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The Auk

Volume 100 | Issue 3 Article 30

September 2024

The Raising of a Ghost-spinus Cucullatus in Puerto Rico

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Recommended Citation
Raffaele, Herbert A. (1983) "The Raising of a Ghost-spinus Cucullatus in Puerto Rico," *The Auk*: Vol. 100: Iss. 3, Article 30.
Available at: https://digitalcommons.usf.edu/auk/vol100/iss3/30

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while in the pes toe I opposes II-V, with II and III being syndactyl.

This lateral grasping mechanism appears to be a particularly clear but overlooked case of convergence among these three classes of climbing vertebrates. It is doubtful that a single name can be usefully applied to this type of grasping foot. The further elucidation of the underlying tendon and muscle arrangements of the respective groups in which this grasping mechanism appears is a fertile area for further study.

My field studies have been generously supported by the F. M. Chapman Fund, American Museum of Natural History, the California State University (Long Beach) Foundation, and Cyril K. Collins. The study of *Apus affinis* was made possible by a Senior Fulbright Research Fellowship to India and the kindness of R. M. Naik. S. L. Warter, G. L. Callison, D. G. Huckaby, and R. J. Raikow made helpful comments on earlier versions of this paper.

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Received 15 October 1982, accepted 21 March 1983.

The Raising of a Ghost – *Spinus cucullatus* in Puerto Rico

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The Red Siskin (*Spinus cucullatus*) has been referred to in most major works on the birds of Puerto Rico ever since it was first listed by Sundevall (1869). Recent references have repeated Gundlach's (1878: 207) statement that the collector of the bird told him that the specimen was not taken in the wild but was a cage bird. Weary of the unwarranted inclusion of the species in the island's bird lists, Leopold (1963: 6) stated, "Surely, after nearly a hundred years, it is time that this ghost be laid."

Despite Leopold's lament, the ghost of the Red Siskin was not to succumb feebly. Biaggi (1970) retained *S. cucullatus* in the main text rather than placing it in the appendix of doubtful reports, a puzzling inclu-

sion, as he notes that the bird has no place among Puerto Rico's avifauna. Perhaps this was all portentous, for it is time that the specter of *S. cucullatus* be raised.

In 1973 R. Cotte, U.S. Fish and Wildlife Service, informed me of a site containing a red and black bird. Several searches proved unfruitful. In early 1976 R. Woodbury, a botanist, related that he had seen a boy selling caged red and black birds along a road edge not far from Cotte's site. On 13 March 1976, following several unsuccessful visits, I finally observed five of these birds. A sketch sent to the Smithsonian Institution was tentatively identified as being of a Red Siskin. At a nearby locality on 2 June 1976, in the company of E. Litovich and J. Lichi, I twice observed a female carrying *Tillandsia* to a nest apparently under construction in a gumbo limbo (*Bursera simaruba*). The tree was on a steep slope, and we were at eye level with its 15-m-high crown, but *Tillandsia* grew so densely in the tree that it was impossible to locate the nest. It was approximately 1.5 m below the crown. We also observed a male, facing another male, issuing a twittering call while its wings were extended and drooping. This behavior was suggestive of a recently fledged bird, though one might not expect a fledgling to be in adult male plumage. We saw approximately 12 birds at this locality and a maximum of 6 at one time. Males were quite tame. A male-female pair was collected.

Reports from a similar area about 20 km from my collecting site suggest that the species has at least a moderate range bounded by the towns of Guayama, Coamo, and Aibonito. Specific reference to the sites of its occurrence have been omitted to inhibit collectors.

The two specimens were photographed and sent to the Smithsonian Institution where a mishap resulted in their loss. At the American Museum of Natural History, E. Eisenmann and I positively identified the photographs as being of *Spinus cucullatus*.

The Red Siskin is native to parts of northern Venezuela, northeastern Colombia, Trinidad, and Monos and Gasparee islands (de Schauensee 1970). It is extremely rare throughout its range, last being recorded in Colombia in 1947 (de Schauensee 1966) and Trinidad in 1960 (ffrench 1973). It is listed in the ICBP Red Data Book (King 1981) as endangered. The Red Siskin was given endangered status in 1976 under the U.S. Endangered Species Act and is protected by Appendix I of the Convention on International Trade in Endangered Species of Wild Flora and Fauna. The endangerment of *S. cucullatus* has resulted from intensive trapping pressure for the cage bird trade (King 1981). Although the species has been a part of that trade since at least the 18th century (as evidenced by the specimen cited by Sundevall), its popularity no doubt increased significantly when it was demonstrated in 1928 that the bird could be crossed successfully with the Common Canary (*Serinus canarius*) to produce the long sought after red factor (Dodwell 1976). The pressure on this bird is so intense that in assessing its status King (1981) suggests that the population's marked decline is "unlikely to be changed until the last bird has been trapped."

Based on the threat to this species, consideration should be given to declaring its range in Puerto Rico as critical habitat under the U.S. Endangered Species Act. Additionally, because the population in Puerto Rico may well represent the largest remaining pool of these birds in the wild, further investigations into the status of the species and the possibility of reintroducing the bird into well-protected habitats in its native lands should be evaluated.

Whether the Red Siskin is indigenous or introduced to Puerto Rico cannot be determined until island and continental specimens are compared. No apparent difference was discernible between the photographed birds and museum skins, suggesting that the bird is probably an introduction.

Most of the Island's recently established finch-like birds (11 species) are confined to, or appear to have spread from, urban centers, and all are primarily coastal, whereas the siskin occurs in scrubby foothills well removed from urban areas (Raffaele 1983). The Red Siskin's peculiar range and particularly the fact that it is so rare elsewhere that in recent decades it could hardly have been imported, suggest that the species is long established. With respect to imports, for the 5 yr from 1968 to 1972, records of birds brought into the U.S. indicate that only 20 Red Siskins arrived, all in 1970 (Clapp and Banks 1973a, b; Clapp 1975). Although the establishment of *S. cucullatus* in Puerto Rico could reasonably have occurred in the late 1940's or 1950's, the bird was already rare by that time. An equally strong argument can be made for it having become established in the 19th century. Sundevall's specimen indicates that the Red Siskin may have been imported to the island over a century ago. Additionally, it is not inconceivable that the bird could have gone unnoticed for that length of time. Gundlach was the first naturalist who might have discovered the siskin. He resided in Puerto Rico for 1½ yr, but never approached the foothills where the bird occurs. Wetmore (1916), however, spent 10 days in the vicinity of the siskin's range, and it is questionable whether the bird would have eluded him. Other more recent workers (i.e. Danforth, McCandless, and Biaggi) resided in Puerto Rico for many years, but it is apparent from their writings that they concentrated their efforts in other localities. I carried out intensive fieldwork in Puerto Rico for nearly 3 yr before even hearing of the bird. The cases of the Puerto Rican Whip-poor-will (*Caprimulgus noctitherus*), missing from 1888 to 1961, and the Elfin Woods Warbler (*Dendroica angelae*), which was only first described in 1971, provide the best evidence that a bird can go undetected on the island for many years.

Despite the above arguments, I believe the Red Siskin's establishment in Puerto Rico most probably coincided with the period of its heaviest importation. This probably would have been in the 1930's when the species was still relatively common in its native lands and there was an extremely high demand for it among Canary breeders. Discussions with long-term residents in the region where the Red Siskin occurs could shed additional light on this matter.

Regardless of the length of time that the Red Siskin has inhabited Puerto Rico, its continued survival will depend on protective safeguards. While the species may have been a will-o'-the-wisp for ornithologists, we cannot depend on it remaining so for pet traders.

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Received 19 August 1982, accepted 4 January 1983.

A Comparison of White-bearded Manakin (*Manacus manacus*) Populations and Lek Systems in Suriname and Trinidad

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The White-bearded Manakin (*Manacus manacus*) is a neotropical, primarily frugivorous, lek-mating passerine. The ecology and behavior of *M. m. trinitatis* in the Arima Valley, Trinidad has been described (Snow 1962; Lill 1974a, b). Snow (1962) found the Trinidad population density to be unusually high with respect to mainland populations and suggested that this was due to either a high proportion of secondary forest, caused by limited clearing and lumbering, or reduced interspecific competition on the island. Secondary forest may benefit survival and reproduction, because many of the trees abundant in secondary forest are prime food sources (Snow 1962) and there is an abundance of saplings on which the males depend for their display (Snow 1962, Lill 1974a).

There has been little research on *M. manacus* in mainland South America. In this study, a population of *M. m. manacus* in virgin rain forest in the interior of Suriname was compared to the Arima Valley population with respect to population density, morphology, reproductive behavior, male mating success, and lek characteristics. At least two resident males, with display courts near each other, constitute a lek. A display court is a circular area of forest floor, between saplings, cleared of leaf-litter by a male. A resident male successfully defends his court and a small area surrounding his court against intruding conspecific males. [See Snow (1962) and Lill (1974a) for a more complete description of the lek mating display.] The lek characteristics investigated in our study include interlek distance, lek area, intercourt distance, and the number of resident males per lek.

Male dispersion in Suriname and Trinidad was compared and related to the lek characteristics investigated. Male dispersion patterns have been described as a continuous gradient in the degree of male clustering. This gradient ranges from uniform fields