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Variation in the Quail-Dove
Geotrygon frenata

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Over a period of several years the junior authors have sent to Chicago Natural History Museum some hundreds of bird skins from Argentina for critical determination, preparatory to publishing a summary of field notes relating to the birds of Jujuy and Salta. Among the specimens received for study by the senior author have been a number of additions to the Argentine list, single specimens of several probably undescribed forms, and three examples of a new and strikingly distinct quail-dove.

The new pigeon, described below, is named in honor of Miss Margaret Conover, sister of the late Boardman Conover, whose outstanding collection of game birds provided much of the comparative material used in the present study.

For the loan of additional comparative material we are indebted to authorities of the following institutions: the American Museum of Natural History, the British Museum (Natural History), and Carnegie Museum.

All measurements are in millimeters and the wings were measured flat. Names of colors when capitalized are from Ridgway's *Color Standards and Nomenclature*, 1912.

***Geotrygon frenata margaritae*, new subspecies**

Type.—Chicago Natural History Museum No. 22413 (Conover Collection), from Yuto, Province of Jujuy, Argentina. Altitude 400 meters. Adult female collected July 7, 1957, by Francisco Contino.

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Diagnosis.—Differs from all known races of *G. frenata* in having the entire crown and occiput deep reddish brown (near Liver Brown) instead of gray or grayish slate. Nearest *G. f. bourcieri* of Colombia and Ecuador but forehead and sides of head darker, near Vinaceous-Cinnamon, and wings, lower back, upper tail coverts, and tail much clearer olive.

Measurements.—Wing, 154; tail, 91; exposed culmen, 16.

Range.—Upper Tropical(?) and Subtropical Zones of Sierra de Santa Barbara, southeastern Jujuy, Argentina, descending briefly to the adjacent lowlands (Yuto, Province of Jujuy) in July and August during periods of exceptional cold.

Habits.—According to Mr. Contino, who collected the six known specimens, *margaritae* customarily lives in cloud forests of the higher mountains of Jujuy, some 2000 meters above sea level. At that altitude the vegetation is very dense and the forest composed of large trees, of which the dominant and most conspicuous kinds are cedar (probably *Cedrela angustifolia*), walnut (*Juglans australis*), and alder (*Alnus jorullensis*). As the trunks and branches of these trees are moss-covered, and laced with lianas, quail-doves are difficult to observe in their usual habitat, but examination of the six stomachs shows that much of their diet consists of alder seeds. During extremely cold weather, usually in July or August, quail-doves sometimes visit the lowlands and may remain in cultivated areas for as long as three weeks. At these times they lose much of their shyness and permit one to approach within a few feet before taking alarm. The confiding nature of *margaritae* while in the cultivated lowlands has earned for it the vernacular name *Paloma tonta* ("foolish pigeon"). Both sexes are similar in appearance and have yellow eyes, black bills, and reddish legs and feet. Weight of adults, 195–330 grams (aver. 244 grams).

Discussion.—The affinities of *margaritae* clearly lie with *G. frenata* but whether or not the two actually are conspecific is at present a matter of opinion. In color of the under parts *margaritae* agrees with *bourcieri* of Colombia and Ecuador, geographically the most distant race of *frenata*, but in color of the upper parts (exclusive of the crown and nape) there is a closer approach to the nominate race of southern Peru and Bolivia. Although the brown-crowned Argentine bird apparently is isolated from its nearest relative (gray-crowned) by some 500 miles and might properly be considered a distinct species, we favor a more conservative treatment until the distribution and habits of both populations are better known.

Characters of the several described races of *G. frenata* have been conveniently summarized by Hellmayr and Conover (1942, footnotes, pp. 618-620). Unfortunately, individual variation within these populations has received scant attention and we find no reference to an apparently significant cline in color of the upper parts that becomes evident on comparison of representative specimens in adequate series. The following remarks reflect the results of a study of such series, and critical examination of the unique type of *loricata* Todd and of two examples (1 adult, 1 immature) of the exceedingly rare and controversial Ecuador form, *erythropareia* Salvadori.

The specimens now assembled show a wide range of individual variation and when arranged by subspecies it becomes obvious that the accepted racial characters are themselves often unreliable in the allocation of individuals. Fortuitous variation is especially evident in the extent and shade of the gray and tawny coloring of the head, and in the coloring of the under parts, whether essentially brown or grayish, dark or pale. As some specimens representing each of the recognized gray-crowned populations are to all appearances identical, any subspecies based on only one or two specimens is suspect and requires authentication. Nevertheless, there is clear evidence in *G. frenata* of two plumage trends, in effect color clines, that indicate significant geographic variation. This is expressed in the progressive loss, from north to south, of rufescence on the upper parts, and in the darkening of the under parts in peripheral populations. Although the clarity of both clines is somewhat clouded by the random occurrence of individual variants, average differences in color of plumage serve to distinguish the following additional populations.

***Geotrygon frenata bourcieri* Bonaparte**

Geotrygon bourcieri Bonaparte, 1855, Compt. Rend. Acad. Sci. Paris, **40**, no. 3, p. 101—Valley of Lloa, Ecuador.

Geotrygon erythropareia Salvadori, 1893, Cat. Bds. Brit. Mus., **21**: 565 (in key), 578—Jima and Rosario, Ecuador.

Characters.—Similar to *G. f. subgrisea* but somewhat more rufescent above and, on the average, decidedly darker and browner (less grayish) below.

Distribution.—Upper Tropical and Subtropical Zones (870-2500 meters) of Colombia and Ecuador; north in the western Andes to Río San Juan. In Colombia reported east of the Andes only in southeastern Nariño (Cerro Pax).

Discussion.—In series this peripheral race averages much darker below than either *subgrisea* or *frenata*, and in this respect is identical with both *margaritae* and the type of "*loricata*." Pale-bellied individuals similar in all respects to darker examples of *subgrisea* occur at random both in Colombia (Cauca) and Ecuador, but these variants are in the minority and do not alter the reality of a separable, dark-bellied northern form. According to Chapman (1926, p. 173), *bourcieri* intergrades with *subgrisea* in extreme southwestern Ecuador (Zaruma).

The status of "*erythropareia*," which is known from but three specimens (2 adults, 1 immature) in the British Museum, remains somewhat equivocal. The type, as depicted in Sclater and Salvin (1869, pl. 40) closely resembles several of the darker, more richly colored examples of *bourcieri* at our disposal, but on direct comparison both Chapman (loc. cit.) and Hellmayr and Conover (loc. cit.) found it to differ in several minor respects from any specimens of the latter seen by them. Our examination of the other adult (from Jima) has verified their observations except as to the distinctive intensity of rufescence on the upper parts. In this connection it is interesting to note that the plumage of the immature bird (from Rosario), while not definitely diagnostic, strongly suggests that of typical *bourcieri*, especially in color of the forehead, malar region, hind neck, and belly. Although the exact plumage of "*erythropareia*" as now known has not yet been found among unquestioned examples of *bourcieri*, the pronounced variability of the latter strongly suggests that the former is only a fortuitous and presumably rare color phase. As the supposed characters of "*erythropareia*" are relatively inconspicuous at best, and its range is apparently covered by that of *bourcieri*, it seems best to combine the two provisionally.

Geotrygon frenata subgrisea (Chapman)

Oreopelia (sic) *bourcieri subgrisea* Chapman, 1922, Amer. Mus. Nov., 31: 2—Alamor, 4350 feet, Province of Loja, Ecuador.

Characters.—Similar to *G. f. frenata* but on the average slightly more rufescent above, and the gray of the crown, whether pale or dark, without a suggestion of vinaceous coloring.

Distribution.—Upper Tropical and Subtropical Zones (1200–3000 meters) of extreme southwestern Ecuador (Province of Loja) and northwestern Peru, eastward at least to the lower Marañón Valley (Santa Rosa).

Discussion.—An intermediate form, having the clear gray crown of *bourcieri* and pale under parts of *frenata*. The darkest individuals of *subgrisea* are indistinguishable from the palest examples of *bourcieri*, but in series the two populations can be separated by average differences. Color of the forehead, considered important by Hellmayr and Conover, proves to be highly variable and of no diagnostic value.

Geotrygon frenata frenata (Tschudi)

Columba frenata Tschudi, 1843, Arch. Naturg., 9, (1), p. 386—eastern slopes of the Andes of Peru (=probably Chanchamayo, Department of Junín).

Oreopeleia erythropareia loricata Todd, 1947, Proc. Biol. Soc. Wash., 60: 67—Buena Vista (Río Yapacani), Bolivia.

Characters.—Similar to *G. f. subgrisea* but gray of the crown, whether dark or pale, usually more or less conspicuously tinged with violaceous.

Distribution.—Upper Tropical and Subtropical Zones (800–3000 meters) of southern Peru (north to Junín) and northern Bolivia in Departments of La Paz, Cochabamba, and Santa Cruz (Río Yapacani).

Discussion.—The distinction between *frenata* and *subgrisea* is rather finely drawn but the diagnostic character of the former shows quite well in pale-crowned birds. Both races are identical in color of the under parts, and individuals of each are in this respect virtually indistinguishable from the palest examples of *bourcieri*.

In describing "*loricata*" from a single specimen Todd evidently was unaware of the wide range of variation to be found even in the adjacent population (*frenata*) and unfortunately compared his bird only with specimens from Incachaca (Bolivia), and with "*erythropareia*" as portrayed by Sclater and Salvin (1869, pl. 40).

The unique type of "*loricata*" is, in fact, notably different from the three Incachaca birds seen by us but there is little to distinguish it from several examples of both *frenata* (Cuzco) and *subgrisea*, and it is virtually identical with numerous typical examples of *bourcieri*. Furthermore, there is no certain evidence that the type of "*loricata*," an August (=cold season) specimen, represents a lowland form. This assumption is suspect by virtue of the fact that no other race of the species is restricted to the highlands, and at least one (*margaritae*) customarily descends to lower altitudes at intervals in July and August. In our opinion the Santa Cruz bird has no present claim to recognition.

SPECIMENS EXAMINED

G. f. bourcierii.—Colombia: La Costa, 2; Munchique, 6; San Antonio, 1; Cocal, west of Popayan, 1.—Ecuador: Chical, 3; Taguaquiri, 2; Ramos-Urco, 1; San Cadoo-Mindo, 1; Montes Anagumba, 4; Pacto, 1; Cerro San José, 1; Río Tigre, 1; Paramba, 1; Monte Chuga, 1; Gualea, 1; Chimiplayas, 1; Condeja, 1; Baeza, 1; San José de Sumaco, 3; Jima, 1; Rosario, 1.

G. f. subgrisea.—Ecuador: Alamor, 2; Celicia, 1.—Peru: Uscho, 1; La Lejia, 1; San Pedro, 1; Santa Rosa, 1.

G. f. frenata.—Peru: Chanchamayo, 7; Marcapata, 3; Oconeque, 1.—Bolivia: Incachaca, 3; Río Yapacani, 1 (type of "*loricata*").

G. f. margaritae.—Argentina: Yuto, 2; Sierra de Santa Barbara, 1.

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