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## TAXONOMY AND NOMENCLATURE OF THREE SPECIES OF *LONCHURA* (AVES: ESTRILDINAE)

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In August and September 1956 I collected birds for a virus research project in central Luzon, Philippine Islands. The museum skins and skeletons prepared as a by-product of this project are now in Carnegie Museum, and represent the first modern collection of Asiatic birds in that institution. Virtually all of the work, therefore, of identifying these Philippine specimens has been done at the American Museum of Natural History (AMNH) and the U. S. National Museum (USNM). In connection with these more-or-less routine identifications, a certain amount of revisionary work proved to be necessary for certain species, several with ranges extending far beyond the Philippines. It has been thought desirable to publish such findings separately rather than include them in the final report of the 1956 collection, where they would be more-or-less irrelevant. The present paper treats the three species of the large estrildine genus *Lonchura* whose ranges include the Philippines.

The field work was carried out as part of a project of the Graduate School of Public Health, University of Pittsburgh, under the sponsorship of the Commission on Viral Infections, Armed Forces Epidemiological Board, and supported in part by the Office of the Surgeon General, U. S. Department of the Army. Specimens were collected and prepared with the invaluable assistance of Mr. Telesforo Oane and the generous counsel of Dr. Canuto G. Manuel, both of the

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National Museum of the Philippines. Much of the taxonomic work was carried out at the American Museum of Natural History, where I received many courtesies from Drs. Dean Amadon and Charles Vaurie, and at the U. S. National Museum, with the help of Mr. H. G. Deignan. Additional specimens were borrowed through the kindness of Dr. Raymond A. Paynter, Jr., of the Museum of Comparative Zoology, Dr. Austin L. Rand of the Chicago Natural History Museum, Dr. S. Dillon Ripley, Jr., of the Yale Peabody Museum, and Dr. Dwain W. Warner of the Minnesota Museum of Natural History.

*Lonchura leucogastra* (Blyth)

Three subspecies of the white-breasted mannikin are currently recognized: *Lonchura leucogastra leucogastra* (Blyth) of Siam, the Malay Peninsula, and Sumatra; *L. l. everetti* (Tweeddale) of the Philippines and northern Borneo; and *L. l. castanonota* Mayr of southern Borneo. Delacour (1943, p. 82) has shown that *Lonchura leucogastroides* (Horsfield and Moore) of Sumatra, Java, Bali, and Lombok, formerly considered to be a subspecies of *L. leucogastra*, is not closely related to the latter species.

Tweeddale described the Philippine *everetti* (type locality Monte Alban, Luzon) in 1877, and later (1878, p. 622) commented that specimens from Palawan appeared to be intermediate between *everetti* and *leucogastra*. He assigned them to the former, working under a strictly binomial system. After having examined over 60 Philippine specimens (this species is by far the least common Philippine *Lonchura*), I have come to the conclusion that the name *everetti* should be confined to the birds of Luzon and a few adjacent islands. The remainder of the range hitherto ascribed to *everetti* is occupied by a form which, although intermediate in many respects between *everetti* and *leucogastra*, occupies such an extensive range that I feel it merits recognition as an additional subspecies, which may be called

*Lonchura leucogastra manueli*, new subspecies

TYPE: USNM 201273; adult male; "near Isabella" [=Isabela], Basilan Island, Philippine Islands; Jan. 26, 1906; E. A. Mearns, collector (original No. 13903).

DIAGNOSIS: Similar to *L. l. everetti* and *L. l. leucogastra*, but, in general, more deeply colored than the former, less deeply colored than the latter (details below); bill (except for Palawan birds; see measurements) averaging larger than that of either subspecies; wing averaging longer than that of *leucogastra*. Although in some characters *manueli* displays a condition intermediate between *everetti* and *leucogastra*, in others it presents a combination of characters typical of one subspecies or the other with a remarkable constancy



considering the size of its range. In detail, then, the features distinguishing the three races under consideration are as follows.

The anterior underparts of *everetti* are chocolate brown, becoming deeper and richer on the chin and throat. In *manueli* this deep, rich color prevails, deepening almost to black on the chin and throat. Finally, in *leucogastra* the whole anterior underparts are virtually black. Dorsally there is a corresponding but less striking deepening of the general brown color of crown and back.

In *everetti* and *manueli* the border between the dark breast and white abdomen includes many dark-tipped white feathers, giving this border area a distinctly spotted appearance. Such feathers are lacking in *leucogastra*, in which the border is more clear-cut.

In *everetti* the upper tail coverts are plain brown, somewhat darker than the rest of the upperparts. In *manueli* the upper tail coverts are decidedly blackish, contrasting quite sharply with the rest of the back. Finally, in *leucogastra* the upper tail coverts are black and this dark area has advanced to include the rump as well. The under tail coverts and thighs show a corresponding progression from brown to blackish brown to black in the three subspecies. The white shaft-streaks of the dorsal surface are best developed in *everetti*, somewhat reduced in *manueli*, and decidedly reduced in *leucogastra*, particularly on the head.

The tiny feathers along the metacarpal edge of the wing are predominantly white in *everetti*, predominantly dark brown or black in *manueli* and *leucogastra*. This is a matter of shifting proportions of white and pigmented feathers rather than a progressive intensification of pigmentation as in other color characters cited.

The yellow of the edges of the central rectrices, while variable, is a warmer, more golden color in *leucogastra* than in either *manueli* or *everetti*.

**RANGE:** Southern half of Philippine Archipelago (see list of specimens for specific islands) and highlands of northern Borneo. The Tutong River specimen mentioned by Mayr (1938, p. 45) has been examined and belongs with *manueli* as might be expected. Six other Borneo specimens examined also belong here; one from Laham, eastern Borneo, and five from Sarawak (Poeh Mountain, Kelabit Plateau, headwaters of Baram River). In the diagnosis above, no comparisons have been made with the rather isolated *L. l. castanota* Mayr of southern Borneo; this is a distinctive race with much richer coloring, being deep rufous chestnut above and jet black below.

**REMARKS:** The only islands of the Philippines from which I have examined specimens which were not immediately referable to either *L. l. everetti* or *L. l. manueli* are Sibuyan and Culion; birds from these islands are almost exactly intermediate. It is possible that such



intermediate populations may also be found on others of the central islands.

Although, as mentioned above, *manueli* is quite constant in its characters for a bird whose range encompasses so many islands, there is a certain amount of intraracial variation present. The most noticeable of these variations is a tendency for Palawan specimens to have smaller bills than those of the other islands within the range of *manueli* as here defined. The two specimens examined from the Sulu Archipelago are also small-billed. That this does not represent a stage in a cline toward the small-billed *leucogastra* is shown by the fact that the Borneo specimens have bills fully as large as those of typical *manueli*.

This subspecies is named for Dr. Canuto G. Manuel, chief of the zoology division of the National Museum of the Philippines, whose assistance and hospitality added immeasurably to the success of our expedition.

A series of specimens of *Lonchura leucogastra* from Kuching, Sarawak, sent to the U. S. National Museum for identification by B. E. Smythies of the Sarawak Museum, shows that a race is found in that vicinity which differs remarkably from other Borneo birds; no less than three races of this species are thus found in Borneo. The birds of the highlands of northern and eastern Borneo are *L. l. manueli*; those of southern Borneo, *L. l. castanonota*. The Kuching birds are actually closest in appearance to the geographically distant *L. l. everetti* of the northern Philippines. Mr. H. G. Deignan, who had suspected that the Kuching series differed from *everetti* as previously understood, has generously permitted me to include a description of this race in the present paper. I am happy to use the name which had been selected by Mr. Deignan, and designate this subspecies

*Lonchura leucogastra smythiesi*, new subspecies

TYPE: USNM 461688; adult male; Tabuan, Kuching, Sarawak; Dec. 9, 1938; collected for Sarawak Museum.

DIAGNOSIS: Nearest to the geographically distant *L. l. everetti* of the northern Philippines, but white shaft-streaks of dorsal surface reduced, practically absent on crown; upper tail coverts virtually concolorous with back instead of a darker brown; anterior underparts deeper brown. The neighboring *L. l. manueli* of the highlands of northern Borneo has blacker anterior underparts and the upper tail coverts decidedly blackish, as mentioned above. The wing of *L. l. smythiesi* averages shorter than that of typical *manueli*, but matches that of the slightly smaller Palawan population assigned to the latter race.



RANGE: Known only from the vicinity of Kuching, Sarawak, Island of Borneo.

SPECIMENS EXAMINED (adults only):

- L. l. everetti*: Luzon, 5; Catanduanes, 2; Polillo, 5; Mindoro, 1.  
*L. l. everetti* x *manueli* intermediates: Sibuyan, 6; Culion, 2.  
*L. l. manueli*: Negros, 8; Cebu, 4; Bohol, 3; Siquijor, 1; Mindanao, 4; Basilan, 5; Palawan, 12; Tawi-tawi, 2; northern Borneo, 7.  
*L. l. smythiesi*: vicinity of Kuching, Sarawak, 11.  
*L. l. castanonota*: southern Borneo, 5.  
*L. l. leucogastra*: Siam, 3; Malay Peninsula, 6; Sumatra, 2.

MEASUREMENTS: All measurements were taken to the nearest half-millimeter. The wing was pressed flat against the ruler. The "bill index" is the sum of the culmen length and the greatest width of the bill. This index is an attempt to indicate the general "largeness" of the bill rather than merely the customary length figure. Perhaps the most obvious difference in dimension between large-billed and small-billed birds is that of depth at the base, but no satisfactory comparable measurements could be made of this because of the great variation in degree of bill closure effected by preparators. The plus sign (+) indicates that the wing or tail was worn, and that the true measurement would be perhaps a millimeter or so longer. Measurements of excessively worn wings or tails were not taken.

*L. l. everetti*

LUZON: Wing, 51, 52, 52, 52, 53. Tail, 36, 37, 38, 39. Bill Index (B. I.), 19, 19.5, 20, 20, 20.

CATANDUANES: Wing, 50, 51. Tail, 36, 38. B. I., 20, 20.

POLILLO: Wing, 50, 50, 51, 51+, 52. Tail, 35+, 35+, 36, 37. B. I., 19.5, 19.5, 20, 20, 20.5.

MINDORO: Wing, 52.5. Tail, 39. B. I., 19.5.

*L. l. everetti* x *manueli* intergrades

SIBUYAN: Wing, 51, 51.5, 52, 52, 52, 52.5. Tail, 36.5, 37, 37, 37.5, 38+, 39.5. B. I., 19, 19.5, 19.5, 21, 21, 21.

CULION: Wing, 51, 51.5. Tail, 35.5, 37.5+. B. I., 20, 20.

*L. l. manueli*

NEGROS: Wing, 50.5, 51.5, 52, 52, 52.5, 52.5, 52.5+, 53. Tail, 36+, 38, 40, 41. B. I., 20.5, 20.5, 20.5, 20.5, 21, 21.

CEBU: Wing, 52, 53.5, 53.5, 55. Tail, 39+, 40. B. I., 20.5, 21, 22.5, 22.5.

SIGUIJOR: Wing, 52. Tail, 37. B. I., 20.

BOHOL: Wing, 52.5, 55, 55. Tail, 37.5, 41. B. I., 20.5, 21.5, 22.

MINDANAO: Wing, 52.5, 53, 54. Tail, 37, 37.5+, 38.5+. B. I., 20.5, 21, 21.5, 22.

BASILAN: Wing, 51, 51.5, 52.5, 53, 53.5. Tail, 35+, 36+, 36.5, 38+, 39. B. I., 19.5, 20.5, 21, 21.5, 22.

PALAWAN: Wing, 49, 50, 50.5+, 51, 51, 51, 51, 51.5, 51.5, 52, 53, 53. Tail, 34+, 34+, 36, 37+, 37.5, 37.5+, 38. B. I., 19, 19, 19, 19, 19.5, 19.5, 19.5, 19.5, 20, 20, 20.5.

TAWI-TAWI: Wing, 50.5, 52.5. Tail, 36+, 37+. B. I., 19, 19.5.

BORNEO: Wing, 50.5+, 51, 54. Tail, 34+, 36.5. B. I., 20, 20, 21.



*L. l. smythiesi*

SARAWAK: Wing, 50, 50, 50.5, 50.5, 50.5, 51, 51, 52, 52, 52, 52. Tail, 35, 36, 37, 37, 37.5, 38. B. I., 19, 20, 20, 20.5, 20.5, 20.5, 21, 21.

*L. l. leucogastra*

SIAM: Wing, 49, 49, 49.5. Tail, 33.5, 34, 37. B. I., 17.5, 17.5, 17.5.

MALAY PENINSULA: Wing, 48.5, 50, 50, 50.5, 50.5, 50.5. Tail, 34.5, 35, 35+, 35.5, 35.5, 36.5. B. I., 17, 17.5, 18, 18, 18.

SUMATRA: Wing, 49.5, 52.5. Tail, 35.5, 37. B. I., 17.5, 17.5.

*Lonchura punctulata* (Linnaeus)

Linnaeus (1758, p. 173) originally described the nutmeg mannikin as *Loxia punctulata*, listing its range simply as "Asia." His description was based entirely on the description and plate of Edwards (1743, p. 40). In the 12th edition of the "Systema Naturae" (1766), Linnaeus added a reference to Brisson, who specifically mentioned Java. Kloss (1931, p. 364) considered that Linnaeus thus acted as his own "first reviser," and that the type locality of *Loxia punctulata* should be restricted to Java. Hellmayr (1914, p. 60) had earlier come to the same conclusion. This is at variance with the treatment of Baker (1926, p. 91; 1930, p. 223) and other authors who have used the Linnaean name for the Indian rather than the Javanese race.

The identification of Linnaeus' name *punctulata* with a particular population of the nutmeg mannikin must rest entirely on Edwards' description and plate, since this was the sole reference in the 10th edition of the "Systema Naturae." If this description and plate are identifiable as one of the subspecies of *Lonchura punctulata*, any subsequent restriction by Linnaeus or anybody else is superfluous. Examination of Edwards' plate and accompanying description make it evident that it cannot possibly apply to the Javanese form, but must be that of India, as advocated by Baker. The evidence is as follows:

1. "The bill is of the shape and bigness of our Green-finch's bill . . ." The plate clearly shows a large-billed form of *L. punctulata*; the Indian bird is large-billed, the Javanese small-billed. Culmen length of *Chloris chloris* (England), 13 mm.; Indian *Lonchura punctulata*, 11.5 mm.; Javanese *L. punctulata*, 10 mm.

2. Although too much reliance should not be placed in Edwards' statement that the bird is figured in its natural size, still the wing-length of the figure matches Indian specimens exactly, and is far larger than Javanese specimens.

3. "Head, neck, beginning of the breast, back, wings and tail, are of a dark reddish brown . . ." True of all except the tail of the Indian race; the Javanese bird has the dorsal surface dull grayish brown, not dark reddish brown.

4. As for the tail, which is described and figured as "dark reddish brown," this does not match *any* form of the species, and is certainly not the Javanese bird in which the tail is distinctly ashy gray. The shape of the tail in the plate is also inaccurate, *unless* the specimen portrayed lacked the long pointed central rectrices, which are yellow in the Indian bird. A specimen of the Indian race in which the bright yellow, pointed central rectrices were missing, and in which



the remaining rectrices were worn (as they appear to be in Edwards' figure) would appear to have a brownish tail.

5. "The forepart of the neck has something of a purplish cast"; true of the Indian race, not of the Javanese.

6. "The rump is of a lighter greenish brown." The rump of the Indian bird is decidedly yellowish or greenish, with faintly indicated darker markings as shown on Edwards' plate. The rump of the Javanese bird is heavily barred with dark gray and white, with no trace of yellowish or greenish.

7. The edges of the white abdominal feathers are described and figured as black; in the Javanese form these edges are dark brown, not black.

8. "The middle of the belly, thighs, lower belly and covert-feathers under the tail, are light brown, or dirty white." Exactly true of the Indian race; the thighs and under tail coverts of the Javanese race are white, heavily barred with dark gray.

The name of the Javanese race thus reverts to *Lonchura punctulata nistoria* (Temminck), while the Indian form is *L. p. punctulata* (Linnaeus). Stuart Baker gives the restricted type locality as Calcutta. Hodgson's *L. p. lineoventer* from Nepal, used for the Indian race by Kloss (1931), Stanford and Ticehurst (1938, p. 611), and others, is a synonym of *punctulata*.

*L. p. topela* (Swinhoe), with type locality Amoy, has customarily been considered the form which occurs in the mountains of Yunnan and northeastern Burma, although its status in the latter area has been questioned (Smythies, 1953, p. 231). La Touche (1927, p. 295), under *topela*, states: "In eastern Yunnan it is represented by another race, probably more closely akin to the Indian forms." All of the literature on Yunnan birds I have been able to find, however, lists the resident race as *topela*. The form found in most of Burma except the northeastern section is *L. p. subundulata* (Godwin-Austin).

In any case, the Yunnan-northeastern Burma bird does differ from *topela*, as might be anticipated on geographic grounds. The latter race is found in Taiwan and Hainan, and in eastern China and northeastern Indochina. It is the second-palest of the races of *L. punctulata*, being exceeded in this respect only by the Philippine race *L. p. cabanisi*.

The Yunnan bird may be described as follows:

***Lonchura punctulata yunnanensis*, new subspecies**

TYPE: AMNH 720698; adult female; "hills around Tengyueh" [=Tengchung], western Yunnan, alt. 6,000 feet; June 1924; George Forrest, collector (original No. 5027).

DIAGNOSIS: Similar to *L. p. topela* (Swinhoe), but coloration markedly richer; pencilling of ventral feathers darker and coarser; dark throat-patch warmer, more reddish brown; dorsal coloration in general browner, less gray, with, in many specimens, a greater contrast between the whitish shaft streaks and the ground color of the



feathers. The yellow of the upper tail coverts and central rectrices averages deeper, less greenish. In juvenal plumage, *L. p. yunnanensis* is everywhere brighter, less grayish in color than *topela*. There is no significant difference in size between *yunnanensis* and *topela*. Measurements of type: wing (flat), 54 mm.; tail, 39 mm.; culmen, 11 mm.; tarsus, 13 mm.

Differs from *L. p. subundulata* (Godwin-Austin) of Assam and southern Burma in having more conspicuous light shaft streaks on the dorsum, a browner (less blackish) tone ventrally, and ventral markings of quite a different shape; the breast and flanks of *subundulata* have a spotted appearance, while those of *yunnanensis* are pencilled like those of *topela*. The posterior border of the brown throat of *subundulata* is more sharply defined than that of *yunnanensis*. Actually the population which is currently known as *subundulata* is a variable series of intermediates between the well-defined *punctulata* to the west and the *yunnanensis-topela* group to the east.

RANGE: Mountains of Yunnan and northeastern Burma (for localities, see list of specimens examined).

REMARKS: Four specimens from Mengtz, in southeastern Yunnan, appear to be somewhat intermediate between *L. p. topela* and *L. p. yunnanensis*, although closer to the latter. Three of the four, however, are in such worn plumage as to make color comparisons almost valueless.

Smythies (1953, p. 231) writes: "The status of *topela* [in Burma] is uncertain; a single specimen obtained by the Vernay-Hopwood expedition at Singhaling Hkamti may have been a winter visitor, whereas birds seen at 5,000 feet or more in the Sadon hills and in the Ngawchang valley and not collected may have been resident *topela*; Stuart Baker claims that it occurs in the Shan States."

The Vernay-Hopwood specimen, taken on Mar. 4, 1935, is in the middle of the post-juvenal molt. A specimen (AMNH 720672) taken at Sinlumkaba, east of Bhamo, on Apr. 19, 1908, has almost completed the post-juvenal molt. Both are referable to *yunnanensis*. That this subspecies does, indeed, breed in northeastern Burma is suggested by a specimen (USNM 377788) taken 6 miles north of Myitkina on May 24, 1945, and one (AMNH 347218) taken at Myitkina on June 25, 1945. The specimen from Washaung (near Myitkina) mentioned by Stanford and Mayr (1941, 355) is, of course, *yunnanensis* rather than *subundulata*. It was taken on Apr. 12, 1939, and is in about the same stage of the post-juvenal molt as the Singhaling Hkamti specimen.

Baker (1930, 223) lists *Munia inglisi* Hume in the synonymy of *L. p. topela*; however, *inglisi* was named from Cachar, and birds from this region are referable to *L. p. subundulata*.



*L. p. catervaria* Koelz (1954, p. 19), described from the Khasia Hills, represents a population intermediate between *punctulata* and *subundulata*, and is best placed in the synonymy of the latter. It will be remembered that *subundulata* itself represents a rather variable intermediate population.

SPECIMENS EXAMINED:

*L. p. yunnanensis*: YUNNAN: Vicinity of Tengyueh, 23; Nantien, 1; Shweli-Salaween Divide, 6. BURMA: Myitkina, 1; 6 miles north of Myitkina, 1; Singhaling Hkamti, 1; Washaung, 1; Sinlunkaba, 1.

*L. p. yunnanensis* x *topela* intermediates: YUNNAN: Mengtz, 4.

*L. p. topela*: Taiwan, 40; Hainan, 23; Fukien, 6; Kwangtung, 1; Tonkin, 5; Annam, 2.

*L. p. topela* x *subundulata* intermediates: BURMA: Pegu, 2.

*L. p. subundulata*: Assam, 5; Khasia Hills ("*catervaria*"), 10.

Also series of other races in USNM and AMNH.

*Lonchura malacca* (Linnaeus)

Delacour (1943, p. 83) united three groups of forms which had often been considered separate species: *L. malacca*, *L. ferruginosa*, and *L. atricapilla*. He used the name *ferruginosa* for the combined species, overlooking the fact that *Loxia malacca* Linnaeus, 1766, antedates *Loxia ferruginosa* Sparrmann, 1789. The desirability of merging the three groups has been questioned by some authors, but I am not prepared to go into this question here. The present paper is concerned only with that portion of the combined species formerly known as *Lonchura atricapilla*, all forms of which lack white on the head and underparts.

It is tempting to consider *L. grandis* of New Guinea as part of this species, since the adults closely resemble the *atricapilla* group. Delacour (1943: p. 83) considered *grandis* and *ferruginosa* (= *malacca*) to comprise a superspecies, giving the large bill and extensively black underparts of *grandis* as specific characters. Even more important, in my opinion, is the pattern of the juvenal plumage, in which *grandis* differs markedly from all races of *malacca* in being streaked on the throat.

Salomonsen (1953, p. 265) pointed out that a revision of this species was badly needed, and he reviewed it briefly himself. The large area ascribed by Salomonsen and other authors to the race *atricapilla* involves a number of well-marked clines, which can be divided into several subspecies and intergrades. Salomonsen's treatment of the Philippine populations is critically discussed (p. 290) after a review of the mainland forms.

The distribution of *L. m. sinensis* is substantially as given by Salomonsen (1953, p. 266), namely Malay States, southern Siam, and lowlands of Sumatra. The diagnostic characters can, how-



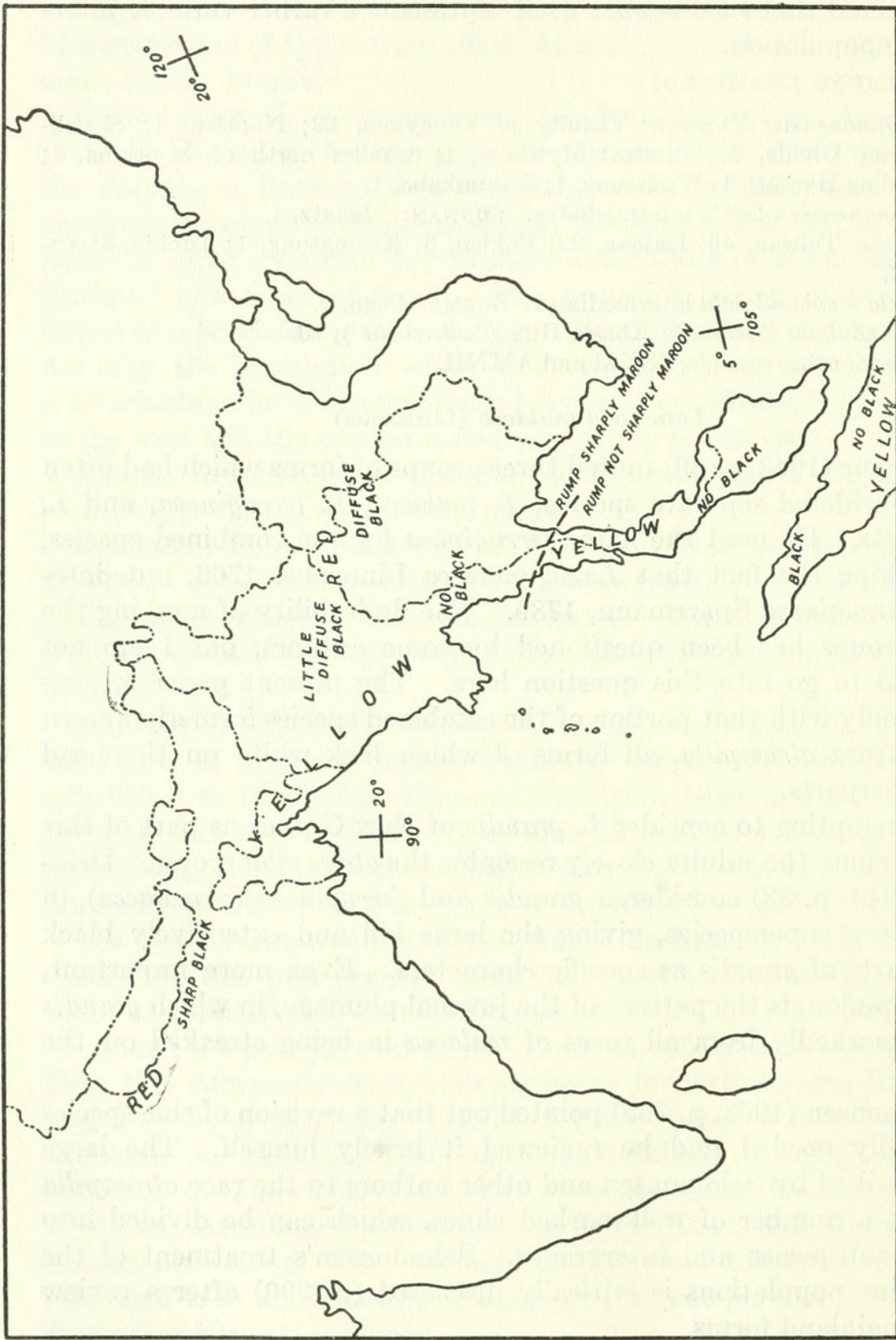


FIGURE 1.—Trends in geographic variation in *Lonchura malacca*. "Red" and "Yellow" refer to the color of upper tail coverts and edges of rectrices. In smaller lettering is shown the relative size and distinctness of the black abdominal patch, when present. The line across the upper Malay Peninsula divides the populations with a maroon rump sharply defined from the back color and those in which the rump is virtually concolorous with the rest of the back. All localities are approximate.



ever, be expanded. The black abdominal patch is absent. The back is paler (particularly noticeable in fresh plumage) than that of adjacent populations to the north and west. The rump is darker and more reddish than the back, but this color is much paler and more diffuse than in any of the races to the north. The upper tail coverts and central rectrices are yellow. The race *L. m. batavana* (Chasen and Kloss) from the mountains of northern Sumatra is similar in dorsal color (including rump and tail), but smaller, and with a well-defined black abdominal patch.

Toward the northwest, *sinensis* intergrades with *atricapilla*, as suggested by Chasen and Kloss (1929, p. 23). A specimen from Pegu is precisely like *sinensis* above and below, except that the rump is a deeper maroon and quite sharply defined. Another Pegu specimen is similar dorsally, but blackish on the lower abdomen and under tail coverts. Specimens from northern Burma and northwestern Yunnan resemble *atricapilla* in having the tail and coverts yellow, and a well-defined maroon rump patch; the Yunnan specimens are paler than those of Burma. Ventrally these birds are rather variable, but all have a more-or-less diffused blackish area in the lower abdomen.

In Assam and Bengal occurs true *atricapilla*, which has a well-defined black abdominal patch, deep maroon rump, and yellow tail and coverts.

Salomonsen (1953, p. 266), Smythies (1953, p. 229), and others have synonymized *Munia rubro-nigra* Hodgson (Nepal) with *atricapilla* of Bengal. This is understandable in view of the distributions and distinguishing characters for the two claimed by Stuart Baker (1926, pp. 80-81). Both are incorrect. As pointed out by Vaurie (1949, p. 38) and others, *rubro-nigra* does not differ from *atricapilla* in wing length or color of underparts. Judging from a limited amount of material, however, the name *rubro-nigra* is available for a well-marked race of Nepal and adjacent India. It occurs at least as far east as Jainagar, on the Nepal-Bihar border (specimen, Yale Peabody Mus. 26520, slightly intermediate toward *atricapilla*), and as far west as Dehra Dun. It resembles *atricapilla* in having a well-defined black abdominal patch and sharply defined maroon rump, but the long, dissected upper tail coverts are a rich maroon red, little different from the rump, whereas in *atricapilla* these feathers are golden yellow to orange. The rectrices themselves are washed with yellow in *atricapilla*, deep reddish brown in *rubro-nigra*. The latter race is also slightly paler dorsally. The four *rubro-nigra* seen have quite large and heavy bills, but accurately sexed material is insufficient to determine whether there is any actual difference between the two races in this respect.



The population of Chieng Rai, northernmost Thailand, mentioned by Deignan (1945, p. 559), is somewhat variable, but cannot be satisfactorily assigned to either a known race or an intergrade between races. Rather than to try to stretch the limits of well-defined subspecies to include these birds, it would seem advisable to recognize them as a subspecific entity, for which an appropriate name is

*Lonchura malacca deignani*, new subspecies

TYPE: USNM 350467; adult male; Chieng Rai, northern Thailand (1,214 feet); May 8, 1936; H. G. Deignan, collector (original No. 1297).

DIAGNOSIS: Differs from all other subspecies of the mainland, glossy black-headed group except *rubro-nigra* in that the long upper tail coverts and central rectrices in most (not all) specimens are deep orange-red rather than some shade of yellow. In a minority of individuals these feathers are rich yellow-orange, not unlike (but somewhat more intensely colored than) those of *atricapilla*. All individuals of *deignani*, however, may be distinguished from *rubro-nigra* or *atricapilla* by their more diffuse and generally less blackish abdominal patch, and by having dark brown rather than black under tail coverts. The general color of both dorsal and ventral surfaces is also a paler reddish brown in *rubro-nigra* than in *deignani*.

RANGE: Chieng Rai Province, northern Thailand, and probably Indo-China. A single specimen from Hue, Annam, is referable to *deignani*. A series of specimens from Hainan in the American Museum of Natural History consists of cage birds, as shown by the condition of the claws; the species is not known to occur in Hainan in a wild state. However, these specimens may well have originated on the Indo-China mainland across from Hainan, since they agree in every respect with *deignani*.

SPECIMENS EXAMINED (mainland and Sumatra races):

*L. m. rubro-nigra*: Nepal, 1; Nepal-Bihar border, 1; United Provinces, 2.

*L. m. atricapilla*: Assam, 5.

*L. m. atricapilla* x *sinensis* intermediates: northern Yunnan, 5; northern Burma, 2; central Burma, 2; southern Burma, 2.

*L. m. sinensis*: Malay Peninsula, 2; Sumatra, 1.

*L. m. batakana*: Sumatra, 2.

*L. m. deignani*: northern Thailand, 6; Annam, 1; "Hainan" (cage birds), 8.

Leaving the glossy black-headed birds of the mainland, we turn now to the eastern populations inhabiting Taiwan, the Philippines, Celebes, and Borneo. There is a general cline in the direction of increased saturation of the pigment of head and breast running from north to south, from grayish brown in Taiwan to rich black in Borneo and northern Celebes; then, surprisingly, back to brown again in



southern Celebes (*L. m. brunneiceps*). The pale northern extreme is *L. m. formosana* (Swinhoe). Salomonsen (1952, p. 354) has shown that specimens from northernmost Luzon are inseparable from Taiwan examples of *formosana*. The rest of the birds from central Luzon to Borneo have until lately been considered to be *L. m. jagori* (Martens), type locality restricted by Salomonsen (1953, p. 267) to Manila. As represented in the Philippines, *jagori* is actually a tremendously variable series of intermediates between *formosana* and the almost consistently black-headed Borneo population. Salomonsen endeavored to express this by describing the black-headed birds as *L. m. gregalis*, with type locality Opol, Mindanao. This merely complicated matters, however, because birds from the range ascribed by Salomonsen to his "*gregalis*" are *not* consistent in having dull black rather than dark brown heads, as he claims. Three Sulu birds in the American Museum of Natural History, for instance, have distinctly brownish crowns, and even some of the Borneo specimens (cf. AMNH 720576, Labuan) tend to have rather brownish heads. In a series of 18 specimens from Basilan, which should be "*gregalis*" (University of Michigan Museum of Zoology), there is much variation; although mostly black-headed, several are distinctly brown on the crown and nape. Some of my own Luzon series (which is quite variable *inter se*) are as dark as any Borneo specimens seen. Peters (1940, p. 209) could detect no significant difference between Borneo and Philippine specimens of this species, calling both *jagori*. De Schauensee (1957, p. 11), on the other hand, upheld "*gregalis*," calling it "a very distinct race," on the basis of comparing *one* adult male and two immature females from Mindanao with three Luzon specimens!

Ideally we should probably use two names, one for the Taiwan-northern Luzon bird and one for the birds of Borneo and northern Celebes, with the rest of the Philippine birds considered as a variable intergrading cline. Unfortunately the name *jagori* was based on the highly variable population of central Luzon. In view of the fact that variability in this species is so high in this part of the world, so that few specimens could be named if their localities were unknown, it appears best to continue to use *jagori* in its traditional sense, considering *gregalis* Salomonsen as a synonym. The subspecies *jagori* thus includes both brown-headed and black-headed birds, with a preponderance of the latter toward the south, but no reasonable geographic line can possibly be drawn between them.

There seems to be no consistent geographic variation in *Lonchura malacca* within the Island of Borneo; this, of course, is in striking contrast to the situation in *L. leucogastra*.



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