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(WITH ONE PLATE)

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THE FORMS OF THE BLACK HAWK-EAGLE

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The black hawk-eagle, *Spizaetus tyrannus* (Wied), has always been considered as a species with no geographic races, and, indeed, I so assumed it to be a number of years ago when working on this genus for the eleventh volume of Ridgway's "Birds of North and Middle America." However, recently I have had occasion to examine far more extensive material than was formerly available, and I find, quite contrary to my earlier opinion, that there are two morphologically separable geographic units in the species. The type of *tyrannus* came from Ilha do Chave, below Quartel dos Arcos, Rio Belmonte, Bahia, Brazil, and the only other names applied to the species are likewise based on eastern and southeastern Brazilian birds—*Harpyia braccata* Spix (*Avium species novae* . . . vol. 1, p. 7, pl. 3, 1824 (=1825)) from São Paulo, Brazil, and *Spizaetus spixii* Des Murs (*Rev. Zool.*, vol. 10, p. 325, 1847) which is merely a new name for *H. braccata* Spix.

Birds from México and Central America, and from northern and western South America, south to Pará, the Amazon Valley, and western Brazil (Rio Purús and Rio Juruá and Mato Grosso) and Bolivia are different from specimens from Bahia, Espírito Santo, Rio de Janeiro, Santa Catharina, Minas Gerais and São Paulo in eastern and southeastern Brazil, and for them is proposed the name

Spizaetus tyrannus serus, new subspecies

Type.—U.S.N.M. No. 206391, ad. ♂, collected at Río Indio, near Gatún, Canal Zone, Panamá, March 4, 1911, by E. A. Goldman (orig. No. 13928).

Subspecific characters.—Similar to the nominate race but with the flanks and thighs more heavily marked with white cross bars, and with the under wing coverts much more whitish, less blackish; these feathers white, rather sparingly marked with blackish in *serus*, and almost wholly black in *tyrannus*. Size of *serus* averaging smaller than the nominate race.

Description of type.—All feathered parts of top of head black, the feathers of the crown and the occipital crest with their basal half or more pure white, much of this color usually showing through among the overlapping feathers; scapulars, interscapulars, back, upper wing coverts black; remiges externally fuscous black to black, crossed by five or six dull fuscous bars about equally spaced, the bars being slightly narrower than the black interspaces and becoming mottled or edged with whitish on the inner margin of the inner webs, these bars grayish white on the under surface of the remiges; rump black, the upper tail coverts black, each feather crossed by two or three narrow white bars which are slightly mottled with brownish gray, and also narrowly tipped with white; rectrices black paling to whitish basally and crossed by four broad bands of deep ashy gray mottled with pale fuscous and whitish, and narrowly tipped with whitish; all the tail bands white on the under surface; chin black, the feathers white basally; feathered portions of lower cheeks and auriculars, throat, breast, sides, and upper abdomen black; lower abdomen and flanks black spotted sparingly with narrow, semitransverse white flecks; thighs black broadly barred with white, the black interspaces somewhat broader than the white bars (in typical *tyrannus* these white bars are very narrow lines); under tail coverts like the thighs and flanks but with the white bars still broader and more broadly spaced; under wing coverts mostly white broadly barred with black, the outer, greater, under primary coverts white with only a sub-terminal and a subbasal black bar (in typical *tyrannus* the under wing coverts are black with sparse and narrow white barrings).

Young birds of both races tend to have more white on the under wing coverts and tibiae than do the adults, but even here the difference between comparable birds of the two subspecies is striking.

Measurements of type.—Wing 381; tail 309.8; culmen from cere 27.5; tarsus 81; middle toe without claw 44 mm.

In size *S. t. serus* averages smaller than *S. t. tyrannus*; thus males of *serus* have wing lengths of 354-394 (379.5 mm.) and tails 291.1-325 (309.8) in length as opposed to wing lengths of 362-422 (398.3 mm.) and tail lengths of 365-367 (366 mm.) in the nominate race; females of *serus* have wing lengths of 353-444.5 (412.5 mm.) and tail lengths of 289-386 (337 mm.), while females of *tyrannus* have wings of 428-460 (443.7 mm.) and tails measuring 370-405 (388.8 mm.)

Range.—Resident in heavily forested areas of the tropical zone from southern México (Oaxaca, Chiapas, San Luis Potosí, Puebla, Veracruz, Campeche, and Yucatán) south through Guatemala, Hon-

duras, British Honduras, Nicaragua, El Salvador, Costa Rica, and Panamá to Colombia, Ecuador, Perú, Venezuela, Trinidad, the Guianas, northern and western Brazil (Pará, the Amazon Valley, Rio Purús, Rio Juruá and Mato Grosso), to Bolivia (Santa Cruz).

The nominate form appears to be restricted to eastern Brazil (Bahia, Espírito Santo, Minas Gerais, Rio de Janeiro, Santa Catharina, and São Paulo) and possibly ranges to northeastern Argentina (Misiones). The species has been recorded once from Paraguay (Sapucai), but, in the absence of material from that country, it is not possible to say which race may have been involved.

Material examined.—Thanks to the cooperation of the authorities of the Chicago Natural History Museum and the Museum of Comparative Zoölogy, I have been able to add to the material in Washington and have thus personally studied 30 specimens. In addition to these, I am able to include here notes on a still larger number of specimens in other museums, kindly made for me by Dr. Pinto on the birds in the museum at São Paulo, Brazil; by Mr. Peters on additional specimens in the Museum of Comparative Zoölogy, Cambridge; by Mr. Todd on those in the Carnegie Museum, Pittsburgh; by Mr. deSchauensee on the birds in the Academy of Natural Sciences of Philadelphia; and by Dr. Zimmer on those in the American Museum of Natural History, New York. The combined material may be listed as follows:

Spizaetus t. tyrannus.—Eastern and southeastern Brazil (Bahia south to São Paulo) 20 (including the type); "South America" 2; total 22 specimens.

Spizaetus t. serus.—Mexico 8; Guatemala 1; British Honduras 1; Honduras 1; Nicaragua 1; Costa Rica 4; Panamá 10 (including the type); Colombia 4; Venezuela 1; Dutch Guiana 6; Ecuador 2; northern and western Brazil (Pará, the Amazon Valley, Rio Purús and Rio Juruá, Mato Grosso) 9; Bolivia 2; total 50 specimens.

Remarks.—The two species of *Spizaetus* inhabiting the American Tropics each divide into two races, but the geographic pattern of this division is quite dissimilar in the two. In the case of the present species the data, still incomplete for much of the interior of Brazil (states of Maranhão, Ceará, Parahyba, Goyaz, southern Pará, and Mato Grosso), indicate that the nominate form is largely a bird of the coastal or semicoastal forested areas from Bahia southward to São Paulo, and that the species apparently does not occur in the adjacent (to the west) extensive areas of "campos" country of the "Planalto" and of the still farther inland grasslands stretching from south of the Amazon forest to parts of northern and eastern Bolivia.

The race *serus* ranges from the Amazonian forest and its outliers (from Pará in the east, and in the west from the Rio Purús and Rio Juruá, from Mato Grosso (São Luiz de Cáceres) and from Santa Cruz in Bolivia) northward to Perú, Ecuador, Colombia, Surinam, Venezuela, Central America, and México.

In *Spizaetus ornatus*, which, as a species, seems to have a range geographically and ecologically very similar to that of *S. tyrannus*, the northern race *vicarius* occurs from southern México, south across Central America to Colombia west of the eastern Andes, and western Ecuador, possibly to Perú, while typical *ornatus* is found from Venezuela and the Guianas southward across Brazil to Bolivia and Paraguay. In *Spizaetus ornatus* it looks as though the Andes constituted a possible barrier between the component forms, whereas in *S. tyrannus* this is not the case.



BLACK HAWK-EAGLE

1, *Spizocelus tyrannus tyrannus* from Joinville, eastern Brazil; 2, *S. t. serus* from Chiapas, Mexico