

SPECIATION TRENDS.

There are two main trends of differentiation in *Glaucidium cuculoides* which act independently. One is size, which follows the degrees of latitude or montane altitude in the traditional way expressed by Bergmann's hypothesis. The second is color which varies from brown to rufous in a random way without obvious correlation except in one case. There is apparently no selective advantage in shades of dark color in these semi-diurnal owls. Dimorphism is not marked as it is in *G. brodei*. In the case of *Glaucidium radiatum* there is some dimorphism, i.e., a more gray plumage, vide Whistler and Kinnear (*Journ. Bomb. Nat. Hist. Soc.*, 1935, 38, p. 238). In *cuculoides* some specimens seem more brownish or more rufescent than others, but I have not seen any specimens in which this is so marked as to prevent their identification.

RACES.

Peters (tom. cit., p. 133.), lists seven races of the species, but as Mayr notes (*Ibis*, 1938, p. 314.), there are several populations of varying color included in one or more of the existing forms, particularly *rufescens*. I would list, therefore, the following:

1. *Glaucidium cuculoides cuculoides* (Vigors).

This is a race lacking in rufescence; blackish-brown above and closely barred with fulvous, the bars on the upper back and nape rather broad and whitish. The wings are rufous-brown with rufous-fulvous bars, the scapulars and outer median wing coverts with white outer edges to the feathers, giving the appearance of spots (not shown in Gould's Plate 4, Century Birds, 1832.). The lower parts are whitish with dark brown and fulvous bars on the breast. The abdomen and vent areas tend to be streaked, more than barred, with light rufous brown.

Measurements:

N. Punjab and Nepal 11 ♂♂ and ♀♀

Wing	Tail	Culmen (from cere)
141-157 (149.5)	75-90 (83.5)	14-16 (15.4)

Range: western Himalayas from Murree and Musoorie through Nepal. Foothills to 6,000 ft.

2. *Glaucidium cuculoides austerum* subsp. nov.

Type: ♂ ad. (U.S.N.M. No. 390166.), collected Jan. 11, 1947, at Tezu, Mishmi Hills, N.E. Assam, by S. Dillon Ripley.

Description: above this race is dark rufous brown with rufous-buff bars. The tone of the wings is darker, richer rufous than in the other races of the species. The tail is blackish, the barring fulvous. Below the amount of basal white on the underparts is much reduced as the barring is heavy and complete on the breast and the bars are rufous buff rather than whitish or fulvous. The abdomen and vent areas are heavily streaked or barred or streaky-barred with dark rufous brown, darker than in any other race of the species.

There is an average size increase over *cuculoides*.

Measurements:

Sikkim to N. Assam, 16 ♂♂ and ♀♀

Wing	Tail	Culmen
148-156.5 (153.1)	81-94 (87.6)	15-16.5 (15.7)

Range: Sikkim, Bengal Duars, Bhutan, Assam north of the Brahmaputra, Mishmi Hills, and south in north Lakhimpur Division, Dibrugarh to Margherita, and into the upper Hukawng Valley of northwest Burma.

Remarks: birds from the Mishmi Hills are the most blackish in tone, but not sufficiently so as to distinguish them from the population of the rest of the range outlined above.

3. *Glaucidium cuculoides rufescens*

Stuart Baker.

This race is more pure brown, far less rufous than *austum*, and with pure fulvous, less rufous fulvous, bars on the upper and lower parts. The population is, however, distinctly more rufous in tone than typical *cuculoides*. Below *rufescens* is barred and streaked with cinnamon brown, paler than *austum*, but darker and with far less white showing than *cuculoides*.

Measurements:

Cachar, Burma, 8 ♂♂ and ♀♀

Wing	Tail	Culmen
148-156.5 (153)	85-91 (87.6)	15-16 (15.6)

Range: southeast Bengal, Assam in Cachar, Manipur north to the Patkoi, Burma in the Hukawng Valley (where it may intergrade with *austum*, the Chin Hills, Myitkina, and south to Pegu and the Shan States.

4. *Glaucidium cuculoides brügeli* (Parrot).

In color there is no real character to separate this race from the preceding one. It is supposed to be less dark above and less rufous below, but I can find no real consistency in this claim. In series it might be asserted that *brügeli* is a trace more rufous on the underparts. There is however, a distinction in size. This race is smaller than *rufescens*.

Measurements:

Siam, 10 ♂♂ and ♀♀

Wing	Tail	Culmen
138-148.5 (144)	76.5-81 (78.7)	14.5-16.5 (15.6)

Range: Burma in Tenasserim; Siam except the southeast; and possibly (?) northern Cambodia, Indo-china.

Remarks: the type of *brügeli* is in Munich. Apparently it came from near Bangkok. However, the type locality has been fixed by Deignan (*Bull. 186 U. S. Nat. Mus.*, 1945, p. 179.), at the Sam Khok district, half-way between Bangkok and Ayutthaya. In this area birds represent the type described above.

5. *Glaucidium cuculoides deignani* subsp. nov.

Type: ♀ ad. (U.S.N.M. No. 308542.), col-

lected Feb. 12, 1927, at Nongkhor, Southeast Siam, by Hugh M. Smith.

Description: This race is more rufescent on the upper parts than *brügelii* or *rufescens*, but it is a paler type of rufescence. The wing feathers and wing coverts are ferruginous-cinnamon. On the under parts the barring and streaking tends to be more extensive than in *brügelii* and *rufescens* and much more rufescent, but of a ferruginous-cinnamon type, less saturated with fulvous. There is no difference in size between this race and *brügelii*.

In color and in smaller size this race differs greatly from *cuculoides*, being ferruginous-cinnamon in tone and more barred and streaked below. From *austerum* it differs in size and in the cinnamon rather than dark fulvous-rufous coloration of the plumage.

Measurements:

S.E. Siam, S.W. Indo-china 8 ♂♂ and ♀♀

Wing	Tail	Culmen
145-151(148.1)	74-80.5(78.3)	14-16(14.7)

Range: southeast Siam, Nongkhor, Hoop-bon, Ban Sadet, Sriracha; southwest Indo-china, Da Ban, Dalat, Trang Bom, south Annam, and Bienhoa in Cochin China.

Remarks: a single bird from the forests of Banteai Srei in northern Cambodia, taken in January, belongs to *brügelii*, although it is rather dark in tone. It may well be a winter wanderer from east Siam.

This race is named for my friend, Herbert G. Deignan.

6. *Glaucidium cuculoides delacouri* subsp. nov.

Type: ♀ ad. (U.S.N.M. No. 304182.), collected May 5, 1924, at Baetan Tray, 36 km. N.N.E. of Lai Chau, Tonkin, Indo-china, by F. R. Wulsin.

Description: this race is the most pure rufescent of all races of the species, darker and more rufous on the upper parts than any other except *austerum*, which is more saturated with dark fulvous, more blackish in tone. Below this race is heavily barred and streaked, more so than any race except *austerum*, in which the barring descends farther onto the abdomen. The general effect is of a suffusion of dark rufescence, richer rufous than in any other race. The rufous tone appears richer than in *austerum* because it is less infused with melanin, more truly "red-dish." The bill is longer in *delacouri* than in the preceding races.

Measurements:

N. Indo-china 4 ♂♂ and ♀♀

Wing	Tail	Culmen
150-157.5(154)	86.5-92.5(89.4)	16-16(16.4)

Range: Indo-china in Tonkin, except the northern valley of the Red River (Chapa area), and the extreme east (Tunghing); northern Laos at Xiengkhouang; north Annam at Hoi-Xuan.

This race is named for my friend, Jean Delacour.