

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.



Fig. 1. A Galápagos Mockingbird gleans ectoparasites from a Galápagos land iguana. The iguana has assumed the characteristic "cooperative" posture.

An iguana typically remained in the cooperative posture for 10 or more s after the mockingbird had left. MacFarland and Reeder (1974) have suggested that Galápagos tortoises remain in the cooperative posture after the departure of finches that clean them in order to detect whether or not the finches have in fact ceased cleaning and to minimize the possibility of frightening the wary finches.

In addition to removing ticks from the iguanas, mockingbirds also ripped off and ate pieces of loose skin that were continually sloughed by the iguanas. In one instance, I observed a mockingbird pull a piece of skin from the hind leg of an iguana. This resulted in slight bleeding. The mockingbird then started pecking at the wound, enlarged it, and began drinking the blood. When the mockingbird resumed pecking at the wound the iguana turned and snapped at the bird. The bird attempted to come back to the iguana after about 15 s, but the iguana again snapped and chased the bird for a distance of approximately 3 m. This was the only observed aggressive encounter resulting from a bout of cleaning, but it suggests that mockingbirds are capable of exploiting the iguanas beyond a point acceptable to the iguanas. Exploitation beyond this point is no longer mutualism.

The Small Ground-Finch (*Geospiza fuliginosa*) has been observed in cleaning/feeding interactions with the Galápagos tortoise on the islands of Isabela, Santa Cruz, and Pinzon (MacFarland and Reeder 1974); with the marine iguana (*Amblyrhynchus cristatus*) on Isla Fernandina (Amadon 1967), Isla Española (Carpenter 1966), and Isla Santa Cruz (MacFarland and Reeder 1974); and with the land iguana (*Conolophus subcristatus*) on Isla Fernandina (pers. obs.) and on South Plazas (pers. obs., MacFarland and Reeder 1974). Apparently, however, *Geospiza fuliginosa* does not clean the land iguana (*Conolophus pallidus*) on Isla Santa Fe despite the abundance of this finch (pers. obs.). During our year-long study on Isla Santa Fe, over 5,200 person-hours were spent observing the iguanas and 147 observations of cleaning

by mockingbirds were recorded. Not a single instance of cleaning by *Geospiza fuliginosa* was observed, however. MacFarland and Reeder (1974) have noted that another finch, *Geospiza fortis*, has been observed cleaning tortoises on Volcan Alcedo on Isla Isabela but not on the islands of Santa Cruz or Pinzon, despite the fact that *G. fortis* occurs in these regions both in single-species flocks and mixed with *G. fuliginosa*.

Many questions concerning cleaning/feeding mutualism between birds and reptiles remain to intrigue biologists. For example, to what extent are these behaviors genetically determined? If learning is important, how does it occur and what is the ontogeny of the behavior pattern? Are such behaviors invented by individual "geniuses" and then imitated by other individuals of the population and hence perpetuated by tradition (Wilson 1975)? The answers to some of these questions may be found by future scrutiny of the inter-island variability of mutualistic interaction found in the Galápagos Islands.

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First Description of the Eggs of the White-winged Guan, *Penelope albipennis*, with Notes on its Nest

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The White-winged Guan (*Penelope albipennis*) was thought extinct for almost 100 yr until its rediscovery in 1977 in the Department of Lambayeque, Peru by Gustavo del Solar and John P. O'Neill (Dejonghe and Mallet 1978; Macedo 1978, 1979a, b; O'Neill 1978; Eley 1979). The breeding habits of this species were previously known only from the brief account of Stolzmann, which I have translated here from Taczanowski (1886: 272): "About 10 January 1877, my companion [Jelski] shot a female that was perched quietly on a branch and noted that another small bird fell with her. This was a chick, hardly two days old; another remained unharmed on the branch. The mother had probably been holding them under her wings, and the one which was killed had been on the side toward the shooter. In the same bush a thick nest was found. It was carelessly composed of dry branches at a height of 3 m above the ground. My companion brought to the house the living chick which we have luckily raised." This captive bird was later carried to Lima where it died. It was probably made into the skin that the British Museum (Natural History) eventually received in exchange from the Museo de Historia Natural "Javier Prado" (Vaurie 1966). If so, this bird and its parent became the only specimens other than the type to exist during the century following the discovery of the species.

The nest found by Jelski may well have been that of *P. albipennis*, but it could possibly have belonged