

## SHORT COMMUNICATIONS

### THE SHINY COWBIRD IN THE WEST INDIES

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The Shiny Cowbird (*Molothrus bonariensis*) has been spreading into the Caribbean since 1860, when a specimen was collected on Vieques Island (Newton 1860), 10 km W of Puerto Rico. *M. bonariensis* has been expanding other parts of its range, notably in Argentina and Chile (Johnson 1967). Ricklefs and Cox (1972) have discussed some features of *M. bonariensis*' range expansion in the West Indies. The success of this species parallels that of the Cattle Egret (*Bubulcus ibis*) in the new world and the Brown-headed Cowbird (*Molothrus ater*) in North America. All three species apparently have responded to modern, large-scale habitat alterations associated with agriculture and animal husbandry.

The subspecies involved in the Caribbean range expansion is *M. b. minimus*, which was originally confined to northern Brazil, the Guianas, Trinidad and Tobago. Through most of the Caribbean the cowbird's spread has been well documented (fig. 1); however, several points deserve comment. The movement of *M. bonariensis* has been aided by man. Probably because of the male's singing ability, the species is often kept as a cage bird, leading to a number of accidental or intentional introductions. According to J. Bond (pers. comm.), there appear to be two separate centers of origin of the cowbird's range expansion in the Caribbean: 1) In the Lesser Antilles, in the region around Grenada, the Grenadines and Barbados, from whence the species has moved NW as far as Antigua (fig. 1). Its rate of progress through the Lesser Antilles has been slow: about 8.3 km per year during the 60 years since it first appeared in the Grenadines. *M. bonariensis* has not been recorded on any islands between Antigua and St. Croix, a distance of 300 km (fig. 1). In addition, in the northern part of its range in the Lesser Antilles, it is uncommon and now seems to have disappeared from some islands from which it was first recorded, such as Marie-Galante (Pinchon 1963). 2) In the Greater Antilles, *M. bonariensis* has spread rapidly westward from a population center in the western Virgin Islands and eastern Puerto Rico: ignoring the anomalous Vieques and St. Croix records, at a rate of about 30.6 km per year between 1955 and 1973 (fig. 1). To a greater degree than in the Lesser Antilles, the Greater Antillean range expansion may have been aided by introductions. However, the rapidity of the species' spread from this second population center is perhaps due to the greater array of feeding habitats and hosts available on large islands such as Puerto Rico. Most species that have invaded the West Indies from South America have been filtered out by the

small islands of the Lesser Antilles, and few have reached the larger islands (Ricklefs and Cox 1972). *M. bonariensis* possibly may not have reached the Greater Antilles without the aid of man.

In 1955 a flock of 10–12 Shiny Cowbirds appeared on St. John (Robertson 1962), 88 km E of Puerto Rico, and in the same year Grayce (1957) saw a flock of 150–175 at Cabezas de San Juan in extreme northeastern Puerto Rico. Nothing further was reported from Puerto Rico until 1961, when Biaggi (1963) saw more than 200 at Yabucoa, southeast Puerto Rico. In 1965 M. Gochfeld (Buckley and Buckley 1970) saw 250 near the Guajataca cliffs in northwestern Puerto Rico. Besides occupying lowland Puerto Rico, by February 1969 the species had penetrated the mountainous central part of the island, where C. B. Kepler and A. K. Kepler (pers. comm.) recorded 6–10 at Cidra.

Four points indicate that *M. bonariensis* arrived in Puerto Rico before 1955: 1) during the 1940's few observers were active in Puerto Rico or the Virgin Islands; 2) the presence, albeit of questionable origin, of cowbirds on nearby islands well before 1955 (fig. 1); 3) the rapidity with which the species has spread from Puerto Rico to Mona Island and Hispaniola (fig. 1); 4) the large numbers of cowbirds that were first seen in Puerto Rico, at widely separated points and over a relatively short period (fig. 1). All records from Hispaniola, where we feel sure that the species is a recent immigrant, have been of individuals or small groups (fig. 1).

Since we began working in Puerto Rico in 1972, we have found cowbirds to be abundant in disturbed lowland habitats; at many communal roosts in southwestern Puerto Rico, they outnumber other icterids (table 1). Along the southwestern Puerto Rican coast, they are common from June to October, which corresponds to the breeding season of most passerines there. After October relatively few cowbirds remain in the coastal zone, and they may move to the interior.

At two study sites in the Puerto Rican coastal zone, one in the southeast at Ceiba, and the other at La Parguera in the southwest, we found that *M. bonariensis* parasitized only Yellow-shouldered Blackbird (*Agelaius xanthomus*) nests. During May–September of 1974 and 1975, 56 of 72 blackbird nests contained cowbird eggs. In the same habitats and at the same time of year that blackbirds were nesting, we examined 128 nests of 7 other passerine species, and found none of them parasitized. The species and numbers of nests examined were: Gray Kingbird (*Tyrannus dominicensis*), 45; Northern Mockingbird (*Mimus polyglottos*), 5; Pearly-eyed Thrasher (*Margarops fuscatus*), 5; Red-legged Thrush (*Mimochicla plumbea*), 2; Yellow Warbler (*Dendroica petechia*), 25; Bananaquit (*Coereba flaveola*), 28; Greater Antillean Grackle (*Quiscalus niger*), 18.

In South America *M. bonariensis* often prefers one host. For example, in Chile, of 72 parasitized nests,

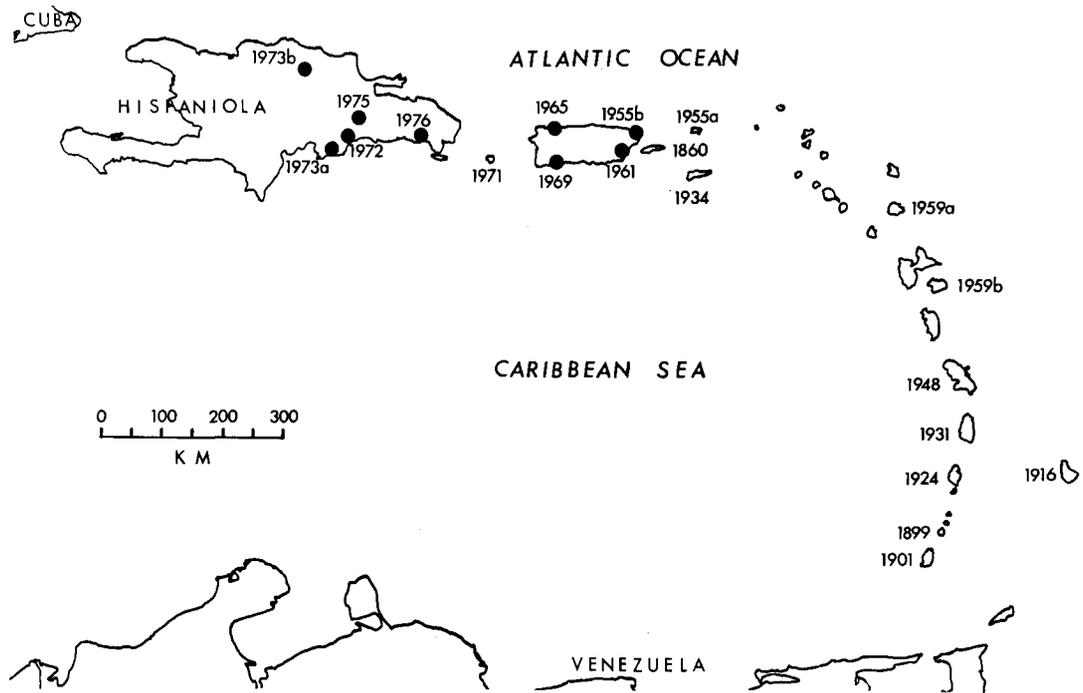


FIGURE 1. Range expansion of *Molothrus bonariensis* in the West Indies. 1860: Vieques Island (Newton 1860); specimen collected. 1899: Carriacou, Grenadines (Bond 1956); ♂ and ♀ collected. 1901: Grenada (Bond 1956). 1916: Barbados (Bond 1956); probably introduced. 1924: St. Vincent (Bond 1956). 1931: St. Lucia (Danforth 1932); singing ♂ and 2 ♀♀ seen. 1934: St. Croix (Bond 1956); ♂ collected, another individual seen. Species probably introduced. 1948: Martinique (Pinchon 1963). 1955a: St. John (Robertson 1962); 10–12 seen. 1955b: Cabezas de San Juan, Puerto Rico (Grayce 1957); 150–175 seen. 1959a: Antigua (Pinchon 1963). 1959b: Marie-Galente (Pinchon 1963). 1961: Yabucoa, Puerto Rico (Biaggi 1963); specimens collected and over 200 seen. 1965: Guajataca Cliffs, Puerto Rico (Buckley and Buckley 1970); 250 seen. 1969: Guánica, Puerto Rico (Kepler and Kepler 1970); 4 seen. 1971: Mona Island (Bond 1973). 1972: Hato Nuevo, 5 km SW of Santo Domingo, Dominican Republic (Bond 1973); immature ♂ collected. 1973a: Najayo Abajo, 22 km SW of Santo Domingo (A. Dod, pers. comm.); 2 ♂♂ seen, associating with *Icterus dominicensis*. 1973b: Santiago, Dominican Republic (A. Dod, pers. comm.) 1975: Finca Estrella, 10 km N of Santo Domingo (specimens in Dominican National Museum of Natural History); 2 ♂♂ collected, association with *Ploceus cucullatus*. 1976: La Romana, Dominican Republic (Wiley); ♂ seen.

44 were of the Diuca Finch (*Diuca diuca*) and the remainder of 7 other species (Johnson 1967). However, the exclusive use of one host is previously unknown, and may be due to the behavior of an expanding population, as well as special features of the blackbird's biology which predispose it to brood parasitism (Post and Wiley, unpubl.).

TABLE 1. Number of icterids using communal roosts in southwestern Puerto Rico 1973–1975.

Locality	Date	<i>Molothrus bonariensis</i>	<i>Agelaius xanthomus</i>	<i>Quiscalus niger</i>
Isla La Cueva	17 Jun 73	2175	1501	586
Isla La Cueva	7 Sep 73	4299	1663	209
Pita Haya	23 Feb 74	488	690	474
La Parguera	12 Jul 74	1180	120	1338
Bahía Montalva	5 Jan 75	897	284	1538
Lajas	12 Feb 75	45	7	405
San Germán	12 Feb 75	1175	6	3525
Bahía Sucia	1 Sep 75	782	201	1446

Brood parasitism by *M. bonariensis* reduced the reproductive output of *A. xanthomus*. Twenty unparasitized blackbird nests produced 0.38 (15/40) fledglings per egg, while 48 parasitized nests produced only 0.18 (19/105) fledglings per egg. The difference is significant ( $\chi^2 = 6.0$ ;  $P < 0.05$ ). Moreover, the impact of cowbirds on blackbirds was more severe in southeastern than in southwestern Puerto Rico. In the southeast, 18 nests produced 17 young cowbirds but only 3 young blackbirds, while in the southwest 35 nests produced 27 blackbirds and 24 cowbirds.

The status of *A. xanthomus* has changed drastically since the 1940's (Post and Wiley 1976). Taylor (1864), who visited the San Juan region, described the species as "excessively abundant." Wetmore (1927) found the blackbirds common throughout lowland Puerto Rico, and even collected specimens from the mountainous interior at Lares. As late as 1936, the species was still common in the lowlands (Danforth 1936). From published reports and from localities given on museum specimens, we conclude that the species was still common and widespread in Puerto Rico until the 1940's, after which

time we have no information until our work began in 1972.

We made extensive searches through Puerto Rico and found *A. xanthomus* mainly to be confined to two circumscribed regions: 1) southeastern Puerto Rico, on Roosevelt Roads Naval Base, near Ceiba; 2) southwestern Puerto Rico, in a narrow coastal zone extending 35 km from Guánica to Boca Prieta. A few small, isolated populations exist outside the two main population centers, notably at San Germán. From roost count data, surveys of nesting areas and communication with other workers, we estimate that the total world population of *A. xanthomus* is now about 2400.

Although the evidence is circumstantial, the blackbird's decline since the 1940's is correlated with the arrival and increase of *M. bonariensis* in Puerto Rico. In the cowbird's spread through the Caribbean, it has been implicated in the decrease of other island bird populations, such as the Yellow Warbler on Barbados (Bond 1966) and the House Wren (*Troglodytes aedon*) on Grenada (Bond 1971).

*M. bonariensis* arrived on Mona Island in early 1971 (Bond 1973). In December 1972 M. Valéz and V. Marquez (fide H. Raffaele) saw a flock of 12 cowbirds on Mona. On several visits to Mona in 1974 and 1975, we saw groups of cowbirds associated with *A. xanthomus*, but because the blackbirds were nesting on steep cliffs, we could not examine any nests.

In October 1972 J. Lindebach collected the first *M. bonariensis* on Hispaniola (Bond 1973). By 1973 A. Dod (pers. comm.) found the species as far west as northcentral Dominican Republic (Santiago). In the Dominican Republic, cowbirds have been seen flocking with two common species: the Village Weaver (*Ploceus cucullatus*) and the Black-cowled Oriole (*Icterus dominicensis*). It is interesting that all Hispaniolan cowbirds collected or sighted whose sex was determined were males.

We anticipate that *M. bonariensis* will move rapidly through the remainder of the Greater Antilles. Cuba or Cozumel may act as the final stepping-stone for the species' invasion of North America.

We appreciate critical comments made by J. Bond and C. B. Kepler. A. Dod generously made available her observations from the Dominican Republic.

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#### CONTINUED EASTERN EXPANSION OF BREEDING RANGE OF ROSS' GOOSE

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The Ross' Goose (*Chen rossii*) has nested in yet another Hudson Bay Lesser Snow Goose (*Chen c. caerulescens*) breeding colony. On 29 July 1975 we found a Ross' Goose family with pre-fledging

juveniles 5 to 6 weeks old among 1850 flightless Lesser Snow Geese captured for banding near the mouth of the Brant River (55°10'N, 82°52'W) in the Cape Henrietta Maria colony on the Hudson Bay coast of Ontario. This is the first Ontario breeding record and represents a significant extension of breeding range into the eastern portion of the Hudson Bay Lesser Snow Goose population. The probable manner of this extension and some implications are discussed.

The family consisted of three juveniles (2 ♀♀, 1 ♂), an adult male Ross' Goose and a larger female