

AMERICAN MUSEUM NOVITATES

PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY
CITY OF NEW YORK OCTOBER 27, 1952 NUMBER 1589

THE SYSTEMATICS OF *AEGITHINA* *NIGROLUTEA* AND *AEGITHINA TIPHIA* (AVES, IRENIDAE)¹

BY DANIEL MARIEN

INTRODUCTION

Two species of ioras (*Aegithina*), both non-migratory, inhabit the open jungle and deciduous woodland of peninsular India from the plains up to about 3000 feet. Extra-limital races of one of these species and two additional species of iora occur in Malaysia and on some of the islands of the East Indies. These four species are *Aegithina nigrolutea*, *A. tiphia*, *A. viridissima*, and *A. lafresnayei*. The last-named is often placed in the monotypic genus *Aethorhynchus*, but as it is very similar to *Aegithina* in plumage pattern and only somewhat larger, there is no need to retain for it a separate genus, as Delacour (1946) has already noted. For the nomenclatorial history of these four species, Hume's (1877) pioneer analysis may be consulted.

Geographic variation in the species *A. tiphia* has received considerable attention, but new data presented in this paper help to clarify the molt situation in these birds and permit a tentative revision of the subspecies. This new study is based on approximately 150 Indian specimens collected by Dr. Walter Koelz, some 100 other specimens in the American Museum of Natural History, and 175 specimens lent by the United States National Museum, the Chicago Natural History Museum, and the University of Michigan Museum of Zoology, to whose curators I am much obligated.

Measurements are in millimeters; the bill was measured from the base of the skull to the tip of the culmen. A locality list of the Koelz specimens precedes the taxonomic accounts.

¹ Notes from the Walter Koelz Collections, Number 13.

PLUMAGES AND MOLTS

Prerequisite to an analysis of the systematics of *Aegithina tiphia* and *A. nigrolutea* is a proper understanding of their various plumages. Ioras molt twice yearly; collections thus tend to have a higher proportion of specimens in molt than they might have if there were but a single molt. Great care is required in selecting specimens for study, since the same characters may vary seasonally and geographically, especially the amount of black on the head and back of males. This is an important taxonomic character in distinguishing the races of *tiphia*.

Adult females of both species are entirely green above (except for a gray and white tail in *nigrolutea*) and yellow (dull in winter, brighter in spring) below. The juvenal and first-winter plumages in both sexes of both species are similar to their adult female plumages. First-year birds are best recognized by the possession of more pointed and somewhat narrower tail feathers.

Subadults (first-winter) and adults of both species undergo an incomplete spring molt in which usually only the body feathers are replaced, but first-year birds do not at that time acquire the full nuptial dress. This incomplete spring molt seldom involves the tail, but occasionally some males of *tiphia* are found to be molting the rectrices, with green quills being replaced by black ones. This condition exists in several subadult males taken in late May and early June in Nepal; it seems unlikely that this represents an early fall molt, the molt in which subadult males normally acquire the black tail of the adult. No black-backed, green-tailed males of *tiphia* have been reported. It is not clear whether birds in first-year plumage breed, or not.

The nuptial plumage of both species is acquired by means of an incomplete molt before the breeding season. In males of *nigrolutea* and in some populations of *tiphia*, birds in this plumage have a golden yellow chin and throat and a variable amount of black on the dorsum; in Himalayan, Chinese, north Siamese, Indo-chinese, Javan, Balinese, Bornean, and Palawan forms of *tiphia* the males have a green-backed, feminine type of plumage. Adult males of both species are black-tailed at all seasons, except on Java and Bali where *tiphia* males are always completely hen-feathered; in *nigrolutea*, at the other extreme, even subadult males have a black and white tail.

The post-nuptial molt is complete in both species, restoring

to males an off-season plumage with green upper parts, black tail (except as noted above), and dull yellow under parts.

***Aegithina nigrolutea* Marshall**

INDIA: Kathiawar, Sihor, January 24–27, 1949, 4 ad. ♂, 5 ad. ♀, 1 unsexed ad. [?♂]. Surguja, Ramanujganj, September 26, 1948, 1 ad. ♀, September 30, 1 ad. ♂. Bihar, Garhwa Road, September 12, 1947, 1 subad. ♂, Mohamadganj, August 24–September 2, 1947, 3 ad. ♂, 3 subad. ♂, 4 ad. ♀, 1 unsexed ad. [?♀]. Madras, Salem, March 9–10, 1948, 1 ad. ♂, 1 ad. ♀.

TAXONOMIC STATUS

The consensus is that *A. nigrolutea* is a species distinct from *A. tiphia*. In a series of faunal papers, Whistler (1932, 1939, 1942) suggested that *nigrolutea* is a borderline case between a subspecies and a species; nomenclatorially, however, he continued to treat it as a species, even while he advanced arguments for its status as a race of *tiphia*. Although frankly puzzled by the overlapping distributions, he was more impressed by what he thought to be intergrades between the two forms. Whistler stated in 1932 that *A. tiphia humei*, one of the peninsular Indian races, appears to represent a population intergrading with *nigrolutea*, yet many years later, in 1939, he claimed, without describing his material, that some specimens from Gwalior were the first *tiphia-nigrolutea* intermediates he had seen. This evidence is surely not convincing, and the intermediates, if such they were, could indicate little more than extreme individual variation or occasional hybridization between a pair of otherwise well-defined sibling species. Aside from Whistler's, I know of no reported intermediates.

It is now certain that the range of *nigrolutea* overlaps even more extensively that of *tiphia* than was formerly believed. Both species can be distinguished with ease wherever they occur. In all plumages (adult and immature) of both sexes, *nigrolutea* has a black tail broadly edged and tipped with white. In *tiphia*, only the adult male ever has a black tail, and although it is sometimes very broadly margined with yellow, it is never white. The black dorsum of males of *nigrolutea* is interrupted by a golden collar on the upper back; individual males of *tiphia* from central India may have this character well developed, but there is never any intergradation of the tail pattern. Perhaps the dorsal pattern common to both species was interpreted by Whistler to

indicate what we now call "gene flow" rather than to mean former sharing in a common "gene pool."

GEOGRAPHIC RANGE

Aegithina nigrolutea is a resident of north central India from the North West Frontier Province and the Kathiawar Peninsula east to Bengal. According to Biswas (*in litt.*), the material in the British Museum and the Zoological Survey of India shows this species to occur in "southern Punjab south to western Khandesh, including eastern Rajputana, Gujarat, and Cutch. To the east it is found in Hazaribagh and Ranchi District in south Bihar." Ali (1945) says this bird also may be found in North West Frontier Province and parts of eastern Bengal. The only specimen of this species in the American Museum of Natural History is from Saharunpore, United Provinces.

The southern boundary of the range is not satisfactorily fixed. Whistler (1942) recorded a male from Mysore (Biligirirangan Hills) resembling *nigrolutea* but which he believed to be an immature of *tiphia*. Mr. Biswamoy Biswas has informed me that the specimen is truly *nigrolutea*. Although the two Koelz specimens from southern Madras are clearly adults, whether the species normally breeds in the area between the Central Provinces and south India or not is to my knowledge unknown. These records could conceivably represent accidental occurrences. The Madras specimens were not in a plumage comparable to the northern ones examined, but seem to be very slightly smaller.

No geographic variation has been recorded.

MOLT AND MEASUREMENTS

All of the listed Koelz specimens, except those from Kathiawar, were in heavy molt.

Kathiawar: Four adult males: wing, 63–65.5(64.3); tail, 44.5–46(45.6); bill, 16–17(16.4). Five adult females: wing, 62.5–65.5(64.1); tail, 44.5–48.5(45.8); bill, 14.5–16(15.3).

Bihar: Three adult males: wing, 60–65(62.6); tail, 39.5–45.5(42.5); bill, 15.5–16.5(15.8). Four adult females: wing, 63–63(63); tail (two only), 44, 45(44.5); bill, 15.5–17(16.4).

Surguja: One adult male: wing, 64; tail, 46; bill, 18. One adult female: wing, 62.5; tail, 50; bill, 17.

Southern Madras: One adult male: wing, 60.5; tail, 40; bill, 16. One adult female: wing, 60; tail, 40; bill, 16.5.

Aegithina tiphia Linnaeus

Aegithina tiphia is by far the most widely distributed of the four ioras, breeding in suitable habitats from Ceylon and India to Malaysia, Indonesia, and Palawan. A number of races have been described from this vast area and have long been supposed to represent an example of parallel clines both east and west of the Bay of Bengal. That such is not strictly true is shown below.

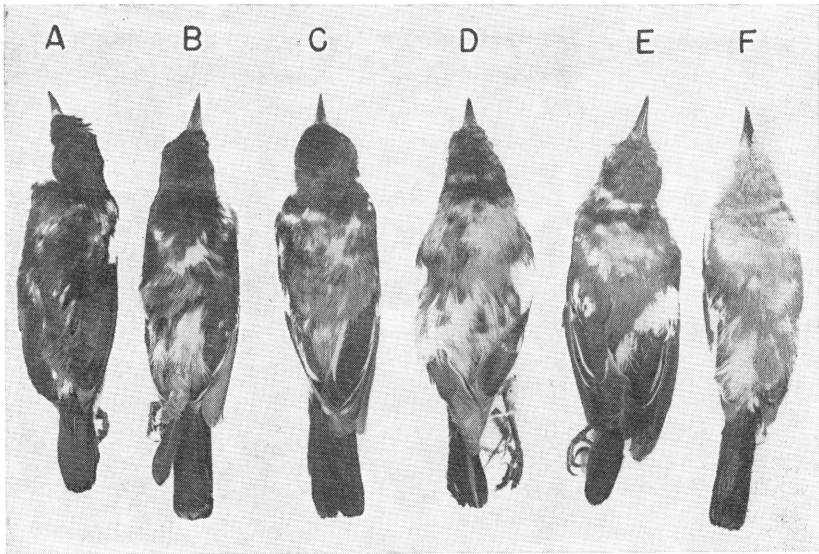


FIG. 1. Six specimens chosen to represent stages in the trend from a black-backed to green-backed adult male breeding plumage in geographical races of *Aegithina tiphia*. A is characteristic of the subspecies *multicolor*; B and C are typical of the subspecies *humei*; D and E are often found in the race *horioptera*; F is the plumage of the nominate subspecies and *styani*. The frequency distribution of these plumage types in different geographical areas is shown in table 1.

VARIABLE CHARACTERS

SIZE: Size differences are not very marked, although there is a small increase from south to north, reaching maxima in Punjab and northern Siam and Yunnan (see table 2).

WING BARS: Two white wing bars are always present except in Ceylon where some birds have only one. The Ceylonese population is dimorphic for this character, although it has often been considered that a single bar was characteristic of it.

PLUMAGE PATTERN: In the section on molts and plumages above it is pointed out that the amount of black on the head and back of breeding males is an important taxonomic character, showing the greatest amount of geographic variation of all the taxonomic characters. This variation is analyzed in the following paragraphs and is used as the chief basis for a revision of the sub-species of *tiphia*.

TABLE 1
COLOR OF BACK OF FULLY ADULT, NON-MOLTING MALES
OF *Aegithina tiphia* IN BREEDING PLUMAGE
(Frequency distribution in selected geographical areas
of plumage types shown in figure 1)

Area	All Black A	Type →				All Green F	Total
		B	C	D	E		
Ceylon	4	2	4				10
Southern India (to latitude 15° N.)	1	1					2
Central India (north to Ganges River)		1	2	2			5
Himalaya (Punjab to Assam)						24	24
North Siam, Yunnan, Ton- kin, Laos, Annam						26	26
North Burma		1	1				2
Central Burma (Pegu)		1			1		2
Central Siam			1	1	4	5	11
Malay Peninsula					4	15	19
Sumatra						4	4
Borneo						4	4
Palawan						12	12
							121

Since the dorsal patterning shows continuous variation and is not easily susceptible to quantitative treatment, an arbitrary index has been devised to describe it. Six specimens have been chosen as representative of arbitrary stages in the trend from an all black to a green plumage and to which the analyzable material has been matched as closely as possible (fig. 1). Table 1 gives the frequency distribution of the several types in selected geographical regions. Only 121 of approximately 215 male specimens were in a plumage usable for comparison.

OUTLINE OF GEOGRAPHIC VARIATION

In Ceylon, southern, and central India, types A, B, and C predominate. The populations of those areas have been divided into two not very distinct races: *multicolor* in the extreme south and *humei* in the northern part of the range. Further details are given below; here it is sufficient to note that these races have breeding males with black crowns and backs. North of these, in the foothills of the Himalayas, are populations of which the males are entirely green above during the breeding season and hence are exclusively type F, hereafter referred to as the *tiphia*-plumage. They range in India from Punjab to east Bengal and are divisible into two subspecies: *septentrionalis* in the west and nominate *tiphia* in the east. Four races, therefore, are found in India and Ceylon, breaking up into two well-marked subspecies groups which meet in a zone roughly corresponding with latitude 25° N. In my material, 17 specimens of the first group, composed of types A, B, and C, are connected to the second group, 24 specimens of type F by only two specimens of type D. None of type E is present.

The situation is somewhat complicated outside India proper. In the Mishmi Hills, Ali and Ripley (1948) got but a single female of this species, but as lowland birds of that region are said to show greater relationship with the avifauna of the western Himalaya than with that of the upper Irrawaddy watershed, we may expect males to be of type F. No populations with males of the *tiphia*-plumage are found in Burma, unless possibly at the extreme northern tip, an area from which there are no specimens or references.

Populations with type F plumage are present in southern Yunnan, northern Siam, northeast Tonkin, northern Laos, Annam, Cochin China, and Cambodia (Deignan, 1945; Delacour and Jabouille, 1931). According to Deignan (*ibid.*), in the provinces of northern Siam the ioras are never black-capped, although they occasionally tend to have some black on the mantle. Examination shows that all his specimens can be assigned to type F. Birds from Yunnan and Chiang Rai Province of north Siam and northern Laos and Tonkin are slightly larger and have accordingly been named *A. t. styani*; birds from the other localities mentioned above are inseparable from the nominate subspecies.

Green-backed forms next occur on some of the islands of the Malay Archipelago up to, but not crossing, the margin of the

continental shelf. On Java and Bali a race has evolved (*scapularis*) in which the males lack the black tail characteristic of males of the rest of the species. Borneo supports two races, *viridis* and *aequanimis*, the latter also occurring on Palawan. The Sumatran population, apparently type F, is related to the variable peninsular Malayan and southern Siamese birds and is considered below.

I cannot confirm the often accepted statement that black-backed birds (types A, B, and C) increase in frequency southward on the Malay Peninsula. The converse seems to be true, although the evidence presented is based on a very limited sample.

From northern Burma south through central and southern Siam, Pegu, Tenasserim, the Malay Peninsula, and Sumatra, forms are found which to a greater or less extent resemble the Indian subspecies *humei* or the nominate race. The amount of black is variable; it is most extensive in some north Burmese specimens and much less so, almost absent, in Malaccan specimens. The latter, in full breeding plumage as judged from the richly colored throat and breast, and the date (May), are almost entirely dull green above, with scattered traces of black most conspicuous on the nape. These are the four examples of type E. Even some winter-taken males, not included in the table, possess a little black and are rather bright below. They resemble specimens of nominate *tiphia* from Cachar and Khasia Hills more than they resemble *humei*.

The true status of the north Burmese iora seems to have been generally overlooked. These birds are all very black-backed and indistinguishable from *humei* of Madras and Bastar in India. Specimens from Upper Chindwin and Myitkyina show an extensively black dorsum. Stanford and Ticehurst (1938) list typical *tiphia* from Myitkyina but neglect to tell us anything about the plumage. A male from Upper Chindwin was also assigned to *tiphia* by Mayr (1938a); as he correctly noted, this bird was molting into the nuptial plumage. Upon examination, the specimen (fig. 1C) is seen to have already a solidly black pileum.

In central Burma (Pegu), the birds tend to be black-backed and to have some black on the crown or nape; there is evidence, however, of wide variation. Of two examples from Pegu, one from Thayetmyo corresponds to type B and the other from south Pegu to type E.

Populations from central Siam and Malacca include birds of types B to F, but 20 of 30 skins examined are of the latter class. Affinities of Sumatran birds are undoubtedly with this group. The application of subspecific names is dealt with in a following section on systematics.

The preceding discussion conflicts with the views of earlier workers who, as noted above, claim that a black-backed plumage appears with increasing frequency southward on the Malay Peninsula. Hume is apparently the originator of this view. Sharpe (1881), having examined both the British Museum specimens and the Tweeddale Collection, concluded that "In the Malayan Peninsula, however, black-backed birds again occur, not to be distinguished from South-Indian specimens." Even so, the possibility that this type is not very common is suggested by his further statement that "Many Malaccan specimens are also identical with Bornean [type F], and would have been referred by me to *Ae. viridis* but for the likelihood of their being black-backed *Ae. tiphia* in its second or black-tailed stage." Chasen and Kloss (1931) concur with Hume and Sharpe, yet they note that "...even as far south as Singapore the black plumage is not invariably assumed..." Moreover, in describing a new race from Singapore, those authors compare their material not with the black-plumaged central Indian form, but with *tiphia*-plumaged birds from Bengal from which the new form differs by being much blacker. However, the bird they have "...selected as the type has the mantle largely green."

This general survey shows that some of the early literature is misleading and that east of the Bay of Bengal there is a trend from an all black-backed to an all green-backed plumage southward, culminating in the green-backed forms of Indonesia.

SYSTEMATICS

The following is a conservative listing of the recognizable subspecies of *Aegithina tiphia*.

- A. t. multicolor*: Ceylon. This intergrades in southern India with the form next following
- A. t. humei*: central India, north Burma
- A. t. septentrionalis*: North West Frontier Province and Punjab
- A. t. tiphia*: northern India from Kumaon east to Bengal and Assam, Indochina, northern Siam (except Chiang Rai)
- A. t. styani*: Chiang Rai, southern Yunnan, northeast Tonkin, and northern Laos

A. t. horizoptera: southern Burma, south central Siam, Malaya, Sumatra, and some offshore islands

A. t. scapularis: Java and Bali

A. t. viridis: southern Borneo

A. t. aequanimis: northern Borneo and Palawan

Complete synonymies are not given, as these are easily available in the standard reference works.

I wish to call attention to the purposely vague outlines of the ranges of the Malaysian races, as it seems to me that there is insufficient material to delimit them with any precision. In any case, it is preferable to stress the defects in our knowledge and so stimulate investigation than to present the false impression of a definiteness which does not exist.

***Aegithina tiphia multicolor* Gmelin**

Ceylon birds in winter plumage are very slightly darker than peninsular birds; males in breeding plumage tend to have a fully black back. Only one wing bar is present in some individuals. Birds from Travancore are said to be intermediate; in an early paper, Whistler (1932) listed them under the more northerly *humei*, but later (1944) he included them with *multicolor*.

***Aegithina tiphia humei* Baker**

INDIA: Bastar: Kesarpal, March 28–29, 1949, 2 ad. ♂; Kondagaon, March 30, 2 ad. ♂; Keskai, March 30, 1 subad. ♂. Bihar: Mohamadganj, August 31–September 2, 1947, 1 subad. ♂, 1 ad. ♀. Central Provinces: Bhopal, Sanchi, January 3, 1938, 1 ad. ♂; Bheraghat, February 26–March 24, 1946, 4 ad. ♂, 2 ad. ♀, April 23, 1 ad. ♀; Nawpara, March 7, 1949, 1 ad. ♂; Bichhia, July 7, 1946, 1 ad. ♀. Kathiawar: Junagadh, Sasan, January 30–February 7, 1949, 4 ad. ♂, 2 ad. ♀, 1 unsexed ad. [♂]. Madras Presidency: Mangalore, March 1, 1937, 2 ad. ♂; Nilambur, March 6, 1 ad. ♂; Kodur, March 18, 1 ad. ♂, 1 ad. ♀; Cudapah, March 20, 1 ad. ♀; Hospet, March 25, 1 ad. ♂; Bengasi, January 26, 1 ad. ♂; Rati, January 29–31, 2 ad. ♂, 1 ad. ♀; Nilgiri Hills, Kuntjapani, February 20, 1 ad. ♂; Salem, March 8–11, 1948, 4 ad. ♂, 1 (? subad.) ♀. Northern Bombay Presidency: Londa, January 8–February 10, 1938, 2 ad. ♂, 2 subad. ♂, 3 ad. ♀; Jagalbed, February 18–March 3, 2 ad. ♂, 2 ad. ♀; Castle Rock, March 5–8, 2 ad. ♂, 1 ad. ♀. Orissa: Mahendra Giri, January 22, 1937, 1 ad. ♂; foot of Mahendra, January 26, 1 ad. ♀. Rajputana: Sirohi, Anadra, December 30, 1948, 2 ad. ♂, 2 ad. ♀; Oria, January 4–7, 1949, 2 ad. ♀. Surguja: Ramanujganj, September 29–30, 1947, 1 ad. ♂, 1 subad. ♂, 1 ad. ♀, November 8, 1 ad. ♀; Gargori, October 22, 1 subad. ♂.

Aegithina tiphia humei* \leq *Aegithina tiphia tiphia

INDIA: United Provinces: Benares, January 22, 1947, 1 ad. ♂; Siswa Bazar, January 30, 1 ad. ♂.

The adult males of this subspecies in the green winter plumage are very slightly paler than males of *multicolor*, and in the nuptial plumage tend not to have the black dorsal pattern unbroken because the yellow bases of the feathers frequently show. Actually, *humei* is scarcely distinct from *multicolor*, whereas it sharply differs from the populations to the north in having dissimilar summer and winter adult male plumages. The northern races, *tiphia* and *septentrionalis*, are green-backed throughout the year, even though they have two molts.

Since it is not possible to distinguish the north Burmese populations from *humei*, they must be considered as belonging to that subspecies. The following specimens have been seen by me: upper Chindwin, Mingin, February, one adult male; Mingin, no date, one adult male and one adult female; upper Chindwin, March, one adult male and one adult female; Upper Burma, June, one adult male and one adult female; Thayetmyo District, May, one adult male.

The delineation of the range of *humei* by Whistler (1932) may be emended to: most of the Indian peninsula from Mysore and southern Madras north to Kathiawar, southern Rajputana, Central Provinces, southern United Provinces, southern Bihar, Surguja, and Orissa, north to about the latitude of the Ganges; north Burma (Chindwin, Thayetmyo, and Myitkyina). Hume (1877) records some partially black-backed birds at Calcutta; these may have to be called *humei* and the type locality of Linnaeus' *tiphia* may be restricted to northern Bengal. Not having seen such specimens, I cannot take that step.

None of the specimens examined show how or where the change from a dimorphic to a monomorphic male dress occurs. Statements by Hume and Whistler that the plumage is mottled or that both types sometimes occur together in the supposed intergrade areas cannot be confirmed by the present series.

***Aegithina tiphia septentrionalis* Koelz**

INDIA: Punjab: Kangra, Kotla, January 2-11, 1948, 1 ad. ♂, 1 subad. ♂, 2 ad. ♀, January 24-25, 1946, 2 subad. ♂, 1 ad. ♀, February 2-9, 2 ad. ♂; Bhadwar, March 31-April 12, 1933, 3 ad. ♂, 1 subad. ♂, 1 ?subad. ♀.

Aegithina tiphia septentrionalis* \geq *Aegithina tiphia tiphia

INDIA: United Provinces: Kathgodam, April 6, 1948, 1 ad. ♂, 1 ad. ♀; Lechiwala, September 1, 1 ad. ♀, October 29–31, 2 subad. ♂, 4 ad. ♀, 1 subad. ♀.

This, the most recently described race of *tiphia*, is slightly paler above and somewhat larger (especially longer-billed) than nominate *tiphia* to the east, intergrading with the latter east of Punjab. All birds from the North West Frontier Province and Punjab may be referred to this subspecies.

When *septentrionalis* was described, the material of the new race available for comparison was composed of specimens in prenuptial molt; these specimens were then contrasted with non-molting, winter examples of nominate *tiphia*. The more golden under parts of the type series were due to this disparity of plumage. In both the type series of *septentrionalis* and a later collection made at a near-by locality (Kangra), it is perfectly clear that, as Koelz (1939) stated, "The outermost rectrices often have broad edges of yellow and the black inner rectrix of males is washed broadly on the distal end with green yellow." Since most races show some yellow on the margins of the rectrices, "more broadly edged" might be a better description. This, together with the paler back and somewhat longer and deeper bill, will separate *septentrionalis* from all other subspecies of *tiphia*.

The following comments on the type of *septentrionalis* were communicated by Dr. Josselyn Van Tyne of the University of Michigan Museum of Zoology, who was also kind enough to lend me the paratypes which, together with the type, are deposited at that museum: "The type of *Aegithina tiphia septentrionalis* Koelz is clearly a male and is so marked on the label by the collector. The tail feathers are black. . . [This refers to the original description which gives the type as a female.] The type. . . is somewhat brighter and richer yellow than any of the paratypes. I measure the wing 66.5 mm. . ."

***Aegithina tiphia tiphia* Linnaeus**

INDIA: United Provinces: Nichlaul, February 1–5, 1947, 1 ad. ♂, 1 ad. ♀; Kalnahi, February 16, 1 ad. ♀. Nepal: Hitaure, May 16–June 6, 1947, 8 ad. ♂, 2 ?subad. ♂, 5 ad. ♀, 1 unsexed juv. Bengal: Sevok Forest, 12 miles from Siliguri, December 19, 1936, 1 ad. ♂, 1 subad. ♂, 1 ad. ♀; Dacca, January 13–14, 1937, 2 ad. ♂, 1 ad. ♀, 1 ad. ♀ [?♂]. Assam: Khasia Hills, Umran, April 11–14, 1949, 2 ad. ♂, 2 ad. ♀; Nongpoh, April 30, 1 ad. ♂, June 22, 1 subad. ♂; Barni Hat, June 1, 1 ad. ♀.

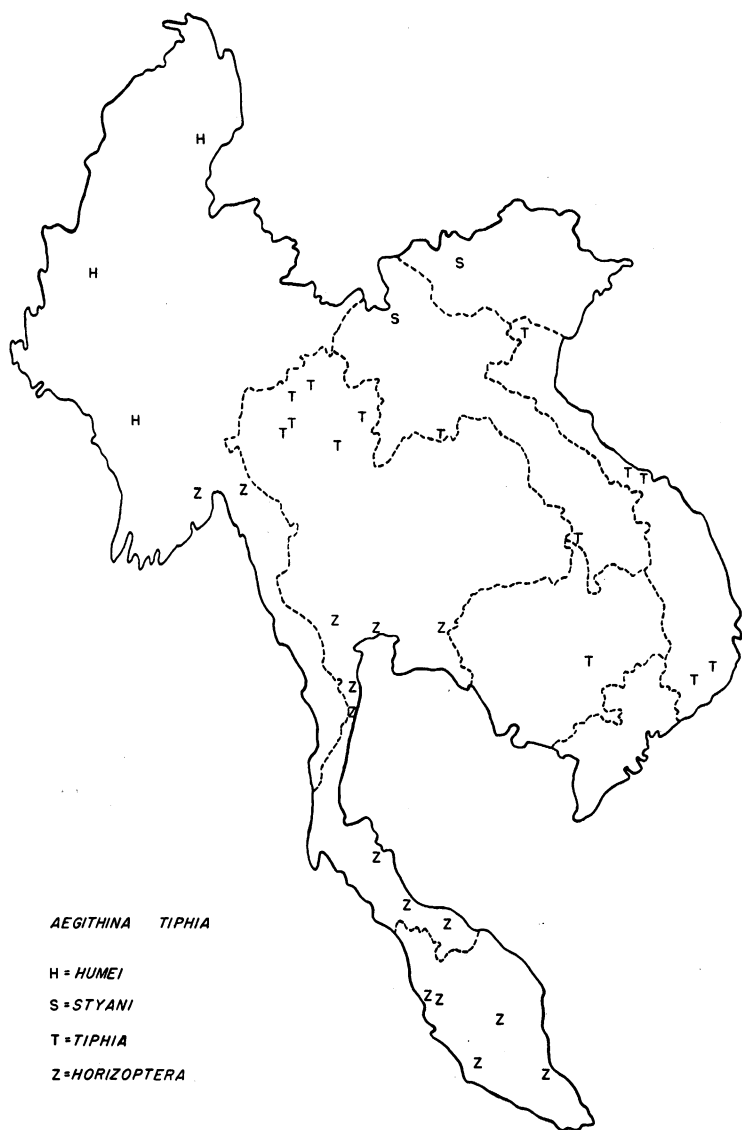


FIG. 2. Partial distribution of races of *Aegithina tiphia* in southeast Asia based on examination of adult males showing subspecific characters. Capital letters represent localities from which assignable specimens were seen: Burma: Kamamaung, Mingin, Myitkyina, Pegu, Thayetmyo; Siam: Aran, Bangkok, Ban Ta Yai, Bukit, Chiengmai, Chomtong, Doi Chiengdao, Koh Lak, Nan, Phrae, Pran, Singora, Wieng Papao; Malaya: Kuala Kangsar, Kuala Lipis, Kuala Lumpur, Rompin, Taiping; Tonkin: Muong Moun; Laos: Boun Tai, Pakse, Vietiane; Annam: Dran, Djiring, Hué, Quantri, Tour Cham, Hoi-Xuan; Cambodia: Mekong River.

The nominate race is darker above than *septentrionalis*, most conspicuously so in Assam, and males have a monomorphic dress. A green-backed form, *tiphia* is replaced to the south and southeast, both east and west of the Bay of Bengal, by populations having a dimorphic male dress. From Gharwal and Kumaon, where it intergrades with *septentrionalis*, it ranges eastward in north India through Nepal and the northern United Provinces to north Bengal and Assam. In south Bengal, at Calcutta, *humei* may be present; this possibility is discussed above under *humei*. Simmons (1948) notes that in Chittagong, east Bengal, "no male was observed to have any black on the head during any season of the year." No mention is made of the back color, but it appears likely that green-backed forms are resident.

The nominate subspecies also occurs in Indochina except where *styani*, considered below, is present.

The description of *Aegithina tiphia philipi* Oustalet from Hué, Annam (Oustalet, 1885) suggested that the type might be an intermediate (hybrid?) between *A. tiphia* and *A. lafresnayei*. According to its describer, it was *tiphia*-like in plumage, but nearer to the larger bird in size. On the advice of Mr. H. G. Deignan, I asked to have the type, which is on deposit at the Muséum National d'Histoire Naturelle in Paris, examined. Dr. J. Berlioz kindly sent me the following information: "...in my opinion, this type is only an abnormal individual of this common species, presumably an immature male owing to the blackish coloration of the tail. It is true that the bill appears longer and wider at the base: but it is only due to the fact that the feathers before the nostrils have been largely destroyed; when measured from the nostrils the bill matches exactly the bills of *Aegth. tiphia*, and even not the largest ones. . . ."

Delacour (*in* Delacour and Jabouille, 1931) listed *philipi* as synonymous with *tiphia* but made no comment. Specimens from Hué that I have examined are not distinguishable from the nominate race.

***Aegithina tiphia styani* La Touche**

Both west and southeast of its range (Chiang Rai Province of northern Siam, southern Yunnan, northeast Tonkin, and northern Laos) *A.^s t. styani* meets the nominate race, from which it differs only in being slightly larger.

***Aegithina tiphia horizoptera* Oberholser**

This is a variable subspecies consisting of birds mainly of types D, E, and F.

It has been shown by de Schauensee and Ripley (1939) that birds from peninsular Siam, the southern Malay States, Sumatra, and Banka Island are the same as those from Nias Island, and thus all are to be called *horizoptera*. I have not seen skins from the coastal islands of Sumatra, but I fully agree that Sumatran and peninsular birds are alike. Lower Burmese and Siamese birds are usually called nominate *tiphia*, but as types D, E, and F are represented it may be best to unite these, too, with *horizoptera*.

The actual distribution of this subspecies is uncertain (fig. 2). Some individual specimens cannot be distinguished from the nominate race, but a series from any one locality will usually show that black-backed birds are present. At present, I would restrict the range of this form to the peninsular portion and south central Siam to about latitude 15° N. It probably intergrades with nominate *tiphia* in eastern Siam. The leaf-bird of north-west Siam is definitely the nominate form, *styani* barely, if at all, reaching Chiang Rai. Critical specimens from the vast lowland area of central Siam are unavailable.

In Burma, *horizoptera* may be said to occur mostly in Tenasserim. Possibly it intergrades with the more extensively black-backed *humei* in the mountains of Pegu and with *tiphia* along the Arakan coast.

On the Malay Peninsula, green-backed birds similar to those of Assam seem to increase in frequency in the south. *A. tiphia singaporensis* Chasen and Kloss (1931) is considered a synonym of *horizoptera*.

Aegithina tiphia scapularis* Horsfield**Aegithina tiphia viridis* Bonaparte*****Aegithina tiphia aequanimis* Bangs**

These three Indonesian races call for no special comment. The last two have been dealt with by Mayr (1938b).

ACKNOWLEDGMENTS

Thanks are due to Dr. Dean Amadon, Dr. Ernst Mayr, and Capt. Jean Delacour for their aid and advice. To Dr. J. Van Tyne and Dr. J. Berlioz the author is indebted for information

on specimens in their care. The critical comments of Mr. H. G. Deignan, who very generously read the manuscript, have been gratefully received. I wish especially to thank Dr. Walter Koelz for permission to work on his collection. Finally, I wish to acknowledge the assistance of Mr. Biswamoy Biswas, of the Zoological Survey of India, in preparing the material on *A. nigrolutea*.

REFERENCES CITED

- ALI, SÁLIM
1945. The birds of Kutch. Oxford.
- ALI, SÁLIM, AND S. DILLON RIPLEY
1948. The birds of the Mishmi Hills. Jour. Bombay Nat. Hist. Soc., vol. 48, pp. 1-37.
- CHASEN, FREDERICK NUTTER, AND C. BODEN KLOSS
1931. Five new Malaysian birds. Bull. Raffles Mus., no. 5, pp. 82-86.
- DEIGNAN, H. G.
1945. The birds of northern Thailand. Bull. U. S. Natl. Mus., no. 186, pp. 1-616.
- DELACOUR, JEAN
1946. Notes on the taxonomy of the birds of Malaysia. Zoologica, vol. 31, pt. 1, pp. 1-8.
- DELACOUR, JEAN, AND P. JABOUILLE
1931. Les oiseaux de l'Indochine Française. Paris, Exposition Coloniale Internationale, vol. 4.
- HUME, ALLAN O.
1877. Remarks on the genus Iora. Stray Feathers, vol. 5, pp. 420-452.
- KOELZ, WALTER
1939. New birds from Asia, chiefly from India. Proc. Biol. Soc. Washington, vol. 52, pp. 61-82.
- MAYR, ERNST
1938a. The birds of the Vernay-Hopwood Chindwin expedition. Ibis, pp. 276-320.
1938b. Notes on a collection of birds from South Borneo. Bull. Raffles Mus., no. 14, pp. 5-46.
- OUSTALET, M. E.
1885. Notices sur quelques espèces nouvelles ou peu connues de la collection ornithologique du Muséum. Nouv. Arch. Mus. Hist. Nat., Paris, ser. 2, vol. 8, pp. 255-306.
- SCHAUENSEE, RODOLPHE MEYER DE, AND S. DILLON RIPLEY
1939. Zoological results of the George Vanderbilt Sumatran expedition, 1936-1939. Part 1. Birds from Atjeh. Proc. Acad. Nat. Sci. Philadelphia, vol. 91, pp. 311-368.
- SHARPE, R. BOWDLER
1881. Catalogue of the birds in the British Museum. London, vol. 6.
- SIMMONS, R. M.
1948. A list of birds observed in Chittagong, E. Bengal, during 1944 and 1945. Jour. Bombay Nat. Hist. Soc., vol. 47, pp. 637-644.

STANFORD, J. K., AND CLAUD B. TICEHURST

1938. On the birds of northern Burma, part 2. *Ibis*, ser. 14, vol. 2, pp. 197-229.

WHISTLER, HUGH

1932. *In* Whistler, Hugh, and N. B. Kinnear, The Vernay scientific survey of the Eastern Ghats. (Ornithological section.) Part 2. *Jour. Bombay Nat. Hist. Soc.*, vol. 35, pp. 737-760.
1939. *In* Ali, Sálím, and Hugh Whistler, The birds of central India. Part 1. *Ibid.*, vol. 41, pp. 82-106.
1942. *In* Ali, Sálím, and Hugh Whistler, The birds of Mysore. Part 2. *Ibid.*, vol. 43, pp. 318-341.
1944. The avifaunal survey of Ceylon conducted jointly by the British and Colombo Museums. *Spolia Zeylanica*, vol. 23, pp. 119-321.

TABLE 2
MEASUREMENTS OF ADULTS OF *Aegithina tiphia* FROM INDIA AND NORTHERN BURMA, MOSTLY FROM THE KOELZ COLLECTION^a

Race and Locality	Sex	N	Wing	N	Tail	N	Bill
<i>multicolor</i>							
Ceylon	♂	5	63.5-65.0 (64.1)	5	44.5-47.0 (46.0)	4	16.5-18.0 (17.1)
	♀	3	62.0-62.0 (62.0)	3	44.5-51.0 (48.3)	3	16.0-17.0 (16.5)
<i>humei</i>							
India	♂	38	61.0-70.0 (65.1)	38	45.5-52.0 (47.8)	38	16.0-19.0 (17.7)
	♀	23	62.0-66.5 (64.3)	23	47.0-54.0 (51.4)	22	17.0-19.0 (17.8)
North Burma	♂	5	63.0-66.0 (64.8)	5	48.0-52.0 (49.8)	3	16.5-18.5 (17.5)
	♀	3	63.0-66.0 (64.3)	3	50.0-54.0 (51.7)	3	16.5-17.5 (17.0)
<i>tiphia</i>							
India	♂	26	62.0-69.0 (65.0)	26	46.0-54.5 (50.2)	24	16.5-18.0 (17.4)
	♀	22	60.0-70.0 (64.6)	23	49.0-58.0 (52.9)	22	16.0-19.0 (17.1)
<i>septentrionalis</i>							
Punjab	♂	6	67.0-69.0 (67.8)	6	51.5-53.5 (52.3)	6	18.0-19.5 (18.8)
	♀	2	66.0-67.0 (66.5)	2	53.0-56.0 (54.5)	2	17.5-18.0 (17.8)

^a Since there is no geographical variation within each race, measurements of *tiphia* and *humei* are not itemized by areas.