THE WHISTLING THRUSHES (GENUS *Myiophoneus*)

BY J. DELACOUR

Plate 8

IN THE mountainous parts of temperate and tropical Asia and Malaysia, from Turkestan and Afghanistan in the west, east to Formosa and Borneo, and south to Ceylon and Java, one often notices along the forested banks of swift-running watercourses, on the ground, on rocks, on boulders or on low branches, peculiar dark birds, always alone or in pairs. They are the Whistling Thrushes of the genus *Myiophoneus*.[1]

Some of them exceed slightly in size the European Mistle Thrush, while others are somewhat smaller, like the American Wood Thrush. Their wings are rather large and moderately rounded, as is their tail, which is comparatively longer in the larger birds than in the smaller ones. Their long legs and their feet are powerful and always black.

With the different forms, the bill varies much in strength, but is always slightly shorter than the head, compressed and hooked at the tip. It is within the species *caeruleus* that the greatest differences are to be found in its depth, which increases continuously and strikingly from north to south. Measured at its thickest part, just beyond the nostrils, it is 8 mm., on an average, in *c. caeruleus* (China), and reaches 15 mm. in *c. flavirostris* (Java). As to color, the bill is either black or yellow with a variable amount of black on the upper mandible. In most black-billed forms, the young show a certain amount of yellow. The nostrils are exposed, round or oval. The iris is always brown, of slightly differing shades.

All *Myiophoneus* show blue in their plumage. It is reduced to shoulder patches in the females of *borneensis, castaneus,* and *blighi;* the male *castaneus* is half blue and half chestnut; the general coloration of all the others is a dark blue, with a greater or lesser admixture of black and purple.

By their general aspect, build and behavior, Whistling Thrushes are true turdine birds, only specialized for semi-aquatic life and particular food, but nevertheless resembling other ground thrushes. They walk, hop, run, stop, flit and open their tail and wings, cock

[1] I agree with C. D. Sherborn (Index Animalium, London, 1928: 4226–4228) that the proper spelling is *Myiophoneus* Temminck and Laugier, 1822. *Myophonus* T. and L., 1822, is an orthographic error, as well as *Myophoneus* in their tables, 1839, while *Myiophonus* Agassiz, 1846, is an unnecessary emendation.

their heads, stare, turn over stones and leaves in ways closely recalling those of the European Blackbird and the American Robin, to name only two birds that are familiar to everyone. Whoever has watched them in life cannot have any doubt about their real relationships. They have little in common with the timaliine birds, always arboreal, whose legs are coarser and wings shorter. The only objection to their admission among the Turdinae is indeed more formal than real, arising from the fact that in most cases the young birds in first plumage are not plainly spotted. Those of *M. blighi,* however, are distinctly marked, having broad pale shaft-lines to their brown feathers on the head and under parts; also the immature *borneensis* is clearly streaked with white on the chest and abdomen. In all other forms, immatures are a uniform sooty or brownish black, with variable blue and purple suffusion; but they all have white or pale-brown shafts, more or less visible, on the feathers of the breast, abdomen, flank and lower back. This, I believe, is a sufficient, if not a very conspicuous indication of their affinities. Once more, however, I wish to call the reader's attention to the artificiality of family or subfamily divisions among passerine birds, particularly in the present group.

As pointed out at the beginning of this paper, Whistling Thrushes are strictly hill birds, completely absent in the plains, except during the winter along swift-flowing streams at the foot of the mountains. They live near or on the ground, in the vicinity of running water, where there is a sufficient cover of trees and bushes on which they perch at times. They feed on all sorts of invertebrates, many of which are caught in the water. Snails seem, however, to be their staple diet. The birds' strong, hooked bills are well adapted to dealing with this sort of prey; they have a habit of cracking them on a particular rock; a great heap of empty shells is found near by. They are more abundant near limestone cliffs where snails are more numerous.

All Whistling Thrushes have similar nesting habits. The nests are placed on ledges, in crevices of rocks, among boulders and logs or even among thick branches, always close to the water. They are large cups of green moss mixed with twigs and muddy roots, lined inside with thin black roots and some leaves. In China and in western India, they are sometimes built under the eaves of temples and houses. The eggs, usually three, sometimes two or four in number, resemble those of many other thrushes, particularly of the subgenus *Oreocincla.* Rather elongated, their ground-color is gray, pinkish, buff, or greenish, with indefinite spots and freckles of pale reddish brown and secondary markings of gray and lavender.

The various species have a long, full and melodious whistle, often uttered, and in India they are called the 'Whistling School Boys.' In some of the smaller species the whistle is weaker. Their alarm-note is harsh and short, not unlike that of the European Blackbird. I have never heard them sing properly either in the wilds or in captivity, but Père David and several aviculturists record a veritable song. The question of their vocal possibilities remains open, but I doubt that they can emit anything more elaborate than their well-known whistle.

All species of *Myiophoneus* appear to be common in suitable situations, with the exception of *blighi,* which remains scarce in the mountain forests of Ceylon. Some forms seem to be fairly local, particularly *robinsoni, glaucinus* and its subspecies. Some Whistling Thrushes are shy birds, but many become easily accustomed to the presence of man and are often observed in the vicinity of human dwellings when they are not molested; *horsfieldi* is particularly fearless; also, to a lesser degree, *caeruleus* and *melanurus.* A good illustration of their confiding nature is given by an amusing incident which took place during my Sixth Expedition to Indo-China in 1931–1932. At Thateng, on the Boloven Plateau in southern Laos, a torrent was rushing through the thick jungle, just back of our camp. Both subspecies, *M. c. caeruleus* and *M. c. eugenei,* were numerous along its course during the winter months. Within a few days of our arrival, we trapped a few of them and kept them on our verandah, each in a box cage. They were given biscuit meal, meat and boiled eggs, and they took readily to such food. After having remained two weeks in captivity, one *eugenei* escaped. We thought that it would quickly return to its nearby native stream. Great was our astonishment when we found that the bird did not leave the eaves of our hut, but came down to eat from the cages scraps which it evidently preferred to its natural diet. We could easily have recaptured it, but we let it remain free in order to watch its behavior. When several weeks later we left Thateng, the bird was still living in the roof. I imagine that it returned only reluctantly to the torrent when no more artificial food could be found.

The systematic arrangement of the different forms of *Myiophoneus* is not simple, and there have been various differences of opinion on the subject.

As previously said, in the majority of Whistling Thrushes, the general coloration is a deep blue, with a variable admixture of black, violet and purple. Even in the few cases where brown or chestnut is dominant, there is always some blue in the plumage (shoulder

patch). In several species the body-feathers terminate in a lustrous blue spot, forming a spangle, a unique feature among thrushes. These spangles are either round or elongated, according to the species or subspecies, and also to the location on the body. They are usually pointed on the head and neck.

All *Myiophoneus* show a shining blue or violet patch on the shoulder, formed by the large decomposed margins of the lesser wing-coverts, and on the bend of the wing. They have the forehead, lores, long plumelets and bristles around the bill deep black. Most of them have a silky blue band across the anterior crown, close to the forehead, but a few lack this. In the great majority of cases, both sexes are either alike or differ only slightly in the intensity of the colors, but in *blighi* the female is a uniform reddish chestnut; in *castaneus* she is also chestnut with a black crown, bluish in front, while the hen *borneensis* is dark brown. In all of them the female is slightly smaller than the male.

With the exception of *horsfieldi, eugenei, melanurus* and *blighi,* all forms possess concealed white feather-bases, running up the shafts, usually on flanks, sometimes on abdomen, breast and back. In some of them, there are indications of a white patch on the outer median under wing-coverts, but this appears to be individual.

In all forms of the *caeruleus* group except *eugenei,* and exceptionally *flavirostris,* there are also glossy white spots, more or less tinged with mauve, at the tip of the median upper wing-coverts. The larger species, including *horsfieldi* and *caeruleus,* have a proportionately longer tail than the smaller ones; but the fact that two of the small, short-tailed forms, *melanurus* and *robinsoni,* show to a greater or lesser extent the same gleaming spangles as *caeruleus,* indicates close affinities. On the other side, the large, long-tailed forms of *horsfieldi,* without spangles, are obviously nearly related to the short-tailed *glaucinus,* while they are not far removed from *caeruleus,* which they replace geographically. All these different characteristics are distributed irregularly among the different forms and cannot be used for generic distinction, all the more since *Myiophoneus* has no very near relatives and forms a homogeneous group.

It seems that their closest allies are the Celebean *Heinrichia,* which, although much smaller, appears not very distant from the slenderer Whistling Thrushes, particularly *blighi.* Furthermore *Heinrichia* is nothing but a large *Brachypteryx,* very similar to *B. poliogyna* from the Philippines and *B. erythrogyna* from Borneo, in both sexes. Besides its much-reduced size, *Heinrichia* differs from *Myiophoneus*

mainly in the absence of glittering blue patches on the lesser wing-coverts.

We have therefore to consider that all Whistling Thrushes should be placed in the genus *Myiophoneus* Temminck and Laugier, Planches Coloriées, 2: 29, Dec. 1822 (type: *M. metallicus* = *M. flavirostris*). *Arrenga* Lesson, 1838 (type: *Turdus cyaneus* = *M. glaucinus*) and *Myiophaga* Lesson, 1838 (type: *Pitta glaucina* = *M. glaucinus*) fall into synonymy.

The American Museum of Natural History, New York, possesses large or sufficient series of all forms. Their study, supplemented by that of other specimens lent by the museums of Washington, Cambridge and Philadelphia, and by information supplied by Messrs. H. G. Deignan and R. M. de Schauensee, has led me to the following conclusions, as to their specific and subspecific status:

The two long-tailed South Indian and Formosan forms without spangles, *horsfieldi* and *insularis,* are conspecific.

All the large, long-tailed spangled forms of the Asiatic and Malaysian countries (*caeruleus, temmincki, turcestanicus, eugenei, crassirostris, dicrorhynchus, flavirostris*) are likewise conspecific, notwithstanding anomalies of distribution due to migration, intergradation and seasonal overlapping.

Among the short-tailed forms, *robinsoni* is best considered a separate species. It has a yellow bill, a primitive character found in several forms and appearing in the immatures of others; it seems to be the most generalized bird in the whole genus.

Three others, *glaucinus* (Java), *borneensis* (Borneo) and *castaneus* (Sumatra), are conspecific in spite of marked differences in color. Their proportions are the same, and also their retiring habits. While the male and the female *glaucinus* are nearly alike and the sexes differ in the two others, the dark-brown female of *borneensis* provides a transition, and fresh adult males of *glaucinus* and *borneensis* are very similar, the latter being only a little larger, duller, and having no lustrous blue band on the anterior crown. The blue tinge disappears to a great extent in old specimens of *borneensis;* those in the American Museum, collected on Kina Balu by J. Whitehead in 1888, hardly show any, while two birds in Cambridge, obtained at the same place by J. A. Griswold, Jr., in August 1937, are almost as blue as fresh *glaucinus.* All three forms have large white bases to the feathers on the breast, abdomen and back.

M. melanurus, from Sumatra, is a very unusual species, slender, with a short bill, very bright colors and spangles, and no white feather-bases.

The Ceylon bird, *M. blighi,* although related to *glaucinus,* is much smaller, has no blue on the anterior crown and no white on feather-bases. The female and the young are conspicuously different. It is better to consider it a valid species.

It is interesting to note that no *Myiophoneus* occurs on the island of Hainan, and that the Malaysian countries are the richest in species: Malay Peninsula, two; Sumatra, three; Java, two; while continental Asia, Formosa, Borneo and Ceylon have only one each.

Evidently Sumatra and the lower Malay Peninsula which, zoogeographically speaking, constitute but one natural region, are the center of distribution of the genus. Of the four different species inhabiting this area (*M. c. dicrorhynchus,* common to both the peninsula and the island; *robinsoni,* Malay Peninsula; *castaneus* and *melanurus,* Sumatra), *M. robinsoni,* restricted in range to the mountains of Selangor, appears to be the most generalized and consequently the central form, possessing nearly all the characteristics of the others, without their being very highly developed. In the dimensions of wings, tail, bill and legs, as well as in its color pattern, it occupies an intermediate position between them all. On the other hand, *M. blighi,* from Ceylon, appears to be the most primitive form now living, the nearest to *Heinrichia* and *Brachypteryx,* from which *Myiophoneus* probably was derived. It must be pointed out here that if the long-tailed *M. caeruleus* and *M. horsfieldi* superficially resemble some forms of *Turdus,* they are not really closely related to them, while through *robinsoni, glaucinus* and *blighi* they are linked to *Brachypteryx.*

The following diagram gives an idea of the affinities of the different species and subspecies of *Myiophoneus,* as they exist today:

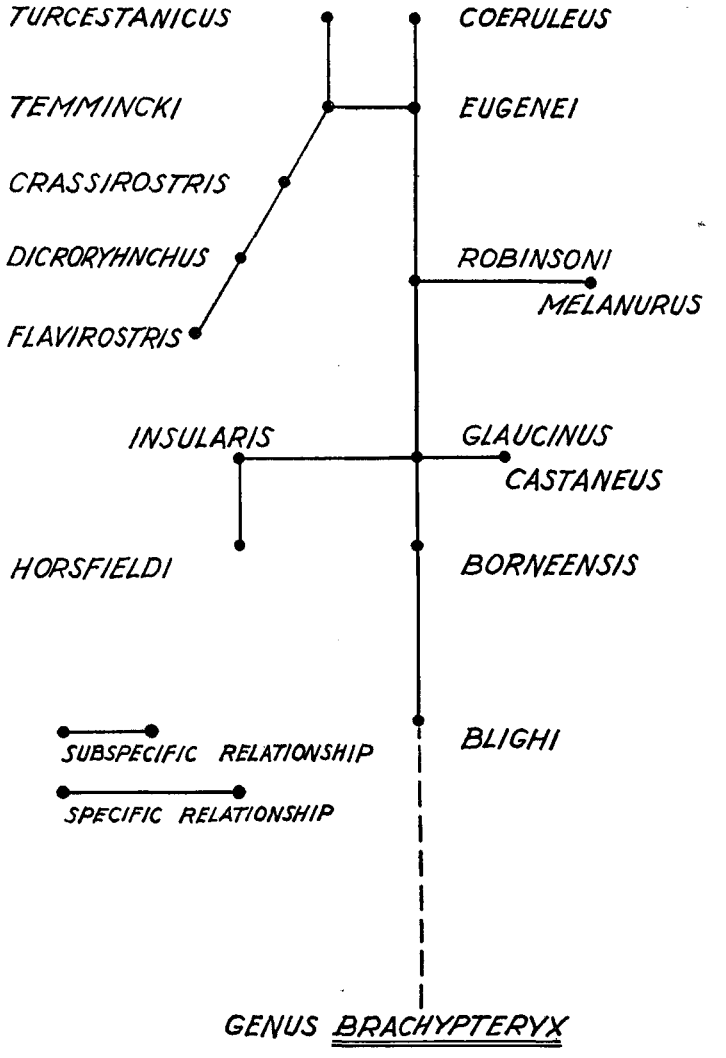
In the following key and descriptions, I have tried to give a summary of our present knowledge of the Whistling Thrushes. The descriptions and measurements have been taken entirely from the good series of the American Museum and a few other borrowed birds. In all forms there is a wide range of individual variation which might prove even greater than indicated in the following pages, if larger series could be examined. But owing to the personal factor, which always prevails in measuring birds, I have preferred not to use the records of other authors.

The length of the culmen has been quoted from its junction with the skull, and the depth of bill as given is the greatest diameter between the tip and the nostrils, close to the end of the latter.

Additional notes and information from literature have been utilized.

My thanks are due to Dr. Ernst Mayr, whose opinions have been

DIAGRAM OF SPECIES AND SUBSPECIES OF THE GENUS MYIOPHONEUS



WHISTLING THRUSH, MYIOPHONEUS CAERULEUS TEMMINCKI

welcome in the study of these birds, and who has kindly consented to read this paper before it was sent to press.

Key to Species and Subspecies

I. Tail longer than 112 mm.
  1. Body feathers without spangles
    A. Anterior crown bright blue ..... *horsfieldi*
    B. Anterior crown dull blue ..... *insularis*
  2. Body feathers terminated by a spangle
    C. Bill black ..... *caeruleus*
    D. Bill mostly yellow
      a. No white spots on median wing-coverts ..... *eugenei*
      b. White spots on median wing-coverts
        a′ Bill slender (depth: 9–10 mm.)
          a″ Smaller and brighter (wing: 159–180 mm.) .... *temminckі*
          b″ Larger and duller (wing: 178–200 mm.) ..... *turcestanicus*
        b′ Bill thick (depth: 12–13 mm.)
          c″ Spangles large (abdomen black) ..... *crassirostris*
          d″ Spangles small (abdomen brownish) ..... *dicrorhynchus*
        c′ Bill very thick (depth: 14–15 mm.) ..... *flavirostris*

II. Tail shorter than 105 mm.
  1. Spangles present
    A. Bill short and black ..... *melanura*
    B. Bill long and partly yellow ..... *robinsoni*
  2. No spangles
    C. General coloration blue and black
      a. Anterior crown black ..... *blighi*
      b. Anterior crown dark blue ..... *borneensis* ♂
      c. Anterior crown bright blue ..... *glaucinus*
    D. General coloration blue and brown, or chestnut, with a blue shoulder-patch
      d. Head, neck and breast blue, rest of plumage chestnut *castaneus* ♂
      e. Crown blackish, rest of plumage chestnut ..... *castaneus* ♀
      f. Whole plumage reddish brown ..... *blighi* ♀
      g. Whole plumage dark brown ..... *borneensis* ♀

I. MYIOPHONEUS HORSFIELDI

1. *Myiophoneus horsfieldi horsfieldi*

Myophonus horsfieldii Vigors, Proc. Zool. Soc. London, 1831: 35: Malabar.

Description.—Anterior crown bright glistening blue; head and neck black; upper parts dark blue, the lesser wing-coverts forming a glistening bright-blue patch; throat, foreneck and upper breast black; lower breast, flanks and abdomen mottled blue and black, the feathers having broad blue tips. Bill black.

Dimensions.—Wing, 143–160; tail, 112–121; tarsus, 42–47; culmen, 30–34; depth of bill, 8 mm.

Distribution.—Western India, from Mt. Abu south to Travancore and east to the Nilghiris. Non-migratory.

2. *Myiophoneus horsfieldi insularis*

Myiophoneus insularis Gould, Proc. Zool. Soc. London, 1862: 280: Formosa.

Description.—Resembles *M. h. horsfieldi,* but larger, with higher legs; anterior crown darker and duller blue; upper parts dull black; breast and abdomen appearing bright blue, the feathers having very broad blue tips; concealed white base to rump feathers and greater under wing-coverts.

Dimensions.—Wing, 156–170; tail, 116–135; tarsus, 51–55; culmen, 31–34; depth of bill, 9–10 mm.

Distribution.—The mountains of Formosa. Resident.

Note.—It is astonishing that the close affinity between *horsfieldi* and *insularis* seems to have, so far, escaped notice. In spite of the strange distribution of the two forms, they evidently constitute local races of the same species.

Geographically, they take the place of *caeruleus,* but the two groups of birds differ so widely in color pattern that it is impossible to link them more than generically. At the same time, *horsfieldi* is undoubtedly rather closely related to *glaucinus.*

II. MYIOPHONEUS CAERULEUS

1. *Myiophoneus caeruleus caeruleus*

Gracula caerulea Scopoli, Del. Flor. Faun. Ins., 2: 88, 1786: China, restricted to Canton.

Myiophoneus caeruleus immansuetus Bangs and Penard, Occas. Papers Boston Soc. Nat. Hist., 5: 147, Feb. 27, 1925: Ichang, Hupeh.

Description.—Whole plumage dark violet blue, each feather marked at the end with a shining spot, except on the lores, abdomen, under tail-coverts, wings and tail; lesser wing-coverts brighter, silky blue; median wing-coverts with a metallic white spot at the tip; feathers of the flanks with a variable amount of white on the base and shaft, sometimes extending to feathers of lower back and lower breast. Inner webs of tail- and wing-feathers black. Bill small, black.

Dimensions.—Wing, 158–178; tail, 114–132; tarsus, 47–54; culmen, 29–32; depth of bill, 8–9 mm.

Distribution.—The whole of China, breeding everywhere except in western Szechuan and in Yunnan, where it is a winter migrant, as it is also in northeastern Indo-China and northwestern Siam. Partly migratory. Rare in the north of its range (La Touche).

The western and northern birds (Szechuan, Hupeh, etc.) have been separated by Bangs and Penard under the name of *immansuetus,* as being duller in coloration, with more grayish spangles. But I agree with Deignan and Greenway that no differences can be discerned when sufficient series are examined, and the type of *immansuetus* (Mus. Comp. Zool., Cambridge, Mass.) cannot be distinguished from many topotypical *caeruleus.* The alleged characteristics are due, once more, to the state of preservation of the skins and above all to the season in which they have been collected. In all forms of *caeruleus,* the more or less ultramarine, violet and silvery tinge of specimens depends upon the season to a very great degree and changes tremendously as time goes on after the moult, without relation to geographical distribution. Foxing in old skins is not very great. On

the whole, however, *caeruleus* is a more silvery and violet bird than the other subspecies, except *turcestanicus*.

2. *Myiophoneus caeruleus eugenei*

Myiophoneus eugenei Hume, Stray Feathers, 1: 475, 1873: Pegu.
Myiophoneus stonei de Schauensee, Proc. Acad. Nat. Sci. Philadelphia, 87: 469, 1929: Chengmai, northwestern Siam.
?*Myiophoneus klossi* Robinson, Ibis, 1915: 250: Koh Mehse, Western Island, eastern Siam.

Description.—Similar to *M. c. caeruleus*, but larger, of a brighter and clearer blue; no white spots on median wing-coverts, no white on base of flank feathers (a characteristic linked to white wing-spots in the species *caeruleus*); a larger, heavier bill, bright yellow, with some black on the culmen and at the base.

Dimensions.—Wing, 165–181; tail, 123–158; tarsus, 48–54; culmen, 34–37; depth of bill, 9–10.5 mm. One exceptionally large male from Hoixuan (northern Annam) has a wing of 188 mm.

Distribution.—Burma, east of the Irrawaddy; Yunnan; western Szechuan (where it intergrades with *c. caeruleus* near Tatsienlu and Washan); northwestern Siam, northeastern and central Indo-China. In southeastern Siam and western Cambodia, and also once in Peninsular Siam and in south-central Siam, it has been found in the winter (December and February), probably on migration, twice within the range of *crassirostris*.

On the western border of its range, it intergrades with *temmincki*, and on the northeastern, with *caeruleus*. Mostly sedentary, moving southward occasionally during the winter.

Note.—Myiophoneus klossi was described by Robinson from the Western Island of Koh Mehse, off the coast of eastern Siam, from one specimen resembling *eugenei*, but having pure-white lores and throat, and white bases to the feathers of the abdomen. Until more specimens are collected, it seems wiser to consider this bird as an abnormal, semi-albinistic *eugenei*, just as the so-called *Cochoa rothschildi* is only a color phase of *Cochoa viridis*, appearing here and there within the range of that species. If, however, it was found that it is a local mutation, stable on the island, *M. klossi* would have to be recognized as a good subspecies of *caeruleus*.

3. *Myiophoneus caeruleus temmincki*

Myiophoneus temminckii Vigors, Proc. Zool. Soc. London, 1831: 171: Himalaya.
Myiophoneus tibetanus Madarász, Ibis, 1886: 145: Central Tibet.
Myophonus caeruleus rileyi Deignan, Proc. Biol. Soc. Washington, 51: 25, 1938: Doi Angka, northern Siam.

Description.—Similar to *eugenei*, but with white spots on the median wing-coverts and white bases and shafts to flanks and sometimes other feathers as in *caeruleus*. Differences in the thickness of bill between *temmincki* and *eugenei* are not constant, as Ticehurst (Ibis, 1938: 398) has pointed out.

Dimensions.—Wing, 159–180; tail, 116–141; tarsus, 48–54; culmen, 31–40; depth of bill, 9–10 mm. One male from Mt. Victoria is very large, having a wing of 187 mm. According to Stresemann, the two females collected with it (1938) measure 184, 177 mm.

Distribution.—Eastern Afghanistan and the Himalayas, Assam, Burma, west to the Irrawaddy, Tibet, western Szechuan. Found sparsely on high mountains in northwestern Siam, South Shan States and eastern Burma, probably on winter migration, within the territory of *eugenei.* Mostly sedentary, but some probably move southeast during the winter, which explains their presence in the area occupied by *eugenei.*

4. *Myiophoneus caeruleus turcestanicus*

Myiophoneus temmincki turcestanicus Zarudny, Ornith. Monatsber., 1909: 168: Russian Turkestan.

Description.—Similar to *temmincki,* but duller generally, with longer wings and tail.

Dimensions.—Wing, 178–200; tail, 140–164; tarsus, 48–52; culmen, 34–36; depth of bill, 9 mm.

Distribution.—Russian Turkestan, eastern Tianschan, Alai, Ferghana, Bukhara, north to the Alatau-Transilien chain. Appears to be sedentary, and according to Dementiev (Systema Avium Rossicarum) extending its range northward.

5. *Myiophoneus caeruleus crassirostris*

Myiophoneus crassirostris Robinson, Bull. British Ornith. Club, 25: 99, 1910: Trang, Peninsular Siam.

Myophonus temminckii changensis Riley, Proc. Biol. Soc. Washington, 41: 207, 1928: Koh Chang Is., southeastern Siam.

Description.—Similar to *temmincki,* but with a larger, higher, heavier bill, and more white on the base and up the shaft of the feathers of the lower back, flanks and abdomen.

Dimensions.—Wing, 167–180; tail, 123–141; tarsus, 49–51; culmen, 32–36; depth of bill, 12 mm.

Distribution.—North of the Malay Peninsula from Bang Tapan in the north, south to Patani and the Langkawi Islands; also the extreme southeast of Siam and neighboring islands. A few *eugenei* (3) have been found in December within or near the range of *crassirostris,* but they represent very likely only stray migrants, like those found on the mountains of southwestern Cambodia and another one (February) in south-central Siam.

Deignan has compared the type and topotypes of *changensis* with series of *crassirostris* and agrees with Kloss and myself that they are all identical when account is taken of season, age and wear.

6. *Myiophoneus caeruleus dicrorhynchus*

Myophonus dicrorhynchus Salvadori, Ann. Mus. Civ. Stor. Nat., Genova, 14: 227, 1879: Padang Highlands, Sumatra.

Description.—Spangles very small and rather dull; lesser wing-coverts dull bluish purple; very small and dull white spots on middle wing-coverts; upper parts dull purplish black; under parts brownish; large white bases to flank, abdomen, lower

breast and lower-back feathers; large yellow bill with black on culmen. The dullest race. Immature birds are dull black all over, with a little blue suffusion on the primaries only, and a white base to body feathers.

Dimensions.—Wing, 165–187; tail, 112–123; tarsus, 50–55; culmen, 35–41; depth of bill, 12–13 mm.

Distribution.—Sumatra and the southern half of the Malay Peninsula, north to Patani, from the foothills to 3,000 feet.

7. *Myiophoneus caeruleus flavirostris*

Turdus flavirostris Horsfield, Trans. Linn. Soc. London, 13: 149, 1821: Java.
Myophonus metallicus Temminck, Pl. Col., 170, 1823: Java.

Description.—Resembles *crassirostris,* but a little more purplish, with smaller and narrower spangles, almost invisible on the head; lesser wing-coverts somewhat less-bright blue; spots on median wing-coverts small, either blue or white, and a very large bill. Immatures are dull black, with blue suffusion on the wings and tail.

Dimensions.—Wing, 160–182; tail, 120–133; tarsus, 48–54; culmen, 36–42; depth of bill, 14–15 mm.

Distribution.—Mountains of Java, up to 3,500 feet.

REMARKS ON THE SPECIES *caeruleus*

The position of the different forms which I have grouped above as subspecies of *M. caeruleus* has been complicated by the fact that several of them have been found in the same territory.

In western Szechuan, Weigold has collected a series of mixed and intermediate specimens which have been well studied by Stresemann ('Zoologische Ergebnisse der Walter Stötznerschen Expeditionen nach Szetschwan, Osttibet und Tschili,' Abh. u. Berichte des K. Zool. u. Anthrop. Mus. zu Dresden, 16: no. 2, 28–29, 1923–24). Translated extracts of his commentary are given here:

"*Myiophonus caeruleus caeruleus* (Scopoli).

"*Myiophonus caeruleus eugenei* Hume.

"The series collected by Weigold in W. Szechuan affords unusual interest because it shows that two forms, which formerly had been regarded as separate species, interlock with each other. The species concerned are *Myiophonus caeruleus* (Scop. ex Sonnerat), for which I fix Canton as its type locality, and *Myiophonus eugenei* described by Hume from the lower Irrawaddy (Thayetmyo). The difference between the two forms consists primarily in the following:

	Length of wing	*Lower mandible*	*Rump feathers*	*Middle wing-coverts*	*Length of bill*
caeruleus	up to 178	black or dusky yellowish	with white shaftline	with white terminal spots	larger in the center
eugenei	up to 184	yellow	without white shaftline	without white terminal spots	narrower in the center

"The more primitive form might be *eugenei,* as its essential characteristics already appear in the juvenal dress, whereas the young *M. caeruleus* still possesses the yellowish lower mandible, entirely black flank-feathers, no white tips on the wing-coverts, and therefore is difficult to distinguish from *eugenei.* In the post-juvenal moult, which takes place in late summer (the remiges and rectrices are not involved), the final coloration is reached in *M. caeruleus.*

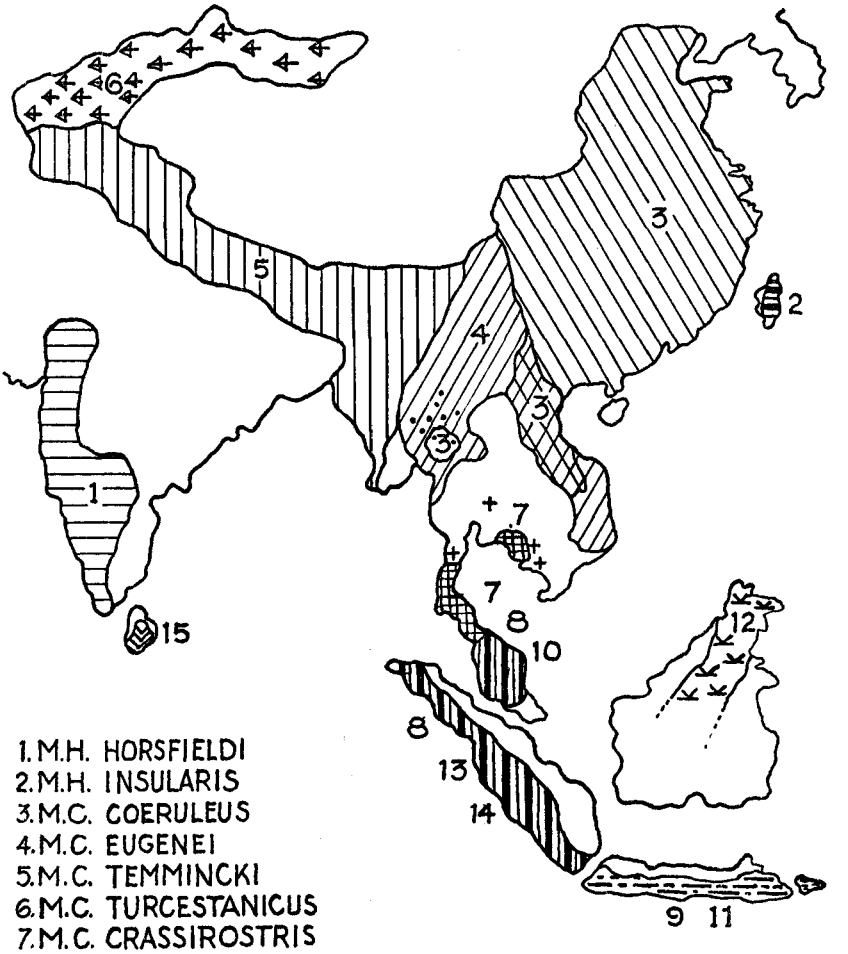
"Seven *M. caeruleus* obtained in the Kwangtung Province, after the post-juvenal moult, measure as follows: wing, 155, 166, 167, 174, 174, 174, 178; culmen, 25, 26, 26, 27, 27, 28, 29 mm. In three cases, the lower mandible is entirely black; in three cases, it shows traces of yellow spots, and in one bird even the tip of the upper mandible shows up much lighter, without, however, being pure yellow. The width of the white shaftline on the flank-feathers varies widely but it is always clearly discernible. The white spots on the wing-coverts are large in all specimens."

The specimens collected by Weigold, with their characteristics, may be tabulated as follows:

SPECIMENS OF *Myiophoneus caeruleus*

No.	*Locality*	*Dates*	*Sexes*	*Wing*	*Culmen*	*Color of bill*	*Rump feathers*	*Spot on lesser wing-coverts*
1	obh. Wanhsién (C)	5. III	♂	169 mm.	26 mm.	black	very white	large
2	Waschan (W)	29. IV	♂ III	176	28	black	little white	large
3	"	29. IV	♂ III	172	27	partly yellowish	very white	large
4	"	30. IV	♂ III	174	27	black	very little white	small
5	"	28. IV	♀ II	170	28	black	very white	large
6	"	29. IV	♂ III	172	28	almost wholly black	very white	medium
7	·	28. IV	♀ III	172	25	partly yellow	very white	large
8	"	29. IV	♂ III	176	27	almost wholly black	very white	large
9	"	30. IV	♂ III	177	27	almost wholly black	little white	large
10	"	28. IV	♂	174	28	almost wholly black	little white	large
11	"	28. IV	♀	177	27	slightly yellow	wholly black	absent
12	"	29. IV	♂	184	27	almost wholly yellow	wholly black	absent
13	"	30. IV	♂ III	173	26	largely yellow	very white	large
14	"	29. IV	♀	164	27	terminal half yellow	almost black	absent
15	"	30. IV	♂	183	29	largely yellow	very white	large
16	Tatsiénlu (T)	1. VI	♂	178	30	wholly yellow	very white	large
17	Atentsze (T)	26. IX	♀	164	—	wholly yellow	wholly black	absent

GENERAL DISTRIBUTION
OF THE GENUS MYIOPHONEUS



"If the collector had confined himself to preserving only one specimen instead of this instructive series, one probably would have 'identified' Nos. 2–10 as *caeruleus,* Nos. 11, 12, and 14 as *eugenei,* No. 13 as *temminckii.* As it is now, it is shown that a point of contact has been found between *M. c. caeruleus* and *eugenei,* in which both races have hybridized. In this hybrid zone the individuals predominate which possess a more or less intermediate coloration. Presence of the white spots on the wing-coverts is always coupled with white shaftlines on the flank feathers; but the genetic factor, controlling the coloration of the bill, remains independent (compare Nos. 15 and 16 with *eugenei* bill and *caeruleus* plumage). It is probably not a coincidence that the largest individuals (Nos. 12, 15, 16) have the *eugenei* bill.

"The width of the zone of mixture is unknown; undoubtedly Tatsiénlu also comes within its bounds, since Thayer and Bangs mention birds from there with *eugenei* plumage, while Weigold's No. 16 possesses *caeruleus* plumage. *M. c. eugenei* inhabits Yunnan, Burma, Siam and Indochina. It is interesting that also within this territory, in the Karen Hills, occasionally individuals with *caeruleus* plumage are found (so-called *'temminckii,'* in reality progressive variations of *eugenei*). Weigold reports that pure *caeruleus caeruleus* occur in eastern Szechuan on the Yangtse in and above Wanhsien on November 5 and March 5 at 185 m. In the boundary mountains of Oméi and Washan and Kwanhsién to Tatsiénlu, mixed forms and hybrids frequently inhabited regions of the wildest torrents, particularly at the edge of waterfalls, at altitudes of 1200–3000 m. In the west, in the Yunnan-Tibet region, some, which undoubtedly were, as the supporting specimen shows, pure *eugenei,* were recorded at five points between Batang and Atentsze at an altitude of 2200–3360 m."

The above conclusions dispose of the objection that *caeruleus* and *eugenei* cannot be conspecific because they breed in the same localities. Their position is the usual one that obtains anywhere on the distributional borders of two races. Farther south, *caeruleus* and *eugenei* occur commonly together during the cold season in the southeast of Yunnan, the northeast and the center of Indochina, and in the northwest of Siam. The differences in the size and the thickness of bill and legs in the two birds are very striking in living specimens and lead one to believe, as I long did, that they represent two separate species. But it is certain that, in all these areas, *caeruleus* is but a winter visitor having been found from October till the beginning of April; it has never been found later in the spring, while *eugenei* is the resident breeding form.

There is an interesting bird in the Museum of Comparative Zoology, a male *caeruleus* taken on Mt. Angka, northwestern Siam, on March 15, 1937, which has no white tips to the median wing-coverts; it has, however, some white on the flank feathers. It is an intermediate between *caeruleus* and *eugenei,* probably a migrant from the mixed area discovered by Weigold.

Curiously enough, and for no apparent reason, both forms of *Myiophoneus* are lacking entirely in the high regions of northern Laos and northeastern Siam where a great deal of work has been done lately by collectors, including myself. They have not been found west of the Tonkin border.

In Yunnan, the breeding bird is undoubtedly *eugenei,* which has been found all over the province (Rothschild, 'Avifauna of Yunnan,' Novit. Zool., 33: 256, 1926). In the west, it intergrades with *temmincki* and there is a well-marked hybrid in the American Museum, collected by Forrest on the Lichiang Range, together with several pure *eugenei.* Such perfectly normal intergradation and overlapping take place also along the Irrawaddy, and quite a number of birds presenting the characteristics of *temmincki* have been found east of the river, often a long distance away. Ticehurst (Ibis, 1938, p. 398) lists the following instances in Burma, where both races have been recorded: foothills of the Arrakan Yomas, west of Thayetmyo; Karen Hills; Na Noi, west of Inle Lake, South Shan States; Loi San Pa, Mong Kong State, South Shan States; Htawgaw, Myitkyna Hills.

The case of white-marked birds occurring during the winter on the mountains of eastern Burma, South Shan States and northwestern Siam is more puzzling, but they must be considered at present as migrants wandering far to the southeast during the cold season.

Deignan's name *rileyi* cannot, in my opinion, be accepted for these birds. Of the characters involved in the description to separate it from *temmincki,* the author himself dismisses now those relating to the size and number of the spangles. Furthermore, the ground color of *temmincki, eugenei* and *crassirostris* is exactly the same on the abdomen. Normally, it is black in all three, and it only turns brownish in worn plumage, long after the moult. Just as many black-bellied specimens can be found among Malay birds as among Himalayan ones. The only form which is normally browner and duller is *dicrorhynchus.* As to the amount of white on the base and shaft of the feathers of the flanks, abdomen and lower back, it is indeed on the average greater in *crassirostris* than in *temmincki,* but it varies individually in the latter race, and one can match the specimens of *'rileyi'* that I have examined with many Indian and Burmese birds.

I therefore consider these isolated white-marked birds which have been found east of the Irrawaddy as stray and migrating *temmincki*. Near the southeastern limits of its range, one finds a few specimens of *temmincki* which are rather larger and have more white; although their bill is not thicker, they evidently show a tendency toward *crassirostris*. It is an interesting fact in the history of the evolution and distribution of the species that *temmincki* seems to be more closely related to *crassirostris* than is *eugenei*.

III. MYIOPHONEUS ROBINSONI

Myiophoneus robinsoni Ogilvie-Grant, Bull. British Ornith. Club, 15: 69, 1905: Mt. Mengkuang Lebar, Selangor, Malay States.

Description.—Medium size; rather large bill, mostly yellow. Anterior crown slightly lighter blue than the head; bright-blue lesser wing-coverts; upper parts dull blackish blue; breast feathers with blue spangles; abdomen dull brownish black; white on the bases of feathers of abdomen, back and flanks.

Sexes alike, but the female is a little duller and browner below.

Dimensions.—Wing, 131–148; tail, 92–103; tarsus, 42–46; culmen, 30–33; depth of bill, 9 mm.

Distribution.—Malay Peninsula, only in Selangor, from the Semango Pass to Gunong Mengkuang (at about 5,000 feet).

Note.—This very interesting species has potentially the characteristics of all the others. The blue fringes of the breast feathers are distinctly shining and constitute spangles, rather ill-defined, but decidedly different from the silky, but not shining blue fringes of the same feathers in *glaucinus*.

IV. MYIOPHONEUS GLAUCINUS

1. *Myiophoneus glaucinus glaucinus*

Pitta glaucina Temminck et Laugier, Pl. Col., 194, 1823: Java.

Turdus cyaneus Horsfield (nec Müller, 1776), Trans. Linn. Soc. London, 13: 140, 1821: Java.

Description.—Medium size; large black bill. Anterior crown bright blue; head blackish; general plumage dark blue, with bright-blue lesser wing-coverts and wide blue margins to the feathers of the breast; white bases in feathers of the flanks, back, abdomen and lower breast. Female similar to male, but a little duller and with less bright blue on the crown and on the breast. Young brownish black.

Dimensions.—Wing, 135–147; tail, 83–92; tarsus, 39–41; culmen, 30–31; depth of bill, 8–9 mm.

Distribution.—Java and Bali, above 2,500 feet.

2. *Myiophoneus glaucinus borneensis*

Myiophoneus borneensis H. H. Slater, Ibis, 1885, p. 123: Sarawak, Borneo.

Description.—Medium size; large black bill. Male: dark purplish blue, brighter on the head and breast, duller on the back; lesser wing-coverts bright violet blue;

wings and tail black; much white on the base of the flanks, back, breast and abdomen feathers. Female: entirely dark brown, with dark-blue lesser wing-coverts. Young brown, distinctly streaked with white underneath.

Dimensions.—Wing, 137–147; tail, 86–103; tarsus, 42–48; culmen, 29–32; depth of bill, 9 mm.

Distribution.—Borneo, between 2,000 and 9,000 feet on Kina Balu.

3. *Myiophoneus glaucinus castaneus*

Myiophoneus castaneus W. Ramsay, Proc. Zool. Soc., London, 1880, p. 16: West Sumatra.

Description.—Medium size; large black bill. Male: anterior crown bright blue; head, neck and breast dark blue, passing to chestnut brown on the abdomen; lesser wing-coverts bright blue; back, wings and tail chestnut; white bases in feathers of flanks, abdomen, breast and back. Female: anterior crown bluish black, passing to blackish brown; lesser wing-coverts blue; rest of plumage chestnut.

Dimensions.—Wing, 137–147; tail, 86–103; tarsus, 42–48; culmen, 29–32; depth of bill, 8–9 mm.

Distribution.—Sumatra, above 3,000 feet.

V. MYIOPHONEUS BLIGHI

Arrenga blighi Holdworth, Proc. Zool. Soc., London, 1872, p. 444: Nuwara Eliya, Ceylon.

Description.—Size very small; rather large bill, black. Male: head black; general plumage uniform dark blue, with lesser wing-coverts lighter blue, remiges and rectrices black. Female: chestnut brown above, reddish below, with blue lesser wing-coverts and a slight bluish suffusion on the back and wings. Young reddish brown, mottled on head and breast. No white on flank feathers.

Dimensions.—Wing, 97–104; tail, 77–86; tarsus, 32–35; culmen, 26–27; depth of bill, 6–7 mm. The smallest species.

Distribution.—Ceylon, above 3,000 feet.

VI. MYIOPHONEUS MELANURUS

Arrenga melanura Salvadori, Ann. Mus. Civ. Stor. Nat. Genova, 14: 227, 1879: Padang Highlands, Sumatra.

Description.—Small size; short black bill. Anterior crown and supercilium bright shining blue; very bright-blue lesser wing-coverts; back black, with bright-blue spangles; remiges and rectrices black; under parts black, with broad blue terminal spangles to the feathers. No white on the bases of flank feathers. The female is similar to the male, but duller and more brownish below, on wings and tail.

Dimensions.—Wing, 122–132; tail, 86–94; tarsus, 37–42; culmen, 24–25; depth of bill, 6 mm.

Distribution.—Sumatra, on the mountains, from 4,000 to 9,000 feet.

168 East 63 Street
New York City