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## Systematic Notes on Palearctic Birds. No. 51 A Review of *Burhinus oedicnemus*

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The Common Thick-knee (or Stone Curlew, as it is called by most British ornithologists) breeds (fig. 1) from East Prussia and about latitude 50° N. in Russia and the Kirghiz Steppes south, including southeastern England, to the Canaries, 26° (and possibly to 23° 40') N., on the coast of West Africa, the oases of the northern Sahara, Egypt, Arabia, and the Iranian region eastward to India, Ceylon, and Burma. It varies geographically, and this variation has been studied by Rothschild and Hartert (1912, pp. 547–548), and Hartert (1920, pp. 1518–1521). Since 1920 new forms have been named, and the validity of others has been questioned, without a study of the species as a whole.

The present review is based on a little more than 200 specimens, consisting of the series in the collections of the American Museum of Natural History which include the Rothschild Collection studied by Hartert, and of series lent to me by Mr. J. D. Macdonald and Dr. I. C. J. Galbraith from the British Museum (Natural History), Dr. A. L. Rand and Mr. M. A. Traylor from the Chicago Natural History Museum, and Dr. S. D. Ripley and Dr. G. E. Watson from the Peabody Museum at New Haven. I gratefully acknowledge this help.

The systematic status of one subspecies is involved, and to facilitate the discussion that follows, I propose to describe it here.

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**Burhinus oedicephalus harterti** Vaurie, new subspecies

TYPE: A.M.N.H. No. 743369; unsexed adult; Kafir Qala, on the Hari Rud (about latitude  $35^{\circ}05'N.$ , longitude  $61^{\circ}07'E.$ ), northeastern Khorasan, northeastern Iran; April 21 [old Russian calendar, corrected to May 5], 1898; N. Zarudny, collector.

DIAGNOSIS: Differs from nominate *oedicephalus*, *saharae*, and *indicus* by being paler, less heavily streaked with brown, and by having a more diffused pattern on the upper wing coverts, the white areas on these coverts being more extensive in *harterti* and their white alar bar less distinct, not sharply bordered as a rule by dark brown bars. *Harterti* is more grayish, less brown, than nominate *oedicephalus* or *indicus*, more grayish, less rufescent, than *saharae*. It is distinctly larger than *indicus*, averages slightly larger than *saharae* but slightly smaller than nominate *oedicephalus* (table 1).

RANGE: Southeastern Russia from the lower Volga eastward to Kazakhstan and south through Russian Turkestan to Iran, Afghanistan, and Baluchistan, but replaced in Khuzistan in southwestern Iran by *saharae*, and in northwestern Iran by a population that is more or less intermediate between *harterti* and nominate *oedicephalus*.

GEOGRAPHICAL VARIATION

The variations of this species appear to be correlated with climatic factors and to be clinal in character, the variation being more evident in the coloration. The subspecies (*indicus* and nominate *oedicephalus*) which inhabit more humid regions are darker, browner, and more heavily streaked than *saharae* or *harterti* which inhabit arid regions. The darkest (and also the smallest) birds are found in India and Ceylon where, generally speaking, the precipitation is greater than in Europe, but the population of India is not uniform and exhibits a well-defined cline of increasing color saturation and decreasing size from the drier northwest to the humid south.

In Europe, the birds probably become paler and more grayish as they range farther east in Russia, and paler and more rufescent as they range south to the Mediterranean and the Balkans, but I could not trace these presumptive clines because of lack of material. At any rate, the dark and brown nominate *oedicephalus* is replaced by the pale and gray *harterti* from the lower Volga eastward, and by the pale and rufescent *saharae* from Greece and the islands of the Mediterranean southward. The average wing length decreases also in the east and south.

It is interesting to speculate on the difference in coloration between

TABLE 1  
MEASUREMENTS (WING LENGTH) OF ADULT *Burhinus oedicnemus*

Race and Region	N	Males	N	Females
Nominate <i>oedicnemus</i>	15	230–253 (242.4)	8	233–249 (243)
<i>distinctus</i>	3	225, 234, 235 (231.4)	3	230, 230, 242 (234) <sup>a</sup>
<i>insularum</i>	6	210–232 (222)	5	213–227 (222)
<i>saharae</i> (Africa)	20	228–242 (235.4)	11	227–243 (235.6)
<i>saharae</i> (Iraq) <sup>b</sup>	4	231.5–242 (237.8)	2	240, 240
<i>saharae</i> (Balearics)	1	226	3	230, 232, 241 (234.4)
<i>saharae</i> (Greece)	—	—	3	227, 243, 246 (238.6)
<i>harterti</i> (South Iran)	10	231–248 (240)	6	234–248 (239.8)
<i>harterti</i> <sup>c</sup>	5	233–243 (238)	5	235–239 (237)
<i>indicus</i> (NW. India)	3	220, 221, 223 (221.3)	4	218–225 (222)
<i>indicus</i> (Cutch, N. Bombay)	5	213–226 (219.4)	2	217, 219
<i>indicus</i> (North India) <sup>d</sup>	6	215–219 (216.5)	2	210, 224
<i>indicus</i> (Central India)	1	207	4	208–219 (212)
<i>indicus</i> (South Bombay)	1	211	4	209–215 (212)
<i>indicus</i> (Mysore)	1	203	2	205, 215
<i>indicus</i> (Ceylon)	1	203	1	205

<sup>a</sup> Type of *distinctus* measures 230.  
<sup>b</sup> Five unsexed adults measure 244–248 (246), including the type of *astutus* which measures 245.  
<sup>c</sup> Specimens from Russia, Transcaspia, eastern and northern Iran, and Afghanistan. Two unsexed adults measure 240 and 241 (the latter being the type of *harterti*).  
<sup>d</sup> From the foothills of the Himalayas in Nepal and United Provinces.

*harterti* (grayish) and *saharae* (rufescent), as the two races inhabit regions that are both about equally arid. In the case of *harterti*, however, a greater portion of its range consists of steppes and mountains, rather than of deserts or semideserts as in the case of *saharae*. Furthermore, Kazakhstan, Transcaspia, and the Iranian region are colder, on an annual average, than the regions inhabited by *saharae*, and these factors may account for the difference in coloration. A similar difference from rufescent (“warm”) to grayish (“cold”) is common to many species of land birds that replace one another from west to east in the arid zone which extends from Africa to central Asia. This phenomenon is common enough in these regions, which have been called the Eremian Zone, to constitute almost an ecological “rule.”

The differences in coloration between the two races of the Canaries and their relationship to neighboring *saharae* can be interpreted also in terms of clinal variation. *Insularum*, which inhabits the arid eastern Canaries, is rufescent, but less so than *saharae*, whereas *distinctus* from the

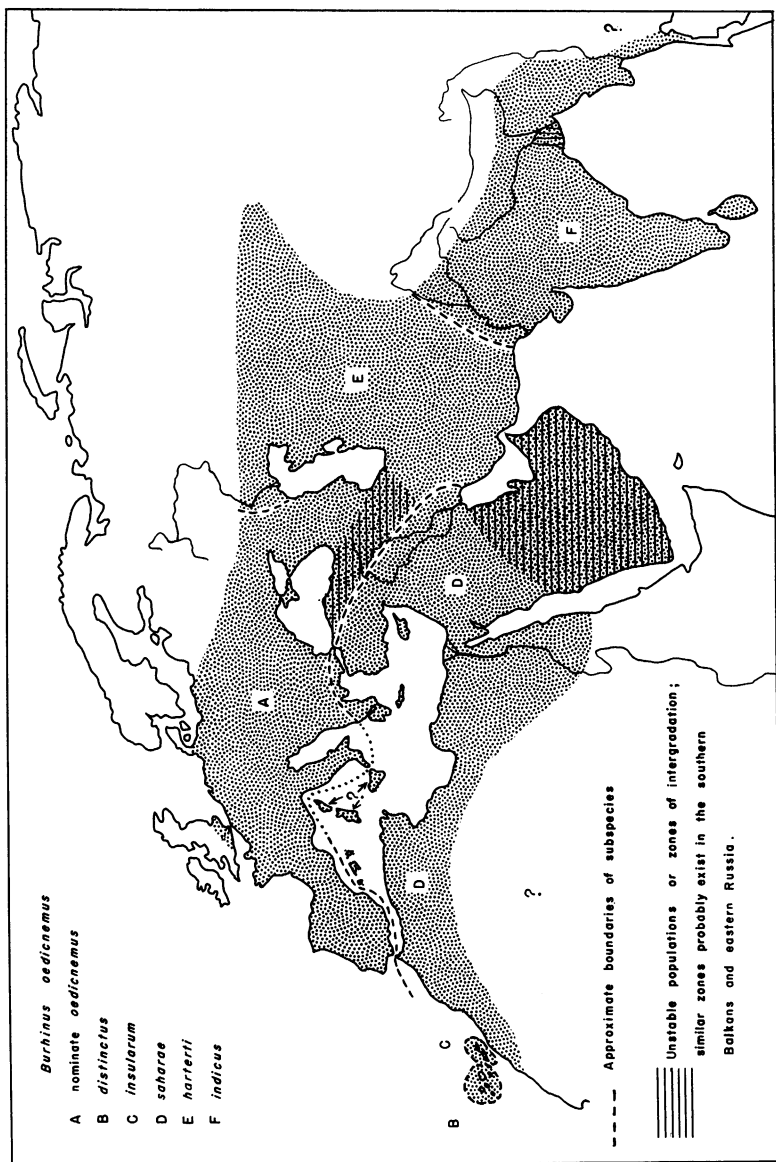


FIG. 1. Distribution of *Burhinus oedicephalus* during the breeding season.

more humid western Canaries is brown and not rufescent. It is also more heavily streaked than *insularum* which is also intermediate between *distinctus* and *saharae* in this respect.

The variation in size does not always follow regular clines, but, generally speaking, the birds from the south have a shorter wing than those that breed in the north, and the cline of decreasing size is quite evident in India, as is mentioned above. Nominate *oediconemus* and *harterti* breed at the same latitudes, but the former averages slightly larger (table 1), a difference that may be explained by the fact that nominate *oediconemus* is more migratory. Not a few individuals of the latter migrate to east Africa south to Kenya and Uganda, whereas *harterti* appears to be chiefly sedentary. In fact, no migratory movements have been reported for *harterti*, but my material suggests that it visits Arabia and probably Iraq occasionally.

The race of the eastern Canaries has a shorter wing than that of Africa, but the trend toward a reduction in size does not extend to the western islands, as the birds from the latter average larger than those of the eastern islands. This fact had been noted by Volsøe (1955, p. 166) who states that "in those species which have two or more subspecies in the Canaries it appears that, if the subspecies differ at all in this character, the westernmost subspecies has always the longest wings." The reason for this phenomenon is not clear.

### SUBSPECIES

1. *Burhinus oediconemus oediconemus* Linnaeus, 1758, type locality, England.
2. *Burhinus oediconemus distinctus* Bannerman, 1914, type locality, Gran Canaria, western Canaries.

This race is similar to nominate *oediconemus* and not well differentiated from it, but it is somewhat more heavily streaked with brown above, and slightly whiter on the face and under parts which show also a tendency to be more sharply and darkly streaked. It averages distinctly smaller. *Distinctus* is restricted to the western Canaries, and the specimens that I have examined are from Gran Canaria and Tenerife. It occurs also on Hierro and may occur on Gomera and La Palma, as Volsøe states (1951, p. 34) that it has been said to be found "in all the western islands," but he adds that no actual records exist for Gomera and La Palma.

3. *Burhinus oediconemus insularum* Sassi, 1908, type locality, Canaries, restricted by inference to the eastern Canaries by Bannerman (1914).

This race differs from *distinctus* by being paler above, more rufescent, less brown, and less heavily streaked; from *saharae* by being darker above, less rufescent, and more heavily streaked above and below. Its wing

length averages shorter than that of *distinctus* or that of *saharae*. It is restricted to the eastern Canaries, where it occurs on Fuerteventura, Lanzarote, Graciosa, and Allegranza. I have examined specimens from all these islands.

4. *Burhinus oedicnemus saharae* Reichenow, 1894, type locality, Tunisia, with the following synonyms: *astutus* Hartert, 1916, type locality, Fao, southern Iraq; *jordansi* Neumann, 1932, type locality, Ibiza, Balearic Islands; and *theresae* Meinertzhagen, 1948, type locality, Tiznit, south-western Morocco.

This race differs from all the others by being more rufescent and sandy in coloration. It has a very big range, extending (fig. 1) from Morocco, Algeria, and Tunisia south to about latitude 26° N. in the coastal region of Spanish Sahara (and perhaps farther south, as Valverde, 1957, reports a pair from Samlat Acchit on May 19 that may have been breeding; Samlat Acchit is near Villacisneros at about latitude 23° 40' N.), and the oases of the northern Sahara to the Mزاب, and east to Egypt, northern Sudan, Arabia, Near East, and Iraq to the plains of Khuzistan in south-western Iran, and north to southern, central, and western Turkey, Greece, Balearic Islands, and perhaps Corsica, Sardinia, and Sicily. It may breed in the central Sahara, as Meinertzhagen (1934, p. 571) states that Geyr von Schweppenburg observed this species in the northern Ahaggar, but, to my knowledge, no specimens have been collected in this region.

Neumann (1932) stated that the birds that breed in the Balearic Islands are intermediate in coloration between nominate *oedicnemus* and *saharae*, and he named them *jordansi*, but four of his specimens that I have seen fall perfectly within the range of individual variation of *saharae*. I consider *jordansi* a synonym of *saharae*, a conclusion reached already by Steinbacher (1936).

My material from the other islands of the Mediterranean consists of only one specimen each from Corsica and Sardinia. They are probably best called *saharae*, because the bird from Corsica is identical to the latter in coloration and the one from Sardinia is identical in size, but the specimen from Sardinia is intermediate in coloration between *saharae* and nominate *oedicnemus*, and the one from Corsica has a longer wing than *saharae*. The bird from Corsica is a female, with a wing length of 250, a measurement longer than that of any female of *saharae* or of nominate *oedicnemus* that I have seen; the bird from Sardinia measures 230 and is a male. I have seen no specimens from Sicily, Crete, or Cyprus.

The subspecific status of the birds that breed in the islands, other than the Balearics, requires further study, but the species has become very rare in the islands except on migration, and very few specimens are in existence.

The literature is not helpful. Hartert (1920) stated that nominate *oediconemus* was the breeding race in some of the Mediterranean islands but did not specify which. Mayaud (1936, 1953) assigned the birds of Corsica to nominate *oediconemus* in his check list of the birds of France, but it remains to be seen whether this opinion is based on specimens. D. A. and W. M. Bannerman (1958) saw apparently no specimens from Cyprus, and Meinertzhagen (1921) saw only one from Crete which he said was identical to *saharae* from the Sahara and Palestine. I follow convention in referring the breeding birds of Crete and Cyprus to *saharae*. The race to be expected on migration would be nominate *oediconemus*.

The material that I have seen from Greece, Rhodes, Turkey, and northwestern Iran is also very meager. Four specimens from Greece, one from Rhodes, and one from Urfa, southern Turkey, are much more similar to *saharae* than they are to nominate *oediconemus*, although somewhat less rufescent, especially the bird from Rhodes, than typical *saharae* from Africa. On the other hand, one bird from Erzurum, eastern Turkey, and three from northwestern Iran, including one from Enzeli on the Caspian Sea, are either identical to nominate *oediconemus* or a little paler and grayer, thus showing a tendency toward *harterti*.

The systematic status of the birds that occur in Iraq, Arabia, and Baluchistan is confused, as the birds of these regions have been assigned to two forms which are sometimes believed to be sympatric during the breeding season, a rufescent form assigned to *saharae* and a grayish one to *astutus*.

Ticehurst (1922) mentioned a specimen taken on August 1 at Khanikin, Iraq, which he identified as *astutus*, and another taken on August 21 at Lake Akkarkuf, Iraq, which he said was *saharae*. He suggested that one of the two forms might be a visitor. In another paper on the birds of Iraq, Ticehurst (1926) mentioned two specimens he assigned to *astutus* that were collected on October 4 and March 6, and one taken on September 12 "indistinguishable from *saharae*." In two other papers, one on the birds of Arabia (1925) and the other on the birds of Baluchistan (1927), Ticehurst reported rufescent and gray birds from the same regions and did not believe they were migrants.

This problem was "solved" by Mackworth-Praed and Grant (1936) who stated that *astutus* was indistinguishable from *saharae*, and "explained" further by Bates (1937, p. 308) who wrote, "throughout the dry belt of Africa and Asia . . . the yellowish birds [i.e., *saharae*] everywhere are those retaining some colour of immaturity." Bates is, of course, quite incorrect as a mere glance shows, but Mackworth-Praed and Grant were correct in synonymizing *astutus* with *saharae*, as I find that the type of

*astutus* is indeed similar to typical *saharae* from Africa. This was not known, however, to Mackworth-Praed and Grant who make no mention of the type.

The type of *astutus* is an unsexed specimen collected at Fao, southern Iraq, by W. D. Cumming in 1893; the month and day are not mentioned. It is quite rufescent, not grayish, and matches well the general coloration of three topotypes of *saharae* (Tunisia), although it is very slightly paler than the majority of the specimens from the Sahara. Its lesser upper wing coverts (an area that is usually more protected from bleaching than the back or other exposed parts of the plumage) are, however, rich rufous cinnamon, more richly colored than about two-thirds of the specimens from Africa, whereas they are grayish brown in *harterti*, in some cases very slightly tinged with buff.

I cannot account for the selection of this type, because Hartert did not include Iraq in the range of *astutus* in his original description (1916), or in his joint paper with Rothschild (1912) in which the subspecific characters of *astutus* (then unnamed) were first mentioned. Hartert (1916) defined the range of *astutus* as "extending at least from Merw (Transcaspia) to East and South Persia, and Persian Baluchistan (Kafir-Kala and Bampur, N. Zarudny coll.), and over the Indian desert as far east as Hissar (Sirsā)." He never implied that *astutus* might be migratory, visiting Iraq, although he did include Fao in the range in his last revision (1920), no doubt on the strength of the type. The selection of this type may have been inadvertent, as Hartert had available to him typical specimens of the race he meant to describe, including (as shown above) the one from Kafir Qala that I have selected for the type of *harterti*. I could not propose the latter as a "new name," because the type would have remained the specimen of *saharae* from Fao, so describe it here.

To turn back to the birds of Iraq and Arabia, I find that all but one of the specimens from Iraq are *saharae*, including the one from Khanikin assigned to *astutus* by Ticehurst. The exception is one of the two called *astutus* by Ticehurst in 1926. This bird, taken on March 6 near Baghdad, is about intermediate in coloration between *saharae* and *harterti* but a little more similar to the latter. It is of interest to note, however, that the specimens from Iraq average slightly paler and duller, not quite so rufescent, as typical *saharae* from Africa, a trend we might expect in view of the clinal variation.

The material that I have seen from Arabia consists of 21 specimens, including all those reported by Ticehurst and Bates, but is inadequate to establish the subspecific status of the birds that breed in that region. None of these birds were said to be breeding, and all but three (taken on



April 4 and 17) were collected between October 12 and March 19, almost all in December, January, and February.

This series is quite mixed. Eleven birds are grayish (including one of those collected in April) and more or less similar to *harterti*, although a few are slightly more rufescent than normal for *harterti*. The other 10 are more or less rufescent and similar to *saharae*, but only two really match the coloration of the latter from either Iraq or Africa. Some of the 10 are also larger than *saharae*, three males measuring 246, 249, and 251. If these 10 birds represent the local population, it would appear to differ from *saharae* by being somewhat duller, less rufescent, and by averaging bigger.

The grayish birds may be winter visitors of *harterti*. They match it in size, eight females from Arabia having a wing length of 227–250 (238.4) and six from Iran 234–248 (239.8), but it is interesting to note that more gray birds were collected in eastern than in western Arabia. Five specimens from seven taken in the east in the coastal districts from Bahrein to Muscat and in the Jafura Desert are gray, whereas only four from 10 taken in the west from Jidda to Aden are gray. In central Arabia, the ratio is even (two to two).

It is impossible to draw satisfactory conclusions without a series of breeding birds, but I suspect that the birds that breed in Arabia will show a more or less regular transition from *saharae* to *harterti*, with the possible exception of those of the north near Sinai, Jordan, and Iraq.

No specimens were examined by me from Baluchistan, but the rufescent one from that country mentioned by Ticehurst (1927) was collected in Makran, rather than far inland, and it is possible that the birds from that region show some affinity with those of southeastern Arabia. This rufescent specimen seems to be the only one known from Baluchistan. Specimens similar to it have not been reported east of Makran.

The only other form that requires comment in connection with *saharae* is *theresae*, described by Meinertzhagen from southwestern Morocco. He diagnosed this form (1948) as redder, less gray, than the birds of England, or *saharae* which he states "is a pale grey race." But, as shown above, *saharae* is rufescent, not grayish, and it is irrelevant to compare the birds of Morocco with those of England. The African populations do not differ, and *theresae* is a synonym of *saharae*.

5. *Burhinus oedicnemus harterti* Vaurie, new subspecies, type locality, Kafir Qala, northeastern Iran.

I have examined 28 specimens of this race, which were collected in southeastern Russia at Lake Sarpa and "on the lower Volga," at Merv [now Mary] in southeastern Transcaspia, in eastern, central, and southern

Iran (Khorasan, northern plateau, Luristan, Bakhtiari, Kirman, Laristan, and Persian Baluchistan), and in eastern Afghanistan. I saw only one bird from Afghanistan, taken by W. Koelz on May 18, 1936, at Dakka in the lower Kabul Valley, but the report of Paludan (1959, p. 103) leaves no doubt that Afghanistan is inhabited by *harterti*. Paludan states that the four specimens that he collected in May, July, and October, 1948, in eastern, central, and western Afghanistan "belong undoubtedly to the subspecies *astutus* [= *harterti*]" as they "differ distinctly" from specimens from Morocco, Tunisia, and western Turkey by being paler above, more grayish, less [rufescent] sandy, and more sharply and narrowly streaked. Their wing length measures 242 in a female, and 230, 235, 252 in males, the last being exceptionally big, as Paludan remarks.

In southwestern Iran, the boundary between *saharae* and *harterti* is formed by the Zagros Mountains. The birds that I have seen from the western foothills of these mountains and the plains of Khuzistan were collected at Dizful and Ahwaz and are *saharae*, but those taken in Luristan and Bakhtiari in the mountains proper are *harterti*. The latter show a slight tendency to be more rufescent than those collected farther east and north in Iran and represent (as in the case of the birds of Iraq) a stage on the cline.

Hartert (1916, 1920) extended the range of the grayish race (now *harterti*) to the Indian Desert and Hissar; Stuart Baker (1929) did much the same; and Ripley (1961) extended it to "West Pakistan and northern India, south to Rajasthan [formerly Rajputana] and northern U. P. . . . intergrading [with *indicus*] in Kutch and Saurashtra [formerly Kathiawar]." Ripley calls the birds of the northwest *saharae*, perhaps following Mackworth-Praed and Grant (1936). But, contrary to these opinions, I believe that the limits of the range of *harterti* on the east probably coincide with those of the Iranian Plateau, that is, they do not extend east of the mountains that separate this region from the lowlands of Sind and the Punjab.

The specimens that I have seen from northwestern India were collected in Patiala, Hissar, Jodhpur, Cutch, and Kathiawar and are certainly too small to be called *harterti* (table 1). There is no overlap, and the difference in measurements is very well marked. It is quite true that the birds of northwestern India are less dark than those of peninsular and southern India and Ceylon, but, with the sole exception of one from Patiala, they are much darker, browner, and much more streaked than *harterti*. They do not intergrade with *harterti* in either coloration or size. The bird from Patiala was taken on January 23, 1948, and may have been a visitor, but such does not appear to be the case as it is a female with a wing length

of only 222, a measurement similar to wing lengths of the birds of India but much too small for *harterti*.

6. *Burhinus oedicnemus indicus* Salvadori, 1865, type locality, India, here restricted to the foothills of the Himalayas, with *mayri* Koelz, 1939, type locality, Londa, southern Bombay Presidency, as a synonym.

This race is darker, browner, more heavily streaked, and smaller than the other races. It ranges from India south to Ceylon and east to Burma. It has been reported from Siam and Cambodia also, but the status of the birds occurring in these regions is unknown, and they may be only visitors or stragglers. I have seen birds from India and Ceylon only, but as Hartert (1920) stated that one from Siam was "exceptionally" dark, it is possible that *indicus* is replaced east of India by an undescribed race that is still darker than *indicus*.

The two birds that I have seen from Ceylon have a very short wing, but Whistler (1944) reported larger birds from Ceylon, measuring 215–216 in three males and 197–217 in six females (no averages given).

The comparative material used by Koelz (1939) in describing *mayri* was very inadequate, consisting of only one old specimen from the United Provinces and two from Ceylon, but I find that his specimens from southern Bombay are darker and smaller than specimens from northern and northwestern India. The name *mayri* is therefore available to authors who may find it convenient to recognize two subspecies in India, but such a division seems undesirable, as the ranges of the two forms could not be defined satisfactorily because of the clinal variation. At any rate, one can restrict the type locality of *indicus* Salvadori to the north, because Salvadori stated (1865) that his specimens were probably collected in the Himalayas ("*probabilmente dall'Imalaja*").

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