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An updated checklist of the birds of Rio Grande do Norte, Brazil, with comments on new, rare, and unconfirmed species

by François Sagot-Martin[*1], *Rafael Dantas Lima**, *José Fernando Pacheco, Jorge Bañuelos Irusta, Mauro Pichorim & David Maurice Hassett*

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Summary.—We present a detailed bird list for the north-east Brazilian state of Rio Grande do Norte. This is the first inventory of the avifauna of the state that complies with strict criteria as to its compilation and documentation. To achieve this, we reviewed all records published for the state, as well as records in several online databases and museum collections. Our consolidated list is enhanced by our own unpublished records, and encompasses 425 species, 391 of them based on available specified physical evidence. The list includes 12 taxa not previously documented in the state and 35 documented taxa that are considered nationally or globally threatened. Other noteworthy records include three documented range extensions of 1,000 km or more and the first proven breeding by three species in far north-eastern Brazil. The rather diverse avifauna of Rio Grande do Norte reflects its location at the juxtaposition of three major domains: Atlantic Forest, Caatinga, Cerrado, and their ecotones, bordered by a marine environment.

Our knowledge of the birds of the state of Rio Grande do Norte, in the extreme north-east corner of South America, remained impoverished until just two decades ago, when field work began to reveal a hitherto unsuspected diversity. Until the early 20th century, the lack of reliable information was almost absolute, because practically none of the great historical naturalists that traversed the Brazilian north-east visited the state (Pacheco 2004). The sole exception is a single reference in G. Marcgrave's famous *Historia rerum naturalis Brasiliae* to the abundance of Greater Rheas *Rhea americana* in the open zones of Rio Grande do Norte. This seems to be the first mention of birds in the state, from among the descriptions of at least 134 wild bird species found in the nearby states of Pernambuco and Paraíba (Marcgrave 1648, Teixeira 1992). Prior to this, there are only ancient cave paintings showing rheas and flamingos (presumably American Flamingo *Phoenicopterus ruber*) at São Rafael (Souza & Medeiros 1982) and Carnaúba dos Dantas (Macedo 2003), rheas, parrots and toucans at Parelhas (Silva 2003), and macaws, parrots and presumably herons at Apodi (Fundação Amigos do Lajedo de Soledade pers. comm.), all in Rio Grande do Norte. The rhea appeared on the state's coat of arms during the colonial period, initially by order of Prince Mauricio of Nassau (Sick 1997).

Throughout the 20th century, references to the birds of Rio Grande do Norte were still scarce: the work of O. M. O. Pinto included just one reference, to *Rhea*, in the first part of his catalogue (Pinto 1938) and three in the second part (Pinto 1944). D. Lamm occasionally visited southern Rio Grande do Norte and included Grey-breasted Martin *Progne chalybea* in an annotated list of the birds of Paraíba and Pernambuco states (Lamm 1948). Faria (1961) published the results of interviews with hunters about birds in the state's Seridó region.

[1]* These authors contributed equally to this work.

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Coelho (1978) referred to just one specimen, a Savanna Hawk *Heterospizias meridionalis*, collected in Rio Grande do Norte among a list of 273 birds of Pernambuco. Lara-Resende & Leal (1982) provided the first information concerning recoveries of ringed birds for the state. H. Sick, after visiting Rio Grande do Norte for a brief period, mentioned only 13 species in his keynote *Ornitologia brasileira* (Sick 1985). By the end of the century, several specific publications on the state's avifauna had become available: Antas (1987a,b), Sick *et al*. (1988), Azevedo & Antas (1990), Praxedes *et al*. (1997), Varela-Freire (1997), Varela-Freire & Araújo (1997), Varela-Freire *et al*. (1997), Rocha-Neto *et al*. (1998), Silveira & Varela-Freire (1999), the first state bird list by Varela-Freire *et al*. (1999), Azevedo *et al*. (2000), Medeiros *et al*. (2000), Nascimento (2000) and Nascimento & Larrazábal (2000). Some of these contained misidentifications and doubtful records, which have been repeated until the present. Other useful contributions on the birds of the state included Sick (1991), Teixeira *et al*. (1993), Pacheco & Whitney (1995), Cordeiro *et al*. (1996), Silva e Silva (1996) and Whitney *et al*. (2000), but avian inventories were scarce.

In the 21st century, the situation has changed considerably, with numerous surveys and articles on the state's birds, by Silveira *et al*. (2001), Larrazábal *et al*. (2002), Olmos (2003), Araújo *et al*. (2004) and Azevedo *et al*. (2004), among others detailed in the species accounts that follow. These works have resulted in a significant increase in the number of species recorded in the state, resulting in the present overview, wherein we highlight the status of 133 species, detail many noteworthy records, and correct some prior misidentifications. We also comment on aspects of the biogeography and conservation of the region's avifauna.

Methods

Study area.—North-east Brazil lies between the Amazon Basin and the Atlantic Forest, with influences from both regions (Werneck 2011, Ledo & Colli 2017; Fig. 1A). Rio Grande do Norte is bordered by the Atlantic Ocean to the north and east (Fig. 1B). The Brazilian continental shelf reaches its narrowest point near Natal, with the shelf break and its nutrient-rich upwellings just 27 km offshore (Lees *et al*. 2015).

The state can be divided into two main phytogeographic domains (Fig. 1C): (1) the Atlantic Forest, a narrow coastal strip of semi-deciduous forest, now quite fragmented and degraded, and forming part of the Pernambuco Centre of Endemism (Brown 1982, Silva & Castelletti 2003), plus severely modified mangroves along the coast, and (2) the Caatinga, a seasonally dry tropical forest which occupies practically the entire interior as far as the northern border, covering >90% of the state (J. M. C. Silva *et al*. 2017), today appearing more like a scrubby steppe-savanna (Veloso *et al*. 1991).

In addition, some of the southwestern 'serras' (Fig. 1C) are influenced by the dominant humid trade winds and possess vegetation more like the Atlantic Forest (Queiroz *et al*. 2017); they are referred to as 'brejos de altitude' (Andrade-Lima 1982, Tabarelli & Santos 2004).

It is frequently overlooked that on the state's north-east coast there is an isolated patch of Cerrado (Oliveira *et al*. 2012, Pichorim *et al*. 2014a), a generic term for the savanna formations typical of the central uplands of Brazil. Moreover, so-called 'tabuleiros costeiros' (literally, 'coastal tablelands'), occur throughout the littoral—as Cerrado-like stretches mixed with Atlantic Forest on the east coast and Caatinga mixed with Atlantic *restinga* on the north.

According to the Köppen-Geiger climate classification system (Geiger 1961), Rio Grande do Norte lies in a region that varies from 'tropical savanna climate with dry winter' to 'tropical savanna climate with dry summer', Aw / As, and 'hot semi-arid climate', BSh. The state shows (1) a distinctly wetter eastern region, with a 'tropical oriental northeast' climate and rainfall of 900–1,500 mm / year generally concentrated in the austral winter

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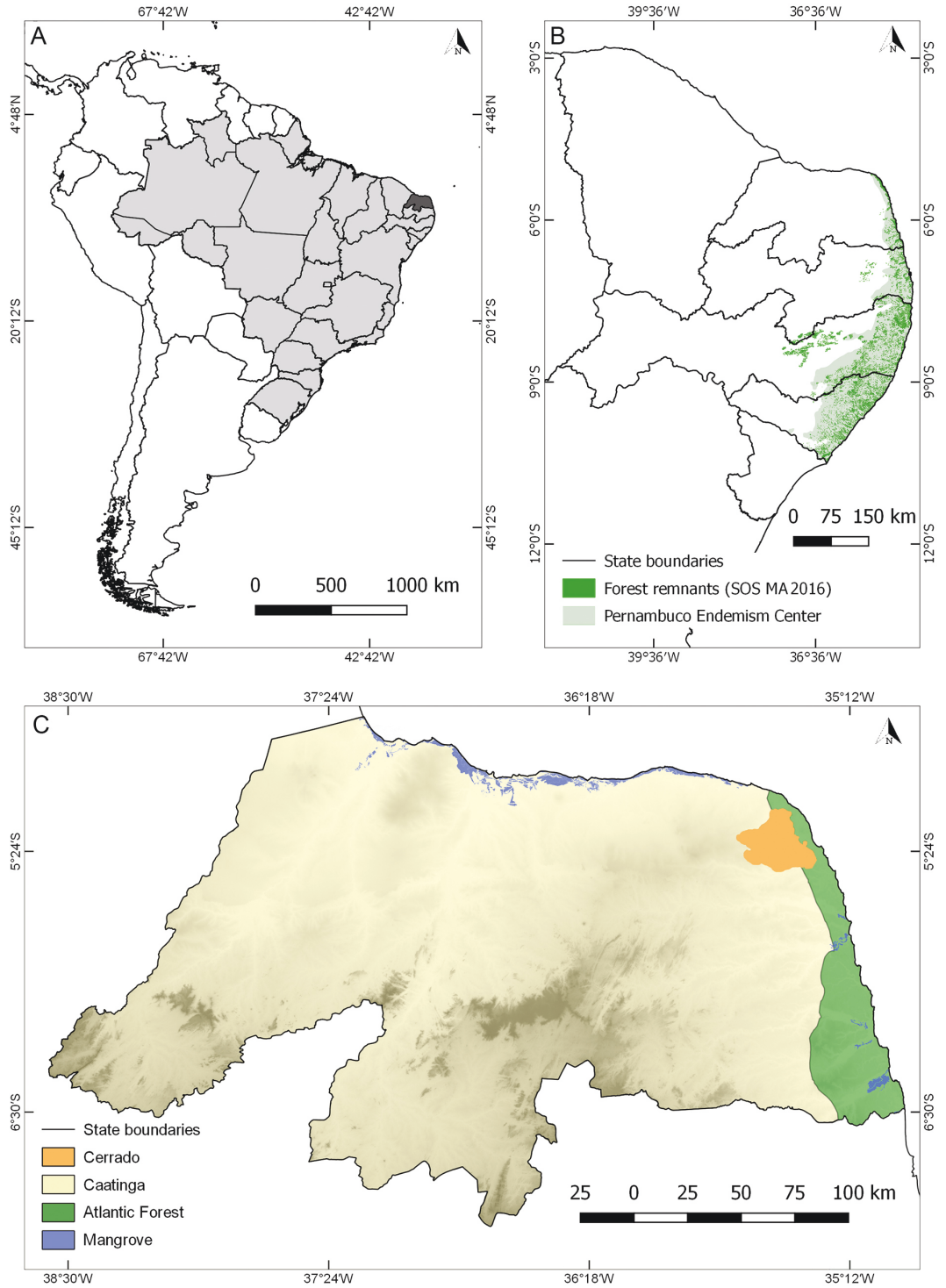


Figure 1. The state of Rio Grande do Norte in Brazil and South America (A). Far north-east Brazil with the location of the Pernambuco Centre of Endemism (B). Main phytophysiognomies in Rio Grande do Norte, with 'serras' indicated by shading (C).

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(March–July); and (2) an extensive semi-arid area with a 'tropical equatorial zone' climate, rainfall of 400–900 mm / year and a dry season lasting up to nine months (April–December) (Diniz & Pereira 2015).

The state is characterised by mean temperatures of 23.2–26.8ºC in the interior—minimum in Serra de Martins—and 25.5–26.5ºC on the east coast. Trade winds from the south-east dominate year-round, but are stronger during August–November and less intense in February–March (Amarante *et al*. 2003). Highest mean relative humidity is in Natal, virtually always above 80% with a peak of 84% in June, which is the wettest month (Espírito Santo & Silva 2016), and decreasing from east to west, to 47% in the Caatinga (INMET 2019).

Methods.—We compiled bird records from the state's mainland plus coastal and offshore areas up to the edge of the continental shelf, thus excluding the oceanic Atol das Rocas Reserve and surrounding waters, which belong to Brazil but are not part of Rio Grande do Norte (Federal Decree 83549, 5 June 1979; M. Brito pers. comm.). We reviewed records from the literature and included our own observations up to 31 March 2019.

We evaluated available records in various online databases and museum collections, as follows: Coleção de Aves Heretiano Zenaide, Universidade Federal da Paraíba, João Pessoa (CAHZ), 60 specimens; Coleção Ornitológica da Universidade Federal do Rio Grande do Norte, Natal (COUFRN), 1,020 specimens; Centro de Pesquisas do Parque Estadual das Dunas de Natal (CPPD), two specimens; Fonoteca Neotropical Jacques Vielliard, Campinas (FNJV), one record; the Internet Bird Collection, www.hbw.com/ibc (IBC), 35 records (now incorporated into ML, below); Louisiana State University Museum of Natural Science, Baton Rouge (LSUMZ), four specimens; Museum of Comparative Zoology, Harvard University, Cambridge, MA (MCZ), four specimens; Macaulay Library, www.macaulaylibrary.org (ML), 249 records; Museu Nacional, Universidade Federal do Rio de Janeiro (MNRJ), 93 specimens; Museu Paraense Emílio Goeldi, Belém (MPEG), six specimens; Museu de Zoologia da Universidade de São Paulo (MZUSP), one specimen; San Diego Natural History Museum, CA (SDNHM), one specimen; Coleção de Aves da Universidade Federal de Pernambuco (UFPE), 205 specimens; University of Michigan Museum of Zoology, Ann Arbor, MI (UMMZ), two specimens; National Museum of Natural History, Smithsonian Institution, Washington DC (USNM), one specimen; WikiAves, www.wikiaves.com.br (WA), 19,680 records; and Xeno-canto, www.xeno-canto.org (XC), 60 records.

We follow the nomenclature and taxonomic sequence of the Brazilian Ornithological Records Committee (Piacentini *et al*. 2015), where the primary and secondary lists form the consolidated list of accepted species for Brazil, with those belonging to the secondary list in square brackets []. The tertiary list and a list of species of probable / possible occurrence in Rio Grande do Norte comprise Appendices 1–2. Our definitions for the three first lists are:

Primary list.—Species with at least one unequivocal state record based on physical evidence, available for independent re-assessment (complete or partial specimen, photograph, or audio or video recording) and which unambiguously provides a certain diagnosis of the taxon involved (Carlos *et al*. 2010).

Secondary list.—Species with published state records, but without available physical evidence, plus our own records when no others can be cited for inclusion of a species.

Tertiary list.—Species with published state records, but for which the available evidence is either questionable or invalid, and whose occurrence in Rio Grande do Norte appears improbable based on current knowledge.

To justify inclusion in the primary list, we present the documentary evidence or reference to support it, giving priority to the oldest available record, unless the first documented record is of low quality or difficult to access.

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TABLE 1

Consolidated list of the birds of Rio Grande do Norte, Brazil. Species on the secondary list in square brackets []; * = subspecies based on distribution; National occurrence: R = Resident, VN = seasonal visitor from the Northern Hemisphere, VS = seasonal visitor from southern South America, VA(N) = vagrant from north, E = endemic to Brazil, and # = status not confirmed; Conservation: national (listed first) and global status: CR = Critically Endangered, EN = Endangered, VU = Vulnerable, NT = Near Threatened, LC = Least Concern, DD = Data Deficient, and NE = Not Evaluated (subspecies evaluated only at national level).

Taxon	English name	National occurrence	National; Global conservation	Specimen	Photo	Sound
RHEIFORMES						
Rheidae						
Rhea americana (Linnaeus, 1758)	Greater Rhea	R	LC; NT		WA 1624047	
R. a. americana (Linnaeus, 1758)*						
TINAMIFORMES						
Tinamidae						
Crypturellus noctivagus (Wied, 1820)	Yellow-legged Tinamou	R, E	NT; NT			WA 3217181
C. n. zabele (Spix, 1825)*			VU			
Crypturellus parvirostris (Wagler, 1827)	Small-billed Tinamou	R	LC; LC	COUFRN 1194		WA 1254365
Crypturellus tataupa (Temminck, 1815)	Tataupa Tinamou	R	LC; LC	COUFRN 1116	WA 2222231	WA 1254765
C. t. lepidotus (Swainson, 1837)*						
[*Rhynchotus rufescens* (Temminck, 1815)]	Red-winged Tinamou		LC; LC			
Nothura boraquira (Spix, 1825)	White-bellied Nothura	R	LC; LC		WA 342523	WA 3300847
Nothura maculosa (Temminck, 1815)	Spotted Nothura	R	LC; LC	COUFRN 1189	WA 324818	Minns *et al.* (2010)
N. m. cearensis Naumburg, 1932*						
ANSERIFORMES						
Anatidae						
Dendrocygna bicolor (Vieillot, 1816)	Fulvous Whistling Duck	R	LC; LC		WA 2168387	
Dendrocygna viduata (Linnaeus, 1766)	White-faced Whistling Duck	R	LC; LC	COUFRN 1011	WA 343450	WA 2187215
Dendrocygna autumnalis (Linnaeus, 1758)	Black-bellied Whistling Duck	R	LC; LC		WA 3032864	
D. a. autumnalis (Linnaeus, 1758)*						
Cairina moschata (Linnaeus, 1758)	Muscovy Duck	R	LC; LC		WA 2888883	
Sarkidiornis sylvicola Ihering & Ihering, 1907	Comb Duck	R	LC; LC		WA 2120536	
Amazonetta brasiliensis (J. F. Gmelin, 1789)	Brazilian Teal	R	LC; LC		WA 336213	
A. b. brasiliensis (J. F. Gmelin, 1789)*						

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Taxon	English name	National occurrence	National; Global conservation	Specimen	Photo	Sound
Anas bahamensis Linnaeus, 1758	White-cheeked Pintail	R	LC; LC		WA 238944	
A. b. bahamensis Linnaeus, 1758*						
[*Anas discors* Linnaeus, 1766]	Blue-winged Teal	VA(N)	LC; LC			
Netta erythrophthalma (Wied, 1833)	Southern Pochard	R	LC; LC	MNRJ 34409	WA 2495205	
N. e. erythrophthalma (Wied, 1833)*						
Nomonyx dominicus (Linnaeus, 1766)	Masked Duck	R	LC; LC		WA 973135	
GALLIFORMES						
Cracidae						
Penelope superciliaris Temminck, 1815	Rusty-margined Guan	R	LC; LC	COUFRN 1196	WA 515077	
P. s. ochromitra Spix, 1825*			DD			
P. s. alagoensis Nardelli, 1993			CR			
Penelope jacucaca Spix, 1825	White-browed Guan	R, E	VU; VU		WA 2016795	
Ortalis araucuan (Spix, 1825)	East Brazilian Chachalaca	R, E	LC; LC		WA 609213	XC 430030
Podicipedidae						
Tachybaptus dominicus (Linnaeus, 1766)	Least Grebe	R	LC; LC		WA 340531	WA 2982539
T. d. brachyrhynchus (Chapman, 1899)*						
Podilymbus podiceps (Linnaeus, 1758)	Pied-billed Grebe	R	LC; LC		WA 240767	
P. p. antarcticus (Lesson, 1842)*						
Phoenicopteridae						
[*Phoenicopterus ruber* Linnaeus, 1758]	American Flamingo	R#	DD; LC			
Spheniscidae						
[*Spheniscus magellanicus* (J. R. Forster, 1781)]	Magellanic Penguin	VS	NT; NT			
PROCELLARIIFORMES						
Diomedeidae						
[*Thalassarche chlororhynchos* (J. F. Gmelin, 1789)]	Yellow-nosed Albatross	VS	EN; EN			
Procellariidae						
Fulmarus glacialoides (A. Smith, 1840)	Southern Fulmar	VS	LC; LC	MCZ 186306		
Daption capense (Linnaeus, 1758)	Cape Petrel	VS	LC; LC	MCZ 226730		
D. c. capense (Linnaeus, 1758)*						
[*Pterodroma madeira* Mathews, 1934]	Zino's Petrel		EN; EN			

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Taxon	English name	National occurrence	National; Global conservation	Specimen	Photo	Sound
[*Pterodroma deserta* Mathews, 1934]	Desertas Petrel		CR; EN			
Pterodroma arminjoniana (Giglioli & Salvadori, 1869)	Trindade Petrel	R	CR; VU		WA 1592035	
[*Bulweria bulwerii* (Jardine & Selby, 1828)]	Bulwer's Petrel	VN#	NE; LC			
Calonectris borealis (Cory, 1881)	Cory's Shearwater	VN	LC; LC	COUFRN 948	WA 2518923	
Puffinus griseus (J. F. Gmelin, 1789)	Sooty Shearwater	VS	LC; NT		ML 77958651	
Puffinus gravis (O'Reilly, 1818)	Great Shearwater	VS	LC; LC		WA 2813943	
Puffinus puffinus (Brünnich, 1764)	Manx Shearwater	VN	LC; LC	COUFRN 831	WA 1593190	
[*Puffinus boydi* Mathews, 1912]	Boyd's Shearwater	VN	; NE			
Hydrobatidae						
Fregetta tropica (Gould, 1844)	Black-bellied Storm Petrel	VS#	LC; LC	COUFRN 120		
F. t. tropica (Gould, 1844)						
Oceanites oceanicus (Kuhl, 1820)	Wilson's Storm Petrel	VS	LC; LC		WA 1593174	
Oceanodroma leucorhoa (Vieillot, 1818)	Leach's Storm Petrel	VN	LC; VU	COUFRN 728	WA 1593164	
O. l. leucorhoa (Vieillot, 1818)*						
CICONIIFORMES						
Ciconiidae						
Jabiru mycteria (M. H. C. Lichtenstein, 1819)	Jabiru	R	LC; LC		Fig. 3A	
Mycteria americana Linnaeus, 1758	Wood Stork	R	LC; LC		WA 1945521	
SULIFORMES						
Fregatidae						
Fregata magnificens Mathews, 1914	Magnificent Frigatebird	R	LC; LC		WA 236127	
Sulidae						
Sula dactylatra Lesson, 1831	Masked Booby	R	LC; LC	COUFRN 1253	ML 127037771	
S. d. dactylatra Lesson, 1831*						
Sula sula (Linnaeus, 1766)	Red-footed Booby		EN; LC	COUFRN 1275		
S. s. sula (Linnaeus, 1766)*						
[*Sula leucogaster* (Boddaert, 1783)]	Brown Booby	R	LC; LC			
Phalacrocoracidae						
Nannopterum brasilianus (J. F. Gmelin, 1789)	Neotropic Cormorant	R	LC; LC		WA 283214	
N. b. brasilianus (J. F. Gmelin, 1789)*						

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Taxon	English name	National occurrence	National; Global conservation	Specimen	Photo	Sound
Anhingidae						
Anhinga anhinga (Linnaeus, 1766)	Anhinga	R	LC; LC		WA 1366323	
A. a. anhinga (Linnaeus, 1766)*						
PELECANIFORMES						
Ardeidae						
Tigrisoma lineatum (Boddaert, 1783)	Rufescent Tiger Heron	R	LC; LC		WA 2712033	
T. l. marmoratum (Vieillot, 1817)*						
Botaurus pinnatus (Wagler, 1829)	Pinnated Bittern	R	LC; LC		WA 622996	
B. p. pinnatus (Wagler, 1829)*						
Ixobrychus exilis (J.F. Gmelin, 1789)	Least Bittern	R	LC; LC		WA 2411673	
I. e. erythromelas (Vieillot, 1817)*						
Ixobrychus involucris (Vieillot, 1823)	Stripe-backed Bittern	R	LC; LC		WA 3065361	
Nycticorax nycticorax (Linnaeus, 1758)	Black-crowned Night Heron	R	LC; LC	USNM 330093	WA 2723524	
N. n. hoactli (J. F. Gmelin, 1789)						
Nyctanassa violacea (Linnaeus, 1758)	Yellow-crowned Night Heron	R	LC; LC		WA 149007	
N. v. cayennensis (J. F. Gmelin, 1789)*						
Butorides striata (Linnaeus, 1758)	Striated Heron	R	LC; LC	COUFRN 742	WA 653335	
B. s. striata (Linnaeus, 1758)*						
Bubulcus ibis (Linnaeus, 1758)	Cattle Egret	R	LC; LC		WA 269132	
B. i. ibis (Linnaeus, 1758)*						
Ardea cocoi Linnaeus, 1766	Cocoi Heron	R	LC; LC		WA 295058	
Ardea alba Linnaeus, 1758	Great Egret	R	LC; LC		WA 625168	WA 2605407
A. a. egretta J.F. Gmelin, 1789*						
[*Pilherodius pileatus* (Boddaert, 1783)]	Capped Heron	R	LC; LC			
Egretta thula (Molina, 1782)	Snowy Egret	R	LC; LC		WA 266283	WA 3300838
E. t. thula (Molina, 1782)*						
Egretta caerulea (Linnaeus, 1758)	Little Blue Heron	R	LC; LC		WA 92412	
Threskiornithidae						
[*Theristicus caudatus* (Boddaert, 1783)]	Buff-necked Ibis	R	LC; LC			
Platalea ajaja Linnaeus, 1758	Roseate Spoonbill	R	LC; LC	SDNHM 35485		

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Taxon	English name	National occurrence	National; Global conservation	Specimen	Photo	Sound
Cathartidae						
Cathartes aura (Linnaeus,1758)	Turkey Vulture	R	LC; LC		WA 248533	
C. a. ruficollis Spix, 1824						
Cathartes burrovianus Cassin, 1845	Lesser Yellow-headed Vulture	R	LC; LC		WA 239455	
C. b. urubutinga Pelzeln, 1861*						
Coragyps atratus (Bechstein, 1793)	Black Vulture	R	LC; LC		WA 724431	
C. a. brasiliensis (Bonaparte, 1850)*						
Sarcoramphus papa (Linnaeus, 1758)	King Vulture	R	NT; LC		WA 1649096	
ACCIPITRIFORMES						
Pandionidae						
Pandion haliaetus (Linnaeus, 1758)	Osprey	VN	LC; LC		WA 252946	
P. h. carolinensis (J. F. Gmelin, 1788)						
Accipitridae						
Leptodon forbesi (Swann, 1922)	White-collared Kite	R, E	EN; CR		WA 2263455	
Chondrohierax uncinatus (Temminck, 1822)	Hook-billed Kite	R	LC; LC		WA 1351596	
C. u. uncinatus (Temminck, 1822)*						
[*Elanoides forficatus* (Linnaeus, 1758)]	Swallow-tailed Kite	R	LC; LC			
Gampsonyx swainsonii Vigors, 1825	Pearl Kite	R	LC; LC		WA 324802	WA 3267846
G. s. swainsonii Vigors, 1825*						
Elanus leucurus (Vieillot, 1818)	White-tailed Kite	R	LC; LC		WA 249718	
E. l. leucurus (Vieillot, 1818)*						
Accipiter striatus Vieillot, 1808	Sharp-shinned Hawk	R	LC; LC		WA 2837626	
A. s. erythronemius (Kaup, 1850)			; NE			
Accipiter bicolor (Vieillot, 1817)	Bicolored Hawk	R	LC; LC		WA 3089927	
A. b. pileatus (Temminck, 1823)						
Ictinia plumbea (J. F. Gmelin, 1788)	Plumbeous Kite	R	LC; LC		WA 249719	
Rostrhamus sociabilis (Vieillot, 1817)	Snail Kite	R	LC; LC	MNRJ 34415	WA 338222	WA 2980216
R. s. sociabilis (Vieillot, 1817)*						
Geranospiza caerulescens (Vieillot, 1817)	Crane Hawk	R	LC; LC		WA 2712040	
G. c. gracilis (Temminck, 1821)*						
Buteogallus aequinoctialis (J. F. Gmelin, 1788)	Rufous Crab Hawk	R	NT; NT		WA 2874182	WA 2868593
Heterospizias meridionalis (Latham, 1790)	Savanna Hawk	R	LC; LC	UFPE 382	WA 238946	WA 1230486

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Urubitinga urubitinga (J. F. Gmelin, 1788)	Great Black Hawk	R	LC; LC		WA 1011184	
U. u. urubitinga (J. F. Gmelin, 1788)*						
Rupornis magnirostris (J. F. Gmelin, 1788)	Roadside Hawk	R	LC; LC	COUFRN 802	WA 1365656	XC 430044
R. m. nattereri (P. L. Sclater & Salvin, 1869)*						
Parabuteo unicinctus (Temminck, 1824)	Harris's Hawk	R	LC; LC		WA 2518913	WA 3202039
P. u. unicinctus (Temminck, 1824)*						
Geranoaetus albicaudatus (Vieillot, 1816)	White-tailed Hawk	R	LC; LC		WA 47525	
G. a. albicaudatus (Vieillot, 1816)*						
Geranoaetus melanoleucus (Vieillot, 1819)	Black-chested Buzzard-Eagle	R	LC; LC		WA 1331947	XC 4838
G. m. melanoleucus (Vieillot, 1819)*						
Buteo nitidus (Latham, 1790)	Grey-lined Hawk	R	LC; LC		WA 3065367	WA 2577547
B. n. pallidus (Todd, 1915)*						
Buteo brachyurus Vieillot, 1816	Short-tailed Hawk	R	LC; LC	COUFRN 369	WA 249715	
B. b. brachyurus Vieillot, 1816*						
Buteo albonotatus Kaup, 1847	Zone-tailed Hawk	R	LC; LC		WA 2829659	
GRUIFORMES						
Aramidae						
Aramus guarauna (Linnaeus, 1766)	Limpkin	R	LC; LC		WA 198235	WA 3066368
A. g. guarauna (Linnaeus, 1766)*						
Rallidae						
Rallus longirostris Boddaert, 1783	Mangrove Rail	R	LC; LC		WA 322480	WA 3300848
R. l. crassirostris Lawrence, 1871*						
Aramides mangle (Spix, 1825)	Little Wood Rail	R	LC; LC		WA 385434	Minns *et al.* (2010)
Aramides cajaneus (Statius Muller, 1776)	Grey-necked Wood Rail	R	LC; LC		WA 2574570	WA 912029
A. c. cajaneus (Statius Muller, 1776)*						
Amaurolimnas concolor (Gosse, 1847)	Uniform Crake	R	LC; LC			WA 2117154
A. c. castaneus (Pucheran, 1851)*						
Laterallus viridis (Statius Muller, 1776)	Russet-crowned Crake	R	LC; LC		WA 2689621	WA 1994114
L. v. viridis (Statius Muller, 1776)*						
Laterallus melanophaius (Vieillot, 1819)	Rufous-sided Crake	R	LC; LC		WA 2832972	WA 3300851
L. m. melanophaius (Vieillot, 1819)*						

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Laterallus exilis (Temminck, 1831)	Grey-breasted Crake	R	LC; LC			WA 2324424
Porzana flaviventer (Boddaert, 1783)	Yellow-breasted Crake	R	DD; LC		WA 2336075	
P. f. flaviventer (Boddaert, 1783)*						
Mustelirallus albicollis (Vieillot, 1819)	Ash-throated Crake	R	LC; LC		WA 2333492	WA 3300909
M. a. albicollis (Vieillot, 1819)*						
Neocrex erythrops (P. L. Sclater, 1867)	Paint-billed Crake	R	LC; LC	COUFRN 1224	WA 343447	WA 2992265
N. e. olivascens Chubb, 1917*						
Pardirallus maculatus (Boddaert, 1783)	Spotted Rail	R	LC; LC		WA 2408428	
P. m. maculatus (Boddaert, 1783)*						
Gallinula galeata (M. H. C. Lichtenstein, 1818)	Common Gallinule	R	LC; LC	UFPE 3869	WA 295455	WA 3009806
G. g. galeata (M. H. C. Lichtenstein, 1818)*						
Porphyriops melanops (Vieillot, 1819)	Spot-flanked Gallinule	R	LC; LC		WA 3089884	
P. m. melanops (Vieillot, 1819)*						
Porphyrio martinicus (Linnaeus, 1766)	Purple Gallinule	R	LC; LC	COUFRN 1191	WA 344504	WA 2117494
Porphyrio flavirostris (J. F. Gmelin, 1789)	Azure Gallinule	R	LC; LC		WA 609215	
Heliornithidae						
[*Heliornis fulica* (Boddaert, 1783)]	Sungrebe	R	LC; LC			
Charadriidae						
Vanellus cayanus (Latham, 1790)	Pied Lapwing	R	LC; LC	MNRJ 34431	WA 1344089	
Vanellus chilensis (Molina, 1782)	Southern Lapwing	R	LC; LC	COUFRN 1230	WA 249749	WA 728917
V. c. lampronotus (Wagler, 1827)*						
Pluvialis dominica (Statius Muller, 1776)	American Golden-Plover	VN	DD; LC		WA 893159	
Pluvialis squatarola (Linnaeus, 1758)	Black-bellied Plover	VN	LC; LC	UFPE 3568	WA 1342260	WA 2669029
P. s. cynosurae (Thayer & Bangs, 1914)*						
Charadrius semipalmatus Bonaparte, 1825	Semipalmated Plover	VN	LC; LC	UFPE 3138	WA 1342258	WA 2669026
Charadrius wilsonia Ord, 1814	Wilson's Plover	R	VU; LC		WA 250851	WA 1254343
C. w. crassirostris Spix, 1825*			VU			
Charadrius collaris Vieillot, 1818	Collared Plover	R	LC; LC	UFPE 3964	WA 250844	

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Haematopodidae						
Haematopus palliatus Temminck, 1820	American Oystercatcher	R	NT; LC		WA 253376	WA 1433694
H. p. palliatus Temminck, 1820						
Recurvirostridae						
Himantopus mexicanus (Statius Muller, 1776)	Black-necked Stilt	R	LC; NE	UFPE 3975	WA 339866	Minns *et al.* (2010)
Scolopacidae						
Gallinago paraguaiae (Vieillot, 1816)	South American Snipe	R	LC; LC		WA 3065363	WA 2179162
Gallinago p. paraguaiae (Vieillot, 1816)*						
Limnodromus griseus (J. F. Gmelin, 1789)	Short-billed Dowitcher	VN	CR; LC		WA 247845	WA 2669028
L. g. griseus (J. F. Gmelin 1789)*						
[*Limosa haemastica* (Linnaeus, 1758)]	Hudsonian Godwit	VN	LC; LC			
Limosa lapponica (Linnaeus, 1758)	Bar-tailed Godwit	VA(N)	NE; NT		WA 3089895	
L. l. lapponica (Linnaeus, 1758)*						
Numenius hudsonicus Latham, 1790	American Whimbrel	VN	NT; NE	UFPE 3673	WA 3089895	WA 1433695
N. h. hudsonicus Latham, 1790*						
[*Numenius phaeopus* (Linnaeus, 1758)]	Eurasian Whimbrel	VA(N)	NE; LC			
Actitis macularius (Linnaeus, 1766)	Spotted Sandpiper	VN	LC; LC		WA 2655752	WA 2581737
Tringa solitaria Wilson, 1813	Solitary Sandpiper	VN	LC; LC		WA 579049	
T. s. solitaria Wilson, 1813*						
Tringa melanoleuca (J. F. Gmelin, 1789)	Greater Yellowlegs	VN	LC; LC		WA 198284	WA 1433699
Tringa semipalmata (J. F. Gmelin, 1789)	Willet	VN	LC; LC		WA 1522100	WA 2581745
T. s. semipalmata (J. F. Gmelin, 1789)						
Tringa flavipes (J. F. Gmelin, 1789)	Lesser Yellowlegs	VN	LC; LC	UFPE 3596	WA 1367974	WA 1433697
Arenaria interpres (Linnaeus, 1758)	Ruddy Turnstone	VN	NT; LC	UFPE 3569	WA 1342259	WA 2669025
A. i. morinella (Linnaeus, 1766)*						
Calidris canutus (Linnaeus, 1758)	Red Knot	VN	CR; NT	UFPE 3595	WA 2040564	WA 1450088
C. c. rufa (Wilson, 1813)*						
Calidris alba (Pallas, 1764)	Sanderling	VN	LC; LC	UFPE 3961	WA 2655751	WA 1433693
C. a. rubida (J. F. Gmelin, 1789)*						
Calidris pusilla (Linnaeus, 1766)	Semipalmated Sandpiper	VN	EN; NT	UFPE 3067	WA 2655753	WA 2581740

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Calidris minutilla (Vieillot, 1819)	Least Sandpiper	VN	DD; LC	UFPE 3959	WA 108627	
Calidris fuscicollis (Vieillot, 1819)	White-rumped Sandpiper	VN	LC; LC	UFPE 3657	WA 636372	
Calidris melanotos (Vieillot, 1819)	Pectoral Sandpiper	VN	LC; LC		ML27817531	
Calidris himantopus (Bonaparte, 1826)	Stilt Sandpiper	VN	LC; LC		WA 95041	
Jacanidae						
Jacana jacana (Linnaeus, 1766)	Wattled Jacana	R	LC; LC		WA 2722891	
J. j. jacana (Linnaeus, 1766)*						
Stercorariidae						
Stercorarius maccormicki Saunders, 1893	South Polar Skua	VS	LC; LC		WA 791473	
Stercorarius pomarinus (Temminck, 1815)	Pomarine Jaeger	VN	LC; LC		WA 1593176	
Stercorarius parasiticus (Linnaeus, 1758)	Parasitic Jaeger	VN	LC; LC		ML77958391	
Laridae						
Chroicocephalus cirrocephalus (Vieillot, 1818)	Grey-hooded Gull	R	LC; LC	UFPE 3070	WA 322479	WA 1433713
C. c. cirrocephalus (Vieillot, 1818)*						
Leucophaeus atricilla (Linnaeus, 1758)	Laughing Gull	VN	LC; LC		WA 287755	
L. a. atricilla (Linnaeus, 1758)*						
Larus dominicanus M. H. C. Lichtenstein, 1823	Kelp Gull	R	LC; LC		WA 2016695	
L. d. dominicanus M. H. C. Lichtenstein, 1823*						
Sternidae						
Anous stolidus (Linnaeus, 1758)	Brown Noddy	R	LC; LC		WA 1728204	
A. s. stolidus (Linnaeus, 1758)*						
Onychoprion fuscatus (Linnaeus, 1766)	Sooty Tern	R	LC; LC		WA 1593177	
O. f. fuscatus (Linnaeus, 1766)*						
Sternula antillarum Lesson, 1847	Least Tern	R	LC; LC	UFPE 3139	WA 1359913	WA 3300839
S. a. antillarum Lesson, 1847*						
Sternula superciliaris (Vieillot, 1819)	Yellow-billed Tern	R	LC; LC		WA 611256	
Phaetusa simplex (J. F. Gmelin, 1789)	Large-billed Tern	R	LC; LC		WA 2503157	
P. s. simplex (J. F. Gmelin, 1789)*						

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Gelochelidon nilotica (J. F. Gmelin, 1789)	Gull-billed Tern	R	LC; LC	UFPE 3072	WA 11254	WA 1433714
G. n. gronvoldi (Mathews,1912)*						
[*Chlidonias niger* (Linnaeus,1758)]	Black Tern	VN	NE; LC			
Sterna hirundo Linnaeus, 1758	Common Tern	VN	LC; LC		WA 11253	
S. h. hirundo Linnaeus, 1758*						
Sterna dougallii Montagu,1813	Roseate Tern	VN	VU; LC		WA 1359911	
S. d. dougallii Montagu, 1813*						
Sterna paradisaea Pontoppidan, 1763	Arctic Tern	VN	LC; LC		WA 612272	
Thalasseus acuflavidus (Cabot, 1847)	Cabot's Tern	R	LC; LC		WA 236785	
T. a. acuflavidus (Cabot, 1847)*						
T. a. eurygnathus (Saunders, 1876)						
Rynchopidae						
Rynchops niger Linnaeus, 1758	Black Skimmer	R	LC; LC		WA 283229	WA 2987184
R. n. intercedens Saunders, 1895*						
COLUMBIFORMES						
Columbidae						
Columbina passerina (Linnaeus, 1758)	Common Ground Dove	R	LC; LC	UFPE 3865	WA 241789	XC 430053
C. p. griseola Spix, 1825*						
Columbina minuta (Linnaeus, 1766)	Plain-breasted Ground Dove	R	LC; LC	COUFRN 75	WA 347676	WA 1254340
C. m. minuta (Linnaeus, 1766)*						
Columbina talpacoti (Temminck, 1810)	Ruddy Ground Dove	R	LC; LC	COUFRN 782	WA 354629	WA 3300854
C. t. talpacoti (Temminck, 1810)*						
Columbina squammata (Lesson, 1831)	Scaled Dove	R	LC; LC	COUFRN 1206	WA 357485	Minns *et al.* (2010)
C. s. squammata (Lesson, 1831)*						
Columbina picui (Temminck, 1813)	Picui Ground Dove	R	LC; LC	COUFRN 2	WA 47101	WA 1254504
C. p. strepitans Spix, 1825*						
Claravis pretiosa (Ferrari-Perez, 1886)	Blue Ground Dove	R	LC; LC	COUFRN 953	WA 2557623	WA 2557967
Columba livia J. F. Gmelin,1789	Rock Pigeon	R	NE; LC		WA 724444	WA 3003975
C. l. livia J. F. Gmelin, 1789*						
[*Patagioenas speciosa* (J. F. Gmelin, 1789)]	Scaled Pigeon	R	LC; LC			
Patagioenas picazuro (Temminck, 1813)	Picazuro Pigeon	R	LC; LC		WA 279033	
P. p. marginalis (Naumburg, 1932)*						

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Patagioenas cayennensis (Bonnaterre, 1792)	Pale-vented Pigeon	R	LC; LC		WA 1615429	WA 2673184
P. c. sylvestris (Vieillot, 1818)*						
Zenaida auriculata (Des Murs, 1847)	Eared Dove	R	LC; LC	MNRJ 36288	WA 342788	WA 2928515
Z. a. noronha Sharpe, 1890*						
Leptotila verreauxi Bonaparte, 1855	White-tipped Dove	R	LC; LC	COUFRN 803	WA 346986	WA 3865184
L. v. approximans Cory, 1917*						
Leptotila rufaxilla (Richard & Bernard, 1792)	Grey-fronted Dove	R	LC; LC			WA 2569992
L. r. bahiae Berlepsch, 1885*						
[*Geotrygon montana* (Linnaeus, 1758)]	Ruddy Quail-Dove	R	LC; LC			
CUCULIFORMES						
Cuculidae						
Micrococcyx cinereus (Vieillot, 1817)	Ash-coloured Cuckoo	R	LC; LC		WA 1716483	
Piaya cayana (Linnaeus, 1766)	Squirrel Cuckoo	R	LC; LC	COUFRN 179	WA 249743	WA 3300857
P. c. pallescens (Cabanis & Heine, 1863)*						
Coccyzus melacoryphus Vieillot, 1817	Dark-billed Cuckoo	R	LC; LC	COUFRN 837	WA 344900	WA 3300857
Coccyzus americanus (Linnaeus, 1758)	Yellow-billed Cuckoo	VN	LC; LC	COUFRN 131	WA 2499860	
C. a. americanus (Linnaeus, 1758)*						
Coccyzus euleri Cabanis, 1873	Pearly-breasted Cuckoo	R	LC; LC		WA 249004	
Crotophaga major J. F. Gmelin, 1788	Greater Ani	R	LC; LC		WA 249751	WA 3300858
Crotophaga ani Linnaeus, 1758	Smooth-billed Ani	R	LC; LC	COUFRN 87	WA 249750	WA 1254713
Guira guira (J. F. Gmelin, 1788)	Guira Cuckoo	R	LC; LC	COUFRN 618	WA 725015	Minns *et al.* (2010)
Tapera naevia (Linnaeus, 1766)	Striped Cuckoo	R	LC; LC		WA 251688	WA 3300859
T. n. naevia (Linnaeus, 1766)*						
STRIGIFORMES						
Tytonidae						
Tyto furcata (Temminck, 1827)	American Barn Owl	R	LC; NE	CPPD (not catalogued)	WA 2016708	WA 2926836
T. f. tuidara (J. E. Gray, 1828)*						
Strigidae						
Megascops choliba (Vieillot, 1817)	Tropical Screech Owl	R	LC; LC	MNRJ 36295	WA 344491	WA 488604
M. c. decussatus (M. H. C. Lichtenstein, 1823)*						

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[*Pulsatrix perspicillata* (Latham, 1790)]	Spectacled Owl	R	LC; LC			
Bubo virginianus (J. F. Gmelin, 1788)	Great Horned Owl	R	LC; LC		WA 2853518	WA 316723
B. v. deserti Reiser, 1905*						
[*Strix virgata* (Cassin, 1849)]	Mottled Owl	R	LC; LC			
Glaucidium brasilianum (J. F. Gmelin, 1788)	Ferruginous Pygmy Owl	R	LC; LC	MNRJ 34465	WA 87779	WA 257119
G. b. brasilianum (J. F. Gmelin, 1788)*						
Athene cunicularia (Molina, 1782)	Burrowing Owl	R	LC; LC	COUFRN 1218	WA 37073	WA 2577098
A. c. grallaria (Temminck, 1822)*						
[*Aegolius harrisii* (Cassin, 1849)]	Buff-fronted Owl	R	LC; LC			
Asio clamator (Vieillot, 1808)	Striped Owl	R	LC; LC	CPPD (not catalogued)	WA 2035087	
A. c. clamator (Vieillot, 1808)*						
Asio flammeus (Pontoppidan, 1763)	Short-eared Owl	R	LC; LC		WA 3065349	
A. f. suinda (Vieillot, 1817)*						
NYCTIBIIFORMES						
Nyctibiidae						
Nyctibius griseus (J. F. Gmelin, 1789)	Common Potoo	R	LC; LC		WA 1361294	WA 2016103
N. g. griseus (J. F. Gmelin, 1789)*						
Caprimulgidae						
Antrostomus rufus (Boddaert, 1783)	Rufous Nightjar	R	LC; LC			XC 430029
A. r. rufus (Boddaert, 1783)*						
Lurocalis semitorquatus (J. F. Gmelin, 1789)	Short-tailed Nighthawk	R	LC; LC		WA 2615000	
L. s. nattereri (Temminck, 1822)*						
Nyctidromus albicollis (J. F. Gmelin, 1789)	Common Pauraque	R	LC; LC	COUFRN 644	WA 1270179	WA 3300862
N. a. albicollis (J. F. Gmelin, 1789)*						
Nyctidromus hirundinaceus (Spix, 1825)	Pygmy Nightjar	R, E	DD; LC	MNRJ 34469	WA 1359959	WA 3300864
N. h. cearae (Cory, 1917)*						
Hydropsalis parvula (Gould, 1837)	Little Nightjar	R	LC; LC	UFPE 3674	WA 864255	WA 3300866
Hydropsalis longirostris (Bonaparte, 1825)	Band-winged Nightjar	R	LC; LC		WA 3219414	WA 3220109
H. l. longirostris (Bonaparte, 1825)*						

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Hydropsalis torquata (J. F. Gmelin, 1789)	Scissor-tailed Nightjar	R	LC; LC	COUFRN 69	WA 317704	
H. t. torquata (J. F. Gmelin, 1789)*						
Nannochordeiles pusillus (Gould, 1861)	Least Nighthawk	R	LC; LC	MNRJ 34468	WA 1355616	
N. p. xerophilus (Dickerman, 1988)*						
Podager nacunda (Vieillot, 1817)	Nacunda Nighthawk	R	LC; LC	COUFRN 1228	WA 2985934	
P. n. nacunda (Vieillot, 1817)*						
[*Chordeiles minor* (J.R. Forster, 1771)]	Common Nighthawk	VN	LC; LC			
Chordeiles acutipennis (Hermann, 1783)	Lesser Nighthawk	R	LC; LC		WA 3089210	
C. a. acutipennis (Hermann, 1783)*						
APODIFORMES						
Apodidae						
Streptoprocne biscutata (P. L. Sclater, 1866)	Biscutate Swift	R	LC; LC	MNRJ 36897	WA 313921	WA 3300867
S. b. seridoensis Sick, 1991						
[*Chaetura meridionalis* Hellmayr, 1907]	Sick's Swift	R	LC; LC			
Tachornis squamata (Cassin, 1853)	Fork-tailed Palm Swift	R	LC; LC		WA 238953	WA 3184658
T. s. squamata (Cassin, 1853)*						
Trochilidae						
Glaucis hirsutus (J. F. Gmelin, 1788)	Rufous-breasted Hermit	R	LC; LC		WA 2688509	
G. h. hirsutus (J. F. Gmelin, 1788)*						
Anopetia gounellei (Boucard, 1891)	Broad-tipped Hermit	R, E	LC; LC	COUFRN 627	WA 347675	WA 2967669
Phaethornis ruber (Linnaeus, 1758)	Reddish Hermit	R	LC; LC	COUFRN 508	WA 244642	XC 430053
P. r. pygmaeus (Spix, 1825)*						
Phaethornis pretrei (Lesson & Delattre, 1839)	Planalto Hermit	R	LC; LC	COUFRN 506	WA 2670787	
Eupetomena macroura (J. F. Gmelin, 1788)	Swallow-tailed Hummingbird	R	LC; LC	COUFRN 726	WA 631517	XC 430036
E. m. simoni Hellmayr, 1929*						
Anthracothorax nigricollis (Vieillot, 1817)	Black-throated Mango	R	LC; LC		WA 2929048	
Chrysolampis mosquitus (Linnaeus, 1758)	Ruby-topaz Hummingbird	R	LC; LC	UFPE 3446	WA 239581	
Chlorestes notata (Reich, 1793)	Blue-chinned Sapphire	R	LC; LC	COUFRN 686	WA 1151475	
C. n. notata (Reich, 1793)*						

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Chlorostilbon lucidus (Shaw, 1812)	Glittering-bellied Emerald	R	LC; LC	COUFRN 732	WA 2715988	
C. l. pucherani (Bourcier & Mulsant, 1848)*						
[*Hylocharis cyanus* (Vieillot, 1818)]	White-chinned Sapphire	R	LC; LC			
Polytmus guainumbi (Pallas, 1764)	White-tailed Goldenthroat	R	LC; LC	UFPE 3690	WA 623011	
P. g. thaumantias (Linnaeus, 1766)*						
Amazilia leucogaster (J. F. Gmelin, 1788)	Plain-bellied Emerald	R	LC; LC	COUFRN 255	WA 817119	WA 2819810
A. l. bahiae (E. Hartert, 1899)*						
[*Amazilia versicolor* (Vieillot, 1818)]	Versicoloured Emerald	R	LC; LC			
Amazilia fimbriata (J.F. Gmelin, 1788)	Glittering-throated Emerald	R	LC; LC	COUFRN 779	WA 480164	
A. f. nigricauda (Elliot, 1878)*						
Heliactin bilophus (Temminck, 1820)	Horned Sungem	R	LC; LC		WA 2682924	WA 2984447
Heliomaster squamosus (Temminck, 1823)	Stripe-breasted Starthroat	R, E	LC; LC		WA 534458	
Calliphlox amethystina (Boddaert, 1783)	Amethyst Woodstar	R	LC; LC		WA 2472156	
TROGONIFORMES						
Trogonidae						
Trogon curucui Linnaeus, 1766	Blue-crowned Trogon	R	LC; LC	COUFRN 498	WA 250915	Minns *et al.* (2010)
T. c. curucui Linnaeus, 1766*						
CORACIIFORMES						
Alcedinidae						
Megaceryle torquata (Linnaeus, 1766)	Ringed Kingfisher	R	LC; LC		WA 2715841	WA 2895442
M. t. torquata (Linnaeus, 1766)*						
Chloroceryle amazona (Latham, 1790)	Amazon Kingfisher	R	LC; LC		WA 615812	WA 3039036
Chloroceryle americana (J. F. Gmelin, 1788)	Green Kingfisher	R	LC; LC		WA 250857	
C. a. americana (J. F. Gmelin, 1788)*						
Momotidae						
Momotus momota (Linnaeus, 1766)	Amazonian Motmot	R	LC; LC		WA 2510629	
M. m. marcgravianus Pinto & Camargo, 1961*			EN			

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GALBULIFORMES						
Galbulidae						
Galbula ruficauda Cuvier, 1816	Rufous-tailed Jacamar	R	LC; LC	COUFRN 791	WA 244631	WA 3300873
G. r. rufoviridis Cabanis, 1851						
Bucconidae						
Nystalus maculatus (J. F. Gmelin, 1788)	Spot-backed Puffbird	R, E	LC; LC	COUFRN 141	WA 1365618	Minns *et al.* (2010)
PICIFORMES						
Picidae						
Picumnus fulvescens Stager, 1961	Tawny Piculet	R, E	LC; NT	COUFRN 47	WA 1343769	
Picumnus limae Snethlage, 1924	Ochraceous Piculet	R, E	LC; LC	CAHZ 705	WA 235428	WA 253695
Melanerpes candidus (Otto, 1796)	White Woodpecker	R	LC; LC		WA 342790	XC 206440
Veniliornis passerinus (Linnaeus, 1766)	Little Woodpecker	R	LC; LC	COUFRN 799	WA 248472	Minns *et al.* (2010)
V. p. taenionotus (Reichenbach, 1854)*						
Piculus chrysochloros (Vieillot, 1818)	Golden-green Woodpecker	R	LC; LC		WA 34096	
Colaptes melanochloros (J. F. Gmelin, 1788)	Green-barred Woodpecker	R	LC; LC	CAHZ 692	WA 47058	WA 1254721
C. m. nattereri (Malherbe, 1845)*						
Colaptes campestris (Vieillot, 1818)	Campo Flicker	R	LC; LC		WA 2221867	WA 2886788
C. c. campestris (Vieillot, 1818)						
Celeus ochraceus (Spix, 1824)	Ochre-backed Woodpecker	R, E	LC; LC		WA 1441573	WA 3300878
Dryocopus lineatus (Linnaeus, 1766)	Lineated Woodpecker	R	LC; LC		WA 1609673	
D. l. lineatus (Linnaeus, 1766)*						
Campephilus melanoleucos (J. F. Gmelin, 1788)	Crimson-crested Woodpecker	R	LC; LC		WA 239452	
C. m. cearae (Cory, 1915)*						
CARIAMIFORMES						
Cariamidae						
Cariama cristata (Linnaeus, 1766)	Red-legged Seriema	R	LC; LC		WA 249742	WA 2088256
FALCONIFORMES						
Falconidae						
Caracara plancus (J. F. Miller, 1777)	Southern Caracara	R	LC; LC		WA 6413	WA 3300879
Milvago chimachima (Vieillot, 1816)	Yellow-headed Caracara	R	LC; LC		WA 287762	WA 3300845
M. c. chimachima (Vieillot, 1816)*						

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Herpetotheres cachinnans (Linnaeus, 1758)	Laughing Falcon	R	LC; LC		WA 348725	WA 1736786
H. c. cachinnans (Linnaeus, 1758)*						
[*Micrastur ruficollis* (Vieillot, 1817)]	Barred Forest Falcon	R	LC; LC			
Micrastur semitorquatus (Vieillot, 1817)	Collared Forest Falcon	R	LC; LC			WA 3390273
M. s. semitorquatus (Vieillot, 1817)*						
Falco sparverius Linnaeus, 1758	American Kestrel	R	LC; LC		WA 80474	
F. s. cearae (Cory, 1915)*						
Falco femoralis Temminck, 1822	Aplomado Falcon	R	LC; LC		WA 47056	
F. f. femoralis Temminck, 1822*						
Falco peregrinus Tunstall, 1771	Peregrine Falcon	VN	LC; LC		WA 287761	
F. p. tundrius C. M. White, 1968*						
F. p. anatum Bonaparte, 1838*						
PSITTACIFORMES						
Psittacidae						
Primolius maracana (Vieillot, 1816)	Blue-winged Macaw	R	NT; NT		WA 1333526	WA 2614632
Diopsittaca nobilis (Linnaeus, 1758)	Red-shouldered Macaw	R	LC; LC			WA 3233556
D. n. cumanensis (M. H. C. Lichtenstein, 1823)*						
Aratinga jandaya (J. F. Gmelin, 1788)	Jandaya Parakeet	R, E	LC; LC		WA 81727	WA 1779831
Eupsittula aurea (J. F. Gmelin, 1788)	Peach-fronted Parakeet	R	LC; LC		WA 480165	WA 2591407
Eupsittula cactorum (Kuhl, 1820)	Cactus Parakeet	R, E	LC; LC		WA 47014	WA 1254747
E. c. caixana (Spix, 1824)*						
Forpus xanthopterygius (Spix, 1824)	Blue-winged Parrotlet	R	LC; LC	COUFRN 875	WA 2716847	WA 1254361
F. x. flavissimus Hellmayr, 1929*						
Amazona amazonica (Linnaeus, 1766)	Orange-winged Parrot	R	LC; LC		WA 619977	WA 2063543
Amazona aestiva (Linnaeus, 1758)	Turquoise-fronted Parrot	R	NT; LC		WA 2614629	WA 2650544
A. a. aestiva (Linnaeus, 1758)						
PASSERIFORMES						
Thamnophilidae						
Myrmorchilus strigilatus (Wied, 1831)	Stripe-backed Antbird	R	LC; LC	COUFRN 52	WA 347677	WA 3300914
M. s. strigilatus (Wied, 1831)						

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Myrmotherula axillaris (Vieillot, 1817)	White-flanked Antwren	R	LC; LC	COUFRN 27	WA 1359465	
M. a. luctuosa Pelzeln, 1868			LC			
Formicivora grisea (Boddaert, 1783)	White-fringed Antwren	R	LC; LC	LSUMZ 10422	WA 90135	Minns *et al.* (2010)
F. g. grisea (Boddaert, 1783)*						
Formicivora melanogaster Pelzeln, 1868	Black-bellied Antwren	R	LC; LC	COUFRN 80	WA 346640	WA 1254742
F. m. bahiae Hellmayr, 1909*						
Formicivora rufa (Wied, 1831)	Rusty-backed Antwren	R	LC; LC		WA 247663;	XC 430046
F. r. rufa (Wied, 1831)*						
Dysithamnus mentalis (Temminck, 1823)	Plain Antvireo	R	LC; LC	MNRJ 8092	WA 452161	WA 2577546
D. m. emiliae Hellmayr, 1912*						
Herpsilochmus sellowi Whitney & Pacheco, 2000	Caatinga Antwren	R, E	LC; LC	COUFRN 94	WA 250894	Minns *et al.* (2010)
Herpsilochmus atricapillus Pelzeln, 1868	Black-capped Antwren	R	LC; LC		WA 1650539	Minns *et al.* (2010)
Herpsilochmus pectoralis P. L. Sclater, 1857	Pectoral Antwren	R, E	LC; VU	COUFRN 1	WA 452125	Minns *et al.* (2010)
Herpsilochmus rufimarginatus (Temminck, 1822)	Rufous-winged Antwren	R	LC; LC	COUFRN 101	WA 1876728	WA 253723
H. r. scapularis (Wied, 1831)*						
Sakesphorus cristatus (Wied,1831)	Silvery-cheeked Antshrike	R, E	LC; LC	COUFRN 252	WA 343961	WA 3300881
Thamnophilus capistratus Lesson, 1840	Caatinga Antshrike	R, E	LC; NE	COUFRN 108	WA 348848	WA 1254752
Thamnophilus torquatus Swainson, 1825	Rufous-winged Antshrike	R	LC; LC	COUFRN 96	WA 2016715	XC 430049
Thamnophilus pelzelni Hellmayr, 1924	Planalto Slaty Antshrike	R, E	LC; LC	COUFRN 34	WA 72129	WA 2063563
Taraba major (Vieillot, 1816)	Great Antshrike	R	LC; LC	COUFRN 31	WA 193676	XC 430050
T. m. stagurus (M. H. C. Lichtenstein, 1823)*						
Cercomacroides laeta (Todd, 1920)	Willis's Antbird	R, E	LC; LC			WA 2660533
C. l. sabinoi (Pinto, 1939)*			NE			
Conopophagidae						
Conopophaga cearae Cory, 1916	Ceara Gnateater	R, E	EN; LC		WA 2159276	WA 3128684
Conopophaga melanops (Vieillot, 1818)	Black-cheeked Gnateater	R, E	LC; LC		WA 2304026	WA 2236800
C. m. nigrifrons Pinto, 1954*			VU			
Dendrocolaptidae						
Sittasomus griseicapillus (Vieillot, 1818)	Olivaceous Woodcreeper	R	LC; LC	COUFRN 1172	WA 2603253	XC 388588
S. g. reiseri Hellmayr, 1917*						

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Xiphorhynchus guttatus (M. H. C. Lichtenstein, 1820)	Buff-throated Woodcreeper	R	LC; LC		WA 619978	WA 2064613
X. g. guttatus (M. H. C. Lichtenstein, 1820)*						
Campylorhamphus trochilirostris (M. H. C. Lichtenstein, 1820)	Red-billed Scythebill	R	LC; LC	COUFRN 1107	WA 1549462	WA 2966049
C. t. major Ridgway, 1911*						
Dendroplex picus (J. F. Gmelin, 1788)	Straight-billed Woodcreeper	R	LC; LC	COUFRN 61	WA 250856	WA 3300882
D. p. picus (J. F. Gmelin, 1788)*						
Lepidocolaptes angustirostris (Vieillot, 1818)	Narrow-billed Woodcreeper	R	LC; LC	COUFRN 74	WA 47542	WA 3300884
Xenopidae						
Xenops minutus (Sparrman, 1788)	Plain Xenops	R	LC; LC	COUFRN 16	WA 2114850	WA 2063601
X. m. alagoanus Pinto, 1954*			VU			
[*Xenops rutilans* Temminck, 1821]	Streaked Xenops	R	LC; NE			
Furnariidae						
Furnarius figulus (M. H. C. Lichtenstein, 1823)	Wing-banded Hornero	R, E	LC; LC		WA 324819	WA 2617452
F. f. figulus (M. H. C. Lichtenstein, 1823)*						
Furnarius leucopus Swainson, 1838	Pale-legged Hornero	R	LC; LC	MNRJ 34527	WA 249194	Minns *et al.* (2010)
F. l. assimilis Cabanis & Heine, 1859						
Pseudoseisura cristata (Spix, 1824)	Caatinga Cacholote	R, E	LC; LC		WA 249192	WA 1254342
Phacellodomus rufifrons (Wied, 1821)	Rufous-fronted Thornbird	R	LC; LC		WA 1851438	
P. r. rufifrons (Wied, 1821)*						
Certhiaxis cinnamomeus (J. F. Gmelin, 1788)	Yellow-chinned Spinetail	R	LC; LC	CAHZ 1245	WA 249146	WA 1649739
C. c. cearensis (Cory, 1916)*						
Synallaxis hellmayri Reiser, 1905	Red-shouldered Spinetail	R, E	DD; NT	COUFRN 244	WA 236135	WA 3300886
Synallaxis frontalis Pelzeln, 1859	Sooty-fronted Spinetail	R	LC; LC	MNRJ 36903	WA 571728	WA 2266747
Synallaxis albescens Temminck, 1823	Pale-breasted Spinetail	R	LC; LC	COUFRN 922	WA 2089572	WA 2088131
S. a. albescens Temminck, 1823*						
Synallaxis scutata P. L. Sclater, 1859	Ochre-cheeked Spinetail	R	LC; LC	COUFRN 127	WA 452167	WA 3065184
S. s. scutata P. L. Sclater, 1859*						
Pipridae						
Neopelma pallescens (Lafresnaye, 1853)	Pale-bellied Tyrant-Manakin	R	LC; LC	COUFRN 59	WA 2016745	Minns *et al.* (2010)

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[*Ceratopipra rubrocapilla* (Temminck, 1821)]	Red-headed Manakin	R	LC; LC			
Manacus manacus (Linnaeus, 1766)	White-bearded Manakin	R	LC; LC		WA 2016730	WA 2457367
M. m. gutturosus (Desmarest, 1806)*						
Chiroxiphia pareola (Linnaeus,1766)	Blue-backed Manakin	R	LC; LC	COUFRN 345	WA 37071	Minns *et al.* (2010)
C. p. pareola (Linnaeus, 1766)*						
Onychorhynchidae						
[*Myiobius barbatus* (J. F. Gmelin, 1789)]	Whiskered Flycatcher	R	LC; LC			
Tityridae						
Pachyramphus viridis (Vieillot, 1816)	Green-backed Becard	R	LC; LC	COUFRN 1054	WA 1364274	
P. v. viridis (Vieillot, 1816)*						
Pachyramphus polychopterus (Vieillot, 1818)	White-winged Becard	R	LC; LC	UFPE 3437	WA 283179	Minns *et al.* (2010)
P. p. polychopterus (Vieillot, 1818)*						
Pachyramphus validus (M. H. C. Lichtenstein, 1823)	Crested Becard	R	LC; LC		WA 47060	WA 1672890
P. v. validus (M. H. C. Lichtenstein, 1823)*						
Xenopsaris albinucha (Burmeister, 1869)	White-naped Xenopsaris	R	LC; LC	MNRJ 36939	WA 186702	WA 3070452
X. a. albinucha (Burmeister, 1869)*						
Cotingidae						
Procnias averano (Hermann, 1783)	Bearded Bellbird	R	LC; LC		WA 1724942	
P. a. averano (Hermann, 1783)*						
Platyrinchidae						
Platyrinchus mystaceus Vieillot, 1818	White-throated Spadebill	R	LC; LC		WA 295438	WA 2598721
P. m. niveigularis Pinto, 1954*			VU			
Rhynchocyclidae						
Leptopogon amaurocephalus Tschudi, 1846	Sepia-capped Flycatcher	R	LC; LC		WA 2513911	
L. a. amaurocephalus Tschudi, 1846*						
Tolmomyias flaviventris (Wied, 1831)	Yellow-breasted Flycatcher	R	LC; LC	UFPE 3435	WA 280125	WA 3300888
T. f. flaviventris (Wied, 1831)*						
Todirostrum cinereum (Linnaeus, 1766)	Common Tody-Flycatcher	R	LC; LC	COUFRN 322	WA 193675	WA 1254334
T. c. cearae Cory, 1916*						

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Poecilotriccus fumifrons (Hartlaub, 1853)	Smoky-fronted Tody-Flycatcher	R	LC; LC		WA 2270071	Minns *et al.* (2010)
P. f. fumifrons (Hartlaub, 1853)*						
Hemitriccus griseipectus (E. Snethlage, 1907)	White-bellied Tody-Tyrant	R	LC; LC		WA 1359463	WA 2011736
H. g. naumburgae (J. T. Zimmer, 1945)*			VU			
Hemitriccus striaticollis (Lafresnaye, 1853)	Stripe-necked Tody-Tyrant	R	LC; LC	COUFRN 44	WA 587100	Minns *et al.* (2010)
H. s. striaticollis (Lafresnaye, 1853)*						
Hemitriccus margaritaceiventer (d'Orbigny & Lafresnaye, 1837)	Pearly-vented Tody-Tyrant	R	LC; LC	UFPE 3440	WA 344899	WA 1254332
H. m. wuchereri (Sclater & Salvin, 1873)						
Tyrannidae						
Hirundinea ferruginea (J. F. Gmelin, 1788)	Cliff Flycatcher	R	LC; LC		WA 269104	WA 3300889
H. f. bellicosa (Vieillot, 1819)*						
Stigmatura napensis Chapman, 1926	Lesser Wagtail-Tyrant	R	LC; LC	COUFRN 149	WA 1689483	WA 1254725
S. n. bahiae Chapman, 1926*			LC			
Euscarthmus meloryphus Wied, 1831	Tawny-crowned Pygmy Tyrant	R	LC; LC	COUFRN 148	WA 47062	Minns *et al.* (2010)
E. m. meloryphus Wied, 1831*						
Ornithion inerme Hartlaub, 1853	White-lored Tyrannulet	R	LC; LC		WA 3257427	WA 3300921
Camptostoma obsoletum (Temminck, 1824)	Southern Beardless Tyrannulet	R	LC; LC	COUFRN 708	WA 198231	WA 3300890
C. o. cinerascens (Wied, 1831)*						
Elaenia flavogaster (Thunberg, 1822)	Yellow-bellied Elaenia	R	LC; LC	UFPE 3436	WA 452134	Minns *et al.* (2010)
E. f. flavogaster (Thunberg, 1822)*						
Elaenia spectabilis Pelzeln, 1868	Large Elaenia	R	LC; LC	COUFRN 432	WA 47193	WA 1254733
Elaenia chilensis Hellmayr, 1927	Chilean Elaenia	VS	LC; NE	COUFRN 64	WA 2111209	WA 2756392
Elaenia cristata Pelzeln, 1868	Plain-crested Elaenia	R	LC; LC	LSUMZ 10420	WA 253384	WA 1570871
E. c. cristata Pelzeln, 1868*						
Elaenia chiriquensis Lawrence, 1865	Lesser Elaenia	R	LC; LC	COUFRN 115	WA 2030096	XC 430033
E. c. albivertex Pelzeln, 1868*						
Suiriri suiriri (Vieillot, 1818)	Suiriri Flycatcher	R	LC; LC		WA 2273569	WA 2931035
S. s. bahiae (Berlepsch, 1893)*						
[*Myiopagis caniceps* (Swainson, 1835)]	Grey Elaenia	R	LC; LC			

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Myiopagis viridicata (Vieillot, 1817)	Greenish Elaenia	R	LC; LC	COUFRN 60	WA 730141	WA 2905285
M. v. viridicata (Vieillot, 1817)*						
Capsiempis flaveola (M. H. C. Lichtenstein, 1823)	Yellow Tyrannulet	R	LC; LC		WA 2657045	WA 2655815
C. f. flaveola (M. H. C. Lichtenstein, 1823)*						
Phaeomyias murina (Spix, 1825)	Mouse-coloured Tyrannulet	R	LC; LC	COUFRN 146	WA 1366321	XC 430051
P. m. murina (Spix, 1825)*						
Serpophaga subcristata (Vieillot, 1817)	White-crested Tyrannulet	R	LC; LC		WA 2620697	
S. s. straminea (Temminck, 1822)*						
Myiarchus swainsoni Cabanis & Heine, 1859	Swainson's Flycatcher	R	LC; LC	COUFRN 1088	WA 2932951	WA 3300894
M. s. swainsoni Cabanis & Heine, 1859*						
Myiarchus ferox (J. F. Gmelin, 1789)	Short-crested Flycatcher	R	LC; LC			WA 2984460
M. f. ferox (J. F. Gmelin, 1789)*						
Myiarchus tyrannulus (Statius Muller, 1776)	Brown-crested Flycatcher	R	LC; LC	CAHZ 698	WA 34098	WA 3300892
M. t. bahiae Berlepsch & Leverkühn, 1890*						
Casiornis fuscus Sclater & Salvin, 1873	Ash-throated Casiornis	R, E	LC; LC	COUFRN 293	WA 34103	Minns *et al.* (2010)
Pitangus sulphuratus (Linnaeus, 1766)	Great Kiskadee	R	LC; LC	COUFRN 86	WA 55170	Minns *et al.* (2010)
P. s. maximiliani (Cabanis & Heine, 1859)*						
Machetornis rixosa (Vieillot, 1819)	Cattle Tyrant	R	LC; LC		WA 251715	
M. r. rixosa (Vieillot, 1819)*						
Myiodynastes maculatus (Statius Muller, 1776)	Streaked Flycatcher	R	LC; LC	COUFRN 947	WA 198225	WA 3300904
M. m. solitarius (Vieillot, 1819)*						
Megarynchus pitangua (Linnaeus, 1766)	Boat-billed Flycatcher	R	LC; LC		WA 250907	XC 366782
M. p. pitangua (Linnaeus, 1766)*						
Myiozetetes similis (Spix, 1825)	Social Flycatcher	R	LC; LC		WA 269146	XC 430058
M. s. pallidiventris Pinto, 1935*						
Tyrannus melancholicus Vieillot, 1819	Tropical Kingbird	R	LC; LC	UMMZ 113608	WA 98160	WA 1254723
T. m. despotes (M. H. C. Lichtenstein, 1823)*						
Tyrannus savana Daudin, 1802	Fork-tailed Flycatcher	R	LC; LC		WA 241803	
T. s. savana Daudin, 1802*						

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Empidonomus varius (Vieillot, 1818)	Variegated Flycatcher	R	LC; LC		WA 342787	
E. v. rufinus (Spix, 1825)*						
Myiophobus fasciatus (Statius Muller, 1776)	Bran-coloured Flycatcher	R	LC; LC		WA 198229	Minns *et al.* (2010)
M. f. flammiceps (Temminck, 1822)*						
Sublegatus modestus (Wied, 1831)	Southern Scrub Flycatcher	R	LC; LC	COUFRN 107	WA 690623	WA 326535
S. m. modestus (Wied, 1831)*						
Fluvicola albiventer (Spix, 1825)	Black-backed Water Tyrant	R	LC; LC		WA 346984	
Fluvicola nengeta (Linnaeus, 1766)	Masked Water Tyrant	R	LC; LC	COUFRN 709	WA 1079213	WA 2762132
F. n. nengeta (Linnaeus, 1766)*						
Arundinicola leucocephala (Linnaeus, 1764)	White-headed Marsh Tyrant	R	LC; LC		WA 269130	
Cnemotriccus fuscatus (Wied, 1831)	Fuscous Flycatcher	R	LC; LC	COUFRN 50	WA 638569	
C. f. bimaculatus (d'Orbigny & Lafresnaye, 1837)*						
[*Lathrotriccus euleri* (Cabanis, 1868)]	Euler's Flycatcher	R	LC; LC			
Knipolegus nigerrimus (Vieillot, 1818)	Velvety Black Tyrant	R, E	LC; LC	MNRJ 2078	WA 2725455	
K. n. nigerrimus (Vieillot, 1818)						
Hymenops perspicillatus (J. F. Gmelin, 1789)	Spectacled Tyrant	R	LC; LC		WA 3065355	
H. p. perspicillatus (J. F. Gmelin, 1789)*						
Satrapa icterophrys (Vieillot, 1818)	Yellow-browed Tyrant	R	LC; LC		WA 649286	
Xolmis cinereus (Vieillot, 1816)	Grey Monjita	R	LC; LC		WA 1689513	
X. c. cinereus (Vieillot, 1816)*						
Xolmis irupero (Vieillot, 1823)	White Monjita	R	LC; LC		WA 2712042	
X. i. niveus (Spix, 1825)*						
Vireonidae						
Cyclarhis gujanensis (J. F. Gmelin, 1789)	Rufous-browed Peppershrike	R	LC; LC	UFPE 3434	WA 2697924	Minns *et al.* (2010)
C. g. cearensis Baird, 1866*						
Hylophilus amaurocephalus (Nordmann, 1835)	Grey-eyed Greenlet	R, E	LC; LC	COUFRN 45	WA 295439	Minns *et al.* (2010)
Vireo chivi (Vieillot, 1817)	Chivi Vireo	R	LC; NE	COUFRN 207	WA 866015	Minns *et al.* (2010)
V. c. agilis (M. H. C. Lichtenstein, 1823)*						
Corvidae						
Cyanocorax cyanopogon (Wied, 1821)	White-naped Jay	R, E	LC; LC	COUFRN 1159	WA 47469	XC 429375

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Hirundinidae						
Pygochelidon cyanoleuca (Vieillot, 1817)	Blue-and-white Swallow		LC; LC		WA 1777794	
P. c. patagonica (d'Orbigny & Lafresnaye, 1837)*						
Stelgidopteryx ruficollis (Vieillot, 1817)	Southern Rough-winged Swallow	R	LC; LC		WA 196389	
S. r. ruficollis (Vieillot, 1817)*						
Progne tapera (Vieillot, 1817)	Brown-chested Martin	R	LC; LC	LSUMZ 10421	WA 2634379	
P. t. tapera (Linnaeus, 1766)						
P. t. fusca (Viellot, 1817)						
Progne chalybea (Gmelin, 1789)	Grey-breasted Martin	R	LC; LC	COUFRN 552	WA 2723512	WA 2982109
P. c. macrorhamphus Brooke, 1974*						
Tachycineta albiventer (Boddaert, 1783)	White-winged Swallow	R	LC; LC	COUFRN 991	WA 725017	
Tachycineta leucorrhoa (Vieillot, 1817)	White-rumped Swallow	R	LC; LC		Fig. 15A	
Tachycineta leucopyga (Meyen, 1834)	Chilean Swallow	VS	LC; LC		Fig. 16	
Hirundo rustica Linnaeus, 1758	Barn Swallow	VN	LC; LC		WA 99051	
H. r. erythrogaster Boddaert, 1783						
Troglodytidae						
Troglodytes musculus Naumann, 1823	Southern House Wren	R	LC; NE	COUFRN 22	WA 343960	WA 1254734
T. m. musculus Naumann, 1823*						
Pheugopedius genibarbis (Swainson, 1838)	Moustached Wren	R	LC; LC		WA 2015201	WA 3300896
P. g. genibarbis (Swainson, 1838)*						
Cantorchilus longirostris (Vieillot, 1819)	Long-billed Wren	R, E	LC; LC	COUFRN 56	WA 247605	XC 429380
C. l. bahiae (Hellmayr, 1903)*						
Donacobiidae						
Donacobius atricapilla (Linnaeus, 1766)	Black-capped Donacobius	R	LC; LC	COUFRN 14	WA 279016	
D. a. atricapilla (Linnaeus, 1766)*						
Polioptilidae						
Ramphocaenus melanurus Vieillot, 1819	Long-billed Gnatwren	R	LC; LC		WA 2214719	WA 2270254
R. m. melanurus Vieillot, 1819*						
Polioptila plumbea (J. F. Gmelin, 1788)	Tropical Gnatcatcher	R	LC; LC	COUFRN 72	WA 248474	Minns *et al.* (2010)
P. p. atricapilla (Swainson, 1831)*						
Turdidae						
Turdus flavipes Vieillot, 1818	Yellow-legged Thrush	R	LC; LC	COUFRN 812	WA 1662001	
T. f. flavipes Vieillot, 1818						

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Turdus leucomelas Vieillot, 1818	Pale-breasted Thrush	R	LC; LC	COUFRN 218	WA 657407	Minns *et al.* (2010)
T. l. albiventer Spix, 1824*						
Turdus rufiventris Vieillot, 1818	Rufous-bellied Thrush	R	LC; LC	COUFRN 112	WA 2713910	WA 349956
T. r. juensis (Cory, 1916)*						
Turdus amaurochalinus Cabanis, 1850	Creamy-bellied Thrush	R	LC; LC	COUFRN 144	WA 198226	Minns *et al.* (2010)
Mimidae						
Mimus gilvus (Vieillot, 1807)	Tropical Mockingbird	R	LC; LC		WA 1343747	WA 1254333
M. g. antelius Oberholser, 1919*						
Mimus saturninus (M. H. C. Lichtenstein, 1823)	Chalk-browed Mockingbird	R	LC; LC	COUFRN 863	WA 193679	WA 1254366
M. s. arenaceus Chapman, 1890*						
Motacillidae						
Anthus lutescens Pucheran, 1855	Yellowish Pipit	R	LC; LC		WA 80471	
A. l. lutescens Pucheran, 1855*						
Passerellidae						
Zonotrichia capensis (Statius Muller, 1776)	Rufous-collared Sparrow	R	LC; LC	UFPE 3655	WA 348722	FNJV 7522
Z. c. matutina (M. H. C. Lichtenstein, 1823)*						
Ammodramus humeralis (Bosc, 1792)	Grassland Sparrow	R	LC; LC	UFPE 3398	WA 249001	Minns *et al.* (2010)
A. h. humeralis (Bosc, 1792)*						
Arremon taciturnus (Hermann, 1783)	Pectoral Sparrow	R	LC; LC		WA 283184	Minns *et al.* (2010)
A. t. taciturnus (Hermann, 1783)*						
Parulidae						
Setophaga pitiayumi (Vieillot, 1817)	Tropical Parula	R	LC; LC		WA 2250869	
S. p. pitiayumi (Vieillot, 1817)*						
Basileuterus culicivorus (Deppe, 1830)	Golden-crowned Warbler	R	LC; LC	COUFRN 43	WA 283196	WA 2615240
B. c. auricapilla (Swainson, 1838)						
Myiothlypis flaveola Baird, 1865	Flavescent Warbler	R	LC; LC	COUFRN 19	WA 283217	Minns *et al.* (2010)
M. f. flaveola Baird, 1865*						
Icteridae						
Procacicus solitarius (Vieillot, 1816)	Solitary Black Cacique	R	LC; LC	COUFRN 219	WA 251714	Minns *et al.* (2010)
Cacicus cela (Linnaeus, 1758)	Yellow-rumped Cacique	R	LC; LC		WA 1688477	WA 2266654
C. c. cela (Linnaeus, 1758)*						

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Icterus pyrrhopterus (Vieillot, 1819)	Variable Oriole	R	LC; LC		WA 251716	WA 247146
I. p. tibialis Swainson, 1838						
Icterus jamacaii (J. F. Gmelin, 1788)	Campo Troupial	R, E	LC; LC	COUFRN 1009	WA 47528	WA 1254350
Gnorimopsar chopi (Vieillot, 1819)	Chopi Blackbird	R	LC; LC		WA 864267	WA 1254730
G. c. sulcirostris (Spix, 1824)*						
Chrysomus ruficapillus (Vieillot, 1819)	Chestnut-capped Blackbird	R	LC; LC		WA 726026	WA 2050548
C. r. frontalis (Vieillot, 1819)*						
Agelaioides fringillarius (Spix, 1824)	Pale Baywing	R, E	LC; LC		WA 339277	WA 3300898
Molothrus rufoaxillaris Cassin, 1866	Screaming Cowbird	R	LC; LC		WA 2164752	
Molothrus bonariensis (J. F. Gmelin, 1789)	Shiny Cowbird	R	LC; LC		WA 2716855	WA 1254336
M. b. bonariensis (J. F. Gmelin, 1789)*						
Sturnella superciliaris (Bonaparte, 1850)	White-browed Meadowlark	R	LC; LC		WA 47055	WA 3244419
Thraupidae						
Porphyrospiza caerulescens (Wied, 1830)	Blue Finch	R	LC; NT	COUFRN 81	WA 1689382	
Schistochlamys melanopis (Latham, 1790)	Black-faced Tanager	R	LC; LC		WA 228669	
S. m. melanopis (Latham, 1790)*						
Schistochlamys ruficapillus (Vieillot, 1817)	Cinnamon Tanager	R	LC; LC	UMMZ 113609	WA 940543	WA 283905
Paroaria dominicana (Linnaeus, 1758)	Red-cowled Cardinal	R, E	LC; LC	CAHZ 686	WA 47186	WA 1254373
Tangara sayaca (Linnaeus, 1766)	Sayaca Tanager	R	LC; LC	COUFRN 165	WA 348726	
T. s. sayaca (Linnaeus, 1766)*						
Tangara palmarum (Wied, 1821)	Palm Tanager	R	LC; LC	COUFRN 130	WA 81822	WA 2762141
T. p. palmarum (Wied, 1821)*						
Tangara cayana (Linnaeus, 1766)	Burnished-buff Tanager	R	LC; LC	COUFRN 102	WA 452006	XC 430039
T. c. flava (J. F. Gmelin, 1789)						
Nemosia pileata (Boddaert, 1783)	Hooded Tanager	R	LC; LC		WA 198256	
N. p. caerulea (Wied, 1831)*						
Compsothraupis loricata (M. H. C. Lichtenstein, 1819)	Scarlet-throated Tanager	R, E	LC; LC		WA 338567	WA 3300900
Conirostrum speciosum (Temminck, 1824)	Chestnut-vented Conebill	R	LC; LC		WA 2519005	WA 2892173
C. s. speciosum (Temminck, 1824)*						

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Conirostrum bicolor (Vieillot, 1809)	Bicoloured Conebill	R	LC; NT		WA 385417	WA 2581741
C. b. bicolor (Vieillot, 1809)*						
Sicalis flaveola (Linnaeus, 1766)	Saffron Finch	R	LC; LC		WA 1613389	
S. f. brasiliensis (J. F. Gmelin, 1789)						
Sicalis luteola (Sparrman, 1789)	Grassland Yellow Finch	R	LC; LC	UFPE 3140	WA 249159	WA 1254714
S. l. luteiventris (Meyen, 1834)*						
Volatinia jacarina (Linnaeus, 1766)	Blue-black Grassquit	R	LC; LC	CAHZ 689	WA 269106	WA 1254764
V. j. jacarina (Linnaeus, 1766)*						
Coryphospingus pileatus (Wied, 1821)	Pileated Finch	R	LC; LC	UFPE 3443	WA 116045	WA 1254731
C. p. pileatus (Wied, 1821)*						
Lanio cristatus (Linnaeus, 1766)	Flame-crested Tanager	R	LC; LC		WA 228661	
L. c. brunneus (Spix, 1825)*						
Tachyphonus rufus (Boddaert, 1783)	White-lined Tanager	R	LC; LC	LSUMZ 10423	WA 82978	Minns *et al.* (2010)
Ramphocelus bresilius (Linnaeus, 1766)	Brazilian Tanager	R, E	LC; LC		WA 2761950	
R. b. bresilius (Linnaeus, 1766)*						
Charitospiza eucosma Oberholser, 1905	Coal-crested Finch	R	LC; NT	COUFRN 815	WA 1689389	
Tersina viridis (Illiger, 1811)	Swallow Tanager	R	LC; LC		WA 287757	
T. v. viridis (Illiger, 1811)*						
Cyanerpes cyaneus (Linnaeus, 1766)	Red-legged Honeycreeper	R	LC; LC		WA 1571335	
C. c. holti Parkes, 1977*						
Dacnis cayana (Linnaeus, 1766)	Blue Dacnis	R	LC; LC	COUFRN 605	WA 5200	XC 429377
D. c. paraguayensis Chubb, 1910*						
Coereba flaveola (Linnaeus, 1758)	Bananaquit	R	LC; LC	COUFRN 92	WA 193677	WA 1254349
C. f. chloropyga (Cabanis, 1850)*						
Sporophila lineola (Linnaeus, 1758)	Lined Seedeater	R	LC; LC		WA 336521	WA 2925073
Sporophila nigricollis (Vieillot, 1823)	Yellow-bellied Seedeater	R	LC; LC		WA 237326	
S. n. nigricollis (Vieillot, 1823)*						
Sporophila albogularis (Spix, 1825)	White-throated Seedeater	R, E	LC; LC	UFPE 3144	WA 47522	WA 1254722
Sporophila leucoptera (Vieillot, 1817)	White-bellied Seedeater	R	LC; LC		WA 2676962	
S. l. cinereola (Temminck, 1820)						

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Sporophila bouvreuil (Statius Muller, 1776)	Copper Seedeater	R	LC; LC	UFPE 3675	WA 315239	
Coryphaspiza melanotis (Temminck, 1822)	Black-masked Finch	R	EN; VU	COUFRN 824	WA 1689384	
C. m. melanotis (Temminck, 1822)*						
Emberizoides herbicola (Vieillot, 1817)	Wedge-tailed Grass-Finch	R	LC; LC		WA 2220061	WA 2051446
E. h. herbicola (Vieillot, 1817)*						
Saltatricula atricollis (Vieillot, 1817)	Black-throated Saltator	R	LC; LC		WA 2658215	WA 2909323
Saltator maximus (Statius Muller, 1776)	Buff-throated Saltator	R	LC; LC		WA 2251953	WA 2263320
S. m. maximus (Statius Muller, 1776)*						
[*Saltator similis* d'Orbigny & Lafresnaye, 1837]	Green-winged Saltator	R	LC; LC			
Thlypopsis sordida (d'Orbigny & Lafresnaye, 1837)	Orange-headed Tanager	R	LC; LC	COUFRN 145	WA 256608	
T. s. sordida (d'Orbigny & Lafresnaye, 1837)*						
Cypsnagra hirundinacea (Lesson, 1831)	White-rumped Tanager	R	LC; LC	COUFRN 902	WA 2432542	
C. h. pallidigula Hellmayr, 1907						
Cardinalidae						
Piranga flava (Vieillot, 1822)	Hepatic Tanager	R	LC; LC		WA 2365584	
P. f. saira (Spix, 1825)*						
Cyanoloxia brissonii (M. H. C. Lichtenstein, 1823)	Ultramarine Grosbeak	R	LC; LC	UFPE 3441	WA 251708	
C. b. brissonii (M. H. C. Lichtenstein, 1823)*						
Fringillidae						
[*Spinus yarrellii* (Audubon, 1839)]	Yellow-faced Siskin	R	VU; VU			
Euphonia chlorotica (Linnaeus, 1766)	Purple-throated Euphonia	R	LC; LC		WA 251718	WA 3300907
E. c. chlorotica (Linnaeus, 1766)*						
Euphonia violacea (Linnaeus, 1758)	Violaceous Euphonia	R	LC; LC		WA 3257429	WA 3257457
E. v. aurantiicollis Bertoni, 1901*						
Estrildidae						
Estrilda astrild (Linnaeus, 1758)	Common Waxbill	R	NE; LC	COUFRN 89	WA 725795	WA 2952512
E. astrild ssp.						
Passeridae						
Passer domesticus (Linnaeus, 1758)	House Sparrow	R	NE; LC	COUFRN 1089	WA 561857	
P. d. domesticus (Linnaeus, 1758)*						

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Following Piacentini *et al*. (2015) we have mentioned subspecies, but these should not be taken as a taxonomic validation. Entries with an asterisk (*) are based only on the current known distribution; therefore, these subspecies should not be used for biogeographical purposes. Those without an asterisk were specifically identified to taxon by us. In the light of some recent taxonomic reviews, we discuss a few issues in the species accounts, but do not specifically propose any changes to the list in Piacentini *et al*. (2015).

Conservation status refers both to national (ICMBio / MMA 2018) and global levels (IUCN 2019). National status and endemism follow Piacentini *et al*. (2015), but only for species on the Brazilian primary list.

We provide complementary information on some vouchers, details and comments on single records, and explanatory notes for all species on the secondary list. We have mentioned the few recoveries, recaptures and resightings of ringed birds of polytypic species encountered in the state, to indicate subspecies and to provide phenological data. We offer more detailed information on seabirds, a group less well known to most ornithologists, including available specimens, records of lost specimens, recoveries, other documented records and sight records.

We have given a strict definition to some terms frequently used in this text: 'specimen' = a skin or any part of a bird preserved in a collection; 'voucher' = unequivocal proof of identification of a taxon; 'recovery' = reading of any distinctive marking on a dead bird; 'recapture' = a ringed bird trapped and released again; and 'resighting' = reading of a ring, flag or tag on a live bird that was not recaptured.

Results

We have compiled records of 425 bird species for the state of Rio Grande do Norte, 391 for the primary list—with available physical evidence—and 34 for the secondary list, with no documentary evidence. Subspecies are proposed for 272 species on the primary list, 27 of them identified, but the other 245 based on distribution. Four species are represented by two subspecies: Rusty-margined Guan *Penelope superciliaris*, Cabot's Tern *Thalasseus acuflavidus*, Peregrine Falcon *Falco peregrinus* and Brown-chested Martin *Progne tapera*. This results in a total of 428 valid or potentially valid distinct taxa (species and subspecies) recorded in the state (Table 1).

A total of 370 bird species that occur in the state are known or presumed to breed in Brazil, 35 of them country endemics (Piacentini *et al*. 2015). Another 51 are migrants from the Northern Hemisphere (36) or southern South America (11), the remaining four being accidental visitors or vagrants from the north. The former status of one species (*Phoenicopterus ruber*) is unknown. Three species introduced from the Old World have established self-sustaining populations: Rock Pigeon *Columba livia*, Common Waxbill *Estrilda astrild* and House Sparrow *Passer domesticus*.

We offer documentation for 12 species new to the state: Black-bellied Storm Petrel *Fregetta tropica*, Jabiru *Jabiru mycteria*, Stripe-backed Bittern *Ixobrychus involucris*, Roseate Spoonbill *Platalea ajaja*, Rufous Crab Hawk *Buteogallus aequinoctialis*, Pectoral Sandpiper *Calidris melanotos*, Short-eared Owl *Asio flammeus*, Lesser Nighthawk *Chordeiles acutipennis*, White-lored Tyrannulet *Ornithion inerme*, Spectacled Tyrant *Hymenops perspicillatus*, Chilean Swallow *Tachycineta leucopyga* and Violaceous Euphonia *Euphonia violacea*.

Noteworthy documented records include three significant range extensions: *Tachycineta leucopyga* (*c*.1,900 km north), *Hymenops perspicillatus* (*c*.1,400 km north) and *Asio flammeus* (*c*.1,000 km north-east). We also present the first proven breeding by Least Tern *Sternula antillarum*, *Thalasseus acuflavidus* and Creamy-bellied Thrush *Turdus amaurochalinus* in extreme north-eastern Brazil.

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On the primary list, there are 19 globally threatened and Near Threatened species (4.9% of the list), one-third of them passerines, of which one is Critically Endangered, five Vulnerable, and 13 Near Threatened (IUCN 2019).

At the national level (ICMBio / MMA 2018), several taxa not evaluated by IUCN (2019) are of conservation concern, such as Yellow-legged Tinamou *Crypturellus noctivagus zabele* (VU), *Penelope superciliaris alagoensis* (CR), Wilson's Plover *Charadrius wilsonia crassirostris* (VU), American Whimbrel *Numenius hudsonicus* (NT), Amazonian Motmot *Momotus momota marcgravianus* (EN), Black-cheeked Gnateater *Conopophaga melanops nigrifrons* (VU), Plain Xenops *Xenops minutus alagoanus* (VU), White-throated Spadebill *Platyrinchus mystaceus niveigularis* (VU) and White-bellied Tody-Tyrant *Hemitriccus griseipectus naumburgae* (VU). In addition, several species, including a Brazilian endemic, have a poorer national status than the global designation, including Trindade Petrel *Pterodroma arminjoniana* (CR vs. VU), Red-footed Booby *Sula sula* (EN vs. LC), King Vulture *Sarcoramphus papa* (NT vs. LC), American Oystercatcher *Haematopus palliatus* (NT vs. LC), Short-billed Dowitcher *Limnodromus griseus* (CR vs. LC), Ruddy Turnstone *Arenaria interpres* (NT vs. LC), Red Knot *Calidris canutus* (CR vs. NT), Semipalmated Sandpiper *C. pusilla* (EN vs. NT), Roseate Tern *Sterna dougallii* (VU vs. LC), Turquoise-fronted Parrot *Amazona aestiva* (NT vs. LC), Ceara Gnateater *Conopophaga cearae* (EN vs. LC) and Black-masked Finch *Coryphaspiza melanotis* (EN vs. VU). On the other hand, the conservation prospects of some species, including four Brazilian endemics, are considered of less concern in a national setting, e.g., Sooty Shearwater *Puffinus griseus* (LC vs. NT), Leach's Storm Petrel *Oceanodroma leucorhoa* (LC vs. VU), White-collared Kite *Leptodon forbesi* (EN vs. CR), Tawny Piculet *Picumnus fulvescens* (LC vs. NT), Pectoral Antwren *Herpsilochmus pectoralis* (LC vs. VU), Red-shouldered Spinetail *Synallaxis hellmayri* (DD vs. NT), Blue Finch *Porphyrospiza caerulescens* (LC vs. NT), Bicoloured Conebill *Conirostrum bicolor* (LC vs. NT) and Coal-crested Finch *Charitospiza eucosma* (LC vs. NT). The Near Threatened Bar-tailed Godwit *Limosa lapponica* (IUCN 2019) has not been evaluated at national level. Moreover, in addition to *Synallaxis hellmayri*, five taxa are considered Data Deficient at national level, *Penelope superciliaris ochromitra*, Yellow-breasted Crake *Porzana flaviventer*, American Golden Plover *Pluvialis dominica*, Least Sandpiper *Calidris minutilla* and Pygmy Nightjar *Nyctidromus hirundinaceus*.

Annotated species on the Primary List

All localities are in Rio Grande do Norte, unless otherwise stated.

GREATER RHEA *Rhea americana*

Greater Rhea was once common (Marcgrave 1648), but the native population, mentioned from many historical localities, became extinct sometime between 1913 (Alves 1977) and 1959 (Faria 1961). The name *R. a. macrorhyncha* P. L. Sclater, 1860, from north-east Brazil (Sick 1993, 1997), is not generally accepted by recent works (Piacentini *et al*. 2015, ICMBio / MMA 2018, Gill & Donsker 2019), but taxonomic and distributional limits of the various subspecies require revision (Piacentini *et al*. 2015). An unidentified taxon was reintroduced in the 1990s at Seridó Ecological Station (ESEC Seridó) (06°35'S, 37°15'W; 200–385 m), Serra Negra do Norte, where a small feral population persists, and subsequently in several private and protected areas in the state, where some still thrive.

YELLOW-LEGGED TINAMOU *Crypturellus noctivagus*

Previously considered probably extinct in the state based on interviews conducted by FSM & DMH with local people in Goianinha, who referred to it as 'zabelê', this tinamou has recently been 'rediscovered'. The first proof of its continued presence was obtained

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in a forest fragment (05°48'S, 35°21'W) near Natal International Airport, São Gonçalo do Amarante, on 19 December 2018 (WA 3217181; R. Araújo). This locality appears too small and isolated to have conservation potential. Although we follow Piacentini *et al*. (2015), a recent reassessment recommended that *C. n. zabele* be treated at species level (Tomotani & Silveira 2016).

FULVOUS WHISTLING DUCK *Dendrocygna bicolor*
A pair introduced in ESEC Seridó, Serra Negra do Norte, was seen breeding in 2002 by FSM, but not in 2012–16 (MP pers. obs.). Previously mentioned for the state (Silveira & Varela-Freire 1999, Azevedo *et al*. 2004, Silva *et al*. 2012), but not documented until a group was photographed at Augusto Severo on 4 September 2015 (WA 2168387; C. Brito) and 13 December 2015 (WA 1951196; J. van den Bosch). Partially migratory in Brazil (Antas 1994, Sick 1997), rare or occasional in many places (Sick 1997), but resident in nearby Ceará (Somenzari *et al*. 2018). Rio Grande do Norte records probably involve southern migrants, but it is also a potential breeder.

RUSTY-MARGINED GUAN *Penelope superciliaris*
Probably two taxa of the *P. superciliaris* complex occur in RN: the Critically Endangered *P. s. alagoensis* (ICMBio / MMA 2018) in the Atlantic Forest and *restinga* (L. F. Silveira pers. comm.; WA 515077; E. Silva), with perhaps the Data Deficient *P. s. ochromitra* Neumann, 1933 (not Spix, 1825 as in Piacentini *et al*. 2015), in the interior. The latter is not confirmed, but *Penelope* flight feathers collected by FSM at Serra das Queimadas, Parelhas, and Serra do Salobro, Luís Gomes, could be identified at MZUSP as only "not *P. jacucaca*" (L. F. Silveira pers. comm.). A recent review of the complex suggests that these taxa should be treated as full species (Vargas 2017).

WHITE-BROWED GUAN *Penelope jacucaca*
Just two photo-documented records of this Vulnerable species: at Tibau on 17 June 2010 (WA 2016795; B. França) and Ruy Barbosa on 5 March 2017 (WA 2491752; A. Barbosa). The status of this Caatinga endemic is very poorly known in Rio Grande do Norte; interviews with local people by FSM suggested some local extinctions, but these do not certainly refer to *P. jacucaca*, as two species of guans appear to frequent the Caatinga (see above).

SOUTHERN FULMAR *Fulmarus glacialoides*
Three specimens (MCZ 186306, 186307 and 226729) collected by G. H. Mackay at Cabo São Roque, *c*.3 km north of the Maxaranguape River mouth (05°29'S, 35°16'W), Maxaranguape, on 9 June 1863 (Carlos *et al*. 2004) are the only state records.

CAPE PETREL *Daption capense*
An adult *D. c. capense* (MCZ 226730), collected by G. H. Mackay at Cabo São Roque near the mouth of the Maxaranguape River (05°29'S, 35°16'W), Maxaranguape, on the same date as the previous species, another austral migrant (Carlos *et al*. 2004), is the sole state record.

CORY'S SHEARWATER *Calonectris borealis*
Two recoveries of birds originally ringed in Macaronesia: a nestling (CEMPA L41317) on Selvagem Grande, Madeira, on 17 September 1991, found by P. H. C. Cordeiro at Pirangi beach, Parnamirim, on 11 July 1994, *c*.4,490 km from the banding site; and one, banded (Spain 6123288) in the Canary Islands on 2 November 2000, found at Extremoz (05°40'S, 35°W) on 12 January 2001 (Olmos 2002). Two other dead birds, identified using Lima *et al*.

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(2004), were found by FSM, of which the mummified remains of one at Canto do Amaro (05°05′S, 36°20′W), Guamaré, on 17 December 2010, will be deposited at COUFRN. Live birds: several photographed off the east coast between 24 November and 22 December 2006 (L. França; confirmed by F. Olmos), one close to the north coast at Guamaré on 6 January 2012 (WA 2518923; MP), another at Galinhos on 31 December 2014 (WA 1569868; F. Torres), and 20 seen 27 km east-northeast off Natal (05°43′S, 34°57′W; depth 200 m) on 24 January 2015 (WA 1593241; N. Moura; Lees *et al*. 2015). Also sporadically observed flying over the mangroves of the north coast, at Salina Diamante Branco (05°05′S, 36°17′W), Galinhos (Azevedo *et al*. 2004), and Canto do Amaro on 19 December 2012 (FSM). It appears that *C. borealis* is regular offshore during the boreal winter, with the immature recovered in July. This is consistent with birds from Macaronesia and Mediterranean wintering in the western Atlantic, where the species has been found year-round (Lima *et al*. 2004, Somenzari *et al*. 2018).

SOOTY SHEARWATER *Puffinus griseus*
One photographed offshore (05°48′S, 34°56′W) on 9 December 2017 (ML 77958651, 77958661; F. Olmos) was the first state record, although this transequatorial migrant was expected given the discovery of one beached on the main island of Fernando de Noronha National Park in 1995 (MZUSP 75463) (Schulz-Neto 2004a, Silva e Silva 2008). Many seen with Manx Shearwaters *P. puffinus* off Trairi, Ceará, on 14 September 2018 (WA 3111847; C. E. Moura). These three records in extreme north-east Brazil are all beyond the species' regular northern limit off Brazil, the state of Bahia (Somenzari *et al*. 2018).

GREAT SHEARWATER *Puffinus gravis*
Of two beached individuals found by JBI at Senador Georgino Avelino in December 2004, the fresher bird was deposited at COUFRN, as was one found at Via Costeira beach, Natal, donated by the environmental agency IBAMA / Natal prior to 2008; however, both frozen corpses were effectively destroyed by an electricity outage at COUFRN on 1 February 2009. The mummified remains of one found by FSM beached at Chapadão de Pipa, Tibau do Sul, on 31 December 2007, will be deposited at COUFRN. Two undated specimens, donated by Aquário-Natal, lack precise localities: COUFRN 838, and female, COUFRN 949, dated 24 September 2012, although it was probably found earlier than this. Recently photographed at sea off Rio Grande do Norte: adults (WA 2813943; J. Quental, WA 2844237; E. Ramirez) *c*.20 km off Natal on 10 December 2017, and another on 13 May 2018 (WA 2971931; M. Farah). *P. gravis* breeds on islands in the South Atlantic in November–April, moves north of the equator between March and September, and visits waters off north-east Brazil in March–December (Lima *et al*. 2004, Somenzari *et al*. 2018), which is consistent with the six dated records here.

MANX SHEARWATER *Puffinus puffinus*
First known from the discovery of beached individuals: one at Barra do Cunhaú, Tibau do Sul, on 24 December 2002; one at Cotovelo, Parnamirim, on 11 December 2004 (FSM); COUFRN 831, found by R. Gondim at Forte dos Reis Magos, Natal, on 23 September 2005; one at Chapadão de Pipa, Tibau do Sul, on 1 January 2008 (FSM); an undated female at Via Costeira, Natal, donated by IBAMA / Natal in 2008, but effectively destroyed by an electricity outage at COUFRN; and eight along 1.5 km of beach at Búzios, Nísia Floresta, on 29 May 2012 (C. Ferreira, identified by FSM). There is an unpublished recovery of a fully grown individual, ringed (EW 77936) at Mallaig (57°N, 05°49′W) in western Scotland by A. D. K. Ramsay on 20 September 2009, found dying by V. Andrade on Cacimbinha

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beach, Tibau do Sul, on 15 January 2013, *c*.7,525 km from the banding site. Hundreds were observed (some photographed) at the shelf break, 27 km east-northeast off Natal, on 25 January 2015 (Lees *et al*. 2015). One flying south 200 m offshore at Santa Rita, Extremoz, on 1 November 2009 (FSM). This species frequents Brazilian and Argentine coasts during the boreal winter (December–March), and breeds in the north-east Atlantic, with isolated records from July and November in Bahia (Somenzari *et al*. 2018). Our data show that *P. puffinus* frequents eastern coastal waters between September and January, with one record in May, thus, is more common off Rio Grande do Norte than previously supposed (Mestre *et al*. 2010, Somenzari *et al*. 2018).

BLACK-BELLIED STORM PETREL *Fregetta tropica*

A beached female with just one leg (COUFRN 120; Fig. 2) was found by the environmental police at Ponta Negra, Natal, on 3 August 2009. The large black hood and its ragged border, which are the best features to distinguish this species from White-bellied Storm Petrel *F. grallaria* (Howell 2010), identify the specimen as *F. tropica*, while the spotted underparts, rather than pure white belly of *F. t. melanoleuca*, indicates the nominate subspecies (Howell 2010, Robertson *et al*. 2016). Note that toe projection and the presence of white feathers on the chin and throat are not necessarily useful for species identification, while the black leading edge of the underwing, narrower in *F. grallaria* (Howell 2010), is not fully visible in our specimen. The only state record, and the fourth specimen of *F. tropica* for Brazil (Lima *et al*. 2004). This austral migrant had already been reported from far north-east Brazil (Olmos 2000): during the 19th century *c*.30 were observed around a ship some 290 km from Fernando de Noronha archipelago (Silva e Silva 2008). *F. t. tropica* presumably frequents Brazilian waters mainly during the austral winter (Lima *et al*. 2004, Somenzari *et al*. 2018); a record from Bahia in January (Olmos 2000), i.e. the austral summer, may have involved an immature.



Figure 2. Black-bellied Storm Petrel *Fregetta t. tropica*, COUFRN 120, found in Natal, Rio Grande do Norte, Brazil, August 2009 (Rafael Dantas Lima)

WILSON'S STORM PETREL *Oceanites oceanicus*

The first documentation of this austral migrant in state waters was published by Lees *et al*. (2015) from over the slope (05°43'S, 34°53'W; depth 2,400 m), which is outside the boundary we have defined but very close to the shelf break (05°43'S, 34°57'W; depth 200 m). Another photo also taken on 24 January 2015, is from the same general area, 27 km east-northeast off Natal (WA 1593174; A. Lees). Previously, one was observed <20 km off Natal during a trip to Atol das Rocas in 1994 (A. Schulz-Neto). It is unknown which of the two subspecies occurs: the nominate, which breeds on subantarctic islands, or *O. o. exasperatus* from Antarctica. Both occur in Brazil (Piacentini *et al*. 2015), where previously recorded between March and

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November (Lima *et al*. 2004, Somenzari *et al*. 2018); the January records from Rio Grande do Norte extend its temporal presence in the country's waters.

LEACH'S STORM PETREL *Oceanodroma leucorhoa*
A specimen of this Vulnerable species (COUFRN 728), donated by IBAMA / Natal, was found on the state's north coast, either on a petroleum platform or a beach, and prepared as a specimen on 6 September 2012 by MP. Two were photographed by A. Lees (WA 1593164) and F. Olmos at the shelf break (05°43'S, 34°57'W; depth 200 m) on 24 January 2015 (Lees *et al*. 2015). Sick (1985) cited a March record for the state, albeit perhaps from Atol das Rocas, which is sometimes considered part of Rio Grande do Norte, but it was not mentioned in Sick (1993, 1997). Part of the Northern Hemisphere population winters off Brazil, with records from Amapá south to São Paulo, mainly in January–February (Somenzari *et al*. 2018).

JABIRU *Jabiru mycteria*
The presence of Jabiru in the state was based on an undocumented old record until 2012. Sr. Raimundo, when 73 years old, informed FSM on 11 September 2011 that in the rainy 1960s 'tuiuiús' (*J. mycteria*, which he described well) reached Acari, and one was hunted. "We ate it. The flesh is black, as tasty as that of a duck", he said. The first documented record involved one on an islet in Pau dos Ferros Dam (06°10'S, 38°11'W), Pau dos Ferros, in February 2012 (Fig. 3A), followed by two at Carnaubais (05°12'S, 36°47'W) on 28 February 2018 (Fig. 3B). Around the same time other records were made in Pernambuco (Pereira *et al*. 2012) and Ceará (WA 3194160) confirming the species' occasional occurrence in the Caatinga, during wet periods.

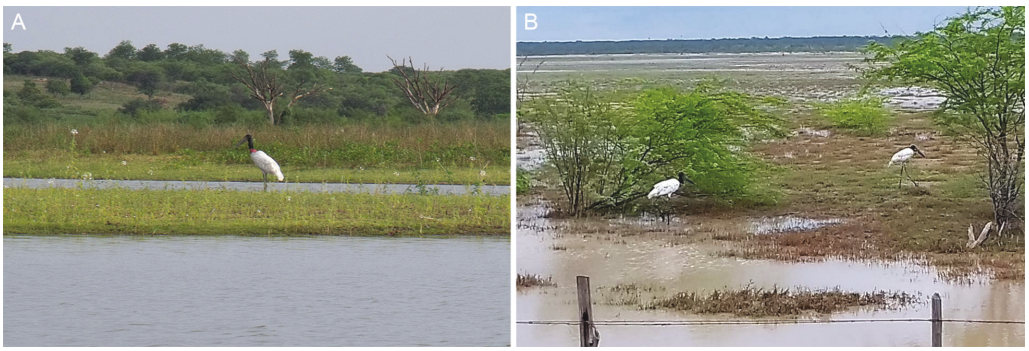


Figure 3A. Jabiru *Jabiru mycteria*, Pau dos Ferros, Rio Grande do Norte, Brazil, February 2012 (© J. L. C. Novaes); (B) Carnaubais, Rio Grande do Norte, Brazil, February 2018 (© C. T. Puppin-Gonçalves & A. C. C. Xavier)

WOOD STORK *Mycteria americana*
Three in a mixed colony of several species of white herons at Umari, Caicó in the Caatinga, in 1998 (C. Medeiros) represented the first state record. An adult with heavily worn and disorganised wing feathers and a dirty body was photographed flying over Messias Targino on 13 December 2015 (WA 1945521; J. van den Bosch).

MAGNIFICENT FRIGATEBIRD *Fregata magnificens*
There is an unpublished recovery of this frigatebird banded as a nestling (CEMAVE U07889) on Fernando de Noronha (03°52'S, 32°26'W) on 25 June 1987 by A. Filippini, and recovered at Pitangui beach (05°30'S, 35°10'W), Extremoz, sometime prior to 1997 (SNA

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2019; A. Schulz-Neto pers. comm.). Regular visitor to the state's coasts, being well known to fishermen as 'garapira'. Its seasonal distribution, based on 52 records (some documented), shows individuals (including adult males) and groups of up to nine occur year-round. At Baía Formosa, flocks of 16 and 15 were seen by FSM interacting with fishing Guiana Dolphins *Sotalia guianensis* in December 2002 and January 2003, respectively.

MASKED BOOBY *Sula dactylatra*

An adult male found alive on Santa Rita beach, Extremoz, on 8 October 2008, was taken to Natal Zoo (Fig. 4), where it subsequently died. It was only recently prepared as a specimen (COUFRN 1253). The first available documented records were off Natal at the shelf break (05°43'S, 34°57'W; depth 200 m) (Lees *et al*. 2015). There are three unpublished recoveries in the state: a nestling, ringed (CEMAVE U23323) on 19 July 1994 on Santa Bárbara Island, Abrolhos National Park (17°58'S, 38°42'W), Caravelas, Bahia, caught at sea (05°06'S, 36°38'W) north of Macau in 1997; an adult, ringed on the right leg, said to be from Abrolhos, Bahia, landed on a floating platform at the Maracajaú Reef (05°40'S, 35°24'W; depth 5 m), 7 km off Maxaranguape, where it was fed, in 2000 and 2002 (Risonaldo pers. comm.; photo identified by FSM); and an adult with a ring on its right leg, photographed on Búzios beach, Nísia Floresta—not in Natal as indicated—(see WA 549593) and subsequently released by the environmental police (G. Rodrigues pers. comm.). *S. dactylatra* appears to be the commonest of the three *Sula* species that occur in the state's waters.



Figure 4. Masked Booby *Sula dactylatra*, found in Extremoz, Rio Grande do Norte, Brazil, October 2008, photographed in Natal Zoo, and now COUFRN 1253 (© D. Brandão)

RED-FOOTED BOOBY *Sula sula*

An adult in typical plumage was found on the coast in 2018 and was prepared as a specimen (COUFRN 1275) on 28 September 2018. This is the only state record.

PINNATED BITTERN *Botaurus pinnatus*

One struck the window of JBI's house close to the floodplain of the Pirangi River, Parnamirim, on 28 May 2008. Its frozen corpse was effectively destroyed by an electricity outage at COUFRN. This was the only state record for some years, but live individuals were subsequently photographed (see WikiAves 2019).

LEAST BITTERN *Ixobrychus exilis*

One observed at Povoado de Sítio in Ceará-Mirim between February 2001 and June 2002 (M. Silva) was the first state record. A female at the lagoon in Martins on 6 August 2010 was the second (FSM). The first documented record involved an adult male at the main pond in ESEC Seridó, Serra Negra do Norte, in 2012, photographed by C. A. Varela-Freire (www.carlosvarela-agenteambiental.blogspot.com). Finally, an adult female was at Mossoró on 25 December 2016 (WA 2411673; RDL). The species' status in the state is unclear, but the record in December suggests possible local breeding.

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STRIPE-BACKED BITTERN *Ixobrychus involucris*
The only state record is a photo of an adult flushed from cattails in the mobile sand dunes at Guamaré on 18 May 2012 (WA 3065361; C. Ferreira, identified by FSM).

ROSEATE SPOONBILL *Platalea ajaja*
The only documented state record involves a skull (SDNHM 35485) collected by F. Baker at 'Paparý Lake' (06°07'S, 35°10'W), Nísia Floresta (Fig. 5). Although the date of the specimen is not given, it can be attributed to 1911, corresponding to the date of a mollusc-collecting expedition during which it was discovered (Baker 1913). Interviews with local people convinced FSM as to the presence of this species in mangroves at Macau and Guamaré until the 1960s, but suggest that it is now extinct; however, one, probably of this species, was observed flying over Macau around December 2009 (JBI). The nearest recent documented records to Rio Grande do Norte are from north-west Ceará and Alagoas, meaning the species could wander to the state.



Figure 5. Skull of Roseate Spoonbill *Platalea ajaja*, SDNHM 35485, collected in Nísia Floresta, Rio Grande do Norte, Brazil, 1911 (P. Unitt, © San Diego Natural History Museum)

OSPREY *Pandion haliaetus*
Widely reported in the state: Macau (Andrade 1991, Sick 1997); Seridó (Varela-Freire & Araújo 1997); the littoral around Potiguar petroleum basin: Macau, Assu, Galinhos, Guamaré, Porto do Mangue (Varela *et al*. 1997, Azevedo *et al*. 2004, Irusta & Sagot-Martin 2011, Silva *et al*. 2012); and Grossos (Girão & Albano 2011). However, there was no documented record for the state until an adult was photographed in flight at Galinhos on 21 November 2009 (WA 252946; B. França). Another record for the southern interior was at ESEC Seridó, Serra Negra do Norte (Pichorim *et al*. 2016b). A female *P. h. carolinensis* named 'Holly' banded (1088-07037) and tagged (388) as a young adult, along with its mate, in Annapolis (38°60'N, 76°29'W), Maryland, USA, was also fitted with a datalogger (Fig. 6A),

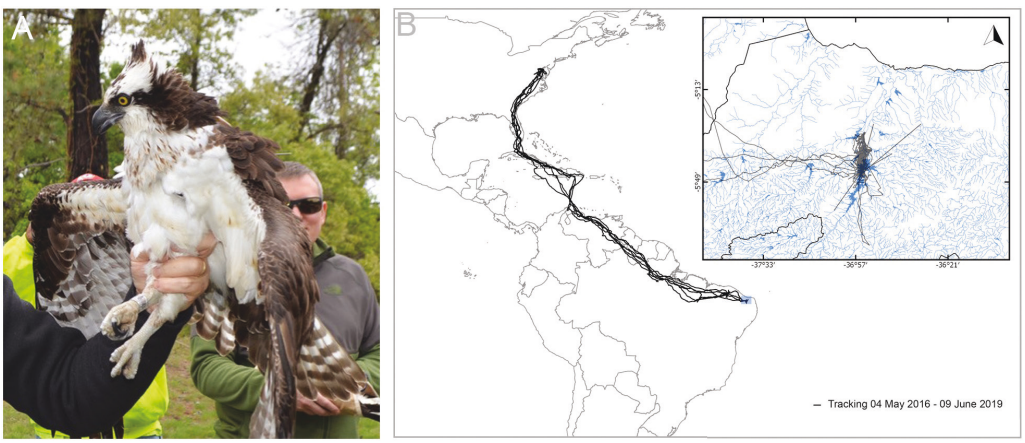


Figure 6A. Osprey *Pandion haliaetus* ('Holly'), Annapolis, Maryland, USA (© R. Bierregaard); and (B) tracking of 'Holly'.

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which revealed that the bird twice migrated to Rio Grande do Norte, covering c.8,000 km on each journey. 'Holly' remained in the Piranhas basin (05°44'S, 36°53'W) between 16 October 2016 and 15 March 2017 and from 9 November 2017 to 14 March 2018 (Fig. 6B). On the next migration, 'Holly' wintered in the state of Ceará, in the Acaraú basin (04°14'S, 40°27'W) (R. Bierregaard pers. comm.). North American Ospreys had previously been recovered in the neighbouring states of Paraíba, initially on 4 February 1973, and Ceará, on 10 February 1983 (Mestre & Bierregaard 2009), but not in Rio Grande do Norte (Mestre *et al*. 2010).

WHITE-COLLARED KITE *Leptodon forbesi*

A presumed adult was flushed from the ground on the left bank of Jiqui River, then circled overhead with a Black Vulture *Coragyps atratus* before disappearing behind forest at Parnamirim, on 15 January 2007 (FSM). This first state record of an Endangered north-east Brazilian endemic was originally considered doubtful due to possible confusion with White-necked Hawk *Amadonastur lacernulatus*, which is now known to occur only south of the São Francisco River (Dénes *et al*. 2011). FSM subsequently observed an adult and young *L. forbesi* at the same locality, on 20 July (with JBI) and 22 July 2009, respectively. Proof of occurrence was obtained by a high-flying bird photographed at Baía Formosa on 4 September 2016 (WA 2263455; D. Gurgel).

SHARP-SHINNED HAWK *Accipiter striatus*

The first documented state record involved an adult banded (CEMAVE H110936) at the Universidade Federal Rural do Semi-Árido farm (05°03'S, 37°24'W), Mossoró, on 26 April 2014 (L. França & P. T. Moura; Fig. 7A). Another Caatinga record was of one captured by MP at ESEC Seridó, Serra Negra do Norte, on 12 June 2014 (Fig. 7B). The subspecies involved is *A. s. erythronemius*, with a finely barred white chest, rufous-grey belly and red flanks and thighs (Ferguson-Lees & Christie 2001), which is sometimes treated as a species (Gill & Donsker 2019).



Figure 7A. Sharp-shinned Hawk *Accipiter striatus erythronemius*, captured in Mossoró, Rio Grande do Norte, Brazil, April 2014 (© P. T. Moura); (B) Serra Negra do Norte, Rio Grande do Norte, Brazil, June 2014 (Mauro Pichorim)

PLUMBEOUS KITE *Ictinia plumbea*

The first state record was of four flying south-east over Serra do Feiticeiro, Lajes, on 6 March 2006 (FSM), while one perched beside the road to Jardim do Seridó (06°39'S, 36°42'W), Parelhas, on 10 April 2006 (photographed by L. Sena) may pertain to the same migratory movement. Further records suggest overwintering adults from a southern population: singles at the Jiqui and Pitimbu floodplain, Parnamirim and Nísia Floresta, on 20 July 2009, and in the same area (WA 249719; B. França) on 5 August 2009 (FSM & JBI), with two there

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on 11 July 2016 (FSM). More surprisingly, two recent records of juveniles: one over São Miguel do Gostoso on 27 May 2018 (WA 3010251; T. Almeida) and one over Currais Novos on 17 February 2019 (WA 3282753; G. Medeiros), the latter date suggestive of local breeding. In Brazil, there are resident and migratory populations of *I. plumbea*, which depart the south of the country mainly in May–July, and occur sporadically in the north-east, where it is not known to breed (Somenzari *et al*. 2018).

RUFOUS CRAB HAWK *Buteogallus aequinoctialis*

In 2002, FSM became convinced that a population exists in the mangroves of Canguaretama, based on interviews with local people during a canoe trip on the Camamirim River. They spoke of the 'gavião-piri-piri' or 'pixi-pixi'—onomatopoeic names for *B. aequinoctialis*—and pointed out a place where one had a nest. A calling bird was heard on the Camamirim River on 27 December 2002 and two were observed flying over the Penha River on 6 January 2003; an adult was seen in the same mangroves on 22 April 2005 (FSM). Ten years later, on the south side of this mangrove complex, at Baía Formosa, sightings were made in August and October 2015 (FSM), and it was finally documented by photos and video on the Garatuba River (06°23'S, 35°04'W) on 25 October 2015 (WA 2874182; DMH). It is estimated that the Rio Grande do Norte population of this Near Threatened species is just 5–10 pairs, with no records elsewhere in the state. In extreme north-east Brazil, it appears to have disappeared from Ceará (WikiAves 2019), where it was formerly present (Pinto & Camargo 1961). More recently, it was found in mangroves of the Mamanguape and Paraíba do Norte Rivers (Araujo *et al*. 2006), and elsewhere in nearby Paraíba (WikiAves 2019). Although recent records in mangroves in the Atlantic Forest domain are restricted to a few localities (Moreira-Lima 2013), we believe the species is recovering in parts of north-east Brazil, possibly due to the less systematic destruction of raptors than in previous decades.

YELLOW-BREASTED CRAKE *Porzana flaviventer*

An adult in wing moult was caught alive by a poacher's hunting dog at Maiada do Fogo, in the floodplain of the Ceará-Mirim River, Ceará-Mirim, on 23 October 2005, and was given to M. Silva. Photos were taken next day by JBI (Fig. 8) before it was released at the same location. On 8 July 2007, FSM & M. Silva flushed one that briefly perched at Sítio (*c*.05°36'S, 35°30'W), Ceará-Mirim, in the same floodplain. One was photographed by D. Gurgel and P. Vitor in the same municipality on 23 October 2016 (WA 2336075, 2334287, 2333420). The status in Rio Grande do Norte of this Data Deficient crake (ICMBio / MMA 2018) remains to be clarified.



Figure 8. Yellow-breasted Crake *Porzana flaviventer*, captured in Ceará-Mirim, Rio Grande do Norte, Brazil, October 2005 (Jorge Bañuelos Irusta)

PAINT-BILLED CRAKE *Neocrex erythrops*

Few reports from north-east Brazil, where this crake is a seasonal visitor and a probable breeder during the rainy season (R. Otoch pers. comm.). In the state, adults have been found dead or moribund three times: a full-plumaged decaying corpse, which had been struck by a vehicle on the road to Cacimbinha, Tibau do Sul, in the Atlantic Forest, found by V.

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Figure 9. Fresh corpse of Paint-billed Crake *Neocrex erythrops*, Parnamirim, Rio Grande do Norte, Brazil, March 2015, and currently COUFRN 1224 (© Z. Coringa)

Andrade on 2 May 2006, photographed by DMH and deposited in alcohol at COUFRN by FSM; one with a wound to its right eye, captured by hand and photographed immediately after release at Cajueiro stream, which divides the municipalities of Parelhas and Equador, in the Caatinga, on 5 June 2008 (WA 343447; L. Sena); and a female found dead in the early morning by M. Viana & Z. Coringa, either having struck a wall or a vehicle, at Pium (05°57'S, 35°10'W), Parnamirim, in the coastal Atlantic Forest on 23 March 2015 (COUFRN 1224) (Fig. 9). In Parelhas, an adult foraging on wet ground was photographed on 10 May 2018 (WA 2969079; L. Sena), and the *tiuk* call was sound-recorded during the same good rainy season on 2 June 2018 (WA 2992265; J. Dantas).

WILSON'S PLOVER *Charadrius wilsonia*

The South American resident population breeds on northern and eastern coasts of Rio Grande do Norte (Sick 1997; FSM & JBI pers. obs.); the presence of migrants from North America is yet to be proven. A specimen taken in Canguaretama sometime between September 1997 and November 1998 and deposited at UFPE (Nascimento & Larrazábal 2000) can no longer be found there (L. Naka pers. comm.). Additional studies are needed to define geographic boundaries and diagnosis of *C. w. crassirostris* and *C. w. cinnamominus*.

SOLITARY SANDPIPER *Tringa solitaria*

Three ringed as juveniles in North America were recaptured and released in the state: BBL (Bird Banding Laboratory, USA and Canada) 1151-15400, New Brunswick, Canada (45°43'N, 64°31'W), on 25 August 1988, recaptured at Canguaretama (06°20'S, 35°01'W) on 25 March 1995; BBL 1431-68689, New Brunswick, on 10 August 1999, recaptured at Galinhos (05°06'S, 36°10'W) on 24 October 2000; and BBL 1541-46316, New Jersey, USA (39°10'N, 74°51'W), ringed on 23 May 2000, recaptured at Galinhos on 13 November 2000 (Mestre *et al*. 2010; L. Mestre pers. comm.). Birds migrating through south-east Canada belong to the nominate form.

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WILLET *Tringa semipalmata*
There has been one alleged recovery of a ringed Willet in the state (Lara-Resende & Leal 1982), questionable because it was mapped outside its coastal range. Forty photos taken on both the north and east coasts (WikiAves 2019) are mainly the nominate, but it is difficult to eliminate Western Willet *T. s. inornata* in some cases (O'Brien *et al*. 2006). Our voucher, an individual with an evenly heavy bill to its tip and contrastingly darker scapulars and paler coverts, photographed at Galinhos on 15 November 2014 (WA 1522100; J. van den Bosch), is of the eastern nominate. Some authors consider the races as separate species that can be syntopic on migration and in winter (Oswald *et al*. 2016).

RUDDY TURNSTONE *Arenaria interpres*
One, ringed in New Jersey, USA, in 2002—thus presumably *A. i. morinella*—was seen in Natal on 15 March and 6 May 2005 (FSM). Individuals were also re-trapped by S. Azevedo in Galinhos during 22 April–3 May 2003 (Araújo *et al*. 2004).

RED KNOT *Calidris canutus*
Three Red Knots originally ringed in New Jersey, USA (one in 2000 or 2002, and two in 2004; W. Pitts pers. comm.)—presumed to be *C. c. rufa*—were seen at the Casqueira River, Macau, on 10 January and 17 February 2005, respectively (JBI).

SANDERLING *Calidris alba*
There have been six sightings of four individuals, all marked in New Jersey, USA (thus presumably *C. a. rubida*), at Forte dos Reis Magos, Natal: one ringed in 2004, observed on 4, 20 and 23 November 2004 (FSM); one ringed in 2003, another in 2004, both seen on 15 December 2004 (JBI); and flag KMJ (banded FWS 1621-19137) attached at Reeds Beach on 14 May 2005, photographed on 30 September 2006 (MP).

PECTORAL SANDPIPER *Calidris melanotos*
The only record is of four observed by JBI in a monitored landfill (05°43'S, 35°23'W) at Ceará-Mirim on 27 September 2012 (ML 27817531).

SOUTH POLAR SKUA *Stercorarius maccormicki*
As distinguishing this species from some congenerics can be difficult, the origin of marked individuals can be useful to guarantee identification: one, ringed prior to fledging at Palmer Station, Cormorant Islands, on 23 February 1980, was recaptured on the state's north coast on 30 October 1980 and released (Lara-Resende & Leal 1982), captured again on 26 April 1984 at the same locality and kept captive; and a nestling, ringed at Admiralty Bay, King George Island (62°S, 58°20'W) on 19 January 1986, recovered at Galinhos on 20 October 1994 (Olmos 2002). One undated specimen (COUFRN 182), donated by IBAMA / Natal, is from Rio Grande do Norte; a dark-morph immature in primary moult was caught at sea and kept captive in Macau, photographed in a cage on 12 September 2008 (JBI, identified by FSM); and one was photographed close to the coast of Natal on 28 October 2012 (WA 791473; V. Florencio). Three of these records are from the same offshore area. Although already proven to occur in the state's waters (Lara-Resende & Leal 1982, Olmos 2002), this skua was mentioned only as a potential species off extreme north-east Brazil (Lees *et al*. 2015). As with most jaegers, it is a transequatorial migrant that is expected to be fairly common in offshore waters (F. Olmos pers. comm.).

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POMARINE JAEGER *Stercorarius pomarinus*
The first photographic record involved one around a boat, pursuing *Sula dactylatra* and *Puffinus puffinus*, 27 km east-northeast off Natal at the shelf break, where there were hundreds of terns of four species, on 25 January 2015 (Lees *et al*. 2015; WA 1593176; A. Lees). Two previous sight records by FSM: one moving south off Cotovelo beach, Parnamirim, on 15 November 2002, and another at Maracajaú Reef (05°40'S, 35°24'W), Maxaranguape, on 30 May 2005.

PARASITIC JAEGER *Stercorarius parasiticus*
The first documented record involved a full-plumaged dark-morph adult photographed *c*.20 km off Natal on 10 December 2017 (ML 77958391; F. Olmos). Previously, individuals had been seen by FSM at Maracajaú Reef (05°40'S, 35°24'W), Maxaranguape: one during 29–31 May 2005, one on 29–30 August 2005, a total of six moving south on 20–21 September 2006, and a total of five moving south on 18–19 October 2006, i.e. during both the boreal spring and autumn migrations.

GREY-HOODED GULL *Chroicocephalus cirrocephalus*
Hundreds of pairs of this colonial breeder occur in mixed colonies with Gull-billed Terns *Gelochelidon nilotica*, Cabot's Terns *Thalasseus acuflavidus eurygnathus* and Black-necked Stilts *Himantopus mexicanus* in or close to saltpans on the north coast (Azevedo *et al*. 2004; FSM, JBI & MP). It is recorded year-round, with fewest in December (five birds) and March (12) and largest numbers during the breeding period (April–August), with max. 1,647 nests (eggs, nestlings and a few flying juveniles) at Furado do Avelino, Macau, on 18–19 July 2009 (FSM, MP, B. França & C. Ferreira). Post-nuptial moult of adults noted August–February (FSM), and post-breeding dispersal at Galinhos, in 2012, between 25 September and 30 October (FSM & C. Ferreira). Uncommon on the state's east coast, where we are aware of just three records: at Nísia Floresta in August 2001 (JBI); at the Potengi estuary, Natal between August 2007 and March 2008 (B. França); and two adults photographed at Natal on 6 November 2013 (WA 1151661; R. Oliveira). There is an inland record of two non-breeding adults at Lagoa do Piató, 57 km from the coast, in Assu, on 9 December 2008 (FSM).

LAUGHING GULL *Leucophaeus atricilla*
An immature with moulting primaries photographed at Guamaré on the state's north coast on 16 May 2010 (WA 287755; B. França) was the first available documented record. Previously observed by FSM, but on the east coast at Maracajaú Reef (05°40'S, 35°24'W), Maxaranguape, where two first-years were present 12 November–6 December 2006 (Fig. 10). On the north coast, 12 (all non-adult) were at the Conchas estuary, Porto do Mangue, on 14 February 2009 (FSM & MP). Most records are from Guamaré: an adult with three first-years at Canto do Amaro (05°05'S, 36°20'W) on 9 November 2010; a first-year at the same location on 19 December 2010; a first-year between Canto do Amaro and Coroa do Moacir on 29 May



Figure 10. First-winter Laughing Gull *Leucophaeus atricilla*, Maxaranguape, Rio Grande do Norte, Brazil, December 2006 (© E. Vieira)

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2011, and perhaps the same bird at the confluence of the Aratuá and Miassaba Rivers (05°06'S, 36°19'W) on 6 June 2011 (FSM); five (including a breeding-plumaged adult) on Canto do Amaro beach on 28 February 2015 (photographed by C. Ferreira, identified by FSM). Also on the north coast, a first-winter at Areia Branca on 20 January 2012 (WA 574897; C. Beier). It appears that this migrant regularly overwinters (November–February) on the state's coasts, where immatures are present as late as May or June.

LEAST TERN *Sternula antillarum*

The alleged identification of Yellow-billed Tern *S. superciliaris* at Salina Diamante Branco (05°05'S, 36°17'W), Galinhos, was accompanied by the following comment: 'arrived March–April to breed in colony June–July 1999 and June 2000, one breeding adult collected 18 June 2000' (translated from Azevedo *et al*. 2004), and the same species was also reported by Araújo *et al*. (2004), but the specimen mentioned (UFPE 3139, in fact labelled 19 June 2000) is an adult *S. antillarum* (Fig. 11). Least Tern is a regular seasonal breeder on sand banks in some mangrove complexes on the state's north coast, as documented at Macau (courtship 29–30 April, one egg on 15 May 2005, and estimated seven pairs around Salina Soledade; FSM & JBI), Guamaré (80 individuals and 20 nests at Rolo da Costa on 29 May 2011; FSM & R. Dantas) and Galinhos (Azevedo *et al*. 2004). This species frequents coastal waters in dozens or hundreds year-round—except August, when only three recorded. Largest concentrations in January—hundreds at the shelf break off Natal (Lees *et al*. 2015)—and in April and October, with respective max. of 370 and 325 roosting on floating structures at Maracajaú Reef (05°40'S, 35°24'W), Maxaranguape (FSM). The presence of individuals from the Northern Hemisphere in these flocks is probable, but not documented. North American migrants could occur simultaneously with local breeders, at least in April.



Figure 11. Least Tern *Sternula antillarum*, UFPE 3139, collected in Galinhos, Rio Grande do Norte, Brazil, June 2000 (© V. L. Silva)

YELLOW-BILLED TERN *Sternula superciliaris*

Well-documented records in the state are few. We consider that the following photo-documented records pertain to this species: two breeding-plumaged adults in Natal on 16 May 2011 (WA 611256; D. Barrufi); 16 adults (in various plumages) at Macau on 21 June 2012 (WA 672567, 673494, 675557; J. van den Bosch); an immature, with a brown-margined

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strong bill and black wing feathers until the sixth primary, at Guamaré on 9 April 2016 (WA 2084773; J. Dantas); a subadult, with a dirty yellow bill and black until the fifth primary, at the same locality on 30 April 2016 (WA 2103818; L. Sena); a breeding-plumaged adult, with a strong bill and three black outermost primaries in Macau on the same date (WA 2104993; J. Dantas); an immature with a streaked crown, dark-tipped strong bill and black until the fifth primary, in Macau on 24 August 2016 (WA 2249902; J. Dantas); and 33, 20 with all-yellow bills, at Areia Branca on 27 February 2017 (WA 2480542; J. C. Rodrigues). Based on this, we assume that adult Yellow-billed Terns visit the state in February–June, with one record of an immature in August.

GULL-BILLED TERN *Gelochelidon nilotica*
The north coast seasonally harbours a few colonies comprising dozens of breeding pairs, mixed with breeding Grey-hooded Gulls, in or close to saltpans (FSM, JBI & MP). First proven breeding in June–July 1999 at Salina Diamante Branco, Galinhos, where common in March–August 2000 and a breeding adult was trapped on 17 April 2000 (Azevedo *et al*. 2004). Also, 50 in June, 23 in July, three in August, and post-breeding dispersal from this colony between 6 July and 13 August 2012 (FSM & C. Ferreira). Fifty nests found by FSM and JBI at Salina Soledade, Macau, on 14 May 2005, where birds absent December 2004–January 2005, returned in February, max. 224 (including four adults on nests) on 8 April, 41 nests with eggs, nestlings and a fledged juvenile on 10 June (with I. Cortez), and adults carrying food on 20–23 June and 1–3 July. At the same colony, in 2006, display in April, nests in May–July, and juveniles in June–August (JBI). On 21–22 July 2007, 22 and 15 first-years at Soledade, Macau, and Lagoa Lagamar, Carnaubais, respectively (FSM & JBI).

COMMON TERN *Sterna hirundo*
Dozens of recoveries from the state's coast have been published, but all lack detailed supporting data (Lara-Resende & Leal 1982, Cordeiro *et al*. 1996, Mestre 2007b, Mestre *et al*. 2010). In an unpublished study conducted in 2005–07 by FSM, 16 Common Terns, ringed as non-volant young in New Hampshire, Massachusetts, Connecticut, New York (USA), and the US Virgin Islands (thus assigned to the nominate form) were seen at Maracajaú Reef (05°40'S, 35°24'W), Maxaranguape.

ROSEATE TERN *Sterna dougallii*
Three coastal recoveries have been published, but all lack detailed data (Lara-Resende & Leal 1982, Mestre *et al*. 2010). In an unpublished study conducted in 2005–07 by FSM, 14 Roseate Terns, ringed as non-volant young in Massachusetts and New York (USA), a nestling ringed BBL in the US Virgin Islands, and another in the Azores (all assigned to the nominate) were seen at Maracajaú Reef (05°40'S, 35°24'W), Maxaranguape.

CABOT'S TERN *Thalasseus acuflavidus*
Yellow-billed *T. a. eurygnathus* is a seasonal breeder on the north coast, in a mixed colony with Grey-hooded Gull, *Gelochelidon* and *Himantopus*. First proven breeding on 19 July 2009 at Furado do Avelino (Salinor), Macau, with a juvenile and five non-volant young (FSM, MP & C. Ferreira; WA 236785; B. França). Around Salina Soledade and Ponta do Tubarão, Macau, birds were absent in December 2004–February 2005, arrived in March, max. 56 and 78 on 20–23 May and 2 July, respectively (FSM & JBI), and display was observed in March 2006 (JBI). On the same coast, 162 (mainly adults) were at the Conchas estuary, Porto do Mangue, on 14 February 2009 (FSM & MP). In addition, one ringed in Mississippi in

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December 1964, thus probably of the nominate (Burger 2018), was recovered on the state's north coast in either August 1966 (Sick 1997: 337) or May 1966 (Olmos 2002).

EARED DOVE *Zenaida auriculata*
The Caatinga population is *Z. a. noronha* (Azevedo & Antas 1990). It is a nomadic mass-breeder tracking the production of seeds following the rainy season, and breeds on the ground in large colonies, where thousands are illegally hunted (J. B. de Medeiros pers. comm.) and sold (FSM pers. obs.). Three banded in Piauí and Pernambuco were recovered in Rio Grande do Norte: one, a youngster, banded (CEMAVE L16622) in Itainópolis, Piauí, on 30 March 1984, was recovered at São José do Seridó in July 1985 (Azevedo & Antas 1990).

GREAT HORNED OWL *Bubo virginianus*
Known in the state since at least the 19th century, and its onomatopoeic local name, 'jucurutu', is replicated in a municipality in Rio Grande do Norte (Cascudo 1968). Rare in the Brazilian north-east, with state records—based mainly on interviews with local people—concentrated in the south and south-west (Lima *et al*. 2018). It is included in the ESEC Seridó bird list, Serra Negra do Norte (Pichorim *et al*. 2016b), based on an undocumented record of one that flew low above FSM in a steppe-type landscape (06°35'S, 37°15'W) at dusk on 3 December 2002. Birds in the Caatinga have been considered to represent a separate subspecies (*Bubo v. deserti* Reiser, 1905), whose validity is questionable (Traylor 1958, Lima *et al*. 2018).

SHORT-EARED OWL *Asio flammeus*
The only state record was at Santa Izabel Farm (05°07'S, 36°10'W), Galinhos, on 14 August 2012, where one was flushed from bare sand dunes and was mobbed by up to seven Southern Lapwings *Vanellus chilensis* (Fig. 12; WA 3065349; C. Ferreira & FSM). Except for a handful of localities in Bahia and Piauí states, it seems there are no other records in the Brazilian north-east (König *et al*. 2009, Olsen *et al*. 2019, WikiAves 2019), thus that in Rio Grande do Norte represents a range extension of *c*.1,000 km north-east.



Figure 12. Short-eared Owl *Asio flammeus*, Galinhos, Rio Grande do Norte, Brazil, August 2012 (© C. Ferreira)

SHORT-TAILED NIGHTHAWK *Lurocalis semitorquatus*
Just one state record, an immature perched on a high horizontal branch of a *Tabebuia aurea* (Bignoniaceae), in Cerro Corá on 9 July 2017 by D. Oliveira *et al*. (WA 2615000; J. Dantas).

BAND-WINGED NIGHTJAR *Hydropsalis longirostris*
One documented state record of this rupiculous nightjar: a male at Cânion dos Apertados (06°20'S, 36°30'W), Currais Novos, photographed (WA 3219414) and sound-recorded (WA 3220109) on 21 December 2018 (E. Oliveira).

NACUNDA NIGHTHAWK *Podager nacunda*
Seldom recorded in extreme north-east Brazil. A female (COUFRN 1228) found dead at Natal International Airport, São Gonçalo do Amarante, on 26 July 2016, was the first documented state record. One responded to playback at ESEC Seridó, Serra Negra do Norte,

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on 23 January 2013 and another was heard there on 25 May 2013 (MP), but neither record was documented. A group of 20 settled on a grassy area at Touros on 22 May 2018 (M. Silva; WA 2985934). A partial migrant in Brazil: the nominate subspecies breeds in far southern latitudes and migrates north in the austral winter, when it mixes with resident *P. n. minor*, which is not known to breed in north-east Brazil (Somenzari *et al*. 2018). Both documented state records were during the austral winter, and, together with the first published record for neighbouring Paraíba—a flock of 15 photographed on 23 June 2010 (Pereira *et al*. 2012)—induce us to believe that these were the nominate form. Should *Podager* (unexpectedly) be proven to occur during the local summer (and rainy season in the Caatinga), this would suggest that *P. n. minor* breeds in north-east Brazil.

LESSER NIGHTHAWK *Chordeiles acutipennis*

Of the two species of *Chordeiles* of problematic identification likely to occur, only *C. acutipennis* has been claimed: recorded but not described in São José do Seridó in July–December 1996 (Medeiros *et al*. 2000), which justified the species' inclusion in a list of birds of the Seridó region (Varela-Freire & Araújo 1997); one trapped but not described at ESEC Seridó, Serra Negra do Norte (Nascimento 2000, Pacheco 2004); seen but again not described at the same location (MMA 2004); recorded at ESEC Seridó and in Macau based on a reference in Silva *et al*. (2012), the latter corresponding to repeated observations in March–July 2005 (FSM & JBI), including a photo (WA 3089210; JBI) of an adult male in flight within a loose group of 27 birds, on 21 June 2005; and ringed but not described, and mentioned as occasional at ESEC Seridó during field work on 14 July 2012, 26 January 2013 and 1 June 2013 (C. C. O. Silva *et al*. 2017). Also at ESEC Seridó, two alleged *C. acutipennis* were captured on 21 February 2013, both with total length of 20 cm, and mass 33.3 g and 31.9 g, and two others on 9 and 12 June 2013, mass 35.0 g and 34.9 g, respectively (Hasui *et al*. 2018), but without documentation (MP pers. obs.). These weights might apply to Least Nighthawk *Nannochordeiles pusillus* (FSM pers. obs.). A photo taken in the Caatinga at Parelhas on 12 March 2006 is not identifiable to species (WA 344901). For now, we recognise *C. acutipennis* as occurring in Rio Grande do Norte based solely on WA 3089210, whereas *C. minor* is relegated to our secondary list.

BISCUTATE SWIFT *Streptoprocne biscutata*

The only holotype of an avian taxon collected in Rio Grande do Norte is the male specimen MNRJ 36897 from Bico da Arara (06°31'S, 36°38'W; 600 m), Acari, of *S. b. seridoensis*. Two Biscutate Swifts, ringed there during 26–27 August 1986, were recaptured on 4–5 August 1987 (Sick *et al*. 1988). The population of this non-breeding colony, first studied by Sick and others, appears to be stable or slightly diminishing, at *c*.90,000–110,000 birds over the last three decades (Andrade & Freitas 1987, Sick *et al*. 1988, Sick 1991; unpubl. work by FSM in 2005, 2007, 2009, 2011, 2016 and 2018).

HORNED SUNGEM *Heliactin bilophus*

Status uncertain, despite repeated records. One at a 'tabuleiro' / floodplain ecotone at Sagi, Baía Formosa, on 3 January 2003. A male and female fed at *Hohenbergia* (Bromeliaceae) in *restinga* at Morro Vermelho, Nísia Floresta, on 16 November 2004, and a breeding-plumaged male was between Lago Azul and Morro Vermelho on 17 April 2005. In the same municipality, an adult male fed on ornamental orange and red Asteraceae flowers at Pium on 7 January 2006 (FSM). Single males were observed in *cerrado* at Punaú (05°23'S, 35°30'W), Rio do Fogo, on 21 October and 12 November 2006, and 17 January 2007, during a study between October 2006 and November 2013 (Pichorim *et al*. 2014a). Moreover, three birds

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were seen, of which a female was photographed, at Espírito Santo on 3 September 2017 (WA 2682924; J. Dantas) in a 'tabuleiro', which had burned the year before. At the same place, there are several documented records, including breeding-plumaged males and a female, in May, July and September–October. To date, *Heliactin* has not been reported during the period 18 January–16 April, and breeding in the state, although probable, is unproven.

AMAZONIAN MOTMOT *Momotus momota*
Since 2002, there have been repeated records at Mata da Estrela Private Reserve (06°23'S, 35°01'W), Baía Formosa (FSM & JFP). Of these, the first to be documented was a singing adult on 28 March 2017 (WA 2510629; P. Fernandes). The Endangered subspecies *M. m. marcgravianus*, endemic to the Pernambuco Centre of Endemism, is not accepted by some authorities, but included by others (Piacentini *et al*. 2015, ICMBio / MMA 2018, Snow & Kirwan 2019).

COLLARED FOREST FALCON *Micrastur semitorquatus*
Observed in shrubby *restinga* at Barra do Cunhaú (06°18'S, 35°02'W), Tibau do Sul, on 25 December 2002; carrying avian prey at a forest border at Baía Formosa on 28 December 2002; flying over mangroves at Canguaretama on 5 January 2003; and heard at Serra das Queimadas, Parelhas, on 11 June 2006 (FSM). One was sound-recorded at Mata da Estrela Private Reserve (06°22'S, 35°00'W; 25 m), Baía Formosa, on 30 August 2008 (M. Silva), and the first publicly available documentation is a sound-recording from the same locality on 9 September 2018 (WA 3390273; J. A. Marins).

PEREGRINE FALCON *Falco peregrinus*
Both subspecies that occur in Brazil have been recovered in the state (Silva e Silva 1996, Mestre 2007a): a young *F. p. tundrius* (BBL 987-39774) banded in Alaska, USA (65°N, 141°03'W) on 12 July 1980 and shot in Assu on 15 February 1982, *c*.12,370 km distant; and a female nestling *F. p. anatum* (BBL 987-15200) banded in Virginia, USA (37°83'N, 75°17'W) on 9 October 1979 and shot in Natal on 18 March 1981, 6,365 km from its nest.

RED-SHOULDERED MACAW *Diopsittaca nobilis*
Discovered in the south-east of the state: a group of eight at an Atlantic Forest / *cerrado*-like ecotone, in Mata do Pilão, Espírito Santo, on 27 May 2018 (J. Dantas), with a sound-recording from the same location on 10 June 2018 (WA 3233566; M. Silva). A pair was photographed in Natal on 24 May 2011 (WA 359163; S. Messias), but we consider these birds to be of cagebird origin.

PEACH-FRONTED PARAKEET *Eupsittula aurea*
A genetic study is needed to clarify the origin(s) of the small populations of this species in the state. As suggested by the collecting of five at Mamanguape, Paraíba, in 1957 (Pinto & Camargo 1961), it has probably been present, perhaps continuously, in Rio Grande do Norte for some decades, possibly originating from and maintained by released or escaped cagebirds, in places such as Natal. The Tibau do Sul breeding population could be feral (DMH). *E. aurea* is scarce in *cerrado* at Rio do Fogo (05°23'S, 35°30'W) (Pichorim *et al*. 2014a), arguably the best habitat for the species in the state.

WHITE-FLANKED ANTWREN *Myrmotherula axillaris*
The subspecies in the state is *M. a. luctuosa*, which is sometimes treated at species level (del Hoyo *et al*. 2019b). All records are from Baía Formosa, at Mata da Estrela Private Reserve

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(06°23'S, 35°01'W), where at least 32 individuals were found during 27 December 2010–3 January 2011 (JFP), and Mata da Pituba (06°27'S, 35°03'W) (RDL).

RUFOUS-WINGED ANTWREN *Herpsilochmus rufimarginatus*
The population in the Pernambuco Centre of Endemism is generally attributed to *H. r. scapularis* (Pinto 1978, del Hoyo *et al*. 2019a), but a taxonomic review of this complex suggests that this population may be a novel taxon, whose plumage and voice is very similar to Amazonian *H. r. frater* (Silva 2013; JFP pers. obs.).

WILLIS'S ANTBIRD *Cercomacroides laeta*
The only state record was a pair seen and sound-recorded in the valley of the Pituba River, Baía Formosa, on 8 September 2009 (WA 2660533; MP, M. Silva & JBI). The Vulnerable subspecies *C. l. sabinoi* (MMA 2003) is not always accepted as valid (Bierregaard *et al*. 1997, Cavarzere 2014) and has not been evaluated by ICMBio / MMA (2018).

BLACK-CHEEKED GNATEATER *Conopophaga melanops*
The Vulnerable subspecies *C. m. nigrifrons* is endemic to the Pernambuco Centre of Endemism (ICMBio / MMA 2018). It occurs around Baía Formosa at two localities: first documented at Mata da Estrela Private Reserve (06°23'S, 35°01'W) via a sound-recording on 14 August 2016 (WA 2235397; J. Dantas); and sight records at Mata da Pituba (JBI).

PLAIN XENOPS *Xenops minutus*
The subspecies in Rio Grande do Norte is *X. m. alagoanus*, which is considered Vulnerable (ICMBio / MMA 2018) and whose voice is more similar to Amazonian *X. m. genibarbis* than to the nominate Atlantic Forest population (RDL pers. obs.). Recent molecular data showed that one collected in Pernambuco (FMNH 399212; Field Museum of Natural History, Chicago) grouped phylogenetically with birds in eastern Amazonia, and not with the Atlantic Forest clade (Burney 2009), but this author inferred that the species is paraphyletic, when in fact *alagoanus* could be ranked as a species. Widely overlooked since its description (del Hoyo *et al*. 2019c), *alagoanus* was omitted from a recent phylogeny of the species (Harvey & Brumfield 2015).

RUFOUS-FRONTED THORNBIRD *Phacellodomus rufifrons*
Reported to be expanding its range in south-east Brazil (Willis & Oniki 1993; JFP pers. obs.), this thornbird has recently reached western Rio Grande do Norte, where it was found at Serra do Mel in 2007 (G. Pereira), and Umarizal and Luís Gomes, respectively, in May and June 2010 (FSM), and the south-east, at Santo Antônio and Nova Cruz in January 2011 (JFP). It was first documented by a photo of two birds at Passa e Fica on 27 September 2015 (WA 1851438; D. Gurgel).

RED-SHOULDERED SPINETAIL *Synallaxis hellmayri*
A Brazilian endemic treated either as Data Deficient (ICMBio / MMA 2018) or Near Threatened (IUCN 2019). The first state record was one trapped at ESEC Seridó, Serra Negra do Norte, on 17 December 1995 (Nascimento 2000). A vocalising pair sound-recorded at 650 m in the Serra das Queimadas, Parelhas, on 14 November 2005 (FSM) is the second. The state's main population is in the highest parts of the Serra de Santana (FSM pers. obs.; Pichorim *et al*. 2016a). Other records are concentrated in the Seridó region, with a few on the north coast. Very local in distribution, *S. hellmayri* is probably better considered Near Threatened at state level.

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BEARDED BELLBIRD *Procnias averano*
Was considered extinct in the state (Paiva 1983 *apud* Sick 1972, Teixeira 1992). Rediscovered at Baía Formosa on 13 June 2015 by P. Vitor, F. V. Souza, and J. Dantas, who photographed a female feeding on *Psidium* fruits (Myrtaceae) (WA 1724942), which is the only documented record.

WHITE-THROATED SPADEBILL *Platyrinchus mystaceus*
First record at Mata da Estrela Private Reserve, Baía Formosa, on 28 December 2002 (FSM); also known from Mata do Mucambo, Goianinha (M. Silva, FSM & JFP pers. obs.), and sound-recorded at Canguaretama (WA 2598721; F. V. Souza). The Vulnerable and declining *P. m. niveigularis* is endemic to the Pernambuco Centre of Endemism, and in need of taxonomic study (ICMBio / MMA 2018).

WHITE-BELLIED TODY-TYRANT *Hemitriccus griseipectus*
Uncommon in remnant patches of Atlantic Forest between Baía Formosa and Natal (Olmos 2003; FSM, JFP & RDL). The Vulnerable *H. g. naumburgae* is endemic to the Pernambuco Centre of Endemism (ICMBio / MMA 2018).

WHITE-LORED TYRANNULET *Ornithion inerme*
A rapid song of this tyrannulet was taped at a forest border in the valley of the Catu River (06°20'S, 35°09'W), Canguaretama, on 13 December 2005 (WA 3300921; FSM, identified by RDL & JFP). Also heard singing repeatedly in riverine forest at Mucambo (06°19'S, 35°14'W), Goianinha, on 2 January 2011 (JFP). More recently, an adult and a just-fledged juvenile at a forest border in the same locality (WA 3257427, 3300921; RDL) provided proof of breeding (RDL & FSM).

PLAIN-CRESTED ELAENIA *Elaenia cristata*
One of the few species documented by a historical specimen, a male (LSUMZ 10420) taken by J. H. Phares in Natal on 9 September 1945. The demography and life history of this elaenia have been studied in *restinga* woodland on dunes with 'tabuleiro' in Parnamirim (Toledo-Lima 2013). Its citation for the north coast Caatinga, in Macau (Silva *et al*. 2012), is the only record for that biome in the state and is perhaps in error (FSM & JBI).

SWAINSON'S FLYCATCHER *Myiarchus swainsoni*
Vocalisations exclusively attributable to this species establish its presence in the state, but its status is uncertain. Visual diagnosis is less reliable (Fig. 13). First documented via a sound-recording of its repeated call at Fazenda Malhada Vermelha (06°45'S, 36°40'W; 400 m), Parelhas, on 14 November 2005 (WA 3300894; FSM, identified by RDL), which may suggest local breeding or a late austral spring migrant. Two individuals reported as this species, with brood patches, were caught during the dry season, on 3 May and 25–26 July 1996 at ESEC Seridó, Serra Negra do Norte (Nascimento 2000). At the same locality, mist-netting work suggested the species to be a migrant (Damasceno 2015), nomadic / migratory (C. C. O. Silva *et al*. 2017) or a seasonal visitor (G. Toledo-Lima). Apart from the November documentation, records suggest the species is present in Rio Grande do Norte in March–August (RDL), i.e. the austral winter. *M. swainsoni* is a partial migrant, the nominate subspecies being the southernmost taxon, which migrates to northern South America, while sedentary populations in central Brazil may be *M. s. pelzelni* (Somenzari *et al*. 2018). Based on analysis of specimens, both subspecies have been found in nearby Ceará (Lanyon 1978).

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SHORT-CRESTED FLYCATCHER *Myiarchus ferox*

The typical call of this *Myiarchus* was first documented at Espírito Santo on 27 May 2018 (WA 2984460; J. Dantas). *M. ferox* had been observed previously: one calling in shrubby *restinga* at Barra do Cunhaú, Tibau do Sul, on 26 December 2002; two calling in riverine forest at Mata do Mucambo, Goianinha, on 20 May 2006 (FSM); two heard at an Atlantic Forest / sugarcane plantation ecotone, Baía Formosa, on 28 December 2010; one heard at Mucambo on 30 December 2010; and one heard at Guaju mangroves, Baía Formosa, on 1 January 2011 (JFP). *M. ferox* was mentioned for the Caatinga by Silva *et al*. (2012), but specimen COUFRN 40 from this habitat in Macaíba was re-identified as *M. tyrannulus* by RDL. Although claimed to have been ringed and reportedly resident at ESEC Seridó, Serra Negra do Norte (C. C. O. Silva *et al*. 2017), we consider its presence there improbable (Pichorim *et al*. 2016b). We regard the species to be the only *Myiarchus* restricted to the Atlantic Forest in the state.

BROWN-CRESTED FLYCATCHER *Myiarchus tyrannulus*

One of the commonest passerines in Rio Grande do Norte, especially in almost all Caatinga areas. Less common in the coastal strip, *M. tyrannulus* was seen in mangroves at Canguaretama on 24 December 2002 (FSM), and was heard in a small patch of Atlantic Forest at Baía Formosa on 28 December 2010 (JFP & FSM). During the rainy season, *M. tyrannulus* occurs in sympatry with *M. swainsoni*. For visual identification of these two species, see Fig. 13.



Figure 13A and C. Brown-crested Flycatcher *Myiarchus tyrannulus*, Tibau, Rio Grande do Norte, Brazil, February 2018; (B and D) Swainson's Flycatcher *M. swainsoni*, Baraúna, Rio Grande do Norte, Brazil, April 2018; note the heavy bill of *M. tyrannulus*, proportionately smaller in *M. swainsoni*, in addition to its pinkish base, and the rufous-brown in the tail feathers of *M. tyrannulus*, which is absent in *M. swainsoni* (Rafael Dantas Lima)

VELVETY BLACK TYRANT *Knipolegus nigerrimus*

Varela-Freire & Araújo (1997) listed Blue-billed Black Tyrant *K. cyanirostris* in the dry Seridó region, but we consider this to be a misidentification of *K. nigerrimus* (see tertiary list in Appendix 1), a species collected in the state (MNRJ 2078) years ago. At Fazenda Salobro

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Private Reserve (06°13'S, 37°03'W; 400 m), Jucurutu, a female was seen and two males were trapped on 31 December 2008 (FSM). *K. nigerrimus* has been documented at several other Caatinga sites in the Seridó region, e.g. Parelhas, where adults tended a nestling on 26 April 2016 (WA 2098441; L. Sena), Acari (06°31'S, 36°38'W; 600 m) and Currais Novos (WA 3099923, 3183124; T. Elis). All of the records of females involved birds with large coloured throats (e.g., WA 3194677; T. Elis; FSM), which lead us to conclude that the nominate occurs. If valid, *K. n. hoflingae*, described from Bahia based on a single female with a thinner striated throat patch, the chin and throat darker than the nominate, and a dusky wing panel, differs from females in Rio Grande do Norte. As it has been incautiously inferred that *hoflingae* is distributed throughout far north-east Brazil, including Rio Grande do Norte (Farnsworth *et al*. 2019), we offer here measurements of two adult males trapped in Jucurutu as a basis for comparative study of these taxa: both total length 159 mm; wing chord 91.5 and 92.5 mm (wingtip p4); tail 80.5 and 79.0 mm; tarsus both 21.8 mm; exposed culmen 13.7 and 14.0 mm; bill to nostrils 9.5 and 10.0 mm; gonys 3.8 and 4.0 mm; mass 21.0 and 19.75 g (CEMAVE E79861, E79864).

SPECTACLED TYRANT *Hymenops perspicillatus*

The only state record of this austral migrant constitutes the northernmost record by *c*.1,400 km. An adult male was photographed foraging on the ground below a group of *Prosopis uniflora* trees (Mimosaceae) at the ecotone between dunes and mangroves at Santa Izabel Farm (05°07'S, 36°10'W), Galinhos, on 10 December 2012 (Fig. 14; WA 3065355; C. Ferreira), and was observed again by FSM two days later, foraging under the same trees. Since then, there has been a second record in north-east Brazil, on 17 May 2014, a female present for a month at Caravelas, Santa Bárbara Island, in southernmost Bahia, following strong southerly winds on 26–28 April (WA 1335827; A. Carletti). This species moves north during the austral winter, with records in the states of Paraná, São Paulo, Rio de Janeiro, Mato Grosso do Sul and Mato Grosso in April–November (Somenzari *et al*. 2018).



Figure 14. Male Spectacled Tyrant *Hymenops perspicillatus*, Galinhos, Rio Grande do Norte, Brazil, December 2012 (© C. Ferreira)

YELLOW-BROWED TYRANT *Satrapa icterophrys*

The five available state records are all from the period May 2012–June 2013, at three Caatinga localities: Alto do Rodrigues and Macau, on 27 May 2012 and 10 June 2012 (WA 649286, 663484; J. van den Bosch), and ESEC Seridó, Serra Negra do Norte, where it was trapped not only in the austral winter (on 14 July 2012 and 1 June 2013), but also on 26 January 2013, when the region was still dry (C. C. O. Silva *et al*. 2017). The true status of this species in Rio Grande do Norte is unclear.

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GREY MONJITA *Xolmis cinereus*
The first documented state record, extending the known range *c.*650 km north-east, is from Punaú, Rio do Fogo, where two were observed on 29 October 2006, and singles on 21 December 2006, 16 August 2008 and 16 November 2013, in recently burned areas (Pichorim *et al*. 2014a; WA 1689513; B. França). At the same location, one was photographed on 15 and 29 January 2017 (WA 2435098; D. Gurgel, WA 2452371; A. Rafael). Lastly, just to the west, at Pureza, an adult was photographed on 29 June 2018 (WA 3030610; M. Silva). The species frequents this *cerrado* enclave in the austral winter (June and August) and during the austral spring migration (October–December) but also in January, which might suggest local breeding. Its status in Rio Grande do Norte is still to be clarified.

BLUE-AND-WHITE SWALLOW *Pygochelidon cyanoleuca*
First documented in Ceará-Mirim on 17 May 2007 (WA 3459903; JBI), this swallow is uncommon in the state, where we know of just 11 records, each involving 1–3 individuals, in February–September. Ten of these, between 30 March and 9 September, during the austral autumn and winter, potentially involve southern South American *P. c. patagonica*, but the record in February may well represent the nominate form.

BROWN-CHESTED MARTIN *Progne tapera*
Two subspecies occur: the nominate, represented by LSUMZ 10421, taken by J. H. Phares in Natal on 9 August 1945; and *P. t. fusca*, an austral migrant (Somenzari *et al*. 2018), photographed in São Miguel do Gostoso on 18 July 2017 (WA 2634379; E. Guilherme). Groups numbering dozens to >300 individuals, including the latter form, have been recorded by JBI, mainly at the landfill of Ceará-Mirim, almost annually since 2005, between March and September (e.g., WA 3459758).

WHITE-RUMPED SWALLOW *Tachycineta leucorrhoa*
Two with one Blue-and-white Swallow, and a group of Southern Rough-winged Swallows *Stelgidopteryx ruficollis*, at the landfill in Ceará-Mirim on 17 May 2007, and one with a group of *Stelgidopteryx* at the same location on 27 September 2007 (Fig. 15A**)** (JBI), are the first photo-documented records for the state. These correspond to the wintering and pre-breeding periods for this austral migrant, which reaches the northernmost limit of its range in Rio Grande do Norte (Moreira-Lima 2013, WikiAves 2019). *T. leucorrhoa* was reportedly

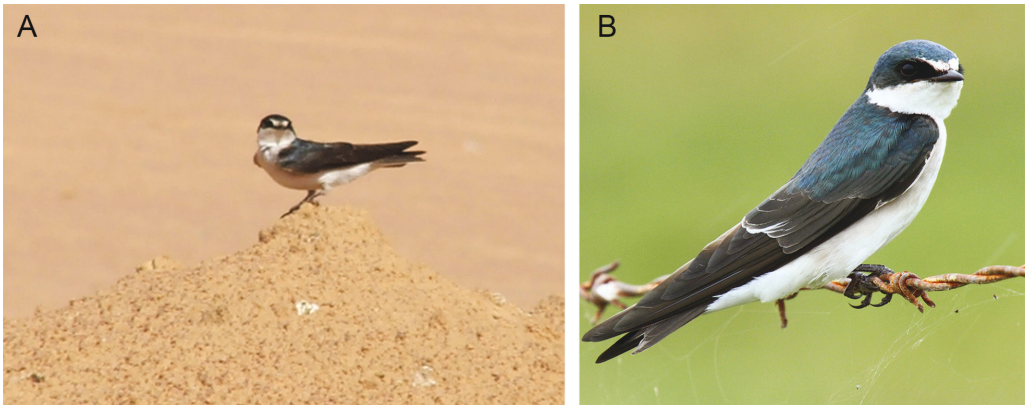


Figure 15A. White-rumped Swallow *Tachycineta leucorrhoa*, Ceará-Mirim, Rio Grande do Norte, Brazil, September 2007 (Jorge Bañuelos Irusta); (B) *T. leucorrhoa*, Alto do Rodrigues, Rio Grande do Norte, Brazil, May 2012 (© J. van den Bosch)

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trapped at Salina Diamante Branco, Galinhos, in April 2003 (Araújo *et al.* 2004), but was said to be resident, rather than a migrant, thereby casting doubt on the identification. The first available proof of occasional overwintering by this species is a photo of an adult at Alto do Rodrigues on 23 May 2012 (Fig. 15B; WA 646156; J. van den Bosch). At least four were photographed together, again in Ceará-Mirim, on 26 June 2013 (JBI).

CHILEAN SWALLOW *Tachycineta leucopyga*

This austral migrant was photographed by JBI at Ceará-Mirim on 30 May 2011 (Fig. 16), the sole documented record for the state. *T. leucopyga* had been claimed at Macau on 14 September 2008 (Silva *et al*. 2012), which would have been a new species for the Caatinga biome, but the photo was ultimately re-identified as a White-winged Swallow *T. albiventer* (WA 761685). The same authors mentioned a record at Ceará-Mirim, also in September 2008, which they considered to be the first for north-east Brazil, but the record was not documented. They also referred to Pacheco *et al*. (1996)—for a record of *T. leucopyga* in Rio de Janeiro—as its northern limit in the austral winter, but the species concerned was *T. leucorrhoa*. Nevertheless, the formal Brazilian limit for overwintering *T. leucopyga* was considered to be Rio de Janeiro (Somenzari *et al*. 2018, WikiAves 2019), consequently the documented record in Rio Grande do Norte is the northernmost by *c*.1,900 km.



Figure 16. Chilean Swallow *Tachycineta leucopyga* in Ceará-Mirim, Rio Grande do Norte, Brazil, May 2011 (Jorge Bañuelos Irusta)

BLACK-CAPPED DONACOBIUS *Donacobius atricapilla*

First noted in 2001 at Povoado de Sítio, Ceará-Mirim, and repeatedly observed there, where it was collected by M. Silva in 2007 (COUFRN 14). At least seven, one of which sang and a pair that duetted, in the same floodplain on 7–8 July 2007 (FSM & M. Silva). The photo of an adult male singing on 8 April 2010 was taken at this sole locality in the state (WA 279016; B. França).

LONG-BILLED GNATWREN *Ramphocaenus melanurus*

The nominate subspecies is an Atlantic Forest endemic (Moreira-Lima 2013). In Rio Grande do Norte, the species was first observed in mixed-species flocks with White-flanked Antwren *Myrmotherula axillaris*, White-fringed Antwren *Formicivora grisea*, Plain Antvireo *Dysithamnus mentalis*, Pectoral Antwren *Herpsilochmus pectoralis*, Planalto Slaty Antshrike *Thamnophilus pelzelni*, Black-cheeked Gnateater *Conophaga melanops* and Plain Xenops *Xenops minutus* at Mata da Estrela Private Reserve, Baía Formosa, on 14–15 December 2002 (FSM). *Ramphocaenus* was first documented by a sound-recording at this sole state locality on 12 March 2016 (WA 2270254; D. Gurgel).

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Figure 17. Female Yellow-legged Thrushes *Turdus flavipes*, COUFRN 812 and COUFRN 844, collected in Barreira do Inferno, Parnamirim, Rio Grande do Norte, Brazil, May and July 2013, respectively (Rafael Dantas Lima)

YELLOW-LEGGED THRUSH *Turdus flavipes*

Not previously suspected to occur in the state, this thrush has been documented four times in the 21st century, during the austral winter: an adult male without a whitish chin (i.e. of the nominate subspecies) ringed by G. Segurado and photographed by B. França at Macaíba on 14 June 2008 (Silva *et al*. 2012), at the ecotone of Caatinga / Atlantic Forest; several of both sexes trapped, of which two females were collected in *restinga* during a study in 2012–16 (Fig. 17); and an adult female photographed at Natal on 12 April 2015 (WA 1662001; D. Gurgel). The nominate race is endemic to the Atlantic Forest (Moreira-Lima 2013), and its complex migratory status, including seasonal altitudinal movements, remain to be clarified (Somenzari *et al*. 2018).

CREAMY-BELLIED THRUSH *Turdus amaurochalinus*

First ringed in the state at Vila Industrial Alcanor, Macau, in May 1988 (D. Souza) at the end of the rainy season in the Caatinga, i.e. the early austral winter. A fresh-plumaged youngster with pointed tail feathers, some evidence of moult on its breast, thighs and vent, mass 60.25 g, and a very young individual (mass 61.5 g) were trapped at Serra das Queimadas, Parelhas, on 9–10 June 2006, suggesting local breeding (Fig. 18). One full-plumaged adult (mass 63 g) with a brood patch, and another full-plumaged adult (55 g) were caught on 10 and 11 March 2007 at the same location, at the start of the austral winter. Also, a heavily speckled juvenile (55 g) was trapped on 8 May 2009, and an adult female (53.5 g) with a brood patch, ringed on 9 May 2009, was recaptured with a well-developed brood patch, mass 57 g, on 19 January 2010, just over eight months later, all at Pimenteira in the Serra de Santana, Santana do Matos



Figure 18. Young Creamy-bellied Thrush *Turdus amaurochalinus*, Serra das Queimadas, Parelhas, Rio Grande do Norte, Brazil, June 2006 (© L. Sena)

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(FSM). In lowland Caatinga, singing birds and adults in nuptial plumage were recorded in January–April (FSM), and five with brood patches were captured in Mossoró (Cavalcanti *et al*. 2016). In Rio Grande do Norte, this thrush forms local concentrations in the austral winter, e.g., *c*.100 birds in 4 ha of low *restinga* at Maxaranguape on 4 August 2015 (FSM); these were presumably either austral migrants or a seasonal gathering of residents at a rich food source. This species occurs year-round in north-east Brazil (Somenzari *et al*. 2018). The latter authors considered that records in this region do not suggest migratory behaviour, probably due to the co-existence of resident / migratory populations—which we believe to be true—but we note that, at least in Rio Grande do Norte, nesting is better established than the arrival of austral migrants.

CHALK-BROWED MOCKINGBIRD
Mimus saturninus

The breeding biology of the species was studied in *restinga* on the campus of the Federal University in Natal during 2006–07 (unpubl. study by L. M. C. Dantas *et al*.). It is also a common breeder in the Caatinga, illustrated by a nest at Fazenda Salobro Private Reserve (06°13'S, 37°02'W; 400 m), Jucurutu, on 23 March 2017 (Fig. 19). Populations in north-east Brazil have traditionally been treated as *M. s. arenaceus*, but this subspecies is diagnosed only by its longer bill (Hellmayr 1934). A modern taxonomic analysis would be welcome.



Figure 19. Nestlings and egg of Chalk-browed Mockingbird *Mimus saturninus*, Jucurutu, Rio Grande do Norte, Brazil, March 2017 (© J. Sagot)

YELLOW-RUMPED CACIQUE *Cacicus cela*

This cacique breeds around Baía Formosa, as reported by local people to FSM and revealed by photos (WikiAves 2019). It is possibly a feral population, still being reinforced by released cagebirds. A former colony in Ceará-Mirim was persecuted to extinction (M. Silva) and another colony at Nísia Floresta in the 1980s also no longer exists (DMH).

SCREAMING COWBIRD *Molothrus rufoaxillaris*

The first mention in the state is from August 2010 (Pichorim *et al*. 2016a). Documentation of immatures in transitional plumages (WA 2164752; J. van den Bosch, WA 2641146; S. Furtado) establishes the species on the primary list. Reported to have recently invaded eastern Brazil (ICMBio / MMA 2018), and that is perhaps true for Rio Grande do Norte too but, based on WikiAves records (to 31 March 2019), it occurs only in March–September, suggesting the species is an austral winter visitor.

CINNAMON TANAGER *Schistochlamys ruficapillus*

Two specimens from the state: UMMZ 113609, taken by E. W. van Aken in Natal on 19 February 1945; and an undated female (COUFRN 705) from the *restinga* at Parnamirim (MP). The species has been recorded almost throughout the east coast, including: an adult in shrubby *restinga* at Barra do Cunhaú (06°18'S, 35°02'W), Tibau do Sul, on 26 December 2002; an adult in low-stature Atlantic Forest at Dunas de Natal State Park, Natal, on 24 November 2004 (FSM); up to five in *cerrado* at Punaú (05°23'S, 35°30'W), Rio do Fogo (Pichorim *et al*. 2014a, where a photo was published); and in 'tabuleiro' at Jundiaí (05°53'S, 35°23'W),

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Macaiba (Silva *et al*. 2012). A sighting in the Caatinga at Macau (Silva *et al*. 2012) is the only record for this biome in the state, but escaped / released cagebirds may be the origin (FSM pers. obs.).

SAFFRON FINCH *Sicalis flaveola*
Interviews with local people by FSM confirmed this finch was formerly numerous in the state (Faria 2001). It is still very sought after by the cagebird trade, filling many of the environmental agency's rehabilitation centres throughout north-east Brazil. It is regularly released by the environmental police without identifying the subspecies concerned, probably leading to some genetic mixing between *S. f. brasiliensis*, the native local taxon, and *S. f. pelzelni*.

BRAZILIAN TANAGER *Ramphocelus bresilius*
Individuals frequent the *restinga* of Parnamirim and Natal (P. Vitor), but breeding is unknown (MP), and environmental agents regularly release cagebirds (FSM). Birds recorded in *restinga* and in mangroves at Baía Formosa and Atlantic Forest borders at Goianinha probably represent remnant native populations (JFP & FSM).

WHITE-BELLIED SEEDEATER *Sporophila leucoptera*
A pair was photographed in the floodplain of the Pirangi River, at Cotovelo, Parnamirim, on 1 May 2008 (JBI), at the start of the local rainy season. A male *S. l. cinereola* was photographed at Nísia Floresta on 28 August 2017 (WA 2676962; F. E. Silva, identified by FSM), at the end of the local rainy season. The so-called 'chorão' or 'patativa' is much sought after by traffickers in the state (Pichorim *et al*. 2016b, FSM pers. obs).

BLACK-THROATED SALTATOR *Saltatricula atricollis*
Recently proven to occur in the north-west of the state: a photo of a moulting male singing at Assu on 26 June 2017 (WA 2658215; M. Silva), and a photo and sound-recording of a singing adult at Sítio do Góis, Apodi, on 11 March 2018 (WA 2908958, 2909323; J. Souza).

COMMON WAXBILL *Estrilda astrild*
This exotic invasive species, present in Natal since 1985 when it was seen building a nest (C. Medeiros), is currently common along the east coast but scarce in the dry interior of the state (FSM pers. obs.; WikiAves 2019).

HOUSE SPARROW *Passer domesticus*
Introduced from the Old World, and currently common throughout the state. The nominate is the only subspecies known to occur in Brazil (Piacentini *et al.* 2015).

Species on the Secondary List

RED-WINGED TINAMOU *Rhynchotus rufescens*
The first published state record (Olmos 2003) lacked documentary evidence, and two other references to the species stemmed from interviews with local people (Silveira & Varela-Freire 1999, Pichorim *et al*. 2016a). It was heard and seen at ESEC Seridó, Serra Negra do Norte (JBI), but was not documented, and this is the sole record to support its inclusion in the Caatinga bird list for the state (Silva *et al*. 2012) along with that for the same locality (Pichorim *et al*. 2016b).

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BLUE-WINGED TEAL *Anas discors*
Ten ringed in the USA and Canada between 1955 and 1971 were recovered in nine municipalities in the state between 1959 and 1975 (Mestre *et al*. 2010), but there is no documentary evidence to support these records (CEMAVE pers. comm., BBL pers. comm.). Subsequently, the species has not been recorded again in Rio Grande do Norte.

AMERICAN FLAMINGO *Phoenicopterus ruber*
A rock painting at 'Pedra Ferrada', São Rafael, has been attributed to this species (Sick 1997: 227). An adult was present at Salina Diamante Branco, Galinhos, over five consecutive days in March 2001 (Azevedo *et al*. 2004), but went undocumented.

MAGELLANIC PENGUIN *Spheniscus magellanicus*
Two weakened immatures, one beached on 7 August 2008 in Natal, the other captured at sea off Natal on 13 August 2008, were found during an influx of this penguin along the Brazilian coast due to a severe austral winter (Dantas *et al*. 2013). Both subsequently died, but the frozen specimens (COUFRN 28, 30) were lost due to an electricity outage.

YELLOW-NOSED ALBATROSS *Thalassarche chlororhynchos*
An albatross found beached on the north coast of the state, in May 2018, was rehabilitated and released on about 20 December 2018 (F. Lima pers. comm.). Two photos of the bird were used to publicise an educational project, in which it was identified as a Black-browed Albatross *T. melanophris*. In fact, the dark bill with clear yellow-green culmen identify this immature as *T. chlororhynchos* (Bugoni & Furness 2009). The species is maintained on our secondary list because the documentary evidence is not available. This is the only known state record, but one of many in north-east Brazil, e.g. one seen 55 km north-east of the Fernando de Noronha archipelago on 15 November 1996 by A. B. S. Fuchs (J. M. R. Soto, MS); 37 found beached on the north coast of Bahia in 1994–98 (Lima *et al*. 2004); an immature off Salvador, Bahia, on 25 May 2009 (WA 156301; B. Rennó); and an immature 45 km off Paracuru, Ceará, on 5 January 2018 (WA 2842425; C. E. Moura). Endangered *T. chlororhynchos* occurs along most of the Brazilian coast (ICMBio / MMA 2018), and our partial compilation of records confirms that immatures are reasonably regular off the north-east of the country.

ZINO'S PETREL *Pterodroma madeira*
This pelagic species, which breeds in Macaronesia, is believed to occur off the state's coast as a result of the use of dataloggers to track the tiny population (Zino *et al*. 2011, Ramos *et al*. 2016), but lacks confirmation through direct observation.

DESERTAS PETREL *Pterodroma deserta*
Like the previous species, occurrence off the state's coast is based on information gathered from dataloggers (Ramirez *et al*. 2013, Ramos *et al*. 2016), but lacks confirmation through direct observation.

BULWER'S PETREL *Bulweria bulwerii*
The occurrence of this pelagic species off Rio Grande do Norte is also based on information gathered from dataloggers (Ramos *et al*. 2015, Cruz-Flores *et al*. 2019), but lacks direct confirmation.

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BOYD'S SHEARWATER *Puffinus boydi*
This shearwater, endemic to the Cape Verde Islands, is believed to occur off the state's coast in the non-breeding season (Zajková *et al*. 2017), but this discovery, which is based on information garnered from dataloggers, lacks direct confirmation. *P. boydi* was split from Macaronesian Shearwater *P. baroli*, itself split from Little Shearwater *P. assimilis* (Gill & Donsker 2019), but is treated as a subspecies of Audubon's Shearwater *P. lherminieri* by some authorities (Carboneras *et al*. 2019). Like *Pterodroma madeira*, *P. deserta*, and *Bulweria*, because of the relative accuracy of geolocators (+/- 200 km), it is impossible to be sure if this shearwater occurs in the state's continental waters, which reach only 27–40 km from the coast.

BROWN BOOBY *Sula leucogaster*
One, beached south of Natal, was kept by A. Varela-Freire between September 1986 and December 1987 (Varela-Freire 1997) but not documented. A weak individual floating in the sea off Guamaré in early March 2019 was photographed by A. Gleydson, but the photo is unavailable (RDL & FSM).

CAPPED HERON *Pilherodius pileatus*
One flushed by FSM from the almost-dry stony bed of Salobro stream, with still a few seasonal ponds and flanked by gallery forest, in Martins on 4 August 2010, was not documented. The species is known from nearby localities in neighbouring Ceará, Paraíba and Pernambuco (Pereira *et al*. 2012, WikiAves 2019). More records are expected in Rio Grande do Norte.

BUFF-NECKED IBIS *Theristicus caudatus*
This conspicuous ibis was seen once in the Seridó region around 1996, but not in 'açude Riacho do Roçado' as claimed by Medeiros *et al*. (2000; A. da Silveira pers. comm.). This record supported the species' inclusion in the first state bird list (Varela-Freire *et al*. 1999). *T. caudatus* is now considered extinct on the north coast, based on interviews with local people by FSM that indicated its presence until the 1950s at Macau and Guamaré, where it was regularly hunted. Now rare in north-east Brazil, where absent from Rio Grande do Norte to north-west Ceará and from almost all of the Caatinga (WikiAves 2019); it is no longer expected in the state.

SWALLOW-TAILED KITE *Elanoides forficatus*
Considered rare in the first state bird list (Varela-Freire *et al*. 1999), but there is no information concerning the origin of the claimed record. A bird perched on electric wires along the unsurfaced road to Morro Vermelho (05°59'S, 35°10'W), Nísia Floresta, on several consecutive days in 2004, was finally shot and buried there (C. Ferreira pers. comm.). The nearest records to Rio Grande do Norte are from Pernambuco; individuals on 15 October and 4 December 1999, possibly of a resident population (Roda & Pereira 2006), and on 17 October 2009 (Pereira *et al*. 2014). Records in central-north Ceará on 25 November 2007, and Alagoas on 19 October 2018 (WikiAves 2019), suggest migration as well; thus, further state records can be expected.

SUNGREBE *Heliornis fulica*
Around 1998, a weak Sungrebe (identified by DMH) was brought to Pipa Ecological Sanctuary, Tibau do Sul, where it died some days later but was not documented. An uncommon resident in the Atlantic Forest (Moreira-Lima 2013); because our record lacks

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information as to the locality where it was found, it may not have been in Rio Grande do Norte.

HUDSONIAN GODWIT *Limosa haemastica*
An immature bird, probably a Hudsonian Godwit, was seen at Salina Soledade, Macau, on 22 June 2005 (Irusta & Sagot-Martin 2011), but not documented. Autumn migration passes inland (west) of north-east Brazil and in spring the species uses few or no stopover sites (Somenzari *et al*. 2018); thus, the species is not expected in Rio Grande do Norte.

EURASIAN WHIMBREL *Numenius phaeopus*
Seen twice in the state: one in a flock with 14 American Whimbrels *N. hudsonicus*, seen both perched and flight at Canto do Amaro mangroves, Guamaré, on 9 October 2010; and one in a flock with *c*.160 *N. hudsonicus* flushed from mangrove islets (05°50'S, 35°17'W) in Macaíba on 18 February 2016 (FSM). There is no documentary evidence, but *N. phaeopus* has been repeatedly documented on Fernando de Noronha (Silva e Silva 2008), and more state records can be expected.

BLACK TERN *Chlidonias niger*
One, banded in 1984 in Berlin, Germany, and therefore of the nominate subspecies, was recovered at Macau in September 1986 (Sick 1997: 335). Although *C. n. surinamensis* is the only subspecies admitted by Piacentini *et al*. (2015), these authors note, based on the Macau record, that the nominate is also expected in Brazil, and *surinamensis* should occur in Rio Grande do Norte.

SCALED PIGEON *Patagioenas speciosa*
An adult perched atop a 15 m-tall tree was seen in riverine forest along Mucambo stream (06°19'S, 35°14'W), Goianinha, on 21 January 2019 (FSM), but was not documented. Given that it occurs at neighbouring localities in Paraíba, the species was expected in the state.

RUDDY QUAIL-DOVE *Geotrygon montana*
A probable Ruddy Quail-Dove was heard singing at Mata da Estrela Private Reserve, Baía Formosa, on 29 December 2002, and two others, probably a pair of this species, were flushed at a forest border in Estivas Private Reserve, Canguaretama, on 12 December 2005 (FSM). The species is expected in Rio Grande do Norte, with the nearest documented record in neighbouring Mamanguape, Paraíba, on 12 May 2015 (WA 1694065; E. Barreto).

SPECTACLED OWL *Pulsatrix perspicillata*
The species has been observed, but not documented, in coastal dunes at Natal (Varela-Freire *et al*. 1999), but we are unable to find any record to support this assertion, and due to the lack of surface water and paucity of tall trees we believe Dunas de Natal State Park does not harbour the species (FSM pers. obs.). Nevertheless, there is a suitable habitat in the Atlantic Forest of south-east Rio Grande do Norte. It is found very nearby at Mamanguape in far north-east Paraíba (Pinto & Camargo 1961, WikiAves 2019), so it can be expected in the state.

MOTTLED OWL *Strix virgata*
The song of this owl was heard at Casqueira forest (06°24'S, 35°04'W), Baía Formosa, on 26 January 2015 during a full moon (FSM), but was not sound-recorded. The nearest

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documented records are from Pernambuco (Roda & Pereira 2006) and to the north, as far as Pará.

BUFF-FRONTED OWL *Aegolius harrisii*
We know of two trustworthy records in the state: one responding to playback on two nights at ESEC Seridó, Serra Negra do Norte (Pichorim *et al*. 2016b); and one heard at Cerro Corá in July 2017 (D. Oliveira), but there is no documentary evidence.

COMMON NIGHTHAWK *Chordeiles minor*
All Brazilian records, including those photo-documented or sound-recorded, are in September–April, and *C. m. chapmani* overwinters in central Brazil and northern Argentina (Somenzari *et al*. 2018). Even photo-documented records require careful analysis due to the difficulty in separating *C. minor* from *C. acutipennis*. Two photos of birds perched on branches, at Parelhas on 12 March 2006 (WA 344901; L. Sena) and Macau on 18 March 2015 (WA 1640227; J. Dantas), could pertain to either of these species. *C. minor* appears rather common at Chapada do Araripe, in southern Ceará, where MNRJ obtained an adult female on 15 March 1989 (Teixeira *et al*. 1993). The other nearest documented record is a photo of one perched at Aquiraz, in northern Ceará, on 16 February 2006 (WA 1947161; A. Campos). Although its main migration route lies west of Rio Grande do Norte, *C. minor* is likely to be found in the state, especially in the 'serras' and mangroves.

SICK'S SWIFT *Chaetura meridionalis*
Seen twice at Engenho Mucambo, Goianinha—one foraging with two Fork-tailed Palm Swifts *Tachornis squamata* and several Barn Swallows *Hirundo rustica* on 5 November 2006 (FSM & MP); and one vocalising over the forest on 30 December 2010 (JFP)—which suggests it is a potential breeder, but documentary evidence to establish its occurrence in the state is lacking.

WHITE-CHINNED SAPPHIRE *Hylocharis cyanus*
An adult male was observed and its song heard at Mata do Mucambo, Goianinha, on 30 December 2010, and the species was heard again there on 2 January 2011 (JFP), but not documented.

VERSICOLOURED EMERALD *Amazilia versicolor*
Included in a bird list for Baía Formosa (Olmos 2003), without documentation. Two females, both showing a subterminal dark band on the open tail, were observed by FSM but not documented: at Dunas de Natal State Park, Natal, on 28 November 2002; and mobbing a male Ruby-topaz Hummingbird *Chrysolampis mosquitus* that was competing with it for flying insects at the border of *restinga* at Morro Vermelho, Nísia Floresta, on 17 November 2004.

BARRED FOREST FALCON *Micrastur ruficollis*
Heard by FSM at Mata da Estrela Private Reserve, Baía Formosa, on 3–4 January 2003, but not documented. Heard at the same locality on 28 February–7 March 2003, where judged uncommon and said to have been sound-recorded (Olmos 2003); however, the observer confirmed that the species was only heard (F. Olmos pers. comm.).

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STREAKED XENOPS *Xenops rutilans*
One heard singing and two seen at Mata do Mucambo, Goianinha, on 2 January 2011 (JFP & FSM), but not documented.

RED-HEADED MANAKIN *Ceratopipra rubrocapilla*
Recorded at Baía Formosa during a survey on 28 February–7 March 2003 (Olmos 2003), but not documented and the species has not been encountered again in this area.

WHISKERED FLYCATCHER *Myiobius barbatus*
Identification of *Myiobius* can be difficult (Ridgely & Tudor 2009). The first mention of this genus in the state pertained to Black-tailed Flycatcher *M. atricaudus* seen at Mata da Estrela Private Reserve, Baía Formosa (Olmos 2003). However, records attributed to this species in the Pernambuco Centre of Endemism are likely to reflect misidentification for *M. barbatus*, which occurs—albeit not in sympatry with *atricaudus*—in the far north-east Brazilian Atlantic Forest, whereas *atricaudus* is found in 'brejos de altitude' in the Caatinga (RDL pers. obs.). Eight specimens of *M. barbatus* were collected in Paraíba at the border with Rio Grande do Norte in 1957 (Pinto & Camargo 1961), and one, presumably this species, was recently photographed at Mata do Pilão, Espírito Santo (WA 3002212; F. V. Souza), but is not definitely identifiable, and we therefore include the species only on the secondary list. A recent phylogeny of the genus reveals that a specimen of *barbatus* collected in the Pernambuco Centre of Endemism—presumably *M. b. mastacalis*—is sister to the nominate from the Guiana Shield (Azevedo 2017), therefore matching the pattern of several species from the same centre of endemism whose populations are more closely related to those in Amazonia than to the Atlantic Forest south of the São Francisco River (Teixeira 1987, Silveira *et al*. 2003).

GREY ELAENIA *Myiopagis caniceps*
One was heard at Mata do Mucambo, Goianinha on 30 December 2010, and it sang at the same place on 2 January 2011 (JFP), but was not documented.

EULER'S FLYCATCHER *Lathrotriccus euleri*
Three undocumented records: one *Cnemotriccus*-like tyrant-flycatcher, but with a pale-based bill and long ochre supercilium, perched on a *Sideroxylon obtusifolium* (Sapotaceae) on a sand dune, along with two or more Chilean Elaenias *E. chilensis*—presumably on austral autumn migration—at Guamaré on 27 April 2012 (FSM); one at the 'serra' of Venha-Ver (06°19'S, 38°26'W) in July 2012 (Mariano 2014); and one at the 'serra' of Martins sometime in 2016 (D. Oliveira). This species, partially migratory in Brazil (Somenzari *et al*. 2018), is expected in the state during the austral winter, and may also be resident in the 'serras' of the state, as it is at Serra de Baturité, Ceará (RDL pers. obs.).

GREEN-WINGED SALTATOR *Saltator similis*
Much sought after by traffickers and historically released by state environmental agents; one, sound-recorded (WA 3257831, 3257841) at Mata do Mucambo, Goianinha, on 20 January 2019, probably originated from a release and is therefore of unknown origin (RDL & FSM). This locality had previously been studied by ornithologists, without any records of this species until at least 2011, thereby reinforcing the hypothesis of a released or escaped individual.

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YELLOW-FACED SISKIN *Spinus yarrellii*
This Vulnerable species was included as rare in the first state bird list, being specifically mentioned for Agreste (Atlantic Forest / Caatinga ecotone) and the Caatinga (Varela-Freire *et al*. 1999), but we have found no specific records. A claimed first documented record at Florânia (Silva *et al*. 2011) was misidentified and consequently invalid (WA 295444). In the most recent Brazilian Red List (ICMBio / MMA 2018), the species is mapped for two localities in the state, one being the incorrect record just mentioned, while the source of the other is unknown to us. Although rare or disappeared today, the species is well known to those inhabitants interviewed (Pichorim *et al*. 2016a; FSM pers. obs.). It is expensive on the black market, and males are much sought after to cross with the canary, *Serinus canaria*, to produce the hybrid 'pintagol', an excellent singer and consequently the target of systematic trapping in the state. Its tendency towards extinction has been offset since at least 1999 via releases (Dr A. Leite, Cetas / IBAMA Natal, pers. comm.), and today the environmental police immediately release any birds confiscated from traffickers.

Discussion

Avifaunal composition.—In biogeographical terms, the state's avifauna reflects the meeting of the wet lowland Atlantic Forest (with some taxa endemic to the Pernambuco Centre of Endemism) and dry Caatinga (four species typical of this domain) enriched by an enclave of Cerrado (two typical species). For example, East Brazilian Chachalaca *Ortalis araucuan* and *Ramphocelus bresilius* are mainly associated with the Brazilian Atlantic Forest, while typical Caatinga species include *Penelope jacucaca*, *Nyctidromus hirundinaceus*, *Anopetia gounellei* and *Synallaxis hellmayri*. Silvery-cheeked Antshrike *Sakesphorus cristatus*, Caatinga Cacholote *Pseudoseisura cristata*, Campo Troupial *Icterus jamacaii*, Pale Baywing *Agelaioides fringillarius* and White-throated Seedeater *Sporophila albogularis* are also associated with the semi-arid domain. The Cerrado enclave harbours six species mainly associated with this domain (*Heliactin bilophus*, *Xolmis cinereus*, Black-masked Finch *Coryphaspiza melanotis*, White-rumped Tanager *Cypsnagra hirundinacea*, and, especially, Blue Finch *Porphyrospiza caerulescens* and Coal-crested Finch *Charitospiza eucosma*), but *Heliactin* also occurs in coastal 'tabuleiros'. Some species like Rusty-backed Antwren *Formicivora rufa*, Rufous-winged Antshrike *Thamnophilus torquatus* and Lesser Elaenia *Elaenia chiriquensis*, occur not only in the Cerrado enclave, but also in some degraded borders of Atlantic Forest, in stable sand dunes, and in a large area of *restinga* interspersed with 'tabuleiros' that extends from Natal to the north-east corner of the state. Tawny Piculet *Picumnus fulvescens* and Ochraceous Piculet *P. limae* are usually considered typical of the Atlantic Forest and Caatinga, respectively (Moreira-Lima 2013, Araujo & Silva 2017) but, although we follow Piacentini *et al*. (2015; see Table 1), a recent taxonomic reassessment considers them to be extreme phenotypes of a clinal variation (Lima *et al*. 2020).

The state's Atlantic Forest forms part of the Pernambuco Centre of Endemism, one of the main hotspots for threatened bird taxa in South America (Teixeira 1986, Lees *et al*. 2014a). Although the state is poorer in endemic taxa than the southern states, *Penelope superciliaris alagoensis*, *Leptodon forbesi*, *Momotus momota marcgravianus*, *Herpsilochmus* [*rufimarginatus*] sp., *Xenops minutus alagoanus*, *Conopophaga melanops nigrifrons*, *Platyrinchus mystaceus niveigularis* and *Hemitriccus griseipectus naumburgae* have already been identified there, and some disjunct populations of Amazonian species occur too, such as *Cercomacroides laeta* and *Myiobius* [*barbatus*] sp. Note that some other taxa may prove to be more related to Amazonian taxa than to those in the Atlantic Forest (Teixeira 1987, Silveira *et al*. 2003, Ledo & Colli 2017).

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Many common species in the coastal Atlantic Forest are absent from the semi-arid Caatinga. However, others (Caatinga Antwren *Herpsilochmus sellowi*, Black-capped Antwren *H. atricapillus*, Ochre-cheeked Spinetail *Synallaxis scutata*, Pectoral Sparrow *Arremon taciturnus* and Flavescent Warbler *Myiothlypis flaveola*) occur in 'brejos de altitude' in the Caatinga. Some of these represent remnants of the ancient corridors that existed between the Amazon and Atlantic forests (Batalha-Filho *et al*. 2013, Ledo & Colli 2017). In Rio Grande do Norte, the 'serras', where the 'brejos de altitude' could occur, are lower (<850 m) than in Ceará (<1,150 m) and Paraíba (<1,190 m), and therefore lack the climatic conditions to support ombrophilous forests, there being only small patches of semi-deciduous forests.

Mangroves in the state harbour some species typical of this environment such as Yellow-crowned Night Heron *Nyctanassa violacea*, *Buteogallus aequinoctialis*, Mangrove Rail *Rallus longirostris*, *Charadrius wilsonia* and Bicoloured Conebill *Conirostrum bicolor*. Others, such as Little Blue Heron *Egretta caerulea*, Little Wood Rail *Aramides mangle*, *Limnodromus griseus*, *Tringa semipalmata* and Plain-bellied Emerald *Amazilia leucogaster*, clearly prefer mangroves and other coastal habitats.

The state of Rio Grande do Norte lies at a subequatorial latitude, which, in conjunction with the coastal effect plus prevailing trade winds, favours the arrival or passage of many species. This is partially reflected by the documentation of two taxa of the same species, e.g., *Thalasseus acuflavidus* (nominate, *eurygnathus*), *Falco peregrinus* (*tundrius*, *anatum*), *Progne tapera* (nominate, *fusca*), with others liable to occur, such as *Charadrius wilsonia* (*crassirostris*, nominate expected), *Tringa semipalmata* (nominate, *inornata* expected), *Chlidonias niger* (presumably nominate, *surinamensis* expected) and *Myiarchus swainsoni* (nominate, *pelzelni* expected).

Except beached birds and the recent use of dataloggers, few data were available on seabirds until the first pelagic birding trips off the state (Lees *et al*. 2015, WikiAves 2019). Numerous other species are expected, and seabirds are likely to account for many future additions to our list (see Potential species).

Potential species.—As indicated earlier, the avifauna of Rio Grande do Norte has only recently been studied, consequently we have prepared a list of species likely to occur or to have occurred in the state (see Appendix 2). References concerning these 'potential species', along with those relating to our tertiary list, are presented in Supplementary Material.

Our speculation as to potential species is based on distributional patterns indicated by documented records in conjunction with the availability of suitable habitats in the state. Migrant species, due to the state's geographical position and to the trade winds, can originate from boreal and austral latitudes, and the Old World. This group of species has already produced some ornithological surprises in the state, such as *Hymenops perspicillatus* from the south, and transatlantic *Numenius phaeopus*, thus migrant species deflected by drift are simultaneously exceptional and expected; see the lists for Atol das Rocas Biological Reserve (Schulz Neto 2004b), Fernando de Noronha (Silva e Silva 2008), and some Ceará records, e.g., Northern Gannet *Morus bassanus* (Teixeira *et al*. 2016), Curlew Sandpiper *Calidris ferruginea* (Musher *et al*. 2016), Collared Pratincole *Glareola pratincola* (WA 1672238) and Lesser Black-backed Gull *Larus fuscus* (Girão *et al*. 2006). For such reasons, we have compiled a reasonably extensive list of potential species for which we indicate their estimated probability of occurrence.

The lack of historical data precludes any assessment of the state's avifauna through time. The number of bird species could have been much larger during the early post-Columbian period; for example, toucans probably existed several centuries ago (Silva 2003). Massive clear-cutting of Atlantic Forest and its replacement by sugarcane plantations had a significant negative impact on avian diversity (Teixeira 1986), and it appears very possible

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that some species recorded during a visit to Mamanguape in neighbouring Paraíba in 1957 (Pinto & Camargo 1961) also once occurred in nearby Rio Grande do Norte. These include Golden-tailed Parrotlet *Touit surdus* and Swallow-winged Puffbird *Chelidoptera tenebrosa*. Yellow-olive Flycatcher *Tolmomyias sulphurescens*, Planalto Tyrannulet *Phyllomyias fasciatus* and several other forest species are currently known from Guaribas Biological Reserve, at Mamanguape (Almeida & Teixeira 2010). Northern Lesser Woodcreeper *Xiphorhynchus atlanticus* at Mataraca (G. Pereira pers. comm.), and other species at Rio Tinto (Araujo & Nishida 2007), two localities in extreme north-east Paraíba, could occur in south-east Rio Grande do Norte. Groups of Boat-billed Heron *Cochlearius cochlearius* have been observed in nearby Paraíba (Araujo *et al*. 2006; E. Souza pers. comm.), which suggests that this heron also will be found in the state. In the interior, where the Caatinga predominates, semi-deciduous forest enclaves are most promising for discovering new species for the state, e.g., Grey-headed Spinetail *Cranioleuca semicinerea*, Planalto Woodcreeper *Dendrocolaptes platyrostris* and Moustached Woodcreeper *Xiphocolaptes falcirostris*.

The potential list encompasses 92 species (55 non-passerines and 37 passerines) with 16 of high, 36 medium, and 40 low (roughly estimated) probability of being found in the state. Along with the 425 species on the consolidated list, those species with high or medium chance of occurrence in the state produce a reasonable potential total of *c*.480 species in Rio Grande do Norte and its continental waters. But it should be borne in mind that, for now, just 391 have been recorded on the primary list.

Threats to the state's avifauna.—Our consolidated list includes a noteworthy number of threatened taxa: ten globally and 21 nationally threatened taxa, and 11 globally and seven Near Threatened, all of which depend on conservation of forests (Atlantic Forest, *restinga* and mangroves, 'serras', and arboreal Caatinga) and the Cerrado. In addition, the lack of respect for federal anti-hunting legislation threatens *Crypturellus noctivagus zabele*, *Penelope superciliaris alagoensis*, *P. jacucaca*, *Spinus yarrellii*, seven species of waders, and eight pelagic species. Other species of conservation concern are *Leptodon forbesi* (Critically Endangered), *Herpsilochmus pectoralis* and *Coryphaspiza melanotis* (both Vulnerable).

We trust this paper will become a basic reference for the construction of a state Red List of birds to be protected by new environmental laws. Simultaneously, restoration initiatives linked to compliance with environmental laws and conservation of water resources should and could be linked to conservation projects for these species, aiming to create new habitat corridors.

As noted by Lees *et al*. (2015), the area at the shelf break is rich in pelagic birds that may suffer some persecution (*cf*. Lima *et al*. 2004). For example, we have encountered a *Puffinus gravis* with its left wing ensnared by a fish hook and nylon line; a *P. puffinus* lacking one wing, probably cut by fishermen after it became caught in their nets; a *Fregetta tropica* with one leg; an *Oceanites oceanicus* lacking half of the primaries in one wing, perhaps caused by a shotgun (or by a jaeger); two *Sula dactylatra* caught on fish hooks; a *Stercorarius maccormicki* captured alive and released, trapped again and kept captive, and another caught on a fish hook and also held captive.

The state's mangroves swamps were partially destroyed centuries ago by the salt industry and since the 1970s by shrimp producers. Today, egg collecting persists in and around some saltpans. Although federal law does not permit hunting, poaching is common in the state and this activity has provided recoveries of ringed birds, e.g., *Falco peregrinus*, waders, ducks (*Anas discors*) and other waterbirds. There is intense pressure on nesting colonies of *Zenaida auriculata*, and we have regularly witnessed the hunting and sale of Tataupa Tinamou *Crypturellus tataupa*, *Penelope jacucaca*, *P. superciliaris*, *Nyctanassa violacea*, Great Egret *Ardea alba*, *Elanoides forficatus*, Black-chested Buzzard-Eagle *Geranoaetus*

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melanoleucus, Roadside Hawk *Rupornis magnirostris*, Common Gallinule *Gallinula galeata*, Blue Ground Dove *Claravis pretiosa*, all of the *Columbina* species, many White-tipped Doves *Leptotila verreauxi*, and *Conirostrum bicolor* (Pichorim *et al.* 2016a; FSM pers. obs.).

The caging and trafficking of wild birds creates an endless drain on groups such as doves, psittacids and passerines (Pichorim *et al*. 2014b, 2016a; FSM pers. obs.). All eight species of psittacids on the primary list have been observed in cages, and many end up in the IBAMA / Natal rehabilitation centre or Natal Zoo. Among passerines, the most impacted families are Icteridae, Thraupidae, Turdidae, Mimidae, Cardinalidae and Fringillidae. Of the latter, *Spinus yarrellii* is on the verge of extinction, as it is over most of its range. White-naped Jay *Cyanocorax cyanopogon* is a common cagebird too. These pressures lead to local decreases and the disruption of the natural distribution of species, e.g., some psittacids, *Cyanocorax*, *Ramphocelus bresilius*, *Cacicus cela* and *Saltator similis*, due to frequent release by local people and environmental agencies of thousands of birds in inappropriate habitats. Also, some non-native species have been erroneously released, such as Seven-coloured Tanager *Tangara fastuosa*.

Windfarms kill raptors, migrants such as *Limnodromus griseus*, *Arenaria interpres* and Semipalmated Plover *Charadrius semipalmatus*, gulls, doves, cuckoos, hummingbirds, etc. (FSM & JBI pers. obs.). There are now thousands of wind turbines along almost the entire north coast and the northern half of the east coast, as well as the tops of some 'serras'. Their full impacts remain to be assessed, as existing monitoring schemes are inadequate.

The most threatened and already impoverished avifauna is surely that of the Atlantic Forest, which is subject to constant loss of its small remnants to sugarcane plantations and, more recently, by touristic developments. Moreover, some of these species are sought after as cagebirds and edible gamebirds, such as the threatened *Penelope superciliaris alagoensis*.

In this article we present the first state bird list based on strict criteria for compilation and documentation (Carlos *et al*. 2010, Lees *et al*. 2014b). It also represents the first critical review of all published records, from which obvious errors and doubtful cases have been removed, following careful consideration, and completed with unpublished records. Our consolidated list of the birds of Rio Grande do Norte encompasses 425 species, with 391 species on the primary list and 34 species on the secondary list.

Species lists are ongoing, never-ending exercises due to the dynamic nature of avian communities and the factors influencing them such as changing weather patterns, human population growth and the destruction of ecosystems. This is the first step in consolidating a state list and we hope that it will spark interest in further studies of the Rio Grande do Norte avifauna.

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Appendix 1

Tertiary list: species with published records for Rio Grande do Norte, but with questionable or invalid physical evidence, and whose occurrence in the state appears improbable based on current knowledge. References: R1—Varela-Freire & Araújo (1997); R2—Praxedes *et al*. (1997); R3—Rocha-Neto *et al*. (1998); R4—Silveira & Varela-Freire (1999); R5—Varela-Freire *et al*. (1999); R6—Medeiros *et al*. (2000); R7—Silveira *et al*. (2001); R8—Azevedo *et al*. (2003); R9—MMA (2003); R10—Olmos (2003); R11—Azevedo *et al*. (2004); R12—MMA (2004); R13—Silveira (2008); R14—Grantsau (2010); R15—Silva *et al*. (2012); R16—Moreira-Lima (2013); R17—Cavalcanti *et al*. (2016); R18—Pichorim *et al*. (2016b); R19—Santos (2017); R20—ICMBio / MMA (2018); R21—Somenzari *et al*. (2018); R22—Fitzpatrick (2019). Notes below (N1–27).

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Taxon	English name	Reference	Notes
TINAMIFORMES			
Tinamidae			
Crypturellus erythropus (Pelzeln, 1863)	Red-legged Tinamou	R4	N1
ANSERIFORMES			
Anatidae			
Anas platalea Vieillot, 1816	Red Shoveler	R4	N1
PELECANIFORMES			
Threskiornithidae			
Mesembrinibis cayennensis (J. F. Gmelin, 1789)	Green Ibis	R12, R15	N2
ACCIPITRIFORMES			
Accipitridae			
Harpagus bidentatus (Latham, 1790)	Double-toothed Kite	R6	N3
CHARADRIIFORMES			
Charadriidae			
Charadrius melodus Ord, 1824	Piping Plover	R8, R11	N4
Sternidae			
Sterna hirundinacea Lesson, 1831	South American Tern	R5	N5
Thalasseus maximus (Boddaert, 1783)	Royal Tern	R9	N6
APODIFORMES			
Trochilidae			
Discosura longicaudus (J. F. Gmelin, 1788)	Racket-tailed Coquette	R16	N7
Amazilia lactea (Lesson, 1832)	Sapphire-spangled Emerald	R3, R7	N8
GALBULIFORMES			
Galbulidae			
Nystalus chacuru (Vieillot, 1816)	White-eared Puffbird	R4, R5	N9
PICIFORMES			
Picidae			
Piculus flavigula (Boddaert, 1783)	Yellow-throated Woodpecker	R2, R5, R6	N10
Celeus flavus (Statius Muller, 1776)	Cream-coloured Woodpecker	R5	N5
PASSERIFORMES			
Thamnophilidae			
Thamnophilus palliatus (M. H. C. Lichtenstein, 1823)	Chestnut-backed Antshrike	R5	N5
Thamnophilus caerulescens Vieillot, 1816	Variable Antshrike	R3, R7	N11
Batara cinerea (Vieillot, 1819)	Giant Antshrike	R5	N5
Myrmoderus loricatus (M. H. C. Lichtenstein, 1823)	White-bibbed Antbird	R3, R7	N12
Dendrocolaptidae			

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Taxon	English name	Reference	Notes
Xiphocolaptes falcirostris (Spix, 1824)	Moustached Woodcreeper	R20	N13
Furnariidae			
Furnarius rufus (J. F. Gmelin, 1788)	Rufous Hornero	R2, R4, R5, R6, R7	N14
Phacellodomus ruber (Vieillot, 1817)	Greater Thornbird	R5	N5
Synallaxis spixi P. L. Sclater, 1856	Spix's Spinetail	R6	N15
Cranioleuca pallida (Wied, 1831)	Pallid Spinetail	R5	N5
Onychorhynchidae			
Myiobius atricaudus Lawrence, 1863	Black-tailed Flycatcher	R10	N16
Tyrannidae			
Elaenia parvirostris Pelzeln, 1868	Small-billed Elaenia	R17	N17
Phyllomyias fasciatus (Thunberg, 1822)	Planalto Tyrannulet	R22	N18
Legatus leucophaius (Vieillot, 1818)	Piratic Flycatcher	R12, R18	N20
Casiornis rufus (Vieillot, 1816)	Rufous Casiornis	R19	N19
Philohydor lictor (M. H. C. Lichtenstein, 1823)	Lesser Kiskadee	R4	N1
Myiozetetes cayanensis (Linnaeus, 1766)	Rusty-margined Flycatcher	R5, R7	N5, N21
Tyrannus albogularis Burmeister, 1856	White-throated Kingbird	R21	N22
Knipolegus cyanirostris (Vieillot, 1818)	Blue-billed Black Tyrant	R1, R5	N23
Turdidae			
Turdus fumigatus M. H. C. Lichtenstein, 1823	Cocoa Thrush	R4, R5	N1, N5
Icteridae			
Anumara forbesi (P. L. Sclater, 1886)	Forbes's Blackbird	R1, R2, R5, R20	N13, N24
Thraupidae			
Paroaria coronata (J. F. Miller, 1776)	Red-crested Cardinal	R2	N25
Tangara fastuosa (Lesson, 1831)	Seven-coloured Tanager	R13, R14, R20	N26
Tangara episcopus (Linnaeus, 1766)	Blue-grey Tanager	R2	N25
Sicalis columbiana Cabanis, 1851	Orange-fronted Yellow Finch	R7	N27
Sporophila caerulescens (Vieillot, 1823)	Double-collared Seedeater	R2	N25

N1—Undocumented records in Major Sales (Silveira & Varela-Freire 1999), based on information from a local person, using Frisch (1981), are not consistent with the known distribution based on documentary evidence.

N2—The undocumented record of *Mesembrinibis cayennensis*, based on a sight record near the headquarters of the ESEC Seridó, Serra Negra do Norte (MMA 2004), is not consistent with the known distribution based on available documentation. This record supported the species' inclusion in Silva *et al*. (2012). Following Pichorim *et al*. (2016b), we consider it to be a misidentification, and believe the species involved was more likely to be Limpkin *Aramus guarauna* (FSM pers. obs.).

N3—An undocumented record of *Harpagus bidentatus*, referred to as 'ripina', from Riacho do Roçado dam, São José do Seridó, sometime in July–December 1996 (Medeiros *et al*. 2000), is probably a misidentification. The known distribution indicates that the species is not expected in the Caatinga, especially during the long dry season, and, in Rio Grande do Norte, 'ripina' is the vernacular name for Roadside Hawk *Rupornis magnirostris*.

N4—Claimed records of *Charadrius melodus* at Salina Diamante Branco, Galinhos, in October and December 2000 (Azevedo *et al*. 2003, 2004) supported this species' inclusion in the Brazilian primary list (CBRO 2009,

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2010, 2011, 2014), but they are misidentifications (Piacentini *et al*. 2015). The voucher UFPE 3656 is, in fact, a *C. semipalmatus* (L. Naka pers. obs.).

N5—Inclusion of this species in the first state bird list (Varela-Freire *et al.* 1999) is inconsistent with the known distribution.

N6— Rio Grande do Norte was included in a list of Brazilian states where *Thalasseus maximus* occurs (MMA 2003), but we are unable to find any evidence for this, and the species is neither cited nor mapped in the state in the most recent Brazilian Red List (ICMBio / MMA 2018). See Appendix 2.

N7—Indication of *Discosura longicaudus* as 'Resident in the Atlantic Forest between Rio Grande do Norte and Rio de Janeiro' (Moreira-Lima 2013) appears speculative, and no evidence for its presence in the state is known.

N8—Alleged documentation for *Amazilia lactea* in the state (a photo in Silveira *et al*. 2001: 66) is a misidentification for Glittering-throated Emerald *A. fimbriata* (FSM pers. obs.). *A. lactea* had already been reported, but not documented, at the same locality, Dunas de Pitangui School, Extremoz, between April and December 1996 (Rocha-Neto *et al*. 1998).

N9—Undocumented records of *Nystalus chacuru* in the Agreste, the Caatinga, and coastal dunes (Varela-Freire *et al*. 1999), are inconsistent with the known distribution. *N. chacuru* had been included in the bird list of Major Sales (Silveira & Varela-Freire 1999), but the first author subsequently confirmed that the species involved was Spot-backed Puffbird *N. maculatus* (A. G. da Silveira pers. comm.).

N10—Undocumented records of *Piculus flavigula* in the Caatinga (Praxedes *et al*. 1997, Varela-Freire *et al*. 1999, Medeiros *et al*. 2000) are inconsistent with the species' known distribution, and probably reflect confusion with Golden-green Woodpecker *P. chrysochloros*.

N11—Alleged documentation for *Thamnophilus caerulescens* in the state (a photo in Silveira *et al*. 2001: 69) is a misidentification of female White-fringed Antwren *Formicivora grisea* (FSM pers. obs.). *T. caerulescens* had already been reported, but not documented, at the same locality, Dunas de Pitangui School, Extremoz, between April and December 1996 (Rocha-Neto *et al*. 1998).

N12—An undocumented record of *Myrmoderus loricatus* at Dunas de Pitangui School, Extremoz, sometime during April–December 1996 (Rocha-Neto *et al*. 1998), is inconsistent with the known distribution. It was omitted from a subsequent bird list (Silveira *et al*. 2001).

N13—Indication of occurrence in the state (ICMBio / MMA 2018) is not supported by any available evidence.

N14—Undocumented records of *Furnarius rufus* in the state (Praxedes *et al*. 1997, Silveira & Varela-Freire 1999, Varela-Freire *et al*. 1999, Medeiros *et al*. 2000, Silveira *et al*. 2001), some based on observations of nests (which in fact resemble those of Pale-legged Hornero *F. leucopus*), are inconsistent with the species' known distribution.

N15—An undocumented record of *Synallaxis spixi* at Riacho do Roçado Dam, São José do Seridó, during July–December 1996 (Medeiros *et al*. 2000), is inconsistent with the species' known distribution.

N16—The record of *Myiobius atricaudus* at Mata da Estrela Private Reserve, Baía Formosa (Olmos 2003), is treated here as a misidentification of *M. barbatus* (see Species accounts). See Appendix 2.

N17—*Elaenia parvirostris* was mentioned in a bird list from Mossoró (Cavalcanti *et al.* 2016) without details; the identification must be considered questionable.

N18—Indication for the presence of *Phyllomyias fasciatus* in the state (Fitzpatrick 2019) cannot be confirmed; see Appendix 2.

N19—*Casiornis rufus* was mentioned in a bird list from Mossoró (Santos 2017) without details; the identification must be considered questionable.

N20—An undocumented record of *Legatus leucophaius* at ESEC Seridó, Serra Negra do Norte (MMA 2004), supported its inclusion in the locality's bird list (Pichorim *et al*. 2016b), but to us it seems a probable misidentification for Variegated Flycatcher *Empidonomus varius*. Nevertheless, *Legatus* is likely to occur in Atlantic Forest remnants in the south-east of the state, but not the Caatinga (see Appendix 2).

N21—A photo (Fig. 9.8) in Silveira *et al*. (2001), taken at Dunas de Pitangui School, Extremoz, and misidentified as *Myiozetetes cayanensis*, is, in fact, of Social Flycatcher *M. similis* (FSM pers. obs.).

N22—Visual identification of *Tyrannus albogularis*, which in many respects resembles some Tropical Kingbirds *T. melancholicus*, can be difficult. Somenzari *et al*. (2018) noted that, based on WikiAves records, this species breeds in Brazil during October–April (including Rio Grande do Norte), but we believe that all

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photos from the state are misidentified *T. melancholicus*, and that *T. albogularis* does not breed in far north-east Brazil (see Appendix 2).

N23—A record of *Knipolegus cyanirostris* in the Seridó (Varela-Freire & Araújo 1997) supported its inclusion in the state bird list (Varela-Freire *et al*. 1999), but is inconsistent with the species' known distribution. More likely the observation involved *K. nigerrimus*.

N24—The Vulnerable Brazilian endemic *Anumara forbesi* (ICMBio / MMA 2018), much sought after in the cagebird trade, has been reported in the state without details (Varela-Freire & Araújo 1997, Praxedes *et al*. 1997, Varela-Freire *et al*. 1999), but all reports are of questionable identification and origin.

N25—An undocumented record in the Agreste of Taipu (Praxedes *et al*. 1997) is inconsistent with the known distribution. It is also of questionable identification, and it may have involved a cagebird.

N26—*Tangara fastuosa* has been mapped for the state (ICMBio / MMA 2018) based on Silveira (2008) and Grantsau (2010). A previous Brazilian Red List (MMA 2003) also included Rio Grande do Norte within this tanager's range, probably based on Silveira & Varela-Freire (1999), who reported it to be rare and threatened, and that it had been found in 'coastal sand dunes, and tabuleiro of Capim Macio.' In these locations within Dunas de Natal State Park, confiscated cagebirds were released (Dr A. Leite, Cetas / IBAMA Natal, pers. comm.). Olmos (2003) did not detect the species in Mata da Estrela Private Reserve and environs, Baía Formosa, during 28 February to 7 March 2003. Neither did JFP, accompanied by FSM, find the species in south-east Rio Grande do Norte between 26 December 2010 and 3 January 2011. Over the last ten years, many hundreds of birds have been trapped by MP's students in the *restinga* of Natal and Parnamirim, and the semi-deciduous forest of Mata da Estrela, but no *T. fastuosa*. Two sight records, both of singles in flight beside the Jiqui River, Parnamirim, on 28 December 2006 and on 15 January 2007 (FSM), pertain to releases by environmental agents. If the Vulnerable *T. fastuosa* ever occurred in the state, its population became extinct long ago, and no feral population apparently exists today. Following our criteria, this species is included in the tertiary list.

N27—A record of *Sicalis columbiana* from Dunas de Pitangui School, Extremoz (Silveira *et al*. 2001), is inconsistent with the known distribution. It is also of questionable identification, and may have involved a cagebird.

Appendix 2

Potential List: species with some probability of occurrence in Rio Grande do Norte, including its continental waters, based on known patterns of distribution. Notes: (1) The species has been recorded nearby, in a neighbouring state, and we believe that suitable habitat exists in Rio Grande do Norte; (2) the species has been recorded nearby, in a neighbouring state, but we consider that there is little or no suitable habitat in Rio Grande do Norte; (3) the species has been recorded in a neighbouring state and we consider that suitable habitat exists for the species in Rio Grande do Norte; (4) the known distribution and / or migration of the species is consistent with its possible / probable occurrence in the state; and (5) the species has probably already occurred in the state, but is currently possibly extinct there. Full notes, including references to nearby records, are presented in Supplementary Material.

Taxon	English Name	Probability of occurrence	Notes
Crypturellus soui (Hermann, 1783)	Little Tinamou	Medium	1
Anas acuta Linnaeus, 1758	Northern Pintail	Low	4
Anas georgica J. F. Gmelin, 1789	Yellow-billed Pintail	Medium	3, 4
Odontophorus capueira (Spix, 1825)	Spot-winged Wood Quail	Low	1, 5
Pterodroma feae (Salvadori, 1899)	Cape Verde Petrel	Medium	4
Pterodroma incerta (Schlegel, 1863)	Atlantic Petrel	Medium	4
Pachyptila desolata (J. F. Gmelin, 1789)	Antarctic Prion	Medium	4
Pachyptila belcheri (Mathews, 1912)	Slender-billed Prion	Medium	4
Procellaria aequinoctialis Linnaeus, 1758	White-chinned Petrel	Medium	4
Calonectris edwardsii (Oustalet, 1883)	Cape Verde Shearwater	Medium	4
Puffinus lherminieri Lesson, 1839	Audubon's Shearwater	Medium	4

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Taxon	English Name	Probability of occurrence	Notes
Fregetta grallaria (Vieillot, 1818)	White-bellied Storm Petrel	Low	4
Pelagodroma marina (Latham, 1790)	White-faced Storm Petrel	Low	4
Oceanodroma castro (Harcourt, 1851)	Band-rumped Storm Petrel	Medium	4
Hydrobates pelagicus (Linnaeus, 1758)	European Storm Petrel	Medium	4
Phaethon aethereus Linnaeus, 1758	Red-billed Tropicbird	Medium	3, 4
Phaethon rubricauda Boddaert, 1783	Red-tailed Tropicbird	Low	3, 4
Phaethon lepturus Daudin, 1802	White-tailed Tropicbird	High	3, 4
Fregata ariel (G. R. Gray, 1845)	Lesser Frigatebird	Low	4
Morus bassanus (Linnaeus, 1758)	Northern Gannet	Low	3, 4
Cochlearius cochlearius (Linnaeus, 1766)	Boat-billed Heron	High	1
Ardeola ralloides (Scopoli, 1769)	Squacco Heron	Medium	3, 4
Ardea cinerea Linnaeus, 1758	Grey Heron	Medium	4
Ardea purpurea Linnaeus, 1766	Purple Heron	Low	4
Egretta tricolor (Statius Muller, 1776)	Tricoloured Heron	Low	3, 4
Egretta gularis (Bosc, 1792)	Western Reef Heron	Medium	4
Egretta garzetta (Linnaeus, 1766)	Little Egret	Low	4
Platalea leucorodia Linnaeus, 1758	Eurasian Spoonbill	Low	4
Harpagus diodon (Temminck, 1823)	Rufous-thighed Kite	High	1, 4
Milvus migrans (Boddaert, 1783)	Black Kite	Low	4
Buteo platypterus (Vieillot, 1823)	Broad-winged Hawk	Medium	3, 4
Spizaetus tyrannus (Wied, 1820)	Black Hawk-Eagle	High	1
Crex crex (Linnaeus, 1758)	Corn Crake	Low	4
Pardirallus nigricans (Vieillot, 1819)	Blackish Rail	Medium	1
Gallinula angulata Sundevall, 1850	Lesser Moorhen	Low	4
Bartramia longicauda (Bechstein, 1812)	Upland Sandpiper	Low	3, 4
Tringa totanus (Linnaeus, 1758)	Common Redshank	Low	4
Calidris ferruginea (Pontoppidan, 1763)	Curlew Sandpiper	Low	3, 4
Calidris pugnax (Linnaeus, 1758)	Ruff	Medium	3, 4
Glareola pratincola (Linnaeus, 1766)	Collared Pratincole	Low	3, 4
Stercorarius skua (Brünnich, 1764)	Great Skua	Medium	4
Stercorarius antarcticus (Lesson, 1831)	Brown Skua	Low	4
Stercorarius longicaudus Vieillot, 1819	Long-tailed Jaeger	Medium	4
Leucophaeus pipixcan (Wagler, 1831)	Franklin's Gull	Medium	4
Larus fuscus Linnaeus, 1758	Lesser Black-backed Gull	Medium	1, 4
Anous minutus Boie, 1844	Black Noddy	Low	4
Gygis alba (Sparrman, 1786)	Common White Tern	Low	4

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Taxon	English Name	Probability of occurrence	Notes
Thalasseus maximus (Boddaert, 1783)	Royal Tern	Low	3, 4
Coccyzus minor (J. F. Gmelin, 1788)	Mangrove Cuckoo	Low	3, 4
Florisuga fusca (Vieillot, 1817)	Black Jacobin	Medium	1, 4
Chelidoptera tenebrosa (Pallas, 1782)	Swallow-winged Puffbird	Low	1, 5
Picumnus pernambucensis J. T. Zimmer, 1947	Pernambuco Piculet	High	1
Falco tinnunculus Linnaeus, 1758	Eurasian Kestrel	Low	4
Pyrrhura griseipectus Salvadori, 1900	Grey-breasted Parakeet	Low	3, 5
Touit surdus (Kuhl, 1820)	Golden-tailed Parrotlet	High	1
Thamnophilus palliatus (M. H. C. Lichtenstein, 1823)	Chestnut-backed Antshrike	Medium	1
Myrmoderus ruficauda (Wied, 1831)	Scalloped Antbird	Low	1, 5
Pyriglena pernambucensis J. T. Zimmer, 1931	Pernambuco Fire-eye	Medium	1, 5
Hylopezus ochroleucus (Wied, 1831)	White-browed Antpitta	Low	2
Sclerurus cearensis E. Snethlage, 1924	Ceara Leaftosser	Low	2
Xiphorhynchus atlanticus (Cory, 1916)	Northern Lesser Woodcreeper	High	1
Dendrocolaptes platyrostris Spix, 1825	Planalto Woodcreeper	High	1
Xiphocolaptes falcirostris (Spix, 1824)	Moustached Woodcreeper	High	1
Automolus lammi J. T. Zimmer, 1947	Pernambuco Foliage-gleaner	Medium	1, 5
Megaxenops parnaguae Reiser, 1905	Great Xenops	Low	2
Synallaxis hypospodia P. L. Sclater, 1874	Cinereous-breasted Spinetail	Low	4
Cranioleuca semicinerea (Reichenbach, 1853)	Grey-headed Spinetail	High	1
Myiobius atricaudus Lawrence, 1863	Black-tailed Flycatcher	Medium	3
Schiffornis turdina (Wied, 1831)	Thrush-like Schiffornis	Medium	1, 5
Iodopleura pipra (Lesson, 1831)	Buff-throated Purpletuft	High	1
Xipholena atropurpurea (Wied, 1820)	White-winged Cotinga	Medium	1
Mionectes oleagineus (M. H. C. Lichtenstein, 1823)	Ochre-bellied Flycatcher	Medium	1
Tolmomyias sulphurescens (Spix, 1825)	Yellow-olive Flycatcher	Medium	1
Tolmomyias poliocephalus (Taczanowski, 1884)	Grey-crowned Flycatcher	Medium	1
Hemitriccus mirandae (E. Snethlage, 1925)	Buff-breasted Tody-Tyrant	Low	2
Zimmerius acer (Salvin & Godman, 1883)	Guianan Tyrannulet	High	1
Phyllomyias fasciatus (Thunberg, 1822)	Planalto Tyrannulet	High	1
Legatus leucophaius (Vieillot, 1818)	Piratic Flycatcher	High	1
Rhytipterna simplex (M. H. C. Lichtenstein, 1823)	Greyish Mourner	Medium	1
Philohydor lictor (M. H. C. Lichtenstein, 1823)	Lesser Kiskadee	Low	1, 5
Tyrannus albogularis Burmeister, 1856	White-throated Kingbird	Low	4
Griseotyrannus aurantioatrocristatus (d'Orbigny & Lafresnaye, 1837)	Crowned Slaty Flycatcher	Low	3, 4
Contopus virens (Linnaeus, 1766)	Eastern Wood Pewee	Low	3, 4

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Taxon	English Name	Probability of occurrence	Notes
Contopus cinereus (Spix, 1825)	Tropical Pewee	Low	3, 4
Progne subis (Linnaeus, 1758)	Purple Martin	High	1, 4
Riparia riparia (Linnaeus, 1758)	Bank Swallow	Medium	4
Catharus fuscescens (Stephens, 1817)	Veery	Low	4
Setophaga fusca (Statius Muller, 1776)	Blackburnian Warbler	Low	3, 4
Geothlypis aequinoctialis (J. F. Gmelin, 1789)	Masked Yellowthroat	Medium	1
Hemithraupis guira (Linnaeus, 1766)	Guira Tanager	High	1
Tiaris fuliginosus (Wied, 1830)	Sooty Grassquit	Medium	1
Sporophila angolensis (Linnaeus, 1766)	Chestnut-bellied Seed Finch	Low	1

Supplementary Material

The database of the Rio Grande do Norte avifauna, an Excel spreadsheet containing all the lists (primary, secondary, tertiary, and potential) with full details and Brazilian Portuguese names, is available on BioOne.

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