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REVISIONS OF INDIAN BIRDS

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During the preparation of a manuscript on the birds of Nepal it became necessary to make revisions of the Blossom-headed Parakeets and the Yellow-fronted Pied Woodpeckers.

THE BLOSSOM-HEADED PARAKEETS

The Blossom-headed Parakeets of India, Ceylon, Burma, Siam, and Indo-China have been considered by all the recent workers to belong to one species, *Psittacula cyanocephala* Linnaeus. Baker (1927) recognized two races, one from Sikkim, western Bengal, Bhutan Duars westward and down to Ceylon, and the other from the area comprising "Bengal, Nepal, and Sikkim to eastern Assam; Burma south to Tenasserim and east to Yunnan, Shan States, the Indo-Chinese countries and south China." Whistler and Kinnear (1935) accepted three races, one from northern India eastward to the Calcutta region, another from southern India, and the third from far eastern Bengal and presumably also from Burma.

My studies on the Blossom-headed Parakeets in the collections of the American Museum of Natural History, Dr. Walter Koelz, British Museum (Natural History), Bombay Natural History Society, Zoological Survey of India, and a few specimens lent by Mr. H. G. Deignan of the United States National Museum, lead to an entirely different conclusion. First, these parakeets are divisible into two well-defined groups, one with richly colored head, verdigris under wing coverts, and long tail, ranging from Bhutan Duars westward all over India and Ceylon, and another

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with the head pale and delicately colored, green under wing coverts, and short tail, ranging from the Darjeeling foothills eastward through Assam to Burma, Siam, and Indo-China. Second, there is a zone of overlap between these long- and short-tailed birds in northern Bengal between the Darjeeling foothills and Bhutan Duars, where they do not intergrade. There is not a single specimen in the beautiful series in the British Museum from this region that can be called an intermediate.

These facts indicate that the two groups should be regarded as two distinct species. On the basis of a study of 277 specimens I find that the following species and subspecies can be recognized (see fig. 1):

Psittacula cyanocephala

Head richly colored; under wing coverts, collar, and rump verdigris; tail long.

RANGE: India (except northeast), Ceylon. Within the range of this species three subspecies can be recognized.

***Psittacula cyanocephala bengalensis* Forster**

Psittacus bengalensis FORSTER in Pennant, 1781, Indian zoology, p. 40. Type locality Bengal, restricted to Calcutta by Whistler and Kinnear (1935).

Less blue and more red on head; size large (table 1).

RANGE: Punjab eastward to Bhutan Duars, western Bengal, southward to Central Provinces. Intergrades with *rosa* in the southern Central Provinces, northern Eastern Ghats, western Satpuras, Kathiawar, etc. The Punjab birds are somewhat larger, but their separation would give recognition to a poor race. Marshall's (1884) *Psittacus purpurascens* is a *nomen nudum*.

***Psittacula cyanocephala rosa* Boddaert**

Psittacus rosa BODDAERT, 1783, Table planches enluminées, p. 83. Mahé, Malabar coast.

Similar to *bengalensis*, but smaller (table 1).

RANGE: Bombay, Hyderabad south to Travancore.

The name *P. rosa* was based on D'Aubenton's plate of the "Perruche de Mahé." As indicated by the name and confirmed by the text, the description was based on a bird from Mahé, the French possession on the Malabar coast (north of Calicut). Whistler and Kinnear (1935) thought that the color of the head "on this plate is too light for any Blossom-headed Parakeet

from Western India and probably came from somewhere east of Calcutta"; so they shifted the type locality to Chittagong. There are, however, two objections to this action. First, as was the custom in those days, D'Aubenton's plates are all hand colored. It is very difficult, if not impossible, to find a work with hand-colored plates in which all plates of one form show the same intensity of coloration, as various artists would execute the coloring of the different sets of plates independently. The copy of Buffon's "Histoire naturelle des oiseaux," containing the "Planches Enluminées" by D'Aubenton in the British Museum library certainly has a bird with a pale head on the plate of the "Perruche de Mahé," and Salvadori (1891) and Whistler and Kinnear identified the pale-headed Assam-Burma populations with it; the copy of the same work in the library of the American Museum of Natural History has on this plate a bird which is as dark headed as any example from Kanara or Malabar, while the copy in the library of the Zoological Survey of India shows a bird that looks like a worn example of *Psittacula cyanocephala*. It seems very unwise to identify subspecies from hand-colored plates that are not skillfully done, and most of D'Aubenton's plates are very poor. The second objection is that the specimen figured by D'Aubenton could hardly have come from Chittagong. Buffon's "Histoire naturelle des oiseaux" (vol. 7) was published in 1783, and during that period the war between the French and the English was extended to Chittagong, which at that time was not an area favorable to collecting. Under these circumstances, it seems inadmissible to set aside arbitrarily the definite locality Mahé mentioned on D'Aubenton's plate. Moreover, during the latter part of the eighteenth century Mahé was a French possession, and it certainly was much easier for D'Aubenton to get his specimens from this area than from anywhere else. The name *rosa* must, therefore, be applied to this subspecies. If, however, it is found that the southeastern Madras populations are not the same as the Ceylonese but are the same as western peninsular Indian ones, *rosa* will become a synonym of *cyanocephala* and a new name must be given to the Ceylonese populations.

***Psittacula cyanocephala cyanocephala* Linnaeus**

Psittacus cyanocephalus LINNAEUS, 1766, Systema naturae, ed. 12, vol. 1, p. 141. Based on birds from Gingee, south Arcot district, Madras (Whistler and Kinnear, 1935).

The most brightly colored subspecies; less red and with more blue on the head.

RANGE: Ceylon and apparently also southeastern Madras.

A search of the literature indicates that no name is available for the eastern, pale-headed species. All the names that have so far been used for it actually belong to *cycnocephala* or one of its races. The species therefore requires a new name:

***Psittacula roseata*, new species**

TYPE: A.M.N.H. No. 621495; adult male; Gunjong, northern Cachar, Assam; January 1, 1896; E. C. Stuart Baker.

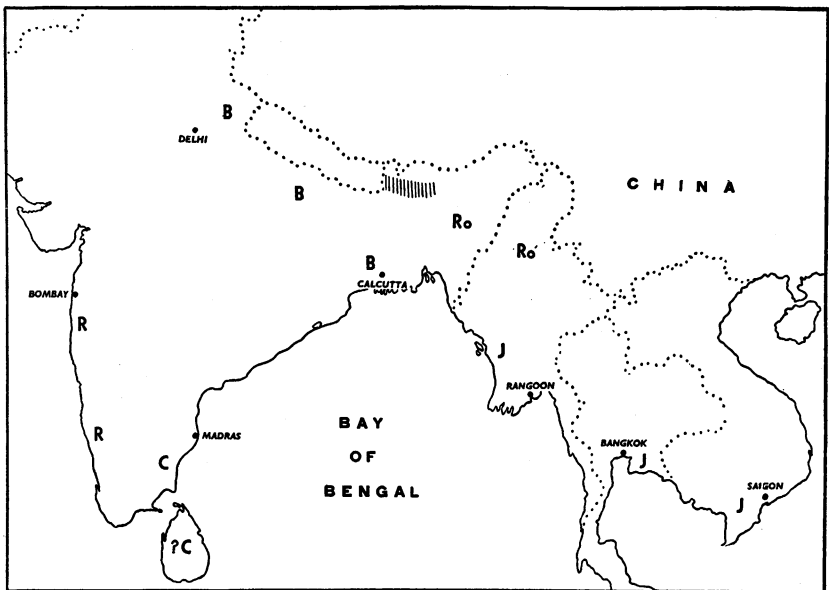


FIG. 1. Distribution of the Blossom-headed Parakeets, *Psittacula cycnocephala* and *P. roseata*. Abbreviations: B, *P. cycnocephala bengalensis*; C, *P. c. cycnocephala*; J, *P. roseata juneae*; R, *P. cycnocephala rosa*; Ro, *P. roseata roseata*.

DIAGNOSIS: This species differs from *Psittacula cycnocephala* in having the fore crown, cheeks, and ear coverts rosy pink instead of red; the crown bluish lilac; back and rump green; no verdigris collar; the color of the patch on wing coverts between Morocco Red and Claret Brown of Ridgway (1912, pl. 1); under wing coverts green and not verdigris; tips of central rectrices pale yellow; tail conspicuously shorter.

MEASUREMENTS OF THE TYPE: Wing, 149; tail, 180; bill from cere, 19 mm.

RANGE: From the lower Himalayas in northern Bengal (Darjeeling) eastward to Assam, eastern Bengal, Burma, Siam, and Indo-China.

Baker's (1927, p. 206) inclusion of Yunnan and southern China in the range is almost certainly based on the following specimens in the British Museum collection:

1. A juvenal example labeled "*Palaeornis rosa*," from Momien, Yunnan (*ex* J. Anderson collection). However, this is certainly not a Blossom-headed Parakeet but a slaty-headed *Psittacula schisticeps*.

2. One juvenal male and an adult female from Canton and Chefoo (*ex* Swinhoe collection). These were certainly cage birds.

Two races of *Psittacula roseata* are here recognized:

***Psittacula roseata roseata*, nominate subspecies**

The nominate subspecies is larger and darker; the patch on the wing coverts is smaller.

RANGE: Lower Himalayas in northern Bengal, Assam, eastern Bengal, and Upper Burma. It intergrades with the next race in southeastern Bengal (Tripura region) and Upper Burma, Chindwin (Mingin and Thaugdwin) area.

***Psittacula roseata juneae*, new subspecies**

TYPE: A.M.N.H. No. 621510; adult male; Arakan, Burma; October 9, 1906; Rogers collector.

Similar to *roseata* but more yellowish, both above and below; the central tail feathers less bluish; the patch on the wing coverts more extensive on the average; wing smaller.

MEASUREMENTS OF THE TYPE: Wing, 139; tail, 175; bill from cere, 18 mm.

RANGE: Arakan, Lower Burma south to Tavoy district, Siam, and Indo-China.

It gives me great pleasure to associate the name of this beautiful bird with Miss June Davies of Bovey Tracey, Devonshire, England, who is so much interested in ornithology.

MATERIAL EXAMINED

Psittacula cyanocephala: 104 specimens: 53 ♂, 39 ♀, 9 juv. ♂, 3 juv. ♀.

Punjab: 5 ♂, 2 ♀: Kangra dist.: Negrota, Kotla, Baijnath (Jan., Feb., March, May).

TABLE 1
MEASUREMENTS OF ADULT SPECIMENS OF *Psittacula cyanocephala* AND *P. roseata*

Locality	Wing	Tail	Bill
<i>c. bengalensis</i>			
Punjab, United Provinces, Nepal, Bihar, Bengal, Central Provinces	21 ♂: 140-150 (144.3) 11 ♀: 136-144 (138.8)	183-253 (210.5) 185-200 (192.9)	17-19 (18.3) 16.5-18 (17.1)
Kathiawar, western Satpuras	5 ♂: 138-142 (139.8) 2 ♀: 135-141	226 (1 example) —	18.5-19 (18.8) 16 (1 example)
<i>c. rosa</i>			
Orissa, Hyderabad, Mysore, Bombay, western Madras	14 ♂: 135-145 (140) 9 ♀: 128-140 (134.2)	192-240 (211.1) 173-176 (2 specimens)	17.5-19 (18.1) 16-17.5 (16.7)
<i>c. cyanocephala</i>			
Southeastern Madras	1 ♂: 136 1 ♀: 131	— —	18 16
Ceylon	5 ♂: 132-137 (134.7) 2 ♀: 126-127	180-196 (188.2) 164 (1 example)	15.5-18 (17.3) 16-17.5
<i>r. roseata</i>			
Sikkim, north Bengal, Assam, Upper Burma	19 ♂: 139-150 (144.6) 5 ♀: 137-143 (139.4)	155-195 (175.2) 140-163 (151)	17.5-20 (18.9) 18-18.5 (18.3)
Southeastern Bengal, Chindwin	4 ♂: 137-145 (142.5) 1 ♀: 135	170-198 (180.3) —	18-19 (18.5) 18.5
<i>r. juncae</i>			
Lower Burma, Siam, Indo-China	46 ♂: 132-145 (138.6) 18 ♀: 131-143 (135.9)	150-193 (173.9) 150-179 (161.7)	16-19 (17.9) 16-18 (17.5)

United Provinces: 7 ♂, 8 ♀, 1 juv. ♂: Agra, Dehra Dun, Bereilly, Naini Tal dist.: Kathgodam, Gorakhpur dist.: Kalnahi, Nichlaul (Feb., April, June, Sept., Dec., no date).

Nepal: 3 ♂, 1 ♀, 3 juv. ♂, 1 juv. ♀: Central Tarai: Amlekhganj, Hitaure (Mar., May, June, July).

Bihar: 1 ♂, 1 ♀, 1 juv. ♂: Palamau dist.: Garhwa Road, Mahammadganj (Sept.).

Bengal: 6 ♂, 4 ♀: Jalpaiguri dist.: Bhutan Duars; Calcutta region (Jan., Feb., Oct., no date).

Orissa: 1 ♂: Ganjam dist.: Mahendra (Jan.).

Central Provinces: 5 ♂, 3 ♀, 1 juv. ♀: Jubbulpore dist.: Bheraghat; Mandla dist.: Bichhia; Surguja: Khuri (Apr., May, June, Oct., Dec.).

Satpuras: 1 ♂: Western Satpuras (Feb.).

Kathiawar: 5 ♂, 4 ♀: Junagarh: Sasan, Jamwala (Jan., Feb.).

Hyderabad: 1 ♂: Secunderabad (Oct.).

Bombay: 5 ♂, 5 ♀, 1 juv. ♂, 1 juv. ♀: Belgaum and North Kanara dists.: Londa, Jagalbed (Jan., Feb., Mar.).

Mysore: 2 ♂, 1 ♀: Tumkur dist.: Namadachilume; Mysore dist.: Biligirirangan Hills (Jan., Nov., Dec.).

Western Madras: 4 ♂, 3 ♀: Malabar dist.: Calicut, Nilambur; Nilgiris: Coonoor, Kunjapuri (Feb., Mar., Aug.).

Southeastern Madras: 1 ♂, 1 ♀, 2 juv. ♂: South Arcot dist.: Cuddalore; Salem dist.: Kurumbapatti; Trichinopoly, Tinnevely (Apr., June, Sept., no date).

Ceylon: 5 ♂, 2 ♀: "South Ceylon," no definite locality (Aug., no date).

Psittacula roseata: 173 specimens: 104 ♂, 47 ♀, 8 juv. ♂, 11 juv. ♀, 3 juv. (unsexed):

Sikkim: 1 ♂, 2 ♀: no definite locality (no date).

Bengal: 20 ♂, 9 ♀: Darjeeling dist.: Darjeeling Tarai, Mangpoo, Bengdubi; Jalpaiguri dist.: Haldibari Tea Estate, Hasimara Tea Estate, Buxa Duars, (Bhutan Duars, (Jan., Feb., Mar., Apr., May, Dec., no date).

Assam: 15 ♂, 5 ♀, 3 juv. ♀: Daffa Hills: Harmutti; Sadiya; Miri Hills; Lakhimpur dist.: Dibrugarh; Cachar dist.: Dikusha, Gunjong, Maher; Naga Hills; Manipur: Dimapur (Jan., Feb., Mar., Apr., May, June, no date).

Upper Burma: 3 ♂, 3 ♀: Kauri Kachin; Bhamo; Northern Shan States: "70 miles NE of Mandalay"; Chil Hills: Mt. Victoria (Jan., Apr., May, no date).

Chindwin: 3 ♂, 2 ♀: Mingin, Thauungdwin (Jan., Apr., Dec.).

Southeastern Bengal: 1 ♂: Hill Tipperah (no date).

Arakan: 12 ♂, 5 ♀: Baronga Island (off Akyab), no definite locality (Mar., Oct., Nov.).

Southern Shan States: 1 ♂, 1 ♀: Banyin (Apr., no date).

Lower Burma: 44 ♂, 18 ♀, 7 juv. ♂, 6 juv. ♀: Karen Hills, Toungoo, Salween dist.: Shwegyin, Kyauk-nyat, Papun; Pegu dist.: Pegu Hills, Lower Pegu, Palow; Rangoon, Elephant Point, Thaton dist.: Thauungyin, Thaton, Wimping, Theinzeik, Haungthraw; Moulmein, Amherst, Tavoy (Jan., Feb., Mar., May, Oct., Nov., Dec.).

Siam: 2 ♂, 1 ♀, 2 juv. ♀: Chan Teuek, Chantabun, Koh Lak (July, Aug., Nov.).

Southern Indo-China: 2 ♂, 1 ♀, 1 juv. ♂, 3 juv. unsexed: Annam: Quang-tri (Khesanh), Daban, Dong Me (nr. Phan Kang); Cambodia: Kompong Thom; Cochinchina: no definite locality (Jan., Feb., May, Dec., no date).

THE RACES OF *DENDROCOPOS MAHRATTENSIS* (LATHAM)

The Yellow-fronted Pied Woodpecker, *Dendrocopos mahrattensis*, is a sedentary species found over almost all of India, Ceylon, and Burma in thin forests or comparatively open country. Two races of the species are generally recognized: *aurocristatus* (northern and central India, Upper and Lower Burma) and *mahrattensis* (southern India and Ceylon). Whistler and Kinnear (1934, pp. 288-289) conclude: "*Dryobates mahrattensis* is evidently not a species which is very susceptible to climatic influences. It has developed no peculiar Malabar race and even if birds from the extreme north-west are compared with birds from the south the recognition of the two races is only just feasible. The difference in colour is not constant, the amount of white is only just appreciable in a series, and there is much overlapping in measurements."

From my studies of the material of this species in the collections of the American Museum of Natural History, British Museum (Natural History), Bombay Natural History Society, and of Dr. Walter Koelz, I cannot agree with this conclusion. It is quite true, as Whistler and Kinnear say, that "the amount of white is only just appreciable in a series" and that "there is much overlapping in measurements." The size seems to decrease clinally southward, the Ceylonese birds being the smallest. The amount of white on the back varies even within small populations and cannot be considered a good taxonomic character. Instead I studied geographical variation in the color of the stripe down the sides of the neck, the size of the white spots on the primaries, the number of white spots on the central rectrices, and size.

I recognize the following races:

***Dendrocopos mahrattensis pallescens*, new subspecies**

TYPE: A.M.N.H. No. 176748; adult female; Lucknow, United Provinces, India; December 31, 1922; Faunthorpe-Vernay Collection.

In this race the stripes down the sides of the neck are pale brown in contrast with dark brown or chocolate brown in other races. The white spots on the primaries are large. There are

six pairs of white spots on each central tail feather in over 93 per cent of birds.

MEASUREMENTS OF THE TYPE: Wing, 105.5; tail, 61; bill from skull, 27 mm.

MATERIAL EXAMINED: Twenty-five males, 10 females. Punjab: Lahore, Gurgaon (Hatti), Jullundur (Shikohpur). United Provinces: Bulandshahr, Moradabad, Agra, Pilbhit Tarai, Lucknow, Benares, Gorakhpur (Gorakhpur, Kalnahi). Northern Bihar: Darbhanga (Baghownie). Rajputana, Jodhpur: Jaswantpur (Sunda Hill), Pali (Hamavas Lake). Rajputana, Sirohi: Chipabari, Oria. Palanpur: Deesa, Balaram. Gwalior, Mandasor: Nimuch. Baroda: Dabka. Northern Bombay: Cambay City environs (January, February, March, May, July, September, October, November, December).

RANGE: Northwestern and western India from southern Punjab, Sind, and Kathiawar to as far east as eastern United Provinces. Birds from Rajputana, Kathiawar, and the northernmost districts of Bombay have a somewhat darker neck stripe, thus tending towards *mahrattensis*; the two northern Bihar specimens I examined have five prominent and one faint white spot on each central tail feather.

***Dendrocopos mahrattensis aurocristatus* (Tickell)**

Picus aurocristatus TICKELL, 1833, Jour. Asiatic Soc. Bengal, vol. 2, p. 579—jungle of Borabhum and Dholbhum; hereby restricted to Borabhum, Manbhum district, Bihar.

This race has the stripes on the sides of the neck dark brown; the spots on the primaries are smaller, and about 72 per cent of birds have five pairs of white spots on each central rectrix.

MATERIAL EXAMINED: Twenty-three males, 24 females, three juvenal males. Southern Bihar: Manbhum, Singbhum. Central Provinces: Surguja (Ramanujganj, Khuri, Gargori), Udipur, Raipur, Bastar (Geedam, Antagarh, Chota Dongar), Chanda, Mandla (Mandla, Kanha, Belwani-Kisli), Jubbulpore (Bina, Bheraghat), Bhandara, Saugor. Northeastern Madras: Godavary Valley (Dumagudiam) (January, February, March, April, May, June, August, September, November, December).

RANGE: Southern Bihar, central India, Central Provinces, south to Godavary Valley in northeastern Madras.

***Dendrocopos mahrattensis blanfordi* (Blyth)**

Picus blanfordi BLYTH, 1863, Jour. Asiatic Soc. Bengal, vol. 32, p. 75—Burma, restricted to Toungou by Baker, 1927, p. 47.

This race is close to *aurocristatus*, but the white spots on the primaries are as large as in *pallescens*, and 75 per cent of these birds have six pairs of spots on each central tail feather.

MATERIAL EXAMINED: Ten males, 10 females, one juvenal male, one juvenal female. Burma: Chindwin (Mingin, Legan), Arakan, Myingyan (Popa Mt.), Thayetmyo (Palow, Thayetmyo), Prome, Toungoo, Pegu (January, May, August, September, October, November, December).

RANGE: Burma as far south as Toungoo.

***Dendrocopos mahrattensis mahrattensis* (Latham)**

Picus mahrattensis LATHAM, 1801, Index ornithologicus, suppl., p. xxxi—India, "Mahratta" country; restricted to Belgaum, southern Bombay, by Baker, 1927, p. 46.

This race is similar to *aurocristatus*, but the spots on the primaries average smaller, and there are five to six pairs of spots on each central tail feather. It is smaller than both *pallescens* and *aurocristatus*. The Travancore population is still smaller, thus approaching *koelzi*.

MATERIAL EXAMINED: Twenty-three males, 10 females, one juvenal male, one juvenal female. Bombay: Salsette Island (Andheri), Satara, Ratnagiri, Londa, Karwar. Malabar: "West coast," Calicut. Nilgiris: Kunjapani. Cochin: Wadakkancheri. Travancore: Trivandrum, ?Aleppy,¹ ?Anjengo² (January, February, March, September, October, December, no date).

RANGE: West coast of India, east to the Western Ghats, south to Travancore where it intergrades with *koelzi*.

***Dendrocopos mahrattensis koelzi*, new subspecies**

TYPE: A.M.N.H. No. 551713; adult male; Aripo, northwestern Ceylon; December 11, 1869; E. Holdsworth, collector.

This race has the stripes down the neck darkest (chocolate brown); it is the smallest race; the spots on the primaries are smaller than in *aurocristatus*; there are five to six pairs of spots on each central rectrix.

MEASUREMENTS OF THE TYPE: Wing, 96; tail, 54; bill from skull, 25 mm.

MATERIAL EXAMINED: Ten males, six females. Mysore: Tūmkūr (Nāmadachilūmé), no locality. Madras: Salem

¹ Three specimens collected by the Rev. H. H. Baker who was stationed at Aleppy.

² Four specimens collected by Shikaris and sold at Anjengo.

TABLE 2
TAXONOMIC CHARACTERS OF THE RACES OF *Dendrocopos mahrattensis*

Subspecies	Color of Stripes Down Sides of Neck	Size of White Spots on Primaries	Number of Pairs of White Spots on Each Central Rectrix
<i>pallascens</i>	Pale brown	Large	5 in 3.1%, 5 + 1 ^a in 3.1%, 6 in 93.8%
<i>aurocristatus</i>	Dark brown	Smaller	5 in 72.9%, 5 + 1 in 2.7%, 6 in 24.4%
<i>blanfordi</i>	Dark brown	Large	5 in 5%, 5 + 1 in 10%, 6 in 75%, 6 + 1 ^a in 10%
<i>mahrattensis</i>	Dark brown	Smaller on average	5 in 27.3%, 5 + 1 in 15.2%, 6 in 57.5%
<i>koelzi</i>	Chocolate brown	Small	5 in 26.7%, 5 + 1 in 13.3%, 6 in 60%

^a 5 + 1 or 6 + 1 indicates five or six prominent and one inconspicuous spot.

TABLE 3
MEASUREMENTS (MEANS IN PARENTHESES) OF THE DIFFERENT POPULATIONS OF *Dendrocopos mahrattensis*

Locality	Number	Sex	Wing	Tail	Bill
Punjab, United Provinces, and Rajputana	12	♂	101-109 (104.3)	57-65 (60.6)	27-30 (28.5)
	10	♀	100-107 (103.6)	60-63 (61.4)	24-27 (25.4)
Southern Bihar, Central Provinces, northeastern Madras	18	♂	100-107 (103.9)	58-64 (60.4)	27-29.5 (28.3)
	23	♀	97-107 (102)	57-64 (59.5)	22-27 (24.9)
Southern Bombay, Malabar, and Nilgiris	9	♂	99-105 (101.6)	53-62 (57.9)	26-28 (27.1)
	5	♀	98-102 (99.8)	53-61 (56.6)	24-25 (24.4)
Mysore	1	♂	101	58	25
	2	♀	98-101	58-59	24
Travancore	7	♂	96-100 (98)	54-59 (56)	25-28 (26.3)
	4	♀	96-99 (97.6)	55-57 (56)	23-24 (23.5)
Ceylon	8	♂	95-100 (97.5)	53-56 (54.6)	24-27 (25.5)
	3	♀	94-95 (94.7)	53-55 (53.7)	22-23 (22.7)
Burma	9	♂	100-106 (103.4)	56-61 (59)	24.5-28 (26)
	9	♀	97-105 (101.7)	55-60 (58.6)	22-24 (23.2)

(Kurumbapatti). Ceylon: Aripo, Jaffna, Madigama, Uva, etc. (January, May, September, November, December, no date).

RANGE: Southeastern Madras and Ceylon. The Mysore birds are as dark as the Ceylonese birds, but are slightly larger.

It is with much pleasure that I name this race for Dr. Walter Koelz.

I am indebted to the authorities of the American Museum of Natural History, British Museum (Natural History), the Bombay Natural History Society, the Zoological Survey of India, to Mr. H. G. Deignan of the United States National Museum, and to Dr. Walter Koelz for giving me permission to study their material. My sincere thanks are due to Dr. Ernst Mayr, Captain Jean Delacour, Dr. Sunder Lal Hora, and Mr. Daniel Marien for much help and advice.

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