; ♀ 8 grams.

Bohol birds are similar to Mindanao and Samar specimens.

**Orthotomus samarensis** Steere

Collected previously by McGregor.

Cantaub, Sierra Bullones, 700–750 meters altitude; 2 ♂, 2 ♀; April 17–28. Cogonon, Guindulman, 700–750 meters altitude; 1 ♂; May 7.

Wing, ♂ (3) 46.5–48.5 (av. 47.3); ♀ (1) 45.5. Culmen from base, ♂ (3) 17–18 (av. 17.3); ♀ (1) 16.5 mm. Weight, ♂ (2) 10, 10; ♀ (1) 8.4 grams.

Bohol birds are indistinguishable from Samar specimens.

A very rare bird and encountered only in the dense undergrowth of original forest. The habits are those of *O. cinereiceps*. 
Family **MUSCICAPIDAE.** Flycatchers.

**Rhipidura supciliaris samarensis** (Steere)

Collected previously by McGregor.

Cantaub, Sierra Bullones, 700–750 meters altitude; 8 ♂, 9 ♀; April 14–May 11. Badiang, Guindulman, 700–750 meters altitude; 1 ♂; May 5. Cogonon, Guindulman, 700–750 meters altitude; 1 ♂; May 7.

Wing, ♂ (10) 75–81 (av. 78.9); ♀ (9) 67–75.5 (av. 72.1). Culmen from base, ♂ (9) 15–16 (av. 15.4); ♀ (9) 14–16 (av. 14.8) mm. Weight, ♂ (10) 11–14.7 (av. 13.7); ♀ (9) 9.5–13 (av. 12) grams.

Bohol birds are indistinguishable from Samar specimens.

Seven males had enlarged gonads in April and May. One female had mature eggs in the ovary in April.

**Rhipidura javanica nigritorquis** Vigors

Collected previously by Everett and by McGregor.

Canlangit, Sierra Bullones, 300–350 meters altitude; 1 ♂, 1 ♀; May 14–16.

Wing, ♂ 86; ♀ 78.5. Culmen from base, ♂ 18.5; ♀ 17 mm. Weight, ♂ 19.7; ♀ 13.7 grams.

The female was molting the rectrices.

*Rhinomyias ruficauda boholensis* Rand and Rabor

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 3 ♂; April 6–11. Anislagan, Sierra Bullones, 300–350 meters altitude; 1 ♂; May 8. Cantaub, Sierra Bullones, 700–750 meters altitude; 4 ♂, 3 ♀; April 15–May 10. Badiang, Guindulman, 700–750 meters altitude; 1 ♂; May 5. Cogonon, Guindulman, 700–750 meters altitude; 1 ♂; May 7.

Wing, ♂ (10) 74–80 (av. 75.7); ♀ 70, 70, 72. Culmen from base, ♂ (10) 16.5–18.5 (16.9 av.); ♀ 16, 16, 16.5 mm. Weight, ♂ (10) 16.5–18.3 (av. 17.5); ♀ 15.1, 15.7, 16.7 grams.

Bohol birds have lighter-colored upper parts than any other race of *R. ruficauda.* Most of the male birds had enlarged gonads in April and May.

All the specimens were taken in original forest, and frequently in the lower tree growths representing the third story of the forest. The species seemed to prefer the darker parts of the forest. A nestling was taken on May 10. It must have hatched from an egg laid in early April.
Niltava rufigastra philippinensis (Sharpe)
Collected previously by McGregor.
Canlangit, Sierra Bullones, 300–350 meters altitude; 2 ♂; May 16. Wing, 73, 76.5. Culmen from base, 15.5, 16.5 mm. Weight, 16.8, 17.3 grams.

Muscicapa griseisticta (Swinhoe)
Collected previously by McGregor.
Sandayong, Sierra Bullones, 300–350 meters altitude; 3 ♂; March 31–April 16. Abakhanan, Sierra Bullones, 300–350 meters altitude; 1 ♀; April 7. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂, 1 ♀; April 22–29.
Wing, ♂ (4) 85–89 (av. 87.4); ♀ 83.5, 88.5. Culmen from base, ♂ (4) 13; ♀ 13, 13 mm. Weight, ♂ (4) 15.4–17.4 (av. 16.7); ♀ 15.1, 15.5 grams.
Two males and one female showed molt on the crown and throat, and one male, only on the throat.

Hypothymis azurea azurea (Boddaert)
Collected previously by Steere Exp. and by McGregor.
Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂, 1 ♀; March 31. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂, 2 ♀; April 17–May 10. Mayana, Jagna, 700–750 meters altitude; 1 ♂; May 5.
Wing, ♂ 69, 69.5, 70.5; ♀ 65.5, 67.5, 67.5. Culmen from base, ♂ 15, 15.5, 16; ♀ 15, 15 mm. Weight, ♂ 10.6, 12, 12; ♀ 9.5, 10.3, 13 grams.
One male had enlarged gonads in March.

Family PACHYCEPHALIDAE. Whistlers.
*Pachycephala philippinensis apoensis* (Mears)
Collected previously by McGregor.
Sandayong, Sierra Bullones, 300–350 meters altitude; 3 ♂, 1 ♀; April 5–9. Cantaub, Sierra Bullones, 700–750 meters altitude; 11 ♂, 10 ♀; April 15–May 11. Badiang, Guindulman, 700–750 meters altitude; 1 ♀; May 5.
Wing, ♂ (14) 78–86.5 (av. 82.7); ♀ (12) 78–83 (av. 80.7) mm. Weight, ♂ (14) 19.8–23.8 (av. 21.5); ♀ (10) 18–24.9 (av. 21.8) grams.
Eleven males and three females had enlarged gonads in April and May. One female had an egg ready for laying in April.
Family CERTHIIDAE. Creepers.

*Rhabdornis mystacalis minor* Grant

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂; April 6. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂, 1 ♀; April 15–22.

Wing, ♂ (2) 78.5, 79.5; ♀ 78.5. Culmen from base, ♂ 21.5, 21.5 mm. Weight, ♂ 23.7, 24; ♀ 29.9 grams.

The Bohol female had in the oviduct a mature egg still without the shell, on April 15.

Family DICAЕIDAE. Flowerpeckers.

Prionochilus olivaceus olivaceus (Tweeddale)

Collected by McGregor.

Dicaeum hypoleucum pontifex Mayr

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂; April 9. Cantaub, Sierra Bullones, 700–750 meters altitude; 3 ♂, 4 ♀; April 15–28.

Wing, ♂ (4) 51.5–56.5 (av. 53.8); ♀ (4) 48.5–52 (av. 50.4). Culmen from base, ♂ (4) 12.5–13 (av. 12.9); ♀ (4) 12.5–13 (av. 12.8) mm. Weight, ♂ (4) 7.6–8.3 (av. 8); ♀ (4) 7.5–8.6 (av. 8) grams.

Our material from Luzon, Samar, Bohol, Mindanao and Basilan shows two important trends in plumage. Both are more clearly shown in the males:

(a) There is a gradual change in coloration of the upper parts, from olive brown in *obscurum* from northern Luzon, to slightly darker olive brown in *pontifex* from Samar, to still darker brown with less olive in *pontifex* from Bohol, to blackish brown with olive wash in *hypoleucum(?)* from Mount Malindang (northern Zamboanga highlands), to blackish brown in *hypoleucum* from southern Zamboanga, to blackish in *hypoleucum* from Basilan.

(b) There is a gradual change in coloration of the under parts from olive gray in *obscurum* from Luzon, to whitish gray with faint olive gray wash in *pontifex* from Samar and Bohol, and *hypoleucum(?)* from Mount Malindang, to whitish in *hypoleucum* from southern Zamboanga Peninsula and Basilan.
All four males and two of four adult females had enlarged gonads in April. Apparently breeding must have started about January because two immature birds of the season were taken in full juvenile plumage in April.

**Dicaeum bicolor inexpectatum** (Hartert)
Collected previously by McGregor.
Sandayong, Sierra Bullones, 300–350 meters altitude; 3 ♂, 1 ♀; March 31–April 9. Cantaub, Sierra Bullones, 700–750 meters altitude; 2 ♀; April 24–29.

Wing, ♂ 50, 51.5, 52.5; ♀ 47, 47, 49. Culmen from base, ♂ 10, 10, 10; ♀ 10, 10, 10 mm. Weight, ♂ 8, 8.5, 8.5; ♀ 8.6, 9.6, 10 grams.

All three males had enlarged gonads in March and April.

**Dicaeum australis australis** (Hermann) (*D. papuense* of authors)
Collected previously by McGregor.
Sandayong, Sierra Bullones, 300–350 meters altitude; 4 ♂, 5 ♀; April 12–23. Canlangit, Sierra Bullones, 300–350 meters altitude; 1 ♂; May 14. Abakhanan, Sierra Bullones, 700–750 meters altitude; 1 ♂; April 7.

Wing, ♂ (6) 54–58 (av. 55.6); ♀ (5) 50–56 (av. 53.1). Culmen from base, ♂ (6) 13; ♀ (5) 12–13 (av. 12.4) mm. Weight, ♂ (4) 8.5–9.5 (av. 8.7); ♀ (5) 8–10.5 (av. 9.1) grams.

Bohol birds are similar to specimens from Luzon, Samar, Cebu and Mindanao.

Four males had enlarged gonads in April and May.

**Dicaeum trigonostigma cinereigulare** Tweeddale
Collected previously by McGregor.
Sandayong, Sierra Bullones, 300–350 meters altitude; 2 ♂, 3 ♀; April 7–29. Cantaub, Sierra Bullones, 700–750 meters altitude; 2 ♂, 1 ♀; April 22–May 3.

Wing, ♂ (4) 48.5–51 (av. 49.5); ♀ (4) 48.5–50 (av. 49.4). Culmen from base, ♂ (4) 12.5–13.5 (av. 12.9); ♀ (4) 12–13 (av. 12.5) mm. Weight, ♂ (3) 6.5, 7.5, 8.1; ♀ (2) 7, 8.4 grams.

Three males and one female had enlarged gonads in April and May.

**Dicaeum pygmaeum pygmaeum** (Kittlitz)
Collected previously by McGregor.
Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂; May 15. Cantaub, Sierra Bullones, 700–750 meters altitude; 2 ♂, 1 ♀; April 24–May 8.

Wing, ♂ 44, 44.5, 47.5; ♀ 42. Culmen from base, ♂ 11, 11, 11; ♀ 11 mm. Weight, ♂ 4.5, 5, 5.6; ♀ 5.6 grams.

One male had enlarged gonads in April.

Family NECTARINIIDAE. Sunbirds.

*Nectarinia sperata davaensis* Delacour

Collected previously by McGregor.

Canlangit, Sierra Bullones, 300–350 meters altitude; 3 ♂ adults, 1 ♂ immature, 2 ♀; May 14–16.

Wing, ♂ (3) 48.5, 51, 51.5; ♀ 48.5, 49.5. Culmen from base, ♂ (3) 18, 19, 19; ♀ (2) 16.5, 17 mm. Weight, ♂ (3) 5.2, 5.7, 5.7; ♀ (2) 5.2, 5.7 grams.

*Nectarinia jugularis jugularis* (Linnaeus)

Collected previously by Everett and by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 8 ♂, 8 ♀; April 2–May 17. Canlangit, Sierra Bullones, 300–350 meters altitude; 7 ♂ adults, 1 ♂ immature, 3 ♀; May 11–16. Cantaub, Sierra Bullones, 700–750 meters altitude; 4 ♂, 1 ♀; April 27–May 11.

Wing, ♂ (19) 55–58 (av. 56.3); ♀ (12) 52–54.5 (av. 53.3). Culmen from base, ♂ (12) 20.5–23.5 (av. 21.7); ♀ (12) 20–22 (av. 20.5) mm. Weight, ♂ (18) 7.9–11.9 (av. 9.2); ♀ (12) 6.8–10 (av. 8.2) grams.

Bohol males vary a great deal in the amount of orange on the breast.

Seven males and five females had enlarged gonads in April and May.

*Aethopyga pulcherrima decorosa* (McGregor)

Collected previously by McGregor.

Cantaub, Sierra Bullones, 700–750 meters altitude; 5 ♂, 5 ♀; April 17–May 10.

Wing, ♂ (5) 47–51 (av. 49); ♀ (5) 44–46.5 (av. 45.5). Culmen from base, ♂ (5) 19–21 (av. 19.9); ♀ (4) 19–19.5 (av. 19.2) mm. Weight, ♂ (5) 4.4–6.5 (av. 5.4); ♀ (5) 4.9–6.7 (av. 5.8) grams.
The Bohol male birds differ from *A. p. pulcherrima* from Samar and Mindanao in: (a) the reduction of the red spot on the breast to tiny streaks or to almost none at all; (b) the greenish blue iridescent edgings of the secondaries (none in *pulcherrima*). From *A. p. jefferyi*, of Luzon, the Bohol male birds differ in: (a) the reduction of the red spot on the breast to tiny streaks or to almost none at all; (b) the much paler yellow rump.

The females of the Bohol race possess much clearer gray streaks on the throat and forebreast than those of either *jefferyi* from Luzon or *pulcherrima* from Samar and Mindanao.

This Bohol endemic form was taken inside original forest and close to the edges, among the lower tree growths.

Three males and one female had enlarged gonads in April and May. One female had a broken egg complete with shell inside the oviduct when collected on April 29.

**Arachnothera longirostris flammifera** Tweeddale
Collected previously by McGregor.

Luyo-Wahig, Sierra Bullones, 200 meters altitude; 1 ♀; May 16.
Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂; April 26.
Cogonon, Guindulman, 700–750 meters altitude; 1 ♂; May 7.

Wing, ♂ 64.5, 64.5; ♀ 64. Culmen from base, ♂ 33, 34; ♀ 31 mm. Weight, ♂ 12.4, 13.5; ♀ 10.7 grams.

Bohol birds are indistinguishable from Samar and eastern Mindanao specimens. Three males from Zamboanga Peninsula, western Mindanao, are slightly darker gray on the throat and breast.

Both Bohol males had enlarged gonads in April and May.

**Family ZOSTEROPIDAE.** White-Eyes.

**Zosterops everetti boholensis** McGregor
Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 2 ♂, 3 ♀; April 6–10. Canlangit, Sierra Bullones, 300–350 meters altitude; 1 ♂, 1 ♀; May 14. Anislagan, Sierra Bullones, 300–350 meters altitude; 1 ♂; May 8. Abakhanan, Sierra Bullones, 700 meters altitude; 1 ♀; May 17. Cantaub, Sierra Bullones, 700–750 meters altitude; 6 ♂, 5 ♀; April 20–May 8.

Wing, ♂ (10) 53.5–56.5 (av. 54.8); ♀ (10) 53–56.5 (av. 55). Culmen from base, ♂ (10) 13–14 (av. 13.6); ♀ (10) 12–14 (av. 13.3) mm. Weight, ♂ (10) 9.4–11.1 (av. 10.2); ♀ (10) 8.2–11.2 (av. 10) grams.
This endemic Bohol form differs from *Z. e. basilanica* from Samar, Mindanao and Basilan in: (a) the brighter and more yellowish upper parts; and (b) the paler gray sides of breast and abdomen.

From *Z. e. siquijorensis* of Siquijor *boholensis* differs in: (a) the darker yellow upper parts; (b) the darker gray sides of breast and abdomen; and (c) the presence of a dusky spot in front of the eye ring (pale yellow spot in *siquijorensis*).

The species was most often found in original forest, although it was also encountered in second growth.

Seven males and five females had enlarged gonads. One female, collected on April 9, had an egg with shell in the oviduct.

**Family STURNIDAE.** Starlings.

*Aplonis panayensis panayensis* (Scopoli)

Collected previously by Everett and by McGregor.

Danicop, Sierra Bullones, 300–350 meters altitude; 7 ♂, 3 ♀; May 13.

Wing, ♂ (7) 103–110 (av. 106.7); ♀ 100, 104, 106. Culmen from base, ♂ (7) 24.5–27 (av. 25.4); ♀ 24.5, 25, 25.5 mm. Weight, ♂ (7) 52–58.7 (av. 55.6); ♀ 55.1, 57.7, 60.5 grams.

Four males and one female had enlarged gonads.

**Sarcops calvus melanonotus** Grant

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 5 ♂, 4 ♀; April 1–May 18. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂, 1 ♀; April 15–26.

Wing, ♂ (6) 129–135 (av. 132.1); ♀ (5) 122–132 (av. 128.2). Culmen from base, ♂ (6) 28.5–32.5 (av. 30); ♀ (5) 28.5–30 (av. 29.5) mm. Weight, ♂ (6) 130–170.4 (av. 144.6); ♀ (5) 120.4–150.5 (av. 140.8) grams.

The amount of black on the back varies a great deal in the Bohol birds but in none of the specimens was found a silvery-gray back, as in typical *calvus*.

**Family PLOCEIDAE.** Weaverbirds.

*Lonchura leucogastra manueli* Parkes

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂, 1 ♀; April 5.
Wing, ♂ 55; ♀ 56. Culmen from base, ♂ 13; ♀ 13.5 mm. Weight, ♂ 11; ♀ 12 grams.

Both the male and female had enlarged gonads.

**Lonchura malacca jagori** (Martens)

Collected previously by Everett, by the Steere Exp., and by McGregor.

Cantaub, Sierra Bullones, 700–750 meters altitude; 15 ♂, 10 ♀; April 18–May 15.

Wing, ♂ (15) 51.5–56.5 (av. 53.5); ♀ (10) 51–54.5 (av. 53). Culmen from base, ♂ (15) 13–13.5 (av. 13.1); ♀ (10) 12.5–13.5 (av. 12.9) mm. Weight, ♂ (15) 11–14.4 (av. 12.6); ♀ (10) 12.4–14.2 (av. 12.9) grams.

Nine males and three females had enlarged gonads. One female, collected on May 3, had an egg in the oviduct ready for laying.

**Family DICRURIDAE.** Drongos.

**Dicrurus hottentottus striatus** Tweeddale

Collected previously by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 4 ♂, 3 ♀; April 2–May 13. Cantaub, Sierra Bullones, 700–750 meters altitude; 3 ♂, 4 ♀; April 19–May 8. Badiang, Guindulman, 700–750 meters altitude; 1 ♂; May 5. Cogonon, Guindulman, 700–750 meters altitude; 1 ♀; May 7.

Wing, ♂ (8) 134–140 (av. 137.2); ♀ (8) 130–138 (av. 134.1). Tail, ♂ (8) 97–102 (av. 98.8); ♀ (8) 98.5–101 (av. 98.4); depth of fork, ♂ (8) 1–6 (av. 3.18); ♀ (6) 0.5–6.5 (av. 2.5; in 2 specimens no forking on tail). Culmen from base, ♂ (8) 32–34.5 (av. 33.3); ♀ (8) 31–33 (av. 32.3) mm. Weight, ♂ (7) 60.5–70.6 (av. 66.2); ♀ (7) 60–69 (av. 65.2) grams.

Vaurie (1947, Amer. Mus. Nov., no. 1335, p. 1; 1949, Bull. Amer. Mus. Nat. Hist., 93, art. 4, p. 282) has described *D. h. samarensis* from Samar, Leyte and possibly Panaon and Bohol. He commented: “This form and the following one (striatus) are intimately related and differ from each other mainly by the length of the tail and the depth of its fork.” In a series of measurements Vaurie has shown that the tail in the Philippine population of *D. hottentottus* becomes progressively longer and the fork deeper as the population ranges south from Leyte and Samar to eastern Mindanao to Basilan. He diagnosed
D. h. striatus as “similar to samarensis but with the tail longer and slightly forked, and with a tendency for the throat and breast spangles to be slightly broader.”

Based on our material in Chicago Natural History Museum (Samar, 4 ♂, 6 ♀; Bohol, 8 ♂, 8 ♀; eastern Mindanao, 5 ♂, 6 ♀; western Mindanao, 5 ♂, 5 ♀; Basilan, 1 ♂) we hesitate to recognize samarensis as a race distinct from striatus. We found the following:

(a) The throat and breast spangles vary a great deal in width within any one population, and we did not find the tendency for the spangles to become broader in our Mindanao birds.

(b) We found that the tails of birds from Mindanao (♂ 102.3, ♀ 101.9) average slightly longer than those of birds from Samar (♂ 96, ♀ 97.2) and Bohol (♂ 98.8, ♀ 98.4). Our single Basilan male has a tail length of 108 mm.

(c) We found that the depth of fork in the tail of birds of both sexes in the various populations varies between no fork at all to a shallow but distinct one. Vaurie gives the “depth of fork” averages for males and females as ♂ 1.0, ♀ 1.29 for samarensis and ♂ 6, ♀ 5.40 mm. for striatus. Our figures do not agree with his. Our ranges and averages of the depth of fork for the various populations follow:

<table>
<thead>
<tr>
<th>Locality</th>
<th>No. of specimens</th>
<th>Range</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samar</td>
<td>4 ♂, 5 ♀</td>
<td>♂ 2-4.5, ♀ 0.5-3.5</td>
<td>♂ 3, ♀ 1.66</td>
</tr>
<tr>
<td>Bohol</td>
<td>8 ♂, 6 ♀</td>
<td>♂ 1-6, ♀ 0.5-6.5</td>
<td>♂ 3.18, ♀ 2.5</td>
</tr>
<tr>
<td>Mindanao</td>
<td>8 ♂, 9 ♀</td>
<td>♂ 1-6.5, ♀ 1-7</td>
<td>♂ 3.37, ♀ 4.11</td>
</tr>
<tr>
<td>Basilan</td>
<td>1 ♂</td>
<td>♂ 6</td>
<td></td>
</tr>
</tbody>
</table>

One female from Samar, two from Bohol, and two from Mindanao do not show any tail fork.

There is a great deal of overlap in the measurements of the wing, culmen, and tarsus among the different populations and it seems best not to recognize two races.

We consider samarensis a synonym of striatus, but recognize the tendency for the tail to increase slightly in length in populations from Samar south to Bohol, to Mindanao, to Basilan.

Family ORIOLIDAE. Orioles.

Oriolus chinensis chinensis Linnaeus

Collected previously by Everett and by McGregor.

Sandayong, Sierra Bullones, 300-350 meters altitude; 2 ♂, 1 ♀; April 9-May 11. Canlangit, Sierra Bullones, 300-350 meters altitude;
4 ♂, 2 ♀ adults, 4 ♀ immatures; May 14. Danicop, Sierra Bullones, 300–350 meters altitude; 1 ♂; May 13. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂; April 23.

Bohol birds, like the populations of the rest of the Visayan Islands, are intermediate between O. c. chinensis and O. c. suluensis, but are closer to the former.

Two males and one female had enlarged gonads. One very young bird, which must have been out of the nest for a little over one week, was taken on May 14. The egg was probably laid in the early part of March.

**Oriolus xanthonotus samarensis** Steere

Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♂; April 22. Wing, 116.5. Culmen from base, 26 mm. Weight, 48.6 grams.

First record of the species from Bohol.

The Bohol male is indistinguishable from two males from Samar and one male from eastern Mindanao. *O. x. basilanicus* is like *samarensis* except in the color of the edges of the inner webs of the quills, which are pale yellow in *basilanicus* and bright lemon-yellow in *samarensis*.

**Family CORVIDAE.** Crows.

**Corvus macrorhynchos philippinus** Bonaparte

Collected previously by Everett and by McGregor.

Sandayong, Sierra Bullones, 300–350 meters altitude; 1 ♂, 1 ♀; April 5, May 1. Cantaub, Sierra Bullones, 700–750 meters altitude; 1 ♀; April 23.

Wing, ♂ 310; ♀ 303, 311. Culmen from base, ♂ 66; ♀ 60, 64 mm. Weight, ♂ 525; ♀ 490.7 grams.
Birds of Samar Island

Introduction

The 1957 Chicago Natural History Museum-Silliman University Samar Expedition, headed by D. S. Rabor, was in the field from March 30 until May 25, 1957. Actual collecting was carried on from April 5 until May 19; the remaining days were spent in traveling and in transferring collecting camps. The party consisted of faculty members of the Silliman University Biology Department, students majoring in biology, and department assistants. Mr. Rodolfo B. Gonzalez, Instructor of Biology, was assistant head of the party.

Itinerary of the Expedition

March 30: Departure of expedition party by steamer, from Dumaguete City, Negros Oriental, for Catbalogan, Samar, via Cebu City, Cebu.

March 31: Arrival in Catbalogan, Samar.

April 3: Departure by truck for Gandara, arriving there at noon; departure for Matuguinao; one-fourth of the way the party traveled by launch, the rest of the way on foot.

April 4: Arrival in Matuguinao, about 35 kilometers into the interior of Samar, a little north of the center of the island. Camp was established in the Home Economics building of the Matuguinao elementary school.

April 5–22: Collecting carried on from Matuguinao (Camp 1, 100–400 meters altitude) and the surrounding localities, for about 10 kilometers radius.

April 23: Departure of party on foot early in the morning for San Isidro (Camp 2, 300–400 meters altitude), about 15 kilometers farther into the interior, toward the east coast. Upon arrival in the afternoon, camp was established beside Bag-ot River.

April 24–May 4: Collecting carried on from Camp 2 and the surrounding localities for about 10 kilometers radius.

May 5: Departure of party on foot early in the morning for Tababucan, about 20 kilometers from San Isidro; arrival there late in the afternoon, in the heart of the Mount Capoto-an localities, 400–600 meters altitude, where Camp 3 was established.
May 6–16: Collecting carried on from Camp 3 and surrounding localities for a radius of about 10 kilometers.

May 17: Departure of party on foot early in the morning for Camp 1 in Matuguinao, arriving there in the evening.

May 18–19: Collecting around Camp 1.

May 20–25: Departure of party by rafts down the Bag-ot River to Gandara, at the coast; by truck to Catbalogan, Samar; by boat to Tacloban, Leyte Island; by truck around the northern end of Leyte Island toOrmoc, on the west coast; by boat to Cebu City, Cebu; by boat to Dumaguete City, Negros Oriental.

May 25: Arrival at Dumaguete City, Negros Oriental.

History of Bird Collections

Three important ornithological collections were made on Samar Island before the 1957 zoological expedition, all of them prior to 1900. The first group that included Samar as one of its important collecting localities was the Second Steere Expedition, which worked in the Philippines in 1887–88. The party consisted of Drs. J. B. Steere, E. L. Moseley, F. S. Bourns, and D. C. Worcester.

In July, 1890, Bourns and Worcester, as members of the Menage Expedition, came back to the Philippines and collected there for two years and eight months, including Samar as one of the many islands in their itinerary.

In 1894–96, John Whitehead, the great English naturalist and collector, worked in the Philippines, and Samar was among the several important localities in which he collected. In fact he worked on Samar twice. The first time was for 4 months in 1895, but the collection burned with the steamer in which it was shipped for England. The second time was from May 15 to July 25, 1896.

Since 1900 until the time of the 1957 expedition only two more parties have worked on Samar. In 1924 a group from the Bureau of Science collected in Loquilocon, Wright, under the direction of R. C. McGregor. Except for the report on an allegedly new species of owl, Phodilus riverae, which was described by McGregor (1927, pp. 517–518) as one of the species collected in this field trip, there was no further report on this collection. In 1952, the Philippine National Museum sent two men to Samar to collect natural history specimens, including birds, as a minor object of the trip. The men worked in the localities of Matuguinao. No report was made of this collection.
The 1957 expedition worked mainly in the interior localities in the north-central part of Samar, between the municipalities of Matuguanao and Catubig, in the mountainous area that forms the divide between the eastern and western sides of Samar. On both sides of this region the streams flow to the east and west coasts, respectively. On the eastern side of the mountains all the streams eventually join the Catubig River; on the other side, they join the Bag-ot River, which eventually flows toward the west coast as the Gandara River, after being joined by numerous streams along its course.

In McGregor's Manual (1909), in which all the species that have been collected on Samar prior to that time are included, 146 forms are listed: 132 resident, 13 migrant, and one of doubtful status. Between 1909 and 1927, two more forms have been added to the Samar avifaunal list. Allowing for synonymy of some of the forms, as of 1956, 147 bird forms have been recorded on Samar: 133 resident, 12 migrant, and 2 of doubtful status.

The 1957 expedition collected 114 bird forms, which included 107 residents and 7 migrants. Nineteen of these forms are new records for Samar; 15 are represented by specimens secured, and 4 by sight records only. Of the 19 new records for Samar, 15 are resident and 4 migrant.

The newly recorded resident forms are the following:

1. *Egretta garzetta garzetta* (sight record only)
2. *Bubulcus ibis coromandus* (sight record only)
3. *Dupetor flavicollis flavicollis*
4. *Pernis celebensis steerei*
5. *Accipiter virgatus confusus*
6. *Spizaetus philippensis*
7. *Hieraetus kienerii formosus*
8. *Tanygnathus sumatranus everetti*
9. *Cacomantis variolosus sepulcralis*
10. *Batracostomus septimus septimus*
11. *Eurostopodius macrotis macrotis* (sight record only)
12. *Caprimulgus macrurus manillensis* (sight record only)
13. *Collocalia esculenta marginata*
14. *Coracina morio mindanense*
15. *Hypothymis coelestis*

The migrant forms are the following:

1. *Ixobrychus eurhythmus*
2. *Cuculus saturatus horsfieldi*
3. *Anthus gustavi*
4. *Locustella certhiola ochotensis*

To date a total of 166 bird forms have been recorded on Samar: 148 resident, 16 migrant, and 2 of doubtful status. Many more migrant forms will be recorded eventually, especially the shore bird species, because the Samar list for migrant forms is very low when compared to those of much smaller islands. Also, the mountainous and still heavily forested interior may still yield more resident forms, perhaps even unknown forms, because collecting on this island has not been extensive or intensive.
Samar is larger than Negros, being third in size among the islands of the archipelago. It possesses a very varied topography and is still covered by wide tracts of untouched forest in the interior. However, although very mountainous, none of the peaks reach even 900 meters in altitude; thus there is less likelihood of a real highland bird fauna. The Pacific Ocean side of the island has not been worked out as it should be ornithologically, and collecting should prove very interesting there.

Geography and Climate

Samar Island, with an area of about 13,271 square kilometers (5,124 square miles), and third in size among the major islands of the Philippines, lies between 11° 01' and 12° 36' N. Lat. and 124° 15' and 125° 46' E. Long. It lies east of Masbate Island and has a general trend of north 30° west. Its shape roughly approximates that of a trapezium.

Samar is very rough and mountainous but it lacks a well-defined central range. Mount Capoto-an, its highest mountain, in the north-central part of the island, hardly reaches the altitude of 850 meters. Because of the absence of a well-defined central range there is no effective rain shadow that prevents the precipitation carried by both monsoons, northeast and southwest, from falling on the entire island. Thus, a great amount of rainfall prevails throughout the year. There is no dry season and the most pronounced maximum rain period is from December to March. The typhonic rains from June until November are by no means slight and they may even approach in amount the rains from December until March. As a result of this abundant precipitation, the island is heavily forested from the lowlands to the highest mountains. Samar is subject to typhoons and every year most of the major typhoons from the Pacific Ocean pass over it.

In general, the road system is very poor, and the interior settlements depend mainly on the few navigable rivers and numerous foot trails as means of communication with the coastal towns. The island is sparsely populated, and the present large area of grassland resulting from cutting down the original forest in connection with the shifting method of agriculture practiced by the farmers here, is badly out of proportion to the number of people who have cleared the virgin forests on the coast and into the interior.
Geology and Paleogeography

Schrenck (in Smith, 1924, pp. 153-154) in discussing the geology of Samar Island writes: "The physiography of Samar is in many ways unlike such islands as Luzon. Nearly all of Samar Province is maturely dissected; the igneous area is limited in extent, while limestone is abundant. Rivers, shallow and rocky, are extremely numerous, making water communication a difficult matter. Outcrops are more abundant along the coasts, where they are not so effectively hidden by vegetation as in the interior. There is no great 'Cordillera Central' on Samar, with the result that a large amount of rain is evenly distributed over the entire island.

"As to structure . . . data now in hand indicate an island with an igneous core, some monoclinal strata, minor folds, much faulting, an unconformity after the Vigo (Miocene), a topographic unconformity between the Pleistocene and the Recent formations, and complex earth movements. The last-named feature is worthy of consideration, in so far as some evidence supports a theory of differential tilting of Samar, while there is as good evidence supporting a theory of general marine terracing of the entire island. Major faults parallel the seismotectonic line on the west coast and the Philippine Deep on the Pacific side."

Samar is one of the present-day islands that rest on the long, narrow and curved platform, known as the Eastern Philippine Rim. Willis (1937, pp. 34-35) writes about the Eastern Philippine Rim thus: "The eastern islands of the Archipelago, namely the Cama- rines, Samar, and Eastern Mindanao, form an arc that borders the Philippine Deep. The waters between them are generally shallow, considerably less than 200 meters deep as a rule, and the descent from the margin into the great deep of 10,000 to 12,000 meters is abrupt. The islands and the submerged plateau between them may be described as a platform with comparatively slight relief."

Pre-Tertiary marl, Eocene undifferentiated metamorphosed volcanics and Oligocene sandstones have been identified in the mountainous interior and in a small strip of the southwestern coast of Samar Island. In the northwestern angle of the island undifferentiated Tertiary volcanics have been found. Miocene sandstone, shale and limestone, Pliocene limestone and Pleistocene undifferentiated alluvium have been identified along the greater part of the coastal areas of the entire island, except at the northeast corner. Limited areas of igneous rocks identified as serpentine have been found in the southeastern tip of the island, toward Guiuan (Irving, 1953, Eastern Visayas, Section III).
A part of the present location of Samar was probably land during the Malumbang-Pliocene time.

Terraces about 120 to 150 meters in elevation in Bohol, Leyte and Samar have been described by various observers (Dickerson, 1928, p. 87). Schrenck (in Smith, 1924, pp. 231–271) reports that little of Samar was above sea level during some of the Pleistocene. He observed indications that the last movement on the eastern shore of Samar was that of depression. However, Schrenck also indicated that there are evidences of high terraces that crossed the middle portion of Samar previous to this time.

The terracing on Samar, Leyte and Bohol, and the local depressions indicate that the same set of forces must have controlled the changes that took place in the combined masses of these three islands. Dickerson (1928, p. 95) shows (fig. 21) a map of the Philippines with the probable islands some time during the Pleistocene before the occurrence of the complicated set of geologic forces which changed this picture radically. In this map, Samar, Leyte, Bohol, southern Luzon, and northeastern Mindanao formed one large island. Later on in the Pleistocene, the same island became covered with water. In fact, it is thought probable that at the maximum regression of the Pleistocene glaciations, when the level of the oceans was lowered in this part of the world by as much as 90–100 meters (Kuenen, 1950; Umbgrove, 1929), a much larger area was exposed than that now occupied by present-day Mindanao and the nearby islands of Samar, Leyte and Bohol and other much smaller adjacent islands (see discussion on Geology and Paleogeography of Bohol, pp. 315–317).

It was very probable that some time in the Pleistocene, when the level of the water rose, large portions of Samar were under a shallow sea as were also parts of Leyte and Bohol. Later on, as a result of a succession of uplifts that took place in the middle or late Pleistocene, these three islands began to assume their present form.

**Description of Collecting Localities**

The preliminary aerial survey that we conducted over the north-central part of Samar showed that the island in this region is still very heavily forested, especially in the mountainous regions that form the divide between the eastern and western sides of the island. It also showed us that great tracts of grasslands have begun to develop in the interior as well as along the level land along the northwestern coast. In the interior, many level areas between mountain peaks have already been cleared of virgin forest and are now covered with
tall grass or with second growth. However, the mountains in the interior, especially in the Mount Capoto-an localities, are still covered with dense original forest, and most of the peaks are less than 500 meters in altitude.

Three camps were established: Camp 1 at Matuguinao (100–400 meters altitude), Camp 2 at Barrio San Isidro (300–400 meters altitude), and Camp 3 at Barrio Tarabucan right in the heart of the Mount Capoto-an localities (400–600 meters altitude).

Matuguinao, Camp 1 (100–400 meters altitude).—Matuguinao is a small settlement along the bank of the Bag-ot River, in the very heart of the island, in the north-central part. About two dozen houses form the municipal district. The areas immediately around are either cultivated fields or grasslands (tall grass). There are no large planted areas because the people farm with the use of their bare hands and the most primitive tools. When asked why they do not use carabaos to help them in their farm work, they answered that these animals do not last long in Matuguinao because people in the neighborhood always kill them or steal them eventually. It is a strange set-up, and the result is a primitive way of farming with small, cleared fields and small, insufficient yield.

Patches of original forest and dense second growth are common immediately around the town. In fact, the immediate impression upon coming to this town is that of forest and tall grass and very few clean fields actually planted.

The forest still thinly lines the Bag-ot River in many places. The hills and mountains, predominantly limestone, are covered with extensive tracts of rich original forest from the bases up to the ridges. In many places, especially close to or on the ridges, bare rocks with stunted forest growth are common. The real dipterocarp forest, with its tall first story of giant trees, is found in the level or near level areas between hills and mountains, where the eroded soil that once layered the nearby peaks has accumulated. It is in level places like these that the forest is cut down by the people and the land planted to corn, sweet potato, and even rice for a few seasons and then left to grass.

The terrain is predominantly rough as are other places in the interior.

San Isidro, Camp 2 (300–400 meters altitude).—This small barrio of about one dozen houses is built along a main road-like cleared area that extends for about 100 meters and begins and ends nowhere. It is a small and compact settlement about 15 kilometers above Matu-
guinao and also along the bank of the Bag-ot River. The nature of the countryside is similar to that of Matuguinao, especially in the immediate neighborhood of the village. A little farther up the river, the forest becomes more extensive, although there are still many small level areas that were cleared and are already covered with tall grass.

Mount Capoto-an (Tarabucan Barrio), Camp 3 (400–600 meters altitude).—The village where camp was established was about as large as San Isidro and likewise was only a row of houses built along both sides of a cleared area that approximates a road, but with no beginning or ending, unless the river bank may be designated its beginning. This type of village seems to be very common in that area, where the houses are built on each side of a cleared area resembling a road, usually about 100 meters long.

The barrio is on the eastern side of the mountains that form the divide between eastern and western Samar. The numerous creeks in the locality empty into the Catubig River, which eventually goes out into the Pacific Ocean on the eastern side of Samar. In contrast, all the creeks in San Isidro and Matuguinao empty into the Bag-ot River, which eventually goes out into the sea on the west coast of Samar.

The area is similar to San Isidro in its extensive tracts of original forests and neglected cleared areas now covered with tall grass and second growth. It is a very rough country; the forest covers the level lands and sides of the hills and mountains, up to the ridges and summits. From a mountain top one can see the unbroken tracts of original forest, all of the dipterocarp type in the small level areas between peaks or hills and the molave-dipterocarp type on the steeper sides of the hills and mountains and on the ridges. The higher regions of the tall peaks (but none above 850 meters altitude) have forest approaching the mid-mountain type but it never becomes typical mid-mountain forest.

In general, the Mount Capoto-an localities are rich in virgin forest and possess a very rough topography; thus from the point of view of ornithologists they are very interesting collecting areas.

Zoogeography

The paleogeographic history of Samar is closely bound with that of Leyte and Bohol. As a result, the avifaunas of these three islands are closely related and show many similarities. The present location of Samar and Leyte, separated from each other only by a very narrow
strait, further strengthens the faunistic relationship of the two islands. We believe that most if not all of the bird species that are at present found on Samar will be found eventually on Leyte, but some of the species from the Leyte highlands, which attain some 1300 meters in altitude and a little more, may not be found on Samar. The Samar avifauna also bears a close relationship to that of Mindanao and Basilan again because of the paleogeographic history of these islands. At this stage of ornithological work on Leyte, it is difficult to state conclusively which species are supposed to be endemic on Samar. However, only three forms are here recognized as endemic: Macronus striaticeps cumingi, Rhabdornis inornatus inornatus, and Dicaeum ignipectus bonga.

McGregor collected a single specimen of the bay owl, Phodilus, which he described as a new species, Phodilus riverae (McGregor, 1927, pp. 517–518), and on which he commented: “A specimen from Samar may belong to the type species, but probably it represents an undescribed race. I have no specimen of P. badius, so can make no comparisons.” We are not including this form in the list of Samar endemics because we are not sure of its status. The single specimen and type of P. riverae was burned during the liberation of Manila in 1945, so we shall never know what it really was. It might have been a straggler from Borneo where P. b. badius normally ranges, and then it might have been really a resident race.

Eleven forms are found only on Samar, Leyte, and Bohol (see list on p. 318).

Eleven forms are found only on Samar and Leyte: Gallicolumba luzonica leyensis, Bolbopsittacus lunulatus intermedius, Ceyx melanurus samarensis, Megalaima haemacephala celestinoi, Pericrocotus flammeus leytensis, Ptilocichla mindanensis minuta, Stachyris plateni pygmaea, S. n. nigrocapitata, Ficedula basilanica samarensis, Sitta frontalis lilacea, and Arachnothera clarae philippinensis.

Seven forms are found only on Samar, Leyte and Mindanao or parts of Mindanao: Bubo philippensis mindanensis, Mulleripicus fuscus fuliginosus, Rhinomyias ruficauda samarensis, Lalage melanoleuca minor, Aethopyga shellyi bella, Anthreptes malacensis griseigularis, and Oriolus xanthotus samarensis.

One form is restricted, so far, to Samar and eastern Mindanao: Corvus enca samarensis. The species may eventually be found also on Leyte.

One form occurs only on Samar, Mindanao and Basilan: Coracina morio mindanense. This form may also be found on Leyte and perhaps on Bohol, with more collecting on these islands.
One very interesting species is found only on Samar, Leyte, Luzon and Mindanao: *Pithecophaga jefferyi*.

One form is found only on Samar, Mindanao, and, strangely enough, on Camiguin North and Polillo. It is very probable, however, that the Camiguin North and Polillo forms may prove to be distinct from the Samar–Mindanao form (*Hypothymis helenae*).

The other forms are of wider distribution in addition to being found on Samar.

As expected, because of their close proximity, Samar and Leyte have the largest number of common forms, which may or may not be found on the adjacent islands.

The absence of *Parus* on Samar, as well as on Leyte and Bohol, poses a very interesting problem of distribution. The species *Parus elegans* is widely distributed from northern Luzon to Mindoro, to the islands of the central or Visayan Province, then to Mindanao; yet it has never been found so far on Samar, Leyte or Bohol, which islands are links between Luzon and Mindanao.

**List of Species**

The 166 birds recorded for Samar are listed below. The earlier records are from McGregor, 1909.

**Family ARDEIDAE.** Herons, Bitterns, etc.

*Ardea purpurea manilensis* Meyen

Collected by Whitehead.

*Egretta intermedia intermedia* (Wagler)

Collected by Steere Exp.

*Egretta garzetta garzetta* (Linnaeus)

First record of the snowy egret from Samar. No specimens were secured but several birds were observed in the marshy and swampy areas along the coastal road from Catbalogan to Gandara, both times that we went up and down this road.

*Bubulcus ibis coromandus* (Boddaert)

First record of the cattle egret from Samar. No specimens were taken, but many birds of this species were seen in the fallow rice fields along the coastal Catbalogan-Gandara road, often in the vicinity of grazing carabaos.
**Butorides striatus carcinophilus** Oberholser  
Collected by Steere Exp. and by Bourns and Worcester.

**Butorides striatus amurensis** Schrenck  
Collected previously by Steere.  
San Isidro, Matuguinao, 300-400 meters altitude; 1 ♂; April 24.  
Wing, 204. Culmen from frontal feathering, 67.5 mm. Weight, 347.2 grams.  
Migrant.

**Nycticorax caledonicus manillensis** Vigors  
Collected previously by Bourns and Worcester.  
San Isidro, Matuguinao, 300-400 meters altitude; 1 ♂; April 29.  
Wing, 319. Culmen from frontal feathering, 72.5 mm. Weight, 1014.2 grams.  
The Samar bird is indistinguishable from Marinduque, Negros and Mindanao specimens.

**Gorsachius melanolophus kutteri** (Cabanis)  
Collected by Whitehead.

**Ixobrychus eurhythmus** (Swinhoe)  
San Isidro, Matuguinao, 300-400 meters altitude; 1 ♂; April 25.  
Wing, 157. Culmen from frontal feathering, 50 mm.  
First record of this rare winter migrant from Samar.  
The Samar bird is a fully adult male. It is interesting that most of the specimens that have been taken of this species on various islands of the Philippines were in juvenal plumage.

**Ixobrychus cinnamomeus** (Gmelin)  
Collected by Whitehead.

**Dupetor flavicollis flavicollis** (Latham)  
Mount Capoto-an, 400–600 meters altitude; 2 ♂; May 14-15.  
Wing, 208, 214. Culmen from frontal feathering, 81.5, 84 mm.  
Weight, 348.7, 357.8 grams.  
First record of the species from Samar.  
Several birds followed a regular route which passed close to the camp-site, or they flew low along the river at sunset, coming from the forest to their feeding places among the tall grass along the river edge.
When one female was secured on May 15 an egg in the oviduct was ready for laying. The egg was a broad oval, with shell of fine texture and very pale bluish green in color. It measured $43 \times 33$ mm.

Family CICONIIDAE. Storks.

_Dissoura episcopus episcopus_ (Boddaert)
Collected by Whitehead.

Family ANATIDAE. Ducks.

_Dendrocygna arcuata arcuata_ (Horsfield)
Collected by Jagor, by the Steere Exp., and by Whitehead.

_Anas luzonica_ Fraser
Collected previously by Whitehead.
San Isidro, Matuguinao, 300–400 meters altitude; 6 $\sigma$, 8 $\varphi$; April 24–29.

Wing, $\sigma$ (6) 247–255 (av. 249.8); $\varphi$ (7) 231–238 (av. 233.6). Culmen from frontal feathering, $\sigma$ (6) 41–43.5 (av. 42.2); $\varphi$ (8) 39–40 (av. 39.4) mm. Weight, $\sigma$ (6) 851.8–976.6 (av. 906.4); $\varphi$ (8) 725.1–818.5 (av. 778.6) grams.

The species was not encountered in any of the numerous rivers in the locality, but about a hundred birds were observed to congregate in a small marsh inside virgin forest area in a small valley surrounded by densely forested hills. The open water was a pond hardly one hectare in area, but the marshy edges extended well into the forest.

All Samar birds were molting the tail feathers in April. One female was completely flightless in April; its primaries and secondaries were still in sheath.

Family ACCIPITRIDAE. Hawks.

_Elanus caeruleus hypoleucus_ Gould
Collected by Whitehead.

_Aviceda jerdoni magnirostris_ (Kaup)
Collected previously by Bourns and Worcester.
Mount Capoto-an, 400–600 meters altitude; 1 $\sigma$; May 9.
Wing, 294. Culmen from base, 31 mm. Weight, 352.6 grams.
Three birds from Mindanao (2 $\varphi$, 1 sex?) have definitely longer wings than the Samar male.
The Samar bird was molting its rectrices in May. The species was rare and was taken inside original forest.

**Pernis ptilorhyncus orientalis** Taczanowski
- Collected by Whitehead.
- Migrant.

**Pernis celebensis steerei** Sclater
- San Isidro, Matuguinao, 300–400 meters altitude; 1 ♀; April 29.
- Wing, 373. Culmen from base, 37 mm. Weight, 751.5 grams.
- First record of the rare barred honey buzzard from Samar.

The Samar female is indistinguishable from one female from Zamboanga Peninsula, western Mindanao, especially in the heavy streaking of the breast and the heavy barring on the flanks, thighs, and tarsal feathers.

**Haliastur indus intermedius** Blyth
- Previously collected by the Steere Exp. and by Bourns and Worcester.
- Matuguinao, 100–400 meters altitude; 1 ♂; April 18.
- Wing, 387. Culmen from base, 37 mm. Weight, 587 grams.

In the Samar fully adult male the dark shaft lines on the white feathers on the head, neck, and breast are not as prominent as in males from Luzon, Negros and Mindanao, in the collection of Chicago Natural History Museum.

**Accipiter trivirgatus extimus** Mayr
- Collected by Bourns and Worcester and by Whitehead.

**Accipiter virgatus confusus** Hartert
- Matuguinao, 100–400 meters altitude; 1 ♂; April 10. Mount Capoto-an, 400–600 meters altitude; 1 ♂; May 11.
- Wing, 153, 154. Culmen from base, 18, 19 mm. Weight, 83.3, 98.5 grams.
- First record of this rare sparrow hawk from Samar. The species was rare and encountered only in original forest, at the edges or inside.

**Butastur indicus** (Gmelin)
- Collected by Bourns and Worcester.
- Migrant.
Pithecophaga jefferyi Ogilvie-Grant

Collected by Whitehead and by Bourns and Worcester.

We did not find the monkey-eating eagle in the interior of Samar, although the settlers in the area told us about a very large eagle that they sometimes saw in flight over the dense forests of the Mount Capoto-an locality.

Spizaetus philippensis Gould

Matuguinao, 100-400 meters altitude; 1 ♀; April 6.
Wing, 350. Culmen from base, 45 mm. Weight, 1,168 grams.
First record of this rare forest eagle from Samar.

The Samar bird is fully adult and shows very clearly the narrow black streaks on the throat and much broader black streaks on the breast, and the even barring of dark brown and white on the thighs and tarsal feathering. One female from Mindanao and another female from Negros have lost the black streaks on the throat and breast and the entire under parts are almost uniformly white except for the remnant faint barring of very pale brown on the thighs and tarsal feathering. One female from Mindanao has still retained a few dark streaks on the breast and the faint barring of brown and white on the thighs and tarsal feathering; otherwise the under parts are white.

One diagnostic difference between S. philippensis and S. cirrhatus limnaetus, which occur together on some islands of the archipelago, is the decidedly shorter wing of the former. The plumages of the species, especially in the white phase, are very similar.

Hieraaetus kienerii formosus Stresemann

San Isidro, Matuguinao, 300-400 meters altitude; 1 ♂; April 29.
Wing, 331. Culmen from base, 36 mm. Weight, 732.3 grams.
First record of the rare rufous-bellied dwarf eagle from Samar.

Haliaeetus leucogaster (Gmelin)

Collected by the Steere Exp., by Bourns and Worcester, and by Whitehead.

Icthyophaga ichthyaetus ichthyaetus (Horsfield)

Collected by Whitehead.

Spilornis cheela holospilus (Vigors)

Collected previously by the Steere Exp. and by Bourns and Worcester.
The Samar birds are very similar to specimens from Mindanao.

Microhierax erythrogenys (Vigors)

Collected previously by Whitehead and by Bourns and Worcester.

Matuguinao, 100–400 meters altitude; 1 ♀; April 9. San Isidro, 300–400 meters altitude; 1 ♂; May 4. Mount Capoto-an, 400–600 meters altitude; 1 ♀; May 10.

The species frequented clearings in original forest, in which some trees were still standing.

Though there is an increase in size from north to south in this species, the difference does not seem consistent enough to warrant recognizing two races. The wing measurements of our material are as follows: Luzon, ♂ 107, 108; ♀ 111, 111, 114, 115. Samar, ♂ 111, 112; ♀ 117. Negros, ♂ 110, 112; ♀ 109, 117, 125. Mindanao, ♂ 111, 111; ♀ 114, 114, 114, 116, 122 mm.

Various other characters have been used in an attempt to delineate races: rufous mark below eye, tawny wash on belly, and white on inner edges of secondaries. That the rufous mark below the eye is an immature character is shown by its presence in three young from Mindanao, not long out of the nest and with tails not yet full grown, in May. With it is correlated a pale (not black) bill. None of the others in our series have these characters.

White marks on the inner webs of remiges: these occur in only one of the immature males from Mindanao and in one adult male from Mindanao and one adult female from Negros. Thus it is of sporadic occurrence, and so is neither an age character nor is it suitable for use in delineating subspecies.

Tawny wash on abdomen: this character is pronounced in one Luzon adult female (an old specimen) but is almost completely absent in another female; it is faint to nearly absent in the other adults and is very faint in the immatures.

Family MEGAPODIIDAE. Megapodes or Mound-Builders.

Megapodius freycinet pusillus Tweeddale

Collected by Bourns and Worcester.
Family **PHASIANIDAE.** Pheasants, Quails, and Jungle Fowl.

**Excalfactoria chinensis lineata** (Scopoli)

Collected by Whitehead.

**Gallus gallus gallus** (Linnaeus)

Collected previously by the Steere Exp. and by Bourns and Worcester.

Matuguinao, 100–400 meters altitude; 1 ♂, 1 ♀; April 6–16. San Isidro, Matuguinao, 300–400 meters altitude; 1 ♀; April 28. Mount Capoto-an, 400–600 meters altitude; 1 ♀ chick; May 7.

The chick must have hatched from an egg laid about the last week of March. The chick was one of four which were accompanying a hen inside original forest.

Family **RALLIDAE.** Rails, etc.

**Rallus striatus striatus** Linnaeus

Collected by the Steere Exp.

**Rallus torquatus quisumbingi** Gilliard

Collected previously by the Steere Exp. and by Bourns and Worcester.

Matuguinao, 100–400 meters altitude; 1 ♂; May 19.

Wing, 147. Culmen from base, 45 mm.

The single Samar male comes closest to *R. t. quisumbingi* in wing measurement as given by Gilliard (1949, Auk, 66: 275).

The race *quisumbingi* is a very slightly differentiated race compared with *torquatus*; its main character is the slightly shorter wing.

**Amaurornis olivacea olivacea** (Meyen)

Collected previously by Bourns and Worcester.

Mount Capoto-an, 400–600 meters altitude; 1 ♂, 1 ♀ immature; May 14–16.

Wing, ♂ 171. Culmen from base, ♂ 38.5 mm. Weight, ♂ 311.7 grams.

The Samar adult male is similar to birds from Luzon, Mindanao, Negros and Bohol.

The immature female must have hatched from an egg laid about the beginning of March.
Gallinula chloropus orientalis Horsfield
Collected by Whitehead.

Family ROSTRATULIDAE. Painted Snipe.
Rostratula benghalensis benghalensis (Linnaeus)
Collected by the Steere Exp. and by Whitehead.

Family SCOLOPACIDAE. Snipe, Sandpipers, etc.
Numenius phaeopus variegatus (Scopoli)
Collected by Sanchez.
Migrant.

Numenius arquata orientalis Brehm
Collected by Whitehead.
Migrant.

Limosa limosa melanuroides Gould
Collected by Whitehead.
Migrant.

Limosa lapponica baueri Naumann
Collected by Whitehead.
Migrant.

Tringa ochropus Linnaeus
Collected by Steere.
Migrant.

Actitis hypoleucos (Linnaeus)
Collected previously by Bourns and Worcester.
San Isidro, Matuguinao, 300-400 meters altitude; 19; April 28.
Wing, 114.5. Culmen from base, 31 mm. Weight, 61.7 grams.
Migrant.

Family LARIDAE. Gulls and Terns.
Thalasseus bergii cristatus (Stephens)
Collected by Bourns and Worcester.
Family **COLUMBIDAE**. Pigeons and Doves.

**Treron pompadora axillaris** (Bonaparte)

Collected previously by Whitehead.
San Isidro, Matuguinao, 300-400 meters altitude; 4 ♂, 2 ♀; May 4.
Wing, ♂ (4) 159-163 (av. 161); ♀ (2) 159, 159. Culmen from base, ♂ (4) 23-24.5 (av. 23.3); ♀ (2) 23, 23 mm. Weight, ♂ (4) 223.1-251.8 (av. 235.2); ♀ (2) 222.5, 227 grams.

Samar birds are inseparable from specimens collected on Luzon, Negros, Bohol, Siquijor, and Mindanao.

**Phapitreron leucotis albibrons** McGregor

Collected previously by the Steere Exp., by Bourns and Worcester, and by Whitehead.
Matuguinao, 100-400 meters altitude; 11 ♂, 7 ♀; April 7-22. San Isidro, Matuguinao, 300-400 meters altitude; 3 ♂, 6 ♀; April 24-May 2. Mount Capoto-an, 400-600 meters altitude; 5 ♂, 2 ♀; May 7-12.
Wing, ♂ (13) 121-128 (av. 124.1); ♀ (15) 121-129 (av. 124.3). Culmen, ♂ (13) 17.5-20.5 (av. 19.6); ♀ (15) 19-21 (av. 19.9) mm. Weight, ♂ (13) 94-115.9 (av. 105.9); ♀ (15) 89.3-117.5 (av. 104.1) grams.

Eight males and three females had the gonads enlarged in April and May. Two females had an egg complete with hard shell ready for laying when they were taken on May 2.

**Phapitreron amethystina amethystina** Bonaparte

Collected previously by the Steere Exp. and by Whitehead.
Matuguinao, 100-400 meters altitude; 4 ♀; April 7-20. San Isidro, Matuguinao, 300-400 meters altitude; 1 ♂, 1 ♀; April 24-25. Mount Capoto-an, 400-600 meters altitude; 2 ♂, 1 ♀; May 9-14.
Wing, ♂ (3) 149-151 (av. 150); ♀ (6) 143-152 (av. 148.1). Culmen, ♂ (3) 29-30 (av. 29.3); ♀ (6) 27-28 (av. 27.5) mm. Weight, ♂ (3) 145.5-166.1 (av. 155.2); ♀ (6) 122.5-148.6 (av. 139.6) grams.

One male and two females had enlarged gonads.

**Ptilinopus occipitalis** Gray

Collected previously by Bourns and Worcester.
Matuguinao, 100-400 meters altitude; 2 ♂ adults, 1 ♂ immature, 1 ♀; April 18-May 9.
Wing, ♂ (2) 160, 162; ♀ 155. Culmen, ♂ (2) 22, 25; ♀ 22 mm. 
Weight, ♂ (2) 222.2, 277.7; ♀ 253.5 grams.

Both males and the single female had enlarged gonads. One 
young bird of the season was taken which must have hatched from 
an egg laid in the early part of February.

Ptilinopus leclancheri leclancheri (Bonaparte)

Collected previously by Whitehead.
Matuguinao, 100–400 meters altitude; 1 ♂, 2 ♀; April 12–22.
Wing, ♂ 153.5; ♀ 143, 144. Culmen from base, ♂ 22.5; ♀ 20.5, 
21 mm. Weight, ♂ 173.5; ♀ 152.7, 158.9 grams.
The Samar birds are indistinguishable from Negros specimens 
(9 ♂, 3 ♀) when arranged in a series.

In the Samar male the top of the head and nape possess a clear 
wash of green. In the series of nine males from Negros, three birds 
have this decidedly green wash on the top of the head and nape; it 
becomes paler in two and almost totally disappears in four, leaving 
these parts more definitely gray with the faintest trace of the green 
wash. Apparently this green wash on top of head and nape varies 
with age; the younger the bird the more intense the green wash.
The Samar females do not differ from Negros specimens.
Both Samar females had enlarged gonads.

Ducula aenea glaucocauda Manuel

Collected previously by Bourne and Worcester.
Matuguinao, 100–400 meters altitude; 1 ♂, 2 ♀; April 9–10. San 
Isidro, Matuguinao, 300–400 meters altitude; 2 ♂, 1 ♀; April 26–28.
Mount Capoto-an, 400–600 meters altitude; 1 ♂; May 6.
Wing, ♂ (4) 231–241 (av. 236.7); ♀ (3) 220, 233, 241. Culmen 
from base, ♂ (4) 31.5–33 (av. 32.2); ♀ (3) 30, 32, 32.5 mm. Weight, 
♂ (4) 492.6–644.2 (av. 557.7); ♀ (3) 454–632 (av. 567) grams.
The Samar birds and two Bohol specimens form a series that is 
separable from a large series of D. a. aenea from Luzon, Mindoro and 
Negros (4 ♂, 8 ♀) mainly on the “upper surface of rectrices appearing 
as if covered with a fine gray powder” (Manuel, Phil. Jour. Sci., 
60: 411), instead of the usual strong steel green gloss in aenea. Also, 
this fine gray powder is more distinctly shown on the upper surface 
of the primaries and secondaries than in aenea, in varying degrees 
of intensity. Our material includes one male from Davao and one fe-
male from Pagadian, in the Zamboanga Peninsula, which approach
D. a. aenea. In addition, one male and one female from Davao show the characteristic gray powdery "bloom" on the rectrices, although not in the same degree of intensity as our Samar birds, and on the upper surface of the primaries and secondaries.

It is unfortunate that the type locality that has been selected for D. a. glaucocauda is Mindanao and not Samar, for the birds from the latter island show most clearly the main diagnostic character of the race—the covering or "bloom" of fine gray powder on the upper surface of the rectrices.

Ducula poliocephala poliocephala (Gray)
Collected previously by Bourns and Worcester.
Mount Capoto-an, 400-600 meters altitude; 2 ♂; May 16.
Wing, 216, 224. Culmen from base, 29, 30 mm. Weight, 509.7, 564 grams.
Samar birds are inseparable from Luzon, Mindoro, Sibuyan, and Negros specimens.

Streptopelia bitorquata dusumieri (Temminck)
Collected by Whitehead.

Chalcophaps indica indica (Linnaeus)
Collected previously by Bourns and Worcester.
Matuguinao, 100-400 meters altitude; 2 ♂, 3 ♀; April 10-17.
Wing, ♂ 144, 146; ♀ 137, 138, 142.5. Culmen from base, ♂ 22, 23.5; ♀ 21, 21, 22 mm. Weight, ♂ 127.6, 138.1; ♀ 109.7, 125.5, 130.3 grams.
One female had the gonads enlarged.

Gallicolumba luzonica leytensis (Hartert)
Collected previously by Bourns and Worcester.
Matuguinao, 100-400 meters altitude; 1 ♂, 1 ♀; April 17-20.
Mount Capoto-an, 400-600 meters altitude; 3 ♂, 1 ♀; May 7-16.
Wing, ♂ (4) 150-155 (av. 152.7); ♀ (2) 143, 148. Culmen from base, ♂ (4) 21.5-23 (av. 22.2); ♀ (2) 19, 21.5 mm. Weight, ♂ (4) 199-204.1 (av. 201); ♀ (2) 180.9, 189.8 grams.
The species seemed to prefer the drier parts of the forests, notably on hillsides, and where there was not much low undergrowth.
Two males and one female had enlarged gonads.
A nest was found on Mount Capoto-an on May 14. The bird was surprised on it but escaped. The nest was a typical pigeon nest of sticks (twigs and bamboo) and was lined with bamboo leaves. It was the usual pile of one stick on another and looked rather flimsy; it possessed the merest semblance of a hollow to receive the egg. The whole affair was placed exactly on the axil formed by a horizontally placed leaf and the main stem. The leaf supporting the nest was about 1 1/2 meters from the ground, in original forest on top of a ridge about 400 meters in altitude. The nest was so placed that the bases of several pinnae on both sides helped to support it. One egg, freshly laid, was inside. It was a blunt oval, both ends almost of the same convexity, with shell of fine texture, creamy white in color, and very faintly glossy.

Family **PSITTACIDAE.** Parrots, Lories, Cockatoos, etc.

*Kakatoe haematuropygia* (Müller)

Collected previously by Steere Exp. and by Whitehead.

Matuguinao, 100–400 meters altitude; 2 ♂, 1 ♀; April 8–10. San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂, 1 ♀; April 24.

Wing, ♂ (3) 209–216 (av. 211.6); ♀ (2) 203, 217. Culmen from front of cere, ♂ (3) 26–27.5 (av. 26.6); ♀ (2) 25, 25 mm. Weight, ♂ (3) 285.7, 297.8, 297.8; ♀ (2) 255.8, 302.2 grams.

**Prioniturus discurus whiteheadi** Salomonsen

Collected previously by Steere Exp. and by Whitehead.

Matuguinao, 100–400 meters altitude; 4 ♂; April 7–14. San Isidro, Matuguinao, 300–400 meters altitude; 1 ♀; April 25. Mount Capoto-an, 400–600 meters altitude; 1 ♂, 1 ♀; May 9–10.

Wing, ♂ (4) 158–168 (av. 160); ♀ (2) 157, 164. Culmen from cere, ♂ (4) 26–28 (av. 27.2); ♀ (2) 27, 28 mm. Weight, ♂ (4) 134.1–148.9 (av. 139.8); ♀ (2) 135.6, 175.9 grams.

Samar and Bohol specimens are most alike in averaging slightly more blue on the head than Negros, Ticao and Masbate specimens, thus closely approaching the condition in *P. d. discurus* from Mindanao. However, the blue in the Samar-Bohol specimens begins in front behind the green of the forehead and ends much higher on the nape than in *discurus*, where the blue occupies the forehead, crown and nape, and contrasts sharply with the green of the rest of the plumage. Salomonsen (1953, Vidensk. Medd. Dansk naturh. Foren., 115: 223–224) comments on the Samar-Leyte population as intermediate between *discurus* and *whiteheadi*.
The measurements of the Samar–Leyte birds are those of *whiteheadi* instead of *discurus*.

*Tanygnathus lucionensis talautensis* Meyer and Wiglesworth
Collectively previously by Whitehead.
Matuguinao, 100–400 meters altitude; 2 ♂; April 15–18. San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂; April 26. Mount Capoto-an, 400–600 meters altitude; 1 ♂; May 16.
Wing, ♂ (4) 183–198.5 (av. 190.6). Culmen from cere, ♂ (4) 32–33.5 (av. 32.8) mm. Weight, ♂ (4) 198.7–231 (av. 215.3) grams.
One male has bluish back and it is not an immature bird. The three others have the characteristic green back of *talautensis*.

*Tanygnathus sumatranus everetti* Tweeddale
San Isidro, Matuguinao, 300–400 meters altitude; 2 ♂, 2 ♀; April 25–28.
Wing, ♂ 197, 201; ♀ 201, 208. Culmen from cere, ♂ 34, 34.5; ♀ 32, 32 mm. Weight, ♂ 230, 267.4; ♀ 252.3, 333.5 grams.
First record of the blue-backed parrot from Samar.
The males from Samar do not differ from Negros males. The Samar females average slightly lighter green on the head and one has a decidedly yellowish tinge, differing from two females from Negros, but very similar to another one. One Negros female with the darker green head was collected in December and with fresher plumage, so the difference may be due to this.
Both Samar females had enlarged gonads.
One female that was taken on April 26 had an egg in the oviduct ready for laying. The egg measured 36.5 × 28.5 mm. It was a regular oval, slightly more pointed on one end, with shell of fine texture but not glossy, and creamy white in color.

*Bolbopsittacus lunulatus intermedius* Salvadori
Collectively previously by Bourns and Worcester and by Whitehead.
Matuguinao, 100–400 meters altitude; 1 ♂, 4 ♀; April 6–14. Mount Capoto-an, 400–600 meters altitude; 1 ♂, 2 ♀; May 6–14.
Wing, ♂ (2) 102, 104.5; ♀ (6) 97–104.5 (av. 100.9). Culmen from cere, ♂ (2) 18, 18.5; ♀ (6) 17.5–18 (av. 17.8) mm. Weight, ♂ (2) 70.2, 70.5; ♀ (6) 62.5–77.1 (av. 72) grams.
The species was found in fruiting trees at the edges of forests, in clearings inside the forest, and even in well-cultivated areas with isolated fruiting trees, especially those close to original or second growth forest patches.

**Loriculus philippensis worcesteri** Steere

Collected previously by Steere Exp., by Bourns and Worcester, and by Whitehead.

Matuguinao, 100–400 meters altitude; 1 ♂; April 17. Mount Capoto-an, 400–600 meters altitude; 1 ♂, 1 ♀ subadult; May 16. Wing, ♂ 94, 95; ♀ subadult, 94. Culmen from base, ♂ 17.5, 18.5; ♀ subadult, 18 mm. Weight, ♂ 36.4, 38.1; ♀ subadult, 34.3 grams.

The Samar birds are indistinguishable from Bohol specimens.

One male had enlarged gonads in April.

**Family CUCULIDAE. Cuckoos.**

**Cuculus saturatus horsfieldi** Moore

Matuguinao, 100–400 meters altitude; 4 ♀; April 13–15. San Isidro, Matuguinao, 300–400 meters altitude; 3 ♂; April 25–May 2. Wing, ♂ (3) 187, 196, 196; ♀ (4) 190–207 (av. 199.7). Culmen from base, ♂ (3) 26, 28, 28; ♀ (4) 26.5–28.5 (av. 27.7) mm. Weight, ♂ (3) 76.4, 82.2, 91.2; ♀ (4) 87.2–136.4 (av. 103.8) grams.

Migrant.

First record of the Oriental cuckoo from Samar.

[Cacomantis merulinus merulinus (Scopoli)

Collected by Steere Exp.]

**Cacomantis variolosus sepulcralis** (Müller)

Mount Capoto-an, 400–600 meters altitude; 1 ♀ subadult; May 13. Wing, 115. Culmen from base, 22 mm. Weight, 33 grams.

First record of the rufous-breasted brush cuckoo from Samar.

Rarely heard, much less encountered, in the localities worked in.

**Chalcites xanthorhynchus amethystinus** (Vigors)

Collected by Whitehead.

**Surniculus lugubris velutinus** Sharpe

Collected previously by Bourns and Worcester and by Whitehead.

Matuguinao, 100–400 meters altitude; 2 ♀; April 8–18.
Wing, 116, 120. Culmen from base, 22.5, 23 mm. Weight, 38.1, 39 grams.

The Samar birds are similar to Mindanao and Bohol specimens.

**Eudynamys scolopacea mindanensis** (Linnaeus)

Collected previously by Steere Exp.

Matuguinao, 100–400 meters altitude; 2 ♂; April 12–22.

Wing, 201, 203. Culmen from base, 32.5, 34.5 mm. Weight, 218.1, 231.1 grams.

**Centropus melanops** Lesson

Collected previously by Steere Exp. and by Whitehead.

Matuguinao, 100–400 meters altitude; 3 ♂, 8 ♀; April 10–22. San Isidro, Matuguinao, 300–400 meters altitude; 2 ♂, 1 ♀; April 28–May 3. Mount Capoto-an, 400–600 meters altitude; 2 ♂, 3 ♀; May 6–10.

Wing, ♂ (7) 159–168 (av. 164.5); ♀ (7) 161–172 (av. 167.8). Culmen from base, ♂ (7) 40–43 (av. 41.3); ♀ (11) 40–42.5 (av. 41.2) mm. Weight, ♂ (7) 197.5–237.3 (av. 214.5); ♀ (12) 214.4–265.4 (av. 237.9) grams.

Samar birds are not separable from the Mindanao and Bohol specimens.

One female, taken on April 10, had an egg in the oviduct ready for laying. It measured 31 × 26 mm. It was a broad oval with one end very slightly more pointed than the other. The shell was white, of fine texture but not glossy.

**Centropus viridis viridis** (Scopoli)

Collected previously by Steere Exp., by Bourns and Worcester, and by Whitehead.

Matuguinao, 100–400 meters altitude; 5 ♂, 1 ♂ immature, 2 ♀ immature; April 8–21. Mount Capoto-an, 400–600 meters altitude; 1 ♂; May 8.

Wing, ♂ (5) 149–160 (av. 153.4); ♀ 159 (abraded). Culmen from base, ♂ (6) 28.5–32 (av. 30.1); ♀ 31 mm. Weight, ♂ (6) 119.7–152.5 (av. 132.6); ♀ 163.3 grams.

Two immature birds taken in April must have hatched from eggs laid during the latter part of February.
Family **TYTONIDAE.** Grass Owls.

**Phodilus badius badius** (Horsfield)

Collected by McGregor.

*Phodilus riverae* McGregor, 1927, was based on the single known specimen taken by McGregor and party at Loquilocon, Wright, on June 9, 1924. This specimen was burned during the war. As no comparisons were made with *P. badius*, and we cannot tell how, if at all, it differs from *badius*, we tentatively assign it to synonymy until new material permits definite allocation.

Family **STRIGIDAE.** Owls.

**Otus bakkamoena everetti** (Tweeddale)

Collected previously by Steere Exp.

Matuguinao, 100–400 meters altitude; 1 ♀; April 12.

Culmen from base, 24 mm. Weight, 115.1 grams.

A single specimen of the Oriental screech owl was brought to the camp by a boy who caught it accidentally in a trap set for something else. Its wings and tail were cut to prevent it from flying.

The Samar bird is indistinguishable from Mindanao and Bohol specimens.

**Bubo philippensis mindanensis** (Ogilvie-Grant)

Collected by Worcester in 1921.

Family **PODARGIDAE.** Frogmouths.

*Batrachostomus septimus septimus* Tweeddale

Matuguinao, 100–400 meters altitude; 1 ♂; April 18.

Mount Capoto-an, 400–600 meters altitude; 1 ♀; May 12.

Wing, ♂ 160; ♀ 148. Culmen from base, ♂ 28; ♀ 26 mm. Weight, ♂ 93.6; ♀ 75.2 grams.

First record of the Philippine frogmouth from Samar.

The male bird had enlarged gonads.

One nest, with one egg, was found in Matuguinao on April 18, inside original forest on the ridge of a peak about 350 meters in altitude. The nest was similar in general location to the one found on Bohol, being firmly attached to a slender horizontal branch about 8 mm. in diameter, the lowest in a low tree, about 3 meters from the forest floor. The nest was placed about one-half meter from the
main trunk and one-half meter from the tip of the branch, on the
bare part, because the leaves were toward the end. The general im-
pression upon seeing the small cup-shaped nest was that it was
pierced through the middle by the branch, which actually was not
the case. The nest was made of moss bound together with spider
web and cocoon threads and was rather shallow. It measured: outer
diameter 68, diameter of depression or hollow 22 mm.

The egg was a long oval, white with fine texture. No measure-
ments could be taken as it was broken in the process of getting it.

The bird that was seen on the nest was standing upright and ap-
peared to be ordinarily perching on the branch. It was actually strad-
dling the small cup-shaped nest and hid it entirely from view. It was
only after the bird was flushed that the nest was discovered.

Color of unfeathered parts when fresh: iris golden yellow; bill
dirty yellow at basal half, brown at terminal half; legs, feet, and nails
yellow.

Family CAPRIMULGIDAE. Nightjars.

Eurostopodus macrotis macrotis (Vigors)
First record of the Philippine eared nightjar from Samar. No
specimens were collected but the species was observed several times
in the Mount Capoto-an localities, flying low over densely forested
areas and giving out its unmistakable notes.

Caprimulgus macrurus manillensis Walden
First record of the long-tailed nightjar from Samar. The species
was never collected by us but was observed several times flying about
the dense second growth and original forest along the river where we
had our camp in the Mount Capoto-an locality. Retrieving the
birds among the dense growth over which they habitually flew just
after sunset would have been impossible, so no attempt was made to
shoot them when they were flying over this particular area.

Family APODIDAE. Swifts.

Collocalia troglodytes Gray
Collected previously by Bourns and Worcester.
Matuguinao, 100-400 meters altitude; 1 ♂; April 20.
Wing, 97. Exposed culmen, 4 mm. Weight, 5.2 grams.
The rocky interior of the island with its numerous limestone
caves, cracks, cavities and overhangs supplied ideal nesting places
for this swift.
Collocalia esculenta marginata Salvadori
Matuguinao, 100–400 meters altitude; 1 ♀; April 20.
Mount Capoto-an, 400–600 meters altitude; 3 ♀; May 9.
Wing, (4) 96–101 (av. 98.7). Exposed culmen, (4) 4–4.5 (av. 4.4) mm. Weight, (4) 6.3–8.3 (av. 7.3) grams.
First record of the species from Samar.
The extensive limestone hills and mountains, and the numerous gullies that have been cut down by the streams, provided the swift with favorable nesting places.

Family HEMIPROCNIDAE. Crested or Tree Swifts.
Hemiprocne comata comata (Temminck)
Collected previously by Bourns and Worcester.
Mount Capoto-an, 400–600 meters altitude; 1 ♂, 1 ♀; May 7–9.
Wing, ♂ 126.5; ♀ 129. Culmen from base, ♂ 12; ♀ 12 mm.
Weight, ♂ 21; ♀ 20.2 grams.
The Samar specimens have slightly smaller wings than Bohol and Mindanao birds.

Family TROGONIDAE. Trogons.
Harpactes ardens linae Rand and Rabor
Collected previously by Steere Exp., by Bourns and Worcester, and by Whitehead.
Matuguinao, 100–400 meters altitude; 3 ♂, 3 ♀; April 12–22.
San Isidro, Matuguinao, 300–400 meters altitude; 1 ♀; April 29.
Mount Capoto-an, 400–600 meters altitude; 1 ♀; May 10.
Wing, ♂ (3) 141, 149, 149; ♀ (5) 142–148 (av. 145.8). Culmen from base, ♂ (3) 24.5, 25.5, 26; ♀ (5) 23.5–26 (av. 24.7) mm.
Weight, ♂ (3) 82.6, 97.5, 99.9; ♀ (5) 88.3–98.6 (av. 92.3) grams.
The Samar birds are inseparable from the Bohol specimens.
Two males and two females had enlarged gonads in April.

Family ALCEDINIDAE. Kingfishers.
Alcedo atthis bengalensis Gmelin
Collected by Steere Exp. and by Bourns and Worcester.

Ceyx argentatus flumenicolus Steere
Collected previously by Steere Exp., by Bourns and Worcester, and by Whitehead.
Matuguinao, 100–400 meters altitude; 6 ♂, 4 ♀; April 6–20.
San Isidro, Matuguinao, 300–400 meters altitude; 6 ♂, 7 ♀; April 24–28.
Mount Capoto-an, 400–600 meters altitude; 2 ♂ immature, 1 ♀, 6 ♀ immature; May 6–8.

Wing, ♂ (12) 56–58.5 (av. 57.4); ♀ (12) 56.5–61.5 (av. 59).
Culmen from base, ♂ (11) 36.5–40 (av. 38.3); ♀ (12) 36–39.5 (av. 37.4) mm. Weight, ♂ (11) 13.5–18.2 (av. 16.7); ♀ (12) 17.2–22.4 (av. 19.4) grams.

The buffy wash on the throat that is found on some specimens varies a great deal in intensity. In the large series of adult birds from Samar the following have been noticed regarding this particular character: 1 ♂, 1 ♀, white, no wash; 1 ♂, 2 ♀, faint buffy wash; 10 ♂, 4 ♀, moderate intensity; 5 ♀, heavy wash.

Among the immature birds (2 ♂, 6 ♀) 2 males and 5 females have a decidedly buffy wash on the throat; only one has a white throat, and even this individual has a very faint and hardly discernible buffy wash, but it is there.

Immature birds of various ages were taken in April and May. They must have hatched from eggs laid in February and March.

_Ceyx melanurus samarensis_ Steere

Collected previously by Steere Exp., by Bourns and Worcester, and by Whitehead.

San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂; April 24.
Mount Capoto-an, 400–600 meters altitude; 1 ♀; May 13.

Wing, ♂ 60.5; ♀ 60.5. Culmen, ♂ 40; ♀ 40 mm. Weight, ♂ 22.5; ♀ 23.9 grams.

Rare and found only inside original forest, even away from streams.
The female had enlarged gonads.

_Pelargopsis capensis smithi_ (Mearns)


_Halcyon smyrnensis gularis_ (Kuhl)

Collected previously by Steere Exp., by Bourns and Worcester, and by Whitehead.

Matuguinao, 100–400 meters altitude; 3 ♂; April 6–7. San Isidro, Matuguinao, 300–400 meters altitude; 2 ♂, 2 ♀; April 28–May 2.
Mount Capoto-an, 400–600 meters altitude; 1 ♀ immature; May 8.
Wing, ♂ (5) 126-129 (av. 127.4); ♀ (2) 123, 126. Culmen from base, ♂ (5) 62-69.5 (av. 64.8); ♀ (2) 63.5, 67.5 mm. Weight, ♂ (4) 90-108.2 (av. 98); ♀ (2) 89.3, 101.2 grams.

One immature bird about 7 or 8 weeks old was taken in May. It must have hatched from an egg laid in the early part of March.

**Halcyon winchelli** Sharpe

Collected by Steere Exp.

**Halcyon chloris collaris** (Scopoli)

Collected by Steere Exp. and by Bourns and Worcester.

**Family MEROPIDAE.** Bee-Eaters.

**Merops philippinus** Linnaeus

Collected by Bourns and Worcester.

**Merops viridis americanus** Müller

Collected by Bourns and Worcester and by Whitehead.

**Family CORACIIDAE.** Rollers.

**Eurystomus orientalis cyanocollis** Vieillot

Collected previously by Steere Exp., by Bourns and Worcester, and by Whitehead.

Matuguinao, 100–400 meters altitude; 1 ♂, 1 ♂; April 13-16. San Isidro, Matuguinao, 300–400 meters altitude; 4 ♂; May 1–4. Mount Capoto-an, 400–600 meters altitude; 1 ♂, 3 ♀; May 8–15.

Wing, ♂ (6) 178–191 (av. 186.6); ♀ (3) 183, 189, 189. Culmen from base, ♂ (6) 33–35 (av. 34.3); ♀ (4) 33–34.5 (av. 33.8) mm. Weight, ♂ (6) 123.6–142.2 (av. 130.9); ♀ (4) 123.5–154.6 (av. 138.5) grams.

**Family BUCEROTIDAE.** Hornbills.

**Penelopides panini samarensis** Steere

Collected previously by Steere Exp., by Bourns and Worcester, and by Whitehead.

Matuguinao, 100–400 meters altitude; 4 ♂, 6 ♀; April 7–16.

Wing, ♂ (4) 229–246 (av. 238); ♀ (6) 221–233 (av. 227.8). Culmen from base, ♂ (4) 96–103 (av. 99.6); ♀ (6) 84–94 (av. 88.6) mm. Weight, ♂ (4) 496.5–554 (av. 523.2); ♀ (6) 393.6–513.9 (av. 450.4) grams.
The species was found inside original forest, second growth, clearings and even in isolated fruiting trees in cultivated areas, provided a forest, preferably original, was nearby.

Two females had enlarged gonads, and two females were molting the rectrices.

**Buceros hydrocorax semigaleatus** Tweeddale

Collected previously by Steere Exp., by Bourns and Worcester, and by Whitehead.

Matuguinao, 100–400 meters altitude; 1 ♂ immature, 5 ♀; April 8–21. San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂ immature, 1 ♀; April 28–May 2. Mount Capoto-an, 5 ♂, 1 ♂ immature, 1 ♀ immature; May 6–13.

Wing, ♂ (5) 365–388 (av. 381.6); ♀ (6) 353–379 (av. 365). Culmen from base, ♂ (5) 150–161 (av. 156.2); ♀ (6) 135–150 (av. 139.8) mm. Weight, ♂ (5) 1368.5–1652.3 (av. 1517); ♀ (6) 1171–1307 (av. 1246) grams.

The species was found only in original forest.

**Family CAPITONIDAE.** Barbets.

**Megalaima haemacephala celestinoi** Gilliard

Collected previously by Whitehead.

San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂; April 29.

Wing, 83. Culmen from nostril, 17 mm. Weight, 47.5 grams.

The wing and bill measurements of the single Samar specimen lend support to the separation of the population on this island as *M. h. celestinoi* Gilliard.

These measurements support the concept that two clines as regards bill length and wing length are involved in this species. Bill length tends to increase from north to south, while wing length tends just the reverse; i.e., the two clines run in opposite directions.

**Family PICIDAE.** Woodpeckers.

**Mulleripicus funebris fuliginosus** Tweeddale

Collected previously by Steere Exp. and by Whitehead.

Matuguinao, 100–400 meters altitude; 1 ♀; April 21. Mount Capoto-an, 400–600 meters altitude; 1 ♂, 2 ♀; May 6–16.

Wing, ♂ 155; ♀ 147, 154, 154. Culmen from base, ♂ 41.5; ♀ 36, 36.5, 39 mm. Weight, ♂ 179.6; ♀ 143.3, 161.6, 168.7 grams.
The Samar birds do not differ from Mindanao specimens. One Samar female has a small red patch on the fore-crown.

**Dryocopus javensis pectoralis** (Tweeddale)

Collected previously by Steere Exp., by Bourns and Worcester, and by Whitehead.

Matuguinao, 100–400 meters altitude; 1 ♀; April 18. San Isidro, Matuguinao, 300–400 meters altitude; 2 ♂, 1 ♀; April 26–May 4.

Wing, ♂ 216, 221; ♀ 203, 206. Culmen from base, ♂ 58; ♀ 50, 51 mm. Weight, ♂ 295.7, 346.8; ♀ 251.6, 267.2 grams.

Samar birds are similar to Bohol specimens.

**Dendrocopos maculatus leytensis** (Steere)

Collected previously by Steere Exp., by Bourns and Worcester, and by Whitehead.

Matuguinao, 100–400 meters altitude; 2 ♂; April 20–22.


Both Samar males are most like the males of *D. m. fulvifasciatus* from Mindanao, except for a very little difference in the intensity of the yellow wash on the under parts, this being very slightly more in *fulvifasciatus*, and also in the slightly fewer black spots on the under parts in the latter.

The Samar–Leyte–Bohol race *leytensis* is a lightly marked race compared with Mindanao–Basilan *fulvifasciatus*.

**Chrysocolaptes lucidus rufopunctatus** Hargitt

Collected previously by Steere Exp., by Bourns and Worcester, and by Whitehead.

Matuguinao, 100–400 meters altitude; 3 ♂, 2 ♀; April 7–18. San Isidro, Matuguinao, 300–400 meters altitude; 1 ♀; April 27.

Wing, ♂ 142, 144, 145; ♀ 146, 146.5, 148.5. Culmen from base, ♂ 44.5, 44.5, 45.5; ♀ 42.5, 42.5, 45 mm. Weight, ♂ 143.6, 155, 164.3; ♀ 147.3, 152.9, 155.9 grams.

The Samar birds are inseparable from Bohol specimens.

All the males were molting only in the primaries in April; all the females were molting both primaries and rectrices in the same month.
Family EURLAIMIDAE. Broadbills.

**Eurylaimus steerii samarensis** (Steere)

Collected previously by Steere Exp., by Bourns and Worcester, and by Whitehead.

Matuguinao, 100–400 meters altitude; 4 ♂, 4 ♀; April 10–22. San Isidro, Matuguinao, 300–400 meters altitude; 2 ♂, 3 ♀; May 1–2. Mount Capoto-an, 400–600 meters altitude; 2 ♀, 1 ♂ immature; May 12–14.

Wing, ♂ (6) 78–85.5 (av. 80.2); ♀ (9) 76.5–82 (av. 79). Culmen from base, ♂ (6) 22–24 (av. 22.3); ♀ (9) 20–23 (av. 21.7) mm. Weight, ♂ (6) 34.2–39.2 (av. 36.2); ♀ (9) 33.4–41.5 (av. 37.7) grams.

The species was encountered only inside original forest among the lower growths, including bushes. One bird was taken with a green caterpillar still in the mouth.

Four males had the primaries molting. One female had enlarged gonads in April.

Family PITTIDAE. Pittas.

**Pitta erythrogaster erythrogaster** Temminck

Collected previously by Steere Exp.

San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂ subadult; April 25. Mount Capoto-an, 400–600 meters altitude; 1 ♂; May 9.

Wing, ♂ 96.5; ♂ subadult 97. Culmen from base, ♂ 22.5; ♂ subadult 23.5 mm. Weight, ♂ 55.4, ♂ subadult 57.3 grams.

**Pitta sordida sordida** (Müller)

Collected by Whitehead.

**Pitta steerii** (Sharpe)

Collected previously by Steere Exp. and by Whitehead.

Matuguinao, 100–400 meters altitude; 1 ♂; April 21. Mount Capoto-an, 400–600 meters altitude; 1 ♂, 1 ♀; May 8–12.

Wing, ♂ 120, 123.5; ♀ 120. Culmen from base, ♂ 28, 28.5; ♀ 28.5 mm. Weight, ♂ (1) 89.2; ♀ 96.9 grams.

One male had enlarged gonads during May.

Family HIRUNDINIDAE. Swallows.

**Hirundo tahitica javanica** Sparrman

Collected previously by Steere Exp.

San Isidro, Matuguinao, 300–400 meters altitude; 1 ♀; April 25.

Wing, 108. Culmen from base, 12 mm. Weight, 16.8 grams.
Family MOTACILLIDAE. Wagtails and Pipits.

Motacilla cinerea melanope Pallas

Collected previously by Steere Exp.

San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂, 1 ♀; April 24–30. Mount Capoto-an, 400–600 meters altitude; 2 ♀; May 10–14.

Wing, ♂ 85.5; ♀ 81.5, 84, 84. Tail, ♂ 97; ♀ 89, 92, 97. Culmen from base, ♂ 17; ♀ 16.5, 17, 17 mm. Weight, ♂ 21.1; ♀ 15.9, 17.7, 19.2 grams.

Migrant.

The tail lengths, which fall below 99 mm., place these winter migrants in the race melanope. The very closely related race cinerea has tail length of 99 mm. and over.

Anthus gustavi Swinhoe

Matuguinao, 100–400 meters altitude; 1 ♀; April 21.

Wing, 87.5. Culmen from base, 17 mm. Weight, 26.4 grams.

First record of this winter migrant from Samar.

The Samar specimen has an exceptionally heavy wash of buff on the lower throat and breast—heavier than that on any of the specimens of the species in the collection of Chicago Natural History Museum.

Anthus novaeseelandiae lugubris (Walden)

Collected by Steere Exp.

Family CAMPEPHAGIDAE. Cuckoo-Shrikes.

Coracina striata boholensis Rand and Rabor

Collected previously by Steere Exp., by Bourns and Worcester, and by Whitehead.

Matuguinao, 100–400 meters altitude; 2 ♂, 3 ♀; April 7–20. San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂ juv., 1 ♀, 1 sex? juv.; April 28–May 4. Mount Capoto-an, 400–600 meters altitude; 1 ♂; May 8.

Wing, ♂ 165, 166, 167; ♀ (4) 149–158 (av. 153.1). Culmen from base, ♂ 32.5, 33.5, 35; ♀ (4) 33–34.5 (av. 33.5) mm. Weight, ♂ 113.6, 115.6, 120.6; ♀ (4) 100.5–128 (av. 112.3) grams.

The Samar birds are inseparable from Bohol specimens.
One female, taken on April 7, had a broken egg complete with shell in the oviduct and ready for laying.

The very young birds, still attended by the parent birds and presumably having just left the nest, were taken on May 4 in original forest. They must have hatched from eggs that were laid about the middle of March.

**Coracina morio mindanense** (Tweeddale)
San Isidro, Matuguinao, 300-400 meters altitude; 1 ♀; May 1.
Wing, 125. Culmen from base, 24 mm. Weight, 61.3 grams.
First record of the Moluccan graybird from Samar. The species was rare.
The Samar bird does not differ from Mindanao specimens.

**Lalage melanoleuca minor** (Steere)
Collected previously by Bourns and Worcester and by Whitehead. Matuguinao, 100-400 meters altitude; 1 ♂, 1 ♀; April 7. Mount Capoto-an, 400-600 meters altitude; 1 ♂, 1 ♀; May 9.
Wing, ♂ 108, 113; ♀ 106, 107. Culmen from base, ♂ 23, 24; ♀ (1) 23 mm. Weight, ♂ 46.3, 47.7; ♀ 41.9, 48.6 grams.
The birds went about in pairs and frequented the higher trees of the forest. They were rare and were difficult to see among the foliage.
One male had enlarged gonads in April.

**Pericrocotus flammeus leytensis** Steere
Collected previously by Bourns and Worcester, by Whitehead, and by Mearns. Matuguinao, 100-400 meters altitude; 1 ♂, 1 ♀; April 8.
Wing, ♂ 83.5; ♀ 82.5. Culmen from base, ♂ 18; ♀ 18 mm. Weight, ♂ 18.4; ♀ 19.4 grams.
Rare and difficult to see among the foliage of the tallest tree story inside original forest.

**Family LANIIDAE.** Shrikes.

**Lanius schach nasutus** Scopoli
Collected by Bourns and Worcester.

**Lanius cristatus lucionensis** Linnaeus
Collected previously by Steere Exp. Matuguinao, 100-400 meters altitude; 1 ♂, 3 ♀; April 8-17.
Wing, ♂ 90.5; ♀ 86.5, 87, 89.5. Culmen from base, ♂ 21; ♀ 19, 19, 20 mm. Weight, ♀ 28.2, 34.2, 34.3 grams.

Migrant.

Family ARTANIDAE. Wood-Swallows.

Artamus leucorhynchus leucorhynchus Linnaeus

Collected previously by Whitehead.

Matuguinao, 100–400 meters altitude; 1 ♂, 1 ♀; April 22.

Wing, ♂ 133; ♀ 136. Culmen from base, ♂ 24; ♀ 25 mm. Weight, ♂ 45.3; ♀ 49.6 grams.

Family PYCNONOTIDAE. Bulbuls, Leafbirds, and Fairy Bluebirds.

*Irena cyanogaster ellae* Steere

Collected previously by Steere Exp., by Bourns and Worcester, and by Whitehead.

Matuguinao, 100–400 meters altitude; 1 ♂, 2 ♀; April 22. San Isidro, Matuguinao, 300–400 meters altitude; 5 ♂, 2 ♀; April 23–May 4. Mount Capoto-an, 400–600 meters altitude; 1 ♂, 2 ♀; May 8–16.

Wing, ♂ (7) 129.5–135 (av. 132.6); ♀ (6) 127–130 (av. 128.3). Culmen from base, ♂ (7) 29.5–31.5 (av. 30.6); ♀ (6) 30–31.5 (av. 30.8) mm. Weight, ♂ (7) 78.7–96.1 (av. 86.2); ♀ (6) 75.9–80.6 (av. 78.1) grams.

The Samar birds are topotypical material.

The species was found only in original forest.

Six males and one female had enlarged gonads in April and May. One male shows molt only in the rectrices, and another one only in the primaries.

*Pycnonotus urostictus urostictus* (Salvadori)

Collected previously by Bourns and Worcester.

Matuguinao, 100–400 meters altitude; 7 ♂, 1 ♀; April 10–18. San Isidro, Matuguinao, 300–400 meters altitude; 8 ♂, 6 ♀; April 24–29. Mount Capoto-an, 400–600 meters altitude; 3 ♂, 7 ♀; May 6 14.

Wing, ♂ (18) 75.5–83 (av. 78.8); ♀ (14) 74–80 (av. 76.7). Culmen from base, ♂ (17) 15–17 (av. 15.9); ♀ (13) 14.5–16.5 (av. 15.5) mm. Weight, ♂ (18) 21.8–27.3 (av. 24.7); ♀ (14) 22.7–26.5 (av. 24.8) grams.
Samar birds are similar to Luzon and Bohol specimens.
Nine males and two females had enlarged gonads in April and May.

**Pycnonotus goiavier samarensis** Rand and Rabor
Collected previously by Bourns and Worcester and by Whitehead. Matuguinao, 100–400 meters altitude; 8 ♂, 10 ♀; April 6–21. San Isidro, Matuguinao, 300–400 meters altitude; 4 ♂; April 25–May 2. Mount Capoto-an, 400–600 meters altitude; 2 ♂; May 8–12.
Wing, ♂ (14) 77–83.5 (av. 80.2); ♀ (10) 74–78 (av. 76.5). Culmen from base, ♂ (14) 16.5–19 (av. 17.8); ♀ (10) 16–17.5 (av. 17.2) mm. Weight, ♂ (14) 25.4–30 (av. 27.8); ♀ (9) 24.4–28.9 (av. 27) grams.

**Hypsipetes philippinus philippinus** (Forster)
Collected previously by Steere Exp. and by Bourns and Worcester. Matuguinao, 100–400 meters altitude; 19 ♂, 13 ♀; April 6–22. San Isidro, Matuguinao, 300–400 meters altitude; 6 ♂, 3 ♀; April 25–May 4. Mount Capoto-an, 400–600 meters altitude; 2 ♂, 3 ♀; May 7–8.
Wing, ♂ (15) 92.5–99 (av. 95.2); ♀ (15) 87–98 (av. 91.7). Culmen from base, ♂ (15) 22–25 (av. 23.8); ♀ (15) 21.5–25 (av. 23.2) mm. Weight, ♂ (15) 32.9–42.7 (av. 38.3); ♀ (15) 32–42.7 (av. 36.6) grams.
Eleven males and five females had enlarged gonads in April and May. One female, taken on April 6, had a very large egg but without the hard shell in the oviduct.
On April 11, a nest of the species was found in an abandoned clearing, close to a trail. It was securely placed on a shrub, one of many in the clearing, which was also heavily grown to tall grass and ferns. The nest was the usual cup-shaped affair, with walls made of mixed grass, twigs, and leaf midribs all woven together and bound compactly with spider web and cocoon threads. Measurements: outside diameter, 116; inside diameter, 68; height, 60; inside depth, 40 mm. One newly laid egg was inside. It was a regular oval, one end very slightly more pointed than the other. The shell was glossy and of fine texture, with fine mottlings of reddish brown, these mottlings becoming very heavy on the broader end. Measurements: 26×18.5 mm.

**Hypsipetes everetti samarensis** Rand and Rabor
Collected previously by Steere Exp., by Bourns and Worcester and by Whitehead.
Matuguinao, 100-400 meters altitude; 6 ♂, 6 ♀; April 6-22. San Isidro, Matuguinao, 300-400 meters altitude; 10 ♂, 5 ♀; April 26-May 4. Mount Capoto-an, 400-600 meters altitude; 4 ♂, 2 ♀; May 6-14.

Wing, ♂ (20) 114-120 (av. 116.8); ♀ (13) 107-115 (av. 110.8). Culmen from base, ♂ (20) 27-31 (av. 29); ♀ (13) 26.5-28 (av. 27.4) mm. Weight, ♂ (20) 51.9-66.9 (av. 60); ♀ (13) 51.9-62.1 (av. 55.7) grams.

The species was fairly common inside original forest and patches of same in already cleared countryside but in well-forested regions.

Ten males had enlarged gonads.

Family TURDIDAE. Thrushes, Chats, etc.

*Copsychus saularis mindanensis* (Boddaert)

Collected by Steere Exp.

Family TIMALIIDAE. Babblers.

*Ptilocichla mindanensis minuta* Bourns and Worcester

Collected previously by Bourns and Worcester and by Whitehead.

Matuguinao, 100-400 meters altitude; 1 ♀; April 21. Mount Capoto-an, 400-600 meters altitude; 3 ♂, 1 ♂ juv., 2 ♀; May 8-14.

Wing, ♂ 68.5, 70, 72; ♀ 67, 67, 67.5. Culmen from base, ♂ 18.5, 18.5, 18.5; ♀ 18.5, 18.5, 19 mm. Weight, ♂ 27.8, 29.6, 30.8; ♀ 26.6, 27.4, 28.5 grams.

The birds are topotypical.

The species was rare and stayed on the ground or close to the forest floor, among the dense undergrowth, in some parts of original forest, preferably in the well-shaded portions.

Two males and one female had enlarged gonads in May. One newly fledged bird, taken on May 13, must have come from an egg laid about the early part of April.

*Macronus striaticeps cumingi* Hachisuka

Collected previously by Steere Exp., by Bourns and Worcester and by Whitehead.

Matuguinao, 100-400 meters altitude; 5 ♂, 6 ♀; April 9-18. San Isidro, Matuguinao, 300-400 meters altitude; 5 ♂, 2 ♀; April 24-30. Mount Capoto-an, 400-600 meters altitude; 2 ♀; May 7.
Wing, ♂ (10) 59–64.5 (61.8); ♀ (10) 56–61 (av. 59). Culmen from base, ♂ (10) 15–17.5 (av. 16.3); ♀ (10) 14.5–15.5 (av. 15) mm. Weight, ♂ (10) 14.6–18.8 (av. 16.2); ♀ (10) 14.2–17.5 (av. 15.4) grams.

Stachyris plateni pygmaea (Ogilvie-Grant)

Collected previously by Bourns and Worcester and by Whitehead.

Matuguinao, 100–400 meters altitude; 7 ♂, 3 ♀; April 6–22. San Isidro, Matuguinao, 300–400 meters altitude; 3 ♂, 1 ♂ immature, 3 ♀; April 25–May 2. Mount Capoto-an, 400–600 meters altitude; 3 ♂, 4 ♀; May 6–12.

Wing, ♂ (13) 52–55.5 (av. 53.3); ♀ (10) 51–53.5 (av. 52.3). Culmen from base, ♂ (13) 12.5–13.5 (12.8); ♀ (9) 12.5–13.5 (av. 12.8) mm. Weight, ♂ (13) 7.5–10.2 (av. 8.6); ♀ (10) 8.1–9.9 (av. 8.9) grams.

The pygmy tree-babbler was common inside original forest at the edges, and occasionally it was seen in low fruiting trees in abandoned clearings that were close to original forest. We even found it, though rarely, in fruiting trees in cultivated areas and more frequently in dense second growth which was adjacent to original forest.

Nine males and two females had enlarged gonads in April and May. One female had an egg in the oviduct, complete with shell and ready for laying when the bird was collected on May 1.

Stachyris nigrocapitata nigrocapitata (Steere)

Collected previously by Steere Exp., by Bourns and Worcester and by Whitehead.

Matuguinao, 100–400 meters altitude; 7 ♂, 5 ♀; April 6–22. San Isidro, Matuguinao, 300–400 meters altitude; 2 ♂, 2 ♀; April 24–29. Mount Capoto-an, 400–600 meters altitude; 5 ♂, 3 ♂ immature, 3 ♀, 1 sex? nestling; May 6–11.

Wing, ♂ (14) 67–73 (av. 69.3); ♀ (10) 66–71 (av. 67.4). Culmen from base, ♂ (14) 15.5–17 (av. 16.2); ♀ (10) 16–17 (av. 16.3) mm. Weight, ♂ (14) 12.9–14.9 (av. 14); ♀ (10) 12.6–16 (av. 14) grams.

The Samar birds are topotypical.

The species was found inside original forest. It preferred the second and third story trees.

Nine males and one female had enlarged gonads. One nestling was taken on May 10.
Family SYLVIIDAE. Warblers.

*Megalurus palustris forbesi* Bangs

Collected by Steere Exp.

*Megalurus timoriensis crex* Salomonsen

Collected previously by Whitehead.

Matuguinao, 100-400 meters altitude; 2 ♂; April 9–11. San Isidro, Matuguinao, 300-400 meters altitude; 1 ♀; April 26.

Wing, ♂ 72, 73.5; ♀ 69.5. Culmen from base, ♂ 19, 19; ♀ 17.5 mm. Weight, ♂ 31.6, 32.2; ♀ 27.5 grams.

The Samar birds are intermediate between Luzon *M. t. tweeddalei* and Mindanao *M. t. crex*, but the presence of the vague darkish streaks on the crown of some of the specimens places the Samar population with crex.

One male and one female had enlarged gonads in April.

*Cisticola exilis rustica* Wallace

Collected previously by Bourns and Worcester.

Matuguinao, 100-400 meters altitude; 2 ♂, 1 sex? immature; April 13–22. San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂; April 29.

Wing, ♂ 43.5, 44.5, 45. Culmen from base, 11.5, 12.5, 13 mm. Weight, 6.7, 6.7, 7.3 grams.

*Locustella certhiola ochotensis* Middendorf

Mount Capoto-an, 400-600 meters altitude; 1 ♀; May 8.

Wing, 72.5. Culmen from base, 19 mm. Weight, 24.1 grams.

Migrant.

First record of the Asiatic grasshopper warbler for Samar.

*Phylloscopus olivaceus olivaceus* (Moseley)

Collected previously by Steere Exp. and by Whitehead.

Matuguinao, 100-400 meters altitude; 8 ♂, 4 ♀, 1 sex?; April 13–22. San Isidro, Matuguinao, 300–400 meters altitude; 2 ♂, 1 ♀; April 25–27. Mount Capoto-an, 400–600 meters altitude; 2 ♂, 2 ♀; May 8–15.

Wing, ♂ (12) 59-64 (av. 62.3); ♀ (7) 52-59 (av. 55.3). Culmen from base, ♂ (12) 14-15 (av. 14.5); ♀ (7) 13-14 (av. 13.7) mm. Weight, ♂ (12) 9.3-11.6 (av. 10.5); ♀ (7) 8.6-10.2 (av. 9.3) grams.
The birds are topotypical material.
The species was found only inside original forest, especially in the third story trees and the lower undergrowth.
Six males and one female had enlarged gonads.

**Phylloscopus borealis borealis** (Blasius)
Collected previously by Bourns and Worcester.
Matuguinao, 100–400 meters altitude; 1 ♀; April 18. San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂, 1 ♀; April 28–30.
Wing, ♂ 70; ♀ 66, 68. Culmen from base, ♂ 14.5; ♀ 14.5, 14.5 mm. Weight, ♂ 9.4; ♀ 7.9, 11.5 grams.

**Orthotomus atrogularis frontalis** Sharpe
Collected previously by Steere Exp., by Bourns and Worcester and by Whitehead.
Matuguinao, 100–400 meters altitude; 7 ♂, 8 ♀; April 6–21. San Isidro, Matuguinao, 300–400 meters altitude; 8 ♂, 6 ♀; April 24–May 4. Mount Capoto-an, 400–600 meters altitude; 1 ♂; May 6.
Wing, ♂ (16) 44–49 (av. 46); ♀ (14) 41–46 (av. 43.9). Culmen from base, ♂ (16) 16–18 (av. 17.3); ♀ (14) 16–18.5 (av. 17.1) mm. Weight, ♂ (15) 6.8–8.7 (av. 8.1); ♀ (13) 6.2–8.2 (av. 7.3) grams.
The Samar birds are indistinguishable from Mindanao and Bohol specimens.
Two males and one female had enlarged gonads.

**Orthotomus samarensis** Steere
Collected previously by Steere Exp., by Bourns and Worcester and by Whitehead.
Matuguinao, 100–400 meters altitude; 1 ♀ immature; April 17. San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂, 1 ♂ immature, 1 ♀; April 26–May 4. Mount Capoto-an, 400–600 meters altitude; 2 ♂; May 12.
Wing, ♂ 45, 45.5, 47; ♀ 45.5. Culmen from base, ♂ 17, 17.5, 19; ♀ 16.5 mm. Weight, ♂ 10, 10.1, 10.2; ♀ 7.4 grams.
The species was rare and was found only among the dense undergrowth and lower growths inside original forest.
One male had enlarged gonads in May. The two young birds taken on April 17 and 27 must have developed from eggs that were laid during the early part of March.
Family **MUSCICAPIDAE.** Flycatchers.

**Rhipidura superciliaris samarensis** (Steere)

Collected previously by Steere Exp., by Bourns and Worcester and by Whitehead.

Matuguinao, 100–400 meters altitude; 3 ♂, 6 ♀; April 6-24. San Isidro, Matuguinao, 300–400 meters altitude; 5 ♂, 5 ♀; April 25–May 2. Mount Capoto-an, 400–600 meters altitude; 10 ♂, 1 ♂ immature, 13 ♀, 1 ♀ immature; May 6–15.

Wing, ♂ (12) 76.5–84.5 (av. 79.6); ♀ (12) 67–75.5 (av. 73). Culmen from base, ♂ (12) 14.5–16 (av. 15.4); ♀ (12) 14.5–15.5 (av. 15) mm. Weight, ♂ (12) 12.8–14.5 (av. 13.5); ♀ (12) 10.8–15 (av. 12.6) grams.

One of the most common bird species; it was normally found only inside original forest.

Ten males had enlarged gonads. Two females had an egg in the oviduct, complete with shell and ready for laying when the birds were taken on May 6 and 15.

**Rhipidura javanica nigritorquis** Vigors

Collected by Bourns and Worcester.

*Rhinomyias ruficauda samarensis* (Steere)

Collected previously by Steere Exp. and by Whitehead.

Matuguinao, 100–400 meters altitude; 1 ♂; April 21. San Isidro, Matuguinao, 300–400 meters altitude; 1 ♀; April 24. Mount Capoto-an, 400–600 meters altitude; 1 ♂, 1 ♀; May 8.

Wing, ♂ 72, 75; ♀ 71, 72. Culmen from base, ♂ 16.5, 17; ♀ 17, 17 mm. Weight, ♂ 16.4, 16.4; ♀ 16.1, 16.2 grams.

Rare and found only inside original forest, frequently in the lowest tree story and undergrowth. It preferred the shadiest portions of the forest.

Both males had enlarged gonads.

**Ficedula basilanica samarensis** (Bourns and Worcester)

Collected previously by Whitehead and by Bourns and Worcester.

Matuguinao, 100–400 meters altitude; 2 ♂, 1 ♀; April 11–18.

Wing, ♂ 63.5, 65; ♀ 62. Culmen from base, ♂ 14.5, 15; ♀ 15 mm. Weight, ♂ 14, 14.2; ♀ 12.4 grams.

The species was rare and was found only among the lower branches of the lowest story and undergrowth of dense original forest.

One male had enlarged gonads.
Niltava rufigastra philippinensis (Sharpe)
Collected by Steere Exp. and by Bourns and Worcester.

Hypothymis azurea azurea (Boddaert)
Collected previously by Steere Exp. and by Bourns and Worcester.
Matuguinao, 100-400 meters altitude; 2 ♂, 1 ♀; April 9-13.
San Isidro, Matuguinao, 300-400 meters altitude; 4 ♀; April 25-29.
Mount Capoto-an, 400-600 meters altitude; 4 ♂, 3 ♀, 1 ♀ juv.; May 9-14.

Wing, ♂ (6) 63-67.5 (av. 65.6); ♀ (8) 62.5-65.5 (av. 64.1). Culmen from base, ♂ (6) 14.5-15.5 (av. 15.1); ♀ (8) 14-16 (av. 15.2) mm. Weight, ♂ (6) 10-11.9 (av. 11.1); ♀ (8) 8.9-13.4 (av. 11.1) grams.

Five males and one female had enlarged gonads. One female had an egg complete with shell, which was later broken when the bird was collected on April 29. One young bird taken on May 9 must have hatched from an egg that had been laid about the early part of March.

Hypothymis helenae (Steere)
Collected previously by Steere Exp., by Bourns and Worcester and by Whitehead.
San Isidro, Matuguinao, 300-400 meters altitude; 2 ♀; April 24-29.
Mount Capoto-an, 400-600 meters altitude; 2 ♂; May 11-15.

Wing, ♂ 65, 66; ♀ 60.5, 61.5. Culmen from base, ♂ 13, 13.5; ♀ 13, 13.5 mm. Weight, ♂ 9.9, 10.3; ♀ 9.2, 10.1 grams.

The birds are topotypes.
The species was rare and was found only in original forest, preferably in the lower two tree stories. It was often a member of mixed bird flocks that traveled about to feed.

Hypothymis coelestis Tweeddale
Matuguinao, 100-400 meters altitude; 1 ♂; April 20.
Wing, 73. Culmen from base, 16 mm. Weight, 13.6 grams.
First record of the celestial blue monarch from Samar.
Another rare flycatcher, although it is of wide distribution. It was found only inside original forest, preferably in the upper two stories of tree growth.
Terpsiphone cinnamomea cinnamomea (Sharpe)

Collected previously by Whitehead.

Mount Capoto-an, 400–600 meters altitude; 3 ♂, 1 ♀; May 6–15.
Wing, ♂ 84.5, 88, 92.5; ♀ 81.5. Culmen from base, ♂ 22, 23.5, 24; ♀ 21 mm. Weight, ♂ 21.2, 22.8, 23.1; ♀ 19.4 grams.

Two of the three males, which are in full adult plumage, have slightly more intense cinnamon color than two fully adult males from Cotabato and Davao, southeastern Mindanao, but slightly less intense than one topotypical male from Basilan and another fully adult male from Zamboanga Peninsula, western Mindanao. The central rectrices of the two Samar males are only 2 and 4 mm. longer than the next longest pair, but in the Cotabato and Davao specimens they are 6 and 4 mm. longer than the next pair. The Basilan male has the central tail feathers extending 6 mm. beyond the next pair, and the Zamboanga bird, 9 mm.

As far as our present specimens from Samar show, we place them with the Mindanao, Basilan and Sulu Archipelago form, cinnamomea.
All the males had enlarged gonads.

Family PACHYCEPHALIDAE. Whistlers.

*Pachycephala philippinensis apoensis* (Mearns)

Collected previously by Steere Exp., by Bourns and Worcester and by Whitehead.

Matuguinao, 100–400 meters altitude; 7 ♂, 2 ♀; April 7–22. San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂, 3 ♀, 1 ♀ immature; April 24–28. Mount Capoto-an, 400–600 meters altitude; 2 ♂, 2 ♀; May 6–15.
Wing, ♂ (10) 80–87 (av. 82.6); ♀ (7) 76–85 (av. 80.7) mm. Weight, ♂ (10) 20–23.8 (av. 22.3); ♀ (7) 20.2–23.5 (av. 21.6) grams.
The species was found only in original forest and was rare.
Nine males and three females had enlarged gonads.

Family SITTIDAE. Nuthatches.

*Sitta frontalis lilacea* (Whitehead)

Collected previously by Bourns and Worcester and by Whitehead.
Matuguinao, 100–400 meters altitude; 1 ♂; April 20.
Wing, 76. Culmen from base, 18 mm. Weight, 14.2 grams.
The single specimen is topotypical.
The species was rare and stayed only inside original forest.
The male collected had enlarged gonads.
Family CERTHIIDAE. Creepers.

*Rhabdornis mystacalis minor* Ogilvie-Grant

Collected previously by Whitehead and by Bourns and Worcester.

Matuguinao, 100–400 meters altitude; 7 ♂, 5 ♀; April 8–22. San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂; April 26. Mount Capoto-an, 400–600 meters altitude; 5 ♂; May 9–13.

Wing, ♂ (13) 76–79.5 (av. 77.8); ♀ (5) 75.5–79.5 (av. 77.2) mm. Width, ♂ (13) 23.9–26.7 (av. 25.3); ♀ (5) 22.4–31.5 (av. 26.4) grams.

The species fed in fruiting trees in the clearings and at the edges of original forest, sometimes as many as a dozen birds being found on one feeding tree. The birds in one tree came there in pairs or singly, from different directions, and, when disturbed, also flew in different directions.

Two males had enlarged gonads in April.

One female, collected on April 16, had a broken egg inside the oviduct.

*Rhabdornis inornatus inornatus* Ogilvie-Grant

Collected previously by Whitehead.

Matuguinao, 100–400 meters altitude; 6 ♂; April 10–20. Mount Capoto-an, 400–600 meters altitude; 8 ♂, 4 ♀; May 8–16.

Wing, ♂ (14) 84–90.5 (av. 86.1); ♀ (4) 85–86.5 (av. 85.7) mm. Weight, ♂ (14) 31.6–41.2 (av. 35.9); ♀ (4) 36.6–39 (av. 37.3) grams.

The species was fairly common in tall fruiting trees in original forest and even went out to feed on low fruiting trees in clearings adjacent to original forest. Sometimes about one dozen birds were seen feeding in the same tree, although they went there individually or in pairs, from various directions.

This species was met with in less cultivated areas than *R. mystacalis minor*.

Family DICAEIDAE. Flowerpeckers.

*Prionochilus olivaceus olivaceus* (Tweeddale)

Collected previously by Whitehead.

Matuguinao, 100–400 meters altitude; 3 ♂; April 8–14. Mount Capoto-an, 400–600 meters altitude; 9 ♂, 6 ♀; May 6–14.

Wing, ♂ (12) 52–57 (av. 54.9); ♀ (6) 51.5–55 (av. 53.3). Culmen from base, ♂ (12) 11–12 (av. 11.3); ♀ (6) 11–11.5 (11.2) mm. Weight, ♂ (12) 8.8–10.7 (av. 9.4); ♀ (6) 8.4–10.1 (av. 9.4) grams.
The species frequented the flowering and fruiting trees close to the edge of original forest and in clearings, including trees of all three stories. Occasionally, these birds fed on the low flowering and fruiting second growth trees in the abandoned clearings.

Four males and one female had enlarged gonads.

**Dicaeum hypoleucum pontifex** Mayr

Collected previously by Steere Exp., by Bourns and Worcester and by Whitehead.

Matuguinao, 100-400 meters altitude; 10 ♂, 1 ♂ immature, 15 ♀, 2 ♀ immature; April 10–21. San Isidro, Matuguinao, 300–400 meters altitude; 4 ♀, 1 ♀ immature; April 28–May 4. Mount Capoto-an, 400–600 meters altitude; 6 ♂, 5 ♀, 1 ♀ immature; May 6–14.

Wing, ♂ (10) 50.5–53 (av. 51.5); ♀ (10) 48–53.5 (av. 49.8). Culmen from base, ♂ (10) 13; ♀ (10) 12.5–13 (av. 12.8) mm. Weight, ♂ (10) 6.9–8.4 (av. 7.9); ♀ (10) 7.2–8.5 (7.7) grams.

The species was common and was often encountered at the edges of original forest, in second growth, and in clearings, feeding in flowering and fruiting trees.

Eight males and four females had enlarged gonads.

**Dicaeum bicolor inexpectatum** (Hartert)

Collected previously by Whitehead.

Mount Capoto-an, 400–600 meters altitude; 1 ♂; May 10.

Wing, 50. Culmen from base, 10 mm. Weight, 7.8 grams.

The species was rare. The single bird was taken in a flowering tree of the third story, at the edge of original forest close to a clearing.

The single male had enlarged gonads.

**Dicaeum australae australae** (Hermann) (*D. papuense* of authors)

Collected previously by Bourns and Worcester and by Whitehead.

Matuguinao, 100–400 meters altitude; 3 ♂, 1 ♂ immature, 3 ♀; April 11–15. San Isidro, Matuguinao, 300–400 meters altitude; 3 ♂, 3 ♀; April 27–May 4. Mount Capoto-an, 400–600 meters altitude; 4 ♂, 1 ♂ immature, 1 ♀, 1 ♀ immature; May 8–13.

Wing, ♂ (10) 52.5–56.5 (av. 55); ♀ (7) 50–54.5 (av. 52.2). Culmen from base, ♂ (10) 12–13 (av. 12.5); ♀ (7) 11.5–13 (av. 12.4) mm. Weight, ♂ (10) 7.9–9.1 (av. 8.7); ♀ (7) 7.9–9 (av. 8.4) grams.
The species was common among the flowering and fruiting trees in clearings and cultivated areas.

Eight males and four females had enlarged gonads. The three very young birds must have come from eggs laid in February and March.

**Dicaeum ignipectus bonga** Hartert

Collected by Whitehead.

**Dicaeum trigonostigma cinereigulare** Tweeddale

Collected previously by Steere Exp., by Bourns and Worcester and by Whitehead.

Matuguinao, 100–400 meters altitude; 16 ♂, 22 ♀; April 6–21.
San Isidro, Matuguinao, 300–400 meters altitude; 17 ♂, 10 ♀; April 26–May 4. Mount Capoto-an, 400–600 meters altitude; 2 ♂, 3 ♀; May 6–14.

Wing, ♂ (12) 48–52 (av. 49.9); ♀ (12) 47.5–50.5 (av. 48.8). Culmen from base, ♂ (12) 12–13 (av. 12.6); ♀ (12) 12–13 (av. 12.5) mm. Weight, ♂ (12) 6.4–7.5 (av. 7.2); ♀ (12) 5.9–7.9 (av. 6.9) grams.

A very common species. A dozen or more individuals would feed at the same time in one feeding tree, often a flowering or fruiting tree, high or low, growing in clearings and even in cultivated areas.

Seven males had enlarged gonads.

**Dicaeum pygmaeum pygmaeum** (Kittlitz)

Collected by Bourns and Worcester.

**Family NECTARINIIDAE.** Sunbirds.

**Anthreptes malacensis griseigularis** Tweeddale

Collected previously by Bourns and Worcester and by Whitehead.

Matuguinao, 100–400 meters altitude; 2 ♂, 2 ♀; April 16–20.
San Isidro, Matuguinao, 300–400 meters altitude; 3 ♂, 2 ♀; April 29–May 3. Mount Capoto-an, 400–600 meters altitude; 1 ♂; May 13.

Wing, ♂ (6) 62.5–64.5 (av. 63.4); ♀ (4) 57.5–58.5 (av. 58). Culmen from base, ♂ (6) 18.5–21 (av. 19.8); ♀ (4) 18–19.5 (av. 18.7) mm. Weight, ♂ (6) 11.4–13 (av. 12.2); ♀ (3) 10.5, 10.7, 10.8 grams.

The species was occasionally encountered in flowering trees inside original forest, in second growth and even in isolated trees in clearings and cultivated areas near a patch of forest.

Three males had enlarged gonads.
*Nectarinia sperata davaoensis* Delacour

Collected previously by Steere Exp., by Bourns and Worcester, by Whitehead, and by Bartsch.

Matuguinao, 100–400 meters altitude; 14 ♂, 13 ♀, 2 nestlings; April 6–17. San Isidro, Matuguinao, 300–400 meters altitude; 8 ♂, 1 ♂ immature, 4 ♀; April 25–May 4. Mount Capoto-an, 400–600 meters altitude; 1 ♂, 1 ♀; April 29–May 10.

Wing, ♂ (23) 48–53.5 (av. 50.9); ♀ (18) 46.5–49.5 (av. 48). Culmen from base, ♂ (22) 17.5–19 (av. 18.2); ♀ (18) 16–18 (av. 17.5) mm. Weight, ♂ (23) 5.9–7.5 (av. 6.7); ♀ (18) 5.6–7 (av. 6.3) grams.

Twelve males and one female had enlarged gonads.

**Nectarinia jugularis jugularis** (Linnaeus)

Collected previously by Steere Exp. and by Bourns and Worcester. Matuguinao, 100–400 meters altitude; 4 ♂, 6 ♀; April 6–22.

Wing, ♂ (4) 56.5–58.5 (av. 57.7); ♀ (6) 52–55 (av. 53.3). Culmen from base, ♂ (4) 21.5–22.5 (av. 22); ♀ (6) 19.5–22.5 (av. 20.7) mm. Weight, ♂ (4) 8.9–9.6 (av. 9.1); ♀ (6) 7–8.5 (av. 7.8) grams.

**Aethopyga pulcherrima pulcherrima** Sharpe

Collected previously by Steere Exp., by Bourns and Worcester and by Whitehead.

Matuguinao, 100–400 meters altitude; 2 ♂, 2 ♂ immature, 1 ♀; April 6–22. San Isidro, Matuguinao, 300–400 meters altitude; 8 ♂, 2 ♂ immature, 10 ♀, 1 ♀ immature; April 26–May 4. Mount Capoto-an, 400–600 meters altitude; 10 ♂, 1 ♂ immature, 3 ♀, 2 ♀ immature; May 10–16.

Wing, ♂ (20) 47.5–51.5 (av. 49.3); ♀ (14) 44.5–47.5 (46). Culmen from base, ♂ (20) 20–21.5 (20.6); ♀ (14) 19–21 (av. 19.7) mm. Weight, ♂ (20) 6.1–7.5 (av. 6.6); ♀ (14) 5.3–6.7 (av. 5.9) grams.

Samar birds are similar to Mindanao specimens.

The species was common and was met with inside original forest, in second growth, and in clearings wherever there were flowering trees. The birds liked to feed on the blossoms of the *abaca* and banana plants, both of the genus *Musa*. Wherever there were patches of *abaca*, either cultivated in cleared areas or as wild plants inside the forest, the species was likely to be seen in the vicinity.

Fourteen males and three females had enlarged gonads.
Aethopyga shelleyi bella Tweeddale

Collected previously by Steere Exp. and by Whitehead.

Matuguinao, 100–400 meters altitude; 1 ♂ adult, 1 ♂ subadult, 2 ♀; April 10–16. San Isidro, Matuguinao, 300–400 meters altitude; 2 ♂; April 27–May 4. Mount Capoto-an, 400–600 meters altitude; 1 ♂, 1 ♀ immature; May 8–16.

Wing, ♂ (4) 42.5–44 (av. 43.2); ♀ (2) 39.5, 41.5. Culmen from base, ♂ (4) 15.5–16.5 (av. 16); ♀ (2) 15, 15.5 mm. Weight, ♂ (4) 3.9–5.3 (av. 4.7); ♀ (2) 3.1, 4.2 grams.

The Samar males have very slightly more intense red on sides of head, neck and mantle, and average slightly fewer vermillion streaks on breast, compared to a male from Zamboanga Peninsula, Mindanao. These differences, however, are too slight to separate Samar birds from Mindanao specimens.

One male and one female had enlarged gonads. One young bird of the season, taken on May 8, must have hatched from an egg laid about the latter part of February.

Arachnothera longirostris flammifera Tweeddale

Collected previously by Steere Exp., by Bourns and Worcester and by Whitehead.

Matuguinao, 100–400 meters altitude; 1 ♂, 2 ♀; April 9–22. San Isidro, Matuguinao, 300–400 meters altitude; 4 ♂, 1 ♀; April 15–May 4. Mount Capoto-an, 400–600 meters altitude; 5 ♂, 2 ♂ immature, 3 ♀, 2 ♀ immature; May 6–15.

Wing, ♂ (10) 62–65 (av. 63.3); ♀ (6) 55–58.5 (av. 56.4). Culmen from base, ♂ (9) 30–34 (av. 32.1); ♀ (6) 28.5–30 (av. 29.1) mm. Weight, ♂ (10) 10.5–13.6 (av. 11.5); ♀ (6) 9.4–10.7 (av. 10.1) grams.

The species was found inside original forest at the edges and occasionally in neglected forest clearings with tree growths beginning to develop.

Six males and one female had enlarged gonads. One female, taken on April 9, had an egg with shell inside the oviduct.

Arachnothera clarea philippinensis (Steere)

Collected previously by Steere Exp. and by Whitehead.

Matuguinao, 100–400 meters altitude; 2 ♂, 2 ♀; April 14–20. San Isidro, Matuguinao, 300–400 meters altitude; 3 ♂, 2 ♀; April 25–May 4. Mount Capoto-an, 400–600 meters altitude; 1 ♂; May 8.
Wing, ♂ (6) 86–94 (av. 89.3); ♀ (4) 83–86 (av. 84). Culmen from base, ♂ (6) 37.5–41.5 (av. 39.4); ♀ (4) 38.5–42 (av. 40.4) mm. Weight, ♂ (6) 29.5–31.7 (av. 30.9); ♀ (4) 27.7–30.4 (av. 28.5) grams.

The birds are topotypical material. The race philippinensis is easily distinguished from either clarae or malindangensis by the naked forehead and heavy wash of green on under parts.

Four males and one female had enlarged gonads.

Family **ZOSTEROPIDAE.** White-Eyes.

**Zosterops everetti basilanica** Steere

Collected previously by Steere Exp., by Bourns and Worcester and by Whitehead.

Matuguinao, 100–400 meters altitude; 7 ♂, 4 ♀; April 10–21. San Isidro, Matuguinao, 300–400 meters altitude; 2 ♀; April 25–26. Mount Capoto-an, 400–600 meters altitude; 3 ♂, 2 ♀, 2 ♀ immature; May 6–8.

Wing, ♂ (10) 53–56.5 (av. 55); ♀ (8) 53–54.5 (av. 53.8). Culmen from base, ♂ (10) 13–14.5 (av. 14); ♀ (7) 13–14 (av. 13.6) mm. Weight, ♂ (10) 8.6–10.6 (av. 9.7); ♀ (8) 8.1–10.8 (av. 9.7) grams.

The species was found in original forest, second growth and clearings where there were trees still standing.

Eight males and four females had enlarged gonads.

Family **STURNIDAE.** Starlings.

**Aplonis panayensis panayensis** (Scopoli)

Collected by Bourns and Worcester.

**Sarcops calvus melanotus** Ogilvie-Grant

Collected previously by Steere Exp. and by Bourns and Worcester.

Matuguinao, 100–400 meters altitude; 12 ♂, 12 ♀, 1 ♀ immature; April 7–21. San Isidro, Matuguinao, 300–400 meters altitude; 3 ♂, 4 ♀; April 24–May 3. Mount Capoto-an, 400–600 meters altitude; 2 ♂, 1 ♀; May 10–12.

Wing, ♂ (10) 130–135 (av. 132.9); ♀ (10) 129–133 (av. 130.8). Culmen from base, ♂ (10) 30–32 (av. 30.8); ♀ (10) 27–30 (av. 28.9) mm. Weight, ♂ (10) 130–158.9 (av. 145.3); ♀ (10) 121.5–157 (av. 138.2) grams.

Samar birds have the characteristic blackish or black mantle which contrasts clearly with the gray on the other parts of the back.
One male and two females had enlarged gonads. Two males and two females had molted only the rectrices.

Family **PLOCEIDAE.** Weaver-Birds.

**Padda oryzivora** (Linnaeus)
Collected by Bourns and Worcester.

**Lonchura leucogastra manueli** Parkes
Collected previously by Whitehead.
San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂; April 24.  
Mount Capoto-an, 400–600 meters altitude; 3 ♂; May 13–14.  
Wing, (4) 50.5–53 (av. 51.6). Culmen from base, (4) 13–13.5 (av. 13.2) mm. Weight, (4) 10.6–12.2 (av. 11.2) grams.  
Two males had the gonads enlarged in May.

**Lonchura malacca jagori** (Martens)
Collected previously by Steere Exp. and by Bourns and Worcester.  
Matuguinao, 100–400 meters altitude; 1 ♀; April 10. San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂, 1 ♀; April 26–May 3.  
Wing, ♂ 50.5; ♀ 51.5, 53. Culmen from base, ♂ 13; ♀ 13, 13 mm. Weight, ♂ 11.5; ♀ 9.8, 13.6 grams.

Family **DICRURIDAE.** Drongos.

**Dicrurus hottentottus striatus** Tweeddale
Collected previously by Steere Exp. and by Bourns and Worcester.  
Matuguinao, 100–400 meters altitude; 3 ♂; April 13–May 18. San Isidro, Matuguinao, 300–400 meters altitude; 1 ♂, 1 ♀; April 25–May 2. Mount Capoto-an, 400–600 meters altitude; 1 ♂ immature, 5 ♀; May 9–14.  
Wing, ♂ (4) 136–139.5 (av. 137.9); ♀ (6) 132–137 (av. 134.8). Outer tail feathers, ♂ (4) 89–103 (av. 96); ♀ (6) 92.5–102 (av. 97.2). Central tail feathers, ♂ (4) 86.5–98.5 (av. 93); ♀ (6) 89–103 (av. 96). Depth of forking, ♂ (4) 2–4.5 (av. 3); ♀ (6) 0.5–3.5 (av. 1.66). Culmen from base, ♂ (4) 32–35.5 (av. 33.5); ♀ (6) 31–33.5 (av. 32.6) mm. Weight, ♂ (3) 66.5, 72.6, 73.4; ♀ (6) 63.2–76.3 (av. 69.6) grams.  
The Samar birds are inseparable from Mindanao and Bohol specimens. (For our comment on the validity of *D. h. samarensis* Vaurie, see the discussion on *D. h. striatus*, page 360.)
Family **ORIOLIDAE.** Orioles.

**Oriolus chinensis chinensis** Linnaeus

Collected by Steere Exp.

**Oriolus xanthornotus samarensis** Steere

Collected previously by Steere Exp., by Bourne and Worcester and by Whitehead.

- Matuguinao, 100–400 meters altitude; 1 ♂; April 21. Mount Capoto-an, 400–600 meters altitude; 1 ♂; May 9.

- Wing, 116, 117. Culmen from base, 26, 26 mm. Weight, 45.7, 48.3 grams.

Rare and found only inside original forest, frequently perching among the top branches of the tallest trees, hence difficult to locate from the ground.

Both males had enlarged gonads.

Family **CORVIDAE.** Crows.

**Corvus macrorhynchus philippinus** Bonaparte

Collected previously by Steere Exp. and by Bourne and Worcester.

- Matuguinao, 100–400 meters altitude; 2 ♀; April 6–12.

- Wing, 288, 301. Culmen from base, 60, 64.5 mm. Weight, 430.3, 446.9 grams.

**Corvus enca samarensis** Steere

Collected previously by Steere Exp. and by Bourne and Worcester.

- Matuguinao, 100–400 meters altitude; 2 ♂; April 11. Mount Capoto-an, 400–600 meters altitude; 2 ♂, 1 ♀, 1 ♂ immature, 1 ♀ immature; May 10–14.

- Wing, ♂ (5) 214–240 (av. 228.1); ♀ (1) 227. Culmen from base, ♂ (5) 51.5–55 (av. 52.7); ♀ (1) 52 mm. Weight, ♂ (4) 235.2–254.7 (av. 241.7); ♀ (1) 221.6 grams.

The species was found only in the immediate vicinity of large tracts of original forest. Occasionally it was seen at the edge of a clearing in well-forested areas but never far from original forest.
Comments on Special Species

Gorsachius goisagi (Temminck)

In addition to the four December Siquijor specimens (wing, ♂ 257, 266; exposed culmen, ♂ 40, 37 mm.), we have a female from Mindanao (Feb. 6, 1947) and one from Negros (Nov. 27, 1953) (wing, 251, 261; exposed culmen, 36, 37 mm.). As there has been some confusion as to plumages, the following notes are given. The males are similar, with a blackish chestnut or dull black crown (not bluish-black), no pronounced crest, and with a brownish back. The females differ from the males chiefly in the upper parts (crown, hind neck, and back), which are nearly uniform chestnut brown; the axillaries are barred black and rufous in both sexes.

The male and female of the related G. melanolophus have a blue-black crown, with a black crest that may be 55 mm. long. The immatures are quite different—crestless, with whole upper parts blackish, the back sparingly vermiculated with grayish, and with conspicuous whitish spots in neck, scapulars, and wing coverts. In any plumage the diagnostic character is that goisagi has the axillaries barred black and rufous, while melanolophus has them barred black and white. Also goisagi has a shorter, stouter bill, a longer wing, and always lacks a crest. Our specimens of melanolophus from Ticao (May 15, 1902) and Mindanao (June 18, 21, 1948) measure: adult ♂, wing, 230; culmen, 44; immatures, wing, 228, 231; culmen, 40, 42 mm.

It is probable that goisagi is only a winter visitor to the Philippines from its breeding range in Japan.

Gallus gallus Linnaeus

We have already published a preliminary note on the relationships of the jungle and domestic fowl in the Philippines (1958, Condor, 60: 138–139). While our data are based largely on casual observations rather than systematic recordings, the casual observations of Rabor have been made during many years of work in the Philippines. When we were together in the islands we did not realize the possibilities presented by the two strains of fowl, Gallus gallus, living on the same island; but discussing it later, we realized that the implications
are of considerable theoretical interest in regard to distribution, colonization, and overlap of closely related forms. Questions involving all these are continually arising when studying Philippine birds.

The wild jungle fowl of the Philippines is of the subspecies Gallus g. gallus L. (otherwise found in parts of Indochina and eastern Siam) and ranges throughout the Philippines on large and moderately small islands (McGregor, 1909, p. 14), being absent, apparently, on very small islands. An examination of 15 males from scattered localities from Palawan and Luzon to Mindanao indicates that only moderate individual variation exists, about as in Indochinese birds. The jungle fowl lives in original forest, extensive bamboo areas, and forest edge, coming out into glades, clearings, and fields adjacent to the forest to feed, morning and evening. At night it roosts in forest trees, and it makes its nest on the ground in the forest. It is a wild, shy bird, difficult to observe and to shoot. (We realize that this and some of the following do not agree completely with McGregor’s observations.)

The domestic fowl of the Filipinos is also widely spread through the Philippines. Some are very similar to Gallus g. gallus, with a black and red male and a brown hen, but are larger and coarser, and with a larger comb and usually white (not gray) legs. In posture and voice there are also differences: the tail is carried higher, and the crow of the male is longer. This bird lives about Filipino houses where it is usually fed once a day. It ranges into nearby fields, sleeps in trees by the houses or on perches under the houses; nests are usually arranged for it, though some lay in nests on the ground in shrubbery near houses. These domestic birds are very tame, though sometimes difficult to catch by hand.

Chicken-raising is rather casual in the less settled parts of the Philippines. Most of the care is the once-a-day calling and feeding. Each year a small farmer usually starts with a cock and a few hens. From these he expects a dozen or so fowls which will be used to help feed the neighbors who come to help in the annual cooperative event (bayani) of preparing the rice fields for the new crop.

Formerly, at least, more attention was paid to having fighting cocks in the outlying districts, and it is said that wild birds were sometimes snared and kept tethered to sire a cross-breed generation which provided valued fighting birds. The wild-caught birds never became domesticated; the offspring was as tame as the other domesticated birds. The desirable features of the wild birds are quickness and agility. The fighting cocks receive much handling and special
feeding. Perhaps this has had an effect on the composition of the early Filipino domestic fowl. In recent years foreign breeds, notable for size and a variety of coloring, have become popular, and these, too, have been spread widely through the islands, influencing the small farmers’ flocks.

Thus, aside from appearance and posture, we have two quite distinct strains of fowl: the jungle fowl, a shy bird of the forests and adjacent fields; and the domestic fowl, a very tame bird of dooryards and immediately adjacent fields.

Interbreeding can take place, as in the intentional crossings mentioned above. It is also possible where farms are close to forests or in forest clearings. Once, on Palawan, Rabor was shown a jungle fowl nest back of a house in a clearing. The hen foraged with the domestic hens, but when disturbed by a person would fly quickly to the nearby forest. This suggests that a hen of one strain may join the “harem” of a cock of the other strain.

But outstanding characteristics of the Gallus populations in the Philippines are that there are no half-wild birds and no birds that make their headquarters in the shrubbery and second growth. They are either timid forest birds or fearless dooryard birds.

That this is not entirely a matter of conditioning is shown by the wild males used in breeding fighting cocks, which never become tame enough to allow their liberty. Further, in 1949, in an interior forest of Negros, Rabor found a clearing which a farmer had deserted in 1945. It was heavily grown to shrubbery, but a number of domestic fowls had evidently been left by the farmer, and the survivors of these, or more likely a few descendants, still lived in the overgrown clearing. Too wild to catch by hand, they were easily shot as they walked about, their behavior in marked contrast to that of jungle fowl. Their color was still that of mixed domestic breeds.

Wildness and tameness of different strains of turkeys have been demonstrated as heritable characters (Leopold, 1944, Condor, 46: 133–197), and we are justified in concluding that tameness vs. wildness and preference for forest vs. preference for dooryards are both heritable traits in the fowl. For a discussion of selective factors that could be involved and their operations, see Leopold’s (op. cit.) excellent discussion on the subject in regard to turkeys.

The best evidence we have on local distribution of Gallus comes from Siquijor, just south of Negros. It is well settled, but it has poor soil and little water; farms are scattered and each has chickens. Parang cultivation, with fields left in second growth for years, is com-
mon, as are lines of trees, second growth and small groves in waste land or pastures; but no fowl make their headquarters here, nor do they range into this second growth when it is far from farm or forest. There are two patches of forest on Siquijor: one of 400 hectares on fairly level ground facing the sea near Maria with no fowl living there; one of 500 hectares on rough, hilly land five kilometers from the sea, near San Juan, with some jungle fowl living there. Both forests have farms, with domestic fowls, near their margins.

The over-all distribution of Gallus gallus seems to be as follows: from the foothills of the Himalayas in India to Indochina and south China and southward to the Malay Peninsula, Sumatra, and Java. Wild jungle-fowl-like populations occur in the Philippines, the Celebes and certain Lesser Sunda Islands (Stresemann, 1939, Jour. f. Orn., 87: 413; 1942, 89: 102), with more or less mixture with recent domestic breeds in Micronesia (Baker, 1951, Univ. Kansas Publ. Nat. Hist. Mus., 3: 114), and in islands east of New Guinea. In Polynesia there were wild fowl which earlier were apparently much like jungle fowl, but more recently, since 1840, they show an admixture of modern domestic breeds (Ball, 1933, Bishop Mus. Bull., 108: 1–121; Delacour, 1951, Pheasants of the world, p. 107). From the literature there may be some half-wild, mixed populations in southern Asia (Beebe, 1926, Pheasants, their lives and homes, 1: 198).

The domestic fowl has been raised for about 4000 years by the Chinese, who credit its homeland as India. Now the distribution of the domestic fowl is nearly co-extensive with that of man, whatever his cultural status, in tropical and temperate climates (Beebe, op. cit., pp. 238–242). One exception is New Guinea, where on three Archbold expeditions Rand found most of the natives without domestic fowl.

In its homeland in Asia the jungle fowl meets with many other fowl-like birds (pheasants, etc.) and presumably meets considerable interspecific competition; predators also are abundant there. Yet no wild population has developed in some areas where the domestic fowl is extensively raised and cared for in a casual manner: Madagascar, Africa, tropical America (Gilmore, 1950, Smithson. Inst., Bur. Amer. Eth., Bull. 143: 343–344).

The domestic fowl are probably all descended from the red jungle fowl, Gallus gallus of India, and probably the domestic fowl are all more closely related phylogenetically than they are to the ancestral jungle fowl. Only in Polynesia do wild fowl show many obvious traits of domestic breeds.
Evidently the distinctiveness of jungle vs. domestic fowl is not the same everywhere, and evidently the ability to revert to a wild condition or to produce wild-living populations is not widespread in the domestic fowl.

From the present gap between the jungle and domestic fowl in the Philippines it seems probable that each represents a separate invasion or introduction of stocks already distinct, that of the jungle fowl long before that of the domestic fowl.

It is not impossible that the jungle fowl colonized the Philippines naturally. It belongs to the subspecies Gallus g. gallus, that also lives in Indochina and Siam. Its absence from Borneo, a logical part of one of its possible colonizing routes, is not conclusive evidence against natural colonization, for there are other species of spotty distribution. However, it is possible that Malays have introduced the original wild birds, and later domestic birds.

The domestic and jungle fowl are conspecific, and in the Philippines they are equivalent to two subspecies kept apart by habitat preferences. The fact that one has been created by man does not affect their reality. Though hybridization occurs, there are no intermediate populations, even where the two forms live close together on the same island. Evidently they are more widely separated than are many intergrading continental subspecies.

If the actual status of the two forms in the Philippines were not so well known, it would be possible to mistake them for sibling species with similar ranges but different habitat preferences. One might even deduce that their ranges were mutually exclusive—that the area on an island occupied by one form could not be occupied by the other because of the presence of the first. However, this is not so; the controlling factor is habitat preference, and there seems to be no competition between the two forms in the Philippines.

On Siquijor, while one dooryard and a surrounding acre or so of a Philippine farm form a habitat large enough to maintain a population of domestic fowl, a forest of 400 hectares on fairly level ground facing the sea is not large enough to support a population of jungle fowl but a forest of 500 hectares on broken, hilly ground is large enough to support one. In each case domestic fowl live near the edges of the forest, and their presence is of no effect in either case. This may be a measure as to the size of the island on which jungle fowl can live. It is noteworthy that they have not been found on many very small Philippine islands on which collecting has been done.
The jungle fowl and the domestic fowl in the Philippines seem to qualify as ecological races. The concept of ecological races has been proposed a number of times, but has met strong opposition (see Mayr, 1947, Evolution, 1: 263–288, and references therein). Despite the strong influence of man on the fowl of the Philippines, the situation seems to demonstrate how ecological speciation could occur.

**Poliolimnas cinereus ocularis** (Sharpe)

This white-browed rail of the Philippines, the Celebes and Micronesia has gone under two names in recent years. *P. c. collingwoodi* Mathews, 1926, has been used by Peters (1934, Check-list of Birds of the World, 2: 198), Hachisuka (1932, The Birds of the Philippine Islands, 1: 235), and Delacour and Mayr (1946, Birds of the Philippines, p. 64). *P. c. ocularis* Ingram, 1911, has been used by Riley (1925, Proc. U. S. Nat. Mus., 64, Art. 16, p. 21) and Stresemann (1941, Jour. f. Orn., 89: 36).

The pertinent history of the names is as follows:

1. "The white eye-browed rail, *Ortygometra ocularis*, a. b. Philippine Islands.—From Mr. Cumming’s collection,” G. R. Gray, 1844, List Bds. Brit. Mus. Grallae, etc., p. 119. This name is here a *nomen nudum*, for neither a vernacular name nor the citation of museum specimens is adequate to validate it.

2. *Ortygometra ocularis* Sharpe, 1894, Cat. Bds. Brit. Mus., 23: 130. Type locality Philippines. The name is cited in the synonymy of *Poliolimnas cinereus* as a *nomen nudum* from Gray. The name would date from Sharpe, as a synonym of *P. cinereus*, type locality Java, and be unavailable for the race from the Philippine, Celebes, etc., except for the following fact: Sharpe (p. 133) designates two types of *ocularis* from the Philippines and describes them (p. 132) as "... more grey on the foreneck and breast than individuals from other localities, ..." The fact that Sharpe did not accept the form is not important. He did introduce the name with a diagnosis, and even designated types.

3. *Porzana cinerea ocularis* Ingram, 1911, Bull. Brit. Orn. Cl., 29: 22. Type locality Philippines. Ingram diagnosed the subspecies, using much the same characters as Sharpe had pointed out, and stated he was using Gray’s *nomen nudum*.

Obviously *ocularis* Sharpe, 1894, is the first valid appearance of the name. Ingram, 1911, simply redescribed *ocularis* Sharpe, 1894, accepting rather than rejecting it, his name being both a synonym and a homonym of Sharpe's name. If Sharpe's name be rejected, Ingram's is still a homonym, and Mathews' name would have to be used. However, the case for the use of *ocularis* Sharpe seems clear.

**Kakatoe haematuropygia** (Müller)

The race *K. h. megargori* Hachisuka, 1930, was described from Polillo on the basis of a single specimen, wing 225 mm., and characterized as larger than birds from the rest of the Philippines. Peters (1939, Bull. Mus. Comp. Zool., 86: 87) has already questioned the validity of the race.


From this it is seen that there seems to be geographic variation in size (largest on Siquijor and Culion), but any separation of subspecies on size is impossible. In part large size correlates with small island populations, but only in part.

**Tanygnathus lucionensis** (Linnaeus)

There is considerable geographical variation in this species but the number of subspecies to be recognized is not clear. Until 1952, most textbooks recognized no subspecies. In 1953 Salomonsen (Vidensk. Medd. Dansk naturh. Foren., 115: 210–222) reviewed the species and recognized nine subspecies. These fall into two easily recognized groups: blue-backed (Luzon, Mindoro and Polillo); and green-backed (Palawan and central islands southward). The blue-backed form is separable into two subspecies, *T. l. hybridus* of Polillo and *T. l. lucionensis* of Luzon and Mindoro, as Salomonsen postulated. The green-backed birds Salomonsen divided into seven subspecies. He says that the main reason for recognizing some of these races on very slender grounds is their geographical distribution: "It would be quite absurd to unite populations from Palawan and Mindanao, or from Talaut Islands and Siquijor, although they look very
similar, when they are separated by large areas inhabited by highly different subspecies.” In other words, if the geographical distribution of the populations containing certain characters was different, several well-marked races could be recognized; but this is not the case. The same characters repeat themselves in isolated areas. The distribution of characters approaches a checkerboard pattern. This is a pattern that repeats itself in species after species in the islands of the Philippines when slight inter-island variation is being considered.

There are three solutions: one is to name a subspecies for every square of the checkerboard, on however slender grounds (this is Salomonsen’s solution); another is to group the most similar in subspecies, with an interrupted distribution (giving three or four subspecies; as Salomonsen points out, this is an absurd solution); and the third is to enlarge the concept of the subspecies to include the many varying populations. The third is the concept we follow here; we group all of Salomonsen’s seven forms of green-backed birds under the oldest name, T. l. talautensis.

Ninox philippensis centralis Mayr

Our Siquijor birds are topotypes, and Bohol (2) and Negros (9) birds are the same. This race is closely related to proxima of Ticao and Masbate and philippensis of Luzon (and probably Samar and Leyte). The slightly rufous wash on the upper parts of our two Luzon birds, and the darker rufous washed upper parts of our single Ticao bird as mentioned in the original descriptions perhaps justify the recognition of philippensis and proxima, though the difference in measurements postulated does not seem to hold, as the following measurements of our material show:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luzon:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bataan</td>
<td>160</td>
<td>76</td>
</tr>
<tr>
<td>Abra Prov.</td>
<td>181</td>
<td>93</td>
</tr>
<tr>
<td>Ticao</td>
<td>175</td>
<td>82</td>
</tr>
<tr>
<td>Negros</td>
<td>159, 163, 165, 75, 77, 82, 172, 176</td>
<td>87, 88</td>
</tr>
<tr>
<td></td>
<td>166</td>
<td>76</td>
</tr>
<tr>
<td>Siquijor</td>
<td>171, 177</td>
<td>88, 92</td>
</tr>
<tr>
<td></td>
<td>176</td>
<td>87</td>
</tr>
<tr>
<td>Bohol</td>
<td>175, 179</td>
<td>83, 85</td>
</tr>
</tbody>
</table>

Batrachostomus septimus Tweeddale

outlined, based on size. As no two birds in our series are alike in color, and as four islands are represented, introducing the possibility of geographical variation, only general comments can be made. Both sexes have gray brown and red brown types of plumage. Sexual difference in size is slight. The sexual dimorphism in color, the darker and duller scapulars of the female commented on by Stresemann, is evident but not very pronounced in the Samar and Bohol birds.

The three races are:

(1) *B. s. septimus* Tweeddale, 1877; type locality Zamboanga, Mindanao. The largest subspecies (Stresemann’s measurements) are (Basilan and Mindanao): wing, ♀ 153, 163, 165, 171; ♂ 156, 156, 157, 158, 164, 169. One female collected by Rabor in Mindanao: 160.

Rabor’s collections (1938, Phil. Jour. Sci., 66: 23) extended the range to Leyte (wing, 160), and his recent collecting extended it to Samar (wing, ♀ 160; ♂ 148) and Bohol (wing, ♀ 154; ♂ 153).

(2) *B. s. menagei* Bourns and Worcester, 1894; type locality Panay. The intermediate-sized race: wing, ♀ 139; ♂ 140 (Stresemann). Our new material (Negros) measures: ♀ 141; ♂ 138 mm.

(3) *B. s. microrhynchus* Ogilvie-Grant, 1895; type locality Mount Data, Luzon. The smallest subspecies (northern Luzon) measures: wing, ♀ 128, 131; ♂ 129 (Stresemann).

**Halcyon coromanda** (Latham)

Though we have recorded our discovery that this bird eats snails after breaking the shells against a rock (Silliman Jour., 1 (1954), pp. 83–85), it seems advisable to summarize the data here.

In the forests of Siquijor, a large, flat, coiled land snail was common on the branches and stems of the undergrowth. Also we continually found little heaps of empty snail shells, sometimes two dozen or more. They were always by a rock and looked as if they had been broken against it. Each shell had the side broken, apparently so that the snail’s body could be extracted.

Inquiry of the local people revealed that they thought a bird was responsible and the old man of the village of Lilo-an, with whom we lodged, identified specimens of the ruddy kingfisher as the bird responsible. When we examined the stomach contents of this kingfisher, we found snail bodies in them. When collecting snails on Sibuyan Island Bourns and Worcester found that the ruddy kingfisher (*H. c. major*) ate the bodies from their cleaned specimens, when they threw out the flesh. In India, where the bird also occurs, it is
said to eat land snails among other things like lizards and insects, and probably it beats the larger, more active items into submission against a branch.

The circumstantial evidence is strong that this bird picks up the land snail in its bill, carries it to a favorite rock on the forest floor, and with movements of its head beats the snail against the rock until the side of the shell caves in. Then the kingfisher extracts the snail’s body and swallows it. The same stone is used time after time, and a heap of shells accumulates. This recalls the song thrush of Europe and its anvil against which it breaks snails, and the gold-crested black bower-bird (Archboldia), which has a similar habit.

Mayr (1945, Zoologica, 30:110, 111) raised a number of questions about the taxonomic status of this species, and additional material from the Philippines and the aid of Mr. H. Deignan of the United States National Museum enable us to answer these in part.

There are three subspecies occurring in the Philippines, as follows:

1. *H. c. major* Temminck and Schlegel, which breeds from Korea to Japan. This is a large, pale bird with little purple or lilac wash on either upper parts or breast. Of this race we have two from Japan (wing 120, 125 mm.), an adult from Mindoro (April 7; wing 121 mm.), and another from Calayan (Sept. 30; wing 116). Deignan writes us that in the United States National Museum there are specimens of major from Calayan, Luzon, Masbate, Sibuyan and Mindanao. Apparently it is only a winter visitor. Deignan also writes us that he finds the type and paratypes of *H. c. ochrothorectis* Oberholser, 1915, type locality Masbate, inseparable from major, of which he has a large series from the main Japanese islands.

2. *H. c. bangsi* (Oberholser), type locality Ishigaki Island, Riu Kiu Islands, appears to be a valid race, of which Chicago Natural History Museum has eight specimens from Siquijor taken in December and January. Wing, ♂ 120, 127; ♀ 119–126 mm.

It was described as being like ochrothorectis [=major] but, among other differences, darker, particularly below, with upper parts and breast more brightly suffused with magenta. Mr. Deignan compared three of our Siquijor specimens and found that they fell within the range of variation of his four Okinawa birds (bangsi), which series stood out strongly from a series of major from the main Japanese islands in being richer and darker in color. This race is large, like major, but in color is intermediate between major and minor.
The rarity of this form in Philippine collections contrasts with the seven specimens of it taken in two months on Siquijor and with the fact that in several years of active study on Negros Rabor has found only two individuals of this species. However, we have no evidence that it is other than a migrant, and whether some of the birds are resident still needs to be determined.

3. *H. c. minor* Temminck and Schlegel, type locality Borneo, is characterized by its smaller size and its darker coloration above and below; its heavier wash of purplish on the back and breast; and its smaller size compared with *bangsi*.

Our only example of this race is one from Borneo (wing, male adult, 104 mm.). Its occurrence in the Philippines seems to rest on an immature female (wing, 102) recorded from Tawi Tawi by Oberholser (1915, Proc. U. S. Nat. Mus., 48: 651), another female (wing, 106) taken July 5, 1940 (Manuel, 1941, Phil. Jour. Sci., 74: 375), also from Tawi Tawi, and an immature specimen from Palawan with "very rich coloring on the back," in the British Museum, recorded by Hachisuka (1934, Bds. Phil. Isl., 2: 139).

**Eurystomus orientalis cyanocollis** Vieillot


There is geographical variation in size in this Philippine island bird, as the following measurements show:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Culmen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luzon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>♂ (4)</td>
<td>183, 185, 191, 199</td>
<td>31, 31, 32, 35</td>
</tr>
<tr>
<td>♀ (3)</td>
<td>185, 185, 192</td>
<td>31, 31, 31</td>
</tr>
<tr>
<td>Mindoro</td>
<td></td>
<td></td>
</tr>
<tr>
<td>♂ (3)</td>
<td>188, 195, 197</td>
<td>31, 32, 32</td>
</tr>
<tr>
<td>♀ (1)</td>
<td>197</td>
<td>32</td>
</tr>
<tr>
<td>Palawan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>♀ (3)</td>
<td>187, 197, 197</td>
<td>34, 34, 35</td>
</tr>
<tr>
<td>Negros</td>
<td></td>
<td></td>
</tr>
<tr>
<td>♂ (3)</td>
<td>188, 191, —</td>
<td>30, 30, 34</td>
</tr>
<tr>
<td>♀ (4)</td>
<td>182, 187, 189, 191</td>
<td>30, 30, 34, 35</td>
</tr>
<tr>
<td>Siquijor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>♂ (1)</td>
<td>180</td>
<td>32</td>
</tr>
<tr>
<td>♀ (1)</td>
<td>180</td>
<td>30</td>
</tr>
<tr>
<td>Bohol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>♂ (6)</td>
<td>186, 186, 189, 190, 192, 193</td>
<td>31, 32, 33, 33, 34</td>
</tr>
<tr>
<td>♀ (6)</td>
<td>189, 189, 190, 194, 195, 195</td>
<td>31, 32, 32, 32, 33, 34</td>
</tr>
<tr>
<td>Samar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>♂ (6)</td>
<td>178—191 (av. 186.6)</td>
<td>33—35 (av. 34.3)</td>
</tr>
<tr>
<td>♀ (4)</td>
<td>183, 189, 189</td>
<td>33—34.5 (av. 33.8)</td>
</tr>
<tr>
<td>Mindanao</td>
<td></td>
<td></td>
</tr>
<tr>
<td>♂ (8)</td>
<td>176—185 (av. 182.2)</td>
<td>29—33 (av. 31)</td>
</tr>
<tr>
<td>♀ (2)</td>
<td>171, 175</td>
<td>31</td>
</tr>
</tbody>
</table>

I hesitate to use the average differences to set up any additional subspecies.
Chrysocolaptes lucidus (Scopoli)

The species *C. lucidus* breaks up into seven sometimes strikingly distinct subspecies. In addition, in recent years one of them, *C. l. haematribon*, occupying Luzon and certain nearby small islands, has been divided into four subspecies on very slender grounds, as reviewed by Salomonsen (1952, Vidensk. Medd. Dansk naturh. Foren., 114: 349–351). These four are:

1. *C. l. ramosi* Gilliard (1949, type locality Sorsogon), from southern Luzon and presumably Marinduque. Characterized by small size. Wing, ♂ (3) 138.5–140, ♀ 144 (Gilliard), 145 (Chicago Natural History Museum). Chest more brownish.

2. *C. l. haematribon* Wagler (1827, type locality Bataan Province, central Luzon). Characterized by less brownish chest and larger size. Wing, ♂ 140–147, ♀ 137–144 (Gilliard); ♂ 138, 139, 139, ♀ 140, 141, 142, 142, 144 (Salomonsen); 143, 142 (Chicago Natural History Museum).

3. *C. l. montium* Salomonsen (1952; type locality Massisiat, Abra Province), from Mountain and Abra Provinces. Characterized by larger size compared with (2), and breast and abdomen slightly darker brown, with coarser and darker spots and bars. Wing, ♂ 142.5–150, ♀ 147.5, 148 (Gilliard); ♂ 145, 149, ♀ 151, 151 (Salomonsen); ♂ 154, ♀ 148 (Chicago Natural History Museum).

4. *C. l. grandis* Hachisuka (1930; type locality Polillo), known only from Polillo. Characterized by larger size compared with (3), the breast much darker brown and the spots on the breast suffused with olive brownish. Wing, ♂ 153, 154, ♀ 151, 152, 152, 152, 155 (Salomonsen).

When Salomonsen described *montium* he thought *ramosi* of Gilliard would probably prove to be a synonym of *haematribon*, while Gilliard had considered specimens of what Salomonsen considered *montium* as inseparable from *haematribon*. It is obvious they are all very close. We have the following material: *montium*, 2 (topotypical); *haematribon*, 2 (topotypical); *ramosi*, 1 (Marinduque). In color, because of individual variation in this small series, the three supposed races cannot be separated readily. The summary of the measurements, given above, indicates no clear cut differences but does indicate that northern birds average larger, with Polillo birds averaging larger again.

The differences in color, as described, form no cline; those in size form a cline of increasing size from south to north and to Polillo. Judged from the condition in some other species in the Philippines,
a series of micro-subspecies may be involved, and a study of them as such, without formally naming them, would be of interest. Possibly a name for each half of the cline (*haematribon* and *ramosi*) would be advisable rather than the recognition of three vaguely defined races. *C. l. grandis* we also recognize.

Two other subspecies are Mindanao and Basilan forms. Since Hachisuka's *The Birds of the Philippine Islands* (vol. II, 1934) appeared, the birds of this species from Mindanao have been considered as one subspecies under the name *C. l. lucidus*, and those from Basilan as another, *C. l. maculiceps*. Present material shows that two subspecies occur in Mindanao, one of which also occurs in Basilan, necessitating some rearrangement in the nomenclature and in the diagnosis of the Mindanao forms as follows:

**Chrysocolaptes lucidus lucidus** (Scopoli)

*Picus lucidus* Scopoli, 1786 (not 1896, as sometimes quoted), Del. Flor. et Fauna, Insbr., 2: 89—type locality Zamboanga, Mindanao.


Sixteen specimens from Mindanao, Zamboanga, examined. These specimens agree in having the feathers of the upper back, lesser wing coverts, scapulars, and inner secondaries golden, heavily edged or washed with crimson or dark red, contrasting with the quite different golden, orange-washed or -margined feathers of the mantle of east Mindanao birds. From descriptions, Basilan birds, of which we have seen no specimens, are the same. In any case there is no doubt of the application of Scopoli’s name, for it is based on Sonnerat’s description and plate, and when Sonnerat was in the Philippines he visited Mindanao at Zamboanga. Sharpe’s name appears to be a synonym.

It should be noted that Hachisuka’s (op. cit., p. 243) diagnosis of this subspecies, copied from McGregor, is correct for Zamboanga birds, and also for what he includes under *maculiceps*.

On the upper parts this race seems to be intermediate in character (though not geographically) between the golden and orange-backed *montanus* of eastern Mindanao and the solid red-backed *rufopunctatus* from Samar, Leyte, Panaon and Bohol. All have the under parts from breast to abdomen dark with pale spots.

**Chrysocolaptes lucidus montanus** (Ogilvie-Grant)

Seven specimens from Mindanao, Davao, examined. These are fairly uniform in having the mantle golden, with at most orange margins to some of the feathers. Compared with the sixteen specimens from Zamboanga, they are conspicuously different in lacking the crimson of the back, wing coverts, scapulars, and secondaries.

Ogilvie-Grant's name, from his remarks (see also Ibis, 1905, p. 485) and from our specimens, in part topotypical, is applicable to this well-characterized race. His recording of an immature female of C. lucidus from Davao probably refers to a dark red variant of this form. Hachisuka, with Davao birds before him, considered montanus a synonym of lucidus because the type locality of the latter was taken as Mindanao, and he considered all Mindanao birds to be the same. Authors since then have followed Hachisuka.

It is interesting that this form of eastern Mindanao, lacking crimson on the back, should be separated by crimson-backed forms from the golden-green-backed form in Palawan.

**Irena cyanogaster** Vigors

The recently collected material from the east central islands permits a re-evaluation of the races of this species, which are as follows:

1. *I. c. cyanogaster* Vigors, 1831; type locality Manila. A very distinct race on the basis of the blue upper back, in which it contrasts with all the other races; lower breast and abdomen heavily washed with blue.
   Specimens: Luzon, 2.

2. *I. c. ellae* Steere, 1890; type locality Samar. Like *cyanogaster* but male with mantle velvety black; whole under parts velvety black, slightly tinged blue on abdomen.
   Specimens: Samar, 13; Bohol, 18.

3. *I. c. hoogstraali* Rand, 1948; type locality Mindanao. Like *ellae* but male with a distinct blue wash over lower breast and abdomen.
   Specimens: Mindanao, 10 (Davao, 2; Zamboanga, 8).

4. *I. c. melanochlamys* Sharpe, 1877; type locality Basilan. Like *hoogstraali* but male with a more distinct and more purplish blue wash on breast and abdomen; iridescent blue of crown and upper tail coverts more purplish-tinged, and shiny blue of upper tail coverts less extensive, being restricted to the tips of the longer tail coverts, not extending nearly to the rump.
   Specimens: Basilan, 3.
Pycnonotus urostictus Salvatori

From the literature this species seems to be darker and with less white below in specimens taken in the northern part of the range, paler and with more white in the under parts and more olive above in those from the southern part of the range. Three races are currently recognized: *urostictus*, type locality Luzon; *philippensis*, type locality Dinagat; and *basilanicus*, type locality Basilan.

Though we have two Luzon, two Polillo, two Bohol, one eastern Mindanao, and one Basilan bird, our only series comes from western Mindanao (Zamboanga) and from Samar. The difference between these is not great and consists chiefly in the more olive, less brown tinge to the upper parts, which is about at the level used to characterize lightly marked subspecies. Lacking adequate material from the ends of the range of the species, we provisionally accept the three named races as currently understood.

Hypsipetes philippinus Forster

This is *Microscelis philippensis* and *M. gularis* of authors (see Rand and Rabor, 1959, Auk, 76: 103). Earlier we recognized five races, but from a consideration of the recently collected material we now recognize only four, as follows:

(1) *H. p. philippinus* Forster, 1795; type locality Luzon. Wing, $\sigma^+$, 98–107 mm.; throat and upper breast washed with rufous and with distinct pale shaft streaks to the feathers; ear coverts streaked. Wear and fading are considerable in this species, making it difficult to get exactly comparable material. Worn specimens are paler and brighter on the throat. Though Mindanao birds seem slightly duller on the throat than do Luzon birds, Cebu birds darker and Bohol birds paler, the difference is not great and it seems impractical to recognize *saturator* Hartert, 1916, type locality Davao, Mindanao, or to set up other races in the range outlined above.

Range: Luzon and through the eastern central islands to eastern Mindanao.

Specimens: Series from Luzon, Polillo, Samar, Cebu, Bohol, and eastern Mindanao.

(2) *H. p. guimarasensis* Steere, 1890; type locality Guimaras. Wing, $\sigma^+$, 109–115; like *philippinus* but larger, and with throat duller rufous. The dullness of the throat is approached by some Cebu birds, which, however, are smaller.

Range: Negros, Guimaras, and presumably other west central islands.
Specimens: Negros, 7; Guimaras, 2.

(3) *H. p. rufigularis* Sharpe, 1877; type locality Malamaui, Basilan. Wing, ♂, 117–120; differs from the above in lacking conspicuous streaking in the throat and upper breast, which is washed rufous; ear coverts unstreaked; crown darker, with less gray; size larger.

Range: Zamboanga and Basilan.

Specimens: Basilan, 2; Zamboanga, 13.

(4) *H. p. mindorensis* Steere, 1890; type locality Mindoro. Wing, ♂, 103–108; like *rufigularis* in lacking streaking, but differs from all the above in lacking a rufous wash on the breast and throat.

Range: Mindoro.

Specimens: Mindoro, 7.

*Macronus striaticeps* Sharpe

The variation in this species that ranges in the southern and east central Philippines does not lend itself well to formal taxonomic treatment. We are tempted to recognize only three races: *cumingi*, Samar to Mindanao; *striaticeps*, Basilan; and *kettlewelli* from the Sulus, as has been done. However, this obscures so much variation and includes such diverse populations in one race that we suggest the following arrangements:

(1) *M. s. cumingi* Hachisuka, 1934; type locality Manila [=Samar]. Upper parts rather rich reddish brown; under parts rather moderately streaked with a red brown tinge. Wing, ♂ (8) 58–63 (av. 59.2); ♀ 58, 58, 58, 60.

Range: Samar (Leyte and ?Dinagat birds probably belong here).

The use of the name *cumingi* for this population needs to be explained. When Hachisuka proposed it in 1934, he gave the type locality as Manila (outside the known range of the species). However, the type is in the British Museum, and Mr. R. W. Sims wrote that the type, though dirty and foxed, seemed to agree best with Samar birds in the rich red-brown color of the back. As to the locality, Mr. Sims said that the original label was lost and the information on the present one had been obtained from the register, where the locality is given as “South of the isle of Manila.” Hugh Cuming, who collected this specimen, apparently travelled considerably in the Philippines during his stay there between 1836 and 1839. It seems in order to substitute Samar for Hachisuka’s “Manila” as the type locality and to use the name *cumingi* for the Samar birds.
(2) *M. s. boholensis* Hachisuka, 1930; type locality Bohol. Like *cumingi* of Samar but paler below, and with upper parts less reddish brown, more olive brown and paler. Wing: ♂ (10) 60–65 (av. 62.3) mm.

Range: Bohol.

(3) *M. s. mearnsi* Deignan, 1950 (replaces *M. montanus* Mearns, preoccupied); type locality Mount Apo. Like *cumingi* but darker and duller (not reddish) brown above, and darker and more heavily and abundantly streaked below. Wing: Mount McKinley, ♂ 60, 65, 66; Mount Malindang, ♂ (5) 62–65 (av. 63.7) mm.

Range: Mindanao west to Mount Malindang.

The populations included here are not uniform. The Mount McKinley birds by themselves, despite individual variation, are distinctly different from the other subspecies. The Mount Malindang birds are similar but slightly more ruddy, thus showing a tendency toward the geographically distant Samar birds. Two Cotabato birds are still closer to Samar birds. There is a possibility that *mearnsi* is a mountain form only, and that the lowlands are inhabited by a form very close to *cumingi* or *mindanensis*.

(4) *M. s. mindanensis* Steere, 1890; type locality Ayala, Zamboanga Peninsula. Quite different from the adjacent *mearnsi* in being paler and with reduced streaking below; most like *boholensis* but differs in having the throat and upper breast whiter, with less streaking or mottling and with upper parts slightly darker. Wing: ♂ (10) 58–63 (av. 62.4) mm.

Range: western and southern Zamboanga.

(5) *M. s. striaticeps* Sharpe, 1877; type locality Basilan. A more sharply defined race than any of the above, with the black and white striping of the head more extensive, extending to the level of the throat, and with the upper breast white streaked with grayish olive, with little brownish tinge. Wing: ♂ (6) 61–65 (av. 62.5) mm.

Range: Basilan.

(6) *M. s. kettlewelli* Guillemard, 1885; type locality Sulu. The most distinct race, with black and white streaking of crown much restricted; hind crown brown; partly concealed white streaks of back more conspicuous; under parts all buffy, browner on flanks, and practically unstreaked; general brown of plumage pale and rusty; size large. Wing: (Sulu and Tawi Tawi) ♂ (6) 65–69 (av. 67.3) mm.

Range: Sulu Archipelago.
**Rhinomyias ruficauda** Sharpe

The most recent treatment of this species is in Vaurie's (1952, Amer. Mus. Nov., no. 1570) review of the genus. Additional material from the Philippines shows that there is more variation in the Philippine populations than was represented by Vaurie's material.

The variation in this species in the Philippines does not present an orderly progression in characters from island to island but shows irregularities in geographical occurrence, and these irregularities in different characters do not all coincide geographically. The islands represented by specimens, listed from south and west to north and east are (1) Sulu Archipelago; (2) Basilan; (3) Zamboanga; (4) Mindanao (except Zamboanga) and Samar, whose birds are alike; and (5) Bohol, which is west of a Mindanao–Samar line. The main variations in characters are as follows: a chestnut eye-ring appears only on Sulu specimens; much gray in the ear coverts is found only in specimens from Basilan; birds with the clearest gray and white under parts are from Basilan; specimens from Sulu are similar but duller; an obscure brownish breast band appears on the birds farther north and east, and this is most pronounced on Samar–Mindanao birds, least on those from Zamboanga; birds which are the palest olive-brown on the upper parts come from Bohol, a darker, duller bird from Sulu, and the darkest and the dullest from Zamboanga; a more red-brown bird comes from Basilan, and a still darker, more red-brown bird from Mindanao–Samar; a slight maximum in size is shown in Sulu. The two subspecies from Borneo are not considered here.

It seems that five names are useful in pointing out this variation, as follows:

1. *R. r. ocularis* Bourns and Worcester, 1894; type locality Sulu, Tawi Tawi. Characterized by a conspicuous chestnut eye-ring; upper parts medium olive-brown; under parts grayish on breast and flanks and dirty whitish on throat and abdomen; bill horn-colored, mandible pale. Wing: α 77, 78.5, 80, 80; φ 75, 76, 77 mm.

   Specimens: Tawi Tawi 2; Sulu 5, including the type of *ocularis* (USNM).

2. *R. r. ruficauda* Sharpe, 1877; type locality Isabela, Basilan. *R. r. basilanica* Hachisuka, 1932, type locality Basilan, is a synonym.

   Like *ocularis* but without chestnut eye-ring; lores and cheeks grayer; under parts whiter and with clearer, colder gray; upper parts
richer rufous brown; bill in adult black, with at most a trace of horn in base of mandible. Wing: ♂ 77; ♀ 70, 70, 70 mm.

Specimens: Basilan, 6 (USNM).

(3) _R. r. zamboanga_ Rand and Rabor, 1957; type locality Diway, Dapiak, Zamboanga. This subspecies has the darkest and duller upper parts of any of the Philippine races and the brownish breast band is very lightly marked. The race differs from the adjacent _rufercauda_ of Basilan in being darker and duller (more olive, less red-brown) above; tail darker rufous; less gray in the face; breast not clear gray, but with a faint or pale olive brown tinge; mandible strongly tinged pale brown (not mostly black). Compared with _samarensis_ of Samar, Zamboanga birds differ chiefly in the darker, duller brown (less red-brown) upper parts and darker rufous tail. The slightly larger size and the less amount of buff on the breast of the Zamboanga form are not diagnostic. Bill dark brown; mandible brown. Wing: ♂ 75, 76, 76, 77, 78; ♀ 71, 71, 73, 74, 75, 77 mm.

Range: Zamboanga Peninsula of western Mindanao.

Vaurie included Zamboanga birds with those from the rest of Mindanao but our material indicates a well-marked subspecies.

The type locality of this new race, Diway (or Diuay), Dapiak, is west of Mount Malindang in about Lat. 8° 15' N. and Long. 23° 25' E. This is about the locality in which Mount Dapiak is shown on some maps as a mountain apparently rivaling Mount Malindang in size, but Rabor found it did not exist as such. The highest land in this area goes only to about 4500 feet, and one such mountain is Mount Diway, near Dapiak River and Dapiak Barrio.

Specimens: Zamboanga, 13 (Dapiak area, 6; Mount Malindang, 2, CNHM; Zamboanga, 1, USNM; Catagan, on the lower slopes of Mount Malindang, 4, USNM).

(4) _R. r. samarensis_ Steere, 1890; type locality Samar.

_R. r. mindanensis_ Mearns, 1909, type locality Pantar (near Lake Lanao), is a synonym.

Samar birds differ from Zamboanga birds chiefly in having the upper parts richer red-brown and the tail richer rufous. The slightly more brownish band on the chest and the average smaller size are not diagnostic. The bill varies from black to dark horn with horn-colored mandible. Wing: ♂ 72, 74, 74, 75, 75; ♀ 69, 69, 70, 70, 70, 71, 72, 72, 72 mm.

Birds from eastern and central Mindanao average somewhat duller than do Samar birds but one of the two most western specimens, the
type of *mindanensis* from Pantar, falls in the middle of the range of variation of the Samar series and these birds are best included with it. Wing: ♂ 75; ♀ 70, 71; sex? 75 mm.

Vaurie was quite right in synonymizing *mindanensis*, as pointed out above. When describing *mindanensis* Mearns had Zamboanga birds, and his description evidently was based in part on them, but his choice of a type specimen was from the richer-colored populations that are *samarensis*. Presumably Leyte birds will prove to be this subspecies.

Specimens: Samar, 17 (4, CNHM; 9, USNM; 4, AMNH); Mindanao, 5 (USNM; Pantar, 2, including the type of *mindanensis*; Santa Cruz, 1; Davao, 1; Piso, 1).

(5) *R. r. boholensis* Rand and Rabor, 1957; type locality Cantaub, Sierra Bullones, Bohol. This subspecies is lightest-colored on the upper parts; like *ocularis* and *zamboanga* in having little ruddy brown in the back; like *zamboanga* and *samarensis* in having an obscure brownish band on the breast. Compared with *samarensis* this new race differs in the lighter, rather bright almost olive brown upper parts (not rich ruddy brown) and whiter under parts, with brownish olive breast band less distinct. Compared with *zamboanga* the race *boholensis* differs chiefly in being paler and brighter olive brown above. Wing: ♂ (10) 74–80 (av. 75.7); ♀ 70, 70, 72 mm.

Range: Bohol Island. Apparently the only specimens previously collected on Bohol are the four immature specimens recorded by McGregor (1907, p. 327).

Specimens: Bohol, 14 (from near Sierra Bullones and Guindulman, from 1000 to 2500 feet altitude).

**Pachycephala philippinensis** Walden

A synopsis of the races is as follows:

(1) *P. p. fallax* McGregor, 1904, Calayan Island; above brownish olive, below yellowish white; bill black streaked with horn color. Culmen, ♂ 18.5, 19; ♀ 18 mm.

(2) *P. p. illex* McGregor, 1907, Camiguin Island, described as like *fallax* but slightly larger and breast and flanks more strongly tinged yellow (not seen; evidently an intermediate stage between *fallax* and the next race).

(3) *P. p. philippinensis* Walden, 1872, Luzon; like the above but lower breast, belly and under tail coverts uniform light yellow; only a light brownish tinge on breast; back more olive (less brownish), bill black. Culmen, ♂ (7) 17–18.5 (av. 17.9); ♀ (4) 17–17.5 mm.
(4) *P. p. siquijorensis* Rand and Rabor, 1957, Siquijor; like *philippinensis* but back much greener (less brownish olive); crown grayer (less brownish); upper breast with less of a brownish wash; feet (in dried skins) blacker; bill longer. Culmen, ♂ (6) 18.5–20 (av. 19.2); ♀ (5) 18–19.

(5) *P. p. basilanica* Mearns, 1909, of Basilan, intergrading with the next form in western Zamboanga; like *siquijorensis* but with a smaller bill, a browner crown, and a more distinct wash of brown on the breast; like *philippinensis* but back green, not olive, and bill smaller. Culmen, ♂ 16, 16.5; ♀ 16.5 (type examined).

(6) *P. p. apoensis* (Mearns), 1905, of Samar, Leyte, Dinagat, Bohol, and Mindanao west to Mount Malindang on northeastern Zamboanga; most like *siquijorensis* but with smaller bill and with deeper yellow under parts in both male and female. Culmen: Samar, ♂ 17, 18, ♀ (4) 16–17; Bohol, ♂ (10) 16–17, ♀ (10) 15.5–17.5; eastern Mindanao (including 3 topotypes), ♂ (7) 15.5–17 (av. 16.1); Mount Malindang, ♂ (8) 15.5–17 (av. 16.3), ♀ (9) 15–17 (av. 16.1) mm.

*Sitta frontalis* (Swainson)

Current treatment of the Philippine yellow-billed forms of this nuthatch, which ranges from Luzon to Mindanao and Basilan (a different, red-billed form, *S. f. palawana*, lives on Palawan), in forests from sea level to 6000 feet, has recognized only three subspecies, with several names doubtfully placed in synonymy (Delacour and Mayr, 1946, p. 219). Adequate series from certain localities sent by Dr. Rabor and a loan of Samar and Basilan material from the United States National Museum permit a partial classification of the geographical variation.

The main trends are: (a) a blue area below the eye and in the ear coverts of northern and west central birds; a lilac area below the eye and in ear coverts of southern birds, with an intermediate condition in Samar specimens; (b) palest under parts least tinged with lilac in birds in the mountains of Luzon (north) and darkest and with most lilac in western Mindanao and Basilan (southwest) birds, with an irregular pattern of intermediate dark- and light-colored ones in between; (c) an increase in lilac wash on hind neck and foreback in birds from north to south and then southwest.

The following five subspecies are recognizable:

(1) *S. f. mesoleuca* Grant, 1894; type locality mountains of northern Luzon. Ear coverts and line below eye blue; under parts pale, without lilac wash; no lilac wash on hind neck or foreback. Wing, ♂ 77, 77, 77, 78, 79; ♀ 74, 77, 78 mm.
Specimens: Luzon, 8 (Benguet, Abra, and Mountain Provinces). Range: Mountains of northern Luzon, replaced at lower altitudes by the next race (see Whitehead, 1899, Ibis, p. 227).

(2) *S. f. aenochlamys* Sharpe, 1877; type locality Guimaras. Like *mesoleuca* but under parts darker cinnamon brown with a faint lilac wash and a slight lilac wash on hind neck and foreback. Wing: Luzon, ♂ 78; Negros, ♂ (10) 73–79 (av. 76.5), ♀ (10) 73–77 (av. 75.1) mm. Specimens: Manila, 1; Negros, 20.
Range: Lowlands of Luzon, Guimaras, Panay, Negros (up to 6000 feet), Cebu.


(3) *S. f. lilacea* (Whitehead), 1897; type locality Samar. Blue below eye and in ear coverts much reduced, largely replaced by lilac; under parts darker and more heavily washed with lilac and more lilac in foreback than in above races. Wing: ♂ 72, 76; ♀ 70, 72 mm. Specimens: Samar, 4 (USNM).
Range: Samar and probably Leyte.

(4) *S. f. apo* Hachisuka, 1930; type locality Mount Apo. No blue below eye or in ear coverts, which are lilac; otherwise plumage more like the “blue-eared” *aenochlamys* of Negros; under parts paler than those of *lilacea* of Samar. Wing: ♂ 80; ♀ 72, 75, 76, 77 mm. Specimens: Southeastern Mindanao, 5 (Mount Apo, Mount McKinley, and Cotabato).
Range: Eastern Mindanao (up to 6900 feet). There is no evidence that this is a mountain race only.

(5) *S. f. zamboanga* Rand and Rabor, 1957; type locality Mount Malindang, Zamboanga Peninsula. This, the darkest subspecies, differs from *apo* of eastern Mindanao in being darker, cinnamon brown washed with lilac on the under parts; differs from *lilacea* of Samar in being still darker below, and in completely lacking blue below the eye and in the ear coverts; differs from all the above races in the greater amount of lilac wash on hind neck and foreback. Wing: western Mindanao, ♂ 77, 77, 77, 79, 79, 82; ♀ 71, 74, 75; Basilan, ♀ 73 mm. Specimens: Mount Malindang, 9; Basilan, 1 (USNM).
Range: Zamboanga Peninsula of western Mindanao and Basilan.
Rhabdornis
Collecting in recent years has resulted in greatly increasing our knowledge of the range and geographical variation of the two species of creepers in this genus. Each species has long- and short-billed races, but the sharply marked white streaking on the crown of mystacalis separates it sharply from inornatus, which has a uniform crown. In each case the long-billed forms are in the north, replaced in the south (in different patterns) by short-billed forms.

Rhabdornis mystacalis Temminck
This seems to be a lower altitude species; our highest specimens come from 3500 feet. Two subspecies are currently recognized, but there are three:

(1) R. m. mystacalis Temminck, 1825; type locality Manila. Luzon: Bataan: wing, ♂ 82, ♀ 77; culmen, ♂ 24, ♀ 25 mm. Abra Province (3200–3500 feet): wing, ♂ 90, ♀ 86; culmen, ♂ 26, ♀ 25 mm. Masbate birds probably belong to this form. The birds of the mountains of northern Luzon are larger than those from Bataan.

(2) R. m. longirostris McGregor, 1911; type locality Cadiz, Negros. Like mystacalis but with a longer bill. Negros: wing, ♂ 80, 83, 85, ♀ 81; culmen, ♂ 27, 27.5, 28.5, ♀ 25 mm. Panay birds are probably of this race. This subspecies has not been recognized, but our material supports McGregor’s diagnosis of longer bill but not of darker wings and back.

(3) R. m. minor Grant, 1896; type locality Samar. Differs from the above two races in the browner, less grayish brown upper parts and the shorter bill. Bohol: wing, ♂ 78.5, 79.5, ♀ 78.5; culmen, ♂ 21.5, 21.5 mm. Samar: wing, ♂ (13) 76–79.5 (av. 77.8), ♀ (5) 75.5–79.5 (av. 77.2); culmen, ♂ (13) 21–22.5 (av. 21.9), ♀ (5) 21–22 (av. 21.3) mm. Mindanao: wing, ♂ 81, 82, 84, 85, ♀ 77, 80, 82; culmen, ♂ 20, 20, 21.5, ♀ 18.5, 19, 20 mm. Leyte and Dinagat birds are usually referred here.

Rhabdornis inornatus Ogilvie-Grant
This species seems to have a higher altitudinal range than does mystacalis, though there is a zone of overlap. Our highest record for the species is 5500 feet. It is known from a number of widely separated localities, representing 5 subspecies:

(1) R. i. grandis Salomonsen, 1953; type locality Kainay, Abra Province, Luzon. A substitute name for R. longirostris Salomonsen, 1952, preoccupied. Known from the type only, in the Philippine National Museum. Wing, ♂ 99; culmen, 26.2 mm. (Salomonsen).
Though described as a species, it is obviously a geographical representative of *R. inornatus*. I examined the type in Manila in 1954, and except for the longer bill it is so similar to the more southern races that they are best considered conspecific. *R. i. grandis* has the white markings in the upper wing coverts which also characterize *inornatus* and *rabori*.

(2) *R. i. inornatus* Ogilvie-Grant, 1896; type locality Samar. The short bill separate this and the following forms from *grandis*. Wing, ♂ 78, 85; culmen, 18, 19 mm. (AMNH). Wing, ♂ (14) 84–90.5 (av. 86.1), ♀ (4) 85–86.5 (av. 85.7); culmen, ♂ (14) 19–20.5 (av. 19.8), ♀ (4) 18.5–20 (av. 19.3) mm. (CNHM).

(3) *R. i. rabori* Rand, 1950; type locality Lake Balinsasayo, Negros. Like *inornatus* but differs chiefly in the grayer face pattern, grayer crown and throat, and larger size. Wing, ♂ (10) 92–98 (av. 95.2), ♀ 88, 94, 95; culmen, ♂ 20–21, ♀ 19–20 mm.

(4) *R. i. alaris* Rand, 1948; type locality east slope of Mount McKinley at 3000 feet, Davao Province, Mindanao. Differs most conspicuously from above forms in the reduction of white markings in the upper wing coverts and in the side of head and neck (for further details see Rand, 1950, Nat. Hist. Miscel., 59: 1). Wing, ♂ 90, 88, sex? 89; culmen, ♂ 18, 19, sex? 18 mm.

(5) *R. i. zamboanga* Rand and Rabor, 1957; type locality Mount Malindang, Zamboanga Peninsula. Like *alaris* but duller brown (not warm ruddy brown) above. Wing, ♂ (10) 88–94 (av. 90.8), ♀ (10) 85–92 (av. 88.4) mm.; culmen, ♂ 18–20, ♀ 17–20 mm.

**Dicaeum anthonyi** McGregor

This thick-billed flowerpecker is one of the very rare Philippine mountain birds. Its known history is short. In 1914, McGregor (Phil. Jour. Sci., 9 (D), p. 531, col. pl. 1) described the species from a male collected on Mount Polis, Luzon. In 1935, Manuel (Phil. Jour. Sci., 56: 94) recorded an additional male and female, and described the female, from Mount Tabuan, Luzon. These three specimens presumably were destroyed when the Philippine Bureau of Science was destroyed in 1945. An additional female specimen was collected in 1948, on Mount Polis, and is in the Philippine National Museum, Manila. In 1952, Manuel and Gilliard (Amer. Mus. Nov., no. 1545, p. 5) described *Dicaeum rubricapilla* (preoccupied; =*D. kampalili* Manuel and Gilliard, 1953, Auk, p. 90), based on three specimens from the mountains of southeastern Mindanao (one is now in New York, the other two in Manila), and pointed out that its
closest relative was *D. anthonyi*. In 1956, Rabor collected two males of an undescribed, closely related form from Mount Malindang in western Mindanao. These are all the specimens of the group that have been collected.

The close similarity in size, shape, and color pattern strongly suggests that the three forms are conspecific. The main differences in the males are a red or a yellow crown, and gray and white or yellowish gray and pale yellow, or olive and bright yellow breast, flanks and abdomen.

The three subspecies are:

(1) *D. a. anthonyi* McGregor, 1914; type locality Mount Polis, Luzon. Male: Crown yellow; upper parts bluish black; throat white; breast and flanks greenish yellow, paler and brighter yellow on abdomen; crissum orange (from plate). Female: Greenish olive above; throat gray; breast and flanks greenish olive; abdomen bright yellow. Wing, ♂ 56, ♀ 58, 59 mm. (from literature).

Range: Mount Polis, Ifungao, and Mount Tabuan, Cagayan, Luzon; "in mossy forest" and at "about 1500 meters."

Specimens: 1 ♀ (examined in Manila), the only specimen extant; the type and two others destroyed in Manila in 1945.

(2) *D. a. kampalili* Manuel and Gilliard, 1953; type locality Mount Kampalili, southeastern Mindanao. Male: Pattern as in anthonyi but crown red, breast and flanks gray, and abdomen white. Female: Very like anthonyi but less greenish above; breast and flanks less olive tinged. Wing, ♂ 53, 53.5, ♀ 57 mm.; culmen, ♂ 10, 12, ♀ 10 mm. (Manuel and Gilliard).

Range: Mount Kampalili (2800 feet) and Mount McKinley (3100 feet in mossy forest) in southeastern Mindanao.

Specimens: 1 ♂, 1 ♀ (examined in Manila) and 1 ♂ (AMNH), the only specimens known.

(3) *D. a. masawan* Rand and Rabor, 1957; type locality Mount Malindang, 3500–4500 feet, western Mindanao. Male: Like kampalili but gray of breast and flanks tinged yellow, and abdomen yellowish white; wing slightly longer. Female: Unknown. Wing, ♂ 57, 57 mm.; culmen, 12, 12 mm.

Range: Mount Malindang, Zamboanga Peninsula, western Mindanao; known from 3500–4500 feet altitude.

Specimens: 2 ♂ (the only ones known).

Remarks: Though not an exact intermediate, being closer to kampalili, the yellow wash over the gray and white of the under parts
bridges some of the difference between *anthonyi* and *kampalili*. This, and the precise similarity in size, bill shape, and color pattern, lead us to treat the three forms as conspecific.

*Nectarinia sperata* (Linnaeus)

Our considerable series of this species supports Salomonsen's finding (1953, Vidensk. Medd. Dansk Naturh. Foren., **115**: 253-260) as to the variation, but we disagree with him on the following points:

The name *trochilus* Salomonsen, 1953, is used for a subspecies which includes a population which already has a name, *davaoensis* Delacour, 1945. It is unfortunate that *davaoensis* was based on specimens intermediate between a yellow-bellied and a red-bellied race. A line of reasoning which would consider *davaoensis* based on a hybrid and unavailable would be valid only if species were involved, which is not the case. No matter how inappropriate the type locality or the appearance of the type, no matter how unfortunate the name, it is available and must be used.

Salomonsen also recognized *N. s. manueli* Salomonsen, 1952, for the birds from Polillo Island, based on their larger size: Wing, ♀ 55, 56, culmen, 21, 21 mm., compared with wing, 49.5-54 (av. 51.6), culmen, 17-20 (av. 18.7) for *sperata* of Luzon.

We have a single Polillo specimen, ♂ wing 53, culmen 19 mm.

Salomonsen has already pointed out the large size as a small island effect in this species and mentioned Sibuyan birds, of which he had seen one, as another example. We now have four Sibuyan males which measure: Wing, 53, 55, 55, 56; culmen, 19, 20, 20 mm. Though Sibuyan birds are referred somewhat arbitrarily to the central Philippine race *davaoensis*, which averages slightly smaller than *sperata*, they differ only slightly from nearby Luzon *sperata* in color.

It seems inadvisable to recognize by name these small island populations which differ only in such “small island effects” as slightly larger size. Thus, we consider *manueli* a synonym of *sperata* and do not consider it advisable to name the Sibuyan population.
General References

DELACOUR, J., and MAYR, E.

DICKERSON, ROY E.

HACHISUKA, M.

IRVING, EARL M. (Compiler and Editor)

KUENEN, P. H.

MC Gregor, R. C.

MEARNS, E. A.

RAND, A. L., and RABOR, D. S.

SMITH, WARREN D.
1924. Geology and mineral resources of the Philippine Islands. 559 pp., 31 pls. Manila Bureau of Printing.

STEEERE, J. B.

Tweeddale (Marquis of)
UMBgrove, J. H. F.

WILLIS, Bailey

Worcester, D. C.

Worcester, D. C., and BourNS, F. S.
1898. Contributions to Philippine ornithology. Part I. A list of the birds known to inhabit the Philippine and Palawan Islands, showing their distribution within the limits of the two groups. Proc. U. S. Nat. Mus., 20: 551–566.