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Taxonomic Notes on Birds of Prey

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INTRODUCTION

The following notes are incidental to my writing, with L. H. Brown, a general work on the diurnal birds of prey. Recent separate notes published elsewhere have treated some of the forms. These papers are listed in the bibliography. Two articles by other authors were stimulated in part by the present project: Partridge's (1961) note showing that *Accipiter pectoralis* is the immature of *A. poliogaster*, and Vaurie's (1962) revision of *Buteo polyosoma* and *B. poecilochrous*.

So far as I am aware, Friedmann's (1950) volume on the Falconiformes in the Ridgway series never received the extensive reviews such a major contribution deserves. As regards major systematics and some aspects of anatomy, it is the most complete available work on the order. Ridgway, in his earlier years, was much interested in the classification of the diurnal birds of prey and published a dozen or so papers on the subject. When Friedmann combined this work and Ridgway's manuscript notes with his own material in preparing this volume, it is not surprising that occasional inconsistencies crept in. Thus in several places we are referred to a family Buteonidae, although by the time the work appeared this entity had been reduced to a subfamily. Further discussion of a few statements from Friedmann's volume are to be found below.

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GENUS *CHONDROHIERAX*

Tremendous variation in plumage and in the size of the bill makes this genus difficult taxonomically. Friedmann (1934) sorted out the plumages and described a race from central Mexico and another from the island of Grenada, Lesser Antilles. The species occurs on Cuba in the form *wilsonii*, which I have recently (1960) suggested be regarded as a subspecies rather than, as hitherto, a species. The genus then becomes monotypic, with *uncinatus* as its only species.

Although individuals with bills of larger than average size occur in many, if not all, parts of the continental range of the species, those with really huge bills are restricted to an area in Amazonian Ecuador and Peru, or so Friedmann concluded. Des Murs had named a form from somewhere on the Ecuador-Peru border *megarhynchus*, but Friedmann concluded that this name cannot be used for the large-billed race, which he named *immanis*. Hellmayr and Conover (1949, p. 30) discussed the matter and concluded, first, that the huge-billed variants are not restricted geographically, and, second, that in case they were restricted to an area in eastern Ecuador and Peru, the name *megarhynchus* can and should be applied to them.

I have looked at the material in the American Museum of Natural History, totaling about 70 specimens that belong to all the recognized forms. Friedmann seems to have been perfectly correct in thinking that the large-billed variation tends to be segregated geographically in Ecuador, Peru, and possibly adjacent Brazil. The following list will suffice to show the geographical segregation of the large-billed birds in our material. The numbers are those from each area. From the following areas, only birds with bills of average size are present: Mexico (Jalisco), three; Guatemala, three; Nicaragua, two; Costa Rica, eight; Surinam, two; Venezuela, 11; Colombia, four; Argentina (Salta), one; Paraguayan Chaco, one. The three remaining countries, Ecuador, Peru, and Brazil, are the only ones from which birds with extraordinarily large beaks are found in our collection. To dispose of Brazil first, of nine birds, seven have bills of average size; one from the Rio Madeira has one somewhat above average size; another has a very large bill, but it is an old specimen, with no locality other than "Brazil," which may be suspect. Of 14 birds from Ecuador, six have the bill of average size; seven, the bill somewhat above average; while one from Chone, a town at about sea level and not far from the coast, but in latitude a little south of Quito, has a very large bill. Of two other birds from this locality, one has the bill of average size, the other, one a little above average. We have four specimens from Peru: of

these, two have the bill of average size, one has a bill above average, while the fourth, from Chaupe at 6100 feet, has a very large bill.

Hellmayr and Conover state that they have seen large-billed specimens from Oaxaca and Chiapas in Mexico, as well as from Merida, Venezuela, and Bahia, Brazil.

There seems to be a tendency for the birds with very large bills to be of large over-all size. One such bird from Peru, for example, although immature and sexed as a male, is larger than any of the other three Peruvian specimens; while the one from Ecuador, an adult female, is equaled in wing length by only one of the other 13 specimens from that country. One might be tempted to conclude that *megarhynchus*, as originally believed, is a distinct species. In the absence of any other differences, however, and, more especially, because specimens of intermediate bill size occur, one must conclude that such is not the case. Field study might be rewarding, although admittedly difficult of birds of this sort. One would especially like to know the situation in regard to mated pairs. Possibly *megarhynchus* is a population that was formerly more isolated and is at present in process of being swamped out.

One may conclude that the big-billed birds, although they are certainly more common in parts of Peru and Ecuador, are by no means of exclusive occurrence even there, and are evidently found elsewhere. Until further data are available, it does not seem to be advisable to take nomenclatural recognition of the variation.

We thus have the following races: *wilsonii*, Cuba; *mirus*, Grenada; *aquilonis*, central Mexico; and nominate *uncinatus* for the remaining and greater part of the range of the species.

GENERA *ROSTRHAMUS* AND *HELICOLESTES*

Recent works list two genera, both monotypic, of closely related, snail-eating kites. One is the well-known Everglade Kite, *Rostrhamus sociabilis;* the other, the relatively rare *Helicolestes hamatus*, which, however, is now much better known as a result of Haverschmidt's fine paper (1959). These two species are so similar that they were confused by some early ornithologists. They agree in general habits, coloration, and in such a minor adaptation as having a pectinate flange on the inner edge of the middle claw. These flanges aid in the removal of the slime of snails from the head and plumage.

The principal difference between the two species is that *hamatus* is stockier, with relatively shorter wings and tail. Other differences of *hamatus* as compared to *sociabilis* are: the immature plumage is very like

that of the adult; the upper mandible is even thinner and more decurved; and the wings are not only shorter but more rounded and hence give a different ratio between the length of the primaries and that of the secondaries.

After careful consideration, my opinion is that the clear-cut affinity of these two species is of more importance than their differences. If each contained several species, one might suggest keeping them separate for convenience. Since they are both monotypic, I regard *Helicolestes* Bangs and Penard, 1918, as a synonym of *Rostrhamus* Lesson, 1830.

GENUS *HARPAGUS*

I have elsewhere (Amadon, 1961a) given reasons for considering this genus a kite and for believing that any resemblance it has to *Accipiter* is either coincidental or possibly due to mimicry. Further field studies are needed, for rumors that these birds catch birds in an accipiter-like style persist. They are known to catch lizards and large insects, pursuing them at times rather awkwardly, and this kite-like behavior probably is the usual method of foraging.

The two species of *Harpagus* have one further resemblance to *Accipiter* which I neglected to mention in the 1961 paper. The females are substantially larger than the males, whereas in most kites sexual dimorphism is slight or lacking. The following measurements are wing lengths, given in millimeters:

H. bidentatus fasciatus: males, 198–210; females, 220–226
H. bidentatus bidentatus: males, 196–217 (208); females, 226–231 (229)
H. diodon: males, 200–210, females, 210–220

GENUS *SPILORNIS*

Stresemann's paper (1959) has brought order into this variable genus. Only in the Andamans do two forms occur together, although somewhat isolated ecologically, and only there is it mandatory to recognize two species (*S. cheela davisoni* and *S. elgini*). It is customary to retain the Celebes and Philippine snake-eagles as species also, as *S. rufipectus* and *S. spilonotus*, respectively. Whether such separation is necessary in view of the variation shown by *cheela* is questionable. Other forms that Stresemann would regard as specifically distinct are *kinabaluensis* of the mountains of northern Borneo, *minimus* of the central Nicobar Islands, and *klossi* of Great Nicobar Island. Of these the only one that I am inclined to accept as a full species is the diminutive and plain-backed *klossi*. As for *kinabaluensis*,

further information will show whether, as I suspect, it intergrades with *pallidus*, the lowland race of Borneo, or not.

GENUS *CIRCUS*

Circus buffoni: I have elsewhere (Amadon, 1954) stated my reasons for considering the change of the name of this species to "*brasiliensis*" unnecessary.

Hellmayr and Conover (1949, pp. 224–227) imply that this harrier may occur only as a migrant in northern South America, with nesting grounds to the south, chiefly in Argentina. They suggest that the eggs taken by Belcher and Smooker in Trinidad and ascribed to this harrier are more likely to belong to some other species. This, however, is the only harrier on the island, and it is hardly likely that these veteran oologists would confuse the eggs as to family. (No other hawk would be nesting on the ground in marshes.) Herklots (1961), in his recent book on the birds of Trinidad, accepts the fact that the species breeds there.

Circus buffoni is of widespread occurrence in northern South America, including Colombia. Chapman (1917, p. 240) first recorded it from that country on the basis of two melanistic specimens. Similar specimens are known from various other countries in northern South America. Most specimens from that part of the continent seem smaller. Recent hasty examination of material in the British Museum (Natural History), however, indicated that some Argentina birds are small and that melanistic specimens do occasionally appear in that population. One melanistic specimen from British Guiana was of large size. It would be premature, therefore, to recognize two races. If it should later prove desirable to do so, the oldest names are *buffoni*, with type locality Cayenne, for the northern birds, and *macropterus*, described from Paraguay, for the southern ones.

GENUS *ACCIPITER*

Accipiter meyerianus: Meyer's Goshawk has a spotty distribution, in part, perhaps, because it is difficult to collect. It must, however, be relatively uncommon. It has been taken on several islands in the Moluccas and Solomons and on New Britain and Watom Islands. Some of the records are from small islands such as Watom, which suggests that it surely must occur on islands where it has as yet been unrecorded.

In the New Guinea area in the restricted sense *meyerianus* has previously been recorded only from Japen Island in Geelvink Bay. It was with

considerable surprise therefore that I came upon a specimen in the British Museum collected in 1932 by F. C. Shaw Mayer at 4000 feet in the Kraetke Mountains in eastern New Guinea. This example is the only fully adult large female of this species that I have seen, except one melanistic specimen from New Britain. It differs from two normal-phase adults, one from Ceramlaut, Moluccas, and one from Kulambangra, Solomons, by being more extensively and uniformly barred below. The difference may be one of age, sex, or due to individual variation. Mr. Galbraith, however, writes that an adult in the British Museum from Guadalcanal, Solomons, is also sparingly barred. It is possible, therefore, that geographical variation does exist.

The similarity of *meyerianus* to the northern Goshawk, *Accipiter gentilis*, in ventral coloration, in both barring and shaft streaking, is striking. Dorsally *meyerianus* is blacker, and its tail is more barred. As regards the heavy feet and the tarsal feathering, the two are quite similar. Of the tropical forms often associated with *gentilis* in a superspecies, *meyerianus* is more like *gentilis* than is either *melanoleucos* of Africa or *henstii* of Madagascar. It is true that *meyerianus* and *melanoleucos* differ from the other two in having a melanistic phase.

Accipiter buergersi of New Guinea is somewhat similar to *meyerianus* in its large size and in the reddish immature plumage. One might think that they are closely related, but *buergersi* is actually a huge sparrow-hawk with very long toes and long, thin, unfeathered shanks. It may be related to *Erythrotriorchis radiatus* of northern Queensland, notwithstanding the rather more buteonine wing and tail proportions of the latter.

Accipiter bicolor: Bangs and Noble (1918) described a race of this hawk occurring in Veracruz and Oaxaca, Mexico, which they named *fidens*. Its characters were given as large size and dark coloration. We have recently received our first specimen of this population, an adult male from 18 miles north of Mapias Romero, Oaxaca. The wing length of this specimen is 217 mm. This compares with a range of 197–216, with a mean of 209 mm., in seven males of the nominate race. Friedmann (1950, p. 167) gave the wing length of a supposed male of this form as 251. Surely this specimen was a female, or perhaps the measurement should read 215. The measurements of females found in the literature are 255, 260, 260; the smallest of these is an immature. Nine females of the nominate race measure 236–253 mm. in wing length, with an average of 245. The largest of these, that with a wing length of 253, was from Nicaragua. There is apparently a cline of increasing size northward in the Central American and Mexican part of the range of the species. Size is more or less constant throughout the extensive South American range of *A. b. bicolor*.

So far as dorsal color is concerned, I cannot see that our specimen from Oaxaca differs in the slightest from many skins from South America. Below it is paler than many of them, but it is well known that this race shows a range in the tone of the ventral coloration so great as almost to suggest the presence of phases. The darker type was named *schistochlamys* by Hellmayr, but it was later found by Chapman that this variation is not geographical. Whether these two "phases" in the adult correspond with the white and the tawny-breasted phases of the immature is, I believe, unknown.

Accipiter bicolor fidens thus seems to rest upon a slight cline of increasing size. It is nevertheless probably worth while to recognize the race tentatively, since size variation in the three species or superspecies, *Accipiter gentilis*, *A. cooperii*+*bicolor*, and *A. striatus*, in Middle America is unusual and interesting in a number of respects. As an example, all three become larger southward in western United States and northwestern Mexico.

Accipiter cooperii of North America, *A. bicolor* of Middle and South America, and *A. gundlachi* of Cuba form a superspecies. I agree with Conover (1946) that the South American members of this group, *pileatus*, *guttifer*, and *chilensis*, should be regarded as conspecific with *bicolor*. *Accipiter pileatus* forms a good transition, since the under parts are still immaculate in the adult but are heavily marked in the immature. I have not seen a full adult of *gundlachi*, but it is a heavier-footed bird than either *cooperii* or *bicolor*. Apparently it is closer to the latter.

I have elsewhere (1961a) commented on the close similarity, sometimes regarded as mimicry, between *Accipiter bicolor pileatus* and the kite, *Harpagus diodon*. The similarity includes both adult and immature plumages, although in the northern part of the range of *diodon* the nominate race of *bicolor* occurs, in which the immatures are unmarked and hence unlike those of *diodon*.

The immatures of *A. b. bicolor*, incidentally, have a striking resemblance to another *Accipiter*-like bird, the Collared Forest Falcon, *Micrastur semitorquatus*, even to the degree that both have a white and a tawny phase. In this case the immatures of *Accipiter* resemble the adults of *Micrastur*. Here both of the birds concerned are fierce predatory types, whereas *Harpagus* is not. It is far from established that true mimicry is involved in any of these resemblances.

Accipiter collaris: So much has been made in the literature of the heavier feet of this species that one seeing it for the first time is apt to question the identification. The claws are a little longer, the tarsi a little heavier, than are those of the closely related Tiny Hawk, *A. superciliosus*, but only because *collaris* is a slightly larger bird. When compared sex for sex with

large examples of *superciliosus* from eastern Peru, I find no difference in the feet. Conover (1946, pp. 42–44) seems to have been quite correct in concluding that *collaris* has two phases in the immature plumage and that these correspond exactly with those of *superciliosus*. The question arises as to whether *collaris* is anything more than a subtropical and perhaps temperate-zone representative of the tropical-zone *superciliosus*. It is, however, hazardous to treat altitudinal forms as subspecies, unless actual intergradation has been demonstrated, and such is not here the case.

In adult plumage *collaris* can be distinguished most easily from *superciliosus* by the much coarser ventral barring and by the broken whitish collar. In *superciliosus* also there are white areas on the feathers of the hind neck, but these are much smaller and more basal and not ordinarily visible. Three of four immatures of *collaris* are in the rufous phase, but only one of eight immatures of *superciliosus* is so. In this phase, the immature of *collaris* is readily distinguishable by the chestnut collar. In the other phase of the immature, in which the upper parts are somewhat like those of the adult in both species but more brownish, identification is more difficult, but *collaris* can be separated by the presence of at least the suggestion of a collar. Probably the ventral barring tends to be broader also.

Todd and Carriker (1923, p. 147) mentioned an accipiter from Las Nubes which they assigned to *A. superciliosus*. Actually, it is an immature of *A. collaris* in the rufous phase, and in fact is the only example of this species in the American Museum. This correction seems not to have been made in the literature, as I do not find the Santa Marta region listed in the range of this species in de Schauensee's "The birds of the Republic of Colombia" (1949).

GENUS *LEUCOPTERNIS*

Leucopternis melanops AND *Leucopternis kuhli:* These two forms are of almost or exactly the same size; they differ only in color. Hellmayr and Conover (1949, p. 176, footnote 4) wrote: "*Leucopternis kuhli* Bonaparte is nearly allied to, and probably the southern representative of *L. melanops*, differing principally by the mainly blackish slate coloration of the pileum and hind neck, the absence of the white spots on wing coverts and scapulars, and the possession of conspicuous white superciliaries." These authors go on to state that *melanops* is found only north of the Amazon, *kuhli* south of it. We have, however, a typical specimen of *melanops* taken at Tauary, Rio Tapajos, a point about 40 miles upriver from Santarem and, of course, south of the Amazon. The specimen was taken by the Olallas on April 19,

1931. I have found a reference to another specimen of the same species collected by the Olallas on the Rio Tapajos. We have a specimen of *L. kuhli* taken by the same collectors at a point "about two days' canoe travel up river from Tauary" but on the opposite side of the river. Unless, therefore, there is some mistake in the locality of this specimen of *Leucopternis melanops*, we shall have to assume that it and *L. kuhli* do, in fact, narrowly overlap in range. To be sure, the Olallas in those days collected so many tens of thousands of specimens that some errors are inevitable.

THE SUPERSPECIES *Leucopternis albicollis:* The nominate race of this group, *L. a. albicollis*, has by far the largest range—almost all of Amazonia

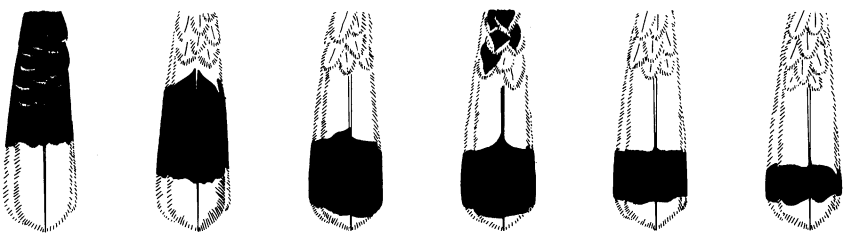

FIG. 1. Tail pattern. *Left to right: Leucopternis polionota, L. albicollis albicollis, L. a. wilhelminae, L. occidentalis, L. albicollis costaricensis,* and *L. a. ghiesbreghti.*

and some of its bordering regions. It is sometimes considered a different species from the White Hawks of Mexico, Central America, Panama, and adjacent Colombia (*ghiesbreghti* and *costaricensis*). De Schauensee (1950), however, described a race, *wilhelminae*, from Colombia which is intermediate between the two groups both geographically and in coloration.

More doubt pertains to the form *occidentalis* of western Ecuador, in which the dorsal markings are leaden gray, not black as in the races of *albicollis* just listed. Further, the upper parts lack the extensive white markings of even the most heavily marked race of *albicollis*, the nominate one. Unless intergradation can be demonstrated between *occidentalis* and *wihelminae* to the north, one may best agree with Chapman (1926, p. 234) that *occidentalis* represents *albicollis* but is specifically distinct.

Southeastern Brazil is inhabited by two rare members of this genus: *lacernulata* and *polionota*. Emil Kaempfer, who collected far and wide in that area during the twenties, secured one *lacernulata*, no *polionota*. Before the forests of southern Brazil were so extensively hacked away in the endeavor to keep the world oversupplied with coffee, the situation may have been otherwise.

Despite the highly tentative attitude adopted by Hellmayr and Conover (1949, p. 173), the following conclusions seem warranted: (1) *Leucopternis polionota* is evidently a geographical representative of *L. albicollis* but, like *L. occidentalis*, differs sufficiently to be kept as a species, unless intergradation is demonstrated. As in *L. occidentalis*, but less so, the upper parts of *polionota* are more extensively dark, the dark feathers a little grayer, than in any of the four races of *L. albicollis*. (2) *Leucopternis polionota* is considerably larger than *L. lacernulata*, and the distinctions in color pattern are not inconsiderable. As Hellmayr and Conover wrote, *lacernulata* may represent *L. melanops* and *L. kuhli*, but the differences are too great for one to suggest putting it in the same superspecies.

The pattern of the tail in the forms of this group is interesting (see fig. 1). One may suggest the following sequence of changes: In *polionota* the basal half of the tail is black; the proximal, half white. In *L. a. albicollis* the black band is, so to speak, shifted toward the end of the tail, so that the white terminal area is narrower and there is some white at the bases of the feathers. In *L. a. wilhelminae* and in *L. occidentalis* the black area is limited to a broad subterminal band. In *L. a. costaricensis* and *L. a. ghiesbreghti* this black band is progressively narrower. The limited amount of black in the tail is reflected in the rest of the plumage; *ghiesbreghti* is otherwise pure white except for some black areas in the wing quills.

GENUS *BUTEOGALLUS*

I have twice (Amadon, 1949; Amadon and Eckelberry, 1955) stated my conviction that it is not feasible to separate the Common Black Hawk, *Buteogallus anthracinus*, and the Great Black Hawk, *Buteogallus* (*Urubitinga*) *urubitinga*, generically, and I would not mention it again except that everyone continues to do so! Recently Dr. Wetmore told me that he now agrees, after osteological comparisons, that the two genera should be united. Remarks on the races of *Buteogallus anthracinus* have been published elsewhere (Amadon, 1961c).

GENUS *HETEROSPIZIAS*

Ridgway, in one of his early papers (1876, p. 139), quite correctly pointed out that the genus *Heterospizias* is scarcely separable from "*Urubitinga*" (= *Buteogallus*). Peters (1931, p. xvi) for some reason put *Heterospizias* in a different subfamily, next to *Accipiter*. This action was followed by Friedmann (1950, p. 65), although his key would associate it correctly with the buteonine genera. Actually there is no particular reason to

believe that *Accipiter* and *Buteo* are at all distantly related; certainly they do not belong to different subfamilies. Plotnick (1956) correctly indicated the relationships of *Heterospizias*.

GENUS *BUSARELLUS*

Ridgway (1876, p. 142) regarded the "Fishing" Hawk, *Busarellus*, as very aberrant and closest to the "haliaetine group, especially to the remarkable Australian genus *Gypoictinia*." Friedmann (1950, p. 409), on the other hand, transferred it to the vicinity of such other neotropical genera as *Buteogallus*. With the latter action I quite agree, though one should scarcely place it between two such exceedingly close genera as *Buteogallus* and "*Urubitornis*" (= *Harpyhaliaetus*). Friedmann's generic diagnosis of *Busarellus*, begins: "Medium sized Buteolike Haliaeeti . . ."; thus Ridgway's (presumably) erroneous conclusion was cited, even though it was not followed.

GENUS *BUTEO*

Buteo poecilochrous: At my suggestion, Vaurie (1962) investigated this puzzling form. Many of the relatively few known specimens of *poecilochrous* are intermediate in one way or another toward *Buteo polyosoma*. Examples of *polyosoma* unquestionably occur within the Andean range of *poecilochrous*, but we do not know whether or not they breed there. Possibly *poecilochrous* is a former isolate which is in the process of being swamped out. Probably only field work can solve the problem, but admittedly this is difficult with such relatively scarce birds.

Separated by a wide assortment of more or less unrelated species by Hellmayr and Conover (1949, pp. 85, 151), *B. polyosoma* and *B. albicaudatus* are nonetheless very closely related forms. Surely they belong to the same superspecies.

Buteo swainsonii: Chapman (1926, p. 230) wrote that there were no specimens of Swainson's Hawk from Ecuador in the American Museum. However, a specimen from Guapulo, near Quito, which he (p. 227) called *polyosoma* proves to be *swainsonii*. Bent (1937, p. 237) stated that the only known example of Swainson's Hawk from Ecuador is one in the Stockholm Museum, which also came from the vicinity of Quito.

It is generally stated that the normal winter range of this hawk lies in Argentina, yet it is surprising how many writers on the birds of that country (for example, Hudson) do not mention it. I spent some two months in Argentina, during which time we saw only one flock that we

thought to be of this species. Wetmore (1926, p. 111) mentions seeing only one specimen during his extended stay in Argentina, not all of which, however, was at the proper season. Swainson's Hawk migrates in large, sometimes tremendous flocks between North America and its winter home and apparently remains in flocks while in Argentina. Doubtless it is nomadic, and one's idea of its status would be based entirely on whether or not one happened to encounter such a flock. On migration it is said that Swainson's Hawk very seldom alights, but one can hardly conjecture that it soars all the way to Argentina without stopping, and in fact Skutch (1945) saw a flock stop for the night in Costa Rica. Nevertheless, specimens from intermediate points are few and far between. Phelps and Phelps (1958, p. 62) stated that only one specimen had been taken in Venezuela. We mention two from Ecuador, above; Pinto (1938, p. 71) listed only one specimen from Brazil.

De Schauensee (1949, p. 395) listed *swainsonii* as a "winter resident" in Colombia and gave four records. It must be admitted that some of the dates concerned (November, December 2, December 12, February 1) suggest wintering. Mr. Eisenmann tells me that a few appear to winter in Panama, or at any rate linger into November and December. There is, moreover, the recent remarkable discovery that small flocks, almost exclusively composed of immatures, winter in southern Florida, where they wander around from one freshly plowed field to another (John Bull, orally). I notice that winter sight records are occurring in the midwestern United States (Kansas, Nebraska) in such numbers that there is some tendency to credit them. The wintering habits of this species may, it would seem, be undergoing some change.

Buteo ventralis: This species has four primaries notched; *B. polyosoma* with which it has been confused, only three. Some of the latter have a suggestion of a notch on the fourth, while in worn plumage that on the fourth primary of *ventralis* may be rather ill defined, so the separation is not always as easy as one would expect. The feet of *ventralis* are heavier, and the legs shorter, than those of *polyosoma.* All the three specimens of *ventralis* that I have seen are in what purports to be the immature dress of the normal phase. The reddish-tailed adult I have not seen, nor the black phase (for descriptions of these, see Goodall, *et al.*, 1951, p. 38). As Hellmayr and Conover (1949, p. 104, footnote) and others have stated, this bird is very similar to *Buteo jamaicensis* in many ways, but the two forms are separated by a vast distance geographically and are probably specifically distinct.

Buteo (*brachyurus*) *albigula:* This hawk has a definite and close relationship to *Buteo brachyurus.* Whether, as Rand (1960) concluded, they are con-

specific is still a moot question. Lehmann and Haffer (1960) state that the two forms overlap zonally in Colombia, where in general *brachyurus* is tropical, *albigula* subtropical, in distribution. Yet in Mexico *brachyurus*, sometimes at any rate, occurs at 6000 or 7000 feet (Davis, 1953). The situation is so complicated that I prefer to follow Rand until it is clarified and to regard them as conspecific.

THE GENERA *HIERAAETUS* AND *SPIZASTUR*

The genus *Hieraaetus* as presently constituted is rather diversified. The species groups are: (1) the type of the genus, *H. pennatus* (the Booted Eagle of Eurasia), and its close relative, *H. morphnoides* (the Little Eagle of Australia and New Guinea); (2) *H. kienerii* of the Indian Region; (3) *H. dubius* of Africa; and (4) *H. fasciatus* (Bonelli's Hawk-eagle) of southern Eurasia and Africa. Stresemann (1924) thought that the first three subgroups form a superspecies. They differ so greatly in the length of the toes (short in *pennatus*, long in *kienerii*), in coloration, in the crest, and in other ways, that this seems dubious. *Hieraaetus kienerii* is the most striking of the lot: black above, rufous below, with a handsome crest. Its immature plumage is quite different: blackish above, pure white below, with a black mask.

To anyone who asks whether the genus as thus constituted is a natural, monophyletic one, I can only say that it appears likely that such is the case. I would arrange the species of *Hieraaetus* in the following sequence: *pennatus*, *morphnoides*, *dubius*, *kienerii*, *fasciatus*. The genus should follow *Aquila*, to the small species of which *S. pennatus* and *S. morphnoides* have a most telling similarity. Wahlberg's Eagle, *Aquila wahlbergi*, has been shifted back and forth from one genus to the other. Stresemann (1924) pronounced it a true *Aquila*, and it probably is closer to that genus than to *Hieraaetus*.

The monotypic neotropical genus *Spizastur* is very similar to *Hieraaetus*. The resemblance is especially striking between *S. melanoleucus* and the immature plumage of *H. kienerii*.

The generic characters of *Spizastur*, such as they are, are as follows: mandibular rami unfeathered; primaries less sharply notched; both immature and adult plain black above, white below.

Two considerations, one scientific, one practical, may justify retention of the two genera. First, the resemblance may be in part parallelism: *Spizastur*, for example, may actually be more closely allied to other neotropical booted eagles, such as *Spizaetus ornatus*, than to the Old World *Hieraaetus*. Second, the name *Spizastur* happens to antedate *Hieraaetus*. It

might cause anguish to give up the latter, long-standing name.

THE CARACARAS

The paragraph on the relationships of the genera of caracaras in Friedmann (1950, p. 579) contains a few archaic or dubious inferences which one suspects were carried over from Ridgway's early work. Thus we are told that the generic characters in the group are "teleological or adaptive"; that the bearing of the Common Caracara, *Polyborus*, "strongly suggests that of the Secretary Bird" (rather flattering to the Caracara); and that the genus *Milvago* presents "a very close approach to the true falcons, through a New Zealand genus of the latter subfamily (*Ieracidea*)." *Ieracidea berigora*, which is found in Australia, not New Zealand, is at the present time usually placed in *Falco*, as is also "*Nesierax*" *novaezeelandiae* of New Zealand, which is probably the bird Friedmann had in mind. Both of these falcons are rather long-legged and "primitive," though very likely secondarily so. As Friedmann remarks, they show in a structural though not in a phylogenetic way how the true falcons and the caracaras may have diverged.

Hellmayr and Conover (1949, p. 283) included the Falkland Islands in the range of *Polyborus p. plancus*. The "caracara" of the Falklands is *Phalcoboenus australis;* one would not expect to find two such similar forms together on small and ecologically limited islands. It is not surprising therefore to learn that *Phalcoboenus australis* occurs on the small islands south of Tierra del Fuego, but not on the latter which is within the range of *Polyborus plancus*.

The northern forms of *Phalcoboenus* (*megalopterus* and *carunculatus*) occur at altitudes in the Andes somewhat above those usually frequented by *Polyborus*. The situation as regards *Phalcoboenus albogularis* of Patagonia and *Polyborus* requires clarification. The mountains in this part of the continent are lower, so there is less opportunity for altitudinal separation. I suspect that *albogularis*, which may be rather local, judging from the paucity of specimens in museums, is found in the bleaker and more barren parts. At any event it is interesting that *Phalcoboenus australis*, the only form of the genus that is entirely allopatric with *Polyborus*, is most like it in the heaviness of the bill, general robustness, coloration, and doubtless also in habits.

The four forms of *Phalcoboenus*, all allopatric, have been variously treated by recent authors. I prefer to regard them all as species. *Phalcoboenus albogularis* and *P. megalopterus* are the most closely allied, and intergradation between them may later be found. One specimen, the type

of W. E. D. Scott's *circumcinctus*, seems to be intermediate in coloration but may be a mutant rather than a true genetic intergrade. Goodall and his coauthors (1951, p. 65) stated that in Chile there is a gap between the range of *albogularis* and that of *megalopterus* but thought that it may be bridged in Argentina. There are, however, situations in which selection creates an unoccupied buffer zone between the ranges of two closely allied, ecologically incompatible species.

In the true caracaras, on the other hand, Dr. Wetmore tells me that he has examined intermediates between *Polyborus plancus* and *cheriway*. With all the mainland forms now believed to be conspecific, the question of whether the extinct Guadalupe Caracara, *lutosus*, had achieved specific status naturally receives reconsideration. We are retaining it as a species, but the decision is difficult.

GENUS *MICRASTUR*

Micrastur buckleyi: Swann (1919) described a new form, *Micrastur semitorquatus buckleyi*, from Sarayacu, Ecuador. It was separated from *M. s. semitorquatus* principally by smaller size. This form was recognized in Peters' check-list (1931) only with a query, while Hellmayr and Conover (1949, p. 247), with some hesitation, synonymized it. Meanwhile, Traylor (1948, pp. 199–200) had concluded that *buckleyi* is a good species, occurring side by side with *semitorquatus* but, unlike that widespread form, restricted to Amazonian Ecuador and Peru. In addition to Swann's data about the type specimen in the British Museum, Traylor based his conclusion on three specimens: one in the Chicago Natural History Museum from Yarinacocha, Peru; and two in the American Museum from eastern Ecuador (Rio Suno and San José). Chapman (1926, p. 221) had referred to the small size of the latter two birds, but he had large birds also from the same general area; he thought that perhaps a highly variable population was involved.

In addition to the smaller size of *buckleyi*, Swann wrote: "White tail bands above partly obscured by brown patches in centre and below less extensive; those on outer feathers only four in number in place of six in typical form." Of these two differences, the first does not seem to hold, but the second, which relates to the number of white bars on the outer tail feathers, does. What it amounts to is that the tail feathers are shorter and hence have fewer bars.

I now find that the American Museum has two additional specimens of *Micrastur buckleyi*, which, in agreement with Traylor, I consider to be a species. Both are from Peru, and the data are as follows: A.M.N.H.

No. 230774; adult female; from Orosa, Amazon River; wing, 217; tail, 230; tarsus, 65. This is the first recorded female of this rare species. Its wings and tail are no longer than those of male specimens, so I would be inclined to doubt the sexing were it not that the claws and tarsi seem to be somewhat heavier and a bit larger than those of males. The tail, moreover, is in molt, and the measurement given may not be correct.

This form, known hitherto only from adult males, has been considered identical in color, except for the mentioned difference in the tail pattern, with the normal white-bellied phase of *semitorquatus*. The present adult female, however, has conspicuous white marks on the scapulars. Two of these are near the tip of each feather and are oval in shape, while two others, half-concealed near the middle of the feather, are crescentic. There are also roundish white markings on the *outer* vanes of the secondaries and on a few of the upper wing coverts. I have not seen such white markings on the scapulars, secondaries, or coverts of any of the numerous available specimens of *semitorquatus*. They may represent a specific character in the female of *buckleyi*.

A.M.N.H. No. 181867, an immature male from Perico, Rio Chinchipe, July 30, 1923, measures: wing, 210; tarsus, 62. The tail is in molt. This, the first known immature of *buckleyi*, is in the intermediate plumage (based on *semitorquatus*) in which the under parts are tawny or buffy, boldly barred with blackish, but in which the immature feathers on the back have been replaced by blacker feathers and have thus lost most of the conspicuous edgings typical of the scapulars and secondaries in the immature. This immature differs from all of about 20 of *semitorquatus* in the following respects: Chest almost uniform tawny, with only the vaguest suggestion of slight blackish marks near the tip of the feathers and no barring. In *semitorquatus* in this plumage, there are always crescentic blackish marks. Under wing coverts and wing linings white, washed with buff, and with only the slightest indication of darker markings. In all specimens of *semitorquatus* examined, the wing linings retain conspicuous black or dark brown cross markings until the bird is fully adult and has lost the ventral barring. The nuchal collar of this bird is rufous as is the chest, with which it is continuous. The upper parts, and especially the crown, seem to be blacker than in most, if not all, specimens of *semitorquatus* in corresponding intermediate immature plumage.

In summary, as first pointed out by Traylor, *Micrastur buckleyi* seems to be a distinct species, differing from *semitorquatus* by much smaller size, especially of the legs and feet. The first-known female and first-known immature of this species are described, and differences between them and the corresponding plumages of *semitorquatus* are pointed out.

Micrastur mirandollei: Haverschmidt (1948, p. 231), in his first list of weights of birds from Surinam, listed a specimen of this rare hawk. It had been identified for him at the American Museum, where it now is. Unfortunately, re-examination shows it to be a specimen of the common *M. semitorquatus* in such bad plumage that the tail appears short and the collar was not in evidence. With this record eliminated, Judge Haverschmidt writes me that the only remaining record of *mirandollei* from Surinam is Schlegel's type of the species.

THE SMALLER FORMS OF *Micrastur:* In certain parts of South America, the smaller forms of *Micrastur* present an exceedingly difficult taxonomic problem. The following comments will, it is hoped, help to clarify a few points.

Micrastur ruficollis interstes: This race, which ranges from Costa Rica through Panama, western Colombia, and western Ecuador, was synonymized with *M. r. guerrilla* of southern Mexico to Nicaragua by Hellmayr and Conover (1949, p. 250). Only one of our series of *guerrilla* is an adult, so I cannot comment on that plumage. Immatures of *interstes*, however, seem to average a little more blackish above than those of *guerrilla.* Furthermore, there is a cline of decreasing relative length of the tail southward, so that in *interstes* the tail is of about the same length as the wing or slightly shorter, whereas the reverse is true in the more northern race. Since this is of interest in understanding some of the puzzling variation in South America, it is well to call attention to it by recognizing the two races. As an arbitrary dividing line, one may assign the birds north of Costa Rica to the race *guerrilla.* Correlated with the decreasing relative length of the tail in *interstes* is a tendency for the basal of the three tail bars to become less conspicuous or partially concealed by the upper tail coverts.

Micrastur ruficollis zonothorax: This race, which seems without question to be conspecific with *guerrilla* and *interstes*, inhabits northern Colombia and northern Venezuela. The tail is again relatively long, with three conspicuous white bars in the adult, four or more in the immatures. In the adult the throat and sides of the head are washed with dull rusty brown. There are two phases, not very different. In one the back is brownish; in the other, grayish.

Micrastur ruficollis ruficollis: The type locality is Rio de Janeiro. This subspecies is found throughout Brazil south of Amazonia, west to Bolivia, and south to Paraguay and northern Argentina (Misiones Province). It presumably extends northward in the subtropical forests of Bolivia and Peru, eventually intergrading with *interstes* in Ecuador or northern Peru. The form *kalinowskii* described by Dunajewski (1938) from Amable

Maria, 2000 feet, in Junin Province, Peru, may be an intermediate. This montane population, as noted below, apparently also intergrades with *gilvicollis* and *pelzelni* of Amazonia. *Ruficollis* seems to be conspecific with the three races hitherto mentioned and, like them but to a greater degree, is dimorphic. The rufous form is predominant in the heart of the range in southeastern Brazil. In typical examples the back is bright rufous; this color extends around on the sides of the neck and across the chest. The crown is brownish black. In the extreme of the gray phase, the bird is white below, barred with pale grayish black more or less throughout except on the throat. The upper parts are clear gray, paler on the nape. Such individuals are not very different from some examples of the races *guerrilla* or *interstes*, but are a clearer gray on the throat and sides of the head.

There seems to be some variation within the range of *ruficollis*. I have examined, in part through the courtesy of the Los Angeles County Museum, a splendid series of specimens collected by W. H. Partridge in Misiones, Argentina. Ventrally these birds agree well enough with examples from southeastern Brazil, but above they are very dusky in both phases. The back seems never to be clear rufous as it is in many Brazilian specimens. A large series of Misiones immatures is rather uniform. Above they are very dark; a few only have a suggestion of fox color. Below, some are whitish, others pale buff; all are heavily barred. Three other immatures, one from Rio de Janeiro, one from Santa Cruz Province, Bolivia, and one from Mato Grosso, are all very much buffier than any of the Misiones ones. They are also much less barred below, with the exception of the Bolivian one, which approaches the least barred of the Misiones series. Possibly adequate comparative material will show that the Misiones birds should be separated from typical *ruficollis*. If such is the case, consideration must be given to the name *seminocturnis* bestowed by Bertoni upon a specimen from the Alto Parana of Paraguay. An immature female in the United States National Museum of the Smithsonian Institution from the Rio Paraguay is, as would be expected, inseparable from many immatures from Misiones.

The range of this hawk extends down into the spurs of subtropical forest in the mountains of northwestern Argentina. Specimens from this area are very definitely larger than nominate *ruficollis* (including Misiones birds). The wing lengths of available specimens of this Argentine population follow:

Tucuman: Male adults, 175+, 186; male immature, 172; female adults, 190, 191, 198; female immatures, 195, 199
Jujuy: Female immature, 195

Males of *M. r. ruficollis* have wing lengths of less than 170; females, of 170–180. Both adult and immature females, especially the latter, of the western Argentine population average darker, duskier, than *ruficollis*. On the other hand, the two adult males available, both in the gray phase, are pale and without a trace of brown or rufous anywhere. In any event the size difference alone is sufficient to justify the separating of this population. A female was selected as type as best showing the large size and possibly darker coloration. Perhaps it would have been better to select one of the very dark, large, immature females.

I am pleased to name this race for my friend Prof. C. C. Olrog, who has already (1958, p. 7) called attention to the large dimensions of the members of this population. Olrog assigned these birds to the species *gilvicollis*, but, as is apparent below, I believe that *gilvicollis*, whether a species or a race, does not reach Argentina.

Micrastur ruficollis olrogi, new subspecies

TYPE: A.M.N.H. No. 140515, adult female, collected March 5, 1916, at 4000 feet above San Pablo, Province of Tucuman, Argentina, by Leo E. Miller and H. S. Boyle.

MEASUREMENTS OF TYPE: Wing, 198 mm.; tail, 188 mm.; tarsus, 63 mm.

DIAGNOSIS: Similar to *M. r. ruficollis*, but larger. Possibly differing also in color, as indicated above, but such possible difference requires confirmation.

RANGE: The spurs of subtropical forest which extend down into northwestern Argentina on the eastern slopes of some of the outlying Andes. Presumably *olrogi* extends northward and gradually intergrades with nominate *ruficollis* in Bolivia. The specimen from Jujuy sent in by Contino, while fully typical of *olrogi* in being large, is paler than females from Tucuman and agrees well with one or two Bolivian birds. I may add that this Jujuy immature is also paler than any of the large series of immatures from Misiones which are much like two or three from Tucuman, but smaller.

Micrastur (ruficollis) gilvicollis: This form is lighter-colored than any of the others. Dorsally it is medium gray; below it is white, barred rather finely on breast and flanks with grayish black and usually becoming whitish on the abdomen and under tail coverts as well as throat. Immatures are more coarsely barred but otherwise similar. Adults have two, immatures usually three, tail bars. These are in some individuals clouded and more or less obsolete, especially the basal one.The tail is shorter than

that of any of the other small micrasturs (except *plumbeus*); and in some cases, especially in Brazilian Amazonia, as on the Rio Madeira and the Rio Tocantins, the basal of the two bars is lacking or is concealed by the upper tail coverts. In this area the tail averages a little shorter, which is correlated with the fact just noted.

Gilvicollis is found over the entire Amazon Basin and extends somewhat into other areas, for example, throughout all the Guianas. Its range includes the Amazonian portions of southern Venezuela, eastern Colombia, Ecuador, Peru, northeastern Bolivia, and Mato Grosso.

Before turning to more difficult matters, I may point out that specimens from eastern Amazonian Peru, namely, the Rio Ucayali, Rio Curaray, and the headwaters of the Amazon, though perfectly typical in color, are noticeably larger than ordinary *gilvicollis*, the type locality of which is Cayenne. For this large race, the name *pelzelni* of Ridgway may be used, although large size was not included among the characters originally proposed for this long-synonymized form. In *pelzelni* the wing lengths of males fall between 180 and 190 mm.; of females, between 190 and 200 mm. Measurements of true *gilvicollis* run a good 10 mm. less, sex for sex, and it is a smaller bird in every way.

There are two putative reasons for considering *gilvicollis* specifically distinct from *ruficollis*. First, the range of *gilvicollis* is alleged to overlap that of *ruficollis*, without there being any interbreeding, in various parts of Brazil (Pinto, 1947, pp. 322–328). Second, the form *Micrastur plumbeus*, which is discussed below, seems to be related to *gilvicollis*, and its range indubitably does overlap that of *M. r. guerrilla* in western Ecuador and Colombia.

I have yet to be convinced that the range of *gilvicollis* does in fact overlap that of *ruficollis*. The only way in which the extreme gray phase of the latter can be distinguished from *gilvicollis* is by the longer tail, with three rather than two bars, and by subtle average differences in coloration. Whether the color differences have been demonstrated or not is, I think, still uncertain. For example, of two specimens from Chapada, Mato Grosso, one is entirely gray without a trace of rufous on the throat, and, while its tail is like that of *ruficollis*, one might have been permitted doubts were it not that in a second specimen from the same locality the throat is definitely washed with rufous, though less so than in typical examples of *ruficollis*. It may almost be said that around the entire borders of its huge Amazonian range, the characters of *gilvicollis* blend with those of neighboring races. Thus a few specimens from southern Venezuela are a little more darkly and uniformly barred below than *gilvicollis* and, while assigned to that race, are not typical and suggest that intergradation with *zonothorax*

occurs. The same is true of specimens from Amazonian Ecuador, from Peru outside the Amazonian region, that is to say, from subtropical forest, and from Mato Grosso and eastern Bolivia. There is considerable variation in the length and barring of the tail within the range of *gilvicollis* and also within that of *interstes* and *guerrilla*. Such variation, which also is true of color, makes it difficult to know on the basis of a few perhaps not quite typical specimens whether we are dealing with true overlap, or not. Pinto (*loc. cit.*) did not regard the problem as solved.

Micrastur plumbeus: We have two specimens of this rare species. One is a fully adult female collected at La Vieja at an altitude of 1000 feet in the upper Atrato Valley, Colombia. This specimen was listed by Chapman (1917, p. 241) as *guerrilla*, before *plumbeus* had been described. The other is an immature from the Rio Sapayo, northern Ecuador, taken by the collectors of the type of the species and mentioned by W. L. Sclater (1918) when describing *plumbeus*.

We have already noted that in parts of the Amazon Basin the tendency of *gilvicollis* to have a shorter tail and reduced tail bars is carried to the point where some specimens have only one tail bar. We have one such specimen from the Rio Tocantins, an immature, and I can detect almost no difference in color between it and the specimen of immature *plumbeus* from northern Ecuador. Both are essentially white below, with light wavy barring across the breast region. Above, however, the Brazil bird and another one almost like it from the Rio Madeira, which does, however, have a concealed second bar near the base of the tail, have the crown a little blacker and lack a light gray, V-shaped segment in the center of the upper back, which is quite conspicuous in the young *plumbeus*. The *plumbeus* male immature measures: wing, 177; tail, 140. The two from Brazil, both females, measure: wings, 180, 183; tails, 140, 142. The adult female of *plumbeus* from Colombia measures: wing, 178; tail, 134 mm. (It is the general rule in all forms of *Micrastur* for the tail to be somewhat longer in immatures, as in so many other hawks.)

From adult *gilvicollis* the adult of *plumbeus* differs, aside from the difference in average tail length and in the reduction of the tail bars to one, in that the crown and upper back are a paler, clearer gray and the throat is clear pale gray, not white. The under sides are entirely barred, with no reduction on the sides and flanks, and the barring is, on the average, a little more blackish. From *Micrastur ruficollis interstes*, the range of which entirely encompasses that of *plumbeus*, the latter can be distinguished by the paler, narrower, less blackish, ventral barring, by the paler gray crown and upper back, and of course by the great difference in the length and barring of the tail—indeed, the proportions are very different, those

of *plumbeus* being of a rather stocky bird; those of *interstes* of a short-winged, long-tailed, accipiter-like form. Thus *plumbeus* is not very typical of the genus *Micrastur* in proportions, but neither for that matter is the other rare species, *mirandollei*. It is possible that *plumbeus* usually occurs at lower altitudes than *interstes*.

One might speculate in various ways about the history of the forms touched on above. The undecided question as to whether *gilvicollis* is a race of *ruficollis* or a species has a bearing on such speculation and makes it futile to pursue the matter very far at the present time. Obviously, either by successive zones of colonization or by some type of circular range extension, we find an overlap in the smaller species of *Micrastur* in the lowlands of northwestern Ecuador and western Colombia, and perhaps only there. If, on the other hand, *gilvicollis* and nominate *ruficollis* overlap in Brazil, then Hellmayr and Conover may be correct in setting up a second species, *gilvicollis*, with the races *gilvicollis*, (*pelzelni*), and *plumbeus*.

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