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First Records of the Shiny Cowbird (*Molothrus bonariensis*) in the Bahama Archipelago

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The spread of the Shiny Cowbird (*Molothrus bonariensis*) northward through the Caribbean during the past 93 years has been well documented (Post and Wiley 1977, Cruz et al. 1985). The species reached mainland Puerto Rico in 1955 (Grayce 1957), the Dominican Republic in 1973 (Bond 1973), and Cuba in 1982 (Garrido 1984). It first appeared in North America in 1985 (Paul 1985) and since then has been recorded in several states, including Florida, Georgia, Louisiana, North Carolina, South Carolina, Oklahoma, Texas, and Maine (Post et al. 1993). Although the islands of the Bahama Archipelago would appear to have been ideal stepping stones for the Shiny Cowbird from the Caribbean to North America, the species was not detected during extensive surveys of the region (Connor and Loftin 1985, Buden 1987a, b, c, 1990, 1992a, b, Dewey 1989, Norton and Clarke 1989, Baltz 1993; R. L. Norton, reports of Christmas Bird Counts in the Bahamas 1985-1993 in *American Birds*). I describe observations of Shiny Cowbirds on North Andros Island that are the first records of the species in the Bahama Archipelago.

Fig. 1. Female Shiny Cowbird captured 4 August 1995 in Staniard Creek, North Andros Island, Bahamas.

During the period 13 to 30 July 1994, I observed Shiny Cowbirds on several occasions in the settlement of Staniard Creek, North Andros Island, Bahamas. Subsequently, birds were observed on the island in October 1994 (Tony White pers. comm.), December 1994 (Rick Perkins pers. comm.), and March 1995 (Tony White pers. comm.). During a survey of the island conducted 30 July to 3 August 1995 (unpubl. data), I observed Shiny Cowbirds in several settlements along the east coast of North Andros Island. I obtained voucher photographs of both male and female individuals on 21 and 30 July 1994, and of a female captured in a mist net on 4 August 1995 (Fig. 1). Photographic evidence will be deposited with the Bahamian Ministry of Agriculture, the Bahamas National Trust, and Visual Resources in Ornithology (VIREO).

I most commonly observed Shiny Cowbirds perched on telephone wires or foraging on the ground. I also observed them perched or feeding in Australian pine (*Casuarina* sp.), red mangrove (*Rhizophora mangle*), West Indian almond (*Terminalia catappa*), and sea grape (*Coccoloba uvifera*). I saw birds singly and in groups of up to six individuals (two males, four females). On several occasions I heard cowbirds vocalizing. I observed a male give several "glug-glug-glee" songs (West et al. 1979), similar to those given by male Brown-headed Cowbirds (*M. ater*) during courtship display (Friedmann 1929). One male gave several courtship songs characteristic of Shiny Cowbirds (Friedmann 1929). Several males uttered the "twitter" song described by Friedmann (1929). Females gave a rattle call (Friedmann 1929).

During the summer of 1995 I confirmed that Shiny Cowbirds were reproducing on North Andros. I observed four family groups of Black-cowled Orioles (*Icterus dominicensis*), all with Shiny Cowbird fledglings. These observations are consistent with the findings of Wiley (1985) in Puerto Rico, where he found 100% of Black-cowled Oriole nests were parasitized.

Given the present distribution of the Shiny Cowbird in the Caribbean and the southern United States, and their curious absence from the southern Bahamas, it is probable that the species invaded North Andros from either Cuba or southern Florida. Post et al. (1993) noted a pattern of seasonal population changes in Shiny Cowbirds in Florida and proposed that a majority of this population may consist of migratory individuals that winter in the Greater Antilles. Such a migratory population on North Andros would explain the absence of Shiny Cowbirds from several winter surveys conducted on the island (Baltz 1993; Christmas Bird Counts 1985-1993). However, recent sightings of the species in October and December suggest that the species is established as a permanent resident.

The potential for increase of the species on the island is probably great since several host species identified by Wiley (1985)—including Black-cowled Orioles, Yellow Warblers (*Dendroica petechia*), and Black-whiskered Vireos (*Vireo altiloquus*)—nest on the island, and current agricultural development will probably increase foraging habitat for cowbirds (pers. obs.). Although Shiny Cowbirds appear to be limited to North Andros, it is likely that they will eventually spread to other islands in the Bahama Archipelago.

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High Prevalence of Hematozoa in Nestlings of a Passerine Species, the Pied Flycatcher (*Ficedula hypoleuca*)

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For birds in general, there is a dearth of data on prevalence and intensity of blood parasites in nestlings. This may be due to the fact that researchers have not expected to find blood parasites in smears because of the short time for infections to be detected. While this may be true in many passerines, mainly ground-nesting species with short fledgling periods, we show here that prevalences may be detected as early as 13 days of age in a cavity-nesting passerine. Prevalences and intensities of hematozoa in nestling birds may merit further study, as both parameters are relatively easy to quantify in smears of peripheral blood in bird species such as the Pied Flycatcher (*Ficedula hypoleuca*, Muscicapidae), which has a relatively extended fledgling period.

In 1993, an intensively studied population of Pied Flycatchers in central Spain (Potti 1993) was sampled for presence of hematozoa. Adult birds were captured while incubating (females) or feeding nestling (males); a drop of blood was obtained from the brachial vein, smeared, air dried, and fixed with 100% ethanol. Slides were later stained with Giemsa for 45 min. In addition, one nestling per nest was picked at random and bled at 13 days of age. We chose this age because it is the standard age of banding and measuring fledglings that are fully grown with respect to some skeletal measures (Potti and Merino 1994) in our population, and not by any consideration on the prepatent periods of hematozoa.

To prevent the possibility that the symmetry of the blood smear might cause a nonrandom distribution of parasites (Godfray et al. 1987), one-half a smear (i.e. the half being chosen at random) was entirely scanned at 200× along its longitudinal axis for presence of *Trypanosoma* spp. and *Leucocytozoon* spp. We quantified the number of these hematozoans by counting the number of fields scanned and transforming parasite numbers to parasites per 100 fields. Infection by *Haemoproteus balmorali* was detected and quantified under oil at 1,000× by counting the number of parasites per 2,000 erythrocytes (Godfray et al. 1987) in the other half of the smear (i.e. that not scanned at 200×).

The prevalences and intensities of infection by different genera of hematozoa in nestlings and both sexes of adult breeding birds are shown in Table 1. The fact that no *Haemoproteus* was observed in nestlings is probably due to the length of the prepatent period for these parasites which is about 14 days (Fallis and Bennett 1961). The two other genera of parasites present in nestlings have prepatent periods of about five days (Fallis and Bennett 1961, Molyneux 1973; but see Baker 1956b); hence, the nestlings should have been infected early in life, at least at the age of seven to eight days. In this population there are several species of ectoparasites that potentially may act as vectors of hematozoa (Merino and Potti 1995, in press). For example, mites (Acari) of the genus *Dermanyssus* are common nest parasites in this population of Pied Flycatchers, and have been reported as vectors of trypanosomes (Macfie and Thomson 1929). Hosts may become infected with these parasites by swallowing vectors (Baker 1956a, Dirie et al. 1990), or by the vector's faeces containing infective stages penetrating the hosts through scars (Molyneux 1977). It would appear that *Trypanosoma* infections acquired during the fledgling period may be maintained until adulthood, as prevalences are similar in both age classes in a horizontal analysis of young and adult birds ($X^2 = 0.00$, $P = 1.00$, Yates' correction). However, this assumes between-age variation also reflects within-bird variation of parasite prevalence with age, which remains to be demonstrated until effects on recruitment (i.e. postfledgling mortality) are ascertained.

The intensity of infection by trypanosomes in nestlings is four times higher than in adult birds (Table 2; Mann-Whitney test comparing nestlings vs. adult