

ORNITOLOGIA NEOTROPICAL

Volume 11

2000

No. 4

ORNITOLOGIA NEOTROPICAL 11: 285–296, 2000
© The Neotropical Ornithological Society

THE SHINY COWBIRD (*MOLOTHRUS BONARIENSIS*) IN CHILE: INTRODUCTION OR DISPERSION? ITS HOSTS AND PARASITIC TRENDS

Manuel Marín

Natural History Museum of Los Angeles County, Section of Ornithology, 900 Exposition
Boulevard, Los Angeles, CA 90007 USA. *E-mail*: mma95@hotmail.com

Abstract. I analyzed the origin, distribution, and hosts of the Shiny Cowbird (*Molothrus bonariensis*) in Chile, using specimen records and the literature. It is more likely that the species was introduced to Chile before natural dispersal could take place from Argentina. The earliest specimens are from mid-1865 and from around Santiago in central Chile. In the early 1900's, the Shiny Cowbird was a very popular cage bird, and large-scale importations took place from Argentina to the markets in the Rancagua-Santiago area. Not coincidentally, the species began to be more common around 1910–1920 in the Santiago-Rancagua area. By the 1940s, it had dispersed as many as 1100 km to the north and 1300 km to the south of the Santiago-Rancagua area and in the 1980's it reached the extreme north of the country and the Magallanes area in the far south. Only 15 species are known as a host for this species in Chile, of which six are known to rear young *Molothrus*. Its slow expansion northward might be due to the decrease in number of birds species that rear young *Molothrus* and to the reduction of suitable habitat. As it disperses northward *Molothrus bonariensis* will probably need to find new hosts that are able to rear its young. *Accepted 20 January 2000.*

Resumen. Se hizo un análisis sobre el origen, la distribución y los huéspedes del Mirlo (*Molothrus bonariensis*) en Chile usando especímenes de museo y récords de la literatura. Es mas posible que la especie fue introducida a Chile antes de que haya ocurrido una dispersión natural desde Argentina. Se encontró que los especímenes mas antiguos son del año 1865 de los alrededores del área entre Santiago y Rancagua. Alrededor de los años 1900 era un ave muy popular y común para jaula y grandes importaciones fueron hechas desde Argentina a los mercados de las zonas de Santiago y Rancagua. Por no coincidencia, la especie comenzó a ser mas comúnmente observada y capturada en el área de Santiago-Rancagua entre los años 1910–1920. En la década de los años 1940, el Mirlo ya se había expandido 1100 km hacia el norte y 1300 km hacia el sur del área de Santiago-Rancagua y, durante la década de los años 1980, llegó al extremo norte del país y a Magallanes en el extremo sur. Hay solo 15 especies conocidas como huéspedes en Chile, de las cuales solo seis se conocen que crían a los jóvenes *Molothrus*. La expansión del Mirlo hacia el norte ha sido mas despacio que al sur y esto puede ser debido a la reducción de especies que pueden criar jóvenes *Molo-*

thrus y al mas reducido hábitat apropiado hacia el norte. A medida de que el Mirlo se va moviendo al norte, la especie necesita encontrar nuevos huéspedes que puedan criar sus jóvenes.

Key words: Shiny Cowbird, *Molothrus bonariensis*, dispersion, hosts, Chile, introduction.

INTRODUCTION

The Shiny Cowbird (*Molothrus bonariensis*) has a wide distribution in South America from Panama and the Caribbean southward to Argentina and Chile (Ridgely & Tudor 1989). It expanded northward through the Caribbean and reached the United States (Florida) in 1985 (Lowther & Post 1999).

The origin of this species in Chile has been controversial. On the one hand, authors like Rahmer (1912) and Cabezas *et al.* (1989) attributed the central populations to natural occurrence and advocated it to natural dispersion from Argentina. Other authors, on the other hand, like Reed (1913, 1934) and Barros (1921, 1946, 1956), hypothesized that the presence of the Shiny Cowbird in central Chile was accidental or due to deliberate introduction. Hellmayr (1932) did not give his own opinion, but Hellmayr (1937) indicated that the Shiny Cowbird was introduced to Chile.

In an earlier work, Marín *et al.* (1989) summarized some of the records of this species for Chile and documented its range expansion to the extreme north of the country. Cabezas *et al.* (1989) hypothesized that the population in northern Chile had dispersed naturally from Peru. However, Marín *et al.* (1989) did not advocate any hypothesis as to the origin of the central Chilean population, although they attributed the northern birds as natural immigrants from the south. An early discussion of whether the Shiny Cowbird is autochthonous to Chile or introduced by man can be found in Hellmayr (1932). Vuilleumier (1991) reanalyzed this interesting situation, and Jakšic (1996) mentioned the problem in his text-

book. In the present study, I present an in-depth analysis of the Shiny Cowbird's dispersion and its hosts.

METHODS

I used museum specimens (see Acknowledgments) and reviewed the literature on Chilean birds to plot the distribution of this species. Being a linear country ranging from about 18°S to 56°S, it is easy to plot the Chilean localities in a linear fashion. For each locality, I used the latitude (expressed in degrees and minutes) taken primarily from Paynter (1988) and Risopatron (1924). In order to plot the minutes of latitude, they were adjusted to a decimal system (e.g., 23°43' becomes 23.71 and 23°30' becomes 23.5). Because the earliest record for the species in Chile was from the mid 1860s, I plotted localities from 1861 to 2000, separated every 10 years (creating 14 categories as follow: 1861–1870 = 1; 1871–1880 = 2; 1881–1890 = 3; etc., Fig. 1). The results are presented for each 10-year category independently in order to identify the extent of expansion of the species. To compile a list of hosts of *Molothrus bonariensis* and assess trends in host parasitism, I reviewed the literature, used egg data cards, primarily those at the Western Foundation of Vertebrate Zoology (WFVZ) and my own field observations in Chile, from the mid 1970's to the present.

RESULTS

I located 105 specimen localities from label data in the major museums in Chile, Europe, and the United States (see Acknowledgments)

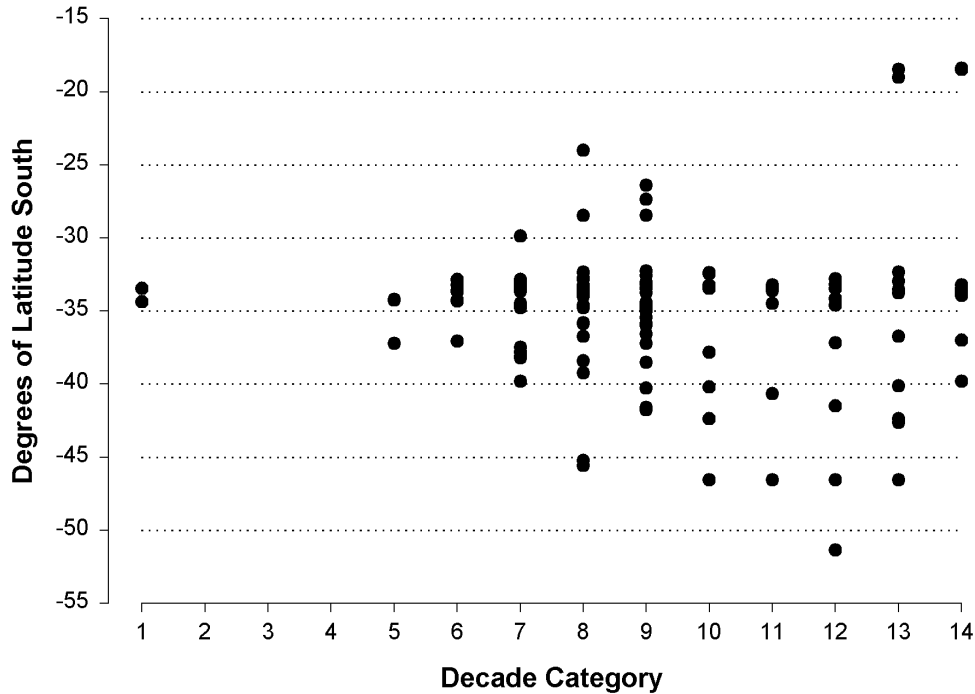


FIG. 1. Latitudinal records of museum specimens (see acknowledgments) and literature data (see text and references) for the Shiny Cowbird (*Molothrus bonariensis*) in Chile. The records were plotted from 1861 to 2000 and are subdivided into 14 decade categories (e.g., 1861–1870 = 1; 1871–1880 = 2; etc.). Records not integrated in the text include: Wagenknecht (1968), Drouilly & Ibarra (1978), Schlatter (1978), and Estades (1997).

and an additional 53 different localities from the literature. In addition, 19 different localities came from personal observations. I present below what I found published for each 10-year category.

Category 1: 1861–1870. Rahmer (1912), Reed (1913), and Hellmayr (1932) stated that the earliest published work documenting the Shiny Cowbird's presence in Chile with certainty was that of Philippi in 1868 who mentioned two birds [collected ?] near the city of Santiago. Although both Rahmer and Reed (1912) indicated that Desmurs had an earlier record than Philippi's, as he mentioned this species from Chile while writing C. Gay's

field notes in 1847, Reed (1913) and subsequent authors doubted that these early specimens were from Chile. The oldest specimens I located are deposited at the Museum of Comparative Zoology (MCZ # 18190, 18191) and were collected by R. A. Philippi, in the winter of 1868 at Mendoza (34°S), a farm about 100 km south of Santiago in the VI Region (*sensu* Risopratron 1924 and Paynter 1988).

Category 2: 1871–1880. I found nothing written nor any specimens.

Category 3: 1881–1890. James Berkeley privately published a Chilean bird list in 1892 in

which he mentioned *M. bonariensis* for the country, but Edwyn Reed in a letter to the Ibis questioned its occurrence in Chile (Reed 1893). Between 1889 and 1891, Ambrose Lane carried out what was probably one of the first extensive collecting in the country, primarily in what are now Regions I and V, the Area Metropolitana, and Regions VIII and X. In these areas and in those years he did not see nor collected any *Molothrus bonariensis* (Lane 1897).

Category 4: 1891–1900. I found nothing written or collected specimens.

Category 5: 1901–1910. Rahmer (1912) observed birds in 1910 near Machali (34°S) and one bird in Baños de Cauquenes (34°S). Reed (1913) mentioned a bird collected near Coronel (37°S) in 1905 which was an unknown bird to him, but his father Edwyn Reed identified it as a *Molothrus bonariensis*. Reed (1913) further mentioned that although he and his father collected many birds in the Coronel area between 1870 and 1899 they never saw this species there. Furthermore, Reed (1913) mentioned that he and his father made several collecting trips between 1890 and 1907 around the area where Rahmer (1912) had done his observations, but that they never encountered the species. However, Reed (1913) did find it near Limache (33°S) rather regularly from 1912 onward.

Category 6: 1911–1920. Rahmer (1912) reported a bird collected by Arturo de Toro in Bella-Vista (34°S) in 1911, and de Toro indicated that the bird was unknown in the area. In the same paper, Rahmer (1912) stated having observed a large flock near Los Baños de Cauquenes (34°S) in late September 1911. Barros (1921), reporting observations made from 1917 to 1921 in the Cordillera de Aconcagua, stated that he found *Molothrus bonariensis* only around Los Andes (32°S) and

mentioned that the species was rare in the area and never found above 1000 m. He also mentioned that Prof. Uldaricio Prado found it in large numbers in the Talagante area (33°S) in 1916. Páfsler (1922), reporting on birds observed near Coronel (37°S) between 1914 and 1918, found that this species occurred in the area and parasitized the Rufous-collared Sparrow (*Zonotrichia capensis*), the Yellow-winged Blackbird (*Agelaius thibius*), and the Spectacled Tyrant (*Hymenops perpicillata*). Housse (1925) reported two specimens collected in 1912 in San Bernardo (33°S), but also indicated that he did not observe it again in the same area until 1921.

Category 7: 1921–1930. Barros (1926) stated that this species was new for Nilahue (34°S), mentioned its nomadic tendencies, and indicated that it could be found year round in the area. Jaffuel & Pirion (1927), writing on the birds of the Valle Marga-Marga (33°S), declared that it was a relatively new bird for the area. Two years later, Bullock (1929) indicated that the species was relatively new in the Angol area (37°S) where it had arrived only in the last 15–20 years. Barros (1930) observed this species for the first time near Rio Blanco (32°S) in 1924 and indicated that it was never seen above 1650 m. Hellmayr (1932), primarily on the basis of the birds collected by the Field Museum expedition to Chile (1922–1924) and on a review of the literature, gave its distribution from Coquimbo (Romero) to Malleco (Angol) (29°S to 37°S). Housse (1940) wrote that in 1927 he observed it at Los Angeles (37°S) and then in 1929 at Puren (38°S).

Category 8: 1931–1940. Kuroda (1933) reported one specimen collected in Perquenco (38°S) in 1931. Friedmann (1934), based on literature records and data gathered by Bullock in Angol (37°S), added some new hosts for the country. Bullock (1939) visited the Tolten region (39°S) in 1909, 1911, and

1937 and sighted the Shiny Cowbird there for the first time in February 1937. Barros (1943) mentioned that the species was observed during the early 1930's in the area of Valdivia and Corral (39°S). Olog (1948) reported that three specimens were collected at Coyaique (45°S) in November 1940 and that other birds were seen in nearby locations, extending its range considerably southward. Within the same decade but to the north, Millie (1938) found a strange egg in the nest of a Dusky-tailed Canastero (*Asthenes humicola*), near Huasco (28°S). Judging by the description of the egg and bird that he flushed, it was very likely a Shiny Cowbird, although at the time it seems that he was not familiar with the bird. Even farther north, Trimble (1943) reported a young female cowbird collected when she flew on board ship off the coast just south of Antofagasta at (24°S) on February 1936, representing a further expansion of the species northward.

Category 9: 1941–1950. Barros (1943) reported the Shiny Cowbird as a new species for Maullín (41°S), indicating that it was becoming relatively common in the area. In 1943, Philippi *et al.* (1944) mentioned the presence of the species as far north as Pueblo Hundido (now called Diego de Almagro) (26°S) and Copiapo (27°S). Later, Barros (1946) wrote up his observations on the life-history of *Molothrus bonariensis* in Chile and mentioned several of its hosts species.

Category 10: 1951–1960. Barros (1956) updated his observations on the parasitic trends of the cowbird in Chile. Peña *et al.* (1964) and, subsequently, Barria (1972) reported about a collection of birds made in 1958 near Dalcahue (42°S) on the island of Chiloe. These authors indicated that this species was new for the island.

Category 11: 1961–1970. Peña (1964) observed

several birds in January 1961 near Chile-Chico (46°S). The specimens he collected were located about 100 km further south than Coyaique, until then the southernmost locality in Chile (Orlog 1948).

Category 12: 1971–1980. A specimen reported upon by Venegas (1982), collected near Cerro Castillo (51°S) in January 1980, represented a large range expansion and the southernmost specimen of the species for Chile. According to Schlatter (1976), the Shiny Cowbird was found at Chile-Chico (46°S) parasitizing the Diuca Finch (*Diuca diuca*).

Category 13: 1981–1990. Marín *et al.* (1989) reported the northernmost specimen from Quebrada de Camarones (19°S), province of Arica, in June 1986, near the extreme north of the country, representing a large northward range expansion. Marín *et al.* (1989) also summarized some of the records of this species in Chile, primarily those of Hellmayr (1932). J. Aguirre & H. Kocksch *in* Sallaberry *et al.* (1992) found some cowbirds at Valle de Lluta (18°S) in September 1986 and, without specimens, they identified them as Screaming Cowbird (*Molothrus rufoaxillaris*), a very unlike species for the area. The birds observed by Aguirre and Kocksch were most probably Shiny Cowbirds. Cabezas *et al.* (1989) published another record, of several birds found in August 1988, in Poconchile (18°S), about 60 km north of Camarones, near the Peruvian border.

Category 14: 1991–2000. Howell & Webb (1995) sighted the Shiny Cowbird in the Azapa and Lluta Valleys (18°S) on November–December 1992, and in November 1994. However, their claim that these observations represented a range expansion were erroneous as Cabezas *et al.* (1989) had reported the species earlier from the same area. Furthermore, more recently, in 1999, Enrique Couve

and Claudio Vidal (pers. com.) observed and photographed a few birds near the extreme south of the country (56°S), thus completing the Shiny Cowbird distribution to almost the entire length of Chile.

DISCUSSION

Distribution. Both Reed (1913, 1934) and Barros (1921, 1946, 1956) suggested that the Chilean population of the Shiny Cowbird originated from caged birds that either were liberated or had escaped near Santiago. This suggestion was also followed by Hellmayr (1937). Both Reed and Barros also indicated that this species was a common and very popular cage bird. These birds were imported from Argentina and sold in large quantities in markets in Santiago and elsewhere in the central provinces of Chile. During their extensive field work in Chile, Reed and Barros found the species to be generally rare. They found it to be more common in some areas of central Chile from about 1919 into the mid 1920's but never above 1700 m. In contrast to Reed and Barros, Rahmer (1912) thought that the species had crossed the Andes from Argentina somewhere in the VI Region. Much later, Cabezas *et al.* (1989) also suggested that the species entered Chile by natural dispersion. Cabezas *et al.* (1989) reached this conclusion because of the wide range of the species, its abundance in Argentina, and the existence of several "low" passes across the Andes. Indeed, the Shiny Cowbird is widespread east of the Andes (Ridgely & Tudor 1989) and Cabezas *et al.* (1989) are right in that there are several "low" passes across the Andes. However, passes of 2560 m or below are further south (36°S to 39°S), not in the Santiago-Rancagua area (32°S to 34°S).

As I judge from the specimen record and published accounts, it is clear that the origin of the Shiny Cowbird in Chile must be sought in the central part of the country in the Santi-

ago-Rancagua area (Fig. 1). I believe that the probability of this species crossing the Andes in the central provinces and multiplying so successfully is very low. If birds did indeed cross the Andes in the central provinces, they either had to be in large flocks or to have multiple crossings in order to colonize Chile so fast. Although there are some early records from the Coronel area (near Concepción) (36°S) where low and feasible passes do occur, the earliest record around Coronel was in 1905, and the Shiny Cowbird was an unknown and a new bird species to Reed (1913). Furthermore, between 1914 and 1918 around Coronel area, Captain R. Päfsler noted several species being parasitized by *Molothrus bonariensis* (Päfsler 1922). In addition Bullock (1929) indicated that this species was new for the Angol area (37°S) where it had arrived only in the last 15–20 years and was becoming common. Because of the early dates of Reed (1913) and Päfsler (1922), accounts can support the dispersion hypothesis with the Shiny Cowbird entering Chile from the south. However, I doubt that a natural range expansion from Argentina was the case. Firstly, it is clear that the origin of the Shiny Cowbird in Chile is farther north (32–34°S) than the Coronel area (36–37°S). Secondly, only six species are known to rear Shiny Cowbirds in Chile (see below). Although some of the six host species are locally abundant, it seems to be a very limited number for such successful colonization to take place. Thirdly, as pointed out long ago by Barros (1921), the species was a very popular cage bird around Santiago and perhaps nearby cities farther south, between 1906 and 1914, at about the same time that the species started to be found more commonly around Santiago and cities slightly farther south. Fourthly, the extensive collecting and field work by many workers along the entire length of Chile from 1889 to the 1960's, including among others Barros, Behn, Conover, Lane,

Orlog, Philippi, Peña, Reed, and Sanborn, give the clear impression that the bird species was either absent or rare in many parts of the country, particularly prior to the 1930's. Fifthly, Fjelds  & Krabbe (1990) gave the Shiny Cowbird's elevational range as mostly within the tropical zone of the lowlands with two exceptional high elevations of 2600 and 3350 m in Bolivia. Similarly, Ridgely & Tudor (1989) indicated that the Shiny Cowbird occurs at elevations mostly below 2000 m, although it can be found locally up to 3500 m in NW Argentina, around (23–30°S). This can support the argument in favor of natural dispersion through the north. However, between (23–30°S), there are no passes near 3500 m, all are above 4000 m. This is an extremely arid zone, an unlikely habitat for the Shiny Cowbird. The highest record for this species in Chile is a specimen (MCZ # 289069) collected at 2000 m at Lo Valdes (33°S) by R. A. Philippi in December 1939. The species expanded north and south quite successfully and, by 1931 to 1940, about 80 years after the first certain specimens were obtained in central Chile and 40 years after the species became more common locally, its distribution was from 24°S to 45°S of latitude. From the Santiago area, this represents and expansion of about 1100 km northward and about 1300 km southward.

Regarding the northern population, Mar n *et al.* (1989) were inclined to think that the birds arrived from the south rather than from the north (i.e., Per ). However, Cabezas *et al.* (1989) suggested that the northern populations had reached Chile from the north because the species was wide-ranging and was abundant north of Chile (*vide* Meyer de Schauensee 1970). I consider that the conclusion of Cabezas *et al.* (1989) is unwarranted because the primary sources they used for the distribution of *Molothrus bonaiensis* are lists, such as Howard & Moore (1980) and Walter (1980) which are secondary or tertiary

sources of data. Furthermore, Meyer de Schauensee (1970), cited by Cabezas *et al.* (1989), mentioned that in western Peru the Shiny Cowbird occurs only in the north. The usage of secondary or tertiary sources, such as checklists prepared for birders, should be discouraged in scientific work. Instead, general but better sources like Fjelds  & Krabbe (1990) and Ridgely & Tudor (1989) should be employed. The usage of checklist is reflected by comparing the distributional maps of Cabezas *et al.* (1989) vs Fjelds  & Krabbe (1990) and Ridgely & Tudor (1989).

In Chile, a specimen was collected in the late 1930's near Antofagasta (24°S) (Trimble 1943). The fact that it was a young bird suggests that the species likely bred nearby. This important and rarely cited specimen represents a significant northward expansion. Despite the fact that there are many subsequent publications on the birds of the II Region (e.g., Rottman & Kuschel 1970, Brown 1971, Lavercombe & Hill 1972), in none of them is this species reported from the Antofagasta area. However, neither Barros (1954) nor Rottman (1972) reported it further north, and it was not until the late 1980's (Mar n *et al.* 1989) that the Shiny Cowbird was reported from the extreme north of the country. This probably indicates a late or little success in the area. Furthermore, despite extensive field work expanded over 40 years in the southwestern departments of Peru (Arequipa, Moquegua, and Tacna), primarily by Hughes (e.g., Hughes 1970, Hughes *in* Johnson *et al.* 1972, Hughes 1976, Hughes unpubl. field notes up to 1989, Schulenberg 1987, Gonz ales & M laga 1997), the Shiny Cowbird was never observed. The species was just recently observed in 1996 for the first time in the departamento of Tacna, in 1997 in the departamento of Moquegua, and in 1998 in the departamento of Arequipa (H gs s *et al.* 1999). Thus, according to present evidence, it is more likely that the

TABLE 1. Hosts of the Shiny Cowbird (*Molothrus bonariensis*) and species that have been observed rearing young in Chile.

Host species ¹	Observed raising young	References ²
<i>Metropelia melanoptera</i>	N	
<i>Pyrope pyrope</i>	Y	Barros (1946)
<i>Hymenops perspicillata</i>	N	
<i>Elaenia albiceps</i>	Y	M. Marin, unpubl. data
<i>Troglodytes aedon</i>	N	
<i>Mimus thenca</i>	Y	Rottman (1970)
<i>Anthus correndera</i>	N	
<i>Sicalis luteola</i>	N	
<i>Zonotrichia capensis</i>	Y	Barros (1946)
<i>Agelaius thilins</i>	Y	Barros (1946)
<i>Sturnella loyca</i>	N	
<i>Phrygilus patagonicus</i>	N	Barros (1946)
<i>Phrygilus unicolor</i>	N	
<i>Dinca dinca</i>	Y	Bullock (1940)
<i>Passer domesticus</i>	N	

¹Sources: Páfslér (1922), Friedmann (1934), Bullock (1940), Barros (1946, 1956), Goodall *et al.* (1946), Rottman (1970), Friedmann & Kiff (1985), WFVZ egg data cards, pers. observ.

²Earliest references mentioning the host feeding young Shiny Cowbirds in Chile.

northern Chilean and southern Peruvian population arrived from the south (central Chile) rather than from the northern part of Peru. As also mentioned by Høgsås *et al.* (1999), it probably expanded north taking advantage of the extended coastal vegetation during el Niño years.

Based on present evidence, I agree with Reed and Barros that the Shiny Cowbird was indeed more likely to have been introduced into the country (at least in the central provinces, 32°–34°S) rather than arrived by natural dispersion from Argentina, although I can not fully rule out the possibility that the Shiny Cowbird presence around the Concepción area (37°S) might have been by dispersal from Argentina. This is because: 1) there are passes 2500 m and lower between 37°–38°S, 2) agriculture development with irrigation and

deforestation in both sides of the Andes increased drastically after the 1900's, and 3) there are some early records (1905–1918) from the Concepción area. However, contrary to this possibility of natural dispersion in the south, exist the following facts of a parallel southern introduction: 1) all the early records are from around or near the city of Concepción, none from the interior despite extensive collecting (see above); 2) Concepción is the third most important city in Chile, besides Santiago and Valparaíso, in the central provinces, and as the Shiny Cowbird was a very popular cage bird sold in the markets in Santiago in the early 1900's, it might well have been sold in the markets in the Concepción area at about the same period of time.

With the facts presented above, the northern birds are without doubt natural immi-



FIG. 2. Nest of Yellow-winged Blackbird (*Agelaius thilius*) saturated with Shiny Cowbird eggs, a phenomenon commonly observed in *A. thilius* nests. Photo: Vegas de Santa Julia, North of Concón, VI Region, 10 December 1980, M. Marin.

grants from the south, contra Cabezas *et al.* (1989) and supporting Marin *et al.* (1989) assertion. Thus, the Shiny Cowbird was more likely to have been introduced in central Chile, and probably with the aid of deforestation and modern agriculture, in about 100 years, it expanded over almost the entire length of the country.

Host species and parasitic trends. Very few host species have been reported for the Shiny Cowbird in Chile. Friedmann & Kiff (1985) gave 201 host species, a total that must be larger now because of more recent observations. However, for Chile only 15 species have been reported as hosts, of which six have been observed raising young *Molothrus* (Table 1). The three most heavily parasitized

species in southern and central Chile are Diuca Finch (*Diuca diuca*), Yellow-winged Blackbird (*Agelaius thilius*), and Rufous-collared Sparrow (*Zonotrichia capensis*), and all three rear young Cowbirds (Bullock 1940, Barros 1946, 1956; Goodall *et al.* 1946, Johnson 1967, WFVZ egg data cards, Table 1, and pers. observ.). Among the three most heavily parasitized birds perhaps, *Agelaius thilius* is the host species that gets more eggs (from 1 to 6 eggs) per nest than any other species in Chile. Early on, this was observed in the Angol area by Dillman Bullock where every nest he found of *Agelaius thilius* contained from 1 to 5 eggs of the Shiny Cowbird (*vide* Friedmann 1934). Fifty years later, in the early 1980's, I observed the same phenomenon in the marshes of the central provinces, where I found every nest of *Agelaius thilius* parasitized and saturated with Shiny Cowbirds eggs. On 10 December 1980, at Las Vegas de Santa Julia, just north of Concón, VI Region, I photographed a nest of *Agelaius thilius* with six *Molothrus bonariensis* eggs (Fig. 2). This trend is probably related to multiple Shiny Cowbirds females laying eggs in the same nest and might be an indication of restricted hosts or cowbirds abundance.

The northward expansion of the Shiny Cowbird is probably limited by the decrease in potential host species. Of the six species known to rear young *Molothrus* from central Chile, only two species (*Zonotrichia capensis* and *Elaenia albiceps*) are present in the extreme north and both are known to rear young *Molothrus* (Table 1). Among the species that might be able to raise young cowbirds in northern Chile are Bran-colored Flycatcher (*Myiophobus fasciatus*) and Vermilion Flycatcher (*Pyrocephalus rubinus*) which are hosts elsewhere (*vide* Friedmann & Kiff 1985). Seasonal movements are well known in Argentina where a bird banded in September in Cordova, was found in November in Rio Negro, 600 km south (Lucero 1982). Several reports

indicate seasonal movements and the nomadic tendencies of the Shiny Cowbird in Chile (e.g., Barros 1921, 1946; Bullock 1929). This fact suggests that the species has been expanding northward and staying where host species and habitat conditions are suitable, rather than in the small green valleys which form oases in the desert of northern Chile, where there are fewer potential hosts to raise young *Molothrus*.

ACKNOWLEDGMENTS

I am very grateful to the following people for providing information about the collections in their care: R. T. Chesser, American Museum of Natural History, New York; Sra. E. de Behn, Colección F. Behn, Zapallar; J. Bates, Field Museum of Natural History, Chicago; C. Venegas, Instituto de la Patagonia, Punta Arenas; R. Schlatter, Instituto de Zoología de la Universidad Austral, Valdivia; R. Prys-Jones and F. Steinheimer, Natural History Museum, Tring [ex British Museum]; K. Garrett, Los Angeles County Museum of Natural History, Los Angeles; R. Paynter and A. Pirie, Museum of Comparative Zoology Harvard University, Cambridge (MCZ); J.C. Torres-Mura, Museo Nacional de Historia Natural, Santiago; V. Jerez, Museo de Zoología de la Universidad de Concepción, Concepción; G. Graves, United States National Museum, Washington, D.C.; Western Foundation of Vertebrate Zoology, Camarillo; P. Whitehead, Yale Peabody Museum, New Haven. I thank E. Couve and C. Vidal for mention of the new record in the far south of Chile. This paper benefited greatly from comments by R. Mc Farlane, R. Fraga, M. Stevens, F. Vuilleumier, and W. Wehtje.

REFERENCES

- Barria P., G. 1972. Observaciones sobre aves de la región de Dalcahue y Mocopulli en la Isla de Chiloé. *Bol. Ornitol.* 4(1): 8–12.
- Barros, O. 1954. Aves de Tarapacá. *Invest. Zool. Chil.* 2: 35–64.
- Barros V., R. 1921. Aves de la Cordillera de Aconcagua. *Rev. Chil. Hist. Nat.* 25: 167–192.
- Barros V., R. 1926. Notas ornitológicas. *Rev. Chil. Hist. Nat.* 30: 137–143.
- Barros V., R. 1930. Nuevas observaciones sobre aves de la Cordillera de Aconcagua. *Rev. Chil. Hist. Nat.* 33: 355–364.
- Barros V., R. 1943. Siete aves nuevas para la región de Maullín. *Rev. Univ. (Santiago)* 28: 21–25.
- Barros V., R. 1946. Vida y costumbres del Tordo Argentino, *Molothrus bonariensis bonariensis* (Gmelin). *Rev. Univ. (Santiago)* 31: 93–112.
- Barros V., R. 1956. El Tordo Argentino una plaga de la avifauna Chilena. *Rev. Univ. (Santiago)* 41: 89–94.
- Brown, A. J. 1971. [no title, check-list of birds of Antofagasta]. *Bol. Ornitol.* 3(2): 3–5.
- Bullock, D. S. 1929. Aves observadas en los alrededores de Angol. *Rev. Chil. Hist. Nat.* 33: 171–211.
- Bullock, D. S. 1939. Aves observadas en la región de Tolten. *Rev. Chil. Hist. Nat.* 42: 105–114.
- Bullock, D. S. 1940. La diuca de Molina. *Rev. Chil. Hist. Nat.* 43: 180–186.
- Cabezas, V. M., H. Toro, E. L. Ruz, & E. Chiappa. 1989. Contribución a la biogeografía del género *Molothrus* y extensión del rango septentrional del “Mirlo” *M. bonariensis* (Gmelin, 1789) en Chile. (Aves: Icteridae). *An. Mus. Hist. Nat. Valparaíso* 20: 81–84.
- Drouilly, P., & J. C. Ibarra. 1978. Presencia y reproducción de patos (Anseriformes) en la reserva forestal Lago Peñuelas, Valparaíso, durante 1976. *Bol. Ornitol.* 10(1–2): 6–8.
- Estades, C. F. 1997. Bird-habitat relationships in a vegetational gradient in the Andes of central Chile. *Condor* 99: 719–727.
- Fjeldsâ, J., & N. Krabbe. 1990. Birds of the high Andes. Zoological Museum, Univ. of Copenhagen, Copenhagen, & Apollo Books, Svendborg, Denmark.
- Friedmann, H. 1934. Additional notes on the birds victimized by the Shiny Cowbird (*Molothrus bonariensis*). *Ibis* 4(Ser. 13): 340–347.
- Friedmann, H., & L. F. Kiff. 1985. The parasitic

- cowbirds and their hosts. Proc. West. Found. Vert. Zool. 2: 226–302.
- González E., M., & E. Málaga A. 1997. Distribución de aves en el Valle de Majes, Arequipa, Perú. Ornitol. Neotrop. 8: 57–69.
- Goodall, J. D. A., W. Johnson, & R. A. Philippi B. 1946. Las aves de Chile su conocimiento y sus costumbres, Vol. 1. Platt Establecimientos Gráficos, Buenos Aires, Argentina.
- Hellmayr, C. E. 1932. The birds of Chile. Publ. 308, Field Mus. Nat. Hist., Zool. Ser. 19, Chicago.
- Hellmayr, C. E. 1937. Catalogue of the birds of the Americas and the adjacent islands. Publ. 381, Field Mus. Nat. Hist., Zool. Ser. Vol. XIII, part 10, Chicago.
- Høgsås, T. E., E. Málaga A., & C. Collado V. 1999. Tordo Parasítico *Molothrus bonariensis* avanzando en el sur del Perú. Cotínga 12: 76.
- Housse, R. 1925. Avifauna de San Bernardo y sus alrededores. Rev. Chil. Hist. Nat. 29: 141–150.
- Housse, R. 1940. Nota sobre la dispersión de algunas aves. Rev. Chil. Hist. Nat. 44: 32.
- Howard, R. & A. Moore. 1980. A complete checklist of the birds of the world. Oxford Univ. Press, Oxford, UK.
- Howell, S. N. G., & S. Webb. 1995. Noteworthy bird observations from Chile. Bull. Br. Ornithol. Club 115: 57–65.
- Hughes, R. A. 1970. Notes on the birds of the Mollendo district, southwest Peru. Ibis 112: 229–241.
- Hughes, R. A. 1976. Additional records of birds from the Mollendo district, coast of southwest Peru. Condor 78: 118–119.
- Jaksic A., F. 1996. Ecología de los vertebrados de Chile. Ediciones Univ. Católica de Chile, Impresos Universitaria S. A., Santiago, Chile.
- Jaffuel, P. P. F., & A. Pirion. 1927. Aves observadas en el Valle de Marga-Marga. Rev. Chil. Hist. Nat. 31: 102–115.
- Johnson, A. W. 1967. The birds of Chile and adjacent regions of Argentina, Bolivia and Peru, Vol. 2. Platt Establecimientos Gráficos, Buenos Aires, Argentina.
- Johnson, A. W., R. A. Hughes, J. D. Goodall, W. R. Millie, & G. Moffett. 1972. Supplement to the birds of Chile and adjacent regions of Argentina, Bolivia and Peru. Platt Establecimientos Gráficos, Buenos Aires, Argentina.
- Kuroda, N. 1933. A collection of birds from Chile. Tori 7: 128–147.
- Lane, A. 1897. Field notes on the birds of Chili. Ibis 3(Ser. 7): 8–51.
- Lavercombe, B. J., & C. Hill. 1972. Aves observadas en la provincia de Tarapacá, incluyendo el hallazgo de dos especies y una subespecie nuevas para Chile. Bol. Ornitol. 4(1): 1–5.
- Lowther, P., & W. Post. 1999. Shiny Cowbird (*Molothrus bonariensis*). Pp. 1–24 in Poole, A., & F. Gill (eds.). The birds of North America, no. 399. Academy of Natural Sciences, Philadelphia.
- Lucero, M. M. 1982. El anillado de aves en la República Argentina. Misc. 74, Instituto Miguel Lillo, Tucumán, Argentina.
- Marín A., M., L. Kiff, & L. Peña G. 1989. Notes on Chilean birds, with descriptions of two new subspecies. Bull. Br. Ornithol. Club 109: 66–82.
- Meyer de Schauensee, R. 1970. A guide to the birds of South America. Livingstone Publ., Wynnewood, Pennsylvania.
- Millie, W. R. 1938. Las aves del Valle del Huasco y sus alrededores (provincia de Atacama). Rev. Chil. Hist. Nat. 42: 181–205.
- Olorog, C. C. 1948. Observaciones sobre la avifauna de Tierra del Fuego y Chile. Acta Zool. Lilloana 5: 437–531.
- Päfsler, R. 1922. In der Umgebung Coronel's (Chile) beobachtete Vögel. Beschreibung der Nester und Eier der Brutvögel. J. Ornithol. 70: 430–482.
- Paynter, R. A. 1988. Ornithological gazetteer of Chile. Mus. Comp. Zool., Harvard Univ. Cambridge, Massachusetts.
- Peña, L. E. 1964. Notas ornitológicas.— Un nuevo genero de ave para Chile y nuevos records de distribución geográfica para Aysen y Magallanes. Rev. Chil. Hist. Nat. 55: 115–121.
- Peña, L. E., J. Rottmann, & G. Barria. 1964. Observaciones ornitológicas. Rev. Chil. Hist. Nat. 55: 109–114.
- Philippi, R. A., A. W. Johnson, & J. D. Goodall. 1944. Expedición ornitológica al norte de Chile. Bol. Mus. Hist. Nat. Santiago 22: 65–120.
- Rahmer, C. F. 1912. Observaciones sobre el *Molothrus bonariensis*, Gm. Bol. Mus. Hist. Nat. Santi-

- ago 4: 207–209
- Reed, C. S. 1913. Datos para la biología del *Molothrus bonariensis*. Rev. Chil. Hist. Nat. 13: 172–179.
- Reed, C. S. 1934. Las aves exóticas que viven aclimatadas en estado silvestre en algunas regiones de Chile. Publ. Oficial No 10, Jardín Zoológico Nacional, Santiago, Chile.
- Reed, E. C. 1893. Notes on the birds of Chili. Ibis 5(Ser. 7): 595–596.
- Ridgely, R., & G. Tudor. 1989. The birds of South America, Vol. 1. Univ. Texas Press, Austin, Texas.
- Risopatrón, L. 1924. Diccionario jeográfico de Chile. Imprenta Universitaria, Santiago, Chile.
- Rottman, J. 1970. Notas breves. Bol. Ornitol. 2(1): 6.
- Rottman, J. 1972. Algunas aves silvestres de los valles agrícolas inferiores a 1000 m de altitud en el departamento de Arica. Idesia 2: 59–63.
- Rottman, J., & R. Kuschel. 1970. Observaciones ornitológicas en las provincias de Antofagasta y Tarapacá. Bol. Ornitol. 2(3): 1–8.
- Sallaberry, M., J. Aguirre, & J. Yañez. 1992. Adiciones a la lista de aves de Chile: descripción de especies nuevas para el país y otros datos ornitológicos. Not. Mens. Mus. Nac. Hist. Nat. Santiago 321: 3–10.
- Schlatter, R. P. 1976. Contribución a la ornitología de la provincia de Aysen. Bol. Ornitol. 7(1): 3–18.
- Schlatter, R. P. 1978. Aves observadas en Sierra de Bellavista, prov. de Colchagua. Bol. Ornitol. 10 (1&2): 3–6.
- Schulenberg, T. S. 1987. New records of birds from western Peru. Bull. Br. Ornithol. Club 107: 184–189.
- Trimble, R. 1943. Birds collected during two cruises of the “Vagabondia” to the west coast of South America. Ann. Carnegie Mus. 29: 409–441.
- Venegas C., C. 1982. Nuevos registros ornitológicos en Magallanes. An. Inst. Patagonia 13: 183–187.
- Vuilleumier, F. 1991. Invasions in the Mediterranean avifaunas of California and Chile. Pp. 327–358 in Groves, R. H., & F. di Castri (eds.). Biogeography of Mediterranean invasions. Cambridge Univ. Press, Cambridge, New York.
- Wagenknecht, R. 1968. Observaciones botánicas y zoológicas en la región de termas de Puyehue y costa cercana de Osorno. Ans. Mus. Hist. Nat. Valparaiso 1: 179–185.
- Walter, M. 1980. The complete birds of the world. David & Charles, North Pomfret, Vermont.