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Lists of victims and hosts of the parasitic cowbirds (*Molothrus*).

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Brood parasitism is an awkward term to describe an interaction between two species in which, as in predator-prey relationships, one species gains at the expense of the other. Brood parasites "prey" upon parental care. Victimized species usually have reduced breeding success, partly because of the additional cost of caring for alien eggs and young, and partly because of the behavior of brood parasites (both adults and young) which may directly and adversely affect the survival of the victim's own eggs or young. About 1% of all bird species are brood parasites.

Host selection is an active process. Not all species co-occurring with brood parasites are equally likely to be selected nor are they of equal quality as hosts. Rather, to varying degrees, brood parasites are specialized for certain categories of hosts. Brood parasites may rely on a single host species to rear their young or may distribute their eggs among many species, seemingly without regard to any characteristics of potential hosts. Lists of species are not the best means to describe interactions between a brood parasitic species and its hosts. Such lists do not necessarily reflect the taxonomy used by the brood parasites themselves nor do they accurately reflect the complex interactions within bird communities (see Ortega 1998: 183-184). Host lists do, however, offer some insight into the process of host selection and do emphasize the wide variety of features that can impact on host selection. Of particular importance are those species known to have reared cowbird young, but even not all species within this category are of equal importance.

Criteria for host selection can be deduced only in a general sense from lists of victims, from some experiments (e.g., King 1979, White et al. 2007, White et al. 2009) and from field observations. Very little is known of those nests actually selected by individual female cowbirds but evidence is accumulating. Methods that have been used to investigate the laying patterns of Brown-headed Cowbirds have been based (1) on assumptions that eggs with similar morphology were laid by the same female especially if all eggs were found within a limited area (e.g., Friedmann 1929, Jones 1941, McGeen and McGeen 1968, Walkinshaw 1949); (2) on electrophoretic markers of egg whites (Fleischer 1984); and (3) on mtDNA fingerprinting to identify genetic parents of eggs and young (e.g., Alderson et al. 1999a, 1999b, Hahn et al. 1999, Strausberger and Ashley 2005); this latter method has been applied similarly in examining host choice for Shiny Cowbirds (e.g., Mahler et al. 2007) and for Screaming Cowbirds (e.g., Mahler et al. 2009).

Successful reproduction among brood parasites requires synchronizing egg laying with an appropriate host that will both (1) accept and incubate the interloping egg and (2) be able to rear the resultant young. Failure results when the potential host rejects the brood parasite's egg or if the potential host can neither properly incubate the parasitic egg nor provide proper care for the young. Failure results also when brood parasites cannot find an appropriate nest and lay their eggs instead on the ground or in nests of species best considered accidental hosts of no real biological significance (e.g., Blue-winged Teal as victim of Brown-headed Cowbird; see also Sealy 2015). For brood parasites, species victimized may be "good" if they can rear the parasitic young successfully or "bad" if they cannot. A three group categorization might identify (1) actual true host species, which are regularly parasitized (and perhaps actively selected) and usually able to rear parasitic young; (2) casual host species, including most victims (as defined below) and those species not regularly parasitized or only infrequently able to rear parasitic young; and (3) accidental victims, which are only rarely parasitized and would be unable to rear parasitic young.

Any response, or lack thereof, by hosts to being parasitized (or to the brood parasites themselves) has potential impact on the reproductive success for both host and brood parasite. Such co-evolutionary interactions between brood parasite and host lead to adaptations and counter-adaptations. Among brood parasites, adaptations to this mode of reproduction include mimicry of host eggs and/or young, and specialized behaviors of adult or nestling brood parasites which may reduce or eliminate intranest competition. For host species, adaptations in response to brood parasitism may include ability to recognize brood parasites as threats (and to respond aggressively to nest searching brood parasites) or to reject parasitic eggs that appear in their nests in some way (by egg ejection, egg burying or nest

abandonment).

McGeen (1972) introduced the concept of "cowbird pressure" as a measure of the impact brood parasitism may have on host species populations. McGeen's measure was determined as the mean of two values: incidence of parasitism (percent of nests parasitized) and intensity of parasitism (percent of parasitized nests that are multiply parasitized). Regardless of the best way to quantify "brood parasitism pressure", the concept has merit. These simple examples explain this concept: if 10% of nests of population A are parasitized and 20% of nests of population B, then population B has greater pressure; if 10% of nests of both populations A and B are parasitized, but population A receives 1 cowbird egg/nest and population B receives 2 cowbird eggs/nest, population B has greater cowbird pressure.

Size of host is likely another component of "pressure" since this characteristic will impact breeding success of both victim and brood parasite. Because brood parasites prey on parental care, small hosts likely exert more effort in food gathering and feeding per cowbird young than they would for any for their own young; hosts of similar size to cowbirds likely exert equal amounts of effort for both cowbird young and their own; and for hosts larger than cowbirds, hosts exert less care for cowbird young than for their own young. Size of host influences "pressure" also in affecting breeding success of host species as a result of the parasitism event itself (i.e., loss of eggs) and from intranest competition among cowbird and host nestlings (which often result in reduced host nestling survival among small hosts especially).

Amount of "pressure" borne by a host population is determined also by density of cowbird population, density of host population (as well as interactions with populations of other host species), timing of host breeding (in relation to cowbird breeding) and degree to which particular host species may be sought out or actively selected by nest searching cowbirds (due to any innate or imprinted preferences). High parasitism pressure in a population would indicate stronger selection for cowbird egg rejection by any means (such as nest desertion, egg ejection, or egg burial) as an co-evolutionary response by host species, but such response is acquired by host populations over an evolutionary time scale, not over the ecological time scale of the current breeding season.

Cowbird "pressure" is not a measure of how many cowbird young are reared but gives a measure, instead, of an impact on host species similar to measurements of predation rates. Different hosts have different abilities and attributes; host quality, in terms of successfully rearing cowbirds, is partly related to host size; larger hosts (e.g., Red-winged Blackbird, Song Sparrow, Northern Cardinal) being more capable than smaller hosts (e.g., Bell's Vireo, Willow Flycatcher). As an example, Brown-headed Cowbird total numbers can be (crudely) estimated as about 30,000,000 individuals. The following two examples show extremes in "importance" of two relatively "good" hosts (= hosts that readily accept cowbird eggs and easily raise cowbird young). Kirtland's Warblers number about 500 pairs; before cowbird control Kirtland's Warblers were under relatively high "pressure" -- about 75% parasitism rate and 1.5 cowbird eggs/nest; assuming 60% survival to fledging for cowbird eggs, Kirtland's Warblers could rear, at most, about 350 cowbird young. In contrast, Red-winged Blackbirds, perhaps the most abundant North American species comprising about 190,000,000 individuals, with a "low" rate of parasitism (5%) would fledge 16,000-times more cowbirds than would Kirtland's Warblers. (Friedmann [1963] noted 180 records of cowbird parasitism of Red-winged Blackbirds and 80 records of parasitism for Kirtland's Warbler, but in reality Red-winged Blackbirds are not 2-times more productive than Kirtland's Warblers; Friedmann's tabulations only generally indicate the importance of different host species, but the listing incorporates a variety of biases such as researcher's interest in host species, ease of study and accessibility.)

In the lists below, "**victim**" is defined simply as those species known to have received cowbird eggs in their nests (but have not necessarily reared cowbird young); and "**host**" (true host, effective host, biological host or fostering host; Johnsgard 1997) is defined as victims known to have reared cowbird young successfully. For Brown-headed Cowbird and Shiny Cowbird, with victim lists of over 200 species, many victims (unproven hosts) may prove to be true hosts as more observations and studies accumulate; victims can be easily identified as a result of a single visit to a nest containing cowbird egg(s) or young; identifying true hosts requires follow up visits to verify successful rearing of the cowbird young. Since occasionally (see Sealy and Lorenzana 1997) adults other than the host pair may feed out-of-nest cowbird young, observations only of "hosts" feeding cowbird young may not actually designate an effective host.

The basis for all of these lists is Friedmann and Kiff (1985). Species marked with an asterisk (*) have been recorded as hosts. **Bold text indicates additions to the basic lists** provided by Friedmann and Kiff (1985), **bold text for common name only** indicates former victims that can now be categorized as hosts. **Blue text codes those species with single records of parasitism** and **green text codes those**

species with fewer than 10 records (this color-coding based primarily on number of records documented in Friedmann 1963, Friedmann et al. 1977, and Friedmann and Kiff 1985); magenta text indicates those species having only circumstantial evidence of parasitism. Alphabetic footnotes comment on taxonomy; numeric footnotes comment on brood parasitism records.

Summary counts of victims and hosts of the brood parasitic cowbirds

Species	Total hosts and victims	Hosts*	<10 records	1 record	Questionable
<i>Molothrus rufoaxillaris</i>	4	4			
<i>Molothrus oryzivorus</i>	11	11 (1, 3)	1	3	
<i>Molothrus aeneus</i>	102	45 (11, 15)	26	43	3
<i>Molothrus bonariensis</i>	267	97 (19, 6)	45	38	5
<i>Molothrus ater</i>	248	172 (41, 7)	65	41	1

* - Numbers in parentheses indicate **host** reports supported by <10 or only single observations.

Molothrus

Molothrus Swainson 1832, in *Fauna Boreali-Americana; or the Zoology of the northern parts of British America: containing descriptions of the objects of natural history collected by the late northern land expeditions under command of Captain Sir John Franklin, R.N. Part Second* ["1831"], *The Birds* [William Swainson and John Richardson], p. 277

A. Hosts of the Screaming Cowbird – *Molothrus rufoaxillaris* Cassin 1866, *Proceedings of the Academy of Natural Sciences of Philadelphia*, 18, p. 23:

The Screaming Cowbird parasitizes, almost exclusively, the Bay-winged Cowbird *Agelaioides badius*, but three other species have been found also to be hosts. Key references for this species are Friedmann (1963), Sick (1985, 1993), Fraga (1986, 1996, 1998), Mermoz and Rebores (1996), de Mársico and Rebores (2008), Mahler et al. (2009), and de Mársico et al. (2010). Several other species have been erroneously described as hosts of the Screaming Cowbird based on mis-identification of eggs of the Shiny Cowbird.¹ Mistakes in either host recognition or in nest selection by female Screaming Cowbirds have produced 2 additional species that can be regarded as accidental victims: Solitary Caciue *Cacicus solitarius* and Cattle Tyrant *Machetornis rixosus* (Di Giacomo et al. 2010).^{1B}

ICTERIDAE

Austral Blackbird, *Curaeus curaeus*^{1C}

Chopi Blackbird, *Gnorimopsar chopi*

Brown-and-Yellow Marshbird, *Pseudoleistes virescens*

Bay-winged Cowbird, *Agelaioides badius*^A

B. Hosts of the Giant Cowbird – *Molothrus oryzivorus*^A (Gmelin 1788), *Systema Naturae per Regna Tria Naturae, Secundum Classes, Ordines, Genera, Species, Cum Characteribus, Differentiis, Synonymis, Locis*, 1, pt. 1, p. 386:

List of known hosts of Giant Cowbird totals 11 species – mostly caciques and oropendolas – based on Friedmann (1963) with new data in **bold face** from Robinson 1988 (adding Russet-backed Oropendola *Psarocolius angustifrons*), Jaramillo and Burke 1999 (adding, or confirming, Green Oropendola *Psarocolius viridis*), McCrary and Gates 2007 (adding single records for each of the 2 *Icterus* orioles feeding out-of-nest cowbird young), Welford et al. 2007 (adding single record for Turquoise Jay *Cyanolyca turcosa*), and Ramoni-Perazzi et al. 2010 (providing 4 additional records for Green Jay *Cyanocorax yncas*). Other large species of icterids that are sympatric with Giant Cowbird may prove to be hosts with further study; potential “new” hosts include Black Oropendola *Psarocolius guatimozinus* (suggested by W. Meise in Schönwetter 1981), Casqued Oropendola *Clypicterus oseryi* (suggested by Jaramillo and Burke 1999), and Olive Oropendola *Psarocolius [bifasciatus] yuracares*^{AA} (suggested by Fraga and Kreft 2007). [W. Meise's prediction (in Schönwetter 1981) about Russet-backed Oropendola being a host proved correct (see Robinson 1988).]

CORVIDAE

Turquoise Jay, *Cyanolyca turcosa*^{2B}

Green Jay, *Cyanocorax yncas*²

ICTERIDAE

Russet-backed Oropendola, *Psarocolius angustifrons*^{AB}

Green Oropendola, *Psarocolius viridis*³

Chestnut-headed Oropendola, *Psarocolius wagleri*

Crested Oropendola, *Psarocolius decumanus*

Montezuma Oropendola, *Psarocolius montezuma*

Yellow-rumped Cacique, *Cacicus cela*

Red-rumped Cacique, *Cacicus haemorrhous*

Spot-breasted Oriole, *Icterus pectoralis*

Streak-backed Oriole, *Icterus pustulatus*

C. Victims and hosts of the Bronzed Cowbird – *Molothrus aeneus* (Wagler 1829), Isis, oder *Encyclopaedische Zeitung, von Oken. 22. col. 758:*

List of known victims and hosts of Bronzed Cowbird based on Friedmann and Kiff (1985; see also Lowther 1995⁴, Ortega 1998) and including new data^{5,6}, in **bold face**, from Bowers and Dunning 1984, Steward et al. 1988, Clotfelter and Brush 1995, Chace 1997, Brush 1998, Russell and Monson 1998, Sealy et al. 1998, Collins 1999, J. F. Chace in Gardaldi and Ballard 2000, Flood 2002, Rothstein et al. 2003, Corman and Wise-Gervais 2005, Peer et al. 2005, Ellison et al. 2006, Ellison et al. 2007, González-García 2007 and Salgado-Ortiz et al. 2008.

COLUMBIDAE

White-winged Dove, *Zenaida asiatica*

Mourning Dove, *Zenaida macroura*

Common Ground-Dove, *Columbina passerina*

CUCULIDAE

Yellow-billed Cuckoo, *Coccyzus americanus*

TYRANNIDAE; FLUVICOLINAE

? Willow Flycatcher, *Empidonax traillii*^{7A}

? Buff-breasted Flycatcher, *Empidonax fulvifrons*^{7B}

TYRANNIDAE; TYRANNINAE

Willow Flycatcher, *Empidonax traillii*

Social Flycatcher, *Myiozetetes similis*

Great Kiskadee, *Pitangus sulphuratus*

Sulphur-bellied Flycatcher, *Myiodynastes luteiventris*

* Tropical Kingbird, *Tyrannus melancholicus*

* Couch's Kingbird, *Tyrannus couchii*

* **Western Kingbird, *Tyrannus verticalis***

Scissor-tailed Flycatcher, *Tyrannus forficatus*

TITYRIDAE

Rose-throated Becard, *Pachyramphus aglaiae*

VIREONIDAE

Slaty Vireo, *Vireo brevipennis*

Bell's Vireo, *Vireo bellii*

Plumbeous Vireo, *Vireo plumbeus*

Hutton's Vireo, *Vireo huttoni*

* **Warbling Vireo, *Vireo gilvus***

* Yellow-green Vireo, *Vireo flavoviridis*^B

CORVIDAE

* Green Jay, *Cyanocorax yncas*

TROGLODYTIDAE

* **House Wren, *Troglodytes aedon***
 Rufous-naped Wren, *Campylorhynchus rufinucha*
Sinaloa Wren, *Thryophilus sinaloa*^{B2}
 Banded Wren, *Thryophilus pleurostictus*^{B2}
 * Carolina Wren, *Thryothorus ludovicianus*
 Happy Wren, *Pheugopedius felix*^{B2}
 * Plain Wren, *Cantorchilus modestus*^{B2}
 * Bewick's Wren, *Thryomanes bewickii*
 POLIOPTILIDAE
Black-tailed Gnatcatcher, *Polioptila melanura*
 White-lored Gnatcatcher, *Polioptila albiloris*
 TURDIDAE
 Black-billed Nightingale-Thrush, *Catharus gracilirostris*
 * Orange-billed Nightingale-thrush, *Catharus aurantiirostris*
 Russet Nightingale-Thrush, *Catharus occidentalis*
 Clay-colored Robin, *Turdus grayi*
 Rufous-backed Robin, *Turdus rufopalliatu*
 MIMIDAE
 * Northern Mockingbird, *Mimus polyglottos*
 Tropical Mockingbird, *Mimus gilvus*
 * Long-billed Thrasher, *Toxostoma longirostre*
 Curve-billed Thrasher, *Toxostoma curvirostre*
 LeConte's Thrasher, *Toxostoma lecontei*^{7C}
 PARULIDAE^{D3}
Lucy's Warbler, *Oreothlypis luciae*^{D2}
 * **Olive-crowned Yellowthroat, *Geothlypis semiflava***
 * **Gray-crowned Yellowthroat, *Geothlypis poliocephala***
 * Tropical Parula, *Setophaga pitiayumi*
Yellow Warbler, *Setophaga petechia* (aestiva group)
Yellow [Mangrove] Warbler, *Setophaga petechia* (erithachorides group)
 * Golden-cheeked Warbler, *Setophaga chrysoparia*
 * **Rufous-capped Warbler, *Basileuterus rufifrons***
 Painted Redstart, *Myioborus pictus*
 * **Yellow-breasted Chat, *Icteria virens***¹¹
 THRAUPIDAE
 * Passerini's Tanager, *Ramphocelus passerinii*
 INCERTAE SEDIS
Buff-throated Saltator, *Saltator maximus*
 EMBERIZIDAE
 * Song Sparrow, *Melospiza melodia*
 * Rufous-collared Sparrow, *Zonotrichia capensis*
 Stripe-headed Sparrow, *Aimophila ruficauda*
 Black-chested Sparrow, *Aimophila humeralis*
 * **Rufous-crowned Sparrow, *Aimophila ruficeps***⁸
 * **Rusty Sparrow, *Aimophila rufescens***

Chipping Sparrow, *Spizella passerina*⁹
Lark Sparrow, *Chondestes grammacus*¹⁰
 White-collared Seedeater, *Sporophila torqueola*
 * Yellow-throated Brush-Finch, *Atlapetes gutturalis*^C
 * Olive Sparrow, *Arremonops rufivirgatus*
 * **Black-striped Sparrow, *Arremonops conirostris***
 * **Spotted Towhee, *Pipilo maculatus***
 Rusty-crowned Ground-Sparrow, *Melozone kieneri*
 * Canyon Towhee, *Melozone fusca*^{C2}
 White-throated Towhee, *Melozone albicollis*^{C2}
 * **Prevost's Ground-Sparrow, *Melozone biarcuata***
 * **White-eared Ground-Sparrow, *Melozone leucotis***
 CARDINALIDAE
 Hepatic Tanager, *Piranga flava*
 * Summer Tanager, *Piranga rubra*
Western Tanager, *Piranga ludoviciana*
 * Flame-colored Tanager, *Piranga bidentata*
 * Red-headed Tanager, *Piranga erythrocephala*
 * Red-crowned Ant-Tanager, *Habia rubica*
 Red-throated Ant-Tanager, *Habia fuscicauda*
 * **Common Bush-Tanager, *Chlorospingus ophthalmicus***
White-lined Tanager, *Tachyphonus rufus*
 Black-headed Grosbeak, *Pheucticus melanocephalus*
 * Northern Cardinal, *Cardinalis cardinalis*
 * **Pyrrhuloxia, *Cardinalis sinuatus***
 Blue Seedeater, *Amaurospiza concolor*
 Blue Grosbeak, *Passerina caerulea*^D
 Painted Bunting, *Passerina ciris*
 ICTERIDAE
 Yellow-billed Cacique, *Amblycercus holosericeus*
 Yellow-winged Cacique, *Cacicus melanicterus*
 Chestnut-headed Oropendola, *Psarocolius wagleri*
Great-tailed Grackle, *Quiscalus mexicanus*
 Black-vented Oriole, *Icterus wagleri*
 * Orchard Oriole, *Icterus [spurius] spurius*^E
 Fuertes's Oriole, *Icterus [spurius] fuertesi*^E
 * Hooded Oriole, *Icterus cucullatus*
 Streak-backed Oriole, *Icterus pustulatus*
 * **Spot-breasted Oriole, *Icterus pectoralis***
 * **Altamira Oriole, *Icterus gularis***
 * Audubon's Oriole, *Icterus graduacauda*
 * Bullock's Oriole, *Icterus bullockii*
 * **Scott's Oriole, *Icterus parisorum***
 * Red-winged Blackbird, *Agelaius phoeniceus*
 FRINGILLIDAE; CARDUELINAE
House Finch, *Haemorhous mexicanus*^{9, E2}

D. Victims and hosts of the Shiny Cowbird – *Molothrus bonariensis* (Gmelin 1789), *Systema Naturae per Regna Tria Naturae, Secundum Classes, Ordines, Genera, Species, cum Characteribus, Differentiis, Synonymis, Locis*, 1, pt. 2, p. 898:

List of known victims and hosts of Shiny Cowbird based primarily on the list in Friedmann and Kiff (1985) and incorporating 2 necessary deletions (see Fraga 2002¹²) and several additions¹³ in **bold face** (Dinelli 1918, Marchant 1960, Boggs 1961, Wiley and Wiley 1980, Salvador 1983, Salvador and Narosky 1983, Salvador and Salvador 1984, Cruz et al. 1985, Sick 1985, 1993, Beltzer 1986, Mason 1986a, 1986b, Pérez-Rivera 1986, Wood 1987, Cavalcanti and Pimentel 1988, Studer and Vieliard 1988, Cruz et al. 1989, Post et al. 1990, Debrot and Prins 1992, Mermoz and Reboresda 1994, Nores and Nores 1994, Baltz 1996, Cruz and Andrews 1997, Kattan 1997, Di Giacomo 1998, Fraga et al. 1998, Raffaele et al. 1998, López Lanús et al. 1999, A. Azpiroz in BirdLife International 2000, Marín 2000, Rochido 2001a, 2001b, Fraga 2002, Sharpe 2003, Opper et al. 2003, Latta et al. 2006, Bodrati and Fraga 2010, Gomes and Rodrigues 2010, Mauricio 2011, Salvador 2012^{13B}, Costa 2013, R. M. Fraga pers. comm., C. J. Sharpe pers. comm., G. N. Mauricio pers. comm.). See also Ortega (1998), Lowther and Post (1999), and Salvador (2012).

Little published information from Cuba on known hosts. Besides published observation of Black-whiskered Vireo *Vireo altiloquus* feeding cowbird fledgling 9 Jun 1994 (Llanes Sosa and Hernández de Armas 1995), Orlando H. Garrido (pers. comm., 19 Jun 1998) knew of only 2 species as hosts in Cuba (based on 3 observations of hosts feeding cowbird young) – Tawny-shouldered Blackbird *Agelaius humeralis* and Cuban Oriole *Icterus melanopsis* (see also Cruz et al. 1998). In addition, Cruz et al. (1989) predicted the following species (most are not included in the following list) would be found to be hosts of the Shiny Cowbird in Cuba – Cuban Vireo *Vireo gundlachi*, Zapata Wren *Ferminia cerverai*, Olive-capped Warbler *Setophaga pityophila*, Yellow-headed Warbler *Teretistris fernandinae*, Oriente Warbler *Teretistris fornsi*, Zapata Sparrow *Torreornis inexpectata*, Eastern Meadowlark *Sturnella magna*, Tawny-shouldered Blackbird *Agelaius humeralis*, Red-shouldered Blackbird *Agelaius assimilis*, and Cuban Blackbird *Dives atroviolaceus* – and the following species predicted as hosts elsewhere in the West Indies (e.g., Jamaica) – Thick-billed Vireo *Vireo crassirostris*, Jamaican White-eyed Vireo *Vireo modestus*, and Jamaican Oriole *Icterus leucopteryx*. (Expected host status was proved correct for Jamaican Oriole, see Raffaele et al. 1998).

No definite record of parasitism by this species is known yet for Florida, but Red-winged Blackbird *Agelaius phoeniceus* has been claimed to have been a Shiny Cowbird host and 3 other species (Prairie Warbler *Setophaga discolor*, Black-whiskered Vireo *Vireo altiloquus* and Northern Cardinal *Cardinalis cardinalis*) are known to have served as cowbird hosts within the Florida range of Brown-headed and Shiny Cowbirds (Paul 1989, Stevenson and Anderson 1994, Cruz et al. 1998, Cruz et al. 2000). Cruz et al. (1998; see also Cruz et al. 2000) provides evaluations of possible new host species for the Shiny Cowbird in Florida and discuss impact of parasitism on these species. Specimen taken in Georgia provides first evidence for breeding of this species in the southeastern U.S. (Sykes and Post 2001¹⁴; see also Pranty 2000).

COLUMBIDAE

Picui Ground-Dove, *Columbina picui*
Black-winged Ground-Dove, *Metriopelia melanoptera*

Zenaida Dove, *Zenaida aurita*
Eared Dove, *Zenaida auriculata*
Common Ground-Dove, *Columbina passerina*
CUCULIDAE

Dark-billed Cuckoo, *Coccyzus melacoryphus*
Guira Cuckoo, *Guira guira*

PICIDAE

Green-barred Woodpecker, *Colaptes [Chrysotilus] melanochloros*

FURNARIIDAE; FURNARIINAE

? **Olog's Cinclodes, *Cinclodes [oustaleti] ologi***
? **White-winged Cinclodes, *Cinclodes atacamensis***

* Rufous Hornero, *Furnarius rufus*
Crested Hornero, *Furnarius cristatus*
Curve-billed Reedhaunter, *Limnornis curvirostris*
Straight-billed Reedhaunter, *Limnornis rectirostris*^F

Wren-like Rushbird, *Phleocryptes melanops*
Tufted Tit-Spinetail, *Leptasthenura platensis*
Plain-mantled Tit-Spinetail, *Leptasthenura aegithaloides*
Pale-breasted Spinetail, *Synallaxis albescens*

Spix's Spinetail, *Synallaxis spixi*
 Stripe-crowned Spinetail, *Cranioleuca pyrrhophia*
 * Olive Spinetail, *Cranioleuca obsoleta*
 Rusty-backed Spinetail, *Cranioleuca vulpina*
Sulphur-bearded Spinetail, *Cranioleuca sulphurifera*
 Yellow-chinned Spinetail, *Certhiaxis cinnamomeus*
Sharp-billed Canastero, *Asthenes pyrrholeuca*
 * Short-billed Canastero, *Asthenes baeri*
 Creamy-breasted Canastero, *Asthenes dorbignyi*
 Patagonian Canastero, *Asthenes patagonica*
 Puna Canastero, *Asthenes sclateri*
 Hudson's Canastero, *Asthenes hudsoni*
 * **Cipó Canastero, *Asthenes luizae***
 Rufous-fronted Thornbird, *Phacellodomus rufifrons*
 Little Thornbird, *Phacellodomus sibilatrix*
 Streak-fronted Thornbird, *Phacellodomus striaticeps*
 * **Orange-breasted Thornbird, *Phacellodomus ferrugineigula***
 Freckle-breasted Thornbird, *Phacellodomus striaticollis*
 Greater Thornbird, *Phacellodomus ruber*
 Firewood-Gatherer, *Anumbius annumbi*^{11B}
 Lark-like Brushrunner, *Coryphistera alaudina*
 Caatinga Cacholote, *Pseudoseisura cristata*
 White-throated Cacholote, *Pseudoseisura gutturalis*
Brown Cacholote, *Pseudoseisura lophotes*
 FURNARIIDAE; DENDROCOLAPTINAE
 Straight-billed Woodcreeper, *Dendroplex picus*^{F2}
 THAMNOPHILIDAE
 Great Antshrike, *Taraba major*
 * Collared Antshrike, *Thamnophilus bernardi*^{F3}
Barred Antshrike, *Thamnophilus doliatus*
 Rufous-capped Antshrike, *Thamnophilus ruficapillus*
Variable Antshrike, *Thamnophilus caerulescens*
 RHINOCRYPTIDAE
 Crested Gallito, *Rhinocrypta lanceolata*
 TYRANNIDAE
 Yellow-bellied Elaenia, *Elaenia flavogaster*
 * **White-crested Elaenia, *Elaenia albiceps***
Small-billed Elaenia, *Elaenia parvirostris*
 * **Caribbean Elaenia, *Elaenia martinica***
 Suiriri Flycatcher, *Suiriri suiriri*
 White-crested Tyrannulet, *Serpophaga subcristata*
 Sooty Tyrannulet, *Serpophaga nigricans*
 * Warbling Doradito, *Pseudocolopteryx flaviventris*
 Flavescent Flycatcher, *Myiophobus fasciatus*
Cliff Flycatcher, *Hirundinea ferruginea*
 Vermilion Flycatcher, *Pyrocephalus rubinus*

Rufous-naped Ground-Tyrant, *Muscisaxicola rufivertex*
Grey-bellied Shrike-Tyrant, *Agriornis microptera*
 Grey Monjita, *Xolmis cinereus*
 White Monjita, *Xolmis irupero*
 * **Fire-eyed Diucon, *Xolmis pyrope***
Black-and-White Monjita, *Xolmis dominicanus*^G
 * **Short-tailed Field-Tyrant, *Muscigralla brevicauda***
 Blue-billed Black-Tyrant, *Knipolegus cyanostris*
 Plumbeous Andean-Tyrant, *Knipolegus cabanis*^{f1}
 * **Velvety Black-Tyrant, *Knipolegus nigerrimus***
 Spectacled Tyrant, *Hymenops perspicillata*
 * **Masked Water-Tyrant, *Fluvicola nengeta***
 * **Pied Water-Tyrant *Fluvicola pica*^J**
 * White-headed Marsh-Tyrant, *Arundinicola leucocephala*
 * Yellow-browed Tyrant, *Satrapa icterophrys*
 * Cattle Tyrant, *Machetornis rixosa*
 Short-crested Flycatcher, *Myiarchus ferox*
 * **Swainson's Flycatcher, *Myiarchus swainsoni***
 Brown-crested Flycatcher, *Myiarchus tyrannulus*
 * **Puerto Rico Flycatcher, *Myiarchus antillarum***
Lesser Antillean Flycatcher, *Myiarchus oberi*
 Streaked Flycatcher, *Myiodynastes maculatus*
 Baird's Flycatcher, *Myiodynastes bairdii*
 * White-bearded Flycatcher, *Phelpsia [Conopias] inornatus*
 * Great Kiskadee, *Pitangus sulphuratus*
 * **Crowned Slaty-Flycatcher, *Empidonomus aurantioatrocristatus***
 Variegated Flycatcher, *Empidonomus varius*
 * Tropical Kingbird, *Tyrannus melancholicus*
Snowy-throated Kingbird, *Tyrannus niveigularis*
Gray Kingbird, *Tyrannus dominicensis*
 * Fork-tailed Flycatcher, *Tyrannus savana*
 TITYRIDAE
 * **Black-tailed Tityra, *Tityra cayana***
 White-naped Xenopsaris, *Xenopsaris albinucha*
 White-winged Becard, *Pachyramphus polychopterus*
 COTINGIDAE
 White-tipped Plantcutter, *Phytotoma rutila*
 VIREONIDAE
 * **Rufous-browed Peppershrike, *Cyclarhis gujanensis***
 * **Puerto Rican Vireo, *Vireo latimeri***
 Red-eyed Vireo, *Vireo olivaceus*^K
 * **Black-whiskered Vireo, *Vireo altiloquus***
Rufous-crowned Greenlet, *Hylophilus poicilotis*
 Golden-fronted Greenlet, *Hylophilus aurantiifrons*
 HIRUNDINIDAE
 * **White-rumped Swallow, *Tachycineta leucorrhoa***
Brown-chested Martin, *Phaeoprogne tapera*
 TROGLODYTIDAE
 * House Wren, *Troglodytes aedon*

- * **Apolinar's Wren, *Cistothorus apolinari***
- * Bicolored Wren, *Campylorhynchus griseus*
- Thrush-like Wren, *Campylorhynchus turdinus*
- Fasciated Wren, *Campylorhynchus fasciatus*
- * **Stripe-backed Wren, *Campylorhynchus nuchalis***
- * Rufous-breasted Wren, *Pheugopedius rutilus*^{B2}
- Buff-breasted Wren, *Cantorchilus leucotis*^{B2}
- * Superciliated Wren, *Cantorchilus superciliaris*^{B2}

POLIOPTILIDAE

- * Masked Gnatcatcher, *Polioptila dumicola*

TURDIDAE

- Orange-billed Nightingale-Thrush, *Catharus aurantiirostris*

Black-billed Thrush, *Turdus ignobilis*

Chiguanco Thrush, *Turdus chiguanco*

Glossy-black Thrush, *Turdus serranus*

Andean Slaty-Thrush, *Turdus nigriceps*

Austral Thrush, *Turdus falcklandii*

- * Rufous-bellied Thrush, *Turdus rufiventris*

- * **Pale-breasted Thrush, *Turdus leucomelas***

- * Creamy-bellied Thrush, *Turdus amaurochalinus*

Bare-eyed Thrush, *Turdus nudigenis*

Red-legged Thrush, *Turdus plumbeus*

Austral Thrush, *Turdus falcklandii*

MIMIDAE

Northern Mockingbird, *Mimus polyglottos*

Tropical Mockingbird, *Mimus gilvus*

- * **Chilean Mockingbird, *Mimus thenca***

- * Long-tailed Mockingbird, *Mimus longicaudatus*

- * Chalk-browed Mockingbird, *Mimus saturninus*

- * **Patagonian Mockingbird, *Mimus patagonicus***

- * White-banded Mockingbird, *Mimus triurus*

Brown-backed Mockingbird, *Mimus dorsalis*

MONTACILLIDAE

Short-billed Pipit, *Anthus furcatus*

Yellowish Pipit, *Anthus lutescens*

Correndera Pipit, *Anthus correndera*

DULIDAE

* **Palm Chat, *Dulus dominicus***PARULIDAE^{D3}

- * Yellow Warbler, *Setophaga petechia* (petechia group)

Adelaide's Warbler, *Setophaga adelaidae*

Masked Yellowthroat, *Geothlypis aequinoctialis*

Flavescent Warbler, *Basileuterus flaveolus*

White-striped Warbler, *Basileuterus leucophrys*

THRAUPIDAE

Red-crested Cardinal, *Paroaria coronata*

Red-capped Cardinal, *Paroaria gularis*

Yellow-billed Cardinal, *Paroaria capitata*

Black-faced Tanager, *Schistochlamys melanopis*

- * **Bicolored Conebill, *Conirostrum bicolor***

- * **Cinereous Conebill, *Conirostrum cinereum***

- * **White-lined Tanager, *Tachyphonus rufus***

Ruby-crowned Tanager, *Tachyphonus coronatus*

- * **Palm Tanager, *Thraupis palmarum***

- * Blue-and-Yellow Tanager, *Thraupis bonariensis*

Crimson-backed Tanager, *Ramphocelus dimidiatus*

Brazilian Tanager, *Ramphocelus bresilius*

- * **Silver-beaked Tanager, *Ramphocelus carbo***

Blue-gray Tanager, *Thraupis episcopus*

- * **Sayaca Tanager, *Thraupis sayaca***

Golden-chevroned Tanager, *Thraupis ornata*

Scrub Tanager, *Tangara vitriolina*

- * **White-rumped Tanager, *Cypsnagra hirundinacea***

- * **White-banded Tanager, *Neothraupis fasciata***

Orange-headed Tanager, *Thlypopsis sordida*

- * **Fulvous-headed Tanager, *Thlypopsis fulviceps***¹⁵

Blue Dacnis, *Dacnis cayana*

- * **Guira Tanager, *Hemithraupis guira***

INCERTAE SEDIS

Rosy Thrush-Tanager, *Rhodinocichla rosea*

- * **Streaked Saltator, *Saltator albicollis***

- * Grayish Saltator, *Saltator coerulescens*

Green-winged Saltator, *Saltator similis*

- * Golden-billed Saltator, *Saltator aurantiirostris*

Black-throated Grosbeak, *Saltator fuliginosus*^L

Many-colored Chaco-Finch, *Saltatricula multicolor*

EMBERIZIDAE

Black-faced Grassquit, *Tiaris bicolor*

- * Rufous-collared Sparrow, *Zonotrichia capensis*

Grassland Sparrow, *Ammodramus [Myiospiza] humeralis*

Stripe-capped Sparrow, *Rhynchospiza strigiceps*^M

- * Tumbes Sparrow, *Rhynchospiza stolzmanni*^M

Patagonian Sierra-Finch, *Phrygilus patagonicus*

Black-hooded Sierra-Finch, *Phrygilus atriceps*

Plumbeous Sierra-Finch, *Phrygilus unicolor*

Ash-breasted Sierra-Finch, *Phrygilus plebejus*

- * Common Diuca-Finch, *Diuca diuca*

- * Long-tailed Reed-Finch, *Donacospiza albifrons*

- * Cinereous Finch, *Piezorhina cinerea*

Collared Warbling-Finch, *Poospiza hispaniolensis*

Ringed Warbling-Finch, *Poospiza torquata*

Cinereous Warbling-Finch, *Poospiza cinerea*

Black-capped Warbling-Finch, *Poospiza*

melanoleuca^N

- * **Black-and-Rufous Warbling-Finch, *Poospiza***

nigrorufa

Black-and-chestnut Warbling-Finch, *Poospiza*

whitii

Gray-throated Warbling-Finch, *Poospiza cabanisi*^X

Greater Yellow-Finch, *Sicalis auriventris*

Saffron Finch, *Sicalis flaveola*

Grassland Yellow-Finch, *Sicalis luteola*

Wedge-tailed Grass-Finch, *Emberizoides herbicola*

Great Pampa-Finch, *Embernagra platensis*

- * **Pale-throated Pampa-Finch, *Embernagra longicauda***
 Lined Seedeater, *Sporophila lineola*
 * Double-collared Finch, *Sporophila caerulescens*
 Ruddy-breasted Seedeater, *Sporophila minuta*
 Large-billed Seed-Finch, *Oryzoborus crassirostris*
 Lesser Seed-Finch, *Oryzoborus angolensis*
Band-tailed Seedeater, *Catamenia analis*
 Black-striped Sparrow, *Arremonops conirostris*
 Saffron-billed Sparrow, *Arremon flavirostris*
 * Ochre-breasted Brush-Finch, *Atlapetes semirufus*
 Yellow-striped Brush-Finch, *Atlapetes citrinellus*
 * **Pale-headed Brush-Finch, *Atlapetes pallidiceps***
Puerto Rican Bullfinch, *Loxigilla portoricensis*
 Lesser Antillean Bullfinch, *Loxigilla noctis*
 Yellow Cardinal, *Gubernatrix cristata*
 * **Red-crested Finch, *Coryphospingus cucullatus***
 Pileated Finch, *Coryphospingus pileatus*
 Crimson-breasted Finch, *Rhodospingus cruentus*
 CARDINALIDAE
 Hepatic Tanager, *Piranga flava*
 Yellow Grosbeak, *Pheucticus chrysopleus*
 Black-backed Grosbeak, *Pheucticus aureoventris*
 Ultramarine Grosbeak, *Cyanocompsa brissonii*^P
 ICTERIDAE
 * **Red-winged Blackbird, *Agelaius phoeniceus***¹⁶
Tawny-shouldered Blackbird, *Agelaius humeralis*¹⁷
 * Yellow-shouldered Blackbird, *Agelaius xanthomus*
 * Yellow-winged Blackbird, *Agelasticus thilius*^Q
 Unicolored Blackbird, *Agelasticus cyanopus*^Q
 * Chestnut-capped Blackbird, *Chrysomus ruficapillus*^Q
 * **Yellow-hooded Blackbird, *Chrysomus icterocephalus***^Q
 * **Saffron-cowled Blackbird, *Xanthopsar flavus***
 Oriole Blackbird, *Gymnomystax mexicanus*
 * **Forbes's Blackbird, *Curaeus forbesi***
 Golden-tufted Grackle, *Macroagelaius imthurni*
 * **Chopi Blackbird, *Gnorimopsar chopi***
 * Red-breasted Blackbird, *Sturnella [Leistes] militaris*^R
Peruvian Meadowlark, *Sturnella [Leistes] bellicosa*
- * **White-browed Blackbird, *Sturnella [Leistes] superciliaris***
 Pampas Meadowlark, *Sturnella [Pezites] defilippii*^R
 * **Long-tailed Meadowlark, *Sturnella [Pezites] loyca***
 * **Brown-and-Yellow Marshbird, *Pseudoleistes virescens***
 ? **Yellow-rumped Marshbird, *Pseudoleistes guirahuro***¹⁸
 * Scrub Blackbird, *Dives warszewiczi*
 * **Greater Antillean Grackle, *Quiscalus niger***
 * Carib Grackle, *Quiscalus lugubris*
 * **Grayish Baywing, *Agelaioides badius***^A
 * **Pale Baywing, *Agelaioides fringillarius***^A
 Bahama Oriole, *Icterus northropi*^S
 * **Cuban Oriole, *Icterus melanopsis***^S
Hispaniolan Oriole, *Icterus dominicensis*^S
 * **Puerto Rican Oriole, *Icterus portoricensis***^S
 * **St. Lucia Oriole, *Icterus laudabilis***
 Martinique Oriole, *Icterus bonana*
 Epaulet Oriole, *Icterus cayanensis*
 Monriche Oriole, *Icterus chrysocephalus*
 Yellow-backed Oriole, *Icterus chrysater*
 * **Venezuelan Troupial, *Icterus [icterus] icterus***
 Campo Troupial, *Icterus [icterus] jamaicaii*
 Orange-backed Troupial, *Icterus [icterus] croconotus*
 * **Yellow Oriole, *Icterus nigrogularis***
Jamaican Oriole, *Icterus leucopteryx*
 * White-edged Oriole, *Icterus graceannae*
Orange-crowned Oriole, *Icterus auricapillus*
 Yellow-billed Cacique, *Amblyramphus holosericeus*
 Yellow-rumped Cacique, *Cacicus cela*
 * **Golden-winged Cacique, *Cacicus chrysopterus***
 ? **Solitary Cacique, *Cacicus solitarius***^{19, T}
 FRINGILLIDAE; CARDUELINAE
 * **Hooded Siskin, *Spinus magellanicus***
 Black-chinned Siskin, *Spinus barbata*
 PASSERIDAE
 House Sparrow, *Passer domesticus*
 PLOCEIDAE
 * **Village Weaver, *Ploceus cucullatus***
 ESTRILDIDAE
 Bronze Mannikin, *Lonchura cucullata*
 Nutmeg Mannikin, *Lonchura punctulata*

E. Victims and hosts of the Brown-headed Cowbird – *Molothrus ater* (Boddaert 1783), *Table des Planches Enluminées* [sic] *d'Histoire Naturelle de M. D'Aubenton* [sic], p. 37:

List of known victims and hosts of Brown-headed Cowbird based on Friedmann and Kiff (1985) with additions²⁰, in **bold face**, from Terrill 1961, Bailey and Niedrach 1965, Svedarsky 1979, Woodward and Woodward 1979, Dolan and Wright 1984, Laubach 1984, Miles 1986, Picman 1986,

Shambaugh 1987, Gaines 1988, Paul 1989, De Geus and Best 1991, Martin and Barber 1995, Chace and Cruz 1996, Webb and Bock 1996, Campbell et al. 1997, 2001, Brush 1998, Davis and Sealy 1998, 2000, Groschupf and Thompson 1998, Withgott and Smith 1998, Ellison 1999, Koons 2000, Herkert et al. 2001, Johnson et al. 2002, Smith and Jackson 2002, Truan 2003, Mollhoff 2004, Vega Rivera et al. 2004, Corman and Wise-Gervais 2005, Reetz et al. 2008 and Ellison and Gagliardi 2008.

ANATIDAE

Blue-winged Teal, *Anas discors*

Lesser Scaup, *Aythya affinis*

Hooded Merganser, *Lophodytes cucullatus* ^{21A}

PHASIANIDAE; TETRAONINAE

Greater Prairie-Chicken, *Tympanuchus cupido*

ACCIPITRIDAE

Ferruginous Hawk, *Buteo regalis*

RALLIDAE

Virginia Rail, *Rallus limicola*

CHARADRIIDAE

Killdeer, *Charadrius vociferus*

SCOLOPACIDAE

Spotted Sandpiper, *Actitis macularia*

Upland Sandpiper, *Bartramia longicauda*

Wilson's Phalarope, *Phalaropus tricolor*

LARIDAE

California Gull, *Larus californicus*

Common Tern, *Sterna hirundo*

COLUMBIDAE

Mourning Dove, *Zenaida macroura* ²¹

Common Ground-Dove, *Columbina passerina*

CUCULIDAE

Black-billed Cuckoo, *Coccyzus erythrophthalmus*

Yellow-billed Cuckoo, *Coccyzus americanus*

TROCHILIDAE

Ruby-throated Hummingbird, *Archilochus colubris*

PICIDAE

Red-headed Woodpecker, *Melanerpes erythrocephalus*

TYRANNIDAE; FLUVICOLINAE

* Olive-sided Flycatcher, *Contopus cooperi* ^U

* Western Wood-Pewee, *Contopus sordidulus*

* Eastern Wood-Pewee, *Contopus virens*

Yellow-bellied Flycatcher, *Empidonax flaviventris*

* Acadian Flycatcher, *Empidonax virescens*

* Alder Flycatcher, *Empidonax alnorum*

* Willow Flycatcher, *Empidonax traillii*

Least Flycatcher, *Empidonax minimus*

Hammond's Flycatcher, *Empidonax hammondii*

* Gray Flycatcher, *Empidonax wrightii*

* Dusky Flycatcher, *Empidonax oberholseri*

* Pacific Slope Flycatcher, *Empidonax difficilis*

* **Cordilleran Flycatcher, *Empidonax occidentalis***

Buff-breasted Flycatcher, *Empidonax fulvifrons*

Black Phoebe, *Sayornis nigricans*

* Eastern Phoebe, *Sayornis phoebe*

Say's Phoebe, *Sayornis saya*

* Vermilion Flycatcher, *Pyrocephalus rubinus*

TYRANNIDAE; TYRANNINAE

Great Crested Flycatcher, *Myiarchus crinitus*

Cassin's Kingbird, *Tyrannus vociferans*

* Western Kingbird, *Tyrannus verticalis*

* Eastern Kingbird, *Tyrannus tyrannus*

* **Gray Kingbird, *Tyrannus dominicensis*** ²²

* Scissor-tailed Flycatcher, *Tyrannus forficatus*

LANIIDAE

* **Loggerhead Shrike, *Lanius ludovicianus***

VIREONIDAE

Slaty Vireo, *Vireo brevipennis*

* White-eyed Vireo, *Vireo griseus*

Flat-billed Vireo, *Vireo nanus*

* Bell's Vireo, *Vireo bellii*

* Black-capped Vireo, *Vireo atricapilla*

* **Gray Vireo, *Vireo vicinior***

* Yellow-throated Vireo, *Vireo flavifrons*

* Plumbeous Vireo, *Vireo plumbeus*

* Cassin's Vireo, *Vireo cassinii*

* Blue-headed Vireo, *Vireo solitarius*

* Hutton's Vireo, *Vireo huttoni*

* Warbling Vireo, *Vireo gilvus*

* Philadelphia Vireo, *Vireo philadelphicus*

* Red-eyed Vireo, *Vireo olivaceus*

Yellow-green Vireo, *Vireo flavoviridis* ^B

* **Black-whiskered Vireo, *Vireo altiloquus***

CORVIDAE

Blue Jay, *Cyanocitta cristata*

American Crow, *Corvus brachyrhynchos*

ALAUDIDAE

* Horned Lark, *Eremophila alpestris*

HIRUNDINIDAE

Purple Martin, *Progne subis* ²³

* Tree Swallow, *Tachycineta bicolor*

Bank Swallow, *Riparia riparia*

Cliff Swallow, *Petrochelidon pyrrhonota*

* Barn Swallow, *Hirundo rustica*

PARIDAE

* Carolina Chickadee, *Poecile carolinensis*

* Black-capped Chickadee, *Poecile atricapillus*

* **Mountain Chickadee, *Poecile gambeli***

Tufted Titmouse, *Baeolophus bicolor*

Black-crested Titmouse, *Baeolophus atricristatus*

REMIZIDAE

* *Verdin, Auriparus flaviceps*

AEGITHALIDAE

* *Bushtit, Psaltriparus minimus*

SITTIDAE

* *Red-breasted Nuthatch, Sitta canadensis*
White-breasted Nuthatch, Sitta carolinensis

Brown-headed Nuthatch, Sitta pusilla

CERTHIDAE

* *Brown Creeper, Certhia familiaris*

TROGLODYTIDAE

Boucard's Wren, Campylorhynchus jocosus

* *Rock Wren, Salpinctes obsoletus*

* *Carolina Wren, Thryothorus ludovicianus*

* *Bewick's Wren, Thyomanes bewickii*

* *House Wren, Troglodytes aedon*

Marsh Wren, Cistothorus palustris

* *Sedge Wren, Cistothorus platensis*²⁴

REGULIDAE

* *Golden-crowned Kinglet, Regulus satrapa*

* *Ruby-crowned Kinglet, Regulus calendula*

POLIOPTILIDAE

* *Blue-gray Gnatcatcher, Polioptila caerulea*

* *California Gnatcatcher, Polioptila californica*^v

* *Black-tailed Gnatcatcher, Polioptila melanura*^v

* *Black-capped Gnatcatcher, Polioptila nigriceps*²⁵

White-lored Gnatcatcher, Polioptila albiloris

TURDIDAE

* *Eastern Bluebird, Sialia sialis*

* *Western Bluebird, Sialia mexicana*

* *Mountain Bluebird, Sialia currucoides*²⁶

* *Townsend's Solitaire, Myadestes townsendi*

* *Veery, Catharus fuscescens*

* *Swainson's Thrush, Catharus ustulatus*

* *Hermit Thrush, Catharus guttatus*

* *Wood Thrush, Hylocichla mustelina*

* *American Robin, Turdus migratorius*

Varied Thrush, Ixoreus naevius

TIMALIIDAE

* *Wrentit, Chamaea fasciata*

MIMIDAE

* *Gray Catbird, Dumetella carolinensis*

Curve-billed Thrasher, Toxostoma curvirostre

* *Brown Thrasher, Toxostoma rufum*

Long-billed Thrasher, Toxostoma longirostre

Bendire's Thrasher, Toxostoma bendirei

Sage Thrasher, Oreoscoptes montanus

* *Northern Mockingbird, Mimus polyglottos*

STURNIDAE

* *European Starling, Sturnus vulgaris*

MONTACILLIDAE

* *Sprague's Pipit, Anthus spragueii*

BOMBYCILLIDAE

Bohemian Waxwing, Bombycilla garrulus

* *Cedar Waxwing, Bombycilla cedrorum*

PTILOGONATIDAE

* *Phainopepla, Phainopepla nitens*

PEUCEDRAMIDAE

* *Olive Warbler, Peucedramus taeniatus*

CALCARIIDAE

McCown's Longspur, Rhynchophanes mccownii^{W4}

* *Chestnut-collared Longspur, Calcarius ornatus*

PARULIDAE^{D3}

* *Ovenbird, Seiurus aurocapilla*

* *Worm-eating Warbler, Helmitheros vermivorum*

* *Northern Waterthrush, Parkesia noveboracensis*^W

* *Louisiana Waterthrush, Parkesia motacilla*^W

* *Blue-winged Warbler, Vermivora cyanoptera*^{v2}

* *Golden-winged Warbler, Vermivora chrysoptera*

* *Black-and-white Warbler, Mniotilta varia*

* *Prothonotary Warbler, Protonotaria citrea*

* *Swainson's Warbler, Limnethlypis swainsonii*

* *Tennessee Warbler, Oreothlypis peregrina*^{D2}

* *Orange-crowned Warbler, Oreothlypis celata*^{D2}

* *Nashville Warbler, Oreothlypis ruficapilla*^{D2}

* *Virginia's Warbler, Oreothlypis virginiae*^{D2}

* *Lucy's Warbler, Oreothlypis luciae*^{D2}

Gray-crowned Yellowthroat, Geothlypis poliocephala

* *MacGillivray's Warbler, Geothlypis tolmiei*

* *Mourning Warbler, Geothlypis philadelphia*

* *Kentucky Warbler, Geothlypis formosa*

* *Common Yellowthroat, Geothlypis trichas*

* *Hooded Warbler, Setophaga citrina*

* *American Redstart, Setophaga ruticilla*

* *Kirtland's Warbler, Setophaga kirtlandii*

* *Cape May Warbler, Setophaga tigrina*²⁷

* *Cerulean Warbler, Setophaga cerulea*

* *Northern Parula, Setophaga americana*

* *Topical Parula, Setophaga pitiayumi*

* *Magnolia Warbler, Setophaga magnolia*

* *Bay-breasted Warbler, Setophaga castanea*

* *Blackburnian Warbler, Setophaga fusca*

* *Yellow Warbler, Setophaga petechia (aestiva group)*

* *Chestnut-sided Warbler, Setophaga pensylvanica*

* *Blackpoll Warbler, Setophaga striata*

* *Black-throated Blue Warbler, Setophaga caerulescens*

* *Palm Warbler, Setophaga palmarum*

* *Pine Warbler, Setophaga pinus*

* *Yellow-rumped Warbler, Setophaga coronata*

* *Yellow-throated Warbler, Setophaga dominica*

* *Prairie Warbler, Setophaga discolor*

* *Grace's Warbler, Setophaga graciae*

* *Black-throated Gray Warbler, Setophaga nigrescens*

* *Townsend's Warbler, Setophaga townsendi*

- * Hermit Warbler, *Setophaga occidentalis*
- * Golden-cheeked Warbler, *Setophaga chrysoparia*
- * Black-throated Green Warbler, *Setophaga virens*
- * Canada Warbler, *Cardellina canadensis*
- * Wilson's Warbler, *Cardellina pusilla*
- * **Red-faced Warbler, *Cardellina rubrifrons***
- Painted Redstart, *Myioborus pictus***
- * Yellow-breasted Chat, *Icteria virens*
- EMBERIZIDAE
- White-collared Seedeater, *Sporophila torqueola***
- Olive Sparrow, *Arremonops rufivirgatus***
- Rusty-crowned Ground-Sparrow, *Melospiza kieneri*
- * Canyon Towhee, *Melospiza fusca*^{C2}
- * California Towhee, *Melospiza crissalis*^{C2}
- * Abert's Towhee, *Melospiza aberti*^{C2}
- * **Green-tailed Towhee, *Pipilo chlorurus***
- * Spotted Towhee, *Pipilo maculatus*
- * Eastern Towhee, *Pipilo erythrophthalmus*
- * Rufous-winged Sparrow, *Peucaea carpalis*^{W2}
- Botteri's Sparrow, *Peucaea botterii***^{W2}
- Cassin's Sparrow, *Peucaea cassinii***^{W2}
- * **Bachman's Sparrow, *Peucaea aestivalis***^{W2}
- * **Rufous-crowned Sparrow, *Aimophila ruficeps***
- * **Five-striped Sparrow, *Amphispiza quinquestriata***^{W3}
- * Chipping Sparrow, *Spizella passerina*
- * Clay-colored Sparrow, *Spizella pallida*
- * Brewer's Sparrow, *Spizella breweri*
- * Field Sparrow, *Spizella pusilla*
- Black-chinned Sparrow, *Spizella atrogularis*
- * Vesper Sparrow, *Poocetes gramineus*
- * Lark Sparrow, *Chondestes grammacus*
- * **Black-throated Sparrow, *Amphispiza bilineata***
- Sagebrush Sparrow, *Artemisospiza nevadensis***^{W3}
- Bell's Sparrow, *Artemisospiza belli***^{W3}
- * **Lark Bunting, *Calamospiza melanocorys***
- * Savannah Sparrow, *Passerculus sandwichensis*
- * Grasshopper Sparrow, *Ammodramus savannarum*
- * **Baird's Sparrow, *Ammodramus bairdii***
- Henslow's Sparrow, *Ammodramus henslowii*
- * LeConte's Sparrow, *Ammodramus leconteii*
- * **Nelson's Sparrow, *Ammodramus nelsoni***²⁸
- * **Seaside Sparrow, *Ammodramus maritimus***
- * **Fox Sparrow, *Passerella iliaca***
- * Song Sparrow, *Melospiza melodia*
- * Lincoln's Sparrow, *Melospiza lincolni*
- * Swamp Sparrow, *Melospiza georgiana*
- * White-throated Sparrow, *Zonotrichia albicollis*
- * White-crowned Sparrow, *Zonotrichia leucophrys*
- * Dark-eyed Junco, *Junco hyemalis*
- CARDINALIDAE
- * Summer Tanager, *Piranga rubra*
- * Scarlet Tanager, *Piranga olivacea*
- * **Western Tanager, *Piranga ludoviciana***
- * Northern Cardinal, *Cardinalis cardinalis*
- Pyrrhuloxia, *Cardinalis sinuatus*
- * Rose-breasted Grosbeak, *Pheucticus ludovicianus*
- * **Black-headed Grosbeak, *Pheucticus melanocephalus***
- * Blue Grosbeak, *Passerina caerulea*^D
- * Lazuli Bunting, *Passerina amoena*
- * Indigo Bunting, *Passerina cyanea*
- * **Varied Bunting, *Passerina versicolor***
- * Painted Bunting, *Passerina ciris*
- * Dickcissel, *Spiza americana*
- ICTERIDAE
- * Bobolink, *Dolichonyx oryzivorus*
- * Red-winged Blackbird, *Agelaius phoeniceus*
- Tricolored Blackbird, *Agelaius tricolor***
- * Eastern Meadowlark, *Sturnella [Sturnella] magna*
- * **Western Meadowlark, *Sturnella [Sturnella] neglecta***
- Yellow-headed Blackbird, *Xanthocephalus xanthocephalus*
- Rusty Blackbird, *Euphagus carolinus***
- * Brewer's Blackbird, *Euphagus cyanocephalus*
- Common Grackle, *Quiscalus quiscula*
- * Orchard Oriole, *Icterus [spurius] spurius*
- * Hooded Oriole, *Icterus cucullatus*
- Altamira Oriole, *Icterus gularis***²⁹
- Audubon's Oriole, *Icterus graduacauda*
- * Baltimore Oriole, *Icterus galbula*
- * **Bullock's Oriole, *Icterus bullockii***
- Scott's Oriole, *Icterus parisorum***
- FRINGILLIDAE; CARDUELINAE
- Gray-crowned Rosy-Finch, *Leucosticte tephrocotis***
- * Purple Finch, *Haemorhous purpureus*^{E2}
- * House Finch, *Haemorhous mexicanus*^{E2}
- Cassin's Finch, *Haemorhous cassinii***^{E2}
- Red Crossbill, *Loxia curvirostra***
- Common Redpoll, *Acanthis flammea***
- Pine Siskin, *Spinus pinus*^{29A}
- Lesser Goldfinch, *Spinus psaltria*^{29B}
- Lawrence's Goldfinch, *Spinus lawrencei***
- American Goldfinch, *Spinus tristis*^{29C}
- Evening Grosbeak, *Coccothraustes vespertinus***^{29D}
- PASSERIDAE
- * House Sparrow, *Passer domesticus*

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TAXONOMIC NOTES:

- A. Lanyon (1992; see also Johnson and Lanyon 1999, Lanyon and Omland 1999) demonstrated that among the 6 species of "cowbirds," the brood parasitic species form a holophyletic group. The Giant Cowbird, formerly *Scaphidura oryzivora*, therefore, is included in *Molothrus* and becomes *Molothrus oryzivorus*. The Bay-winged Cowbird, formerly *Molothrus badius*, is removed from *Molothrus* and treated as *Agelaioides badius* (see Jaramillo and Burke 1999). The Bay-winged Cowbird forms clade with the Bolivian Blackbird *Oreopsar bolivianus*; Johnson and Lanyon (1999) suggested placing the Bay-winged Cowbird in the same genus as Bolivian Blackbird, but if this is done, Bolivian Blackbird becomes *Agelaioides oreopsar* (see Lowther 2001). *Agelaioides badius fringillarius* of eastern Brazil is possibly specifically distinct from other forms of *Agelaioides badius* (see Jaramillo and Burke 1999; Fraga and D'Angelo Neto 2014, R. M. Fraga pers. comm.). See also American Ornithologists' Union 2000.
- American Ornithologists' Union. 2000. Forty-second supplement to the American Ornithologists' Union *Check-list of North American Birds*. *Auk* 117: 847-858.
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- Lowther, P. E. 2001. New name for the Bolivian Blackbird. *Bulletin of the British Ornithologists' Club* 121: 280-281.
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- AA This form of *Psarocolius bifasciatus* sometimes treated as separate species (Jaramillo and Burke 1999)
- AB The form *Psarocolius angustifrons alfredi* sometimes treated as separate species (Jaramillo and Burke 1999, who report also that this taxon is a cowbird host).
- B. Sometimes considered subspecies of Red-eyed Vireo, *Vireo olivaceus*.
- B2. Formerly placed in the genus *Thryothorus*
- C. All host records of this taxon from Costa Rica. *Atlapetes gutturalis* sometimes considered conspecific with White-naped Brush-Finch *Atlapetes albinucha* of Mexico. Host taxa listed as *Atlapetes gutturalis parvirostris* in Friedmann (1963) and as *Atlapetes albinucha parvirostris* and *Atlapetes albinucha brunnescens* in Friedmann and Kiff (1985).
- C2 Formerly placed in the genus *Pipilo*.
- D. Sometimes placed in monotypic genus *Guiraca*.
- D2 Formerly included in the genus *Vermivora*.
- D3 Taxonomy of Parulidae follows Chesser et al. 2011: *Wilsonia citrina*, *Parula* and *Dendroica* merged into *Setophaga*;

Oporornis tolmiei, *Oporornis philadelphia* and *Oporornis formosus* moved into *Geothlypis*; *Wilsonia pusilla* and *Wilsonia canadensis* moved into *Cardellina*.

- Chesser, R. T., R. C. Banks, F. K. Barker, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, P. C. Rasmussen, J. V. Remsen Jr., J. D. Rising, D. F. Stotz and K. Winker. 2011. Fifty-second supplement to the American Ornithologists' Union *Check-list of North American Birds*. Auk 128: 600-613.
- E. Both *Icterus spurius spurius* and *Icterus spurius fuertesi* as listed as hosts of Bronzed Cowbird (Friedmann and Kiff 1985); these forms sometimes considered separate species (see Baker et al. 2003).
- Baker, J. M., E. López-Medrano, A. G. Navarro-Sigüenza, O. R. Rojas-Sota and K. E. Omland. 2003. Recent speciation in the Orchard Oriole group: divergence of *Icterus spurius spurius* and *Icterus spurius fuertesi*. Auk 120: 848-859.
- E2. Formerly placed in the genus *Carpodacus*
- F. Sometimes treated as *Limnornis rectirostris*.
- F2. Formerly included in *Xiphorhynchus*
- F3. Formerly included in *Sakesphorus*
- G. Sometimes treated as *Heteroxolmis dominicana*
- H. Sometimes considered conspecific with Andean Tyrant, *Knipolegus signatus*.
- J. Includes Black-backed Water-Tyrant, *Fluvicola albiventer*.
- K. Includes Chivi Vireo, *Vireo chivi*.
- L. Sometimes treated as *Pitylus fuliginosus*
- M. Formally treated sometimes in *Aimophila*; but *Aimophila* sensu lato polyphyletic; *Rhynchospiza* comprise the South American "Aimophila".
- N. Sometimes considered subspecies of Cinereous Warbling-Finch, *Poospiza cinerea*; if the forms *cinerea* and *melanoleuca* are lumped, however, the name *melanoleuca* has priority (Ridgely and Tudor 1989).
- Ridgely, R. S., and G. Tudor. 1989. The birds of South America, vol. 1. The oscine passerines. University of Texas Press, Austin, TX.
- P. The name *Loxia cyanea* Linnaeus 1758, which refers to this species, has been suppressed.
- Q. *Agelaius*, as used by Sclater (1886), Blake (1968) and Sibley and Monroe (1990), has been shown to be a polyphyletic taxon (see Lanyon 1994, Lanyon and Omland 1999, Johnson and Lanyon 1999). Cladistic analyses, based on mtDNA sequencing of 879 base-pair sequence of cyt-b and 1035 bases of ND2, show that the species of the traditional *Agelaius* form 3 separate clades –identified here as the genera *Agelaius*, *Agelasticus* and *Chrysomus* (see Lowther et al. 2004).
- Blake, E. R. 1968. Family Icteridae, pp. 138 - 202. In *Check-list of birds of the world*, vol. 14 (R. A. Paynter, Jr., ed.). Museum of Comparative Zoology, Cambridge, MA.
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- Sclater, P. L. 1886. Catalogue of the birds in the British Museum. Vol. XI. Catalogue of the Passeriformes, or perching birds, in the collection of the British Museum. Fringilliformes: Part II. Containing the families Cœrebidæ, Tanagridæ, and Icteridæ. British Museum, London.
- Sibley, C. G., and B. L. Monroe, Jr. 1990. Distribution and taxonomy of birds of the world. Yale University Press, New Haven, CT.
- R. *Sturnella*, here, includes both *Leistes* and *Pezites*; if *Leistes* retained as distinct from *Sturnella*, then taxon known here as *Sturnella militaris* becomes *Leistes militaris* and *Sturnella defilippi* (formerly treated as *Pezites militaris*) becomes *Sturnella militaris*.

- S. Taxonomic note about *Icterus dominicensis*. Phylogenetic studies of *Icterus* by Omland et al. (1999) show *Icterus dominicensis* to be polyphyletic: 3 lineages include (a) *Icterus dominicensis prosthemelas* of Central America [and becoming *Icterus prosthemelas*, Black-cowled Oriole, American Ornithologists' Union 2000] ; (b) *Icterus dominicensis melanopsis* of Cuba and *Icterus dominicensis northropi* of Bahamas; and (c) *Icterus dominicensis portoricensis* of Puerto Rico.
- Garrido et al. (2005) review various aspects of the biology of endemic *Icterus* species of the West Indies and conclude that these forms comprise a superspecies represented by *Icterus northropi* (found on Andros and Abaco), *Icterus melanopsis* (found on Cuba, Isla de Pinos, and some northern keys), *Icterus dominicensis* (found on Hispaniola, including Île de la Gonâve, Île de la Tortue, Île-à-Vache, and Isla Saona), *Icterus portoricensis* (found on Puerto Rico), *Icterus oberi* (found on Montserrat), *Icterus bonana* (found on Martinique), and *Icterus laudabilis* (found on St. Lucia).
- American Ornithologists' Union. 2000. Forty-second supplement to the American Ornithologists' Union *Check-list of North American Birds*. Auk 117: 847-858.
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- T Fraga (2005) proposed a new genus for the Solitary Cacique – *Procacicus* ; this proposal was not supported by the South American Classification Committee of the American Ornithologists' Union .
- Fraga, R. M. 2005. A new generic name for the Solitary Cacique. *Bulletin of the British Ornithologists' Club* 125: 286-287.
- U. The name *Contopus cooperi*, which refers to this species, has priority over *Contopus borealis*.
- V. California Gnatcatcher, *Poliophtila californica*, and Black-tailed Gnatcatcher, *Poliophtila melanura*, formerly considered conspecific.
- V2. Formerly known as *Vermivora pinus*.
- W. Formerly placed in the genus *Seiurus*.
- W2 Formerly placed in the genus *Aimophila*.
- W3 Formerly placed in the genus *Aimophila*; former taxon *Artemisiospiza belli* considered now to comprise the interior *Artemisiospiza nevadensis* and coastal *Artemisiospiza belli*.
- W4 Formerly placed in the genus *Calcaricus*.
- X. *Poospiza cabanisi* has usually been treated as subspecies of *Poospiza lateralis* – and was treated as such in Friedmann and Kiff 1985 – but see Assis et al. (2007) and Remsen et al. (2009).
- Assis, C. P., M. A. Raposo & R. Parrini. 2007. Validação de *Poospiza cabanisi* Bonaparte, 1850 (Passeriformes: Emberizidae). *Revista Brasileira de Ornitologia* 15(1): 103-112.
- Remsen, J. V., Jr., C. D. Cadena, A. Jaramillo, M. Nores, J. F. Pacheco, M. B. Robbins, T. S. Schulenberg, F. G. Stiles, D. F. Stotz, and K. J. Zimmer. Version 20 Oct 2009. A classification of the bird species of South America. American Ornithologists' Union. <http://www.museum.lsu.edu/~Remsen/SACCBaseline.html>

NOTES:

1. These supposed hosts of Screaming Cowbird (and initial references) are Chalk-browed Mockingbird *Mimus saturninus* and Yellow-winged Blackbird *Agelasticus thilius* (Grant 1912); Rufous Hornero *Furnarius rufus*, Great Antshrike *Taraba major*, Great Kiskadee *Pitangus sulphuratus*, Rufous-bellied Thrush *Turdus rufiventris*, and Saffron Finch *Sicalis flaveola [pelzelni]* (Pereyra 1938). Friedmann (1963) indicated these species were thought hosts of Screaming Cowbird because of misidentified Shiny Cowbird *Molothrus bonariensis* eggs; both Mason (1980) and Fraga (1986) concur with this opinion. Those egg sets reported by Pereyra as documenting Screaming Cowbird parasitism were examined by Fraga (1986) who found only 1 of the 12 records apparently correct. This possibly correctly identified host is of a Rufous Hornero *Furnarius rufus* set taken 28 Nov 1931 at Manchala, Tucuman, Argentina, by P. Girard and consists of 2 host eggs and 1 "Screaming Cowbird" egg.
- Red-fronted Thornbird *Phacellodomus rufifrons* listed as host in Ortega (1998); she cited Hoy and Ottow (1964) as her source, apparently on basis of their seemingly clear statement that: "Screaming Cowbird. *Molothrus rufo-axillaris*. -- ... frequently parasitizes the large, clearly visible nests of the Red-fronted Thorn-bird *Phacellodomus rufifrons*. (p. 190)" The meaning here, I believe, was that Screaming Cowbirds parasitized Bay-winged Cowbirds nesting in the nests of the thornbird. Throughout Hoy and Ottow's paper, Screaming Cowbirds were treated as a

- specialist brood parasite that parasitized only Bay-winged Cowbirds, as Screaming Cowbirds were known at the time.
- 1B. Two species best treated as accidental victims of the Screaming Cowbird (Di Giacomo et al. 2010): a) one nest of Solitary Cacique, *Cacicus solitarius*, which had been investigated by Bay-winged Cowbirds, received 1 Screaming Cowbird egg after caciques had abandoned the nest without laying any eggs; Bay-winged Cowbirds (an usual host for Screaming Cowbirds) do sometimes usurp cacique nests. This egg was of H5 haplotype which had been limited to cowbirds parasitizing Chopi Blackbirds. b) one nest of Cattle Tyrant, *Machetornis rixosus* -- located < 1 m from an active Chopi Blackbird nest which had been parasitized -- received 3 Screaming Cowbird eggs; 1 of these eggs hatched, but the young died; 1 of the unhatched eggs was H1 haplotype (which has been known in both 18 Bay-wing and 7 Chopi Blackbird nests).
- 1C. Comment in NEOORN-L, 11 Dec 2014 from Alvaro Jaramillo addressed to Sebastian K. Herzog regarding "Subject: Re: Chopi Blackbird as Screaming Cowbird host in Bolivia"
 "... In Chile Screaming Cowbirds have begun to colonize in an area several hundred km south of Santiago. They were first detected about three years ago when a "baywing" was seen hanging with a flock of Austral Blackbirds. We surmised it was actually a juvenile Screaming and the Austral Blackbirds were the hosts. This has been confirmed now, and Screaming Cowbirds have been detected at several sites. So not only did the species hop across the Andes, it also has found some success with a brand new species of host!! We will be monitoring this situation, and if any grad students working on cowbirds are listening, this would be a great study of the use of a new host, as well as range and expansion into new habitats by a brood parasite!"
2. Green Jay included as host based on report by Lehmann (1960) of adult jays feeding out of nest cowbird young. Four additional observations of Green Jays as a host presented by Ramoni-Perazzi et al. (2010).
- 2B. Turquoise Jay included as host based on report by Welford et al. (2007) of observations made of 2 cowbird young cared for by jays from Feb to Jun 2005 as nestlings and later as out-of-nest young.
3. Green Oropendola reported as "common host" of Giant Cowbird and that young cowbirds have been successfully reared by this species (A. Jaramillo pers. obs. in Jaramillo and Burke 1999). Prior to this published confirmation as a host, the appearance of Green Oropendola in Friedmann's 1963 host list for Giant Cowbird was confusing. Friedmann provided no discussion, no documentation, and no supporting reference; its presence in Friedmann's host list at that time may have been in error (see W. Meise in Schönwetter 1981).
 W. Meise (in Schönwetter 1981: 405) wrote: [. . . Die Wirtsliste erweiterte sich nur noch wenig. Sie sei hier historisch zusammengestellt (und umfaßt *Psarocolius viridis* nicht, der bei FRIEDMANN 1963, S. 219, darin steht, auch nicht die Rasse *Cacicus haemorrhous affinis*, für die ich Keinen Beleg finde): *Psarocolius decumanus* (1894 von GOELDI als Wirt entdeckt), *Cacicus haemorrhous haemorrhous* (von LLOYD, l. c., 1897, von GOELDI, Bull. [sic] Mus. Paraense 3, S. 205, 1902 hinzugefügt), *Cacicus cela* (1897 von KUSCHEL und LLOYD), *Psarocolius wagleri ridgwayi* (1914 von CRANDALL), *Psarocolius montezuma* (1914 von CRANDALL) und *Cyanocorax yncas* (1960 von LEHMANN, s. u., hinzugefügt), möglicherweise (siehe unten) auch *Psarocolius guatimozinus* und *P. angustifrons alfredi*. Hrsg.]
 Translation: [. . . The host-list includes only a few species. It is presented here in full for historical reasons (and does not include *Psarocolius viridis*, that was listed by Friedmann 1963: 219, also does not include the race *Cacicus haemorrhous affinis*, for which I find no proof/documentation): *Psarocolius decumanus* (discovered as host by Goeldi 1894), *Cacicus haemorrhous haemorrhous* (Lloyd 1897, Goeldi 1902 [= Portugese version of Goeldi 1897]), *Cacicus cela* (Kuschel 1897, Lloyd 1897), *Psarocolius wagleri ridgwayi* (Crandall 1914), *Psarocolius montezuma* (Crandall 1914) and *Cyanocorax yncas* (Lehmann 1960), probably also *Psarocolius guatimozinus* and *P. angustifrons alfredi*. W. Meise, editor]
4. Western Meadowlark *Sturnella neglecta* listed, in error, as host in Lowther (1995).
5. Listed references add the following hosts:
Steward et al. (1988), Slaty Vireo *Vireo brevipennis*;
Clotfelter and Brush (1995), Yellow-billed Cuckoo *Coccyzus americanus* and Western Kingbird *Tyrannus verticalis*;
Chace (1997), Hutton's Vireo, *Vireo huttoni*, Western Tanager *Piranga ludoviciana*;
Brush (1998; see also Hathcock 2000): Altamira Oriole *Icterus gularis*;
Russell and Monson (1998), Bell's Vireo *Vireo bellii* and Black-tailed Gnatcatcher *Poliophtila melanura*;
Sealy et al. (1997), House Wren *Troglodytes aedon*, Olive-crowned Yellowthroat *Geothlypis semiflava*, Gray-crowned Yellowthroat *Geothlypis poliocephala*, Rufous-capped Warbler *Basileuterus rufifrons*, White-lined Tanager *Tachyphonus rufus*, Buff-throated Saltator *Saltator maximus*, Black-striped Sparrow *Arremonops conirostris* and Spot-breasted Oriole *Icterus pectoralis*;
J. F. Chace in Gardali and Ballard (2000) report out-of-nest young cowbird fed by Warbling Vireo *Vireo gilvus*.
Russell and Monson (1998), in their Bronzed Cowbird account, listed 6 species, with no other detail, in whose nests eggs or young of Bronzed Cowbirds had been noted: Black-tailed Gnatcatcher, Sinaloa Wren, Bell's Vireo, Hooded Oriole, Scott's Oriole, and Streaked-backed Oriole.
Flood (2002) adds Scott's Oriole *Icterus parisorum* as host.
Rothstein et al. (2003) mentions reports of 2 possible records of Willow Flycatcher *Empidonax traillii* as victim
Ellison et al. (2006) and Ellison et al. (2007) list Pyrrhuloxia, *Cardinalis sinuatus* as host.
K. Ellison (pers. comm.; see also Ellison et al. 2006, Ellison et al. 2007) list Chipping Sparrow *Spizella passerina*

and House Finch *Haemorhous mexicanus* as new victims with no details.

Corman and Wise-Gervais (2005) add Lucy's Warbler *Oreothlypis luciae* and Yellow Warbler *Setophaga petechia* (*aestiva* group) as victims.

Peer et al. (2005) report Great-tailed Grackle *Quiscalus mexicanus* as new victim based on egg in grackle nest in collection of WFVZ.

González-García (2007) report Common Bush-Tanager *Chlorospingus ophthalmicus* as new host and report new host status for Rusty Sparrow, *Aimophila rufescens*

Salgado-Ortiz et al. (2008) report Yellow [Mangrove] Warbler *Setophaga petechia bryanti* as new victim (and likely host also); 24 of 283 nests parasitized but no specific mention of cowbird success included

Not included in this host list is Brewer's Blackbird. Unitt (2004: 568) describes Brewer's Blackbird as "the only host of the Bronzed Cowbird known in San Diego County"; he reports breeding by Bronzed Cowbird evident by independent juvenile in 2001 and "... The only previous confirmation of the species' reproducing in the county was the juvenile seen with Brewer's Blackbirds at Jacumba (U28) 13 July 1974 (J. L. Dunn)." (See Unitt 1984, 2002 below).

Unitt (2002) reported Brewer's Blackbird *Euphagus cyanocephalus* as a host of Bronzed Cowbird, but the basis of this statement was an observation of a juvenal cowbird – age unknown – accompanying flock – unknown size – of this species (see Unitt 1984). While possible that Brewer's Blackbird has served as a host, appearance of young cowbird with "flock" of blackbirds may actually indicate post-breeding flocking behavior of cowbirds with other icterids rather than an association indicating host adults and their recently reared cowbird young.

Unitt (2002): "Still just one breeding record [of Bronzed Cowbird], parasitizing Brewer's Blackbird at Jacumba [in San Diego Co., CA.] in 1974. One or two trapped in Borrego Springs area in 1990. Parasitism of orioles or blackbirds in Borrego Valley perhaps most likely prospect for further breeding in county."

Unitt (1984: 230): "A juvenal [Bronzed Cowbird] was accompanying a flock of Brewer's Blackbirds on 13 July 1974 (J. Dunn)."

6. Not included in this host list are possible additional victims suggested by Forcey 2002b. Forcey (2002b) gives list of 5 species as "successful" hosts and list of 8 species for which "attempted parasitism" was noted; 5 of these 8 species may be new victims: Greater Pewee *Contopus pertinax*, Western Wood-Pewee *Contopus sordidulus*, Cassin's Kingbird *Tyrannus vociferans*, American Robin *Turdus migratorius* and Gray Silky-Flycatcher *Ptilononys cinereus*. Specific details not given; no indication that this list based on observation of nest contents. Only "(1)" appears apparently to indicate that "attempted parasitism" was noted at 1 nest for each of these 8 species. Species accounts for Western Wood-Pewee (see Forcey 2002a) and American Robin (see Forcey 2002b) mention that these species were observed (1 time each) to chase Bronzed Cowbirds; accounts of other species mention neither cowbirds nor brood parasitism. Species accounts of all 5 "successful" hosts mention, only, that host species observed "attending" out-of-nest cowbird young. Forcey's reply to query: "Your interpretation of my article is correct. Adult birds feeding young Cowbirds out of the nest was considered **successful parasitism**, and Cowbirds at or near an active nest, though not seen entering the nest, was considered as **attempted parasitism**."
- Forcey, J. M. 2002a. Notes on the birds of central Oaxaca, part II: Columbidae to Vireonidae. Huitzil 3: 14-27. www.huitzil.net.
- Forcey, J. M. 2002b. Notes on the birds of central Oaxaca, part III: Hirundinidae to Fringillidae. Huitzil 3: 43-55. www.huitzil.net.
- 7A. Willow Flycatcher *Empidonax traillii* indicated as a possible victim (Marshall and Stoleson 2000: 20) with no other details: "... except for one possible instance in the Gila River valley of New Mexico (Skaggs 1996) and one instance at Roosevelt Lake in Arizona (Sferra et al. 1995), the southwestern willow flycatcher is not known to be a host of this species [Bronzed Cowbird, *Molothrus aeneus*] ..." The 2 references cited are reports and are listed below (only), not in cited references:
- Skaggs, R. W. 1996. Population size, breeding biology, and habitat of Willow Flycatchers in the Cliff-Gila Valley, New Mexico 1995. Final Report, New Mexico Department of Game & Fish (unpubl. report).
- Sferra, S. J., R. A. Meyer, and T. E. Corman. 1995. Arizona Partners In Flight 1994 Southwestern Willow Flycatcher survey. Final Technical Report 69, Arizona Game & Fish Department, Nongame & Endangered Wildlife Program, Phoenix, AZ, 46 pp.
- 7B. Bowers and Dunning (1984, 1994) report one instance of brood parasitism of Buff-breasted Flycatcher *Empidonax fulvifrons* by Brown-headed Cowbird and one observation of "... female Bronzed Cowbird seen attempting to sit on a nest, but unsuccessful ... [in laying egg in nest]" (Bowers and Dunning 1994).
- 7C. Record suspect; Friedmann 1963 lists single record: 179: "In the collections of the Hancock Foundation at the University of Southern California there is an egg of the bronzed cowbird which is reported to have been found in a nest of Le Conte's thrasher. Unfortunately, no locality nor date is given on the label." (Friedmann 1963: 179)
8. Possible victim based on observation by Collins (1999: 18): "Unidentified cowbird chick (Bronzed Cowbirds seen in vicinity) present in a [*Aimophila ruficeps*] *scottii* nest at Madera Canyon, AZ (CNRP [= Cornell Nest Records

- Program] nest card data)."
9. From: "Kevin Ellison" <kellis6@hotmail.com>; To: lowther@fieldmuseum.org; Subject: Re: cowbirds etc.; Date: Tue, 06 Mar 2001 08:56:46. "For host list: In 2000, I added Chipping Sparrow and House Finch as Bronzed Cowbird hosts. The House Finch nest was built in an Orchard Oriole nest and my assistant reported seeing House Finch and orioles "fighting" over nest so perhaps this confused cowbirds similar to my 21 May finding of parasitism of inactive or "wrong" nest with active nest nearby." Additional information From: "Kevin Ellison" <kellis6@hotmail.com>; To: lowther@fieldmuseum.org; Subject: Re: M. aeneus; Date: Thu, 27 Dec 2001 16:49:13: Chipping Sparrow – abandoned nest found 29 May with 3 host and 1 Bronzed Cowbird; House Finch found using Orchard Oriole nest on 16 Jul with 3 host and 1 Bronzed Cowbird, nest abandoned 21 Jul.
 10. From: "Kevin Ellison" <kellis6@hotmail.com>; To: lowther@fieldmuseum.org; Subject: M. aeneus; Date: Sat, 30 Jun 2001 18:01:34. "Of interest to you from this season's data: *M. aeneus* singly parasitism of 2 Lark Sparrow nests; One Northern Cardinal nest parasitized with one egg of each cowbird spp. (BHCO and BROCO). I am most interested in host selection by cowbirds, a topic you have spent some time pondering so I am sure I could benefit from meeting with you." Additional information From: "Kevin Ellison" <kellis6@hotmail.com>; To: lowther@fieldmuseum.org; Subject: Re: M. aeneus; Date: Thu, 27 Dec 2001 16:49:13: Lark Sparrow nest found 19 Apr with 3 host plus 1 Bronzed Cowbird egg, host egg added 21 Apr, on 23 Apr nest with 2 host eggs in nest and cowbird egg broken underneath; Lark Sparrow nest found 29 Jun with 3 host eggs, Bronzed Cowbird egg added 30 Jun, nest contents on ground 1 Jul.
 11. From: "Kevin Ellison" <kellis6@hotmail.com>; To: lowther@fieldmuseum.org; Subject: Re: M. aeneus; Date: Tue, 19 Feb 2002 11:03:04. I have been working with your cowbird list and noticed you don't have records of Chats rearing *M. aeneus*. In 1999, I observed YBCH rearing 2 *M. aeneus* young in a nest. I have a bad photo too, taken by the landowner but still confirmation of nestling spp. I will have to look and see whether that nest fledged though. Kevin Ellison
 - 11B. Friedmann and Kiff (1985) includes this species in their list of hosts "known to have reared shiny cowbirds" (p. 267). Only 3 published records exist for this species – Castellanos 1934 [cited by Friedmann 1938], Harrison 1950 [mentioning only "eggs in the nest"], and H. Sick in Friedmann et al. 1977 [with no details] – and this species' inclusion in the Friedmann and Kiff host list based on assertion by A. Castellanos ("He visto eriendo pichones de tordo a las especies siguientes: *Anumbius annumbi*, ..."). Recent work in Argentina (Delhey et al. 2011) add additional parasitism records (31 eggs in 27 of 164 nests), but only 7 of these eggs hatched, no young survived more than a few days.

Friedmann, H. 1938. Additional hosts of the parasitic cowbirds. **Auk** 55: 41-50. (Citing "Castellanos 1934, **Hornero** 5: 332" [= Castellanos, A. 1931-1934. *Aves del Valle de los Reartes* (Córdoba). **Hornero** 4: 361-391, 5: 1-40, 5: 159-174, 5: 307-338.]).

Harrison, G. 1950. Selection of fosterers by cowbirds. **Bulletin of the British Ornithological Club** 70: 5-7.

Delhey, K., M. Carrizo, L. Verniere, B. Mahler and A. Peters. 2011. Rejection of brood-parasitic Shiny Cowbird *Molothrus bonariensis* nestlings by the Firewood-gatherer *Anumbius annumbi*? **Journal of Avian Biology** 42: 463-467.
 12. Fraga (2002; R. M. Fraga pers. comm.) notes that 2 species in the host list given by Friedmann et al. (1977) included in error: Cock-tailed Tyrant *Alectrurus tricolor* and Crested Oropendola *Psarocolius decumanus*.

The single record of Cock-tailed Tyrant is based on a putative parasitized clutch of this flycatcher collected around 1910 in Tucumán, Argentina, and housed in the National Museum of Natural History in Paris. But this flycatcher has never been reported from Tucumán (see Olrog 1979), not even at the time when the clutch was collected (Lillo 1902). The putative parasitized clutch of Crested Oropendola in the Museo de La Plata, Argentina, collected in Tucumán, Argentina, is misidentified and clearly belonged to the Epaulet Oriole *Icterus cayenensis* (Fraga 2002); in addition, Crested Oropendolas have never been reported from Tucumán (Olrog 1979).
 13. Association of new hosts and victims of Shiny Cowbird with specific references:

Dinelli (1918; see also Fraga 2005): Brown-backed Mockingbird *Mimus dorsalis*;

Marchant (1960; see also Gochfeld 1979: 863): Peruvian Meadowlark *Sturnella bellicosa*

Boggs (1961): Orange-crowned Oriole *Icterus auricapillus*;

Wiley and Wiley (1980): Yellow-hooded Blackbird *Chrysomus icterocephalus*;

Salvador (1983): Bay-winged Cowbird *Agelaioides badius*;

Salvador and Narosky (1983): Rufous-naped Ground-Tyrant *Muscisaxicola rufivertex*;

Salvador and Salvador (1984): Sharp-billed Canastero *Asthenes pyrrholeuca*, Variable Antshrike *Thamnophilus caerulescens*, Pied Water-Tyrant *Fluvicola pica*, Black-capped Warbling-Finch *Poospiza melanoleuca*;

Cruz et al. (1985): Puerto Rico Flycatcher *Myiarchus antillarum*, Red-legged Thrush *Turdus plumbeus*, Northern Mockingbird *Mimus polyglottos*, Palm Chat *Dulus dominicensis*, Black-whiskered Vireo *Vireo altiloquus*, Greater Antillean Grackle *Quiscalus niger*, Puerto Rican Oriole *Icterus portoricensis*, Troupial *Icterus icterus*, Village Weaver *Ploceus cucullatus*, Nutmeg Mannikin *Lochura punctulata*;

Sick (1985): Guira Tanager *Hemithraupis guira*, Ruby-crowned Tanager *Tachyphonus oronatus*;

Beltzer (1986): Solitary Cacique *Cacicus solitarius*;

Mason (1986a): Yellow-winged Blackbird *Agelasticus thilius*;

- Mason (1986b)**: White-browed Blackbird *Sturnella superciliaris*;
Pérez-Rivera (1986): Zenaida Dove *Zenaida aurita*, Common Ground-Dove *Columbina passerina*, Black-faced Grassquit *Tiaris bicolor*;
Wood (1987): Martinique Oriole *Icterus bonana*;
Cavalcanti and Pimentel (1988): White-banded Tanager *Neothraupis fasciata*, Palm Tanager *Thraupis palmarum*. White-rumped Tanager *Cypsnagra hirundinacea*;
Studer and Vielliard (1988): Forbes's Blackbird *Curaeus forbesi*;
Cruz et al. (1989): Caribbean Elaenia *Elaenia martinica*, Puerto Rican Vireo *Vireo latimeri*, Adelaide's Warbler *Setophaga adelaidae*, Puerto Rican Bullfinch *Loxigilla portoricensis*;
Post et al. (1990): Caribbean Elaenia *Elaenia martinica*, Puerto Rico Flycatcher *Myiarchus antillarum*, Lesser Antillean Flycatcher *Myiarchus oberi*, St. Lucia Oriole *Icterus laudabilis*;
Debrot and Prins (1992): Yellow Oriole, *Icterus nigrogularis*;
Sick (1993): Masked Water-Tyrant *Fluvicola nengeta*, Chopi Blackbird, *Gnorimopsar chopi*;
Mermoz and Rebores (1994): Brown-and-Yellow Marshbird *Pseudoleistes virescens*;
Nores and Nores (1994): Brown Cacholote, *Pseudoseisura lophotes*;
Stevenson and Anderson (1994): Red-winged Blackbird *Agelaius phoeniceus* as possible or probable host [see Note 16];
Cruz and Andrews (1997): Pied Water-Tyrant *Fluvicola pica*;
Baltz (1996): Bahama Oriole, *Icterus northropi*;
Kattan (1997: 648) gives casual mention of 4 species of "occasional hosts recorded outside the study area [of House Wren - Shiny Cowbird interactions]" including 3 "new" hosts -- Black-billed Thrush *Turdus ignobilis*, Crimson-backed Tanager *Ramphocelus dimidiatus*, Scrub Tanager *Tangara vitriolina*;
Di Giacomo (1998): Barred Antshrike *Thamnophilus doliatus*;
Fraga et al. (1998): Saffron-cowled Blackbird *Xanthopsar flavus* as host;
Raffaele et al. (1998) listed Jamaican Oriole *Icterus leucopteryx* as first known host on Jamaica.
López Lanús et al. (1999): Straight-billed Reedhaunter *Limnortyx rectirostris*;
A. Azpiroz in BirdLife International (2000): Black-and-White Monjita *Xolmis dominicanus*;
Marín (2000): *Xolmis pyrope*, *Elaenia albiceps* and *Mimus thenca* added as hosts;
Rochido (2001a): *Knipolegus nigerrimus* added as hosts;
Rochido (2001b): *Hirundinea ferruginea* added as victim;
Fraga (2002, R. M. Fraga pers. comm.) adds observations of host status for several species: Pale-breasted Thrush *Turdus leucomelas*, Red-crested Finch *Coryphospingus cucullatus*, White-browed Blackbird *Sturnella superciliaris*; and a certain host record for Masked Gnatcatcher, *Poliophtila dumicola*, for which previous information of host status was doubtful;
Sharpe (2003, C. L. Sharpe pers. comm.): Fulvous-headed Tanager *Thlypopsis fulviceps* as host [see note 15];
Oppel et al. (2003): Pale-headed Brush-Finch *Atlapetes pallidiceps* added as host.
Latta et al. (2006): Hispaniolan Oriole *Icterus dominicensis* added as victim ("parasitism has been confirmed", p. 209).
Bodrati and Fraga (2010): Golden-winged Cacique *Cacicus chrysopterus* as host
Gomes and Rodrigues (2010): Cipó Canastero *Asthenes luizae* as host
Mauricio (2011, G. N. Mauricio pers. comm.): Orange-breasted Thornbird *Phacellodomus ferrugineigula* as host
Salvador (2012): see note 13B
Costa (2013): Pale-throated Pampa-Finch, *Embernagra longicauda* as host
- 13B. Salvador (2012) provides a comprehensive list of 141 species (157 species and subspecies) serving as victims and hosts from Argentina and includes 13 species new to the host list for the Shiny Cowbird. New species and reference sources are listed below. N = parasitized nests found; AP = adults feeding young; ? = uncertain observation. [N = hallazgos de nidos parasitados; AP = observaciones de adultos alimentando pichones; ? = para cuando el dato no es claro.]
- Dark-billed Cuckoo, *Coccyzus melacoryphus*: N -- Salvador and Bodrati (2011).
 Guira Cuckoo, *Guira guira*: N -- de la Peña (2005a).
 Olog's Cinclodes, *Cinclodes ologi*: ? -- Miatello et al. (1999).
 White-winged Cinclodes, *Cinclodes atacamensis schocolatinus*: ? -- Miatello et al. (1999).
 Tufted Tit-Spinetail, *Leptasthenura platensis*: N -- Salvador (2011).
 Sulphur-billed Spinetail, *Craniolaema sulphurifera*: N -- Darrieu et al. (1988).
 Small-billed Elaenia, *Elaenia parvirostris*: N -- Narosky en Narosky y Salvador (1998), Salvador (2011).
 Grey-bellied Shrike-Tyrant, *Agriornis micropterus micropterus*: N -- Narosky and Yzurieta in Narosky and Salvador (1998).
 Swainson's Flycatcher, *Myiarchus swainsoni ferocior*: AP -- S. Salvador (obs. per.).
 Austral Thrush, *Turdus falcklandii magellanicus*: N -- S. Salvador (obs. per.).
 Black-hooded Sierra-Finch, *Phrygilus atriceps*: N -- Salvador and Bodrati (2011).
 Ash-breasted Sierra-Finch, *Phrygilus plebejus naroskyi*: N -- Salvador and Bodrati (2011).
 Band-tailed Seedeater, *Catamenia analis*: N -- de la Peña (2001).
- Darrieu, C. A., G. Soave and E. Soave. 1988. Nidificación de passeriformes en la reserva integral de Punta Lara y sus alrededores, Buenos Aires, Argentina. Hornero 13: 53-58.
 de la Peña, M. R. 2001. Nidificación de algunas especies de aves en el este de la provincia de Catamarca,

- Argentina. Hornero 16: 17-21.
- de la Peña, M. R. 2005a. Reproducción de las aves argentinas (con descripción de pichones). Ed. LOLA, Buenos Aires, Argentina.
- Miatello, R., J. Baldo, M. Ordano, C. Rosacher and L. Biancucci. 1999. Avifauna del Parque Nacional Quebrada del Condorito y Reserva Hídrica Provincial de Achala, Córdoba, Argentina. Sec. Agric. Gan. Rec. Ren. Córdoba.
- Narosky, T., and S. Salvador. 1998. Nidificación de las Aves Argentinas (Tyrannidae). Asociación Ornitológica del Plata. Buenos Aires, Argentina.
- Salvador, S. A. 2011. Parasitismo de cría del Renegrido (*Molothrus bonariensis*) en el departamento General San Martín, Córdoba, Argentina. Biológica 14: 49-51.
- Salvador, S. A., and A. Bodrati. 2011. Nuevas víctimas del Tordo Renegrido (*Molothrus bonariensis bonariensis*), hallados en Argentina. Nuestra Aves 56: 38-39.
14. Female collected 7 Jul 2000, McIntosh Co., GA, with 3 unshelled eggs in oviduct, largest 8.1 mm diameter.
15. From: Chris Sharpe <rodsha@telcel.net.ve>; To: NEOORN-L@listserv.lsu.edu; Date: Sat, 22 Dec 2001 15:40:32; Sender: Bulletin Board for Ornithologists working with Neotropical Birds <NEOORN-L@listserv.lsu.edu>; Subject: [NEOORN-L] Cowbirds "On the subject of Cowbirds, is there an accessible list of all recorded hosts of brood parasites anywhere? I saw a Shiny Cowbird *Molothrus bonariensis* feeding a young Fulvous-headed Tanager *Thlypopsis fulviceps* [sic] the other day and tried to find out whether parasitism of this species had been recorded." Christopher J. Sharpe, Av. Carabobo, Edif. Izarra, Apto. 4, El Rosal, Caracas 1060, VENEZUELA
From: Chris Sharpe <rodsha@telcel.net.ve>; To: NEOORN-L@listserv.lsu.edu; Date: Sat, 22 Dec 2001 21:23:42; Sender: Bulletin Board for Ornithologists working with Neotropical Birds <NEOORN-L@listserv.lsu.edu>; Subject: Re: [NEOORN-L] Cowbirds; "Ups, must be too much Christmas spirit! It's a nice thought and would be potentially applicable to the conservation of those failing passerine populations in North America, but of course, the tanager was feeding the cowbird, not vice versa. I'd still like to know whether there is published information in parasitism of this species. Sorry for the confusion, Chris."

From: "Chris Sharpe" <rodsha@telcel.net.ve>; To: "Peter Lowther" <lowther@fieldmuseum.org>; Subject: Re: *Molothrus bonariensis* & *Thlypopsis fulviceps*; Date: Wed, 19 Nov 2003 11:34:18; "Dear Peter: How are you? I'm very pleased to say that the *M. bonariensis* article finally got printed! I spoke to the *Memorias* editors last week and have hard copies for the moment, but will try to get a PDF to send you.
> Chris -- Has this gotten in press yet? If so, what is the citation. Best wishes, Peter Lowther
Sharpe, C. L. 2003. Shiny Cowbird *Molothrus bonariensis venezuelensis* Stone 1891 as a successful brood parasite of Fulvous-headed Tanager *Thlypopsis fulviceps fulviceps* Cabanis 1851. *Memoria de la Sociedad de Ciencias Naturales La Salle* 61 (155): 139-141.
Unfortunately the editors added "Stone 1981 [sic]" instead of "(Gmelin) 1789". I don't know which date should be used - volume 61 corresponds to 2001, but the real date is 2003.
As a coda to the article... My 2001 observation was made during our annual 2001 Audubon Avethón (Birdathon). This year, we ran the event on 26 October. I happened to go to the same park at about the same time and was pleased to locate a pair of *T. fulviceps* in exactly the same patch of vine tangle. Suddenly, behind them appeared a juvenile *M. bonariensis* begging for food! Best wishes, Chris.
16. This species very probably is now, or will be soon, a host of the Shiny Cowbird in Florida. No indisputable record yet exists, but suggestive observation in 1991 offered first speculation.
- (a) "A fledgling cowbird fed by a Red-winged Blackbird, near Homestead (s Dade Co.), 1991, was believed to be (because of the host species) a Shiny [Cowbird] (B. [= Bill] Pranty *in litt.*). [Stevenson and Anderson 1994: 679]."

"... Apparently becoming resident in southern Dade Co., where a Red-winged Blackbird was seen to feed a fledgling *M. bonariensis* in 1991 (H. W. Kale, II, C. A. Miles, M. C. Wheeler *in litt.*). [Robertson and Woolfenden 1992: 146]
17. Known as host only on basis of personal communication from Orlando H. Garrido (Nov 1997) of observation of adults feeding cowbird young; Cruz et al. (1989) predicted this species to be found as a cowbird host in Cuba.
18. Present in draft copy but not final published version (see Fraga 2002)
From: "Rosendo Fraga" <chfraga@ciudad.com.ar>; To: "Peter Lowther" <lowther@fieldmuseum.org>; Subject: Catalog. Hi Peter, I'm sending a draft of **my contributions to the new host catalog**. There are a couple of new records still in the air. The items marked with * are not really "new" and could be deleted. Best regards, Rosendo
Attachment Converted: "c:\... \Glossy.doc"
Yellow-rumped Marshbird *Pseudoleistes guirahuro*. Specimens at the Museu de Zoologia, Universidade de Sao Paulo, Brasil (female numbered 53976, collector A. Olalla) indicate this icterid as an effective cowbird host. The specimen's label indicate that the marshbirds (a pair) were feeding 2 fledgling Shiny Cowbirds when collected, on 23 February 1963, at Fazenda Pedras (22° 59' S, 48° 45' W), Sao Paulo state.

From: "Rosendo Fraga" <chfraga@ciudad.com.ar>; To: "Peter Lowther" <lowther@fieldmuseum.org>; Subject: RE: MS on Shinies; Date: Thu, 23 May 2002 00:19:33 -0300

Hi Peter: Well, I decided against putting that piece of data for two reasons. First, a formal reason. All data in the paper is from Argentina, but that was from Brazil. Something like putting two bars for clarinet in a cello sonata... The second reason is that the record was not my own, and I cannot control for its accuracy. It was based on two labels of two specimens of *Pseudoleistes guirahuro* (male and female), in Sao Paulo, both written in portuguese. The label says both marshbirds were feeding "filhotes (= chicks) de chopim". Quite probably "chopim" in this context means Shiny Cowbird, but it is an ambiguous common name, used for any black blackbird, and originally an onomatopoeic name for *Gnorimopsar chopi*. The shadow of a doubt... I looked for the "filhotes" reared by the guirahuros among the Shiny specimens, but I could not find them. ... Best regards, Rosendo, New address: Ugarteche 2873, 3 D; 1425 Buenos Aires

From: Chendo Fraga chfraga@yahoo.com To: "Peter Lowther" <lowther@fieldmuseum.org>; Subject: RE: Chendo Fraga on HBW16; Date: Wed, 11 Apr 2012 6:36 PM

Hi Peter: I recently received my complementary copy of HBW vol 16 with my Icterid chapter. ... You will see that I accepted the Yellow-rumped Marshbird *Pseudoleistes guirahuro* as a Shiny Cowbird host. This is based on a Brazilian book I saw 2 yrs. ago. Unfortunately I forgot to include it in the references of the *P. guirahuro* account. But it was included in the Bibliography at the end of the volume. The book is more of a coffee-table picture book, with many good photos of bird nests from Brazil. In one photo they show a cowbird nestling in a *guirahuro* nest. The book is: D. Buzzetti & S. Silva. 2005. Nurturing new life: nests of Brazilian birds. Editora Terceiro Nome, Sao Paulo, Brazil. ... My best regards Chendo
Rosendo M. Fraga
CICYTTP, Conicet
España y Matteri
(3105) Diamante, Entre Ríos
Argentina

19. Although Solitary Cacique, *Cacicus solitarius*, is listed by Beltzer (1986) as a new cowbird host, his observation is not definitive: the reference merely reports finding a cowbird egg in a nest of the cacique, but the nest may have been usurped by some other species which was parasitized or that the egg was laid in an abandoned nest; care of cowbird young by adult host species was not seen (R. M. Fraga pers. comm. [23 May 2003]).
20. Association of new hosts and victims of Brown-headed Cowbird with specific references:
Terrill (1961), Least Flycatcher *Empidonax minimus* added as host;
Bailey and Niedrach (1965), Rock Wren *Salpinctes obsoletus* added as host;
Svedarsky (1979; see also Shaffer et al. 2003), Greater Prairie-Chicken *Tympanuchus cupido* added as victim;
Woodward and Woodward (1979), Eastern Bluebird *Sialia sialis* added as host;
Dolan and Wright (1984), Cordilleran Flycatcher *Empidonax occidentalis* added as victim;
Laubach (1984), Western Meadowlark *Sturnella neglecta* added as host;
Miles (1986), Rufous-crowned Sparrow *Aimophila ruficeps* added as host;
Picman (1986), Marsh Wren *Cistothorus palustris* added as victim;
Shambaugh (1987, see also Bowen 1997), Townsend's Solitaire *Myadestes townsendi* added as host;
Gaines (1988), Gray-crowned Rosy-Finch, *Leucosticte tephrocotis*;
Paul (1989), Black-whiskered Vireo *Vireo altiloquus*;
De Geus and Best (1991), Loggerhead Shrike *Lanius ludovicianus*;
Martin and Barber (1995), Red-faced Warbler *Cardellina rubrifrons* added as victim, this species noted as host by **Corman and Wise-Gervais (2005)**;
Chace and Cruz (1996), Cordilleran Flycatcher *Empidonax occidentalis*, Gray Vireo *Vireo vicinior*, Mountain Chickadee *Poecile gambeli*, Mountain Bluebird *Sialia currucoides*, and Green-tailed Towhee *Pipilo chlorurus* added as hosts;
Webb and Bock (1996), Botteri's Sparrow *Peucaea botterii* added as victim;
Campbell et al. (1997), Swainson's Thrush *Catharus ustulatus*, added as host, Varied Thrush *Ixoreus naevius* added as victim;
Brush (1998), Altamira Oriole *Icterus gularis*, added as victim [see also note 29];
Davis and Sealy (1998), Baird's Sparrow *Ammodramus bairdii*, added as host;
Groschupf and Thompson (1998), Varied Bunting *Passerina versicolor* added as host;
Withgott and Smith (1998), Brown-headed Nuthatch *Sitta pusilla* added as victim;
Ellison (1999), Bell's Sparrow, *Artemisiospiza belli* added as victim;
Davis and Sealy (2000), Sprague's Pipit *Anthus spragueii* added as host;
Koons (2000) added Lesser Scaup *Aythya affinis* as victim;
Campbell et al. (2001), Bushtit *Psaltriparus minimus*, Cape May Warbler *Setophaga tigrina*, Black-headed Grosbeak *Pheucticus melanocephalus* added as hosts and Cassin's Finch *Haemorhous cassinii* added as victim;
Herkert et al. (2001), Sedge Wren *Cistothorus platensis* added as host [see also note 24];
Johnson et al. (2002) added Black-throated Sparrow *Amphispiza bilineata* as host;
Smith and Jackson (2002) give undocumented report of Gray Kingbird *Tyrannus dominicensis* as host [see also note 22];
Truan (2003) added Western Bluebird *Sialia mexicana* as host;
Mollhoff (2004) added Lark Bunting *Calamospiza melanocorys* as host;
Vega Rivera et al. (2004) added Black-capped Gnatcatcher *Poliioptila nigriceps* as host [see also note 25].
Corman and Wise-Gervais (2005) added Olive Warbler *Peucedramus taeniatus* as host based on report of adult

feeding out-of-nest cowbird.

Reetz et al. (2008) added Bachman's Sparrow *Peucaea aestivalis* as host

Ellison and Gagliardi (2008); also **C. Gagliardi pers. comm.** (via K. S. Ellison; see note 21A) added Hooded Merganser *Lophodytes cucullatus* as victim

21A. From: Kevin Ellison [mailto:ksellison@wisc.edu]
Sent: Tuesday, November 13, 2007 2:03 PM
To: Lowther, Peter
Subject: new victim

Hi Peter - I forgot to send you this earlier; an account of "parasitism" by BHCO on Hooded Merganser this summer posted on WI bird listserv. I've contacted the observer and asked he[r] if she wishes to publish a note on it. Any suggestions on a journal? I was thinking just the **Passenger Pigeon**, maybe **Wilson J. for O.** ? Cheers-Kevin

"We have 4 Wood Duck boxes but one of them has a live-cam installed in it where the wires come in our cabin and then plug into our TV for viewing & it has audio too. I've been observing both Wood Ducks & Hooded Mergansers going into this box and worried it was going to be a dump-box like we witnessed last year. Well, Sat. evening a Hoody flew in, nestled down and started incubating. At about 11 pm I could hear some rustling in the box (as the Hoody lay still) and I couldn't figure out what these sounds were but then I saw something smaller moving in the box around her....sure enough it was a Cowbird. The intruding Cowbird seemed to partially lay on the back of the nesting Hoody for approximately 5 minutes, all the time while Mom lay still and she didn't seem bothered in the least with this. Too tired?... or perhaps she's had this done to her before but all of a sudden I saw this tiny egg drop and poof, the Cowbird flew out. A little while later the Hoody turned her own eggs and I saw her somewhat roll & bury the little egg that was in the corner."

From: Kevin Ellison [mailto:ksellison@wisc.edu]
Sent: Tuesday, November 13, 2007 2:58 PM
To: Lowther, Peter
Subject: Re: RE: new victim

Hi Peter - Yes, strange behavior all around. This was 28 April, 2007 – early in season, so perhaps a female that couldn't find a nest? I'll have to check on the weather records for then, I remember a cold snap that slowed our grassland birds down around then. Observer: **Cathy Gagliardi**, Birchwood, WI, Sawyer Co (I'm not sure if this is just her home county or where observed as well)

Observation published: Ellison and Gagliardi 2008.

21. Dubious host. Reference suggesting Mourning Dove to have reared cowbird – Kellogg 1900 – is summarized below:
On 25 May 1899, at Rock Hill, PA, C. D. Kellogg noticed cowbird leave Common Grackle nest, which was found to contain 1 cowbird egg; on 28 May, the nest contained, in addition, 2 Mourning Dove eggs. Three weeks later, the nest contained a young cowbird almost ready to fly with the 2 unhatched dove eggs. No adult host was seen to feed the cowbird.
22. Undocumented report from M. Oberle of 2 Gray Kingbirds feeding 2 young Brown-headed Cowbirds on Jekyll Is., GA (Smith and Jackson 2002).
23. Single, circumstantial report in Friedmann (1963) not considered credible (Brown 1997).
24. Generally not known as victim or host, "However, on 30 Jun 1996 a Sedge Wren was observed feeding a large Brown-headed Cowbird fledgling at Lonetree Wildlife Management Area (Wells Co.), ND (DEK [= D. E. Kroodsma])." Herkert et al. 2001: 12.
25. See also Vega Rivera et al. 2004.
From: Jorge H. Vega Rivera <jhvega2002@yahoo.com>; Date: Thu, 26 Sep 2002 17:01:30; To: lowther@fmnh.org; Subject: Help on information.
Dear Dr. Lowther, I am writing a little note about brown-headed cowbird parasitism on *Polioptila nigriceps*, an [sic] endemic bird from western Mexico. I am still not sure if it worthy to try to publish a note like this. I have only one record, a nest where both parents care for a young cowbird until it fledge (I am attaching a picture of the male feeding the young) and three more observations of adults feeding fledgling cowbirds. I thought that being an endemic species, and knowing so little about parasitism in the neotropics, would be worthy to publish it. But, do we know little about parasitism in the neotropics? Is there already a report of parasitism in this species? I do not have information to answer these questions. And I thought that you may have information (or you may know where to get the information) to answer the above questions. I have checking the internet and have not found a title that suggest me to have a list of the species. I would appreciate any help. Thank you, Jorge Vega
Dr. Jorge H. Vega Rivera, Estacion Biologia Chamela, IBUNAM, A.P. 16, San Patricio, Jalisco, Mexico 48980; Email: jhvega@biologia.unam.mx
26. Reference indicated only that a young cowbird (age unknown) was found in a bluebird nest (Chace and Cruz 1996).
27. Cape May Warbler first listed by Friedmann (1963: 100) as victim based on correspondence from J. H. Bowles of

"distinct recollection of having seen a set of eggs of this warbler containing one of the cowbird, but he could not recall where or when it was collected or in whose collection it was when he saw it".

In addition to this indistinct record of parasitism, Campbell et al. (2001) report a more definite observation: 1 fledgling cowbird associated with Cape May Warbler family group on 18 Jul in British Columbia. See notes 20 (above) and 30 (below).

28. Friedmann (1963) mentions only single hypothetical record; this species listed as host in Friedmann and Kiff (1985) but no details provided to support this listing. Hill (1968) report one record of nest with cowbird egg. Nordhagen et al. (2005) report a second definite record of brood parasitism and a first definite instance of this species rearing a young cowbird.
29. See also Brush 1998.
From: Tim Brush <tbrush@panam.edu>; Date: Mon, 27 Sep 2004 14:40; To: lowther@fmnh.org; Subject: RE: Cowbirds.
Peter, Thanks for your interest. We did find 6 Brown-headed Cowbird eggs, along with a dead oriole nestling, in an Altamira Oriole nest. Since we didn't know much about the history of that particular nest, we thought that the cowbird eggs might have been laid after the oriole nestling died. However, it is also possible that the laying of the cowbird eggs caused desertion by the Altamiras. If you'd like other information on this observation, let me know and I can try to find it. By the way, Brown-headed Cowbirds are quite uncommon during the breeding season along the lower Rio Grande in Texas. My students and I have never seen Brown-headed Cowbirds approaching (that I can recall) Altamira nests or laying eggs, other than the above record. ... Regards, Tim Brush
- 29A Included in list of species that have reared cowbird young in Friedmann and Kiff (1985), but skepticism of "host" reports appropriate since host young fed seed diet which has been found generally inadequate for young of Brown-headed Cowbird. Friedmann (Friedmann 1963, Friedmann and Kiff 1985) provide 4 sources that suggest "host" status: (a) Dales and Bennett (1929) – observed nest in Iowa with 3 siskin eggs plus 1 cowbird egg; cowbird hatched either 22 May 1928 or 23 May; on 27 May only cowbird young remained in nest and "the young Cowbird seemed to thrive". (b) Swenk (1929) – describes Nebraska's fifth nesting record, 16 May 1915, involving 1 siskin in the nest, 1 cowbird on the ground underneath, and both young being fed by adults. (c) Rolfs et al. (1974) monitored siskin nesting in Kansas, monitoring 50 nests of which 28 parasitized and report that some cowbird young survived to age 5 days; Hill (1976) summarizes these same data and indicates 1 cowbird fledged but provides no details.
- 29B Included in list of species that have reared cowbird young in Friedmann and Kiff (1985), but skepticism of "host" reports appropriate since host young fed seed diet which has been found generally inadequate for young of Brown-headed Cowbird. Only single record indicating "host" status presented in Friedmann et al. (1977) of observation by D. A. Schroeder in Ventura Co., CA, of cowbird hatching 21 or 22 May 1972 and "fledging" on 31 May; additional detail of observation indicates nest was not observed daily.
- 29C Dubious host. Included in list of species that have reared cowbird young in Friedmann and Kiff (1985), but skepticism of "host" reports appropriate since host young fed seed diet which has been found generally inadequate for young of Brown-headed Cowbird. Only report of American Goldfinch as cowbird host from Dr Nathaniel Potter of Baltimore letter to Alexander Wilson (Friedmann and Kiff 1985): "I found a goldfinch's nest ... [with 1 goldfinch and 1 cowbird eggs] ... Being obliged to leave home ... but from my reckoning, ... cow bird must have been hatched in 9 or 10 days from the commencement of incubation. ... On my return, I found the young cow bird occupying nearly the whole nest and the foster mother as attentive to it as she could have been to her own."
- 29D Included in list of species that have reared cowbird young in Friedmann and Kiff (1985), but skepticism of "host" reports appropriate since host young fed seed diet which has been found generally inadequate for young of Brown-headed Cowbird. There are no records of cowbird young in the nest. Friedmann (1963) gives 2 references of a single instance of grosbeaks attending cowbird young: Nichols (1949: 231) briefly reports of "... and 1 pair [of Evening Grosbeaks] was seen feeding a young Cowbird (Meade)" about which Schaub (1951) expands the observation: On 2 Jul 1949, male grosbeak observed at feeder in New York with "much grayer" young, on 7 Jul, the "grayer" young was identified as a young cowbird "at least a week out of nest" and the male grosbeak seen to make 8 trips from feeder to the cowbird; on 11 Jul, the 2 birds were at the feeder again but the male showed less interest to the cowbird.
30. Campbell et al. (2001) includes of table of 83 victim and host species that have been reported in British Columbia. The list partitions records to those involving eggs, nestlings and fledglings giving dates, mean number of eggs or young involved and sample size, and maximum number of eggs or young in the nest or maximum number of out-of-nest young being cared for. "Fledgling" records taken to mean out-of-nest cowbird young being cared for by host species and an indication that host species successfully reared cowbird young. Several new records are involved; details of these are listed below:
Bushtit *Psaltriparus minimus*: eggs 10 - 13 Jun, mean 1, n = 2, maximum, 1; **fledglings 27 Jul, mean 1, n = 1, maximum, 1.**
Swainson's Thrush *Catharus ustulatus*: eggs 26 May - 5 Aug, mean 1.1, n = 35, maximum, 1; nestlings 24 Jun - 5 Aug, mean 1.2, n = 9, maximum = 2; **fledglings 6 Jul - 11 Aug, mean 1.4, n = 5, maximum, 1.**
Varied Thrush *Ixoreus naevius*: **eggs 1 Jun, mean 1, n = 1, maximum, 1.**
Cape May Warbler *Setophaga tigrina*: **fledglings 18 Jul, mean 1, n = 1, maximum, 1.**
Black-headed Grosbeak *Pheucticus melanocephalus*: eggs 29 May - 26 Jun, mean 1.8, n = 8, maximum, 4;

nestlings 3 - 20 Jun, mean 2.5, n = 2, maximum, 4; fledglings 25 Jul, mean 1, n = 1, maximum, 1.
Cassin's Finch *Haemorhous cassinii*: eggs 28 May - 14 Jun, mean 1.8, n = 4, maximum, 3.

31. Unpublished studies of Jameson F. Chace presented as abstract from proceedings of the **1997 Cowbird Workshop** held 23 - 25 Oct 1997 at Sacramento, CA, and as content of web page describing some of the current research activity of the Appleton-Whittell Research Ranch, National Audubon Society. Full text of proceedings' abstract (a) and web page (b) are given below.

(a) Chace, J. F. Cowbird parasitism in the Huachuca Mountains of southeastern Arizona. Department of E.P.O. Biology, University of Colorado, Boulder, CO 80309-0334. 303-492-6685.; jameson.chace@colorado.edu.
 Bronzed (*Molothrus aeneus*) and Brown-headed cowbirds breed in the mountain canyons of the Huachuca range. In 1997, I documented and compared the timing, frequency, and impacts of brood parasitism on host species in the mountain pine forests (elev. ca 1800-2400 m). Bronzed and Brown-headed cowbird parasitism occurred more frequently in forests adjacent to an extensive riparian corridor, and Bronzed Cowbird parasitism was absent in forests without adjacent riparian vegetation. Cowbirds overlapped in host use of the Hutton's Vireo (*Vireo huttoni*), Plumbeous Vireo (*V. plumbeus*), and Western Tanager (*Piranga ludoviciana*). Only Bronzed Cowbirds were found to parasitize Hepatic Tanagers (*P. flava*)(n=2), whereas only Brown-headed Cowbirds were found to parasitize Painted Redstarts (*Setophaga picta*)(n=1), Grace's Warbler (*Setophaga graciae*)(n=1). Impacts of parasitism were minimized by moderate rates of predation (33.3%, n=84). Future work may include comparative impacts on Bell's (*V. bellii*), Warbling (*V. gilvus*), Plumbeous, and Hutton's vireos, a comparison of habitat preference and home range size between Bronzed and Brown-headed cowbirds, and the timing, duration, and pattern of egg laying among captive cowbirds.

(b) Jim Chace -- TRR Current Research, The Appleton-Whittell Research Ranch of The National Audubon Society web page (<http://www.audubon.org/local/sanctuary/appleton/chace.html>).

Cowbird ecology and life history

Bronzed (*Molothrus aeneus*) and Brown-headed (*Molothrus ater*) Cowbirds breed in the mountain canyons in the vicinity of the Huachuca Mountains. In 1997, I documented and compared the timing, frequency, and impacts of brood parasitism on host species in the montane pine forests (elev. ca 1800 - 2400 m). Bronzed and Brown-headed Cowbird parasitism occurred more frequently in forests adjacent to an extensive riparian corridor, and Bronzed Cowbird parasitism was absent in forests without adjacent riparian vegetation. Cowbirds overlapped in host use of the Hutton's Vireo (*Vireo huttoni*), Plumbeous Vireo (*V. plumbeus*), and Western Tanager (*Piranga ludoviciana*). Only Bronzed Cowbirds were found to parasitize Hepatic Tanagers (*P. flava*) (n = 2), whereas only Brown-headed Cowbirds were found to parasitize Painted Redstarts (*Setophaga picta*) (n = 1), Grace's Warblers (*Dendroica graciae*) (n = 1). Impacts of parasitism were minimized by moderate rates of predation (33.3%, n = 84).

Cowbirds flourish among the gallery cottonwood forest of the Babocomari Ranch (free ranging cow and calf operation), and among the grain fed steer operation south of the Research Ranch, adjacent to O'Donnell Canyon riparian habitat. Although cowbirds were never found on the Research Ranch (cattle-free) during the late afternoon, when cowbirds are feeding, they were found flying in from the north and south along riparian corridors during the early morning hours when cowbirds typically look for nests to parasitize. Although this observation needs to be tested with radio telemetry of cowbird movements, it appears that while the Research Ranch is cattle free for 13 square miles [= 33.7 km²], that area is not large enough to prevent cowbirds from flying in to look for nests to parasitize.

Bird feeders and shady lawns also attract cowbirds in the late evening prior to roosting. I observed, captured and banded both Bronzed and Brown-headed Cowbirds arriving just before dusk to one home northwest of Sonoita in a riparian and ornamental forest within a grassland ecosystem. Further work will examine the relationship of cowbird movements to landscape features such as residential areas, bird feeders, golf courses, and livestock operations.

Future work will include comparative impacts on Bell's (*Vireo bellii*), Warbling (*Vireo gilvus*), Plumbeous, and Hutton's Vireos, a comparison of habitat preference and home range size among Bronzed and Brown-headed Cowbirds.

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32. This reference (Gaines 1988) includes in its cowbird account an observation by Sallie Hejl: "Representative breeding localities and hosts: ... 9400' [= 2800 m], Lee Vining Canyon, Rosy Finch (SH)" Based on Gaines 1988 as their source reference, Gray-crowned Rosy Finch was listed as cowbird host in Purcell, K. L., and J. Verner. 1999. [Abundance and rates of brood parasitism by Brown-headed Cowbirds over an elevational gradient in the southern Sierra Nevada. Stud. Avian Biol. 18: 97-103].