

plausible arguments can be made that, in aerial maneuvering, 9% may make a significant difference to a bird being chased by an accipiter, or to a sallying specialist like the Yellow-rumped Warbler. The estimates of the power differentials were for feathers with 11 months of wear. For most of the year the differences in power requirements for sustained flight and maneuvering would be considerably less than 4% and 9%, respectively.

As mentioned above, it is possible that a decreased flying surface area may affect birds in other ways, but such possibilities will require more detailed observations. Until then the ecological significance of the reduction in wear remains uncertain for two reasons. First, it is not obvious how fitness scales with energy requirements. Second, the effects of other factors, such as camouflage and countershading, are conceivably at least as important as the savings due to flight energetics and need to be evaluated.

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A New Race of *Atlapetes leucopterus*, with Comments on Widespread Albinism in *A. l. dresseri* (Taczanowski)

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Recent explorations in the low mountain ridges of northern Dept. Cajamarca, Peru have revealed a startling number of previously undescribed bird forms (Fitzpatrick and O'Neill 1979, *Auk* 96: 443 and references therein). Included in the collections are seven specimens of another distinctive new form in the genus *Atlapetes*. The form most closely resembles *Atlapetes leucopterus dresseri*, the southernmost of two previously described races of *leucopterus*. I here describe the new form as a well-differentiated race of that species but acknowledge the possibility that a narrow geographic hiatus between this form and *dresseri* may be closed by future collectors, thereby raising the new form to specific status.

In examining specimens of *A. l. dresseri*, I encountered a striking pattern of individual variation in that race, apparently caused by widespread partial albinism. This is discussed following my description and discussion of the new subspecies.

Atlapetes leucopterus paynteri subsp. nov.

Holotype.—Field Museum of Natural History, no. 299491; adult male from the Cordillera del Condor, above San José de Lourdes, Dept. Cajamarca, Peru, 5°02'S, 78°51'W, elevation approximately 2,200 m; collected 21 July 1976 by J. W. Fitzpatrick.

Diagnosis.—A small brush finch of the *Atlapetes schistaceus* species-group (see Paynter 1972, *Bull. Mus. Comp. Zool.* 143: 297); recognizable as *A. leucopterus* by small size (wing chord of males 72 mm

TABLE 1. Measurements (mm) of *Atlapetes leucopterus* subspecies.

Subspecies	Sex	n	Wing chord		Central rectrix		Tarsus		Exp. culmen		Bill depth ^a		Weight (g)	
			\bar{x}	Range	\bar{x}	Range	\bar{x}	Range	\bar{x}	Range	\bar{x}	Range	\bar{x} (n)	Range
<i>A. l. leucopterus</i>	♂	14	66.6	62.5-71.0	65.4	60.5-70.0	25.6	24.0-27.0	9.2	8.8-10.0	6.6	6.1-7.0	—	—
<i>A. l. leucopterus</i>	♀	3	65.7	63.5-67.5	63.2	62.5-64.0	26.0	25.0-26.9	9.1	8.9-9.3	6.3	6.1-6.5	—	—
<i>A. l. dresseri</i>	♂	12	65.5	62.5-69.0	64.5	61.0-69.0	24.4	23.5-25.8	8.3	8.0-9.2	6.4	6.1-6.8	22.9(7)	20.7-26.0
<i>A. l. dresseri</i>	♀	10	62.7	57.5-65.0	62.3	58.0-66.5	24.2	23.3-24.7	8.2	7.7-8.8	6.5	6.2-6.9	22.5(7)	19.0-26.1
<i>A. l. paynteri</i>	♂	5	69.7	67.5-72.0	72.0	68.5-76.5	25.5	25.0-26.3	8.8	8.5-9.0	6.9	6.5-7.5	24.6(4)	23.0-26.5
<i>A. l. paynteri</i>	♀	2	66.8	66.5-67.0	69.5	68.2-70.8	25.8	25.0-26.5	8.7	8.5-8.9	6.9	6.6-7.1	25.4(2)	25.0-25.8

^a Bill depth measured at anterior edge of nostril.

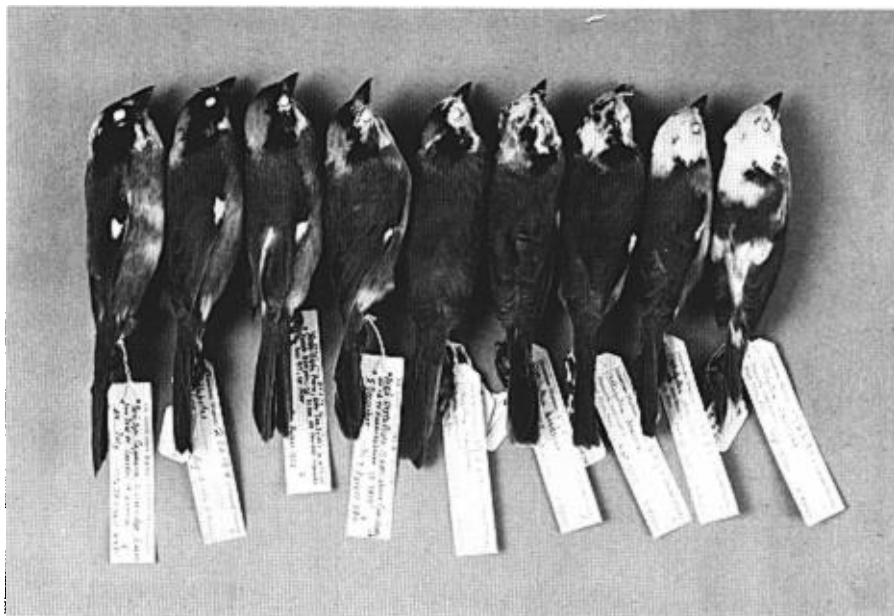


Fig. 1. Dorso-lateral view of one specimen of *Atlapetes leucopterus paynteri* (leftmost) and eight specimens of *A. l. dresseri* from northeastern Peru. Specimens of *dresseri* show graded series of albinism on face and crown, culminating in rightmost specimen in which other body parts are affected. White eye-ring, present on most specimens of *dresseri*, is lacking in *paynteri* and the southernmost populations of *dresseri* (second from left).

or less), conspicuous white alar speculum, black face and head with buffy crown patch broadly separated from culmen by black forecrown. Differs from *A. leucopterus dresseri* primarily in having pure neutral gray, rather than buffy-olive gray, flanks, dorsum, remiges, and rectrices and a nearly white, rather than dark rufous-buff, patch on crown and nape; also no trace of white eye-ring in *paynteri*, this feature present in all but southernmost populations of *dresseri*; tail slightly longer than wing chord in *paynteri*, equal to or slightly shorter in *dresseri* (Table 1).

Distribution.—Extreme northern Peru; known from the type locality in Cajamarca (San José de Lourdes, 2,200 m) on the Cordillera del Condor about 20 km south of the Ecuador border and from one locality in extreme northeastern Piura (Playón, about 2 km south of El Carmen, 1,700 m) in the eastern drainage of the main Andes north of Huancabamba.

Description of holotype.—Dorsum, rump, secondary coverts, remiges, and rectrices Dark Neutral Gray (capitalized colors are from Smithe 1975, *Naturalist's Color Guide*, New York, Amer. Mus. Nat. Hist.), remiges and rectrices slightly darker than back; primary coverts Blackish Neutral Gray; all nine primaries basally white, forming conspicuous alar speculum 7.5 mm wide at fifth primary; proximal half of outer web of ninth primary broadly edged white; wrist and wing linings white. Face, anterior crown, and lateral portions of nape pure black; loreal spots and anterior few feathers at center of forecrown white; posterior pileum, from center of crown to center of nape, creamy white, closest to pale Cream Color; black bases of pale crown feathers showing through, giving mottled appearance and poorly defined edges to the creamy cap. Malar region, chin, and throat white, contrasting with crisply defined black auricular and orbital region; thin black malar streak extends about 10 mm posteriorly from base of mandible. Lower breast and belly white; narrow pectoral zone and flanks from malars to crissum, Pale to Light Neutral Gray. Under tail coverts faintly tinged buffy. Soft part colors in life: bill entirely black, tarsi and feet dark gray, irides reddish brown.

Measurements of holotype.—Wing chord 70.0 mm; central rectrix 72.0 mm; tarsus 25.2 mm; culmen 8.5 mm from anterior end of nostril, 15.8 from base; weight 24.5 g.

Etymology.—It is a pleasure to name this form in honor of Raymond A. Paynter, Jr. in recognition of his contributions to neotropical ornithology, his work on the biology of the genus *Atlapetes*, and his early and lasting influence on the author.

Remarks.—In contrast to the situation in *A. leucopterus dresseri*, discussed below, there is only minor individual variation evident among the paratypes, consisting chiefly of differences in the size and color of the pale crown patch. This patch is small, nearly pure white, and mottled with black feather edgings in two specimens and is a solid creamy-buff extending through the nape to the upper mantle in one specimen. Remaining specimens show intermediate patterns in size and color. Several specimens lack the medial white spot on the forecrown, but all show conspicuous white loreal spots. A suffusion of pale creamy-buff, present on the crissum of all specimens, extends onto the belly and posterior flanks to varying degrees on several specimens. As is true throughout the genus, males appear to average slightly larger than females (Table 1).

Maps detailing the distribution of the *Atlapetes schistaceus* species-group, including the exact location of the type locality of *A. leucopterus paynteri*, can be found in Paynter (1972 op. cit.; 1978, Bull. Mus. Comp. Zool. 148: 323). To Paynter's (1978 loc. cit., Figure 24) map should be added the recent, second locality for *paynteri* about 60 km due west of the first. At this locality (Playón), Gary R. Graves collected one specimen of *paynteri* (LSMZ no. 87081) on 8 July 1978, a specimen that precisely matches the series from the type locality. Surprisingly, Graves' specimen was collected less than 30 km east of a zone where various collectors have found typical *A. leucopterus dresseri* to be abundant at similar elevations (1,750–1,850 m; specimens in LSMZ). The habitat of *paynteri*, moist brushy mountain slopes, is apparently similar to that of conspecific *dresseri* in this region, although *dresseri* ranges into xeric brush farther to the west and south. Despite the proximity of these two quite distinct forms, they are prohibited from geographic contact by two forested mountain ridges that flank the Río Huancabamba. The taller westerly ridge is capped by a wide zone of puna grassland. *Atlapetes leucopterus dresseri* inhabits middle elevations on the west slope of the western ridge, while *A. l. paynteri* appears at similar elevations on the east slope of the eastern ridge. No *A. leucopterus* has been found in the intervening Huancabamba Valley, where suitable habitat apparently is absent. I am grateful to Theodore A. Parker for providing this account of the interesting geographical picture in this region.

Albinism in A. leucopterus dresseri.—A striking degree of individual variation characterizes the subspecies *dresseri* almost throughout its limited range in extreme northwestern Peru and adjacent Ecuador. At the southern (Seques, Dept. Lambayeque) and northern (Alamor, Loja, Ec.) extremes of its range, *dresseri* shows a facial pattern typical of *l. leucopterus* and the new race *paynteri*. This includes a solid black cheek and face with no white eye-ring and well-demarcated white loreal spots. Specimens from Depts. Piura and northern Lambayeque, Peru, however, show varying amounts of white about the face and forecrown. The white pattern is sufficiently extensive on certain specimens to resemble strongly the white cheeks and face of *A. albiceps*, a local endemic that is sympatric over much of the range of *A. l. dresseri*. The two species often occur in mixed flocks where their altitudinal distributions overlap (T. Parker pers. comm.), although *albiceps* is commonly at lower elevations than *dresseri* (150–1,200 m vs. 615–2,000 m, respectively, among specimens examined). The possibility of hybridization between these forms is further suggested by the frequent occurrence of irregular black facial markings and mystacial streaks among specimens of *albiceps*. These patterns of individual variation in both *dresseri* and *albiceps* were commented upon by Paynter (1972 op. cit.).

I find no firm evidence for hybridization between *albiceps* and *l. dresseri*, despite the tempting resemblances in head patterns of certain specimens. The amount of white on the head in *dresseri*, or black on the face of *albiceps*, shows no correlation with altitude in either form. Were they hybridizing, the greatest similarity in facial pattern would be expected within the zone of overlap, between 600 and 1,200 m. Indeed, the whitest *dresseri* and blackest *albiceps* specimens were taken well above and below this zone, respectively. Furthermore, the two forms are vastly different in size and bill proportions (see Paynter 1972, op. cit. for some measurements). Specimens with seemingly intermediate plumage show no intermediacy in size; their measurements fall cleanly within the normal ranges for each species.

The appearance of irregular white facial plumage in *A. l. dresseri* appears to represent widespread, partial albinism in this form, most intense within the central 200 km of *dresseri*'s 350-km long distribution along the western slope. The most revealing evidence for this pattern lies in a series of six specimens collected at Palambra, Dept. Piura, Perú by H. Watkins in 1922. This locality lies roughly at the center of the albinistic zone. As shown in Fig. 1, several of these specimens are nearly pure white about the head, and one female (AMNH #175690) shows extensive, symmetrical white plumage throughout the back, wings, rump, and tail. Specimens collected since 1922 in areas very near Palambra all show varying amounts of white in the face, but none is as completely white as any of those collected by Watkins. In most cases, the clear white eye-ring is the only evident trace of the albinistic gene. This observation, combined with the timing and geography of the available collections, suggests the possibility that a local center of albinism early in this century may have diffused nearly throughout the limited range of *Atlapetes leucopterus dresseri*, resulting in the near fixation of a white eye-ring as an identifying feature of this

subspecies. This hypothesis requires further investigation and field work for verification. If correct, it represents one mechanism by which a conspicuous and commonly occurring "field mark" can arise and spread throughout a local population. The white eye-ring and white auricular markings characterizing most specimens of *dresseri* are absent in the other two races of *leucopterus*.

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Specimens examined.—*Atlapetes leucopterus paynteri* (7): PERU. Dept. Cajamarca: east above San José de Lourdes, 5 ♂ [(1 FMNH, 1 LSUMZ, 3 MCZ, 1 ♀ (LSUMZ)]; Playón, 2 km south Carmen on R. Samoniego, 1 ♀ (LSUMZ). *Atlapetes leucopterus dresseri* (37): ECUADOR. Prov. Loja: Alamor, 2 ♂ (AMNH), 1 ♀ (MCZ); Cruzpampa, 2 ♂, 1 ♀ (MCZ). PERU. Dept. Piura: Sauce Grande, 1 ♂, 1 ♀ (LSUMZ); El Angolo, 1 ♂, 2 ♀ (LSUMZ); Fundo Querpón, 1 ♂ (LSUMZ); 3 km north Chignia, 1 ♂ (LSUMZ); Palambra, 1 ♂, 4 ♀, 1 ♀ (AMNH); 15 km above Canchaque, 1 ♂, 4 ♀ (LSUMZ); near Abra de Porculla, 3 ♂, 1 ♀, 3 ♀ (4 LSUMZ, 3 PANS). Dept. Lambayeque: Seques, 3 ♂, 1 ♀, 2 ♀ (AMNH). *Atlapetes l. leucopterus* (23): ECUADOR. Scattered localities in Provs. Pichincha, Napo, Pastaza, Chimborazo, and Guayas: 14 ♂, 3 ♀, 6 ♀ (1 FMNH, 2 LACM, 1 MCZ, 8 PANS, 11 AMNH). Received 3 March 1980, accepted 3 May 1980.

Cleaning/Feeding Symbiosis Between Birds and Reptiles of the Galápagos Islands: New Observations of Inter-island Variability

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MacFarland and Reeder (1974) have reviewed cleaning symbioses involving birds and reptiles and have presented data on the symbiotic relationship between two species of Darwin's finches (*Geospizinae*) and the Galápagos tortoise (*Geochelone elephantopus*). Recently (Vogt 1979), the Common Grackel (*Quiscalus quiscula*) has been implicated in the symbiotic removal of leeches from map turtles (*Graptemys*). This paper describes a symbiotic relationship between the Galapagos Mockingbird (*Nesomimus parvulus*) and two species of Galapagos land iguanas (*Conolophus pallidus* and *C. subscristatus*) and the inter-island variability in cleaning symbiosis by a Darwin's finch (*Geospiza fuliginosa*).

Carpenter (1966) reported cases of mockingbirds removing parasitic ticks from Galápagos marine iguanas on Isla Marchena and Isla Española. Unlike Galápagos tortoises (MacFarland and Reeder 1974) and Galápagos land iguanas (see below), however, the marine iguanas took a completely passive role in the cleaning procedure. Beebe (1924) reported that mockingbirds cleaned some land iguanas that he had tied up on Isla Baltra, but he did not know whether this was a natural behavior or the birds were simply taking advantage of the bound iguanas.

I observed a single instance of a mockingbird cleaning *Conolophus subscristatus* on Isla Fernandina during a short visit to that island. I also observed 147 instances of mockingbirds cleaning *Conolophus pallidus* on Isla Sante Fé during a year-long study of the iguanas of that island. Most of my observations involved only one mockingbird, but I also observed several instances of two birds cleaning the same iguana. The iguanas assumed a "cooperative" posture (Fig. 1) when a mockingbird approached and, at times, even when mockingbirds simply foraged nearby on the ground.

Typically, a bout of cleaning was initiated when a mockingbird landed on the back of the iguana. At this time the iguana would assume a cooperative posture, raising itself off the ground as high as possible on all four legs and remaining motionless while the mockingbird picked ticks off its body. This posture allowed the mockingbirds to reach ticks in the axillary regions and around the cloacal opening. By remaining motionless, the iguana appeared to minimize the possibility of frightening the bird before it had finished removing ticks. The duration of these interactions varied from a few seconds up to 5 min.