

Breeding Avifaunas of Mt. Puguis, Northern Luzon and Baracatan, Mindanao, Philippines (Part I)¹⁾

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After World War II various American institutions, in collaboration either with the National Museum of the Philippines or with Silliman University, sent expeditions to the Philippines and collected a large number of bird specimens on different islands. These expeditions added much to our knowledge of Philippine birds, including the discovery of a dozen new species (see DUPONT, 1971, for an up-to-date bibliography on the Philippine birds). Nevertheless there are still many areas in the Philippines that have not been visited by ornithologists, particularly many peaks in northern and northeastern Luzon and mountains on the east coast of Mindanao, which are among the most interesting places to be explored ornithologically. Furthermore, information on the habitat and ecology of many Philippine birds is badly needed.

From May 20 until July 28, 1977, the National Science Museum, Tokyo, sent a zoological expedition to the Philippines and gathered specimens on Luzon, Mindanao, and Palawan. We participated in the expedition and collected bird specimens. Although the chief object of our collecting was to secure skeletons and alcoholic specimens of certain genera and species needed for anatomical study, we obtained nearly 500 skins of birds and made field observations at different localities.

The present paper deals with our observations on the highland avifaunas in northern Luzon and Mindanao. The bird species that were observed or collected above about 1,800 m altitude were not many, since the mossy forest possesses much fewer species of birds than does the lowland or the midmountain forest.

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chairman of Zoology Department, and Mr. Roger SISON, technical assistant, to all of whom our sincere thanks are due. Our thanks are also due to the authorities of the Philippine Constabulary and its local headquarters who were most generous in allowing us the use of firearms for collecting birds.

Birds of Mt. Puguis, Northern Luzon

TOPOGRAPHY AND VEGETATION

Mt. Puguis, Mountain Provinces, is situated at about $17^{\circ} 03' 30''$ N and $121^{\circ} 04' 30''$ E (about 11 km ESE of Bontoc). The peak has a height of 2,102 m above sea level. Mt. Puguis is not, however, an isolated peak or even a mountain in the usual sense. The best description of Mt. Puguis would be a hill in a hilly country, as a greater part of Mountain Provinces consists of vast highlands rising above 1,500 m and the 'base' of Mt. Puguis is somewhat higher than 1,800 m. The only human habitation in the Puguis area is the Provincial Agricultural High School with a dormitory at 1,900 m altitude, the roadway from Bontoc to Barlig passing just below it.

The climate of the Puguis area is moderately temperate. Although no meteorological data are available, the rainfall is apparently heavy throughout the year and especially so in the months from June to August. During this rainy season transportation by road is frequently interrupted by washouts. December to April is the relatively dry part of the year.

A large part of the Puguis area (Figs. 1–3) is covered with the original vegetation of mossy (elfin) type forest, although the destruction of timber by man is continuously in progress everywhere. The vegetation has also been altered by the penetration of second-growth trees and shrubs into the primary forest.

The mossy forest ranges from about 1,800 m in the Puguis region, but some forests here appeared to be transitional between the typical mossy forest and the midmountain forest. However, all forests on Mt. Puguis are of the one-storied type. The transitional type forest is a very dark and damp forest with an almost completely closed canopy formed by fairly tall trees, and is especially well-developed on the southern slope of Mt. Puguis along the ravine below the roadway. The trees above the roadway are more stunted and gnarled than those of the forests below, showing the characteristics of the mossy forest.

Pine stands are common and scattered throughout the area but they are probably second growth except for a large stand on the north side at 1,800 m altitude (not shown on the vegetation map). Grassland and cultivated areas are of course secondary. The only resident bird species in the grassland is the Bush Warbler (*Cettia diphone*), though tree-babblers (*Stachyris whiteheadi*), shortwings (*Brachypteryx montana*), shrikes (*Lanius validirostris*), and swiftlets (*Collocalia esculenta*) often frequent it. Near the summit of Mt. Puguis is a lake (Tufog Lake). It dries up in winter and harbors no aquatic birds or fishes.

We arrived at Mt. Puguis via Bontoc on June 10, 1977 and stayed there until June

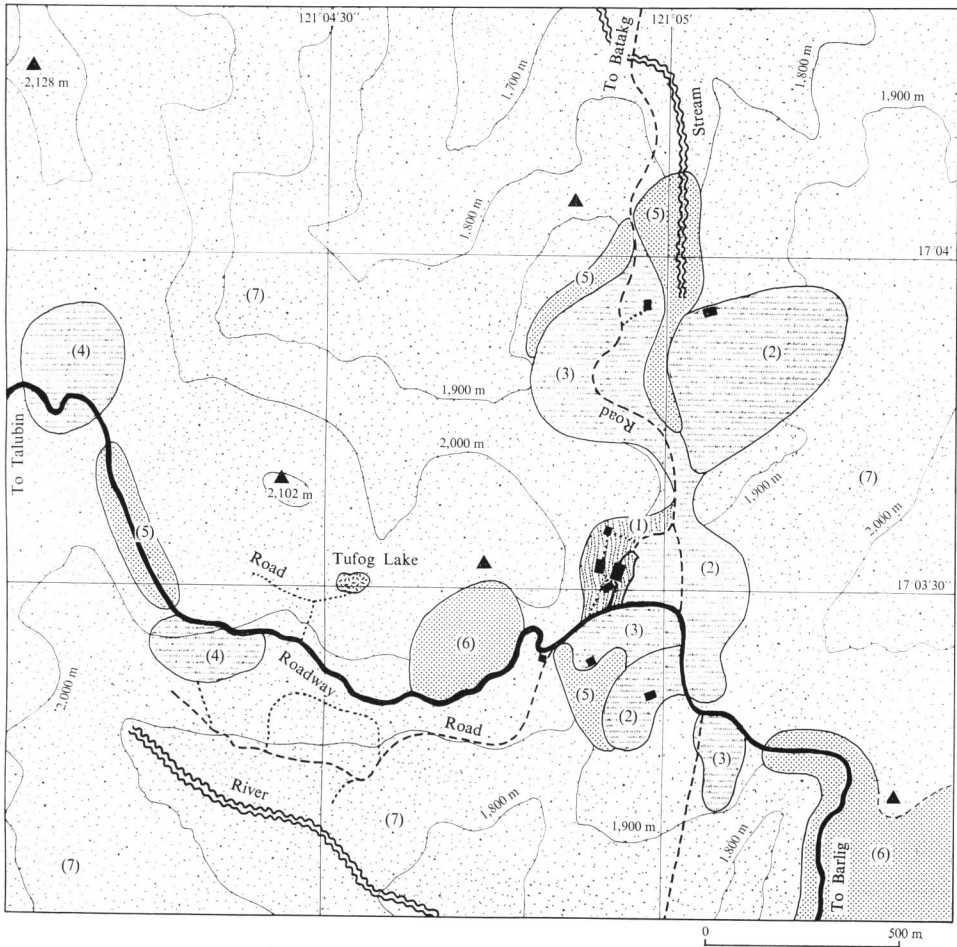


Fig. 1. Vegetation map of the Puguis area. 1, Human habitation. 2, Cultivated area. 3, Scrubby grassland. 4, Cleared area. 5, Scrub. 6, Pine stand. 7, Primary forest.

19. The approach of a typhoon cut short our stay in the Puguis region. The area in which our collecting and observations were made was relatively small, usually within a radius of 5 km from the High School and ranging from about 1,800 m to 2,100 m altitude. On the way to Mt. Puguis we stopped at Mt. Santo Tomas (2,252 m) and Mt. Data (2,348 m) and obtained a small number of specimens. While we were on Mt. Puguis, Mr. Roger SISON, who accompanied us throughout the expedition, collected on Mt. Amuyao (2,682 m) on the Ifugao border. These collections have sometimes been mentioned in the species accounts.

SPECIES ACCOUNTS

In the following species accounts the species seen but not collected are marked with an asterisk. Except for some duplicates deposited with the National Museum of the Philippines, all the specimens reported herein are in the collection of the National Science Museum, Tokyo. Most of the specimens taken had the gonads still enlarged, though somewhat regressed. Judging from the state of the gonads, the chief breeding season of most birds in this area is in May.

**Hieraaetus kieneri formosus* STRESEMANN. Rufous-bellied Eagle. — A single individual was observed on two occasions near the lake, circling high above mountain forest in search of prey. The species normally ranges from the lowlands to the mid-mountain forest up to about 1,500 m altitude and is probably an uncommon visitor to higher elevations.

**Ptilinopus* sp. Fruit Dove. — Fruit doves were seen flying above original forest in small groups. They were not uncommon, although we were unable to ascertain the species.

**Ducula policocephala policocephala* (GRAY). Pink-bellied Imperial Pigeon. — This pigeon was occasionally seen flying above dense forest in small flocks. Its characteristic booming call was also heard in the evening. According to a native hunter, imperial pigeons are common birds in the forest but they are more frequently met with in fall and winter.

**Macropygia phasianella tenuirostris* BONAPARTE. Slender-billed Cuckoo Dove. — We saw one bird that had been caught by a native boy. The cuckoo dove has a wide altitudinal range, occurring from sea level up to above 2,000 m altitude, and is probably not uncommon on Mt. Puguis.

Prioniturus montanus montanus OGILVIE-GRANT. Crimson-spotted Racket-tailed Parrot. — The racket-tailed parrot was not uncommon in deep original forest and was usually seen singly or in pairs. In dense forest, however, the bird was extremely difficult to find and it was more often heard than seen. Though not very noisy, its screeching voice could be heard at a considerable distance and was unmistakable. A female was collected in a thick jungle at 2,000 m altitude. The stomach contained a large quantity of pieces of plant seeds.

Phoenicophaeus cummingi FRASER. Scale-feathered Cuckoo. — This magnificent, long-tailed cuckoo was found to be rather common in the original forest of Mt. Puguis and Mt. Data at about 1,900 m altitude. It is an inhabitant of dense forest, occasionally frequenting second growth and open pine wood. Although the species is generally arboreal in its habits, we observed it feeding on the forest floor on several occasions. It lives alone or in pairs. We collected three males and a female. Four stomachs examined contained chiefly weevils (including *Pachyrrhynchus* spp.), together with several other small and medium-sized beetles, locusts, cockroaches, insect larvae, a spider, and a small amount of mosses.

**Otus bakkamoena whiteheadi* (OGILVIE-GRANT). Oriental Screech Owl. — This owl was seen hunting for prey in cleared areas at the forest border almost every even-

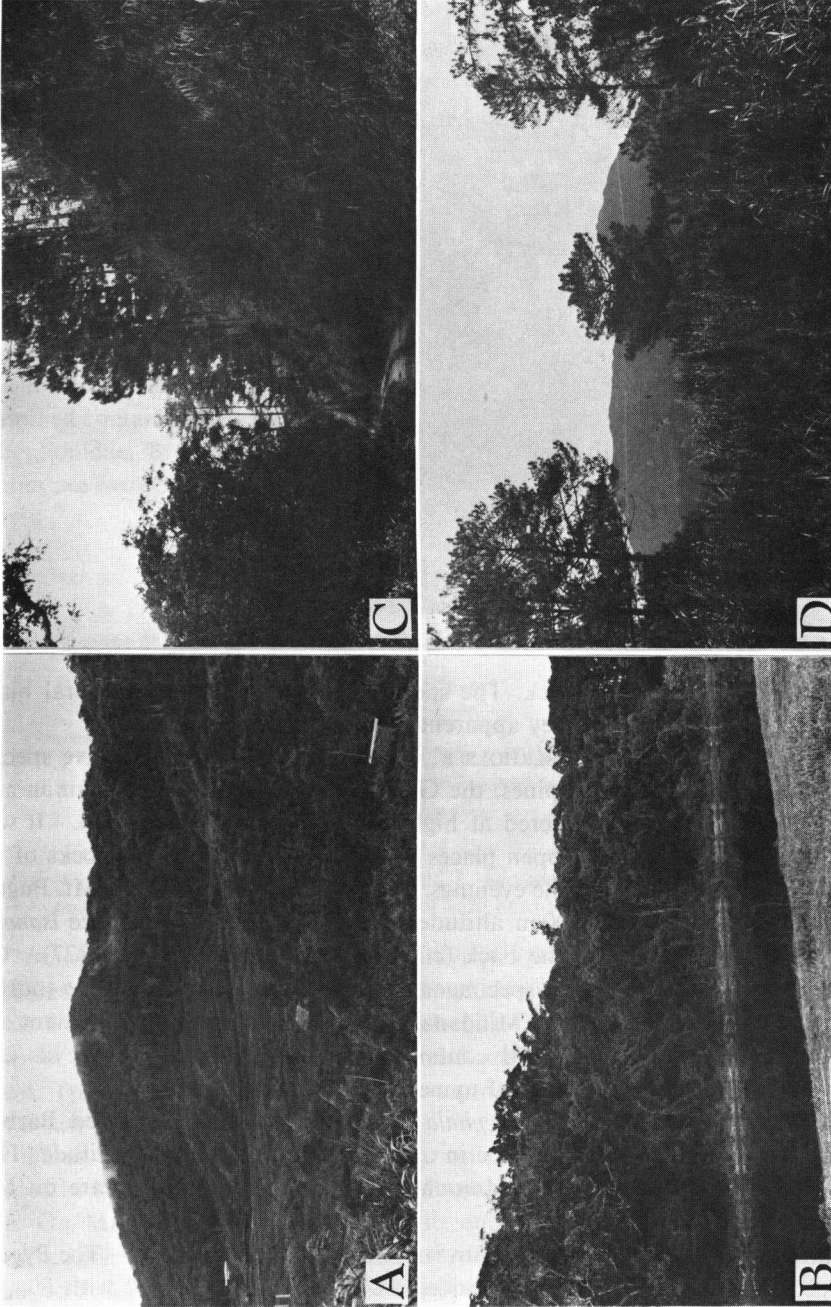


Fig. 2. Landscape of the Puguis area. A, Mt. Puguis (2,102 m) with cultivation in the vicinity of High School at 1,900 m. B, Tufog Lake (2,050 m) near the summit of Mt. Puguis. C, Pine stand and second growth along the roadway at 1,950 m. D, Mt. Amuyao (2,701 m) viewed from Mt. Puguis.

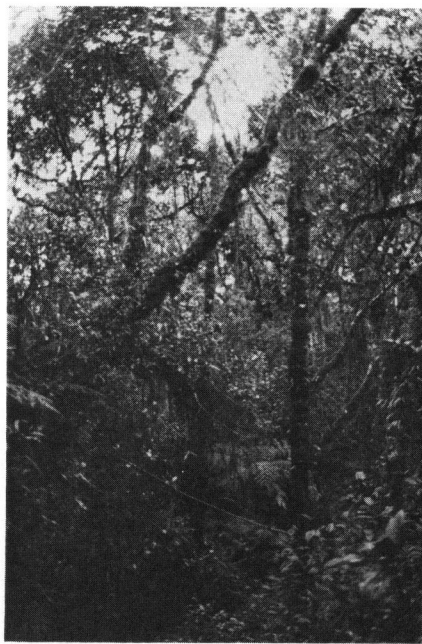


Fig. 3. Mossy (elfin) forest at 2,000 m on Mt. Puguis.

ing between eight and eleven o'clock. The species was fairly common, several birds being encountered in one night. They apparently breed in the nearby forest.

Collocalia esculenta isonota OBERHOLSER. Glossy Swiftlet. — Of the five species of swiftlets occurring in the Philippines, the Glossy Swiftlet is the most common and was the only one that we encountered at high altitudes in northern Luzon. It was locally abundant, flying low over open places and along the roadway in flocks of up to 50 birds on cloudy days and in the evenings. Five males were taken on Mt. Puguis and Mt. Santo Tomas above 1,900 m altitude. They all belong to the race *isonota*, which has the rump colored like the back (cf. DELACOUR & MAYR, 1945: 127). On comparing them with our Mindanao specimens, the differences between *isonota* (northern Luzon, Babuyan Is.) and *bagobo* (Mindanao, Sulu Is.) seemed to be consistent but very slight. Four stomachs examined contained black flies, pieces of weevils and other small beetles, and some remains of hymenopterous insects (Apocrita).

**Megalaema haemacephala haemacephala* (MÜLLER). Crimson-breasted Barbet. — A single individual was observed once in a roadside tree at 1,950 m altitude. This barbet is apparently a lowland and midmountain bird and is probably rare on Mt. Puguis.

Dendrocopos maculatus validirostris (BLYTH). Pygmy Woodpecker. — The Pygmy Woodpecker was rather rare in forests above 1,800 m altitude. We met with few individuals in the upper second-growth forest and collected a male. We heard its call three times in dense primary forest, although the species generally prefers open forest.

Its behavior was similar to that of our pygmy woodpecker *Dendrocopos kizuki* but the call was a more pure and sharper *ch-ee*. One stomach examined contained pieces of a small and a medium-sized beetle, and two beetle larvae.

**Chrysocolaptes lucidus haematribon* (WAGLER). Crimson-backed Woodpecker. — Like the preceding species, this woodpecker is essentially a bird of low and middle elevations and is rare at high altitudes. We encountered only a single bird in a pine stand at 1,900 m altitude.

Lanius validirostris validirostris OGILVIE-GRANT. Strong-billed Shrike. — The Strong-billed Shrike (Fig. 4) was a common bird at high elevations in northern Luzon. It was always seen singly, frequenting open second growth, clearings, forest edge, and scrubby grassland. Eight specimens were taken on Mt. Puguis and one on Mt. Data above 1,900 m altitude. The behavior and voice of the shrike was exactly like that of our shrike *Lanius bucephalus* but the bill is considerably thicker. Seven stomachs examined contained only insects, chiefly small and medium-sized beetles (Cerambycidae, Curculionidae, Brentidae, Scarabaeidae, Lucanidae, Chrysomelidae). Some of these beetles are extremely hard-bodied and the thick bill is possibly adapted for taking such prey.

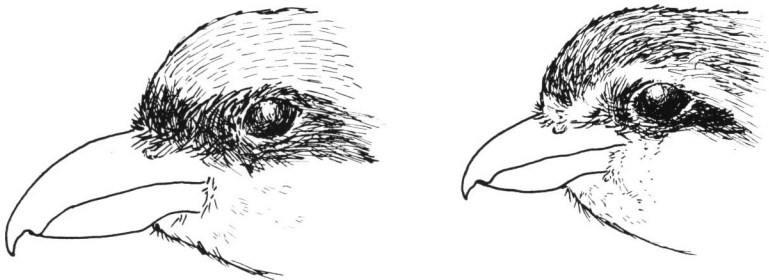


Fig. 4. Bill of *Lanius validirostris* (left) and *L. bucephalus* (right). The thick bill of *validirostris* is probably adapted for a diet of very hard-bodied beetles.

Brachypteryx montana poliogyna OGILVIE-GRANT. Blue Shortwing. — The species appeared to be fairly common in the dense, low thicket inside original forest and in forest edge. Owing to the unobtrusive habits of the bird, it was rarely seen but a series of specimens was obtained with mist-nets placed in the undergrowth in heavy forest. The contents of four stomachs examined consisted of pieces of minute beetles and a saw-fly.

Turdus poliocephalus thomassoni (SEEBOHM). Island Thrush. — The Island Thrush seemed to favor places higher than Mt. Puguis and Mt. Data, where it was apparently rare. On Mt. Puguis we saw the thrush only a few times in cleared areas and at forest edges. A female was collected on the roadway at 1,950 m altitude. On Mt. Amuyao at 2,600 m, Mr. SISON found the bird to be common in the shrubbery along the ridge where he obtained a series of specimens, including immatures. The stomach of the bird taken on Mt. Puguis contained several small seeds only.

Stachyris whiteheadi (OGILVIE-GRANT). Whitehead's Tree-babbler. — This handsome tree-babbler was one of the most common species in the highlands of northern Luzon and we obtained a large series of specimens on Mt. Puguis, Mt. Data, Mt. Amuyao, and Mt. Santo Tomas at 1,800 to 2,600 m altitude. The bird frequents original forest as well as open forest and second growth. It preferred to stay in lower branches, shrubs, and undergrowth, although it was frequently seen foraging in the high canopy. The contents of thirteen stomachs examined consisted chiefly of small seeds, together with some remains of small beetles and spiders.

Bradypterus caudatus caudatus (OGILVIE-GRANT). Long-tailed Ground Warbler. — The ground warbler was encountered in the dense underbrush of original forest but was rare. It prefers deeply shaded and more or less damp places in the forest. An adult male with somewhat regressed testes was taken low in a tall thicket along a forest stream at 1,900 m altitude. This species is a very noisy and extremely active bird, constantly uttering a loud call while rushing about on the forest floor with the tail cocked. It was much more active than our wren *Troglodytes troglodytes* and always seen at such close range that shooting was difficult. The single stomach examined contained no food.

Cettia diphone seebohmi OGILVIE-GRANT. Bush Warbler. — Although we did not encounter it on Mt. Data, the Bush Warbler was quite common in scrubby grassland and clumps of roadside shrubs on Mt. Puguis at 1,900 to 2,000 m altitude.

Phylloscopus trivirgatus nigrorum (MOSELEY). Mountain Leaf Warbler. — This species was observed and collected in the canopy of primary forest at 2,000 to 2,100 m altitude. It was fairly common and was always found in small parties, sometimes in company with *Pachycephala* and *Stachyris*. Once we saw it in open pine forest. Five specimens were obtained from Mt. Puguis and three from Mt. Data and Mt. Amuyao. Two stomachs examined contained pieces of minute beetles and two lepidopteran larvae.

Rhipidura cyaniceps cyaniceps (CASSIN). Blue-headed Fantail. — The fantail was not uncommon in deep original forest and two specimens were taken by mist-net. A family with young just fledged was observed on June 18. This species preferred to stay in the understory of heavy forest and was very active and noisy in the lower branches and among dense undergrowth, although it was occasionally seen feeding in the high canopy. Two stomachs examined contained quantities of fragments of tiny beetles.

Muscicapa panayensis nigrimentalis (OGILVIE-GRANT). Verditer Flycatcher. — This azure-colored flycatcher was common in the primary forest of highlands in northern Luzon. It is a solitary and quiet bird (song not heard), usually found in the canopy and among the higher branches of tall trees. We obtained several specimens on Mt. Puguis and Mt. Data at 1,900 to 2,000 m altitude. Five stomachs examined contained remains of small beetles (Curculionidae, Coccinellidae, Elateridae), one locust, a Hymenoptera (Ichneumonidae), and a Hemiptera (Delphacidae).

Ficedula westermanni westermanni (SHARPE). Little Pied Flycatcher. — This small, black-and-white flycatcher was uncommon in original forest. We observed several and

obtained a male in deep forest at 1,800 m altitude. They perched on lower branches and were very quiet and inactive and thus not readily noticed. One stomach examined contained no food.

Rhinomyias insignis OGILVIE-GRANT. White-browed Jungle Flycatcher. — This handsome flycatcher is an uncommon inhabitant of dense forest. Although we had no chance to observe it, two specimens were obtained with mist-nets placed in the thick undergrowth of dark primary forest at 1,900 m altitude. Two stomachs examined contained remains of small weevils (including *Metapocyrtus* sp.) and seeds of *Setaria* (Gramineae).

Pachycephala cinerea albiventris (OGILVIE-GRANT). White-bellied Whistler. — This whistler was common in dense original forest and preferred to stay in the canopy and higher branches of tall trees. We did not see it in the undergrowth or in lower branches. It was a quiet, solitary species, but was occasionally found in loose parties with other canopy birds such as *Phylloscopus* and *Zosterops*. The contents of nine stomachs examined consisted of remains of small and medium-sized beetles (chiefly weevils), several species of Neuroptera, a Homoptera (Psyllidae), and a spider.

Parus elegans montigenus (HACHISUKA). Elegant Titmouse. — The Elegant Titmouse was a common species in the highlands of northern Luzon. It is essentially a bird of open and second-growth forests and was not found in dense primary forests except at its edge. While feeding it frequents both canopy and lower branches. We secured three males and two females, all of which were taken on the roadway. Five stomachs examined contained pieces of small beetles.

Sitta frontalis mesoleuca (OGILVIE-GRANT). Velvet-fronted Nuthatch. — This species was not uncommon in primary forest, open second-growth forest, and roadside trees. A male and a female were taken in open forest at 1,900 m altitude. Its behavior was like that of our nuthatch *Sitta europaea* but the voice was much keener. The contents of two stomachs examined consisted of pieces of small beetles.

**Rhabdornis mysticalis mysticalis* (TEMMINCK). Striped-headed Creeper. — The creeper appeared to be rare at high elevations of northern Luzon. We encountered only two birds, each on a high branch extending over the roadway where they quietly searched the twigs for insects.

Dicaeum anthonyi anthonyi (MCGREGOR). Yellow-crowned Flowerpecker. — The Yellow-crowned Flowerpecker (Fig. 5) is one of the rarest birds of the Philippines. The history of the species, together with a synopsis of its races, has been given by RAND and RABOR (1960: 437). MAYR and AMADON (1947) and SALOMONSEN (1960) discussed its relationships within the family. The species was long known only from Luzon, but recently two races were described from Mindanao. Of the nominate race only four specimens were hitherto known: the type (male) taken in the mossy forest near Banaue, Ifugao Prov., about 2,000 m alt., February 7, 1913; a male and a female taken on Mt. Tabuan, Cagayan Prov., about 1,500 m alt., May 18, 1929; a female taken near the type-locality, May 27, 1948. Of these, the first three were lost in the war in 1945, the last specimen being until now the only one in existence (in the collection of the

National Museum of the Philippines, Manila). We were fortunate enough to secure a fifth specimen, an adult female, which was taken in the high canopy of primary forest on Mt. Puguis at 2,000 m altitude, June 11, 1977. The discovery was not unexpected, however, as Mt. Puguis is only about 16 km north of Banaue, the type-locality. Unfortunately we obtained no information about the habits of the species since the identity of the specimen was not ascertained until after collection. The bird is evidently not common and we never met with it again. The measurements of the specimen are as follows: wing (flattened) 56.5 mm, tail 27 mm, culmen (from feathers) 10.5 mm, tarsus broken. Bill blackish, legs dark brown.



Fig. 5. Bill of *Dicaeum anthonyi* (left), *D. bicolor* (center), and *D. nigrilore* (right). *D. anthonyi* has the heaviest bill in the genus *Dicaeum*.

**Aethopyga pulcherriam jefferyi* (OGILVIE-GRANT). Mountain Sunbird. — This sunbird was uncommon. We met with it twice in the second growth along the roadway. On both occasions the bird was found in small groups of five to six individuals and moved quickly from one clump of shrubs to another. Though no specimen was obtained on Mt. Puguis, Mr. SISON secured two examples for us on Mt. Amuyao at 2,600 m altitude.

Zosterops montana whiteheadi HARTERT. Mountain White-eye. — This white-eye was rather uncommon. Small flocks were occasionally seen feeding in the canopy of primary forest and at the forest edge. A male was taken in the brush along the roadway at 1,950 m altitude. Mr. SISON also obtained a male on Mt. Amuyao at 2,600 m altitude. One stomach examined contained no food.

Pyrhula leucogenys leucogenys OGILVIE-GRANT. Philippine Bullfinch. — The Philippine Bullfinch is a highland species endemic to the mountains of Luzon and Mindanao. On Mt. Puguis it was not rare and flocks of up to thirty birds were seen daily, feeding in the shrubbery in open stands of pine and in low second growth at 1,950 m altitude. We also observed a large flock of the bullfinches flying high above the pine forest on Mt. Data at 2,000 m altitude, while Mr. SISON obtained a specimen from Mt. Amuyao at 2,600 m. Six stomachs examined contained quantities of seeds of *Dianella* (Liliaceae) growing in the pine stand.

(To be concluded)