

## **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, among 7 families, are brood parasites. The 5 species of brood parasitic "cowbirds" are currently all treated as members of the genus *Molothrus*.

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 than 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 1985); 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 a 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 that have been recorded as hosts are indicated by an “x” in the “Host” column. In the column “Notes”, “new” indicates additions to the basic lists provided by Friedmann and Kiff (1985); “host” in this column indicates former victims that can now be categorized as hosts; infrequent victims or hosts are coded by “single” or “few”, with “single” indicating just 1 known record and “few” indicating fewer than 10 records based primarily on number of records documented in Friedmann 1963, Friedmann et al. 1977, and Friedmann and Kiff 1985; “questionable” indicates those species having only circumstantial or doubtful evidence of parasitism.

### Summary counts of victims and hosts of the brood parasitic cowbirds

Species	Total hosts and victims	Hosts
Screaming Cowbird <i>Molothrus rufoaxillaris</i>	5	5
Giant Cowbird <i>Molothrus oryzivorus</i>	11	11
Bronzed Cowbird <i>Molothrus aeneus</i>	103	45
Shiny Cowbird <i>Molothrus bonariensis</i>	270	97
Brown-headed Cowbird <i>Molothrus ater</i>	249	172

### *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 four 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 Reboreda (1996), de Mársico and Reboreda (2008), Mahler et al. (2009), de Mársico et al. (2010), and Mermoz et al. (2018). Several other species have been erroneously described as hosts of the Screaming Cowbird based on mis-identification of eggs of the Shiny Cowbird.<sup>1</sup> 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 Black Caciue *Cacicus solitarius* and Cattle Tyrant *Machetornis rixosus* (Di Giacomo et al. 2010).<sup>2</sup>

Host	FAMILY/species	Species	Notes
	ICTERIDAE		
x	Austral Blackbird	<i>Curaeus curaeus</i>	new
x	Scarlet-headed Blackbird	<i>Amblyramphus holosericeus</i>	new; single
x	Chopi Blackbird	<i>Gnorimopsar chopi</i>	new
x	Brown-and-Yellow Marshbird	<i>Pseudoleistes virescens</i>	new
x	Bay-winged Cowbird	<i>Agelaioides badius</i>	

**B. Hosts of the Giant Cowbird – *Molothrus oryzivorus* (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 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 Lehmann 1960 and Ramoni-Perazzi et al. 2010 (providing 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* (suggested by Fraga and Krefl 2007). [W. Meise’s prediction (in Schönwetter 1981) about Russet-backed Oropendola being a host proved correct (see Robinson 1988).]

Host	FAMILY/species	Species	Notes
	<b>CORVIDAE</b>		
x	Turquoise Jay	<i>Cyanolyca turcosa</i>	new; single
x	Green Jay	<i>Cyanocorax yncas</i>	few
	<b>ICTERIDAE</b>		
x	Russet-backed Oropendola	<i>Psarocolius angustifrons</i>	new
x	Green Oropendola	<i>Psarocolius viridis</i>	new
x	Chestnut-headed Oropendola	<i>Psarocolius wagleri</i>	
x	Crested Oropendola	<i>Psarocolius decumanus</i>	
x	Montezuma Oropendola	<i>Psarocolius montezuma</i>	
x	Yellow-rumped Cacique	<i>Cacicus cela</i>	
x	Red-rumped Cacique	<i>Cacicus haemorrhous</i>	
x	Spot-breasted Oriole	<i>Icterus pectoralis</i>	new; single
x	Streak-backed Oriole	<i>Icterus pustulatus</i>	new; single

**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 1995<sup>3</sup>, Ortega 1998) with additions<sup>4</sup>.

Host	FAMILY/species	Species	Notes
	<b>COLUMBIDAE</b>		
	White-winged Dove	<i>Zenaida asiatica</i>	single
	Mourning Dove	<i>Zenaida macroura</i>	few
	Common Ground-Dove	<i>Columbina passerina</i>	few
	<b>CUCULIDAE</b>		
	Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	new; single
	<b>TITYRIDAE</b>		
	Rose-throated Becard	<i>Pachyramphus aglaiae</i>	
	<b>TYRANNIDAE; TYRANNINAE</b>		
	Willow Flycatcher	<i>Empidonax traillii</i>	new; single
	Social Flycatcher	<i>Myiozetetes similis</i>	new; single
	Great Kiskadee	<i>Pitangus sulphuratus</i>	single

	Sulphur-bellied Flycatcher	<i>Myiodynastes luteiventris</i>	single
x	Tropical Kingbird	<i>Tyrannus melancholicus</i>	
x	Couch's Kingbird	<i>Tyrannus couchii</i>	
x	Western Kingbird	<i>Tyrannus verticalis</i>	new
	Scissor-tailed Flycatcher	<i>Tyrannus forficatus</i>	single
	<b>TYRANNIDAE; FLUVICOLINAE</b>		
	Willow Flycatcher	<i>Empidonax traillii</i>	questionable
	Buff-breasted Flycatcher	<i>Empidonax fulvifrons</i>	questionable
	<b>VIREONIDAE</b>		
	Slaty Vireo	<i>Vireo brevipennis</i>	new; single
	Bell's Vireo	<i>Vireo bellii</i>	new; single
	Plumbeous Vireo	<i>Vireo plumbeus</i>	few
	Hutton's Vireo	<i>Vireo huttoni</i>	new; single
x	Warbling Vireo	<i>Vireo gilvus</i>	new; single
x	Yellow-green Vireo	<i>Vireo flavoviridis</i>	few
	<b>CORVIDAE</b>		
x	Green Jay	<i>Cyanocorax yncas</i>	
	<b>TROGLODYTIDAE</b>		
x	House Wren	<i>Troglodytes aedon</i>	new; single
	Rufous-naped Wren	<i>Campylorhynchus rufinucha</i>	
	Sinaloa Wren	<i>Thryophilus sinaloa</i>	few
	Banded Wren	<i>Thryophilus pleurostictus</i>	single
x	Carolina Wren	<i>Thryothorus ludovicianus</i>	single
	Happy Wren	<i>Pheugopedius felix</i>	single
x	Plain Wren	<i>Cantorchilus modestus</i>	single
x	Bewick's Wren	<i>Thryomanes bewickii</i>	
	<b>POLIOPTILIDAE</b>		
	Black-tailed Gnatcatcher	<i>Polioptila melanura</i>	few
	White-lored Gnatcatcher	<i>Polioptila albiloris</i>	
	<b>TURDIDAE</b>		
	Black-billed Nightingale-Thrush	<i>Catharus gracilirostris</i>	
x	Orange-billed Nightingale-thrush	<i>Catharus aurantirostris</i>	
	Russet Nightingale-Thrush	<i>Catharus occidentalis</i>	
	Clay-colored Robin	<i>Turdus grayi</i>	few
	Rufous-backed Robin	<i>Turdus rufopalliatu</i>	
	<b>MIMIDAE</b>		
x	Northern Mockingbird	<i>Mimus polyglottos</i>	
	Tropical Mockingbird	<i>Mimus gilvus</i>	
x	Long-billed Thrasher	<i>Toxostoma longirostre</i>	few
	Curve-billed Thrasher	<i>Toxostoma curvirostre</i>	
	LeConte's Thrasher	<i>Toxostoma lecontei</i>	single
	<b>FRINGILLIDAE</b>		
	House Finch	<i>Haemorhous mexicanus</i>	new
	<b>PASSERELLIDAE</b>		
	Stripe-headed Sparrow	<i>Peucaea ruficauda</i>	single
	Black-chested Sparrow	<i>Peucaea humeralis</i>	single
x	Olive Sparrow	<i>Arremonops rufivirgatus</i>	
x	Black-striped Sparrow	<i>Arremonops conirostris</i>	new as host
x	Rufous-collared Sparrow	<i>Zonotrichia capensis</i>	single
	Lark Sparrow	<i>Chondestes grammacus</i>	
	Chipping Sparrow	<i>Spizella passerina</i>	new; single
x	Song Sparrow	<i>Melospiza melodia</i>	

	Rusty-crowned Ground-Sparrow	<i>Melospiza kieneri</i>	
x	Canyon Towhee	<i>Melospiza fusca</i>	
	White-throated Towhee	<i>Melospiza albicollis</i>	
x	Prevost's Ground-Sparrow	<i>Melospiza biarcuata</i>	few
x	White-eared Ground-Sparrow	<i>Melospiza leucotis</i>	single
x	Rusty Sparrow	<i>Aimophila rufescens</i>	new as host; 1
	Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>	questionable
x	Spotted Towhee	<i>Pipilo maculatus</i>	few
x	White-naped Brushfinch	<i>Atlapetes albinucha</i>	
	<b>ICTERIIDAE</b>		
x	Yellow-breasted Chat	<i>Icteria virens</i>	few
	<b>ICTERIDAE</b>		
	Yellow-billed Cacique	<i>Amblycercus holosericeus</i>	few
	Yellow-winged Cacique	<i>Cacicus melanicterus</i>	
	Chestnut-headed Oropendola	<i>Psarocolius wagleri</i>	single
	Great-tailed Grackle	<i>Quiscalus mexicanus</i>	new; single
	Black-vented Oriole	<i>Icterus wagleri</i>	few
x	Orchard Oriole	<i>Icterus spurius</i>	few
	Fuertes's Oriole	<i>Icterus fuertesi</i>	single
x	Hooded Oriole	<i>Icterus cucullatus</i>	
	Streak-backed Oriole	<i>Icterus pustulatus</i>	
x	Spot-breasted Oriole	<i>Icterus pectoralis</i>	new; few
x	Altamira Oriole	<i>Icterus gularis</i>	new; few
x	Audubon's Oriole	<i>Icterus graduacauda</i>	
x	Bullock's Oriole	<i>Icterus bullockii</i>	
x	Scott's Oriole	<i>Icterus parisorum</i>	new; few
x	Red-winged Blackbird	<i>Agelaius phoeniceus</i>	
	<b>PARULIDAE</b>		
	Lucy's Warbler	<i>Oreothlypis luciae</i>	new; single
x	Olive-crowned Yellowthroat	<i>Geothlypis semiflava</i>	new; single
x	Gray-crowned Yellowthroat	<i>Geothlypis poliocephala</i>	new; single
x	Tropical Parula	<i>Setophaga pitiayumi</i>	single
	Yellow Warbler	<i>Setophaga petechia (aestiva group)</i>	new; single
	Yellow [Mangrove] Warbler	<i>Setophaga petechia (erithachorides group)</i>	new
x	Golden-cheeked Warbler	<i>Setophaga chrysoparia</i>	single
x	Rufous-capped Warbler	<i>Basileuterus rufifrons</i>	new; few
	Painted Redstart	<i>Myioborus pictus</i>	single
	<b>CARDINALIDAE</b>		
	Hepatic Tanager	<i>Piranga flava</i>	few
x	Summer Tanager	<i>Piranga rubra</i>	
	Western Tanager	<i>Piranga ludoviciana</i>	new; few
x	Flame-colored Tanager	<i>Piranga bidentata</i>	few
x	Red-headed Tanager	<i>Piranga erythrocephala</i>	single
x	Red-crowned Ant-Tanager	<i>Habia rubica</i>	single
	Red-throated Ant-Tanager	<i>Habia fuscicauda</i>	single
x	Common Bush-Tanager	<i>Chlorospingus ophthalmicus</i>	new; single
	White-lined Tanager	<i>Tachyphonus rufus</i>	new; single
	Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	single
x	Northern Cardinal	<i>Cardinalis cardinalis</i>	
x	Pyrrhuloxia	<i>Cardinalis sinuatus</i>	new; few
	Blue Seed-eater	<i>Amaurospiza concolor</i>	single
	Blue Grosbeak	<i>Passerina caerulea</i>	few

	Painted Bunting	<i>Passerina ciris</i>	few
	THRAUPIDAE		
x	Passerini's Tanager	<i>Ramphocelus passerinii</i>	
	Buff-throated Saltator	<i>Saltator maximus</i>	new; single
	White-collared Seedeater	<i>Sporophila torqueola</i>	single

**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 2002<sup>5</sup>) and several additions<sup>6</sup>. 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 ptyophila*, 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 2001<sup>7</sup>; see also Smith and Sprunt 1987, Post 1992, Pranty 1995, 2000).

Host FAMILY/species	Species	Notes
COLUMBIDAE		
Picui Ground-Dove	<i>Columbina picui</i>	few
Black-winged Ground-Dove	<i>Metriopelia melanoptera</i>	
Zenaida Dove	<i>Zenaida aurita</i>	new; single
Eared Dove	<i>Zenaida auriculata</i>	
Common Ground-Dove	<i>Columbina passerina</i>	new; single
CUCULIDAE		
Dark-billed Cuckoo	<i>Coccyzus melacoryphus</i>	new
Guira Cuckoo	<i>Guira guira</i>	new
PICIDAE		
Green-barred Woodpecker	<i>Colaptes melanochloros</i>	single
FURNARIIDAE; FURNARIINAE		

	Olog's Cinclodes	<i>Cinclodes ologi</i>	questionable
	White-winged Cinclodes	<i>Cinclodes atacamensis</i>	questionable
x	Rufous Hornero	<i>Furnarius rufus</i>	
	Crested Hornero	<i>Furnarius cristatus</i>	
	Curve-billed Reedhaunter	<i>Limnornis curvirostris</i>	single
	Straight-billed Reedhaunter	<i>Limnortites rectirostris</i>	new
	Wren-like Rushbird	<i>Phleocryptes melanops</i>	single
	Tufted Tit-Spinetail	<i>Leptasthenura platensis</i>	
	Plain-mantled Tit-Spinetail	<i>Leptasthenura aegithaloides</i>	
	Pale-breasted Spinetail	<i>Synallaxis albescens</i>	
	Spix's Spinetail	<i>Synallaxis spixi</i>	
	Stripe-crowned Spinetail	<i>Cranioleuca pyrrhophia</i>	few
x	Olive Spinetail	<i>Cranioleuca obsoleta</i>	single
	Rusty-backed Spinetail	<i>Cranioleuca vulpina</i>	single
	Sulphur-bearded Spinetail	<i>Cranioleuca sulphurifera</i>	new
	Yellow-chinned Spinetail	<i>Certhiaxis cinnamomeus</i>	
	Sharp-billed Canastero	<i>Asthenes pyrrholeuca</i>	new
x	Short-billed Canastero	<i>Asthenes baeri</i>	
	Creamy-breasted Canastero	<i>Asthenes dorbignyi</i>	single
	Patagonian Canastero	<i>Asthenes patagonica</i>	few
	Puna Canastero	<i>Asthenes sclateri</i>	single
	Hudson's Canastero	<i>Asthenes hudsoni</i>	
x	Cipó Canastero	<i>Asthenes luizae</i>	new
	Rufous-fronted Thornbird	<i>Phacellodomus rufifrons</i>	single
	Little Thornbird	<i>Phacellodomus sibilatrix</i>	single
	Streak-fronted Thornbird	<i>Phacellodomus striaticeps</i>	single
x	Orange-breasted Thornbird	<i>Phacellodomus ferrugineigula</i>	new
	Freckle-breasted Thornbird	<i>Phacellodomus striaticollis</i>	few
	Greater Thornbird	<i>Phacellodomus ruber</i>	few
	Firewood-Gatherer	<i>Anumbius annumbi</i>	
	Lark-like Brushrunner	<i>Coryphistera alaudina</i>	single
	Caatinga Cacholote	<i>Pseudoseisura cristata</i>	
	White-throated Cacholote	<i>Pseudoseisura gutturalis</i>	single
	Brown Cacholote	<i>Pseudoseisura lophotes</i>	new
	<b>FURNARIIDAE; DENDROCOLAPTINAE</b>		
	Straight-billed Woodcreeper	<i>Dendroplex picus</i>	
	<b>THAMNOPHILIDAE</b>		
	Great Antshrike	<i>Taraba major</i>	
x	Collared Antshrike	<i>Thamnophilus bernardi</i>	
	Barred Antshrike	<i>Thamnophilus doliatus</i>	new
	Rufous-capped Antshrike	<i>Thamnophilus ruficapillus</i>	
	Variable Antshrike	<i>Thamnophilus caerulescens</i>	new
	<b>RHINOCRYPTIDAE</b>		
	Crested Gallito	<i>Rhinocrypta lanceolata</i>	
	<b>TYRANNIDAE</b>		
	Yellow-bellied Elaenia	<i>Elaenia flavogaster</i>	
x	White-crested Elaenia	<i>Elaenia albiceps</i>	new as host
	Small-billed Elaenia	<i>Elaenia parvirostris</i>	new
x	Caribbean Elaenia	<i>Elaenia martinica</i>	new
	Suiriri Flycatcher	<i>Suiriri suiriri</i>	few
	White-crested Tyrannulet	<i>Serpophaga subcristata</i>	single
	Sooty Tyrannulet	<i>Serpophaga nigricans</i>	



x	Warbling Doradito	<i>Pseudocolopteryx flaviventris</i>	
	Flavescent Flycatcher	<i>Myiophobus fasciatus</i>	
	Cliff Flycatcher	<i>Hirundinea ferruginea</i>	new; single
	Vermilion Flycatcher	<i>Pyrocephalus rubinus</i>	
	Rufous-naped Ground-Tyrant	<i>Muscisaxicola rufivertex</i>	new
	Grey-bellied Shrike-Tyrant	<i>Agriornis microptera</i>	new
	Grey Monjita	<i>Xolmis cinereus</i>	
	White Monjita	<i>Xolmis irupero</i>	
x	Fire-eyed Diucon	<i>Xolmis pyrope</i>	new as host
	Black-and-White Monjita	<i>Xolmis dominicanus</i>	new
x	Short-tailed Field-Tyrant	<i>Muscigralla brevicauda</i>	single
	Blue-billed Black-Tyrant	<i>Knipolegus cyanirostris</i>	
	Plumbeous Andean-Tyrant	<i>Knipolegus cabanisi</i>	
x	Velvety Black-Tyrant	<i>Knipolegus nigerrimus</i>	new; few
	Spectacled Tyrant	<i>Hymenops perspicillata</i>	
x	Masked Water-Tyrant	<i>Fluvicola nengeta</i>	new
x	Pied Water-Tyrant	<i>Fluvicola pica</i>	new; few
x	White-headed Marsh-Tyrant	<i>Arundinicola leucocephala</i>	
x	Yellow-browed Tyrant	<i>Satrapa icterophrys</i>	
x	Cattle Tyrant	<i>Machetornis rixosa</i>	
	Short-crested Flycatcher	<i>Myiarchus ferox</i>	single
x	Swainson's Flycatcher	<i>Myiarchus swainsoni</i>	new
	Brown-crested Flycatcher	<i>Myiarchus tyrannulus</i>	single
x	Puerto Rico Flycatcher	<i>Myiarchus antillarum</i>	new
	Lesser Antillean Flycatcher	<i>Myiarchus oberi</i>	new
	Streaked Flycatcher	<i>Myiodynastes maculatus</i>	
	Baird's Flycatcher	<i>Myiodynastes bairdii</i>	few
x	White-bearded Flycatcher	<i>Phelpsia [Conopias] inornatus</i>	
x	Great Kiskadee	<i>Pitangus sulphuratus</i>	
x	Crowned Slaty-Flycatcher	<i>Empidonomus aurantioatrocristatus</i>	few
	Variiegated Flycatcher	<i>Empidonomus varius</i>	
x	Tropical Kingbird	<i>Tyrannus melancholicus</i>	
	Snowy-throated Kingbird	<i>Tyrannus niveigularis</i>	single
	Gray Kingbird	<i>Tyrannus dominicensis</i>	single
x	Fork-tailed Flycatcher	<i>Tyrannus savana</i>	
	<b>TITYRIDAE</b>		
x	Black-tailed Tityra	<i>Tityra cayana</i>	single
	White-naped Xenopsaris	<i>Xenopsaris albinucha</i>	
	White-winged Becard	<i>Pachyramphus polychopterus</i>	
	<b>COTINGIDAE</b>		
	White-tipped Plantcutter	<i>Phytotoma rutila</i>	few
	<b>VIREONIDAE</b>		
x	Rufous-browed Peppershrike	<i>Cyclarhis gujanensis</i>	few
x	Puerto Rican Vireo	<i>Vireo latimeri</i>	new
	Red-eyed Vireo	<i>Vireo olivaceus</i>	
	Chivi Vireo	<i>Vireo chici</i>	
x	Black-whiskered Vireo	<i>Vireo altiloquus</i>	new
	Rufous-crowned Greenlet	<i>Hylophilus poicilotis</i>	single
	Golden-fronted Greenlet	<i>Hylophilus aurantiifrons</i>	
	<b>HIRUNDINIDAE</b>		
x	White-rumped Swallow	<i>Tachycineta leucorrhoa</i>	few
	Brown-chested Martin	<i>Phaeoprogne tapera</i>	few

	<b>TROGLODYTIDAE</b>		
x	House Wren	<i>Troglodytes aedon</i>	
x	Apolinar's Wren	<i>Cistothorus apolinari</i>	new
x	Bicolored Wren	<i>Campylorhynchus griseus</i>	
	Thrush-like Wren	<i>Campylorhynchus turdinus</i>	
	Fasciated Wren	<i>Campylorhynchus fasciatus</i>	
x	Stripe-backed Wren	<i>Campylorhynchus nuchalis</i>	single
x	Rufous-breasted Wren	<i>Pheugopedius rutilus</i>	
	Buff-breasted Wren	<i>Cantorchilus leucotis</i>	
x	Superciliated Wren	<i>Cantorchilus superciliaris</i>	
	<b>POLIOPTILIDAE</b>		
x	Masked Gnatcatcher	<i>Polioptila dumicola</i>	
	<b>TURDIDAE</b>		
	Orange-billed Nightingale-Thrush	<i>Catharus aurantiirostris</i>	
	Black-billed Thrush	<i>Turdus ignobilis</i>	new
	Chiguanco Thrush	<i>Turdus chiguanco</i>	
	Glossy-black Thrush	<i>Turdus serranus</i>	single
	Andean Slaty-Thrush	<i>Turdus nigriceps</i>	
	Austral Thrush	<i>Turdus falcklandii</i>	
x	Rufous-bellied Thrush	<i>Turdus rufiventris</i>	
x	Pale-breasted Thrush	<i>Turdus leucomelas</i>	new as host
x	Creamy-bellied Thrush	<i>Turdus amaurochalinus</i>	
	Bare-eyed Thrush	<i>Turdus nudigenis</i>	
	Red-legged Thrush	<i>Turdus plumbeus</i>	new
	Austral Thrush	<i>Turdus falcklandii</i>	new
	<b>MIMIDAE</b>		
	Northern Mockingbird	<i>Mimus polyglottos</i>	new
	Tropical Mockingbird	<i>Mimus gilvus</i>	
x	Chilean Mockingbird	<i>Mimus thenca</i>	new as host
x	Long-tailed Mockingbird	<i>Mimus longicaudatus</i>	
x	Chalk-browed Mockingbird	<i>Mimus saturninus</i>	
x	Patagonian Mockingbird	<i>Mimus patagonicus</i>	few
x	White-banded Mockingbird	<i>Mimus triurus</i>	
	Brown-backed Mockingbird	<i>Mimus dorsalis</i>	new
	<b>DULIDAE</b>		
x	Palm Chat	<i>Dulus dominicus</i>	new
	<b>PLOCEIDAE</b>		
x	Village Weaver	<i>Ploceus cucullatus</i>	new
	<b>ESTRILDIDAE</b>		
	Bronze Mannikin	<i>Lonchura cucullata</i>	single
	Nutmeg Mannikin	<i>Lonchura punctulata</i>	new; single
	<b>PASSERIDAE</b>		
	House Sparrow	<i>Passer domesticus</i>	
	<b>MONTACILLIDAE</b>		
	Short-billed Pipit	<i>Anthus furcatus</i>	few
	Yellowish Pipit	<i>Anthus lutescens</i>	
	Correndera Pipit	<i>Anthus correndera</i>	
	<b>FRINGILLIDAE</b>		
x	Hooded Siskin	<i>Spinus magellanicus</i>	few
	Black-chinned Siskin	<i>Spinus barbata</i>	
	<b>RHODINOCICHLIDAE</b>		
	Rosy Thrush-Tanager	<i>Rhodinocichla rosea</i>	single

	<b>PASSERELLIDAE</b>		
x	Tumbes Sparrow	<i>Rhynchospiza stolzmanni</i>	
	Stripe-capped Sparrow	<i>Rhynchospiza strigiceps</i>	single
	Grassland Sparrow	<i>Ammodramus [Myiospiza] humeralis</i>	
	Black-striped Sparrow	<i>Arremonops conirostris</i>	single
	Saffron-billed Sparrow	<i>Arremon flavirostris</i>	single
	Black-capped Sparrow	<i>Arremon abeillei</i>	new; single
x	Rufous-collared Sparrow	<i>Zonotrichia capensis</i>	
x	Ochre-breasted Brush-Finch	<i>Atlapetes semirufus</i>	few
	Yellow-striped Brush-Finch	<i>Atlapetes citrinellus</i>	
x	Pale-headed Brush-Finch	<i>Atlapetes pallidiceps</i>	new
	<b>ICTERIDAE</b>		
	Yellow-rumped Cacique	<i>Cacicus cela</i>	single
x	Golden-winged Cacique	<i>Cacicus chrysopterus</i>	new as host; few
	Solitary Cacique	<i>Cacicus solitarius</i>	questionable
	Yellow-billed Cacique	<i>Amblyramphus holosericeus</i>	
	Bahama Oriole	<i>Icterus northropi</i>	new
x	Cuban Oriole	<i>Icterus melanopsis</i>	new
	Hispaniolan Oriole	<i>Icterus dominicensis</i>	new; single
x	Puerto Rican Oriole	<i>Icterus portoricensis</i>	new
x	St. Lucia Oriole	<i>Icterus laudabilis</i>	new
	Martinique Oriole	<i>Icterus bonana</i>	
	Epaulet Oriole	<i>Icterus cayanensis</i>	single
	Monriche Oriole	<i>Icterus chrysocephalus</i>	
	Yellow-backed Oriole	<i>Icterus chrysater</i>	
x	Venezuelan Troupial	<i>Icterus [icterus] icterus</i>	new as host
	Campo Troupial	<i>Icterus [icterus] jamacaii</i>	
	Orange-backed Troupial	<i>Icterus [icterus] croconotus</i>	
x	Yellow Oriole	<i>Icterus nigrogularis</i>	new as host
	Jamaican Oriole	<i>Icterus leucopteryx</i>	new
x	White-edged Oriole	<i>Icterus graceannae</i>	
	Orange-crowned Oriole	<i>Icterus auricapillus</i>	new
	Red-winged Blackbird	<i>Agelaius phoeniceus</i>	questionable
	Tawny-shouldered Blackbird	<i>Agelaius humeralis</i>	new
x	Yellow-shouldered Blackbird	<i>Agelaius xanthomus</i>	
x	Scrub Blackbird	<i>Dives warszewiczi</i>	
	Golden-tufted Grackle	<i>Macroagelaius imthurni</i>	
	Oriole Blackbird	<i>Gymnomystax mexicanus</i>	few
x	Chopi Blackbird	<i>Gnorimopsar chopi</i>	new as host
x	Forbes's Blackbird	<i>Anumara forbesi</i>	new
x	Yellow-winged Blackbird	<i>Agelasticus thilius</i>	
	Unicolored Blackbird	<i>Agelasticus cyanopus</i>	few
x	Greater Antillean Grackle	<i>Quiscalus niger</i>	new; few
x	Carib Grackle	<i>Quiscalus lugubris</i>	
x	Chestnut-capped Blackbird	<i>Chrysomus ruficapillus</i>	
x	Yellow-hooded Blackbird	<i>Chrysomus icterocephalus</i>	new
x	Saffron-cowled Blackbird	<i>Xanthopsar flavus</i>	new as host
x	Brown-and-Yellow Marshbird	<i>Pseudoleistes virescens</i>	new as host
	Yellow-rumped Marshbird	<i>Pseudoleistes guirahuro</i>	questionable
x	Grayish Baywing	<i>Agelaioides badius</i>	new
x	Pale Baywing	<i>Agelaioides fringillarius</i>	new
	Pampas Meadowlark	<i>Sturnella [Pezites] defilippii</i>	few

x	Long-tailed Meadowlark	<i>Sturnella [Pezites] loyca</i>	new as host
x	Red-breasted Meadowlark	<i>Sturnella [Leistes] militaris</i>	
	Peruvian Meadowlark	<i>Sturnella [Leistes] bellicosa</i>	new; few
x	White-browed Meadowlark	<i>Sturnella [Leistes] supercilialis</i>	new
	<b>PARULIDAE</b>		
x	Yellow Warbler	<i>Setophaga petechia (petechia group)</i>	
	Adelaide's Warbler	<i>Setophaga adelaidae</i>	new
	Masked Yellowthroat	<i>Geothlypis aequinoctialis</i>	
	Flavescent Warbler	<i>Basileuterus flaveolus</i>	
	White-striped Warbler	<i>Basileuterus leucophrys</i>	
	<b>CARDINALIDAE</b>		
	Hepatic Tanager	<i>Piranga flava</i>	
	Yellow Grosbeak	<i>Pheucticus chrysopheplus</i>	few
	Black-backed Grosbeak	<i>Pheucticus aureoventris</i>	
	Ultramarine Grosbeak	<i>Cyanocompsa brissonii</i>	
	<b>THRAUPIDAE</b>		
x	Guira Tanager	<i>Hemithraupis guira</i>	new; few
x	Bicolored Conebill	<i>Conirostrum bicolor</i>	few
	Cinereous Conebill	<i>Conirostrum cinereum</i>	few
	Greater Yellow-Finch	<i>Sicalis auriventris</i>	
	Saffron Finch	<i>Sicalis flaveola</i>	
	Grassland Yellow-Finch	<i>Sicalis luteola</i>	
	Black-hooded Sierra-Finch	<i>Phrygilus atriceps</i>	new
	Patagonian Sierra-Finch	<i>Phrygilus patagonicus</i>	
	Plumbeous Sierra-Finch	<i>Phrygilus unicolor</i>	
	Ash-breasted Sierra-Finch	<i>Phrygilus plebejus</i>	new
	Band-tailed Seedeater	<i>Catamenia analis</i>	new
	Ruby-crowned Tanager	<i>Tachyphonus coronatus</i>	new
	White-lined Tanager	<i>Tachyphonus rufus</i>	few
	Pileated Finch	<i>Coryphospingus pileatus</i>	
x	Red-crested Finch	<i>Coryphospingus cucullatus</i>	new as host
	Crimson-backed Tanager	<i>Ramphocelus dimidiatus</i>	new
x	Silver-beaked Tanager	<i>Ramphocelus carbo</i>	few
	Brazilian Tanager	<i>Ramphocelus bresilius</i>	
	Crimson-breasted Finch	<i>Rhodospingus cruentus</i>	
	Blue Dacnis	<i>Dacnis cayana</i>	single
	Lined Seedeater	<i>Sporophila lineola</i>	few
x	Double-collared Finch	<i>Sporophila caerulescens</i>	
	Ruddy-breasted Seedeater	<i>Sporophila minuta</i>	
	Lesser Seed-Finch	<i>Sporophila angolensis</i>	
	Large-billed Seed-Finch	<i>Sporophila crassirostris</i>	
	Many-colored Chaco-Finch	<i>Saltatricula multicolor</i>	
x	Streaked Saltator	<i>Saltator albicollis</i>	single
x	Grayish Saltator	<i>Saltator coerulescens</i>	
	Green-winged Saltator	<i>Saltator similis</i>	
x	Golden-billed Saltator	<i>Saltator aurantiirostris</i>	
	Black-throated Grosbeak	<i>Saltator fuliginosus</i>	
	Great Pampa-Finch	<i>Embernagra platensis</i>	
x	Pale-throated Pampa-Finch	<i>Embernagra longicauda</i>	new; single
	Wedge-tailed Grass-Finch	<i>Emberizoides herbicola</i>	
x	Cinereous Finch	<i>Piezorina cinerea</i>	
	Collared Warbling-Finch	<i>Poospiza hispaniolensis</i>	few

x	Black-and-Rufous Warbling-Finch	<i>Poospiza nigrorufa</i>	few
	Black-and-chestnut Warbling-Finch	<i>Poospiza whitii</i>	new
	Gray-throated Warbling-Finch	<i>Poospiza cabanisi</i>	few
	Orange-headed Tanager	<i>Thlypopsis sordida</i>	few
x	Fulvous-headed Tanager	<i>Thlypopsis fulviceps</i>	new; few
	Ringed Warbling-Finch	<i>Microspingus torquatus</i>	few
	Black-capped Warbling-Finch	<i>Microspingus melanoleuca</i>	new; few
	Cinereous Warbling-Finch	<i>Microspingus cinerea</i>	few
x	White-rumped Tanager	<i>Cypsnagra hirundinacea</i>	new
x	Long-tailed Reed-Finch	<i>Donacospiza albifrons</i>	
	Black-faced Grassquit	<i>Tiaris bicolor</i>	new
	Puerto Rican Bullfinch	<i>Loxigilla portoricensis</i>	new
	Lesser Antillean Bullfinch	<i>Loxigilla noctis</i>	few
x	White-banded Tanager	<i>Neothraupis fasciata</i>	new
x	Common Diuca-Finch	<i>Diuca diuca</i>	
	Yellow Cardinal	<i>Gubernatrix cristata</i>	
	Red-crested Cardinal	<i>Paroaria coronata</i>	
	Red-capped Cardinal	<i>Paroaria gularis</i>	
	Yellow-billed Cardinal	<i>Paroaria capitata</i>	
	Black-faced Tanager	<i>Schistochlamys melanopsis</i>	single
	Scrub Tanager	<i>Stilpnia vitriolina</i>	new
	Blue-gray Tanager	<i>Thraupis episcopus</i>	
x	Sayaca Tanager	<i>Thraupis sayaca</i>	few
	Golden-chevroned Tanager	<i>Thraupis ornata</i>	
x	Palm Tanager	<i>Thraupis palmarum</i>	new; few
x	Blue-and-Yellow Tanager	<i>Thraupis bonariensis</i>	

**E. Victims and hosts of the Brown-headed Cowbird – *Molothrus ater* (Boddaert 1783),** *Table des Planches Enlumineez [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 additions <sup>8</sup> and potential deletions <sup>9</sup>.

Host FAMILY/species	Species	Notes
<b>ANATIDAE</b>		
Blue-winged Teal	<i>Spatula discors</i>	single
Lesser Scaup	<i>Aythya affinis</i>	single
Hooded Merganser	<i>Lophodytes cucullatus</i>	new; single
<b>PHASIANIDAE; PHASIANINAE</b>		
Ring-necked Pheasant	<i>Phasianus colchicus</i>	new; single
<b>PHASIANIDAE; TETRAONINAE</b>		
Greater Prairie-Chicken	<i>Tympanuchus cupido</i>	new; single
<b>COLUMBIDAE</b>		
Mourning Dove	<i>Zenaida macroura</i>	few; dubious as host
Common Ground-Dove	<i>Columbina passerina</i>	few
<b>CUCULIDAE</b>		
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	few
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	few
<b>TROCHILIDAE</b>		
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	single

	<b>RALLIDAE</b>		
	Virginia Rail	<i>Rallus limicola</i>	single
	<b>CHARADRIIDAE</b>		
	Killdeer	<i>Charadrius vociferus</i>	single
	<b>SCOLOPACIDAE</b>		
	Spotted Sandpiper	<i>Actitis macularia</i>	few
	Upland Sandpiper	<i>Bartramia longicauda</i>	few
	Wilson's Phalarope	<i>Phalaropus tricolor</i>	few
	<b>LARIDAE</b>		
	California Gull	<i>Larus californicus</i>	single
	Common Tern	<i>Sterna hirundo</i>	single
	<b>ACCIPITRIDAE</b>		
	Ferruginous Hawk	<i>Buteo regalis</i>	single
	<b>PICIDAE</b>		
	Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	single
	<b>TYRANNIDAE; TYRANNINAE</b>		
	Great Crested Flycatcher	<i>Myiarchus crinitus</i>	
	Cassin's Kingbird	<i>Tyrannus vociferans</i>	single
x	Western Kingbird	<i>Tyrannus verticalis</i>	few
x	Eastern Kingbird	<i>Tyrannus tyrannus</i>	
x	Gray Kingbird	<i>Tyrannus dominicensis</i>	new; single
x	Scissor-tailed Flycatcher	<i>Tyrannus forficatus</i>	few
	<b>TYRANNIDAE; FLUVICOLINAE</b>		
x	Olive-sided Flycatcher	<i>Contopus cooperi</i>	few
x	Western Wood-Pewee	<i>Contopus sordidulus</i>	few
x	Eastern Wood-Pewee	<i>Contopus virens</i>	
	Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	
x	Acadian Flycatcher	<i>Empidonax virens</i>	
x	Alder Flycatcher	<i>Empidonax alnorum</i>	
x	Willow Flycatcher	<i>Empidonax traillii</i>	
	Least Flycatcher	<i>Empidonax minimus</i>	new as host
	Hammond's Flycatcher	<i>Empidonax hammondii</i>	single
x	Gray Flycatcher	<i>Empidonax wrightii</i>	
x	Dusky Flycatcher	<i>Empidonax oberholseri</i>	
x	Pacific Slope Flycatcher	<i>Empidonax difficilis</i>	
x	Cordilleran Flycatcher	<i>Empidonax occidentalis</i>	new; few
	Buff-breasted Flycatcher	<i>Empidonax fulvifrons</i>	single
	Black Phoebe	<i>Sayornis nigricans</i>	
x	Eastern Phoebe	<i>Sayornis phoebe</i>	
	Say's Phoebe	<i>Sayornis saya</i>	few
x	Vermilion Flycatcher	<i>Pyrocephalus rubinus</i>	few
	<b>LANIIDAE</b>		
x	Loggerhead Shrike	<i>Lanius ludovicianus</i>	new; few
	<b>VIREONIDAE</b>		
	Slaty Vireo	<i>Vireo brevipennis</i>	single
x	White-eyed Vireo	<i>Vireo griseus</i>	
	Flat-billed Vireo	<i>Vireo nanus</i>	single
x	Bell's Vireo	<i>Vireo bellii</i>	
x	Black-capped Vireo	<i>Vireo atricapilla</i>	
x	Gray Vireo	<i>Vireo vicinior</i>	new as host
x	Yellow-throated Vireo	<i>Vireo flavifrons</i>	
x	Plumbeous Vireo	<i>Vireo plumbeus</i>	

x	Cassin's Vireo	<i>Vireo cassinii</i>	
x	Blue-headed Vireo	<i>Vireo solitarius</i>	
x	Hutton's Vireo	<i>Vireo huttoni</i>	
x	Warbling Vireo	<i>Vireo gilvus</i>	
x	Philadelphia Vireo	<i>Vireo philadelphicus</i>	few
x	Red-eyed Vireo	<i>Vireo olivaceus</i>	
	Yellow-green Vireo	<i>Vireo flavoviridis</i>	
x	Black-whiskered Vireo	<i>Vireo altiloquus</i>	new
	<b>CORVIDAE</b>		
	Blue Jay	<i>Cyanocitta cristata</i>	few
	American Crow	<i>Corvus brachyrhynchos</i>	few
	<b>ALAUDIDAE</b>		
x	Horned Lark	<i>Eremophila alpestris</i>	
	<b>HIRUNDINIDAE</b>		
	Bank Swallow	<i>Riparia riparia</i>	single
x	Tree Swallow	<i>Tachycineta bicolor</i>	few
	Purple Martin	<i>Progne subis</i>	questionable
x	Barn Swallow	<i>Hirundo rustica</i>	
	Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	few
	<b>PARIDAE</b>		
x	Carolina Chickadee	<i>Poecile carolinensis</i>	few
x	Black-capped Chickadee	<i>Poecile atricapillus</i>	few
x	Mountain Chickadee	<i>Poecile gambeli</i>	new; few
	Tufted Titmouse	<i>Baeolophus bicolor</i>	
	Black-crested Titmouse	<i>Baeolophus atricristatus</i>	few
	<b>REMIZIDAE</b>		
x	Verdin	<i>Auriparus flaviceps</i>	few
	<b>AEGITHALIDAE</b>		
x	Bushtit	<i>Psaltriparus minimus</i>	new as host; few
	<b>SITTIDAE</b>		
x	Red-breasted Nuthatch	<i>Sitta canadensis</i>	few
	White-breasted Nuthatch	<i>Sitta carolinensis</i>	few
	Brown-headed Nuthatch	<i>Sitta pusilla</i>	new; single
	<b>CERTHIDAE</b>		
x	Brown Creeper	<i>Certhia familiaris</i>	few
	<b>TROGLODYTIDAE</b>		
	Boucard's Wren	<i>Campylorhynchus jocosus</i>	
x	Rock Wren	<i>Salpinctes obsoletus</i>	new as host
x	Carolina Wren	<i>Thryothorus ludovicianus</i>	
x	Bewick's Wren	<i>Thryomanes bewickii</i>	few
x	House Wren	<i>Troglodytes aedon</i>	few
	Marsh Wren	<i>Cistothorus palustris</i>	new; single
x	Sedge Wren	<i>Cistothorus platensis</i>	new; few
	<b>POLIOPTILIDAE</b>		
x	Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	
x	California Gnatcatcher	<i>Poliophtila californica</i>	
x	Black-tailed Gnatcatcher	<i>Poliophtila melanura</i>	
x	Black-capped Gnatcatcher	<i>Poliophtila nigriceps</i>	few
	White-lored Gnatcatcher	<i>Poliophtila albiloris</i>	
	<b>REGULIDAE</b>		
x	Golden-crowned Kinglet	<i>Regulus satrapa</i>	few
x	Ruby-crowned Kinglet	<i>Regulus calendula</i>	few

	<b>SYLVIIDAE</b>		
x	Wrentit	<i>Chamaea fasciata</i>	
	<b>TURDIDAE</b>		
x	Eastern Bluebird	<i>Sialia sialis</i>	new as host
x	Western Bluebird	<i>Sialia mexicana</i>	new as host
x	Mountain Bluebird	<i>Sialia currucoides</i>	new as host; few
x	Townsend's Solitaire	<i>Myadestes townsendi</i>	new as host
x	Veery	<i>Catharus fuscescens</i>	
x	Swainson's Thrush	<i>Catharus ustulatus</i>	new as host
x	Hermit Thrush	<i>Catharus guttatus</i>	
x	Wood Thrush	<i>Hylocichla mustelina</i>	
x	American Robin	<i>Turdus migratorius</i>	
	Varied Thrush	<i>Ixoreus naevius</i>	new; single
	<b>MIMIDAE</b>		
x	Gray Catbird	<i>Dumetella carolinensis</i>	
	Curve-billed Thrasher	<i>Toxostoma curvirostre</i>	single
x	Brown Thrasher	<i>Toxostoma rufum</i>	
	Long-billed Thrasher	<i>Toxostoma longirostre</i>	single
	Bendire's Thrasher	<i>Toxostoma bendirei</i>	single
	Sage Thrasher	<i>Oreoscoptes montanus</i>	single
x	Northern Mockingbird	<i>Mimus polyglottos</i>	
	<b>STURNIDAE</b>		
x	European Starling	<i>Sturnus vulgaris</i>	few
	<b>BOMBYCILLIDAE</b>		
	Bohemian Waxwing	<i>Bombycilla garrulus</i>	single
x	Cedar Waxwing	<i>Bombycilla cedrorum</i>	
	<b>PTILOGONATIDAE</b>		
x	Phainopepla	<i>Phainopepla nitens</i>	
	<b>PEUCEDRAMIDAE</b>		
x	Olive Warbler	<i>Peucedramus taeniatus</i>	new; single
	<b>PASSERIDAE</b>		
x	House Sparrow	<i>Passer domesticus</i>	
	<b>MONTACILLIDAE</b>		
x	Sprague's Pipit	<i>Anthus spragueii</i>	new as host; single
	<b>FRINGILLIDAE</b>		
	Gray-crowned Rosy-Finch	<i>Leucosticte tephrocotis</i>	new; single
x	Purple Finch	<i>Haemorhous purpureus</i>	
x	House Finch	<i>Haemorhous mexicanus</i>	
	Cassin's Finch	<i>Haemorhous cassinii</i>	new; single
	Red Crossbill	<i>Loxia curvirostra</i>	single
	Common Redpoll	<i>Acanthis flammea</i>	few
	Pine Siskin	<i>Spinus pinus</i>	
	Lesser Goldfinch	<i>Spinus psaltria</i>	
	Lawrence's Goldfinch	<i>Spinus lawrencei</i>	few
	American Goldfinch	<i>Spinus tristis</i>	
	Evening Grosbeak	<i>Coccothraustes vespertinus</i>	few
	<b>CALCARIIDAE</b>		
	McCown's Longspur	<i>Rhynchophanes mccownii</i>	few
x	Chestnut-collared Longspur	<i>Calcarius ornatus</i>	
	<b>PASSERELLIDAE</b>		
x	Rufous-winged Sparrow	<i>Peucaea carpalis</i>	
	Botteri's Sparrow	<i>Peucaea botterii</i>	new; single



	Cassin's Sparrow	<i>Peucaea cassinii</i>	few
x	Bachman's Sparrow	<i>Peucaea aestivalis</i>	new as host
x	Grasshopper Sparrow	<i>Ammodramus savannarum</i>	
	Olive Sparrow	<i>Arremonops rufivirgatus</i>	few
x	Five-striped Sparrow	<i>Amphispiza quinquestriata</i>	few
x	Black-throated Sparrow	<i>Amphispiza bilineata</i>	new as host
x	Lark Sparrow	<i>Chondestes grammacus</i>	
x	Lark Bunting	<i>Calamospiza melanocorys</i>	new as host
x	Chipping Sparrow	<i>Spizella passerina</i>	
x	Clay-colored Sparrow	<i>Spizella pallida</i>	
	Black-chinned Sparrow	<i>Spizella atrogularis</i>	
x	Field Sparrow	<i>Spizella pusilla</i>	
x	Brewer's Sparrow	<i>Spizella breweri</i>	
x	Fox Sparrow	<i>Passerella iliaca</i>	few
x	Dark-eyed Junco	<i>Junco hyemalis</i>	
x	White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	
x	White-throated Sparrow	<i>Zonotrichia albicollis</i>	
	Sagebrush Sparrow	<i>Artemisiospiza nevadensis</i>	few
	Bell's Sparrow	<i>Artemisiospiza belli</i>	new; single
x	Vesper Sparrow	<i>Poocetes gramineus</i>	
x	LeConte's Sparrow	<i>Ammospiza leconteii</i>	
x	Seaside Sparrow	<i>Ammospiza maritima</i>	single
x	Nelson's Sparrow	<i>Ammospiza nelsoni</i>	new as host; single
x	Baird's Sparrow	<i>Centronyx bairdii</i>	new as host; few
	Henslow's Sparrow	<i>Centronyx henslowii</i>	
x	Savannah Sparrow	<i>Passerculus sandwichensis</i>	
x	Song Sparrow	<i>Melospiza melodia</i>	
x	Lincoln's Sparrow	<i>Melospiza lincolnii</i>	
x	Swamp Sparrow	<i>Melospiza georgiana</i>	
	Rusty-crowned Ground-Sparrow	<i>Melospiza kieneri</i>	
x	Canyon Towhee	<i>Melospiza fusca</i>	
x	Abert's Towhee	<i>Melospiza aberti</i>	
x	California Towhee	<i>Melospiza crissalis</i>	
x	Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>	new as host
x	Green-tailed Towhee	<i>Pipilo chlorurus</i>	new as host; few
x	Spotted Towhee	<i>Pipilo maculatus</i>	
x	Eastern Towhee	<i>Pipilo erythrophthalmus</i>	
	<b>ICTERIIDAE</b>		
x	Yellow-breasted Chat	<i>Icteria virens</i>	
	<b>ICTERIDAE</b>		
	Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	
x	Bobolink	<i>Dolichonyx oryzivorus</i>	
x	Eastern Meadowlark	<i>Sturnella [Sturnella] magna</i>	
x	Western Meadowlark	<i>Sturnella [Sturnella] neglecta</i>	new as host
x	Orchard Oriole	<i>Icterus spurius</i>	
x	Hooded Oriole	<i>Icterus cucullatus</i>	
	Altamira Oriole	<i>Icterus gularis</i>	new; single
	Audubon's Oriole	<i>Icterus graduacauda</i>	
x	Baltimore Oriole	<i>Icterus galbula</i>	
x	Bullock's Oriole	<i>Icterus bullockii</i>	few
	Scott's Oriole	<i>Icterus parisorum</i>	single
x	Red-winged Blackbird	<i>Agelaius phoeniceus</i>	

	Tricolored Blackbird	<i>Agelaius tricolor</i>	single
	Rusty Blackbird	<i>Euphagus carolinus</i>	few
x	Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	
	Common Grackle	<i>Quiscalus quiscula</i>	
	<b>PARULIDAE</b>		
x	Ovenbird	<i>Seiurus aurocapilla</i>	
x	Worm-eating Warbler	<i>Helmitheros vermivorum</i>	
x	Northern Waterthrush	<i>Parkesia noveboracensis</i>	
x	Louisiana Waterthrush	<i>Parkesia motacilla</i>	
x	Blue-winged Warbler	<i>Vermivora cyanoptera</i>	
x	Golden-winged Warbler	<i>Vermivora chrysoptera</i>	
x	Black-and-white Warbler	<i>Mniotilta varia</i>	
x	Prothonotary Warbler	<i>Protonotaria citrea</i>	
x	Swainson's Warbler	<i>Limnothlypis swainsonii</i>	
x	Tennessee Warbler	<i>Leiothlypis peregrina</i>	few
x	Orange-crowned Warbler	<i>Leiothlypis celata</i>	
x	Nashville Warbler	<i>Leiothlypis ruficapilla</i>	
x	Virginia's Warbler	<i>Leiothlypis virginiae</i>	few
x	Lucy's Warbler	<i>Leiothlypis luciae</i>	
	Gray-crowned Yellowthroat	<i>Geothlypis poliocephala</i>	single
x	MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	
x	Mourning Warbler	<i>Geothlypis philadelphia</i>	
x	Kentucky Warbler	<i>Geothlypis formosa</i>	
x	Common Yellowthroat	<i>Geothlypis trichas</i>	
x	Hooded Warbler	<i>Setophaga citrina</i>	
x	American Redstart	<i>Setophaga ruticilla</i>	
x	Kirtland's Warbler	<i>Setophaga kirtlandii</i>	
x	Cape May Warbler	<i>Setophaga tigrina</i>	new; few
x	Cerulean Warbler	<i>Setophaga cerulea</i>	
x	Northern Parula	<i>Setophaga americana</i>	
x	Topical Parula	<i>Setophaga pitiauyumi</i>	few
x	Magnolia Warbler	<i>Setophaga magnolia</i>	
x	Bay-breasted Warbler	<i>Setophaga castanea</i>	few
x	Blackburnian Warbler	<i>Setophaga fusca</i>	
x	Yellow Warbler	<i>Setophaga petechia (aestiva group)</i>	
x	Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	
x	Blackpoll Warbler	<i>Setophaga striata</i>	few
x	Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	
x	Palm Warbler	<i>Setophaga palmarum</i>	
x	Pine Warbler	<i>Setophaga pinus</i>	
x	Yellow-rumped Warbler	<i>Setophaga coronata</i>	
x	Yellow-throated Warbler	<i>Setophaga dominica</i>	few
x	Prairie Warbler	<i>Setophaga discolor</i>	
x	Grace's Warbler	<i>Setophaga graciae</i>	few
x	Black-throated Gray Warbler	<i>Setophaga nigrescens</i>	
x	Townsend's Warbler	<i>Setophaga townsendi</i>	single
x	Hermit Warbler	<i>Setophaga occidentalis</i>	few
x	Golden-cheeked Warbler	<i>Setophaga chrysoparia</i>	
x	Black-throated Green Warbler	<i>Setophaga virens</i>	
x	Canada Warbler	<i>Cardellina canadensis</i>	
x	Wilson's Warbler	<i>Cardellina pusilla</i>	
x	Red-faced Warbler	<i>Cardellina rubrifrons</i>	new; few

	Painted Redstart	<i>Myioborus pictus</i>	single
	<b>CARDINALIDAE</b>		
x	Summer Tanager	<i>Piranga rubra</i>	
x	Scarlet Tanager	<i>Piranga olivacea</i>	
x	Western Tanager	<i>Piranga ludoviciana</i>	few
x	Northern Cardinal	<i>Cardinalis cardinalis</i>	
	Pyrrhuloxia	<i>Cardinalis sinuatus</i>	
x	Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	
x	Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	new as host
x	Blue Grosbeak	<i>Passerina caerulea</i>	
x	Lazuli Bunting	<i>Passerina amoena</i>	
x	Indigo Bunting	<i>Passerina cyanea</i>	
x	Varied Bunting	<i>Passeria versicolor</i>	new; few
x	Painted Bunting	<i>Passeria ciris</i>	
x	Dickcissel	<i>Spiza americana</i>	
	<b>THRAUPIDAE</b>		
	Cinnamon-rumped Seedeater	<i>Sporophila torqueola</i>	few

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#### TAXONOMIC NOTES:

The form *Psarocolius angustifrons alfredi* sometimes treated as separate species (Jaramillo and Burke 1999, who report that this taxon is also a host of the Giant Cowbird).

All host records of parasitism by Bronzed Cowbird of *Atlapetes gutturalis* are from Costa Rica. *Atlapetes gutturalis* sometimes considered conspecific with *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).

*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*.

*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).

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#### 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 (1985) 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.
2. 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).
3. Western Meadowlark *Sturnella neglecta* listed, in error, as host in Lowther (1995).
4. Association of new victims and hosts of the Bronzed Cowbird with specific reference:  
Bowers and Dunning (1984, 1994), one observation of "... female Bronzed Cowbird seen attempting to sit on a nest [of Buff-breasted Flycatcher *Empidonax fulvifrons* ], but unsuccessful ... [in laying egg in nest "  
**Steward et al. (1988)**, Slaty Vireo *Vireo brevipennis*;  
**Cloffelter and Brush (1995)**, Yellow-billed Cuckoo *Coccyzus americanus* and Western Kingbird *Tyrannus verticalis*;  
**Chace (1997)**, Hutton's Vireo, *Vireo huttoni*, Western Tanager *Piranga ludoviciana*;  
**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*;  
**Brush (1998; see also Hathcock 2000)**: Altamira Oriole *Icterus gularis*;  
**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.  
**J. F. Chace in Gardali and Ballard (2000)** report out-of-nest young cowbird fed by Warbling Vireo *Vireo gilvus*.  
**Marshall and Stoleson (2000)**, adds Willow Flycatcher *Empidonax traillii* as possible victim with no details  
**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  
**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 Western Foundation of Vertebrate Zoology.  
**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.

**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)."

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 *Ptilogonys 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) noted 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](http://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](http://www.huitzil.net).

5. 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).

6. 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 supercilii*;

**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 Reboreda (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. 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 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]." and "... 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];

**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 (1995):** 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;

**Velázquez-Tibatá et al. (2000):** Apolinar's Wren *Cistothorus apolinari* added as host;

**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;

**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 below

**Costa (2013):** Pale-throated Pampa-Finch, *Embernagra longicauda* as host

**H. F. Greeney pers. comm:** Black-capped Sparrow *Arremon a. abeillei* as victim. Greeney, H. F. 2018. The nest and eggs of Black-capped Sparrow *Arremon a. abeillei* (Passerellidae) in southwestern Ecuador. Manuscript in review.

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).

Orog's Cinclodes, *Cinclodes olrogi*: ? -- Miatello et al. (1999).

White-winged Cinclodes, *Cinclodes atacamensis schocolatinus*: ? -- Miatello et al. (1999).

Tufted Tit-Spinetail, *Leptasthenura platensis*: N -- Salvador (2011).

Sulphur-beared Spinetail, *Cranioleuca sulphurifera*: N -- Darrieu et al. (1988).

Small-billed Elaenia, *Elaenia parvirostris*: N -- Narosk 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 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.
7. Female collected 7 Jul 2000, McIntosh Co., GA, with 3 unshelled eggs in oviduct, largest 8.1 mm diameter.
8. Association of new hosts and victims of Brown-headed Cowbird with specific references:  
**Carlson (1943)**, Ring-necked Pheasant *Phasianus colchicus* added as victim (egg in a "dump" nest);  
**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;  
**Davis and Sealy (1998)**, Baird's Sparrow *Centronyx 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 Wiens 1994];  
**Johnson et al. (2002)** added Black-throated Sparrow *Amphispiza bilineata* as host;  
**Smith and Jackson (2002)** cite undocumented report from M. Oberle of Gray Kingbird *Tyrannus dominicensis* as host: 2 Gray Kingbirds seen feeding 2 young Brown-headed Cowbirds on Jekyll Is., GA];  
**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 *Poliopitila nigriceps* as host.  
**Corman and Wise-Gervais (2005)** added Olive Warbler *Peucedramus taeniatus* as host based on report of adult feeding out-of-nest cowbird.  
Nordhagen et al. (2005) adds definite host record of Nelson's Sparrow *Ammospiza nelsoni* to the hypothetical record provided by Friedmann (1963)  
**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) added Hooded Merganser *Lophodytes cucullatus* as victim

9. Reference suggesting Mourning Dove to have reared cowbird – Kellogg 1900 – is summarized as follows: 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.

Single, circumstantial report by Friedmann (1963) of Purple Martin as victim not considered credible (Brown 1997).

The lists in Friedmann and Kiff (1985) include species of *Spinus* and *Coccothraustes* as having reared cowbird young, but there is skepticism of these "host" reports appropriate since host young fed seed diet which has been found generally inadequate for young of Brown-headed Cowbird.

Pine Siskin *Spinus pinus*.— 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.

Lesser Goldfinch *Spinus psaltria*.—Included in list of species that have reared cowbird young in Friedmann and Kiff (1985). 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.

American Goldfinch *Spinus tristis*.— 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."

Evening Grosbeak *Coccothraustes vespertinus*.— 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.

### Note regarding Giant Cowbird parasitism of Green Oropendola

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 virdis* 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 virdis*, 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]

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