

1 **Range Expansion and Breeding of White-cheeked Duck (*Anas bahamensis*)**  
2 **in the High Andes**

3  
4 DIEGO F. CISNEROS-HEREDIA<sup>1,2,3,4\*</sup>, MIRJAYA IZURIETA<sup>1</sup>, EMILIA PEÑAHERRERA,<sup>1,2</sup> AND  
5 MAARTJE MUSSCHENGA<sup>4,5</sup>

6 <sup>1</sup> Universidad San Francisco de Quito USFQ, Colegio de Ciencias Biológicas y Ambientales,  
7 Quito 170901, Ecuador

8 <sup>2</sup> Universidad San Francisco de Quito USFQ, Instituto de Biodiversidad Tropical iBIOTROP,  
9 Museo de Zoología & Laboratorio de Zoología Terrestre, Quito, Ecuador

10 <sup>3</sup> Instituto Nacional de Biodiversidad INABIO, Quito, Ecuador

11 <sup>4</sup> Colectivo ciudadano AvesQuito, Quito, Ecuador

12 <sup>5</sup> Universidad Central de Ecuador, Facultad de Filosofía, Carrera de Pedagogía de las  
13 Ciencias Experimentales Química y Biología, Quito, Ecuador

14 \* Corresponding author; e-mail: [diego.cisnerosheredia@gmail.com](mailto:diego.cisnerosheredia@gmail.com). ORCID: 0000-0002-  
15 6132-2738

16  
17 **Abstract.**—We review the distribution of White-cheeked Duck *Anas bahamensis*  
18 *rubrirostris* in mainland Ecuador and show that the species is expanding its range  
19 significantly. Contrary to published records, *A. b. rubrirostris* has been present in mainland  
20 Ecuador at least since the early 20<sup>th</sup> century, although probably in low numbers. During the  
21 20th century, the species increased its range along the entire coastlands of Ecuador and  
22 nowadays, it has reached the coasts of Colombia. The species has also extended its presence  
23 along the Andes, and we report the first breeding records of *A. b. rubrirostris* in the Andes at  
24 altitudes between 2360–2440 m, the highest across the entire range of the species. We

25 describe the transitioning plumage between duckling–juveniles, which has not been portrayed  
26 in detail before.

27

28 **Keywords.**—Anatidae, Anseriformes, distribution, Ecuador, nesting, plumage, urban  
29 water reservoirs.

30

31

32 White-cheeked Duck (*Anas bahamensis*) is widespread but spottily distributed across the  
33 Caribbean and South America, where it mainly inhabits brackish waters, mangrove swamps,  
34 tidal creeks, estuaries, coastal lagoons, and inland freshwater wetlands, including reservoirs  
35 and sewage ponds (Kear 2005, Erize et al. 2006, Johnsgard 2010, Carboneras and Kirwan  
36 2020). Until the 20th century, highland regular records of *A. bahamensis* were only known at  
37 Lake Alalay, Bolivia (2550 m), and accidental reports at 3700 m at Lake Poopó, Bolivia, and  
38 at 4080 m in Junín, Peru (Bond and Meyer de Schauensee 1943; Fjeldså 1985; Fjeldså and  
39 Krabbe 1990). Since the late 20<sup>th</sup> century, the species has started to disperse into the Andean  
40 highlands of Colombia, Ecuador, and Peru (Schulenberg et al. 2007; Freile et al. 2013;  
41 Astudillo et al. 2015; Freile et al. 2019a; Rodríguez-Villamil and Álvarez-Moya 2020).

42

43 Three subspecies of *Anas bahamensis* are currently recognized: *A. b. bahamensis*  
44 inhabiting the Caribbean and northern Atlantic coasts of South America, south to Brazil; *A. b.*  
45 *galapagensis*, endemic to the Galapagos Archipelago; and *A. b. rubrirostris* from the Pacific  
46 coasts and Southern Cone of South America (Kear 2005; Johnsgard 2010; Carboneras and  
47 Kirwan 2020). Most information on the breeding biology of *A. bahamensis* is based on data  
48 from *A. b. bahamensis* (Sorenson 1992; Sorenson et al. 1992; Kear 2005; Johnsgard 2010;  
49 Davis et al. 2017). Accounts about the southern *Anas b. rubrirostris* report that nesting occurs

50 from April–September along the coasts of Ecuador (Marchant 1958, 1960; RSOLAB7 2020),  
51 October–November in Argentina (Kear 2005), and November–February in Chile (Saratscheff  
52 et al. 1991; Tala and Gabella 1991; Vilina 1995; Rubio C. 1998).

53

54 Knowledge on the distribution and breeding of many Ecuadorian waterbird species is  
55 scarce, and breeding data has usually been inferred from studies from other areas. Herein, we  
56 review the distribution range of *Anas bahamensis rubrirostris* in Ecuador and report the first  
57 breeding records in the high Andes of South America.

58

59

## METHODS

60

61 We made field observations during citizen science activities run by AvesQuito, a citizen  
62 collective that promotes bird watching and urban bird ecology studies, and research projects  
63 of Universidad San Francisco de Quito USFQ. We have periodically birdwatched since 2010  
64 at the Cumbayá Reservoir, Quito Metropolitan District, province of Pichincha, Ecuador (-  
65 0.19483°, -78.42912°, 2360 m) and since 2014 at the Guangopolo Reservoir, Quito  
66 Metropolitan District, province of Pichincha, Ecuador (-0.26927° -78.45366°, 2440 m),  
67 especially for Quito's Christmas Bird Count (Cisneros-Heredia et al. 2015). Intensive bird  
68 censuses were carried out every two weeks between April and September 2015 at the  
69 Cumbayá Reservoir and between 2019 and 2020 at the Guangopolo Reservoir.

69

70

71 We obtained occurrence data from mainland Ecuador from different sources. Published  
72 records were synthesized based on a literature review, not limited by study type, study  
73 design, or language, conducted in Google Scholar™ scholarly text search  
74 (<https://scholar.google.com>) by online searches. We gathered relevant references using the  
75 search terms '*Anas bahamensis*'. Open metadata for all occurrences from mainland Ecuador

75 were downloaded from eBird (<https://ebird.org>) by Cornell Lab of Ornithology (eBird 2020)  
76 and iNaturalist (<https://www.inaturalist.org>) by California Academy of Science and National  
77 Geographic (GBIF 2021). Data search and extraction from all sources were conducted in  
78 March 2020 and updated in April 2021. For each occurrence point, we compiled geographic  
79 data and all other associated information. Protocol for data curation and mining included  
80 validation of localities and duplicate detection. All localities were reviewed and validated  
81 individually, and coordinates were amended when incorrectly georeferenced in the source.  
82 Geographic records of *Anas bahamensis* from mainland Ecuador used for this paper are  
83 available in the Supplementary Material.

84

## 85 RESULTS

86 Marchant (1958, 1960) recorded several *Anas bahamensis (rubrirostris)* between 1954–  
87 1957 in the Santa Elena Peninsula, south-western Ecuador, the first published record in the  
88 country (Ridgely and Greenfield 2001). However, an adult male *A. b. rubrirostris* collected at  
89 the Santa Elena Peninsula on 22 December 1933 (by Philip Hershkovitz and deposited at the  
90 bird collection of Museum of Zoology, University of Michigan; UMMZ 91899, GBIF 2021)  
91 provides evidence that the species has been present on the coast of Ecuador at least since the  
92 early 20<sup>th</sup> century—though probably rare based on the lack of collections by expeditions  
93 visiting the area during the late 19<sup>th</sup> century (Chapman 1926). Interestingly, *A. bahamensis*  
94 was the most abundant duck at La Carolina, a late Pleistocene site in the Santa Elena  
95 Peninsula (Campbell, Jr. 1976), suggesting that the species' abundance has fluctuated in the  
96 region, most probably due to environmental changes.

97

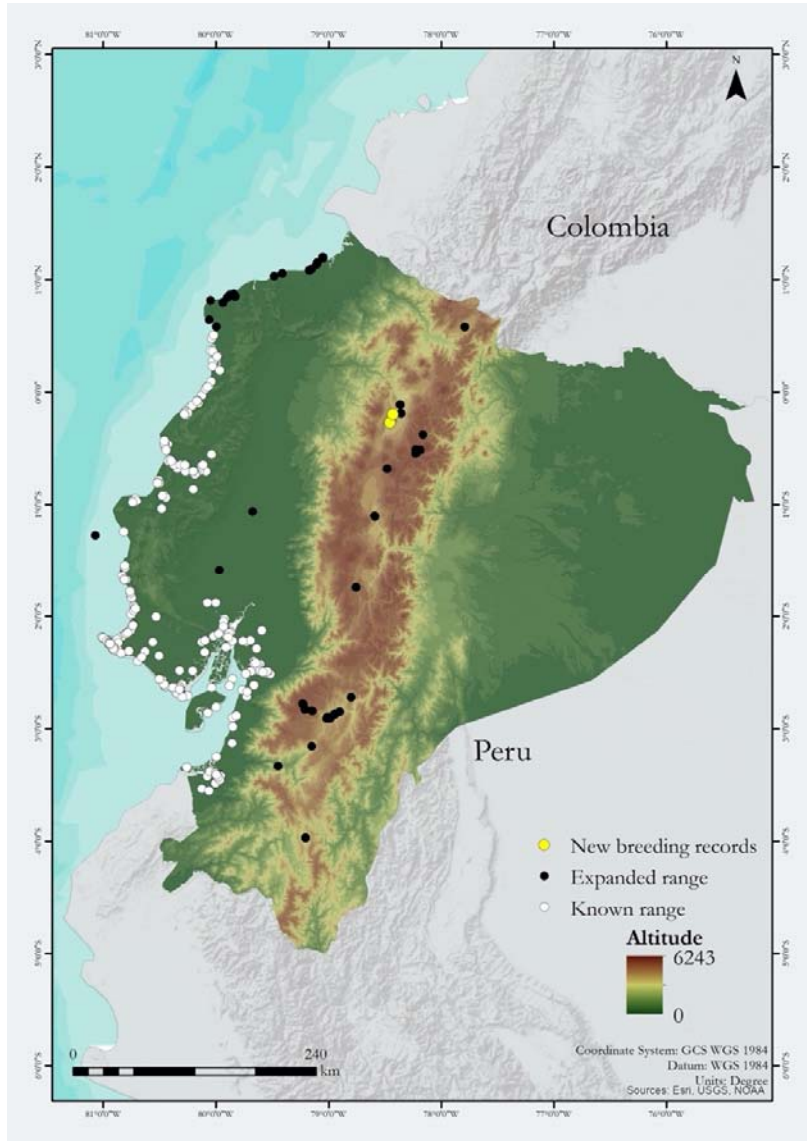
98 During the 20<sup>th</sup> century, *A. bahamensis rubrirostris* increased its range along the Pacific  
99 coastlands of Ecuador, becoming locally common below 50 m and evaluated as a non-

100 threatened subspecies in the country (Ridgely and Greenfield 2001, Santander et al. 2013,  
101 Freile and Restall 2018, Freile et al. 2019b, eBird 2020, GBIF 2021). There are few inland  
102 records on the western lowlands of Ecuador, mainly on the floodplains and rice paddies  
103 between Quevedo and Guayaquil (Fig 1) (eBird 2020, GBIF 2021). Ridgely and Greenfield  
104 (2001) reported the northernmost Ecuadorian locality of the species in Atacames, province of  
105 Esmeraldas, where it has been observed since the 1990s. Solano-Ugalde et al. (2009)  
106 evidenced that the species kept advancing north, observing it just 40 km S from the  
107 Colombian border (Fig. 1). *Anas bahamensis* was unknown from the Pacific coasts of  
108 Colombia until 2013, when Calderón et al. (2013) reported it from the Mar Agrícola farm, in  
109 the department of Nariño, ca. 27 km from the Ecuadorian border. Subsequently, there are  
110 records of the species up to Buenaventura, department of Valle del Cauca, Colombia, since  
111 2015 (eBird 2020).

112

113 The first high altitude reports of *A. bahamensis* in Ecuador was at La Mica Lagoon (3900  
114 m) in 2002 (Lock et al. 2003), where it was recorded again in 2005 and 2006 (eBird 2020,  
115 GBIF 2021). Subsequently, it has been recorded at several highland wetlands, including (only  
116 first record cited): Cumbaya reservoir (2360 m elevation) in 2009 (Freile et al. 2013);  
117 Llaviucu lagoon, Cajas National Park (3160 m) in 2009 (Astudillo et al. 2015); El Paraiso  
118 park (2490 m) in 2009 and Ucubamba reservoir (2415 m) in 2012 (Astudillo Webster and  
119 Siddons 2013); Quito Airport pond (2350 m) in 2015 (Boyla and Sanchez 2015); Guangopolo  
120 reservoir (2440m ) in 2017 (Bedoya 2017); Colta lagoon (3310) in 2017 (Morocho 2017); El  
121 Salado lagoon (2780 m) in 2017 and Yaguarcocha lagoon (2200 m) in 2018 (Loaiza  
122 Bosmediano 2017; Freile et al. 2019a), Jipiro park (2030 m) in 2018 (Hefty 2018), and  
123 Yambo lagoon (2600 m) in 2020 (Fattorelli 2020). Records of *Anas bahamensis* across the  
124 Andean highlands of Ecuador are becoming more recurrent. The species is present year-

125 round in low numbers at the Cumbaya, Guangopolo and Ucubamba reservoirs and the  
126 artificial ponds of El Paraíso Park and Museo Pumapungo (pers. obs.; eBird 2020, GBIF  
127 2021).



128

129 **Figure 1.** Map of Ecuador showing the distribution range of White-cheeked Duck *Anas*  
130 *bahamensis rubrirostris*. White dots: Records until the late 1990s. Black dots: Records since  
131 the early 2000's, showing the range expansion towards the northern coast, inland western  
132 lowlands, and Andean highlands. Yellow dots: New highest breeding records.

133 On 26 June 2015, a female *A. bahamensis* was observed with eight ducklings swimming in  
134 the southern pool of the Cumbaya reservoir (Fig. 2). Ducklings were still covered by down  
135 but transitioning to juvenile plumage: face grayish-cream, superciliary band grayish-cream  
136 and faint, dark line from eye to nape diffuse, foreneck dark gray, cheeks whitish, lines on  
137 sides of back whitish and soft, ventral surfaces whitish with faint lateral stripes, bill bluish  
138 gray with light pink wash at the base, eyes brown (Fig. 2). The female and her offspring were  
139 either preening or swimming between the northern and southern pools until 06 August 2015.  
140 During mid-August, the northern pools were cleaned for sediment removal, and the juveniles  
141 were not seen subsequently, but three adults were observed regularly.

142

143 Between 13–16 November 2019, a female *A. bahamensis* with two ducklings were  
144 swimming in a narrow channel, part of the Guangopolo reservoir. On 17 November 2019,  
145 two adults were sitting on the channel wall, but there was no trace of the ducklings, and they  
146 were not seen subsequently. On 15 July 2020, an adult female with eight ducklings covered  
147 by down were swimming in the same channel of the Guangopolo reservoir as in November  
148 2019 (Fig. 3). Duckling plumage is overall the same as described by Carboneras and Kirwan  
149 (2020) and Kear (2005). However, lines on the back were yellow, not whitish, especially in  
150 the younger ducklings, and there was a brown spot under the eye line, also more visible in the  
151 younger ducklings. By 30 July 2020, ducklings were transitioning to juvenile plumage, but  
152 the face, cheeks and neck were still yellow, although drabber than in ducklings (Fig. 3). On  
153 04 August 2020, the reservoir was cleaned for sediment removal, and the ducklings were not  
154 seen anywhere. On 23 August 2020, the reservoir's water level was average again, and nine  
155 *A. bahamensis* were observed. All ducks had adult size, but bill and plumage were not as  
156 bright as in adults suggesting they were juveniles. Their head was smaller and less round,  
157 head plumage looked a bit fluffy or downy, and the base of the bill was narrow and ended



158 wider, whereas, in adults, the width of the bill seemed more constant. On 04 September 2020,  
159 two juveniles (bill and plumage less bright than adult) were swimming next to each other in  
160 the channel. In October 2020, two or three adults and up to five juveniles were in the  
161 reservoir (Fig. 3). Subsequently, 8–15 *A. bahamensis* were regular at the Guangopolo  
162 reservoir until December 2020, suggesting that the juveniles stayed.



163



164

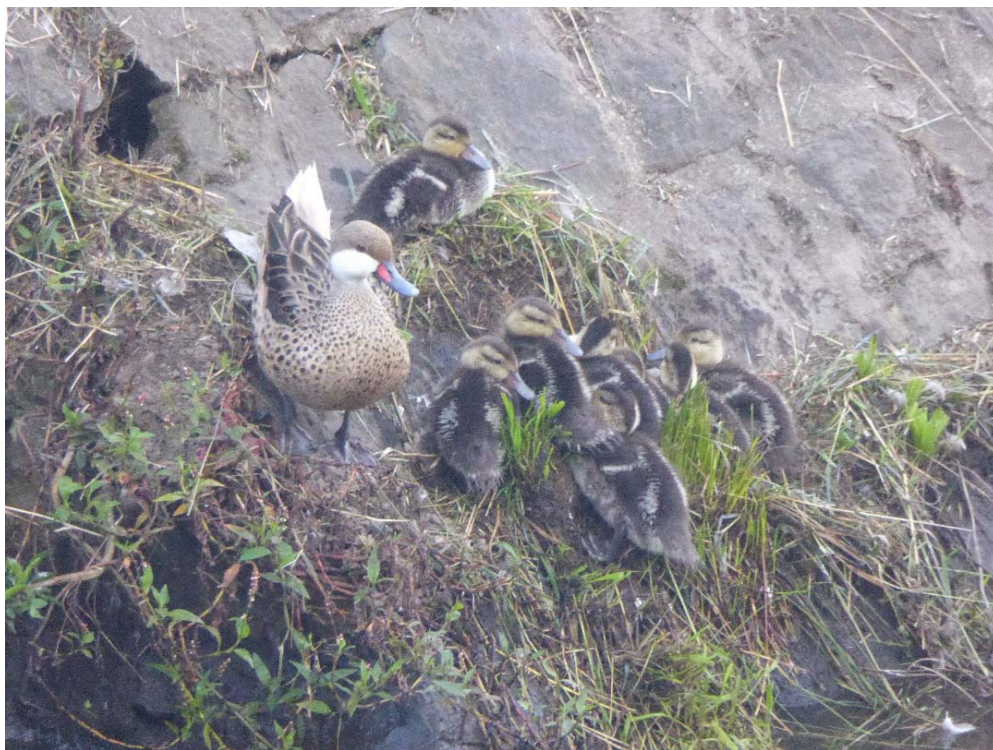
165 **Figure 2.** Adult female and eight ducklings of White-cheeked Duck *Anas bahamensis*  
166 *rubrirostris* at the Cumbaya reservoir, Quito Metropolitan District, province of Pichincha,  
167 Ecuador, on 26 June 2015.

168





169



170

171 **Figure 3.** Adult female and eight ducklings of White-cheeked Duck *Anas bahamensis*  
172 *rubrirostris* at the Guangopolo reservoir, Quito Metropolitan District, province of Pichincha,  
173 Ecuador, 15 July 2020 (upper) and 30 July 2020 (lower).



174

175 **Figure 4.** Juvenile of White-cheeked Duck *Anas bahamensis rubrirostris* at the Guangopolo  
176 reservoir, Quito Metropolitan District, province of Pichincha, Ecuador, 01 October 2020.

177

178

#### DISCUSSION

179

180

181

182

183

184

185

186

187

188

189

190

These are the highest breeding records of *A. bahamensis* across its distribution and evidence that the species may be starting to establish self-sustaining populations in the Andean highlands. Reproductive biology was within the reported ranges for brood size, parental care, and fledging time (Kear 2005; Carboneras and Kirwan 2020). Breeding seasonality in the Andes of Ecuador mostly coincides with that reported along the coastlands (April-September), although we also recorded a breeding event in November. All breeding records or long-standing populations in the Andes are in human-made wetlands, probably due to lower impacts by human disturbances, lower predation by domestic and feral dogs and cats (since access to all reservoirs and artificial ponds is controlled), and relatively constant water levels.

191 ACKNOWLEDGEMENTS

192 We would like to thank Empresa Eléctrica Quito EEQ for the permission to access  
193 Cumbaya and Guangopolo reservoirs; all members and citizen scientists of AvesQuito for  
194 their enthusiastic and constant support; Universidad San Francisco de Quito USFQ, Instituto  
195 iBIOTROP, Museo de Zoología and Laboratorio de Zoología Terrestre for logistical and  
196 financial support; and xx reviewers for the comments on the manuscript. This paper was  
197 possible thanks to the contribution of a wealth of naturalists continuously contributing to  
198 eBird and iNaturalist; to scientific collections publishing their curated catalogues in GBIF,  
199 and to the Biodiversity Heritage Library for making important literature freely available. This  
200 work was supported by Universidad San Francisco de Quito USFQ through research projects  
201 (HUBI ID 33 “Diversidad, historia natural, biogeografía y conservación de las aves del  
202 Ecuador”, 35 “Estudio de la biodiversidad en áreas urbanas y rurales”, 1057 “Impact of  
203 habitat changes on the biological diversity of the northern tropical Andes”, 5452 “Estrés en  
204 aves en matrices urbano-rurales en los Andes tropicales”); outreach projects (HUBI ID 278,  
205 292, 483, 607 “Celebrando la Naturaleza: Ciencia ciudadana y educación Ambiental para  
206 valorar la biodiversidad”), and operative funds assigned to Instituto iBIOTROP, Museo de  
207 Zoología and Laboratorio de Zoología Terrestre.

208

209 LITERATURE CITED

210 Astudillo PX, Tinoco BA, Siddons DC. 2015. The avifauna of Cajas National Park and  
211 Mazán Reserve, southern Ecuador, with notes on new records. *Cotinga* 37: 2–12.  
212 Astudillo Webster P, Siddons DC. 2013. Avifauna de Santa Ana de los Cuatro Ríos de  
213 Cuenca. Comisión de Gestión Ambiental de Cuenca, Municipalidad de Cuenca,  
214 Universidad del Azuay, Cuenca, Ecuador.

- 215 Bedoya J (2017) eBird Checklist - 29 Jan 2017 - Reservorio Guangopolo - 35 species. eBird.  
216 <https://ebird.org/checklist/S34043296>. Accessed 10 Apr 2021
- 217 Bond J, Meyer de Schauensee R (1943) The Birds of Bolivia. Part II. Proceedings of the  
218 Academy of Natural Sciences of Philadelphia. 95:167–221
- 219 Boyla KA, Sanchez M (2015) eBird Checklist - 5 Dec 2015 - Quito airport pond - 16 species.  
220 In: eBird. <https://ebird.org/checklist/S26138606>. Accessed 10 Apr 2021
- 221 Calderón JJ, Rosero Y, Ramírez F, et al (2013) Nuevos registros de aves para Nariño y su  
222 costa Pacífica. Boletín GAICA 4:5–10
- 223 Campbell, Jr. KE (1976) The Late Pleistocene Avifauna of La Carolina, Southwestern  
224 Ecuador. Smithsonian Contributions to Paleobiology 27:155–168
- 225 Carboneras C, Kirwan GM (2020) White-cheeked Pintail (*Anas bahamensis*). Birds of the  
226 World version 1.0
- 227 Chapman FM (Frank M (1926) The distribution of bird-life in Ecuador: a contribution to a  
228 study of the origin of Andean bird-life. Bulletin of the AMNH 55: 1–784.
- 229 Cisneros-Heredia DF, Amigo X, Arias D, et al (2015) Reporte del 1er Conteo Navideño de  
230 Aves de Quito, Ecuador. ACI Avances en Ciencias e Ingenierías 7(2): 37–51.  
231 <https://doi.org/10.18272/aci.v7i2.256>
- 232 Davis JB, Vilella FJ, Lancaster JD, et al (2017) White-cheeked Pintail duckling and brood  
233 survival across wetland types at Humacao Nature Reserve, Puerto Rico. The Condor  
234 119:308–320. <https://doi.org/10.1650/CONDOR-16-169.1>
- 235 eBird (2020) eBird: An online database of bird distribution and abundance [web application].  
236 Cornell Lab of Ornithology, Ithaca, NY
- 237 Erize F, Rodríguez Mata J, Rumboll M (2006) Birds of South America: non-passerines: rheas  
238 to woodpeckers. Princeton University Press, Princeton, NJ.



- 239 Fattorelli C (2020) eBird Checklist - 30 Jan 2020 - Laguna de Yambo - 28 species. eBird.  
240 <https://ebird.org/checklist/S63939210>. Accessed 10 Apr 2021.
- 241 Fjeldså J (1985) Origin, Evolution, and Status of the Avifauna of Andean Wetlands.  
242 Ornithological Monographs 36: 85–112.
- 243 Fjeldså J, Krabbe N (1990) Birds of the high Andes: a manual to the birds of the temperate  
244 zone of the Andes and Patagonia, South America. Zoological Museum, University of  
245 Copenhagen, Copenhagen, Denmark.
- 246 Freile J, Restall R (2018) Birds of Ecuador. Bloomsbury Publishing, London, UK.
- 247 Freile J, Solano-Ugalde A, Brinkhuizen D, et al (2019a) Fourth report of the Committee for  
248 Ecuadorian Records in Ornithology (CERO) and a revision of undocumented and  
249 erroneous records in the literature. *Revista Ecuatoriana de Ornitología* 5:52–79.  
250 <https://doi.org/10.18272/reo.vi5.1277>
- 251 Freile JF, Ahlman R, Brinkhuizen DM, et al (2013) Rare birds in Ecuador: first annual report  
252 of the Committee of Ecuadorian Records in Ornithology (CERO). *ACI Avances en*  
253 *Ciencias e Ingenierías (Quito)* 5: 24–41. <https://doi.org/10.18272/aci.v5i2.135>
- 254 Freile JF, Santander T, Jiménez-Uzcátegui G, et al (2019b) Lista Roja de las Aves del  
255 Ecuador. Ministerio del Ambiente, Aves y Conservación, Comité Ecuatoriano de  
256 Registros Ornitológicos, Fundación Charles Darwin, Universidad del Azuay, Red Aves  
257 Ecuador, Universidad San Francisco de Quito USFQ, Quito, Ecuador.
- 258 GBIF (2021) GBIF Occurrence Download [*Anas bahamensis* Linnaeus, 1758 Ecuador eBird  
259 & iNaturalist]. DOI: 10.15468/DL.WHGPND
- 260 Hefty J (2018) eBird Checklist - 9 Dec 2018 - Jipiro Park - 5 species. eBird.  
261 <https://ebird.org/checklist/S50973338>. Accessed 10 Apr 2021
- 262 Johnsgard PA (2010) Ducks, geese, and swans of the world. University of Nebraska-Lincoln  
263 Libraries, Lincoln, NE.

- 264 Kear J (ed) (2005) Ducks, geese, and swans. Oxford University Press, Oxford, UK.
- 265 Loaiza Bosmediano JM (2017) eBird Checklist - 9 Jul 2017 - Laguna El Salado - 8 species.
- 266 eBird. <https://ebird.org/checklist/S38069818>. Accessed 10 Apr 2021
- 267 Marchant S (1958) The birds of the Santa Elena Peninsula, S.W. Ecuador. Ibis 100:349–387.
- 268 <https://doi.org/10.1111/j.1474-919X.1958.tb00404.x>
- 269 Marchant S (1960) The breeding of some S.W. Ecuadorian birds. Ibis 102(4):584–599
- 270 Morocho T (2017) eBird Checklist - 21 Jan 2017 - Laguna de Colta - 15 species. eBird.
- 271 <https://ebird.org/checklist/S34119540>. Accessed 10 Apr 2021
- 272 Ridgely RS, Greenfield PJ (2001) The birds of Ecuador. Comstock/Cornell Paperbacks,
- 273 Cornell University Press, Ithaca, NY.
- 274 Rodriguez-Villamil DR, Álvarez-Moya WA (2020) Distribución y nuevos registros del Pato
- 275 Cariblanco (*Anas bahamensis*) en Colombia. Boletín SAO 29:6–13
- 276 RSOLAB7 (2020) White-cheeked Pintail (*Anas bahamensis*). iNaturalist.
- 277 <https://www.inaturalist.org/observations/60418827>. Accessed 10 Apr 2021
- 278 Rubio C. M (1998) Nidificación de pato gargantillo (*Anas bahamensis*) en la Región
- 279 Metropolitana. Boletín Chileno de Ornitología 5:30–31
- 280 Santander T, Ágreda A, Lara A (2013) Censo Neotropical de Aves Acuáticas Ecuador 2008–
- 281 2012. Aves y Conservación, Quito, Ecuador.
- 282 Saratscheff P, Gabella JP, Tala C (1991) Un breve recorrido por algunos humedales costeros
- 283 de la V región. Boletín Informativo Unión de Ornitólogos de Chile UNORCH 11:16–17
- 284 Schulenberg TS, Stotz DF, Lane DF, et al (2007) Birds of Peru, Revised and updated edition.
- 285 Princeton University Press, Princeton, NJ.
- 286 Solano-Ugalde A, Freile JF, Moscoso P, Prieto-Albuja F (2009) New and confirmative bird
- 287 records from northern Esmeraldas province, Ecuador. Cotinga 31: 115–118.



- 288 Sorenson LG (1992) Variable Mating System of a Sedentary Tropical Duck: The White-  
289 Cheeked Pintail (*Anas bahamensis bahamensis*). *The Auk* 109:277–292.  
290 <https://doi.org/10.2307/4088196>
- 291 Sorenson LG, Woodworth BL, Ruttan LM, McKinney F (1992) Serial monogamy and double  
292 brooding in the White-cheeked (Bahama) Pintail *Anas bahamensis*. *Wildfowl* 43:156–159
- 293 Tala C, Gabella JP. 1991. Observaciones breves. *Boletín Informativo Unión de Ornitólogos*  
294 de Chile UNORCH 12:9–10
- 295 Vilina Y (1995) Residencia, abundancia y preferencia de habitat del pato gargantilla (*Anas*  
296 *bahamensis*) en el humedal “Estero el Yali”, Chile central. *Anales del Museo de Historia*  
297 *Natural de Valparaíso* 23:89–94.
- 298
- 299