

Catalogue of Cuban fossil and subfossil birds

Author: Suárez, William

Source: Bulletin of the British Ornithologists' Club, 142(1) : 10-74

Published By: British Ornithologists' Club

URL: <https://doi.org/10.25226/bboc.v142i1.2022.a3>

The BioOne Digital Library (<https://bioone.org/>) provides worldwide distribution for more than 580 journals and eBooks from BioOne's community of over 150 nonprofit societies, research institutions, and university presses in the biological, ecological, and environmental sciences. The BioOne Digital Library encompasses the flagship aggregation BioOne Complete (<https://bioone.org/subscribe>), the BioOne Complete Archive (<https://bioone.org/archive>), and the BioOne eBooks program offerings ESA eBook Collection (<https://bioone.org/esa-ebooks>) and CSIRO Publishing BioSelect Collection (<https://bioone.org/csiro-ebooks>).

Your use of this PDF, the BioOne Digital Library, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Digital Library content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne is an innovative nonprofit that sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Catalogue of Cuban fossil and subfossil birds

by William Suárez

Received 4 July 2021; revised 17 December 2021; published 11 March 2022

<http://zoobank.org/urn:lsid:zoobank.org:pub:4C9216EC-E822-4CC7-A163-6E96CFB3078F>

SUMMARY.—All information relating to the Cuban palaeo-avifauna since the first published list in 1928 to the present, is summarised and presented as a catalogue with commentary. I update data on the composition, systematics and distribution of fossil and subfossil birds from Quaternary (Late Pleistocene-Holocene interval) deposits in Cuba, with a necessary critical review. Thirty-six taxa (30 extinct, two poorly represented and apparently also extinct, and four extirpated) are listed as valid records in Section I, under 14 families, with Teratornithidae the only extinct family grouping. Birds of prey and scavengers constitute 72.2% of these taxa, with Accipitridae (22.2%) and Falconidae (16.6%) the best represented, followed by nocturnal raptors. Sections II and III comment on and discuss material referred to 29 taxa, of which one is of dubious identity and the others misidentified and / or synonymised at class, family, genus or species level. Cuban neospecies currently known in paleontological localities throughout the archipelago are listed in Section IV; 49 are identified (14 considered today as endemic species, including six endemic genera) in 26 families.

In memoriam: Storrs L. Olson (1944–2021), mentor, friend and partner in the study of fossil birds

During 1911 and 1918, Carlos de la Torre, his assistant Víctor Rodríguez (both from Universidad de La Habana), Barnum Brown (American Museum of Natural History, New York), and allied personnel, conducted extensive field work at Quaternary fossil localities in central Cuba, especially in spring deposits at Baños de Ciego Montero, Cienfuegos province (Goldberg *et al.* 2017). The first mention of Cuban fossil birds—for the living avifauna of Cuba see Kirkconnell *et al.* (2020)—was published by Brown (1913: 228) with news of bones secured there along with remains of other vertebrates, including a remarkable mammalian assemblage (see Matthew 1931, Aguayo 1950, Williams 1950, Álvarez Conde 1951). Also in 1913, the Links collected fossil material, including of birds, from the western part of the archipelago (Peterson 1917; see Holland 1917: 356, Anthony 1919: 625) in a Quaternary cave deposit at Sierra de Caballos, Isla de Pinos (now Isla de La Juventud). Being more explicit than Brown on the avian specimens, Peterson (1917: 359) described the material as in ‘semi-petrified condition’ where ‘few limb-bones of snipes and small herons are represented’. At the end of excavations in Ciego Montero, a small collection (11 specimens) of bird elements emerged. Eight taxa were identified (Wetmore 1928), with two extinct, one extirpated and one intrusive.

The geologist Roy E. Dickerson discovered fossils (see Chawner 1932), including those of birds in a ‘tar pit near Hato Nuevo [now Martí]’, a locality currently known as ‘Las Breas de San Felipe’, Matanzas province, western Cuba, and the only fossil deposit of its kind in the Greater Antilles (Iturralde-Vinent 1998, Iturralde-Vinent *et al.* 1999, 2000). Some specimens were collected there in early 1933 (see Berry 1934: 237, Richards 1935: 255–256, Williams 1950: 7) by Dickerson, Pedro J. Bermúdez (both from the Atlantic Refining Company) and Horace G. Richards (New Jersey State Museum, Trenton), and

sent to Carlos de la Torre, but never studied (Iturralde-Vinent *et al.* 2000: 300). The next notable event was in 1947, when Abelardo Moreno (Museo Felipe Poey, La Habana) sent to Alexander Wetmore (Smithsonian Institution, Washington DC), two fossils of a large extinct raptor (genus *Ornimegalonyx* Arredondo, see Suárez 2020b), from the former Oriente (now Santiago de Cuba) province, eastern Cuba (Arredondo & Olson 1994) that was identified and considered to be a giant barn owl (genus *Tyto* Billberg) for some time (Wetmore 1959: 15, Brodkorb 1959: 357, Olson's footnote in Arredondo 1976: 172, Olson 1978: 105).

In the second half of the 20th century, studies of fossil vertebrates in Cuba were greatly enhanced by the dedication of Prof. Oscar Arredondo (1918–2001). Arredondo's explorations, discoveries and publications on fossil birds during his lifetime added significant advances to Cuban avian paleontology (Arredondo Antúnez 2007, see also Álvarez Conde 1957: 247–248, Olson 1978: 101). Wetmore (1956, 1959) and Brodkorb (1963, 1964, 1971, 1978) listed Cuban fossil birds, including those recorded by Wetmore (1928) and described by Arredondo (1958, 1970a) and Brodkorb (1969). These were treated in more detail by Arredondo (1984) in *Sinopsis de las aves halladas en depósitos fosilíferos pleistoholocénicos de Cuba* ['Synopsis of the birds found in Pleisto-Holocene fossil deposits of Cuba'], with the addition of most of the birds named and identified by Fischer (1968, 1970, 1977), Fischer & Stephan (1971a,b), Arredondo (1972a,b,c, 1982), Olson (1974) and Acevedo-González & Arredondo (1982), plus all others recovered, or then known, from Quaternary deposits throughout the archipelago. The 'synopsis' has been, for almost four decades, the main source of information for palaeontologists and archaeologists dealing with Cuban avian remains.

The catalogue of Cuban fossil and subfossil birds has been changing since 1984 (see Section I) by deletions, records of additional extinct and/or extirpated taxa, and descriptions of new genera and species for science (Olson 1985, Arredondo & Olson 1994, Suárez & Arredondo 1997, Suárez 2000a, 2001a,b, 2004a,b, 2020a,b, Suárez & Olson 2001a,b, 2003a,b,c, 2009a, 2015, 2020a,b, 2021, Arredondo & Arredondo 2002a,b, Olson & Suárez 2008a, Steadman & Takano 2016), with consequent modifications in composition, systematics and distribution of the palaeo-avifauna. Thirty-six taxa (including extinct and extirpated) are currently known in the palaeontological record of Cuba (see summary in Table 1). The present catalogue updates and critically summarises all data concerning Cuban palaeornithology since Wetmore's pioneering list published on 29 February 1928.

Material and Methods

The catalogue is divided into four sections: Section I: Extinct (+) & Extirpated (×) Taxa; Section II: Species of Dubious Identity; Section III: Misidentified & Synonymised Taxa; and Section IV: Cuban Neospecies in Fossil Deposits.

Only paleontological records are presented, with archaeological (pre- or post-Columbian) and recent (Late Holocene) material, usually derived from barn owl (= *Tyto*) pellets, excluded, or only mentioned for particular taxa or as incidental comments. In section I, under 'History', are summaries of relevant dates when known, in the history of some extinct birds, e.g., related to discovery, type material, taxonomy, etc. 'Other material' includes all specimens (mostly paratypes) mentioned in the original description of each taxon, other than the holotype. Distribution of taxa by their respective localities (= Late Pleistocene-Holocene deposits), are ordered from west to east, using an identification key (Appendix, Fig. 1). Each taxon is indicated following the publication in which it has been recorded and cited as appears in the original source, if the nomenclature is different from that used herein. For species with wider distribution (continental and/or insular), information provided under 'Referred material' and 'Distribution' is restricted

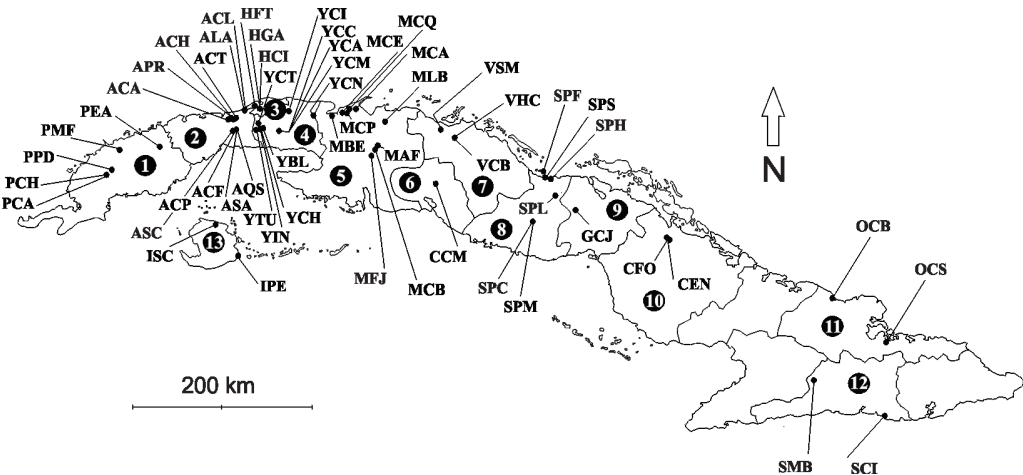


Figure 1. Distribution of Quaternary deposits in Cuban territory.

to Quaternary fossil localities in Cuba. Figures and/or drawings (*) from the literature are cited (when they exist) for each specimen, with their respective views indicated in brackets. Information concerning types and specimens that constitute first records to Cuba, with their localities and related bibliography, is summarised in Table 1. Acronyms, ordered alphabetically by collections and/or institutions from the USA, Cuba and France as follows: AMNH (American Museum of Natural History, New York), Av. (acronym as in Fischer & Stephan 1971a,b; Universidad de La Habana, La Habana; specimens currently in other Cuban collections are indicated in each case), CAZGA (Colección Arqueozoológica del Gabinete de Arqueología, Oficina del Historiador de La Habana, La Habana), CLV (Lazaro W. Viñola, Matanzas), CZACC (Colecciones del Instituto de Zoología, Academia de Ciencias de Cuba, now at Instituto de Ecología y Sistemática, La Habana), DPUH (Departamento de Paleontología de la Universidad de La Habana, La Habana), GEC (Grupo de Exploraciones Científicas, Cuba), GEPAB (Grupo Espeleológico Pedro A. Borrás, La Habana), IGP/ACC (Instituto de Geología y Paleontología, Academia de Ciencias de Cuba, La Habana), LACM (Natural History Museum of Los Angeles County, California), LMR (Luis M. Rodríguez, Holguín), MCZ (Museum of Comparative Zoology, Harvard University, Cambridge, MA), MNHN (Muséum national d'Histoire naturelle, Paris), MNHNCu (Museo Nacional de Historia Natural de Cuba, La Habana), OA (Oscar Arredondo, La Habana), OJ (Osvaldo Jiménez, La Habana), PB (Pierce Brodkorb, University of Florida, Gainesville), SEC (Sociedad Espeleológica de Cuba), UCMP (University of California Museum of Paleontology, Berkeley), UF (University of Florida, Gainesville), USNM (National Museum of Natural History, Smithsonian Institution, Washington DC; collections at the Department of Paleobiology with the acronym PAL, cited sporadically in recent literature) and WS (William Suárez, La Habana). Systematic arrangement follows the last edition of the American Ornithologists' Union (AOU 1998) and its supplements, except the extant White-winged Barn Owl *Tyto furcata* (Temminck, 1827), considered a full, insular species from Cuba, Jamaica and Cayman Islands (Suárez & Olson 2015, 2020a). Authors' names and titles of papers appear in 'References' without modifications from their original sources, with corrections indicated when necessary and in those cases, authors cited in the text as corrected. Osteological terminology is from Howard (1929).

TABLE 1

Extinct (†) and extirpated (×) fossil and subfossil birds with holotypes and specimens that constitute first records in Quaternary deposits in Cuba.

Taxon	Specimen(s)	Locality	Bibliography
1. † <i>Siphonorhis daiquiri</i> Olson, 1985	*Distal half of right tarsometatarsus (USNM 336506).	*Cueva de los Indios (SCI), Santiago de Cuba, Santiago de Cuba.	Olson 1985, <i>Proc. Biol. Soc. Wash.</i> 98: 528.
2. † <i>Nesotrochis picapicensis</i> (Fischer & Stephan, 1971)	*Left humerus (Av. 832/67 [as ' <i>Fulica picapicensis</i> ']).	*Caverna de Pío Domingo (PPD), Minas de Matahambre, Pinar del Río.	Fischer & Stephan 1971b, <i>Wiss. Zeitsch. Humboldt-Univ. Berlin, Math.-Nat. R.</i> 20: 595.
3. † <i>Antigone cubensis</i> (Fischer & Stephan, 1971)	*Skull with its respective mandible and left quadrate (Av. 1/67 [as ' <i>Grus cubensis</i> ']).	*Caverna de Pío Domingo (PPD), Minas de Matahambre, Pinar del Río.	Fischer & Stephan 1971a, <i>Wiss. Zeitsch. Humboldt-Univ. Berlin, Math.-Nat. R.</i> 20: 565.
4. × <i>Burhinus bistriatus</i> (Wagler, 1829)	Distal ends of left (OA 2958) and right (OA 2959) humeri (as ' <i>Burhinus</i> sp.').	Cueva de Paredones (ACP), Caimito, Artemisa.	Arredondo 1984, <i>Rep. Invest. Inst. Zool.</i> 17: 16 (see Suárez 2020a).
5. † <i>Gallinago kakuki</i> Steadman & Takano, 2016	Right humerus (MNHNCu 75.4709 [as ' <i>Capella</i> sp.']).	Cueva El Abrón (PEA), Los Palacios, Pinar del Río.	Suárez 2004b, <i>Carib. J. Sci.</i> 40: 155 (see Steadman & Takano 2016).
6. † <i>Ciconia maltha</i> L. Miller, 1910	Distal left tibiotarsus (AMNH unnumbered) and proximal right (AMNH unnumbered) tarsometatarsus (as ' <i>Jabiru mycteria</i> ').	Baños de Ciego Montero (CCM), Palmira, Cienfuegos.	Wetmore 1928, <i>Amer. Mus. Novit.</i> 301: 2 (see Howard 1942).
7. <i>Ciconia</i> sp.	Distal end of right tibiotarsus (MNHNCu 75.4599).	Las Breas de San Felipe (MLB), Martí, Matanzas.	Suárez & Olson 2003a, <i>Condor</i> 105: 151.
8. † <i>Mycteria wetmorei</i> Howard, 1935	Proximal end of right carpometacarpus (MNHNCu 75.4602), distal end of right tibiotarsus (MNHNCu 75.4603), proximal end of left tarsometatarsus (juvenile, MNHNCu 75.4604), distal end of right tarsometatarsus (MNHNCu 75.4605).	Las Breas de San Felipe (MLB), Martí, Matanzas.	Suárez & Olson 2003a, <i>Condor</i> 105: 151.
9. × <i>Tigrisoma mexicanum</i> Swainson, 1834	Left tarsometatarsus (AC-33).	Casimba en los Buentes (VCB), Mal Páez, Villa Clara.	Olson & Suárez 2008a, <i>Waterbirds</i> 31: 285.
10. † <i>Oscaravis olsoni</i> Arredondo & Arredondo, 2002	*Right femur (IGP/ACC 400–649 [as ' <i>Teratornis</i> sp.']).	*Cueva de Paredones (ACP), Caimito, Artemisa.	Suárez & Arredondo 1997, <i>El Pitirre</i> 10: 101 (see Arredondo & Arredondo 2002b, Suárez & Olson 2009a).
11. † <i>Gymnogyps varonai</i> (Arredondo, 1972)	*Proximal fragmentary left tarsometatarsus (DPUH 1254 [as ' <i>Antillovultur varonai</i> ']).	*Cueva de Paredones (ACP), Caimito, Artemisa.	Arredondo 1972c, <i>Mem. Soc. Cienc. Nat. La Salle</i> 31: 310 (see Suárez & Emslie 2003).
12. † <i>Coragyps seductus</i> Suárez, 2020	*Left tarsometatarsus (MNHNCu 75.4719).	*Las Breas de San Felipe (MLB), Martí, Matanzas.	Suárez 2020a, <i>Zootaxa</i> 4780: 12.
13. † <i>Cathartes emsliei</i> Suárez & Olson, 2020	*Proximal half of left tarsometatarsus (MNHNCu 75.4752).	*Las Breas de San Felipe (MLB), Martí, Matanzas.	Suárez & Olson 2020b, <i>Bull. Brit. Orn. Cl.</i> 140: 335.
14. † <i>Gigantohierax suarezi</i> Arredondo & Arredondo, 2002	*Left femur (MNHNCu 75.574).	*Cueva de Sandoval (ASA), Caimito, Artemisa.	Arredondo & Arredondo 2002a, <i>Poeyana</i> 470–475: 10.

Taxon	Specimen(s)	Locality	Bibliography
15. † <i>Gigantohierax itchei</i> Suárez, 2020	*Distal third of right tarsometatarsus lacking trochlea IV (MNHNCu 75.4869).	*Las Breas de San Felipe (MLB), Martí, Matanzas.	Suárez 2020a, <i>Zootaxa</i> 4780: 25.
16. <i>Buteogallus</i> cf. † <i>B. fragilis</i> (L. Miller, 1911)	Distal end of right tibiotarsus (MNHNCu 75.4735), distal shaft of left tarsometatarsus (MNHNCu 75.4736).	Las Breas de San Felipe (MLB), Martí, Matanzas.	Suárez 2020a, <i>Zootaxa</i> 4780: 17.
17. † <i>Buteogallus borraisi</i> (Arredondo, 1970) ¹	*Left tarsometatarsus lacking distal end (DPUH 1250 [as ' <i>Aquila borraisi</i> ']).	*Cueva del Túnel (YTU), Quivicán, Mayabeque.	Arredondo 1970a, <i>Cienc. Biol. Univ. Habana</i> 4(8): 3 (see Suárez & Olson 2008).
18. † <i>Buteogallus royi</i> Suárez, 2020	*Left tarsometatarsus (MNHNCu 75.4909).	*Las Breas de San Felipe (MLB), Martí, Matanzas.	Suárez 2020a, <i>Zootaxa</i> 4780: 20.
19. † <i>Buteogallus irpus</i> Suárez & Olson, 2021	***Partial skeleton (WS 365 [as ' <i>Amplibuteo</i> sp.]).	Cueva de Sandoval (ASA), Caimito, Artemisa.	Suárez & Arredondo 1997, <i>El Pitirre</i> 10: 101 (see Suárez & Olson 2021).
20. × <i>Buteo lineatus</i> (J. F. Gmelin, 1788)	Proximal end of right femur (MNHNCu 75.4614), distal halves of right (MNHNCu 75.4615) and left (MNHNCu 75.4616) tibiotarsi, distal end of left tibiotarsus (MNHNCu 75.4617), distal halves of right (MNHNCu 75.4618) and left (MNHNCu 75.4619) tarsometatarsi.	Las Breas de San Felipe (MLB), Martí, Matanzas.	Suárez & Olson 2003b, <i>J. Raptor Res.</i> 37: 71.
21. † <i>Buteo sanfelipensis</i> Suárez, 2020	*Left tarsometatarsus lacking trochlea IV (MNHNCu 75.4910).	*Las Breas de San Felipe (MLB), Martí, Matanzas.	Suárez 2020a, <i>Zootaxa</i> 4780: 28.
22. † <i>Tyto pollens</i> Wetmore, 1937	Distal left tarsometatarsus (DPUH 1252 [holotype of ' <i>Tyto riveroi</i> ']).	Cueva de Bellamar (MBE), Matanzas, Matanzas.	Arredondo 1972b, <i>Bol. Soc. Venez. Cienc. Nat.</i> 30 (124/125): 131 (see Suárez & Olson 2015).
23. † <i>Tyto noeli</i> Arredondo, 1972	*Right tarsometatarsus (DPUH 1251).	*Cueva del Túnel (YTU), Quivicán, Mayabeque.	Arredondo 1972a, <i>Bol. Soc. Venez. Cienc. Nat.</i> 29 (122/123): 416.
24. † <i>Tyto cravesae</i> Suárez & Olson, 2015	*Associated postcranial elements of one individual (MNHNCu 75.590 [= proximal half of left humerus, proximal end of right ulna, right carpometacarpus and right femur]).	*Cueva de Paredones (ACP), Caimito, Artemisa.	Suárez & Olson 2015, <i>Zootaxa</i> 4020: 545.
25. † <i>Tyto maniola</i> Suárez & Olson, 2020	*Proximal half of left tarsometatarsus (MNHNCu 75.4651).	*Las Breas de San Felipe (MLB), Martí, Matanzas.	Suárez & Olson 2020a, <i>Zootaxa</i> 4830: 552.
26. † <i>Pulsatrix arredondoi</i> Brodkorb, 1969	*Left tarsometatarsus (PB 8420).	*Cueva de Paredones (ACP), Caimito, Artemisa.	Brodkorb 1969, <i>Quart. J. Fla. Acad. Sci.</i> 31: 112.
27. † <i>Bubo osvaldoi</i> Arredondo & Olson, 1994	*Right tarsometatarsus lacking proximal end (MNHNCu 75.27).	*Cueva del Mono Fósil (PMF), Viñales, Pinar del Río.	Arredondo & Olson 1994, <i>Proc. Biol. Soc. Wash.</i> 107: 438.
28. † <i>Ornimegalonyx oteroi</i> Arredondo, 1958	**Left tarsometatarsus lacking distal end (SEC P-383.E [at MCZ]).	*Caverna de Pío Domingo (PPD), Minas de Matahambre, Pinar del Río.	Arredondo 1958, <i>El Cartero Cubano</i> 17(7): 11 (see Brodkorb 1961).

Taxon	Specimen(s)	Locality	Bibliography
29. † <i>Ornimegalonyx ewingi</i> Suárez, 2020	*Right femur (USNM 447022).	*'Mine' in vicinity of Baire (SMB), Contramaestre, Santiago de Cuba.	Suárez 2020b, <i>Bull. Brit. Orn. Cl.</i> 140: 391.
30. † <i>Caracara creightoni</i> Brodkorb, 1959	Incomplete skull (OA 3928).	Cueva Calero (MCA), Cantel, Matanzas.	Suárez & Arredondo 1997, <i>El Pitirre</i> 10: 101.
31. † <i>Milvago carbo</i> Suárez & Olson, 2003	*Near-complete right tarsometatarsus (MNHN Cu 75.4569).	*Las Breas de San Felipe (MLB), Martí, Matanzas.	Suárez & Olson 2003c, <i>Proc. Biol. Soc. Wash.</i> 116: 302.
32. † <i>Milvago diazfrancoi</i> Suárez, 2020	*Left tarsometatarsus lacking trochleae II and IV (MNHN Cu 75.4610).	*Las Breas de San Felipe (MLB), Martí, Matanzas.	Suárez 2020a, <i>Zootaxa</i> 4780: 36.
33. <i>Milvago</i> sp.	Proximal left tarsometatarsus (WS 977).	Cueva de Paredones (ACP), Caimito, Artemisa.	Suárez & Arredondo 1997, <i>El Pitirre</i> 10: 101.
34. × <i>Falco femoralis</i> Temminck, 1822	Incomplete right carpometacarpus (MNHN Cu 75.4606, MNHN Cu 75.4607), distal end of left tibiotarsus (MNHN Cu 75.4608), proximal end of left tarsometatarsus (MNHN Cu 75.4609).	Las Breas de San Felipe (MLB), Martí, Matanzas.	Suárez & Olson 2003b, <i>J. Raptor Res.</i> 37: 73.
35. † <i>Falco kurochkini</i> Suárez & Olson, 2001	*Left tarsometatarsus (MNHN Cu 75.3229).	*Cueva de Sandoval (ASA), Caimito, Artemisa.	Suárez & Olson 2001a, <i>Proc. Biol. Soc. Wash.</i> 114: 35.
36. † <i>Ara tricolor</i> Bechstein, 1811	Proximal half of right carpometacarpus (AMNH unnumbered)	Baños de Ciego Montero (CCM), Palmira, Cienfuegos.	Wetmore 1928, <i>Amer. Mus. Novit.</i> 301: 4.

¹ For *Geranoaetus melanoleucus* see section II.
* Holotype and type locality. ** Lectotype. *** Paratype.

I—EXTINCT & EXTIRPATED TAXA

Systematic palaeontology

Order CAPRIMULGIFORMES Ridgway
Family CAPRIMULGIDAE Vigors
Genus *Siphonorhis* P. L. Sclater, 1861

Siphonorhis P. L. Sclater, 1861, *Proc. Zool. Soc. London*, pl. 1, p. 77. Type, by original designation, *Caprimulgus americanus* Linnaeus (not '*Siphonorhis jamaicensis*' sensu Garrido 2003: 62).
Microsiphonorhis Chapman, 1917, *Bull. Amer. Mus. Nat. Hist.* 37: 329. Type, by original designation, *M. brewsteri* Chapman.

1. †*Siphonorhis daiquiri* Olson, 1985
Cuban Pauraque (Torico Cubano)

Siphonorhis daiquiri Olson, 1985, *Proc. Biol. Soc. Wash.* 98: 528.
Siphonorhis sp.: Acevedo-González & Arredondo 1982: table 1.
Siphonornis daiquiri: Zelenkov & González 2020: 416 (*lapsus calami*).

History.—*February 1917*: Harold E. Anthony collects first material at type locality (see Anthony 1917, 1919). *October 1980*: field work by S. L. Olson *et al.* provides the holotype and some paratypes (Olson 1985: 528–530). *1982*: two additional specimens identified (April) by Olson, previously collected by E. N. Kurochkin in Camagüey province (Olson 1985: 529, see Olson & Kurochkin 1987: 354). First mentioned as '*Siphonorhis* sp.' by Acevedo-González &

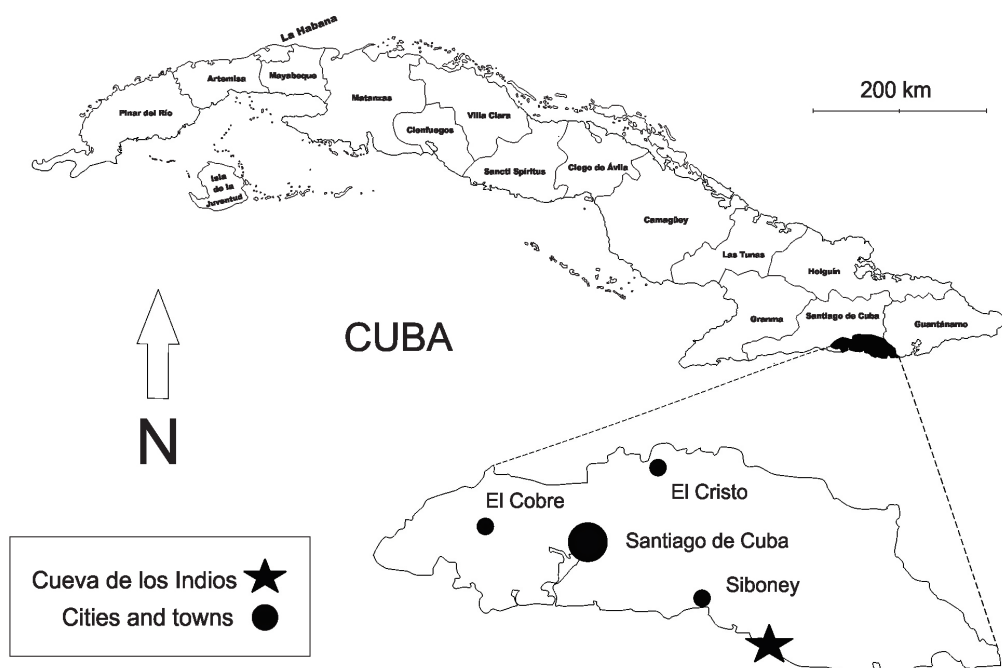


Figure 2. Cueva de los Indios (SCI), Santiago de Cuba, eastern Cuba. Type locality of *+Siphonorhis daiquiri* Olson.

Arredondo (1982: table 1). *16 May 1985*: original description of *S. daiquiri* published (Olson 1985). *Autumn 2000*: first record from western Cuba, in El Sumidero, Cueva de Sandoval, Artemisa (formerly La Habana) province, an apparently older deposit than the type locality (Suárez 2000b: 67). *April 2004*: reported from Cueva El Abrón, its westernmost known fossil locality (Suárez 2004b: 156), in the mountains of Pinar del Río province (see Suárez & Díaz-Franco 2003).

Holotype.—Distal half of right tarsometatarsus, USNM 336506—not ‘Right proximal humerus (USNM 336506)’ as stated by Orihuela (2019: 64)—(Olson 1985: 528, fig. 1: A [anterior], B [posterior], fig. 2: B [posterior]). Collected 31 October 1980 by S. L. Olson *et al.* [= Jim Lynch, Nicasio Viña and Fernando González (S. L. Olson *in litt.* 2015)] (Olson 1985: 528).

Other material.—**Coracoid**: left, USNM 336507. **Humerus**: right, AMNH 21905 (Olson 1985: 529, fig. 3: B [anconal]), AMNH 21906; right lacking distal end, AMNH 21907; proximal ends of right, AMNH 21908, USNM 336508; proximal end of left, USNM 336509; left lacking proximal end, AMNH 21909. **Carpometacarpus**: right lacking minor metacarpal, AMNH 21904; proximal end of left, USNM 336510. AMNH material collected by H. E. Anthony in 1917 (Olson 1985: 529, see ‘History’).

Type locality.—Cueva de los Indios (SCI), near Daiquirí, c.22 km east-southeast of Santiago de Cuba, Santiago de Cuba province, Cuba (Olson 1985: 528; see Anthony 1917, 1919). Fig. 2.

Distribution.—Cave deposits across the main island of Cuba (see Appendix). *Pinar del Río*. Los Palacios: **PEA** (Suárez 2004b: 156). *Artemisa*. Caimito: **ASA** (Suárez 2000b: 66, fig. 3 = tarsometatarsus: A [anterior], B [posterior], fig. 4 = idem: A [anterior]). *Mayabeque*. Quivicán: **YBL** (Jiménez Vázquez *et al.* 2005: 97–98). *Camagüey*. Sierra de Cubitas: **CFO**

(Olson 1985: 529). *Santiago de Cuba*. Santiago de Cuba: SCI = type locality (Olson 1985: 528–529 [*Siphonorhis daiquiri*, new species], Arredondo 1996: 1).

Direct ^{14}C dating.—None. For dating of associated fauna from PEA ($17,406 \pm 161$ ^{14}C yr BP) and YBL ($7,864 \pm 96$ ^{14}C yr BP), see Suárez & Díaz-Franco (2003: 373) and Jiménez Vázquez *et al.* (2005: 90), respectively.

Notes.—Not rare in cave deposits containing relatively ancient barn owl pellets (*cf.* *Tyto furcata* and *T. noeli*). Genus *Siphonorhis* is endemic to the Greater Antilles and a primitive caprimulgid stock, being one of the most ancient members of the West Indies avifauna (Olson 1978, 1985). The extinct (but see Olson 1985: 531, Suárez 2000b: 68) Cuban Pauraque was first mentioned by Acevedo-González & Arredondo (1982: table 1) as '*Siphonorhis* sp.', without reference to specimens or locality, based on information supplied by S. L. Olson (O. Arredondo pers. comm.). Subsequently, it was deleted without comment in Arredondo (1984: 30). Three species are known in *Siphonorhis* (not '*S. noctitherus*† in Puerto Rico' as appears in Kirkconnell *et al.* 2020: 65), distributed on Hispaniola including Gonâve Island (Least Pauraque *S. brewsteri* [Chapman, 1917]; see Garrido 2003, Keith *et al.* 2003, Latta *et al.* 2006), Jamaica (Jamaican Pauraque †*S. americana* [Linnaeus, 1758], see Olson & Steadman 1977, Downer & Sutton 1990, AOU 1998) and Cuba (Cuban Pauraque †*S. daiquiri*). The latter is intermediate in size compared to the two other species (Olson 1985: 530, see Olson & Steadman 1977: 456).

Order GRUIFORMES Bonaparte Family INCERTAE SEDIS Genus †*Nesotrochis* Wetmore, 1918

Nesotrochis Wetmore, 1918, *Proc. US Natl. Mus.* 54: 516. Type, by original designation, *Nesotrochis debooyi* Wetmore.

2. †*Nesotrochis picapicensis* (Fischer & Stephan, 1971) Pica-Pica's Rail (Gallinuela de Pica-Pica)

Fulica picapicensis Fischer & Stephan, 1971b (part), *Wiss. Zeitsch. Humboldt-Univ. Berlin, Math.-Nat. R.* 20: 595.

Fulica picapicensis: Fischer & Stephan 1971b: 595 (part).

Nesotrochis picapicensis: Olson 1974: 441.

Nesotrochis picapicebsis: Jiménez Vázquez & Arrazcaeta Delgado 2015: 142 (*lapsus calami*).

Nesotrochis picipicensis: Oswald *et al.* 2021: 2 (*lapsus calami*).

Fulica picipicensis: Oswald *et al.* 2021: 2 (*lapsus calami*).

History.—*Summer 1967*: members of the Cuban-German Expedition (Universidad de La Habana & Institut für Paläontologie und Museum der Humboldt-Universität zu Berlin) collect the type material in western Cuba (Castellanos 1968: 4, Fischer 1968: 270, 1970). *1971*: original description of *Fulica picapicensis* published (Fischer & Stephan 1971b: 595–597). *31 December 1974*: Antillean extinct genus *Nesotrochis* identified from Cuba, leading to the new combination *N. picapicensis* (Olson 1974: 441, see 'Notes'). *September 1995*: first record outside the type locality, in Cueva del Indio, Mayabeque (formerly La Habana) province (Jiménez Vázquez & Valdés Ruiz 1995: 62). *27 August 2019*: morphology of the hypotarsus in *Nesotrochis* indicates it is not a Rallidae (Mayr 2019), but shares osteological characters with flufftails, Sarothruridae (Africa and New Guinea) and related taxa (Heliornithidae). *17 March 2021*: mitochondrial genome analysis of *N. steganinos* Olson, 1974 (Hispaniola) corroborates that the genus is not a rallid (Oswald *et al.* 2021), but a sister taxon to Sarothruridae and the extinct flightless Aptornithidae (New Zealand).

Holotype.—Left humerus, Av. 832/67, at CZACC (Fischer & Stephan 1971b: 595, fig. 9: a [anconal], b [palmar], Olson 1977: 352, fig. 1b: bottom [anconal]). Collected summer 1967 by members of the Cuban-German Expedition [= Wolfgang Reichel, Hans-Hartmat Krueger,

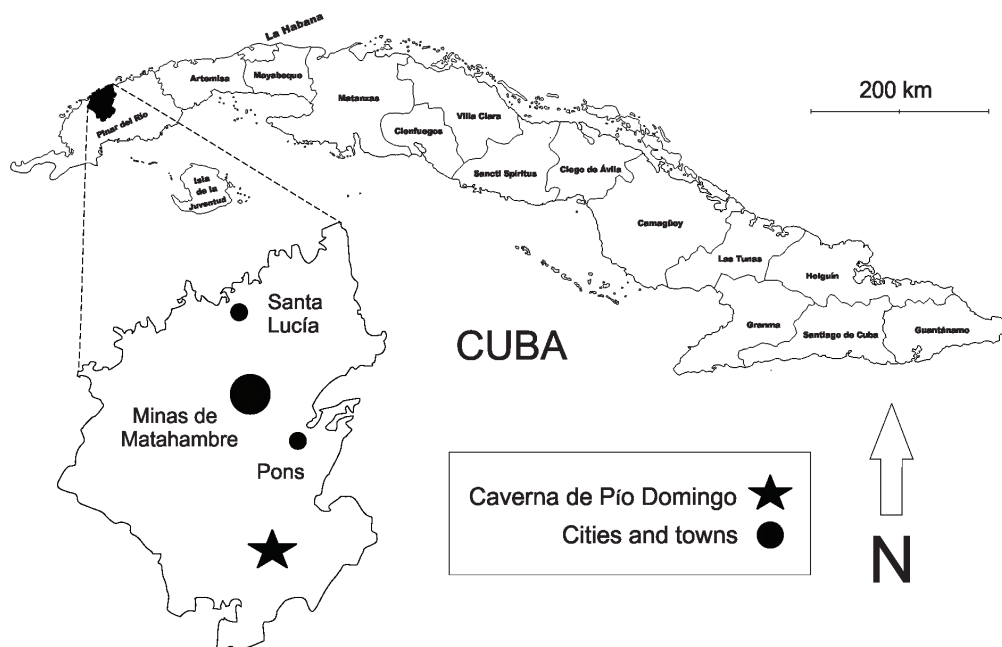


Figure 3. Caverna de Pío Domingo (PPD), Minas de Matahambre, western Cuba. Type locality of †*Nesotrochis picapicensis* (Fischer & Stephan), †*Antigone cubensis* (Fischer & Stephan) and †*Ornimegalonyx oteroi* Arredondo.

Karlheinz Fischer, Gustavo Furrázola Bermúdez, Manuel Acevedo González, Néstor Mayo and Manuel Iturralde Vinent (Castellanos 1968: 4)] in El Abismo [= Furnia del Aguacero, or del Abismo] at the type locality (see Fischer & Stephan 1971a: 541, b: 593).

Other material.—**Skull:** incomplete, Av. 833/67 (fig. 8: a [dorsal]). **Vertebra:** cervical, Av. 834–838/67; thoracic, Av. 839/67. **Humerus:** right, Av. 840–841/67⁺; left, Av. 842/67⁺. **Ulna:** see ‘Notes’. **Pelvis:** incomplete, Av. 844 (Figs. 11a [dorsal], 12a [lateral]) to 849/67⁺. **Femur:** right, Av. 850 (fig. 13a [posterior]) to 851/67; proximal right, Av. 852/67⁺; left, Av. 853/67⁺. **Tibiotarsus:** right, Av. 854/67; proximal right, Av. 855–857/67; left, Av. 858 (fig. 14: a [anterior], b [posterior]) to 860/67⁺; proximal left, Av. 861–862/67⁺; distal left, Av. 863–864/67⁺. **Tarsometatarsus:** right, Av. 865 (fig. 15a [anterior]; Olson 1977: 352, fig. 1B: top [anterior]), 866/67⁺, and Av. 867/67 (the last is immature); proximal right, Av. 868/67; distal right, Av. 869–870/67; left, Av. 871/67⁺ (immature); proximal left, Av. 872/67⁺; distal left, Av. 873–874/67⁺. Cited figures from pl. 2–6 of Fischer & Stephan (1971b), other than when indicated. The annotation (*) indicates specimens (= paratypes) at CZACC (see comments in Arredondo 1984: 14 and Livezey 2003: 55).

Type locality.—Caverna de Pío Domingo (PPD), Sierra de Sumidero, municipality of Minas de Matahambre, Pinar del Río province, Cuba (Fischer & Stephan 1971b: 595). Fig. 3.

Distribution.—Cave deposits in west Cuba (see Appendix). *Pinar del Río*. Viñales: **PMF** (Arredondo & Rivero 1997: 111 [‘*Nesotrochis* sp.’], Jiménez Vázquez 1997b: 97, Arredondo & Arredondo 2000: Anexo 1 [‘*Nesotrochis* sp.’]), Minas de Matahambre: **PPD** = type locality (Fischer & Stephan 1971b: 595 [‘*Fulica picapicensis*, n. sp.’]). *Artemisa*. Caimito: **ACP** (Jiménez Vázquez 1997b: 97), **ASA** (cf. Suárez & Arredondo 1997: 101, Suárez 2000b: table 1, Arredondo & Arredondo 2002a: table 1 [‘*Nesotrochis* sp.’]). *Mayabeque*. Quivicán: **YBL** (Jiménez Vázquez 1997b: 97), San José de las Lajas: **YCI** (Jiménez Vázquez & Valdés Ruiz 1995: 62, Jiménez Vázquez 1997b: 97, Rojas Consuegra *et al.* 2012: 6, 10), Madruga: **YCN** (Orihuela 2012: 306–308, tables 1 [‘*Nesotrochis* sp.’] and 3 [‘*Rallidae* cf. *Nesotrochis* sp.’], fig.

8A = femur [*Nesotrochis* sp. (cf.) *N. picapicensis*]: left [medial], right [anterior], Orihuela 2019: 61, fig. 3 = idem: A [medial], B [anterior]. *Matanzas*. Jagüey Grande: **MFJ** (cf. CLV).

Direct ¹⁴C dating.—None. For indirect dating from relevant Cuban archaeological sites, see Córdova Medina *et al.* (1997), Jiménez Vázquez (2005), Orihuela (2019), Orihuela *et al.* (2020b).

Notes.—Bones of this cave rail are common in palaeontological deposits of western Cuba and are abundant in cultural (*contra* Steadman *et al.* 2013: 1355) sites (see Jiménez Vázquez 1997b, 2001, Jiménez Vázquez & Arrazcaeta Delgado 2008, 2015). Formerly described as a coot, genus *Fulica* Linnaeus. One of the paratypes, the incomplete right ulna, Av. 843/67 (Fischer & Stephan 1971b: 595, fig. 10a [medial]), ‘is not from a rail and is possibly columbid’ (Olson 1974: 441, footnote). The extinct genus *Nesotrochis* is endemic to the Greater Antilles but has Old World origins (Oswald *et al.* 2021). Three large flightless species (Olson 1977: 352–353, Olson 1978: 107, Cuello 1988: 15; see Livezey 1998) have been described, from the Virgin Islands (*N. debooyi* Wetmore, 1918), but also present in Puerto Rico (Wetmore 1922, Olson 1974), Hispaniola (*N. steganinos* [= *M. steganinos* Arredondo 1984: 15, *lapsus calami*]) and Cuba (*N. picapicensis*), and seem to have survived on these islands until recently (Olson 1974, Jiménez Vázquez & Arrazcaeta Delgado 2008, 2015, Carlson & Steadman 2009). The Cuban species was for some time considered the same bird named ‘Biaya’ or ‘Bambiaya’ by native peoples (cf. Jiménez Vázquez 1997b, 2005), but this is incorrect (Jiménez Vázquez & Arrazcaeta Delgado 2015: 144). Figueredo (2011: 13) commented that the distribution of *Nesotrochis* could be extended to the Bahamas, citing Steadman *et al.* (2007). This appears to be a misinterpretation, as the only flightless rail mentioned in the latter paper (see also Steadman *et al.* 2013) is ‘*Rallus* undescribed sp.’. For a summary of extinct birds in Quaternary deposits of the Bahamas, see Steadman & Franklin (2020).

Family GRUIDAE Vigors Genus *Antigone* Reichenbach, 1852

Antigone Reichenbach, 1852, *Av. Syst. Nat.*, p. xxiii. Type, by original designation and tautonymy, *Grus torquata* Vieillot = *Ardea antigone* Linnaeus.

3. †*Antigone cubensis* (Fischer & Stephan, 1971) Cuban Flightless Crane (*Gruella Cubana*)

Grus cubensis Fischer & Stephan, 1971a, *Wiss. Zeitsch. Humboldt-Univ. Berlin, Math.-Nat. R.* 20: 565.

Ciconia: Castellanos 1968: 4.

Grus cubensis: Fischer & Stephan 1971a: 565.

G[rus]. cubanensis: Kilmer & Steadman 2016: table 3 (*lapsus calami*).

Antigone cubensis: Suárez 2020a: 6.

History.—*April 1968*: first notice of material collected by the Cuban-German Expedition, being tentatively identified as ‘*Ciconia*’ (Castellanos 1968). The name *Baeopteryx cubensis* (*nomen nudum*) appears (Fischer 1968: 271) with the comment ‘wie der pleistozäne Cuba-Kranich später heißen soll’ [‘as the Pleistocene Cuban crane will later be called’]], without indication of type material or catalogue numbers, along with comments on the proportions of some elements. Referred to as a flightless crane for the first time: ‘Flugunfähiger Kranich aus dem Pleistozän Cubas’ [‘Flightless crane from the Pleistocene of Cuba’] (Fischer 1968). *1971*: original description of *Grus cubensis* published (Fischer & Stephan 1971a). *September 1995*: first record outside the type locality, in Cueva del Indio, Mayabeque (formerly La Habana) province, west Cuba (Jiménez Vázquez & Valdés Ruiz 1995: 62, not Suárez 2000b: table 1). *December 2000*: reported from asphalt deposits at Las Breas de San Felipe, Matanzas province (Iturralde-Vinent *et al.* 2000: table 2). *22 May 2020*: direct ¹⁴C dating of material

from tar sheeps and treated under new combination *Antigone cubensis* (Suárez 2020a: 6, table 2).

Holotype.—Skull with its respective mandible and left quadrate [but not ‘atlas’, see ‘Notes’], Av. 1/67, at CZACC (Fischer 1968: 271, fig. unnumbered* [lateral], Fischer 1970: 234, Plate 1*, skull: a [lateral], e [dorsal], f [ventral], g [posterior]; quadrate: c [lateral]; mandible: b [lateral], d [dorsal]; Arredondo 1971: 96, fig. centre left unnumbered*: top [lateral], Fischer & Stephan, 1971a: 565, Figs. 26*: skull and quadrate [lateral], 27*: mandible [lateral], 28*: skull [ventral], 29*: skull [posterior]; pl. 1, skull: 1 [lateral], 4 [dorsal], 5 [ventral], mandible: 2 [lateral], 3 [dorsal]). Collected summer 1967 by the Cuban-German Expedition [= Wolfgang Reichel, Hans-Hartmat Krueger, Karlheinz Fischer, Gustavo Furrázola Bermúdez, Manuel Acevedo González, Néstor Mayo and Manuel Iturralde Vinent (Castellanos 1968: 4)] in El Abismo [= Furnia del Aguacero, or del Abismo] at the type locality (Fischer & Stephan 1971a: 565, see also Fischer 1968: 270, 1970: 233–235).

Other material.—**Skull:** calvaria, Av. 2/67, Av. 5–11/67, Av. 15–16/67; crania, Av. 3–4/67. **Mandible:** ‘upper and lower’, Av. 12/67; ‘lowers’, Av. 13–14/67. **Vertebra:** atlases, Av. 17 (fig. 7*: a [anterior], b [posterior]) to 18/67; axes, Av. 19 (fig. 8* [lateral]) to 20/67; cervical 3, Av. 21–24/67; cervical 4, Av. 25–28/67; cervical 5, Av. 29–35/67; cervical 6, Av. 36–42/67; cervical 7, Av. 43/67; cervical 8–2, Av. 44–51/67, Av. 52 (fig. 9*: a [dorsal], b [ventral], c [lateral], d [anterior], e [posterior]) to 63/67; cervical 13 to 14, Av. 102–110/67; cervical 15, Av. 111–118/67; cervical 16, Av. 119–126/67; cervical 17, Av. 127–143/67; cervical indet., Av. 144–149/67; thoracic 1, Av. 150–159/67; thoracic 2, Av. 160–161/67; thoracic 3–5, Av. 162–163/67; thoracic 5–8, Av. 164 (fig. 10*: a [lateral], b [anterior]) to 192/67; thoracic indet., Av. 193–194/67. **Rib:** right, Av. 195–198/67; left, Av. 199–205/67. **Sternum:** incomplete, Av. 206/67 (fig. 31* [lateral]). **Coracoid:** right, Av. 207 (fig. 32*: a [ventral], b [dorsal]) to 210/67; left, Av. 211/67. **Scapula:** right, Av. 212 (fig. 33*: a [dorsal], b [ventral]) to 218/67, Av. 227/67; left, Av. 219–226/67, Av. 228/67. **Furcula:** right, Av. 229–231/67; left, Av. 232 (fig. 14*: a [internal], b [external]) to 235/67. **Humerus:** right, Av. 236/67, 237 (fig. 34*: a [anconal], b [palmar]) to 239/67; right without distal end, Av. 240/67; proximal half of right, Av. 241/67; proximal half of left, Av. 242/67; distal ends of left, Av. 243/67, Av. 247/67; left without distal end, Av. 244/67; proximal end of left, Av. 245/67; shaft piece of left, Av. 246/67. **Radius:** right, Av. 248/67 (fig. 35*: a [dorsal], b [ventral]); proximal ends of right, Av. 249–257/67, Av. 274/67; distal ends of right, Av. 258–265/67, Av. 275/67; proximal ends of left, Av. 266–269/67; distal ends of left, Av. 270–273/67. **Ulna:** distal ends of right, Av. 276–277/67; distal ends of left, Av. 278 (fig. 36*: a [dorsal], b [ventral]) to 280/67. **Carpometacarpus:** right, Av. 281/67; fragmentary right, Av. 282–284/67; left, Av. 285/67 (fig. 37*: a [medial], b [lateral]), Av. 287/67; left without proximal end, Av. 286/67; left without distal end, Av. 288/67. **Pelvis:** incomplete, Av. 289 (fig. 30*: a [dorsal], b [ventral]) to 292/67; synsacral vertebrae 1–2, Av. 293/67. **Femur:** right, Av. 294/67 (fig. 38*: a [anterior], b [posterior]); shaft of right, Av. 295/67; left without proximal end, Av. 296/67; fragmentary proximal half of left, Av. 297/67; distal end of left, Av. 298/67; shaft of left, Av. 299/67; distal articular region, Av. 300/67. **Tibiotarsus:** right, Av. 301 (fig. 39*: a [anterior], b [posterior]) to 304/67; right without proximal ends, Av. 313–317/67; distal ends of right, Av. 322–327/67; shafts of right, Av. 334–335/67; left, Av. 305–312/67; left without proximal ends, Av. 318–321/67; distal ends of left, Av. 328–333/67; shaft of left, Av. 336/67. **Fibula:** right, Av. 337 (fig. 40*: a [medial], b [lateral]) to 340/67; left, Av. 341–342/67. **Tarsometatarsus:** right, Av. 343 (fig. 41*: a [anterior], b [posterior]) to 352/67; proximal ends of right, Av. 361–364/67; right without proximal end, Av. 372/67; distal ends of right, Av. 373–375/67; left, Av. 353–360/67; proximal ends of left, Av. 365–371/67; distal ends of left, Av. 376–381/67. **Phalanges:** right digit II, phalanx 1, Av. 382–390/67; right digit II, phalanx 2, Av. 391–393/67; right digit III, phalanx 1, Av. 407–412/67; right digit IV, phalanx 1, Av.

433–438/67; left digit II, phalanx 1, Av. 394–403/67; left digit II, phalanx 2, Av. 404–406/67; left digit III, phalanx 1, Av. 413–422/67; left digit IV, phalanx 1, Av. 439–443/67; digit III, phalanx 2, Av. 423–429/67; digit III, phalanx 3, Av. 430–432/67; digit IV, phalanx 2, Av. 444–447/67; digit IV, phalanx 3, Av. 448–450/67; digit I?, phalanx 1, Av. 451/67; ungual phalanges, Av. 452–456/67. Cited material and figures are from Fischer & Stephan (1971a), in which catalogue numbers on figure legends are preceded by '67', contrary to the holotype, or the same paratypes listed in their table 1.

Type locality.—Caverna de Pío Domingo (PPD), Sierra de Sumidero, municipality of Minas de Matahambre, Pinar del Río province, Cuba (Fischer & Stephan 1971a: 565). Fig. 3.

Distribution.—Cave and asphalt deposits in west Cuba (see Appendix). *Pinar del Río*. Minas de Matahambre: **PPD** = type locality (Castellanos 1968: 4 ['*Ciconia*'], Fischer 1968: 271 ['*Baeopteryx cubensis*'], Fischer 1970: 234 ['*Baeopteryx*'], Arredondo 1971: 95 ['*Baeopteryx cubensis*'], Acevedo González 1971: 36 ['*Baeopteryx cubensis*'], Fischer & Stephan 1971a: 565 ['*Grus cubensis*, nov. spec.'], Arredondo 1984: 13 ['*Grus cubensis*' see 'Notes']). *Artemisa*. Caimito: **ACP** (cf. Suárez & Arredondo 1997: 101 ['*Grus cubensis*'], Arredondo & Arredondo 2002a: table 1 ['*Grus cubensis*'], 2002b: table 1 ['*Grus cubensis*']), **ASA** (Suárez 2000b: table 1 ['*Grus cubensis*']). *Mayabeque*. San José de las Lajas: **YCI** (Jiménez Vázquez & Valdés Ruiz 1995: 62 ['*Grus cubensis*'], Rojas Consuegra *et al.* 2012: 6, 10 ['*Grus cubensis*']). *Matanzas*. Martí: **MLB** (Iturralde-Vinent *et al.* 2000: table 2 ['*Grus cubensis*'], fig. 6 = tarsometatarsus: A [anterior], Suárez 2020a: 6–7, fig. 3A–D = tibiotarsus: A [anterior], B [distal], C [medial], D [posterior], 3E–F = tarsometatarsus: E [anterior], F [proximal], 3G–J = tarsometatarsus: G [posterior], H [medial], I [anterior], J [distal]).

Direct ¹⁴C dating.—Late Pleistocene (MLB): 22,900 ± 2,700 ¹⁴C yr BP (Suárez 2020a: table 2, tibiotarsus).

Notes.—Remains of this large crane are known to be common in just three Cuban Quaternary deposits (see Fischer & Stephan 1971a, Rojas Consuegra *et al.* 2012, Suárez 2020a). In the original description, Fischer & Stephan (1971a: 565) mentioned: 'Cranium mit Atlas (Abb. 7–12), Universität Habana, Av. 1/67' ['Cranium with atlas (fig. 7–12), University of Havana, Av. 1/67']. The indication of 'atlas' seems to be a mistake for mandible, as no atlas with the catalogue number of the holotype is mentioned in the text or figures of this work. The only two atlases mentioned are paratypes (Fischer & Stephan 1971a, fig. 7, table 1, see 'Other material' above). Otherwise, in figures the mandible and a left quadrate accompanying the skull has the same number, Av. 1/67, as the holotype. Fischer (1968) tentatively identified this species as a member of *Baeopteryx* Wetmore, a genus described as a fossil from Bermuda (Wetmore 1960), but considered subsequently to be a junior synonym of *Grus* Brisson (Fischer & Stephan 1971a: 574; see Olson & Wingate 2000: 356). Use of '*Grus cubensis* (Fischer, 1968)' by Arredondo (1975: 146, 1984: 13) and Arredondo Antúnez (1997: 5) is incorrect, being based on '*Baeopteryx cubensis*', which name is not available (see 'History' and ICZN 1999, Art. 15.1). Apart from its large size and other osteological characters related to flightlessness, the Cuban species is most similar to *Antigone antigone* (Linnaeus, 1758) and *A. canadensis* (Linnaeus, 1758) in features of the skull, rather than to *Grus americana* (Linnaeus, 1758). Recently, Mayr *et al.* (2020) considered species of the genus *Antigone* under *Grus* Brisson.

Order CHARADRIIFORMES Huxley

Family BURHINIDAE Mathews

Genus *Burhinus* Illiger, 1811

Burhinus Illiger, 1811, *Prodromus Syst. Mamm. Av.*, p. 250. Type, by monotypy, *Charadrius magnirostris* Latham (not '*Charadrius magnirostris* Latham' *sensu* Arredondo 1984: 16).

4. ×*Burhinus bistratus* (Wagler, 1829)

Double-striped Thick-knee (Búcaro)

Charadrius bistratus Wagler, 1829, *Isis von Oken* 22, col. 648.

Burhinus: Olson & Hilgartner 1982: 33 [Cuba].

Burhinus sp.: Acevedo-González & Arredondo 1982: table 1 [Cuba].

Burhinus bistratus: Suárez 2020a: 7 [Cuba].

History.—*November 1980*: S. L. Olson identifies fossils of *Burhinus* at CZACC and OA (Olson & Hilgartner 1982: 33). *1982*: first published notice (5 August) as to presence in Cuban collections of fossil material referable to *Burhinus* (Olson & Hilgartner 1982: 33). Reported as '*Burhinus* sp.' by Acevedo-González & Arredondo (1982: table 1) without indicating specimens or locality. *May 1984*: fossils in OA (see 'Referred material') recorded as '*Burhinus* sp.' (Arredondo 1984: 16–17). *December 2000*: first record from asphalt deposits at Las Breas de San Felipe (Iturralde-Vinent *et al.* 2000: table 2). *22 May 2020*: some Cuban specimens identified as '*Burhinus bistratus*' (Suárez 2020a: 7).

Referred material.—**Humerus**: right lacking distal end, MNHNCu 75.4783; distal end of right, MNHNCu 75.4792; distal ends of left, OA 2958, and right, OA 2959. **Tibiotarsus**: distal end of right, MNHNCu 75.4798. See Arredondo (1984: 16), Suárez (2020a: 7).

Distribution.—Cave and asphalt deposits in west Cuba (see Appendix). *Artemisa*. Caimito: **ACP** (Arredondo 1984: 16 ['*Burhinus* sp.'], Arredondo & Arredondo 2002a: table 1 ['*Burhinus* sp.'], 2002b: table 1 ['*Burhinus* sp.']), **ASA** (Suárez 2000b: table 1 ['*Burhinus* sp.'], Arredondo & Arredondo 2002a: table 1 ['*Burhinus* sp.']). *Mayabeque*. San José de las Lajas: **YCC** (Jiménez & Orihuela 2021: 169). *Matanzas*. Martí: **MLB** (Iturralde-Vinent *et al.* 2000: table 2 ['*Burhinus* sp.'], Suárez 2020a: 7).

Direct ¹⁴C dating.—None in Cuba. For dating of other bird species at MLB, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = 11,880 ± 420 to 4,960 ± 280 years ¹⁴C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005). For dating of *Burhinus* material from the Bahamas, see Jones O'Day (2002).

Notes.—Common in Pleistocene deposits, considered a palaeo-ecological indicator of arid open habitat (Feduccia 1980, Pregill & Olson 1981, Iturralde-Vinent *et al.* 2000). Some material referred to *Burhinus* from Cuba is of a different size (Suárez 2020a; WS & S. L. Olson unpubl.), and perhaps involves the smaller *B. nanus* Brodkorb, 1959, described from the Bahamas and considered a species, or a subspecies of *B. bistratus* by some authors (see Olson & Hilgartner 1982: 33, Oswald & Steadman 2018: 363). *B. bistratus* still inhabits the Greater Antilles, with the endemic *B. b. dominicensis* (Cory, 1883) resident on Hispaniola (AOU 1998, Raffaele *et al.* 1998, 2003, Keith *et al.* 2003, Latta *et al.* 2006).

Family SCOLOPACIDAE Bonaparte

Genus *Gallinago* Brisson, 1760

Gallinago Brisson, 1760, *Ornithologia*, vol. 5, pp. 298, 304. Type, by tautonymy, *Scolopax gallinago* Linnaeus.

5. +*Gallinago kakuki* Steadman & Takano, 2016

West Indian Snipe (Becasina Isleña)

Gallinago kakuki Steadman & Takano, 2016, *Zootaxa* 4109: 348.

Capella delicata: Wetmore 1937: 435 [Bahamas].

Capella sp.: Olson & Hilgartner 1982: 31 [Bahamas].

Capella sp.: Morgan 1994: 480 [Cayman Islands; see also Morgan 1977a,b].

Capella sp.: Suárez 2004b: 155 [Cuba].

History.—*October 1937*: three specimens from 'Great Exuma' (= Little Exuma *fide* Hecht 1955) identified as '*Capella delicata* (Ord.)', but said to probably 'represent an extinct species'

of large size (Wetmore 1937: 435). *25 March 1977*: fossils from Cayman Brac, Cayman Islands, identified as a new, extinct large species of *Capella* (Morgan 1977a: 68–73, b: 21; see Morgan 1994: 480–481). *5 August 1982*: summary of the fossil record of this large snipe (as '*Capella* sp.') in the West Indies, with comparisons of known material, including new specimens identified from Banana Hole, New Providence, Bahamas (Olson & Hilgartner 1982: 31–33). *April 2004*: recorded from Cuba as '*Capella* sp.' on basis of four specimens, including one immature humerus which suggests the bird was a year-round resident in the Antillean subregion (Suárez 2004b: 157). *9 May 2016*: original description of *G. kakuki* published (Steadman & Takano 2016), which species seems to be more similar to Old World *Gallinago*.

Holotype.—Complete right humerus, UF 297382 (Steadman & Takano 2016: 348, figs. 3A [anconal], 4A [palmar]). Collected in 1958–60 by J. C. Dickinson *et al.* at the type locality (Steadman & Takano 2016: 348).

Type locality.—Banana Hole, New Providence, Bahamas (Steadman & Takano 2016: 348).

Referred material.—**Humerus**: right, MNHNCu 75.4709 (fig. 1: left [palmar]), OA 3138; left, MNHNCu 75.4711 (immature). **Ulna**: right, MNHNCu 75.4712 (fig. 1: right [palmar]). Cited material and figures are from Suárez (2004b).

Distribution.—Cave deposits in west and central Cuba (see Appendix). *Pinar del Río*. Los Palacios: **PEA** (Suárez 2004b: 155 ['*Capella* sp.']). *Sancti Spiritus*. Yaguajay: **SPH** and **SPS** (Suárez 2004b: 155–156 ['*Capella* sp.']).

Direct ¹⁴C dating.—None in Cuba. For dating of associated fauna from PEA (17,406 ± 161 ¹⁴C yr BP), see Suárez & Díaz-Franco (2003: 373).

Notes.—Remains of this snipe are sporadically found in Cuban cave deposits containing ancient barn owl pellets (*cf. Tyto furcata* and *T. noeli*). *G. kakuki* had a wider distribution in the West Indies that also included the Bahamas and Cayman Islands (Olson & Hilgartner 1982, Steadman & Takano 2016) where apparently it was a resident, endemic species (Suárez 2004b, Steadman & Takano 2016). Probably the first material to be collected was from Isla de la Juventud (= Isla de Pinos), west Cuba, as Peterson (1917: 359) noted 'few limb-bones of snipes' in the remains he studied, but this requires corroboration.

Order CICONIIFORMES Bonaparte

Family CICONIIDAE Sundevall

Genus *Ciconia* Brisson, 1760

Ciconia Brisson, 1760, *Ornithologia*, vol. 1, p. 48; vol. 5, p. 361. Type, by tautonymy, *Ardea ciconia* Linnaeus.

6. †*Ciconia maltha* L. Miller, 1910

La Brea Stork (Cigüeña de La Brea)

Ciconia maltha L. Miller, 1910, *Univ. California Publ. Bull. Dept. Geol.* 5: 440.

Jabiru mycteria: Wetmore 1928: 2.

Ciconia maltha: Howard 1942: 202.

Ciconia maltha: Newton 2003: 266 (*lapsus calami*).

Ciconia lydekkeri: Agnolin 2009: 57.

Holotype.—Left tarsometatarsus, UCMP 11202 (Miller 1910: 440, Figs. 1* [proximal], 2* [distal]). Collected by members of the 'University of California' (Miller 1910: 439).

Type locality.—Rancho La Brea, Los Angeles, California, USA (see Miller 1910, Howard 1942, Wetmore 1956: 22, Brodkorb 1963: 289).

Referred material.—**Tibiotarsus**: distal left, AMNH unnumbered. **Tarsometatarsus**: proximal right, AMNH unnumbered (see Howard 1942).

Distribution.—Spring deposit (not ‘from a cave’ as indicated by Howard 1942: 189) in central Cuba (see Appendix). *Cienfuegos*. Palmira: **CCM** (Wetmore 1928: 2 [*Jabiru mycteria*], Howard 1942: 201). For summary of continental distribution, see Wetmore (1956: 22, 1959: 8–9), Brodkorb (1963: 289–290), Emslie (1998: 26–27) and Kilmer & Steadman (2016: table 4).

Direct ^{14}C dating.—None in Cuba. Two indirect conventional dates from its fossil locality in Cienfuegos. Late Pleistocene (CCM): $>30,000$ to $25,000 \pm 2000$ ^{14}C yr BP (Kulp *et al.* 1952: 419, table 2 [two samples: pine cones and wood]).

Notes.—The two referred specimens (Howard 1942: 201–202) are the only known material of this taxon in Cuba. Formerly recorded as *Jabiru mycteria* (M. H. C. Lichtenstein, 1819) by Wetmore (1928: 2–3), reidentified as *Ciconia maltha* by Howard (1942: 202; see also Wetmore 1956: 22, 1959: 9). Navarro (2021: 58, table 4) confused *C. maltha* with another fossil congeneric taxon in Cuba, the smaller and undescribed *Ciconia* sp. (see below), which is restricted to tar seeps in Matanzas province (Suárez & Olson 2003a, Suárez 2020a).

7. *Ciconia* sp.

Referred material.—**Tibiotarsus**: distal end of right, MNHNCu 75.4599, formerly P4599 (Suárez & Olson 2003a: 151, fig. 1E [distal], Suárez 2020a: 9, fig. 4A [distal]). Collected 25 February 2001 by WS & Stephen Díaz Franco in San Felipe I, C area (Suárez & Olson 2003a: 151).

Distribution.—Asphalt deposits in west Cuba (see Appendix). *Matanzas*. Martí: **MLB** (Suárez & Olson 2003a, Suárez 2020a).

Direct ^{14}C dating.—None. For dating of other bird species at MLB, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = $11,880 \pm 420$ to $4,960 \pm 280$ years ^{14}C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—Extremely rare. Known from Cuba by a single specimen of a species smaller than *C. maltha* (Suárez & Olson 2003a: 151). Orihuela (2019: 58–59) incorrectly indicated ‘type material’ and ‘type locality’ for *Ciconia* sp., which is an undescribed species. Navarro (2021: 58, table 4) erroneously listed *Ciconia* sp. as the only representative of the genus in Cuba (see ‘Notes’ under *C. maltha*), indicating it was ‘originally identified as *Jabiru mycteria* (Lichtenstein, 1819), by Wetmore (1928)’ which was not the case.

Genus *Mycteria* Linnaeus, 1758

Mycteria Linnaeus, 1758, *Syst. Nat.*, edn. 10, vol. 1, p. 140. Type, by monotypy, *Mycteria americana* Linnaeus.

8. †*Mycteria wetmorei* Howard, 1935

Wetmore’s Stork (Cayama de Wetmore)

Mycteria wetmorei Howard, 1935, *Condor* 37: 253.

Mycteria americana: L. Miller 1910: 446.

Mycteria americana: Campbell 1980: 121.

Mycteria americana: Emslie 1998: table 14.

Holotype.—Fragment of lower mandible, LACM K3527 (Howard 1935: 253, fig. 47: 1 [lateral], 2 [dorsal]). Collected by members of the Southern California Academy of Sciences (Howard 1935: 251).

Type locality.—‘North bank of “pool” near Wilshire Boulevard, Rancho La Brea, Los Angeles, California’, USA (Howard 1935: 253).

Referred material.—**Carpometacarpus**: proximal end of right, MNHNCu 75.4602 (fig. 1E [internal]). **Tibiotarsus**: distal end of right, MNHNCu 75.4603 (fig. 1D [distal]). **Tarsometatarsus**: left, MNHNCu 75.4757 (Suárez 2020a: 10, fig. 4: E [proximal], F [distal],

G [anterior], H [medial], I [posterior]); proximal end of left (immature), MNHNCu 75.4604 (fig. 1H [anterior]); distal end of right, MNHNCu 75.4605 (fig. 1F [anterior]). Cited material and figures are from Suárez & Olson (2003a), other than where indicated.

Distribution.—Asphalt deposits in west Cuba (see Appendix). *Matanzas*. Martí: **MLB** (Suárez & Olson 2003a, Suárez 2020a).

Direct ^{14}C dating.—None in Cuba. For dating of other bird species at MLB, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = $11,880 \pm 420$ to $4,960 \pm 280$ years ^{14}C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—Very rare. *M. wetmorei* occurred sympatrically with *M. americana* Linnaeus, 1758, only in Cuba (*contra* Kirkconnell *et al.* 2020: 69) in the tar seep deposits (Suárez & Olson 2003a). Previous records of Wood Stork in fossil localities of North America, including Florida (see Emslie 1998), represent misidentifications, including of *M. wetmorei* (Olson 1991, Suárez & Olson 2003a).

Order PELECANIFORMES Sharpe Family ARDEIDAE Leach Genus *Tigrisoma* Swainson, 1827

Tigrisoma Swainson, 1827, *Zool. J.* 3: 362. Type, by original designation, *Ardea tigrina* 'Latham' (= J. F. Gmelin, 1789) = *Ardea lineata* Boddaert.

9. *×Tigrisoma mexicanum* Swainson, 1834 Bare-throated Tiger Heron (Garza Tigre Mejicana)

Tigrisoma mexicana Swainson, 1834, in Murray, *Encycl. Geogr.*, p. 1383.

Referred material.—**Tarsometatarsus:** left, AC-33 (Olson & Suárez 2008a: 285, figs. 1B [anterior], 2A [anterior]). Collected during February–April 2004 by members of Arqueocentro [= Néstor A. Gómez, Lorenzo Morales and Raul Villavicencio Finalet], Sagua La Grande (Olson & Suárez 2008a: 285).

Distribution.—Sinkhole deposit in central Cuba (see Appendix). *Villa Clara*. Sagua La Grande: **VCB** (Olson & Suárez 2008a: 286).

Direct ^{14}C dating.—None.

Notes.—Extremely rare. The single tarsometatarsus from Cuba referred to *T. mexicanum* is the first evidence of this genus in a fossil locality anywhere, and the first record of the subfamily Tigrisomatinae in the West Indies (Olson & Suárez 2008a).

Order INCERTAE SEDIS Family †TERATORNITHIDAE L. Miller Genus †*Oscaravis* Suárez & Olson, 2009

Oscaravis Suárez & Olson, 2009a, *Proc. Biol. Soc. Wash.* 122: 106. Type, by monotypy, *Teratornis olsoni* Arredondo & Arredondo.

10. †*Oscaravis olsoni* (Arredondo & Arredondo, 2002) Cuban Teratorn (Teratorno Cubano)

Teratornis olsoni Arredondo & Arredondo, 2002b, *Poeyana* 470–475: 16 [for 1999].

Teratornis sp.: Suárez & Arredondo 1997: 100.

Teratornis olsoni: Arredondo & Arredondo 2002b: 16.

'*Teratornis*' *olsoni*: Suárez 2004a: 124.

Oscaravis olsoni: Suárez & Olson 2009a: 111.

History.—1969: holotype collected in a cave deposit from western Cuba by members of IGP (Arredondo & Arredondo 2002b). *Winter 1997*: first record of Teratornithidae in Cuba, the West Indies, and outside continental America, is announced (Suárez & Arredondo 1997). *13 December 2002*: original description (not ‘26 May 1999’, see ‘Notes’) of *Teratornis olsoni* published (Arredondo & Arredondo 2002b), based on some of the material then known. *1 January 2009*: first revision of *T. olsoni* with description of new material from Cuban cave and asphalt deposits, and erection of the genus *Oscaravis* (Suárez & Olson 2009a).

Holotype.—Near-complete right femur, IGP/ACC 400-649, at CZACC (Arredondo & Arredondo 2002b: 16, figs. 1* [anterior], 2* left [anterior], 3*A: reversed [anterior], Suárez & Olson 2009a: 111, fig. 7, left in each pair: A [anterior], B [posterior], C [proximal], D [distal], Orihuela 2019: 59, fig. 2: A [anterior], B [posterior]). Collected in 1969 by members of IGP at the type locality (Arredondo & Arredondo 2002b: 15).

Other material.—**Quadrate**: incomplete right, OA 3205 (Arredondo & Arredondo 2002b: 16, fig. 4*: A [lateral], B [ventral], Suárez & Olson 2009a: 111, fig. 3, left in each pair: A [lateral], B [posterior], C [medial], D [ventral]). **Femur**: fragmentary distal half of right, OJ P-8 (as ‘P-8’, in the original description), at CZACC; internal condyle of left, OA 3151. See Arredondo & Arredondo (2002b: 16).

Type locality.—Cueva de Paredones (ACP), c.3 km south-west of Ceiba del Agua, municipality of Caimito, Artemisa [not ‘Mayabeque’ as stated by Orihuela 2019: fig. 2] province, Cuba (Arredondo & Arredondo 2002b: 16). Fig. 4.

Distribution.—Cave and asphalt deposits in west Cuba (see Appendix). *Artemisa*. Caimito: ACP = type locality (Suárez & Arredondo 1997: 100 [‘*Teratornis* sp.’], Arredondo & Arredondo 2002a: table 1 [‘*Teratornis* sp.’], 2002b: 16 [‘*Teratornis olsoni* sp. nov.’]), **ASA** (Suárez & Arredondo 1997: 100 [‘*Teratornis* sp.’], Suárez 2000b: 68 [‘*Teratornis*’], Suárez & Olson 2009a: 111–112, figs. 4 = coracoid: B–D [dorsal], F [sternal], 5 = humerus: C [palmar], D [ventral], 6 = humerus: C [palmar], D [anconal], E [distal], 8 = tibiotarsi: B–C [anterior]).

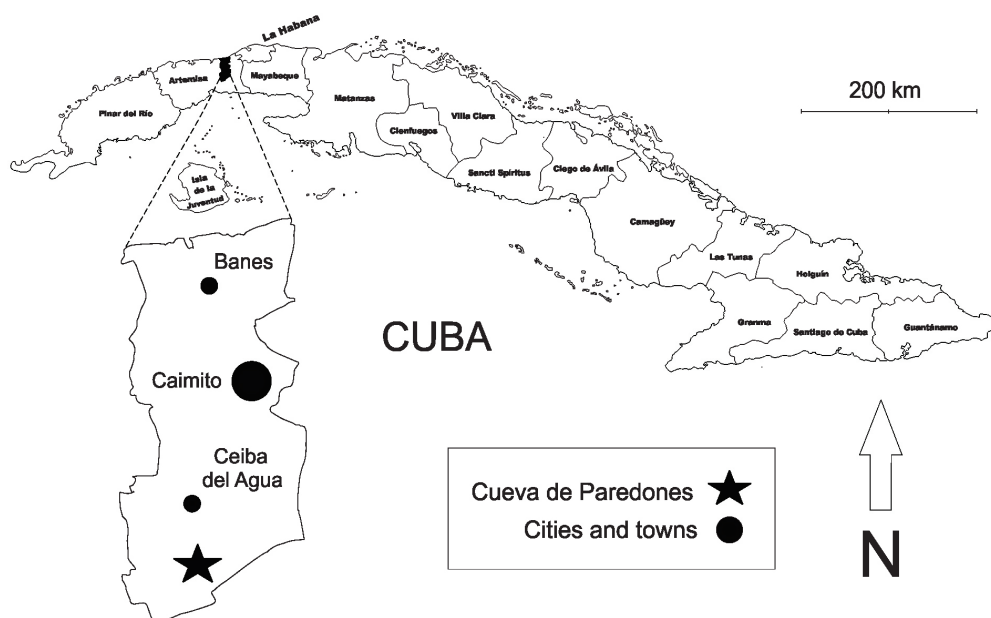


Figure 4. Cueva de Paredones (ACP), Caimito, western Cuba. Type locality of †*Oscaravis olsoni* (Arredondo & Arredondo), †*Gymnogyps varonai* (Arredondo) and †*Tyto cravesae* Suárez & Olson.

Mayabeque. Quivicán: **YBL** (Jiménez Vázquez *et al.* 1995: 25 ['Buitre gigante ind.'], Suárez & Arredondo 1997: 100 ['*Teratornis* sp.'], Arredondo & Arredondo 2002b: 16 ['*Teratornis olsoni* sp. nov.']), **YIN** (Arredondo & Arredondo 2002b: 16 [after correction of the locality of OA 3205, by Suárez & Olson 2009a: 111]). *Matanzas*. Martí: **MLB** (Suárez & Olson 2009a: 112, fig. 8 = tarsometatarsus: E [anterior], Suárez 2020a: 10–12, fig. 5 = tibiotarsus: A [anterior], B [distal], C [medial]; fig. 5 = tarsometatarsi: D [anterior], E [posterior], F [distal]). See 'Notes'.

Direct ^{14}C dating.—None. For dating of other bird species at MLB, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = 11,880 $\pm$ 420 to 4,960 $\pm$ 280 years ^{14}C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—Not rare in Cuban Quaternary fossil localities, wherein it is the only known extinct avian family (Suárez & Olson 2009a). Formerly described (Arredondo & Arredondo 2002b) as a smaller species of the North American genus *Teratornis* L. Miller. Orihuela (2019: 57) erroneously mentioned the limited flight capabilities of the Cuban Teratorn, which is incorrect (see Olson & Alvarenga 2002: 704, Suárez & Olson 2009a: 114). While revising fossil mammals, for a study published elsewhere (Silva Taboada *et al.* 2008), I identified an additional fragmentary specimen referable to Teratornithidae. This was apparently collected in central Cuba by Carlos de la Torre *et al.* during their field work (see Brown 1913, Goldberg *et al.* 2017), but was obviously not seen by Wetmore (1928) for his study of fossil birds from Cuba. This fact probably indicates that the bone is not from Baños de Ciego Montero. The specimen is stored at the Facultad de Biología, Universidad de La Habana, mixed with fragmentary material of mammals of the same colour and degree of mineralisation (recalling fossils from Las Llanadas and sinkhole deposits in northern Villa Clara), and without a catalogue number. Although no precise date, locality or collectors are certainly known, probably the specimen constitutes the first material of the Teratornithidae collected in Cuba, but this requires further study.

The original description of the Cuban Teratorn was published in *Poeyana*, special number 470–475, for 26 May 1999. However, the issue was not printed until more than three years later, on 13 December 2002, as recorded in the Poeyana archives at the Instituto de Ecología y Sistemática (La Habana) library. Following the ICZN (1999, Art. 21.4), the original description of *T. olsoni* must be dated 13 December 2002. The same holds for original descriptions of other taxa published in the same issue, including *Gigantohierax suarezi* Arredondo & Arredondo (see below). Both these species were incorrectly cited as being published in 2003 by Arredondo Antúnez & Arredondo de la Mata (2012) and Arredondo de la Mata & Arredondo Antúnez (2012).

Order CATHARTIFORMES Coues Family CATHARTIDAE Lafresnaye Genus *Gymnogyps* Lesson, 1842

Gymnogyps Lesson, 1842, *Écho du Monde Sav.* (2)9, no. 44, col. 1037. Type, by monotypy, *Vultur californianus* Shaw.

Antillovultur Arredondo, 1972c, *Mem. Soc. Cienc. Nat. La Salle* 31: 310 [for 1971]. Type, by monotypy, *A. varonai* Arredondo.

11. †*Gymnogyps varonai* (Arredondo, 1972) Cuban Condor (Cónдор Cubano)

Antillovultur varonai Arredondo, 1972c, *Mem. Soc. Cienc. Nat. La Salle* 31: 310 [for 1971].

Antillovultur varonai: Arredondo 1972c: 310.

Gymnogyps varonai: Emslie 1988: 213.

Antillovultur varoni: Arredondo 1996: 1 (*lapsus calami*).

Gymnogyps sp.: Suárez & Arredondo 1997: 100.

Antillovultur varonai: Pradas 1998: 7 (*lapsus calami*).
Gymnogyps varonae: Vergara 2003: 454, 456 (*lapsus calami*).
Gymnogyps varonai: Suárez 2004c: 15 (*lapsus calami*).

History.—7 September 1959: Arredondo and members of GEC collect the type series in a cave deposit in west Cuba (Arredondo 1972c: 209). 5 February 1971: first news published of ‘un Buitre cubano extinguido...aparentemente de la talla del actual Cóndor de los Andes’ [‘an extinct Cuban vulture...apparently about the size of the living Andean Condor’] (Arredondo 1971: 96). 1972: original description (after March 1972, not ‘1971’, see ‘Notes’) of ‘*Antillovultur*’ *varonai* published (Arredondo 1972c). May 1978: S. L. Olson comments on similarities between the extinct genus *Antillovultur* and living *Gymnogyps* (Olson 1978: 103–104). June 1988: Cuban Condor treated as *Gymnogyps varonai* (Emslie 1988: 222). 1 February 2000: cranial and postcranial elements from cave, asphalt and sinkhole deposits described, further evidencing it is a *Gymnogyps* (Suárez 2000a). 23 April 2003: redescription of *G. varonai* published after first direct comparison with living and extinct North American congeners (Suárez & Emslie 2003). 22 May 2020: direct ¹⁴C dating published, on material from asphalt deposits (Suárez 2020a: table 2).

Holotype.—Proximal fragmentary left tarsometatarsus, DPUH 1254 (Arredondo 1972c, figs. 1—not ‘MPUH’ (*lapsus calami*) as in the figure legend—[anterior], 2*A [anterior], 3*D [anterior], 1976, figs. 1: A [anterior], B [posterior], 2*C [anterior], Suárez 2000a, fig. 1: ‘A’ = left [anterior], ‘B’ = right [posterior]). Collected 7 September 1959 by Oscar Arredondo [with Manuel Acevedo-González, Juan N. Otero and Walter M. Acevedo-González (see Morejón 1974: 85)], in ‘Salón del Pozo’, at the type locality (Arredondo 1972c: 309, 311).

Other material.—**Vertebra:** incomplete ‘7th’ cervical, OA 848. **Humerus:** left lacking proximal end, GEC P-80, formerly GEC unnumbered, at CZACC (Arredondo 1972c: figs. 4 [palmar], 5*C: left [anconal], right [dorsal], 1976, fig. 1C [palmar]). **Tarsometatarsus:** trochlea IV of left, OA 847 (Arredondo 1972c: fig. 3*D [anterior], 1976: fig. 2*C [anterior]). See Arredondo (1972c: 311).

Type locality.—Cueva de Paredones (ACP), c.3 km south-west of Ceiba del Agua, municipality of Caimito [formerly San Antonio de los Baños], Artemisa [formerly La Habana] province, Cuba (Arredondo 1972c: 311). Fig. 4.

Distribution.—Cave, asphalt and sinkhole deposits over Cuba’s main island (see Appendix). *Pinar del Río*. Minas de Matahambre: **PPD** (Suárez 2000a: 113). *Artemisa*. Caimito: **ACP** = type locality (Arredondo 1971: 96 [see ‘History’], 1972a: table 1 [‘Especie de Buitre ligeramente mayor que un Cóndor’], 1972c: 310 [‘*Antillovultur varonai* n. gen., n. sp.’], 1975: 151 [‘*Antillovultur varonai*’], Suárez & Arredondo 1997: 100 [‘*Gymnogyps* sp.’], Suárez 2000a: 113, fig. 2* = tarsometatarsus: A [anterior], B [posterior], Suárez & Emslie 2003: 30, fig. 4 = tarsometatarsi: middle [anterior], right [anterior], Arredondo & Arredondo 2002a: table 1 [‘*Antillovultur varonai*’], 2002b: table 1 [‘*Antillovultur varonai*’]), **ASA** (Suárez 2000a: 112–113, 2000b: 68 [‘*Gymnogyps*’], 2004a: 124, Arredondo & Arredondo 2002a: table 1 [‘*Antillovultur varonai*’]). *Mayabeque*. Quivicán: **YIN** (Suárez 2000a: 113). *Matanzas*. Martí: **MLB** (Suárez 2000a: 112, fig. 4* = rostrum: A [dorsal], B [lateral], Iturralde-Vinent *et al.* 2000: table 2, Suárez & Emslie 2003: 30, fig. 2 = rostrum: middle [lateral], Suárez 2020a, fig. 7: A = humerus [anconal], B = coracoid [ventral], C = carpometacarpus [ventral], D = tibiotarsus [anterior], E = tibiotarsus [distal], F–J = tarsometatarsus: F [anterior], G [proximal], H [posterior], I [anterior], J [distal]). *Villa Clara*. Corralillo: **VSM** (Pradas 1998: 7 [‘*Antillovultur* [sic] *varonai*’], Suárez 2000a: 112, fig. 3* = skull: A [dorsal], B [lateral], C [posterior], Suárez & Emslie 2003: 30, figs. 1 = skull: top row, middle [dorsal], bottom row, middle [posterior], 3 = tibiotarsus: left [anterior], Arredondo Antúnez & Villavicencio Finalet 2006: 163, tables I–II). *Holguín*.

Mayarí: OCS (Arredondo 1984: 8 [*'Antillovultur varonai'*], 1996: 1 [*'Antillovultur varoni* [sic]']. This record has been cited with reservations, see Suárez 2000a, fig. 5)).

Direct ^{14}C dating.—Late Pleistocene (MLB): >41,000 ^{14}C yr BP (Suárez 2020a: table 2, tibiotarsus).

Notes.—The commonest cathartid in Cuban Late Pleistocene / Early Holocene deposits, from where it is known by most of its skeletal elements (Suárez 2000a, 2020a, Suárez & Emslie 2003). Approximately the same size (not 'bigger', as incorrectly indicated by Gutiérrez Domech 2010: 12, Gutiérrez Domech *et al.* 2018: 42) as Andean Condor *Vultur gryphus* Linnaeus, 1758, and larger than California Condor *Gymnogyps californianus* (see Arredondo 1971: 96, 1972c: 311, 1976: 172, 1984: 8). Comments on the taxonomic status of Cuban Condor by Navarro (2020: 51) are outdated, overlooking the taxon's redescription (Suárez & Emslie 2003). The original description of *Antillovultur* (= *Gymnogyps*) *varonai* was not published in September–December 1971, as appears on *Mem. Soc. Cienc. Nat. La Salle* 31(90). Some evidence indicates it was printed after the description (March 1972) of the extinct barn owl *Tyto noeli* Arredondo, and probably before that of '*T. riveroi*' Arredondo (December 1972 [but see Arredondo 1975: 159, 189]). On 5 February 1971, Arredondo (1971: 95–96) commented about his discoveries and progress with investigations concerning the two large *Tyto* species and the condor. Of the barn owls, he wrote that 'aunque están descritas, no han sido aún dadas a conocer como especies nuevas' ['although they are described, they have not yet been released as new species'], and concerning the condor, 'aún no está descrita, pero en un futuro se dará a conocer' ['it is not yet described, but in the future it will be released'], indicating that both *Tyto* manuscripts were finished (one being in press, see Arredondo 1970b: 151) and he expected them to be published before that of the condor, which was still not finished. This accords with the original description of *T. noeli* (supposedly published 3–4 months after the condor paper), wherein the condor is listed in a table without a scientific name (Arredondo 1972a: table 1). This seems logical, as Arredondo had no means of easily modifying manuscripts in press outside Cuba (in this case Venezuela) (O. Arredondo pers. comm.). But, the barn owl paper, supposedly published a year after '*A. varonai*', is cited in the condor's original description as a source that had previously mentioned the presence of this scavenger in Cuba, with a precise indication of page numbers (Arredondo 1972c: 309, 322), year (= 1972), month (= March), and even the scientific name of the tytonid (Arredondo 1972c: 319, table 1). Or, in other words, a publication from 1972, is cited in all its details in a paper supposedly published the previous year, 1971. More precise information exists in an article on the history of the discovery of Cuban Condor and other fossil raptors by Arredondo, published by Morejón (1974: 85): 'En septiembre de 1959 un grupo de investigadores, entre los cuales se encontraban...Manuel Acevedo-González, Juan N. Otero y Walter M. Acevedo-González, todos espeleólogos; y el paleontólogo Arredondo, encontraron en...la Cueva de Paredones...huesos de un ave que muy posteriormente, en 1972, pudieron ser clasificados como pertenecientes a una especie de buitre mayor que el actual cóndor de California. Se trata de un nuevo género y una nueva especie, y recibió la denominación de "*Antillovultur varonai*" ...' ['In September 1959, a group of researchers, among them...Manuel Acevedo-González, Juan N. Otero and Walter M. Acevedo-González, all speleologists, and the palaeontologist Arredondo, found in...Cueva de Paredones...bones of a bird that much later, in 1972, was finally classified as belonging to a species of vulture larger than the living California Condor. It is a new genus and a new species, and received the name of "*Antillovultur varonai*" ...']. Considering the evidence from these papers, the publication date of the condor cannot be in the last quarter of 1971, but sometime after March 1972. Delays, even of a year, in the printing of some issues of *Mem. Soc. Cienc. Nat. La Salle* were common at the time (F. Rojas *in litt.*

2021). As the precise date is unknown, according to the ICZN (1999, Art. 21.3 and 21.4), the date of publication for *Antillovultur* (= *Gymnogyps*) *varonai* Arredondo to be adopted is 31 December 1972, rather than September–December 1971, as has been generally accepted by the palaeontological community.

Genus *Coragyps* Le Maout, 1853

Coragyps Le Maout, 1853, *Hist. Nat. Oiseaux*, p. 57, 66. Type, by monotypy, *Vultur urubu* Vieillot = *Vultur atratus* Bechstein.

12. †*Coragyps seductus* Suárez, 2020 Cuban Black Vulture (Zopilote Cubano)

Coragyps seductus Suárez, 2020a, *Zootaxa* 4780: 12.

History.—*May 2001*: first notification of an extinct small vulture ‘larger than *C. aura*’ from Cuba (Suárez 2001b: 110). *25–27 December 2002*: WS & Stephen Díaz Franco collect paratypes in San Felipe II, at the type locality. *22 May 2020*: original description published (Suárez 2020a).

Holotype.—Near-complete left tarsometatarsus, MNHNCu 75.4719 (Suárez 2020a: 12, fig. 6: A [anterior], B [posterior], C [distal]). Collected in San Felipe II on 24 February 2001 by WS and Stephen Díaz Franco (Suárez 2020a: 3).

Other material.—**Femur**: proximal half of left lacking trochanter, MNHNCu 75.4718 (fig. 6: E [anterior], F [posterior]). **Tarsometatarsus**: proximal left, MNHNCu 75.4720 (fig. 6: D [proximal]). Cited material and figures are from Suárez (2020a).

Type locality.—Las Breas de San Felipe (MLB), c.5.5 km west of town of Martí, San Felipe Valley, municipality of Martí, Matanzas province, Cuba (Suárez 2020a: 12; for description of the deposit, see Iturralde-Vinent *et al.* 2000). Fig. 5.

Distribution.—Asphalt deposits in west Cuba (see Appendix). *Matanzas*. Martí: MLB (Suárez 2020a: 12).

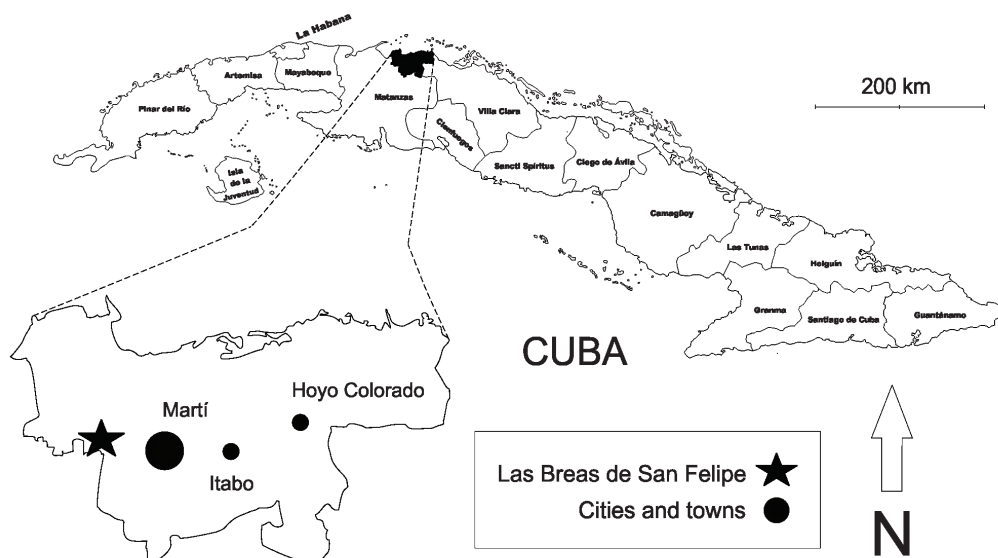


Figure 5. Las Breas de San Felipe (MLB), Martí, western Cuba. Type locality of †*Coragyps seductus* Suárez, †*Cathartes emsleyi* Suárez & Olson, †*Gigantohierax itchei* Suárez, †*Buteogallus royi* Suárez, †*Buteo sanfelipensis* Suárez, †*Milvago carbo* Suárez & Olson and †*M. diazfrancoi* Suárez.

Direct ^{14}C dating.—None. For dating of other bird species at the type locality, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = $11,880 \pm 420$ to $4,960 \pm 280$ years ^{14}C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—The rarest extinct Cuban cathartid, restricted to its type locality. Larger and more robust than living Black Vulture *Coragyps atratus* (Bechstein, 1793) and similar in size to extinct *C. occidentalis* (L. Miller, 1909), but with tarsometatarsus slender, among other characters (Suárez 2020a: 12). Also, proximal foramina of the tarsometatarsus are more distally placed in the two Cuban specimens available (S. L. Olson & WS unpubl.) than in congeneric species, but this can be variable and requires further evaluation of additional, insular fossil material. A distal fragment of carpometacarpus from a cave deposit in ASA, western Cuba, probably involves this taxon, but it is insufficient in diagnostic characters for a positive identification (Suárez 2020a: 13). As with Cuban Condor, the Cuban Black Vulture seems to have diverged during the Quaternary, after colonisation probably from Florida, evolving rapidly in isolation and depending on an endemic, insular ‘megafauna’, where competitive carnivorous mammals were absent (see Arredondo 1976: 170, Morgan *et al.* 1980: 606, Suárez 2000a: 120, Suárez & Emslie 2003: 36, Silva Taboada *et al.* 2008: 328–329, Suárez & Olson 2020b: 341).

March (1863: 150–151) reported vultures observed and prepared for collection by him in Jamaica, including the ‘John Crow Vulture [= *Cathartes aura*]’, ‘The Black, or Carrion Crow Vulture [= *Coragyps atratus*]’ and another, unknown vulture species, of which he stated: ‘In the autumn of 1828, I obtained from Great Salt Pond a specimen of a black Vulture, mottled with white spots, about the size of *Pandion carolinensis*. It was so obese, with deep fulvous fat, that I had much difficulty in preserving it in part. I sent the specimen to the Royal Dublin Society, but have received no information of its having been identified with any described species.’ The specimen, or material that matches March’s description, are unknown in the Dublin collection (P. Viscardi *in litt.* 2021). William T. March (1804–72) was a Jamaican native naturalist and collector (see Levy 2008, 2013). Although the bird he collected in 1828 could have been a leucistic *Cathartes aura* (see Zeiger *et al.* 2017), it is also possible that it was an individual of the Cuban (Antillean?) extinct species *Coragyps seductus*, which was larger than *C. atratus* (Suárez 2020a). If the skin still exists, and its identity, are the subject of pending investigations.

Genus *Cathartes* Illiger, 1811

Cathartes Illiger, 1811, *Prodromus Syst. Mamm. Av.*, p. 236. Type, by subsequent designation, *Vultur aura* Linnaeus.

13. †*Cathartes emsliei* Suárez & Olson, 2020

Emslie’s Vulture (Aura de Emslie)

Cathartes emsliei Suárez & Olson, 2020b, *Bull. Brit. Orn. Cl.* 140: 335.

Cathartes aura: Jiménez Vázquez & Valdés Ruiz 1995: 62.

Cathartes? sp.: Suárez 2000a: 120.

Cathartes sp.: Arredondo & Arredondo 2002a: table 1.

History.—1997: first identified specimen (tarsometatarsus) of the type series collected by WS in a cave deposit in west Cuba (Suárez & Olson 2020b: 335). *February 2000*: comment published, clarifying that Turkey Vulture *C. aura* (Linnaeus, 1758) is unknown in Cuba from Pleistocene / Early Holocene deposits, where fossils represent another taxon (Suárez 2000a: 120). *May 2001*: the presence of two additional ‘undescribed, smaller species’ of vultures from Cuba is reported (Suárez 2001b: 110). 2020: first record from asphalt deposits (22 May)

at Las Breas de San Felipe, west Cuba (Suárez 2020a: 14), and the original description (21 September) of *C. emsliei* is published (Suárez & Olson 2020b).

Holotype.—Proximal half of left tarsometatarsus, MNHNCu 75.4752 (Suárez & Olson 2020b: 336, fig. 3: B [anterior], E [posterior]). Collected in San Felipe I on 27 December 2002 by WS and Stephen Díaz Franco (see Suárez 2020a: 3).

Other material.—**Scapula:** right, MNHNCu 75.692, formerly P-692 (fig. 1B [ventral]). **Coracoid:** fragmentary left, MNHNCu 75.4755, formerly P-691 (fig. 1D [dorsal]). **Tibiotarsus:** right without proximal end, MNHNCu 75.4750 (fig. 2A [anterior]); distal right, MNHNCu 75.4754, MNHNCu 75.4749 (fig. 2C [anterior]); distal left, MNHNCu 75.4748. **Tarsometatarsus:** proximal right, MNHNCu 75.4745, MNHNCu 75.4753, WS 778—immature (fig. 3: A [anterior], D [posterior]); distal half of right, MNHNCu 75.4746 (fig. 3: H [anterior], J [posterior]); proximal half of left, MNHNCu 75.4747; distal half of left, MNHNCu 75.4751 (fig. 3: G [anterior], I [posterior]). Cited material and figures are from Suárez & Olson (2020b).

Type locality.—Las Breas de San Felipe (**MLB**), c.5.5 km west of the town of Martí, San Felipe Valley, municipality of Martí, Matanzas province, Cuba (Suárez & Olson 2020b: 338; for description of the deposit, see Iturralde-Vinent *et al.* 2000). Fig. 5.

Distribution.—Cave, asphalt and sinkhole deposits in west and central Cuba (see Appendix). *Artemisa*. Caimito: **ACP** (WS unpubl.), **ASA** (Suárez 2004a: 124 [‘a small species of vulture’], Suárez & Olson 2020b: 338). *Mayabeque*. San José de las Lajas: **YCI** (Jiménez Vázquez & Valdés Ruiz 1995: 62 [‘*Cathartes aura*’], Rojas Consuegra *et al.* 2012: 10 [‘*Cathartes* sp.’, after being re-identified by WS (= ‘*C. aura*’ of Jiménez Vázquez & Valdés Ruiz 1995)], Suárez & Olson 2020b: 335). *Matanzas*. Martí: **MLB** = type locality (Suárez 2020a: 14 [‘*Cathartes* sp.’], Suárez & Olson 2020b: 336 [‘*Cathartes emsliei* sp. nov.’]). *Villa Clara*. Corralillo: **VSM** (WS unpubl.).

Direct ¹⁴C dating.—None. For dating of other bird species at the type locality, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = 11,880 ± 420 to 4,960 ± 280 years ¹⁴C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—Uncommon in Quaternary deposits on the main island. Postcranial elements smaller compared to specimens of living *C. aura* (Suárez 2001b, 2004a, Suárez & Olson 2020b). Scarce material of *C. emsliei* from cave deposits in west Cuba, and from sinkhole deposits in Villa Clara province, central Cuba, are present at CZACC and AC, respectively (WS unpubl.). Emslie’s Vulture is comparable in size to the extinct, tiny *Wingegyps cartellei* Alvarenga & Olson, 2004, from the Pleistocene of Brazil (see Nascimento & Silveira 2020: 502–503), but the latter is similar to *Gymnogyps* condors rather than to *Cathartes* (Alvarenga & Olson 2004: 3).

Order ACCIPITRIFORMES Vieillot Family ACCIPITRIDAE Vieillot Genus †*Gigantohierax* Arredondo & Arredondo, 2002

Gigantohierax Arredondo & Arredondo, 2002a, *Poeyana* 470–475: 10 [for 1999]. Type, by original designation, *G. suarezi* Arredondo & Arredondo.

Gygantohierax Arredondo Antúnez & Arredondo de la Mata 2012: 298 (*lapsus calami*).

14. †*Gigantohierax suarezi* Arredondo & Arredondo, 2002 Suárez’s Giant Eagle (Águila Gigante de Suárez)

Gigantohierax suarezi Arredondo & Arredondo, 2002a, *Poeyana* 470–475: 10 [for 1999].

Aquila borraasi: Arredondo 1970a: 3 (part).

Titanohierax borraasi: Olson & Hilgartner 1982: 28 (part).

History.—*July 1954*: first material collected by members of SEC in a cave deposit in western Cuba (Arredondo 1955: 29, 1958: 11, 1961: 20, 1964: 19, 1970a: 1–2, 1971: 94). *December 1955*: a drawing of an ungual phalanx, digit I, is labelled ‘ave prehistórica, tal vez andadora’ [‘prehistoric bird, maybe a walker’] (Arredondo 1955: 26). *July 1958*: an incomplete right femur and the same ungual phalanx are figured and tentatively identified as a supposed larger species of terror bird than *Ornimegalonyx oteroi* (see Arredondo 1958). The length of the phalanx is compared to one of ‘*Phororhacos longissimus*’ (Arredondo 1958: 11). *27 March 1959*: B. Patterson (MCZ, *in litt.* to O. Arredondo) mentions a large eagle identified (see ‘Notes’) among Cuban material sent to him for study (Arredondo 1964: 21, 1970a: 2). *1961*: first published notice in Cuba of an extinct eagle from the island (Arredondo 1961: 20; see also Arredondo 1964: 19, 21, 90). *January 1970*: original description of ‘*Aquila borrasii*’ published (Arredondo 1970a) based on a composite type series including some specimens at MCZ (Arredondo 1970a: 3–4, see *Buteogallus borrasii*). *5 August 1982*: species transferred to extinct genus *Titanohierax* Wetmore (Olson & Hilgartern 1982: 28). *16 February 1995*: Jesús Martínez González and WS collect the holotype (Arredondo & Arredondo 2002a: 9). *13 December 2002*: original description (not ‘26 May 1999’, see ‘Notes’ under *Oscaravis olsoni*) of *Gigantohierax suarezi* is published (Arredondo & Arredondo 2002a: 10). The type series includes some large specimens at MCZ, formerly described as ‘*Aquila borrasii*’. *22 May 2020*: first record in asphalt deposits, with description of previously unknown skeletal elements (Suárez 2020a: 22–25).

Holotype.—Left femur, MNHNCu 75.574, original number ‘MNHNH. P-574’ (Arredondo & Arredondo 2002a: 10, figs. 1* [anterior], 3*A [posterior]; see Díaz-Franco 2004: 156, Herrera-Uria *et al.* 2015: 114). Collected 16 February 1995 by Jesús Martínez González and WS in the deposit known as El Sumidero (see Suárez 2000b) at the type locality (Arredondo & Arredondo 2002a: 9). The holotype was not ‘discovered since the late 1950s’ (*contra* Orihuela 2019: 60).

Other material.—**Femur**: right lacking trochanter and condyles, SEC P-26, at MCZ (Arredondo 1958: 12, fig. left unnumbered: top [anterior], 1964: 19, fig. left unnumbered: right [anterior], 1970a: 4, fig. 7 [anterior], 1971: 96, fig. top left unnumbered: A, left [anterior], Arredondo & Arredondo 2002a: 9–10, fig. 2* [anterior]). **Tarsometatarsus**: three shaft fragments of right, WS 80120.E. **Phalanges**: ungual phalanx, digit I, SEC P-31, at MCZ (Arredondo 1955: 27, fig. unnumbered*: centre [lateral], 1958: 10, fig. left unnumbered*: 2 [lateral], 12, fig. left unnumbered: middle right [lateral], 1970a: 4, fig. 3A [lateral], 1971: 96, fig. top left unnumbered: A, top [lateral], bottom* [lateral], Arredondo & Arredondo 2002a: 9–10, fig. 4A*: [lateral]).

Type locality.—Cueva de Sandoval (**ASA**), c.4 km south of Vereda Nueva, municipality of Caimito, Artemisa [formerly La Habana] province, Cuba (Arredondo & Arredondo 2002a: 10). Fig. 6.

Distribution.—Cave, asphalt and sinkhole deposits in west and central Cuba (see Appendix). **Artemisa**. Caimito: **ACP** (Arredondo 1955: 26 [‘ave prehistórica, tal vez andadora’], 1958: 11 [‘especie mucho mayor’], 1964: 19 [‘Aguila cubana de la prehistoria’], 1970a: 4 [‘*Aquila borrasii* sp. nov.’ (part)], figs. 5*A = ungual phalanx [lateral], 9* = ungual phalanx [lateral], see ‘Notes’ under *Buteogallus borrasii*; 1971: 96 [‘*Aquila borrasii* (part)’], Arredondo & Arredondo 2002a: 9–10; WS unpubl.), **ASA** = type locality (Suárez 2000b: table 1 [‘Accipitridae indeterminate’], Arredondo & Arredondo 2002a: 10 [‘*Gigantohierax suarezi* n. gen., n. sp.’]), **ACF** (Arredondo & Arredondo 2002a: 10). **Mayabeque**. Quivicán: **YIN** (WS unpubl.). **Matanzas**. Jagüey Grande: **MFJ** (WS unpubl.), Martí: **MLB** (Suárez 2020a, fig. 11 = humerus: A [palmar], B [anconal], C = carpometacarpus [external], D = tarsometatarsus [distal], E [idem: anterior], F [idem: medial], G [idem: posterior], H = digit

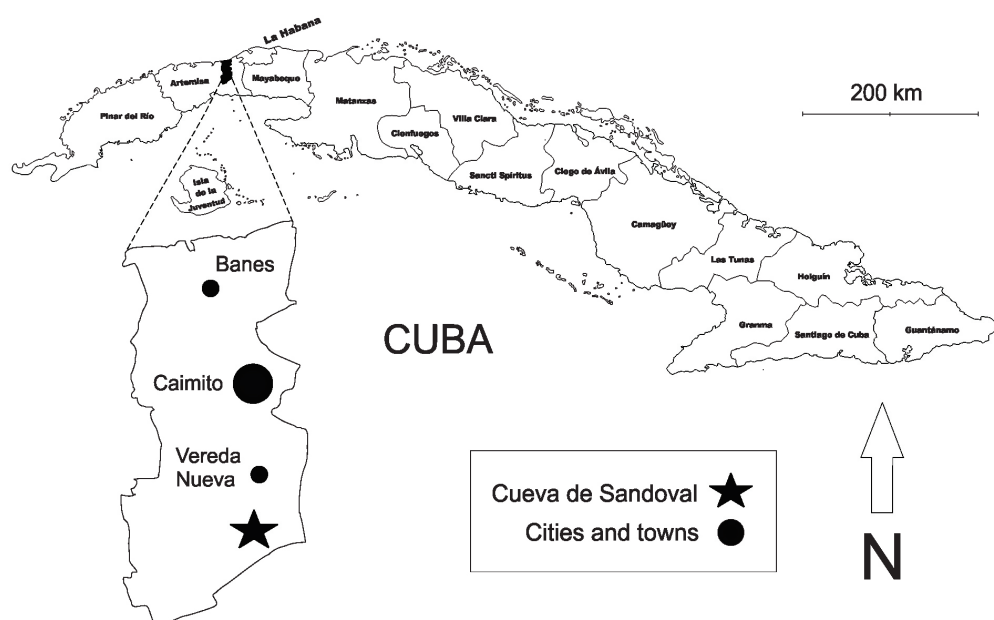


Figure 6. Cueva de Sandoval (ASA), Caimito, western Cuba. Type locality of †*Gigantohierax suarezi* Arredondo & Arredondo and †*Falco kurochkini* Suárez & Olson.

I, phalanx 1 [dorsal], I = ungual phalanx, digit I [lateral]). *Villa Clara*. Sagua La Grande: **VCB** (WS unpubl.).

Direct ^{14}C dating.—None. For dating of other bird species at MLB, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = $11,880 \pm 420$ to $4,960 \pm 280$ years ^{14}C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—Common in Cuban Quaternary deposits. This taxon is the largest Accipitridae ever known from the Americas, larger than the living Harpy Eagle *Harpia harpyja* (Linnaeus, 1758) or any of the extinct described species there (Arredondo & Arredondo 2002a: 10, Suárez 2020a: 22); the genus seems to have been also present on Hispaniola (Suárez 2020a: 25). Another paratype of *Aquila* (= *Buteogallus*) *borrasi*, the ungual phalanx GEC unnumbered, at CZACC, from ACP (Arredondo 1970a: 4), is referred herein to *G. suarezi* (see ‘Notes’ under *B. borrasi*). According to B. Patterson’s notes comparing fossil material from Cuba with museum specimens, femur SEC P-26 (see ‘Other material’) was considered by him as a ‘Giant Cuban Cathartid’, instead of ‘Accipitridae’, as he identified other bones in the sample. Arredondo correctly assumed (*contra* Patterson’s notes) that the largest femur was an Accipitridae (now *G. suarezi*), and included it in the type series of ‘*Aquila*’ *borrasi*’ (see Arredondo 1970a: 4, Arredondo 1984: 11). On the other hand, the skeleton of *G. suarezi* is similar to some Old World vultures in characters (Suárez & Olson 2021: 264, Suárez *et al.* unpubl.), which confused B. Patterson to the point that he considered the large Cuban femur as belonging to a cathartid. A more complete study of the anatomy and relationships of this taxon will be presented elsewhere (Suárez *et al.* unpubl.).

15. †*Gigantohierax itchei* Suárez, 2020 Itche’s Eagle (Águila de Itche)

Gigantohierax itchei Suárez, 2020a, *Zootaxa* 4780: 25.

Holotype.—Distal third of right tarsometatarsus lacking trochlea IV, MNHNCu 75.4869 (Suárez 2020a: 25, fig. 11: M [anterior], N [medial], O [posterior], P [distal]). Collected in San Felipe II, during 25–28 November 1998 by members of the Depto. de Geología y Paleontología, MNHNCu (see ‘Type locality’).

Other material.—**Femur:** proximal end of fragmentary right, MNHNCu 75.4725 (Suárez 2020a: 25, fig. 11: J [anterior], K [posterior], L [lateral]).

Type locality.—Las Breas de San Felipe (**MLB**), c.5.5 km west of the town of Martí, San Felipe Valley, municipality of Martí, Matanzas province, Cuba (Suárez 2020a: 25; for description of this deposit see Iturralde-Vinent *et al.* 2000). Fig. 5.

Distribution.—Asphalt deposits in west Cuba (see Appendix). *Matanzas*. Martí: **MLB** (Suárez 2020a: 25).

Direct ^{14}C dating.—None. For dating of other bird species at the type locality, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = $11,880 \pm 420$ to $4,960 \pm 280$ years ^{14}C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—Very rare. Unknown from other Quaternary deposits in Cuba. This taxon is c.29% smaller than *Gigantohierax suarezi*. The holotype, MNHNCu 75.4869, was for some time held in the same collection under the incorrect catalogue number P4569, preoccupied by material of *Milvago carbo* (see below).

Genus *Buteogallus* Lesson, 1830

Buteogallus Lesson, 1830, *Traité d’Orn.*, livr. 2, p. 83. Type, by monotypy, *B. cathartoides* Lesson = *Falco aequinoctialis* J. F. Gmelin.

16. *Buteogallus* cf. *†B. fragilis* (L. Miller, 1911)

Fragile Eagle (Águila Frágil)

Geranoaëtus fragilis L. Miller, 1911, *Univ. California Publ. Bull. Dept. Geol.* 6: 315.

Urubitinga fragilis: Howard 1932: 16.

Buteogallus fragilis: Howard 1946: 117.

Holotype.—Left tarsometatarsus, UCMP 12757 (Miller 1911: 315, fig. 5*: A [proximal], B [anterior]).

Type locality.—Rancho La Brea, Los Angeles, California, USA (Miller 1911; see Howard 1932, Wetmore 1956: 45, Brodkorb 1964: 269).

Referred material.—**Tibiotarsus:** distal end of right, MNHNCu 75.4735 (fig. 8I [anterior]). **Tarsometatarsus:** distal shaft segment of left, MNHNCu 75.4736 (fig. 8J [posterior]). Cited material and figures are from Suárez (2020a).

Distribution.—Asphalt deposits in west Cuba (see Appendix). *Matanzas*. Martí: **MLB** (San Felipe II, Suárez 2020a: 17).

Direct ^{14}C dating.—None in Cuba. For dating of other bird species at MLB, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = $11,880 \pm 420$ to $4,960 \pm 280$ years ^{14}C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—Extremely rare in the archipelago, where unknown outside tar seeps. The Cuban material referred to *B. fragilis* constitutes the first record of this taxon in the West Indies and outside continental America (Suárez 2020a: 17).

17. *†Buteogallus borraasi* (Arredondo, 1970)

Borrás’s Hawk (Gavilán de Borrás)

Aquila borraasi Arredondo, 1970a (part), *Cienc. Biol. Univ. Habana* (4)8: 3.

Aquila borraasi: Arredondo 1970a: 3 (part).

Aquila borraisi: Acevedo González *et al.* 1975: VIII (typographical error).
Aquila sp.: Fischer 1977: 214.
Sarcoramphus sp.: Acevedo-González & Arredondo 1982: table 1.
Titanohierax borraisi: Olson & Hilgartner 1982: 28 (part).
Sarcoramphus sp.?: Arredondo 1984: 9.
Aquila sp.: Arredondo 1984: 12.
Titanohierax borraisi: Milberg & Tylberg 1993: 243 (*lapsus calami*).
Sarcoramphus? sp.: Suárez 2000a: 120.
Titanohierax borraisi: Vergara 2003: 454 (*lapsus calami*).
Aquila borraisi: Newton 2003: 267 (*lapsus calami*).
'Aquila' borraisi: Suárez 2004a: 121.
Buteogallus borraisi: Suárez & Olson 2008: 289.
Buteogallus borraisi: Hunt & Lucas 2018: 285 (*lapsus calami*).
Aguila borraisi: Orihuela 2019: 60 (*lapsus calami*).

History.—27 March 1959: B. Patterson (MCZ, *in litt.* to O. Arredondo) reports a large eagle identified in the Cuban material sent to him for study (Arredondo 1964: 21). 1961: first published notification in Cuba about the presence of an extinct eagle on the island (Arredondo 1961: 20; see Arredondo 1964: 19, 21, 90). February 1968: Noel González Gotera and Arredondo collect the holotype in a cave deposit in western Cuba (Arredondo 1970a: 2). January 1970: original description of *Aquila borraisi* published (Arredondo 1970a), based on a composite type series including material at MCZ (Arredondo 1970a: 3–4, see *Gigantohierax suarezi*). 5 August 1982: species transferred to the extinct genus *Titanohierax* Wetmore (Olson & Hilgartner 1982: 28). December 2000: first record in Cuban asphalt deposits (Iturralde-Vinent *et al.* 2000: table 2). 13 December 2002: two large specimens of the type series included in the original description of *Gigantohierax suarezi* (Arredondo & Arredondo 2002a). April 2004: generic position of *Titanohierax borraisi* questioned by Suárez (2004a: 124). 2008: Borrás's Hawk redescribed on basis of additional fossil material and reassigned to *Buteogallus* (Suárez & Olson 2008: 289).

Holotype.—Left tarsometatarsus lacking distal end, DPUH 1250 (Arredondo 1970a: 4, fig. 1 [anterior], 1971: 96, fig. top left unnumbered: A, centre [anterior], 1976: fig. 3 [anterior]). Collected 11 February 1968 by Noel González Gotera and Oscar Arredondo at the type locality (Arredondo 1970a: 4), in a place known as 'Bolsón de los Huesos del Salón del Depósito' (see Acevedo González *et al.* 1975: 16, 18, figs. 4–5).

Other material.—**Phalanges:** pedal phalanx, OA 674 (1000B), at CZACC (Arredondo 1970a: 15, fig. 5*: C [lateral], D [dorsal]); ungual phalanx, digit IV, SEC P-32, at MCZ (Arredondo 1970a: 4, fig. 5*: B [lateral]); ungual phalanx, digit IV, OA 675 (1000A), at CZACC (Arredondo 1970a: 14, fig. 4 [lateral]). Three specimens, a femur and two ungual phalanges, formerly paratypes of *'Aquila' borraisi*, represent *Gigantohierax suarezi* (see 'History' and 'Notes'). Other material mentioned in the original description at MCZ (Arredondo 1970a: 2, fig. 3: B [lateral], C [lateral], see Olson & Hilgartner 1982: 28), need re-evaluation.

Type locality.—Cueva del Túnel (YTU), c.3 km south-east of La Salud, municipality of Quivicán, Mayabeque [formerly La Habana] province, Cuba (Arredondo 1970a: 4, see Acevedo González *et al.* 1975: 18). Fig. 7.

Distribution.—Cave, asphalt and sinkhole deposits in west and central Cuba (see Appendix). Artemisa. Caimito: ACP (Arredondo 1970a: 4 [*'Aquila borraisi* sp. nov.' (part), see 'Notes']; 1972a: table 1 [*'Aquila borraisi'* (part)], 1972c: table 1 [*'Aquila borraisi'* (part)], 1975: 151 [*'Aquila borraisi'* (part)], 1984: 11 [*'Aquila borraisi'* (part)], 12 [*'Aquila* sp.'], Suárez & Olson 2008: 290–291, fig. 1: A = tarsometatarsus [anterior], fig. 2: A = humerus [anconal], B = ulna [palmar], fig. 3: C = tarsometatarsus [anterior], Arredondo & Arredondo 2002a: table 1 [*'Titanohierax borraisi'*]), ASA (Suárez 2000b: table 1 [*'Titanohierax borraisi'*], Suárez & Olson 2008: 291, fig. 3: E = tibiotarsus [anterior], Arredondo & Arredondo 2002a: table

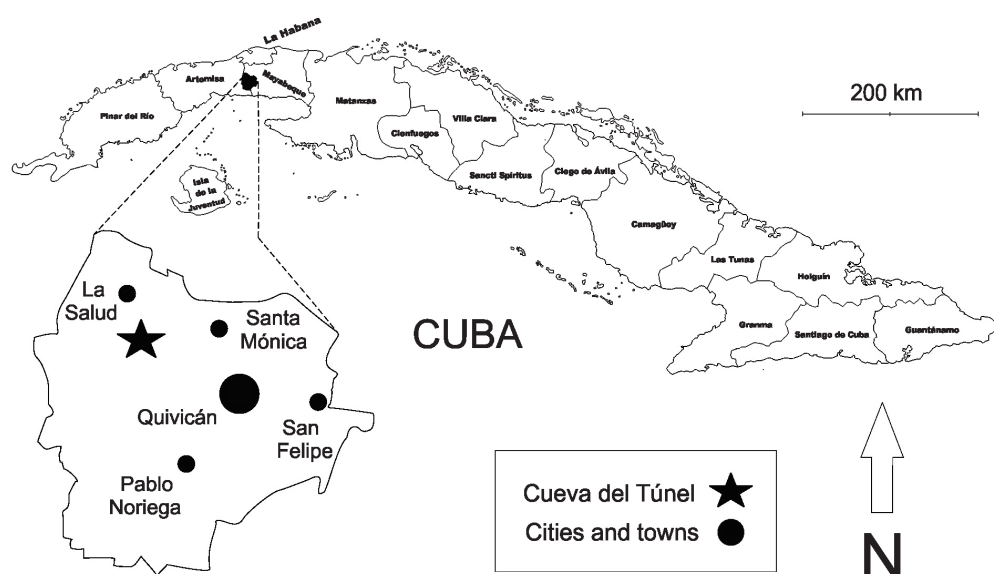


Figure 7. Cueva del Túnel (YTU), Quivicán, western Cuba. Type locality of *†Buteogallus borraisi* (Arredondo) and *†Tyto noeli* Arredondo.

1 [*Titanohierax borraisi*]). Bauta: **ALA** (Fischer 1977: 214 [*Aquila* sp.], Arredondo 1984: 12 [*Aquila* sp.], Suárez & Olson 2008: 291). La Habana. Boyeros: **HCI** (Arredondo 1984: 9–10 [*Sarcoramphus* sp.?], reidentified by Suárez 2001b: 110, as '*Titanohierax borraisi*', fig. 1* = ulna; A [internal], B [external], C [distal], see section III, Suárez & Olson 2008: 291). Mayabeque. Quivicán: **YTU** = type locality (Arredondo 1970a: 3–4 [*Aquila borraisi* sp. nov.], 1971: 96 [*Aquila borraisi*], 1972a: table 1 [*Aquila borraisi*], 1975: 154 [*Aquila borraisi*], Acevedo González *et al.* 1975: 18 [*Aquila borraisi*], Arredondo 1976: 175 [*Aquila borraisi*], Suárez & Olson 2008: 291), **YIN** (Suárez & Olson 2008: 291), **YBL** (Suárez & Olson 2008: 291, fig. 2 = tibiotarsus [anterior]). San José de las Lajas: **YCI** (Jiménez Vázquez & Valdés Ruiz 1995: 62 [*Titanohierax borraisi*], Rojas Consuegra *et al.* 2012: 6, 10 [*Titanohierax borraisi*], Suárez & Olson 2008: 291), **YCC** (Jiménez & Orihuela 2021: 169). Matanzas. Martí: **MLB** (Iturralde-Vinent *et al.* 2000: table 2 [*Titanohierax borraisi*], Suárez & Olson 2008: 291–293, Suárez & Olson 2009b, fig. 1: C = tarsometatarsus [anterior], Suárez 2020a: 16–17, fig. 8 = tarsometatarsus: A [anterior], B [posterior], C [proximal], D = tarsometatarsus [posterior], E = tibiotarsus [anterior], F = idem [distal], G = digit I, phalanx 1 [plantar], H = ungual phalanx, digit II [lateral]). Villa Clara. Corralillo: **VSM** (Suárez & Olson 2008: 293). Sagua La Grande: **VHC** (Suárez & Olson 2008: 293). Sancti Spiritus. Yaguajay: **SPF** (Arredondo 1984: 12 [*Aquila* sp.], Suárez & Olson 2008: 293). Jatibonico: **SPL** (Aranda *et al.* 2017: 115 [on p. 118 as '*Buteogallus* sp.'], fig. 1E = digit I, phalanx 1 [ventral], Martínez-López 2019: fig. 5f–g = digit I, phalanx 1: f [ventral], g [dorsal]).

Direct ^{14}C dating.—None. For dating of other bird species at MLB, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = 11,880 ± 420 to 4,960 ± 280 years ^{14}C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—The commonest extinct Accipitridae in Cuban fossil deposits (Suárez 2004a, Suárez & Olson 2008, Suárez 2020a). Originally described in *Aquila* Brisson (Arredondo

1970a), transferred to *Titanohierax* Wetmore (Olson & Hilgartner 1982), and finally redescribed under *Buteogallus* (Suárez & Olson 2008), this is an extinct eagle-size hawk with general morphology resembling the living *B. urubitinga* J. F. Gmelin, 1788, but c.33% larger. Material from CCM identified by Wetmore (1928: 3–4) as *Geranoaetus melanoleucus* (Vieillot, 1819) probably is this species (Suárez 2020a: 17, see section II). Arredondo (1984: 11) commented about some femora from PPD (see also Arredondo 1976: 175) that ‘parecen corresponder a esta especie’ [‘seem to correspond to this species’]. I have found no evidence, until now, of large Accipitridae at this locality. The paratype ungual phalanx, digit I, GEC unnumbered, at CZACC, from ACP (see Arredondo 1970a: 4, figs. 5*A, 9* [not figures of SEC P-31, *contra* Arredondo & Arredondo 2002a: 9], table 2), is re-identified herein as *Gigantohierax suarezi*, based on its size and characters. Material recorded as ‘*Titanohierax* cf. *T. gloveralleni*’, from Crab Cave, Grand Cayman, Cayman Islands (Morgan 1994: 479–480, fig. 22.5A = mandible [dorsal]), seems to represent one of the large, extinct species of *Buteogallus* now known from Cuba, including Borrás’s Hawk (Suárez 2004a, Suárez & Olson 2008, 2021).

18. †*Buteogallus royi* Suárez, 2020

Roy’s Hawk (Gavilán de Roy)

Buteogallus royi Suárez, 2020a, *Zootaxa* 4780: 20.

Holotype.—Left tarsometatarsus, MNHNCu 75.4909 (Suárez 2020a: 20, figs. 9C [anterior], 10: A [anterior], B [medial], C [posterior]). Collected in San Felipe I, C area, on 12 May 2009 by WS and Stephen Díaz Franco.

Type locality.—Las Breas de San Felipe (MLB), c.5.5 km west of Martí, San Felipe Valley, municipality of Martí, Matanzas province, Cuba (Suárez 2020a: 21; for description of this deposit see Iturralde-Vinent *et al.* 2000). Fig. 5.

Other material.—**Ulna:** distal third of right, MNHNCu 75.4737, San Felipe II (Suárez 2020a: 21, fig. 10: D [dorsal], E [ventral]).

Distribution.—Asphalt deposits in west Cuba (see Appendix). *Matanzas*. Martí: **MLB** (San Felipe I and II, Suárez 2020a: 21).

Direct ¹⁴C dating.—None. For dating of other bird species at the type locality, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = 11,880 ± 420 to 4,960 ± 280 years ¹⁴C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—Extremely rare and unknown outside tar seeps in the west of the archipelago. Roy’s Hawk is currently the smallest of the known extinct species of *Buteogallus* from Cuba (Suárez 2020a).

19. †*Buteogallus irpus* Suárez & Olson, 2021

Wolf Hawk (Gavilán Lobo)

Buteogallus irpus Suárez & Olson, 2021, *Bull. Brit. Orn. Cl.* 141: 259.

Titanohierax gloveralleni: Woods 1980: 8 (part) [Hispaniola].

Titanohierax sp.: Olson & Hilgartner 1982: 28 [Hispaniola].

Amplibuteo sp.: Suárez & Arredondo 1997: 100 [Cuba].

Amplibuteo woodwardi: Suárez 2004a: 121 [Cuba].

History.—24 April 1978: Charles Woods (UF) collects the holotype in a cave deposit in the Dominican Republic (Suárez & Olson 2021: 260; see Olson & Hilgartner 1982: 28). July 1980: material of large Accipitridae from Hispaniola referred to *Titanohierax gloveralleni* Wetmore by Woods (1980: 8). 5 August 1982: holotype identified as ‘*Titanohierax* sp.’ by Olson & Hilgartner (1982: 28). 2 March 1995: paratype collected in a cave deposit in western Cuba (Suárez & Olson 2021: 259; see Suárez 2004a: 121). Winter 1997: mentioned for Cuba

as '*Amplibuteo* sp.' by Suárez & Arredondo (1997: 100–101). *April 2004*: Cuban material compared with continental fossil taxa and identified as *A. woodwardi* L. Miller, but shows some differences interpreted as individual variation (Suárez 2004a: 122). *10 September 2021*: original description of *Buteogallus irpus* published (Suárez & Olson 2021) based on fossils from Hispaniola and Cuba, with the extinct genus *Amplibuteo* Campbell, 1979, treated as synonym of *Buteogallus*.

Holotype.—Left tarsometatarsus lacking proximal end, USNM PAL 299573 (Suárez & Olson 2021: figs. 1: A [anterior], B [medial], C [distal], D [posterior], E [lateral], 2: A [anterior]). Collected on 24 April 1978 by Charles Woods, under 60 cm of red earth, at the type locality (Suárez & Olson 2021; see also Olson & Hilgartner 1982: 28).

Other material.—**Partial skeleton:** WS 365 (see Suárez 2004a: Figs. 1–2), including: one cervical (axis) and three thoracic vertebrae, seven fragments of ribs, fragmentary pelvis (fig. 2E [lateral]), proximal fragmentary right humerus (fig. 2A [palmar], B [anconal]), distal fragments of left humerus (fig. 2C [palmar]), segment of shaft of left ulna (fig. 2D [palmar]), left fragmentary femur without distal end (fig. 2G [anterior]), proximal and distal fragmentary ends of right femur (fig. 2F–F' [anterior]), shaft of left tibiotarsus (fig. 2I [posterior]), proximal right fibula (fig. 2H [internal]), left tarsometatarsus lacking inner calcaneal ridge, part of the metatarsal facet, wing of trochlea II, and posterior surface of trochlea III (fig. 1A [anterior], fig. 2J [anterior], K [proximal], L [posterior], Suárez & Olson 2008: fig. 1C [anterior], 2021: fig. 2B [anterior]), left digit I, phalanx 1 (fig. 2M [dorsal]) and phalanx 2 (fig. 2N [lateral]), left digit III, phalanx 2 and phalanx 3, right digit III, phalanx 4 (fig. 2O [lateral]), right digit IV, phalanx 4. Collected on 2 March 1995 by WS. Cited figures are from Suárez (2004a), other than where indicated.

Type locality.—Cueva de las Abejas (18°01'N, 71°67'W; elevation c.20 m), near Cabo Rojo, 8 km south-east of Pedernales, Pedernales province, Dominican Republic. Quaternary, probably late Pleistocene, but not directly dated (Suárez & Olson 2021: 260; see Olson & Hilgartner 1982: 28, Steadman *et al.* 2019: 321).

Distribution.—Cave deposit in west Cuba (see Appendix). *Artemisa*. Caimito: **ASA** ([Sandoval III low deposit, see Suárez 2000b: 67–68] Suárez & Arredondo 1997: 100–101 [*Amplibuteo* sp.], Suárez 2004a: 121 [*Amplibuteo woodwardi*], Suárez & Olson 2021: 259 [*Buteogallus irpus*, sp. nov.]).

Direct ¹⁴C dating.—None.

Notes.—Very rare, known from a single cave deposit in west Cuba and the type locality in south-central Hispaniola (Suárez & Olson 2021). *B. irpus* possesses a tarsometatarsus within the size range of the extinct continental species *B. woodwardi* (L. Miller, 1911) and *B. hibbardi* (Campbell, 1979), but relatively shorter and more robust, with reduced trochleae (Suárez & Olson 2021). Although currently synonyms of the genus *Buteogallus*, both *Harpyhaliaetus* Lafresnaye and *Heterospizias* Sharpe were incorrectly cited in place of the former by Suárez & Olson (2021: 259) when listing characters 9 and 10 of '*Amplibuteo*' described by Campbell (1979: 77). These characters of the distal tarsometatarsus (trochleae) are of specific value and their presence is variable in living and extinct species currently in *Buteogallus*, as partially described by Campbell (1979: 74). The extinct genus *Titanohierax*, described from the Bahamas (Wetmore 1937) and currently unknown outside those islands (Suárez & Olson 2008, Suárez 2020a), was erroneously considered to be more widely distributed in the West Indies (*cf.* Woods 1980, Olson & Hilgartner 1982, Morgan 1977a,b, 1994, Morgan *et al.* 2019). See *Buteogallus borraisi*. A re-evaluation of some fossils representing large members of Accipitridae from continental deposits in North America probably will shed more light on the taxonomy and distribution of *T. gloveralleni*.

Genus *Buteo* Lacépède, 1799

Buteo Lacépède, 1799, *Tabl. Mamm. Oiseaux*, p. 4. Type, by tautonymy, *Falco buteo* Linnaeus.

20. ×*Buteo lineatus* (J. F. Gmelin, 1788)**Red-shouldered Hawk (Gavilán de Hombros Rojos)**

Falco lineatus J. F. Gmelin, 1788, *Syst. Nat.*, edn. 13, vol. 1, pt. 1, p. 268.

Calohierax quadratus: Wetmore 1937: 429.

Buteo sp.: Olson & Hilgartner 1982: 26.

Buteo lineatus: Olson 2000: 60.

Buteo quadratus: Oswald & Steadman 2018: 363.

F[alco]. lineatus: Orihuela 2019: 60.

Referred material.—**Femur**: proximal end of right, MNHNCu 75.4614 (fig. 1A, right [anterior]). **Tibiotarsus**: distal halves of right, MNHNCu 75.4615 (fig. 1B, right [anterior]), and left, MNHNCu 75.4616; distal end of left, MNHNCu 75.4617. **Tarsometatarsus**: distal halves of right, MNHNCu 75.4618 (fig. 1C, right [anterior]), and left, MNHNCu 75.4619. Cited material and figures are from Suárez & Olson (2003b). Specimens collected in San Felipe II during 25–28 November 1998 (not ‘1988’ as stated [*lapsus calami*] in Suárez & Olson 2003b: 71) by members of Depto. de Geología y Paleontología, MNHNCu. Catalogue numbers for this material in Suárez (2020a: 27) are incorrect.

Distribution.—Asphalt deposits in west Cuba (see Appendix). *Matanzas*. Martí: **MLB** (San Felipe II, Suárez & Olson 2003b: 71, Suárez 2020a: 27). For fossil localities in the Bahamas (as ‘*Buteo quadratus*’), see Steadman & Franklin (2020). For current continental distribution, see Dykstra *et al.* (2020).

Direct ¹⁴C dating.—None in Cuba. For dating of other bird species at MLB, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = 11,880 ± 420 to 4,960 ± 280 years ¹⁴C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—Very rare in Cuba (Suárez & Olson 2003b, Suárez 2020a). Orihuela (2019: 60) indicated that ‘Cuban remains [of *Buteo lineatus*] were described as “more consistently robust” than the comparative material of the Grey Hawk (*Buteo nitidus*)’, but the reverse is true (Suárez & Olson 2003b: 71). Also recorded from Quaternary deposits in the Bahamas (Olson 2000; see Olson & Hilgartner 1982, Steadman & Franklin 2020), where it was originally described (Wetmore 1937) as *Calohierax quadratus* Wetmore. The latter species is considered valid under *Buteo* by some authors (see Oswald & Steadman 2018, Steadman & Franklin 2020).

21. †*Buteo sanfelipensis* Suárez, 2020**San Felipe’s Hawk (Gavilán de San Felipe)**

Buteo sanfelipensis Suárez, 2020a, *Zootaxa* 4780: 28.

Holotype.—Left tarsometatarsus without trochlea IV, MNHNCu 75.4910 (Suárez 2020a: 28, fig. 10 F [anterior], G [medial], H [posterior]). Collected in San Felipe I on 14 May 2009 by WS and Stephen Díaz Franco.

Type locality.—Las Breas de San Felipe (**MLB**), c.5.5 km west of the town of Martí, San Felipe Valley, municipality of Martí, Matanzas province, Cuba (Suárez 2020a: 28; for description of this deposit see Iturralde-Vinent *et al.* 2000). Fig. 5.

Distribution.—Asphalt deposits in west Cuba (see Appendix). *Matanzas*. Martí: **MLB** (Suárez 2020a: 28).

Direct ¹⁴C dating.—None. For dating of other bird species at the type locality, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct

mammals (*Parocnus browni* = 11,880 ± 420 to 4,960 ± 280 years ¹⁴C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—Unknown from other Quaternary deposits in Cuba, being the rarest extinct species of Accipitridae in the country's fossil record. Known only by the tarsometatarsus, which resembles the equivalent element in Swainson's Hawk *B. swainsoni* Bonaparte, 1838, and Rough-legged Buzzard *B. lagopus* (Pontoppidan, 1763) in size and general morphology, but shorter, among other characters (Suárez 2020a: 28). Much larger and distant in morphology to living species in Cuba (see Kirkconnell *et al.* 2020) of the genera *Chondrohierax* Lesson, *Elanoides* Vieillot, *Circus* Lacépède, *Ictinia* Vieillot, or *Rostrhamus* Lesson (S. L. Olson & WS unpubl.), which are currently unknown in the archipelago's fossil record.

Order STRIGIFORMES Wagler Family TYTONIDAE Ridgway Genus *Tyto* Billberg, 1828

Tyto Billberg, 1828, *Syn. Faun. Scand.*, vol. 1, pt. 2, tab. A, p. 2. Type, by monotypy, *Strix flammea* Linnaeus = *Strix alba* Scopoli

22. †*Tyto pollens* Wetmore, 1937

Bahamian Giant Barn Owl (Lechuza Gigante de las Bahamas)

Tyto pollens Wetmore, 1937, *Bull. Mus. Comp. Zool.* 80: 436.

Tyto riveroi: Arredondo 1972b: 131.

[*Tyto*]. *Triveroi*: Arredondo 1982: 36 (typographical error).

Tyto pollens: Suárez & Olson 2015: 539.

History.—1937: Vivienne Knowles collects the type series in the Bahamas and the original description (October) of *T. pollens* is published (Wetmore 1937). 3 June 1959: additional specimens from Banana Hole, New Providence, Bahamas, are described and illustrated by Brodkorb (1959: 357–358, pl. 1, figs. 5 = tibiotarsus [anterior], 6 = tarsometatarsus [anterior]). April 1970: Manuel Rivero de la Calle presents to O. Arredondo the first known material from Cuba, collected in 'Galería de los Megalocnus', Cueva de Bellamar, western Cuba (Arredondo 1972b: 131). 1972: original description of '*Tyto riveroi*' published (Arredondo 1972b). 23 September 2015: first direct comparisons between Bahamian and Cuban giant barn owls (including previously unrecorded material) reveal '*Tyto riveroi*' to be a junior subjective synonym of *T. pollens*, and expand the ancient range of the latter to Cuba (Suárez & Olson 2015).

Holotype.—Left femur, MCZ 2262 (Wetmore 1937: 436–437, figs. 10* [anterior], 11* [posterior], 12* [lateral], 13* [distal], 14* [medial]). Collected during early 1937 by Vivienne Knowles (Wetmore 1937: 427, 437).

Type locality.—Cave deposit on 'Great Exuma [= Little Exuma *fide* Hecht 1955]', Bahama Islands (Wetmore 1937: 437; see Suárez & Olson 2015: 540).

Referred material.—**Tarsometatarsus:** proximal half of right, CZACC unnumbered; proximal end of right, OA 3215 (Suárez & Olson 2015: 539, fig. 6: D [anterior]); distal half of left, DPUH 1252 (holotype of '*T. riveroi*', Arredondo 1972b: 132, figs. 1 [anterior], 2 [posterior], 3 [lateral], 4* = reversed: D, top row [distal], bottom row [anterior], Arredondo 1976: 185, fig. 11: C [anterior], D [posterior], E [lateral], 1982: 39, fig. 2*: left [anterior], right [posterior]). Collected by Manuel Rivero de la Calle in 'Galería de los Megalocnus', Cueva de Bellamar (see Arredondo 1972b: 131, Suárez & Olson 2015: 540).

Distribution.—Cave deposit in west Cuba (see Appendix). *Matanzas*. Matanzas: **MBE** (Arredondo 1972b: 132 [*'Tyto riveroi* sp. nov.'], Suárez & Olson 2015: 539). For fossil localities in the Bahamas see Wetmore (1937: 437), Brodkorb (1959: 357–358), Olson & Hilgarter

(1982: 36–37), Suárez & Olson (2015: 540) and Steadman & Franklin (2020: SI appendix, table S1).

Direct ^{14}C dating.—None.

Notes.—The largest *Tyto* in the Americas (Olson & Hilgartner 1982: 36, Steadman & Hilgartner 1999: 79, Suárez & Olson 2015: 540) and the rarest of the giant barn owls in Cuban fossil deposits (see ‘Notes’ under *T. cravesae*). *T. pollens* probably evolved in Cuba and subsequently colonised the Bahamas (Suárez & Olson 2015: 549), where it is recorded from Quaternary deposits on some islands of the Great Bahama Bank (Suárez & Olson 2015, Steadman & Franklin 2020).

23. †*Tyto noeli* Arredondo, 1972

Noel’s Giant Barn Owl (Lechuza Gigante de Noel)

Tyto noeli Arredondo, 1972a (part), *Bol. Soc. Venez. Cienc. Nat.* 29: 416.

Tyto noelli: Arredondo 1972a: table 5 (*lapsus calami*).

Tyto neddi: Steadman & Hilgartner 1999: 76.

Tyto noelii: Bolufé Torres 2016: 41 (*lapsus calami*).

History.—7 September 1959: first material collected by O. Arredondo and members of GEC at a cave deposit in western Cuba (Arredondo 1972a: 416). 3 March 1968: the holotype is secured by O. Arredondo and N. González Gotera in a cave in western Cuba (Arredondo 1972a: 417). 5 February 1971: first published news of this extinct large barn owl (Arredondo 1971: 95–96). March 1972: original description published (Arredondo 1972a) based on a composite type series (see ‘Notes’). December 2003: material of *T. noeli* from Cueva El Abrón, western Cuba, is dated (^{14}C), the first extinct bird from Cuba to be so analysed (Suárez & Díaz-Franco 2003: 373). 23 September 2015: first direct comparisons between all large extinct barn owls in the West Indies (Suárez & Olson 2015), with result that ‘*Tyto neddi*’ described on fragmentary material from Barbuda, Lesser Antilles (Steadman & Hilgartner 1999: 76), is considered a junior synonym of *T. noeli*. Fossils from Jamaica are also identified as the latter taxon.

Holotype.—Right tarsometatarsus, DPUH 1251 (Arredondo 1972a: 416–417, fig. 1 [anterior], 1972b, fig. 4*B: top [distal], bottom [anterior], 1975: fig. 23B [anterior], 1976: 183, fig. 11B [anterior], 1982: 38, fig. 1 [image with wrong number ‘3’]: right [anterior]). Collected on 3 March 1968 by Noel González Gotera and Oscar Arredondo at the type locality (Arredondo 1972a: 417).

Other material.—**Coracoid:** right, OA 839 (Arredondo 1972a: 417, fig. 2 [images in figs. 2 and 4 of the original description are therein reversed]; 6 [ventral], 1976: 183, fig. 10c: right [ventral]). **Ulna:** proximal, OA 806 (Arredondo 1972a: 417, fig. 2: 5, top [palmar], 1976: 183, fig. 10b: bottom right [palmar]), and distal, OA 815 (Arredondo 1972a: 417, fig. 2: 5, bottom [palmar], 1976: 183, fig. 10b: top right [palmar]), ends of right. **Femur:** right, OA 818 (Arredondo 1972a: 417, fig. 2: 1 [anterior], 1976: 183, fig. 10d: right [anterior], 1982: 38, fig. 1 [image wrongly numbered ‘3’]: left [anterior]); left, OA 834. **Tibiotarsus:** proximal half of right, OA 827; shaft of right, OA 822; distal end of left, OA 812. These three specimens formed a reconstructed element (Arredondo 1972a: 417, fig. 2: 3 [posterior], 1976: 183, fig. 10c: right [posterior]). Collected by O. Arredondo and members of GEC in September 1959 (see ‘History’) at ‘Salón del Pozo’, ACP, and during November–December 1963 and January–March 1968 by N. González Gotera and Arredondo at the type locality (Arredondo 1972a: 415–416). See *T. cravesae* Suárez & Olson for specimens formerly included in the type series of *T. noeli*.

Type locality.—Cueva del Túnel (YTU), c.3 km south-east of La Salud, municipality of Quivicán, Mayabeque [formerly La Habana] province, Cuba (Arredondo 1972a: 417). Type

material from this locality was collected at a place known as 'Bolsón de los Huesos del Salón del Depósito' (see Acevedo González *et al.* 1975: 16, 19–20, figs. 4–5). Fig. 7.

Distribution.—Cave deposits across the Cuban archipelago (see Appendix). *Pinar del Río*. Los Palacios: **PEA** (Suárez & Díaz-Franco 2003: 373, Suárez 2004b: 156–157). *Artemisa*. Caimito: **ACP** (Arredondo 1972a: 417 [part], 1972c: table 1 [part], 1982: 39 [part], 1984: 21 [part], Suárez & Olson 2001a: 37, Arredondo & Arredondo 2002a: table 1 [part], 2002b: table 1 [part], Suárez & Olson 2015: 541), **ASA** (Suárez 2000b: table 1, Suárez & Olson 2001a: 37, Arredondo & Arredondo 2002a: table 1, Suárez 2004a: 124, Suárez & Olson 2015: 541–542). *La Habana*. Boyeros: **HCI** (Arredondo 1976: 183, 1982: 39, 1984: 21, Suárez & Olson 2015: 542). *Mayabeque*. Quivicán: **YBL** (Jiménez Vázquez *et al.* 1995: 25, Arredondo & Arredondo 2002b: table 1, Suárez & Olson 2015: 542), **YTU** = type locality (Arredondo 1972a: 416 [*Tyto noeli* sp. nov. (part)], 1976: 183 [part], Acevedo González *et al.* 1975: 19 [part], Arredondo 1982: 38 [part], 1984: 21 [part], Arredondo & Arredondo 2002b: table 1 [part], Suárez & Olson 2015: 542), **YIN** and **YCH** (Suárez & Olson 2015: 542), **YCC** (Jiménez & Orihuela 2021: 169). *Matanzas*. Cárdenas: **MCE** (Orihuela 2013: 13, 2019: 62, fig. 4 = ulna: A [palmar], B [anconal], D [dorsal]). *Sancti Spiritus*. Yaguajay: **SPS** (Suárez 2004b: 157). *Sancti Spiritus*: **SPM** (Arredondo 1976: 183, 1982: 39, 1984: 21, Suárez & Olson 2015: 542). *Ciego de Ávila*. Florencia: **GCJ** (Suárez & Olson 2015: 542). *Holguín*. Gibara: **OCB** (cf. LMR).

Direct ^{14}C dating.—Late Pleistocene (PEA): $17,406 \pm 161$ ^{14}C yr BP. Calibration (95% confidence interval) of same sample gave ages from 21,474 to 20,050 ^{14}C yr BP (Suárez & Díaz-Franco 2003: 373, long bones). For discussion of age of material from other islands, see Suárez & Olson (2015: 543).

Notes.—The commonest and smallest of the three (not 'four large barn-owls' as stated by Orihuela 2019: 57) Cuban giant barn owls in cave deposits (Arredondo 1984: 22, Suárez & Olson 2015: 542) is currently unknown from tar seep or sinkhole deposits (Suárez 2020a: 29–30). The composite type series of this taxon included specimens of the larger *T. cravesae*. Also recorded from cave deposits in Jamaica, Greater Antilles, and Barbuda, Lesser Antilles (Suárez & Olson 2015: 543).

24. *Tyto cravesae* Suárez & Olson, 2015

Craves's Giant Barn Owl (Lechuza Gigante de Craves)

Tyto cravesae Suárez & Olson, 2015, *Zootaxa* 4020: 545.

Tyto noeli: Arredondo 1972a: 416 (part).

Tyto sp.: Iturralde-Vinent *et al.* 2000: 309, table 2.

History.—*March* 1972: first known material described as *Tyto noeli* (see Arredondo 1972a, Suárez & Olson 2015: 547). *5 June* 1998: holotype collected by WS in a cave wall cavity at the type locality, western Cuba (Suárez & Olson 2015: 545). *23 September* 2015: original description published (Suárez & Olson 2015), including some specimens formerly in the type series of *T. noeli* (see 'Other material'). *22 May* 2020: single specimen known from asphalt deposits (a paratype) illustrated (Suárez 2020a).

Holotype.—Associated postcranial elements of one individual, MNHNCu 75.590 (cited figures from Suárez & Olson 2015), consisting of proximal half of a left humerus (fig. 3A [anconal]), proximal end of a right ulna, a near-complete right carpometacarpus (fig. 3C [external]) and a near-complete right femur (fig. 4: C [anterior], G [internal]). Collected 5 June 1998 by WS in an amoeboid-shaped patch of red clay matrix, in a wall cavity near (c.30 m) 'Salón del Pozo' (not 'Type locality: Salón del Pozo', as stated by Orihuela 2019: 62) at the type locality (Suárez & Olson 2015: 546).

Other material.—**Coracoid**: sternal end of left, OA 832 (Suárez & Olson 2015: fig. 2D [dorsal]). **Humerus**: proximal end of right, OA 826 = paratype of *T. noeli* (Arredondo 1972a:

417, fig. 2 [images in figs. 2 and 4 of the original description are therein reversed]; 4, top [anconal], 1976: 183, fig. 10a: top right [anconal]; distal half of right, OA 804 = paratype of *T. noeli* (Arredondo 1972a: 417, fig. 4: 4, bottom [anconal], 1976: 183, fig. 10a: bottom right [anconal]); shaft of left, WS 077. **Femur**: left lacking a proximal segment of shaft, MNHNCu 75.594 (Suárez & Olson 2015, fig. 4: D [anterior], E [internal]); proximal end of left, CZACC unnumbered. **Tibiotarsus**: distal half, MNHNCu 75.593 (Suárez & Olson 2015: fig. 5F [anterior]), and distal end, OA 831 = paratype of *T. noeli* (Suárez & Olson 2015: fig. 5E [anterior]), of left. **Tarsometatarsus**: right, MNHNCu 75.596 (Suárez & Olson 2015: 547, Figs. 6C: proximal portion [anterior], 7D [anterior], 8A: proximal portion [internal]); right lacking distal end, OA 828 = paratype of *T. noeli* (Arredondo 1972a: 417, fig. 2: 2 [anterior], Suárez & Olson 2015: fig. 7E [anterior]); proximal, MNHNCu 75.595, immature (Suárez & Olson 2015: fig. 6B [anterior]) and distal, MNHNCu 75.592 (Suárez & Olson 2015: fig. 6H [anterior]), WS 091, immature (Suárez & Olson 2015: fig. 6G [anterior]) ends of right; shaft of right, CZACC unnumbered; distal ends of left, MNHNCu 75.591, MNHNCu 75.4801 (Suárez 2020a: 30–31, fig. 12: A [anterior], B [distal]). See Suárez & Olson (2015: 547).

Type locality.—Cueva de Paredones (ACP), c.3 km south-west of Ceiba del Agua, municipality of Caimito (not ‘San Antonio de los Baños’ as stated by Orihuela 2019: 62), Artemisa province, Cuba (Suárez & Olson 2015: 246). Fig. 4.

Distribution.—Cave and asphalt deposits in west Cuba (see Appendix). *Artemisa*. Caimito: ACP = type locality (Suárez & Olson 2015: 545–546 [*Tyto cravesae*, new species]), ACT (Suárez & Olson 2015: 547). *Mayabeque*. Quivicán: YBL and YTU (Suárez & Olson 2015: 547). *Matanzas*. Cárdenas: MCE (Orihuela 2019: 62), Martí: MLB (Suárez & Olson 2015: 547, Suárez 2020a: 30 [see ‘Other material’]). *Sancti Spiritus*. Sancti Spiritus: SPC (cf. CLV).

Direct ¹⁴C dating.—None. For dating of other bird species at MLB, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = 11,880 ± 420 to 4,960 ± 280 years ¹⁴C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—Not ‘the rarest of Cuban tytonid owls’ as claimed by Orihuela (2019: 62; see *T. pollens* above). *T. cravesae* is about the size of *T. ostologa* from Hispaniola, being less robust, but having a femur with the deepest shaft of all known West Indian giant barn owls (Suárez & Olson 2015: 548). None of the Cuban large barn owls exhibits (*contra* Orihuela 2019: 57) ‘anatomical adaptations that suggest pronounced ground-dwelling’.

25. †*Tyto maniola* Suárez & Olson, 2020 Cuban Dwarf Barn Owl (Lechuza Enana de Cuba)

Tyto maniola Suárez & Olson, 2020a, *Zootaxa* 4830: 552.

Tyto sp.: Suárez 2020a: 29.

History.—*February–March 1997*: two specimens collected in cave deposits in west Cuba (Suárez & Olson 2020a: 558). *November 1998*: holotype collected by members of MNHNCu in asphalt deposits (Suárez & Olson 2020a: 558). *December 2003*: first notice of this extinct, small barn owl, appears in the original description of a fossil phyllostomid bat from Cuba (Suárez & Díaz-Franco 2003: 375). *14 August 2020*: original description published (Suárez & Olson 2020a).

Holotype.—Proximal half of left tarsometatarsus, MNHNCu 75.4651 (Suárez & Olson 2020a: 552, fig. 6: A [anterior], B [posterior], C [proximal], D [external], E [internal]; fig. 7B [anterior]). Collected in San Felipe II during 25–28 November 1998 by members of Depto. de Geología y Paleontología of MNHNCu.

Other material.—**Humerus**: right, WS 0.435, immature (fig. 3B [dorsal]). **Ulna**: near-complete right, WS 0.436, fig. 3F [palmar]). **Carpometacarpus**: right fragmentary, MNHNCu

75.4654. **Tarsometatarsus**: proximal right, MNHNCu 75.4656; distal right, MNHNCu 75.4652 (fig. 7F [anterior]); proximal left without inner calcaneal ridge, MNHNCu 75.4655 (fig. 7: C [anterior]), H [proximal]); distal left, MNHNCu 75.4657 (fig. 7: G [anterior], I [distal]). Cited material and figures from Suárez & Olson (2020a).

Type locality.—Las Breas de San Felipe (**MLB**), c.5.5 km west of the town of Martí, San Felipe Valley, municipality of Martí, Matanzas province, Cuba (Suárez & Olson 2020a: 552; for description of this deposit see Iturralde-Vinent *et al.* 2000). Fig. 5.

Distribution.—Cave and asphalt deposits in west Cuba (see Appendix). *Pinar del Río*. Los Palacios: **PEA** (Suárez & Díaz-Franco 2003: 375 [‘small, undescribed species of *Tyto*’], Suárez 2004b: 156 [‘a new species of *Tyto*’], Suárez & Olson 2020a: 556 [but not ‘municipality of La Palma’]). *Artemisa*. Caimito: **ACP** (Suárez & Olson 2020a: 556). *Matanzas*. Martí: **MLB** = type locality (Suárez & Olson 2020a: 552 [‘*Tyto maniola*, new species’]).

Direct ^{14}C dating.—None. For dating of other bird species at the type locality, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = $11,880 \pm 420$ to $4,960 \pm 280$ years ^{14}C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005). For dating of associated fauna at **PEA** (*Tyto noeli*), see Suárez & Díaz-Franco (2003: 373).

Notes.—Uncommon, currently unknown from sinkhole deposits. The smallest Cuban tytonid, living or extinct, being also smaller when compared to skeletal elements of Ashy-faced Owl *T. glaucops* (Kaup, 1852) —and its synonym *T. cavatica* Wetmore, 1920—of Hispaniola (Suárez & Olson 2020a: 556).

Family STRIGIDAE Leach

Genus *Pulsatrix* Kaup, 1848

Pulsatrix Kaup, 1848, *Isis von Oken* 41, col. 771. Type, by monotypy, *Strix torquata* Daudin = *Strix perspicillata* Latham.

Pulsatrix Suárez 2020a: 31 (*lapsus calami*).

26. *Pulsatrix arredondoi* Brodkorb, 1969

Arredondo’s Owl (Búho de Arredondo)

Pulsatrix arredondoi Brodkorb, 1969, *Quart. Jour. Fla. Acad. Sci.* 31: 112 [for 1968].

Pulsatrix arredondoi: Louchart 2005: table 2 (*lapsus calami*).

Pulsatrix arredondoi: Orihuela 2019: 62 (*lapsus calami*).

Pulsatrix arredondoi: Orihuela *et al.* 2020a: table 1 (*lapsus calami*).

Holotype.—Left tarsometatarsus, PB 8420 (Brodkorb 1969: 112, fig. 1: left [anterior], top [proximal], bottom [distal], right [internal], Arredondo 1975, fig. 19*: B [anterior], 1982: 41, fig. 4: left [anterior], right [lateral, not ‘posterior’]). Collected in 1960 by O. Arredondo (Brodkorb 1969: 112).

Type locality.—Cueva de Paredones (**ACP**), c.3 km south-west of Ceiba del Agua, municipality of Caimito [formerly San Antonio de los Baños], Artemisa [formerly La Habana] province, Cuba (Brodkorb 1969: 112 [= ‘Caverna Paredones’]). Fig. 4.

Referred material.—**Tarsometatarsus**: right lacking calcaneal ridge, CZACC 6.4126 (Arredondo & González Gotera 1982: 2); incomplete left, OA 3216 (*cf.* Arredondo & Olson 1994: 436); left without part of the calcaneal ridge and portions of trochleae III and IV, CAZGA-267 (Jiménez & Orihuela 2021: 166–167, fig. 2B [anterior]); proximal half of left, MNHNCu 75.4808 (Suárez 2020a: 31, fig. 12: C [anterior], D [proximal]); fragmentary distal left lacking trochlea IV and lateral border, CAZGA-268 (= ‘CAZG04’ and ‘CAZGA04’ of Orihuela 2019: 63, fig. 6 [not ‘right’]: A [anterior], B [posterior], Jiménez & Orihuela 2021: 167, fig. 2A [anterior]).

Distribution.—Cave and asphalt deposits in west Cuba (see Appendix). *Artemisa*. Caimito: **ACP** = type locality (Brodkorb 1969: 112 [*Pulsatrix arredondoi*, new species], Arredondo 1972a: table 1, 1972c: table 1, 1975: 150, 1976: table 1, 1982: 41, 1984: 25, Arredondo & González Gotera 1982: 1, Arredondo & Arredondo 2002a: table 1, 2002b: table 1; WS unpubl.). *Mayabeque*. San José de las Lajas: **YCC** (Jiménez & Orihuela 2021: 166–167, fig. 2 = tarsometatarsus: B [anterior]), **YCM** (Orihuela 2019: 63, fig. 6 = tarsometatarsus [left not ‘right’]: A [anterior], B [posterior], Jiménez & Orihuela 2021: 166–167, fig. 2A [anterior]). *Matanzas*. Cárdenas: **MCA** (Arredondo & Olson 1994: 436), Martí: **MLB** (Suárez 2020a: 31, fig. 12 = tarsometatarsus: C [anterior], D [proximal]). *Sancti Spiritus*. Sancti Spiritus: **SPC** (cf. Orihuela 2019: 63, Suárez 2020a: 31, Jiménez & Orihuela 2021: 169).

Direct ^{14}C dating.—Late Holocene (YCM): $1,390 \pm 30$ ^{14}C yr BP (680–600 BC) (Orihuela 2019: 63, tarsometatarsus; see also Jiménez & Orihuela 2021: 170).

Notes.—Arredondo’s Owl is the only *Pulsatrix* in the Antillean subregion (Brodkorb 1969: 112, Olson 1978: 106, Arredondo 1982: 41, 1984: 25), and was not of large size (*contra* Gutiérrez Domech *et al.* 2018: 42). Its remains are uncommon in Cuban cave or asphalt deposits, being currently unknown from sinkholes. Jiménez & Orihuela (2021: 169) indicated the presence of this taxon at two localities in the province of Artemisa and one in Matanzas, but the reverse is true (see ‘Distribution’). Material from SPC, central Cuba, consists of a tarsometatarsus identified during early 1990 (O. Jiménez Vázquez *in litt.* 2021). Although the locality has been cited in the subsequent literature, the specimen was never mentioned. The tarsometatarsus is the only described skeletal element of *P. arredondoi* (Brodkorb 1969, Arredondo & González Gotera 1982, Arredondo 1984, Suárez 2020a, Jiménez & Orihuela 2021).

Genus *Bubo* Duméril, 1805

Bubo Duméril, 1805, *Zool. Anal.*, p. 34. Type, by subsequent monotypy, *Strix bubo* Linnaeus.

27. *†Bubo osvaldoi* Arredondo & Olson, 1994 Osvaldo’s Owl (Búho de Osvaldo)

Bubo osvaldoi Arredondo & Olson, 1994 (part), *Proc. Biol. Soc. Wash.* 107: 438.

Tyto riveroi: Salgado *et al.* 1992: 28, table 1.

History.—*July 1991*: holotype collected by O. Jiménez Vázquez and C. Morales in a cave deposit at Sierra de Galeras, western Cuba (see ‘Holotype’). *4 October 1994*: original description published (Arredondo & Olson 1994). *9 December 2020*: type series of *B. osvaldoi* revealed to be composite, and only specimens from the type locality represent this species (Suárez 2020b).

Holotype.—Right tarsometatarsus lacking proximal end above tubercle for tibialis anticus, MNHNCu 75.27, formerly MNHNCu-27.1 (Arredondo & Olson 1994: 438, fig. 1: B [posterior], C [anterior], D [distal], Orihuela 2019: 63, fig. 5: A [anterior], B [posterior]). Collected on 2 July 1991 (no collecting date appears in the original description, but was not ‘1992’ as reported in Díaz-Franco 2004: 156 and Herrera-Uria *et al.* 2015: 113) by Osvaldo Jiménez Vázquez and Carlos Morales at ‘Pozo del Búho’, in the type locality (O. Jiménez Vázquez *in litt.* 2021).

Other material.—**Femur**: right lacking internal condyle and abraded about the trochanter, MNHNCu 75.4908, formerly MNHNCu 27.3 (Arredondo & Olson 1994: 38, fig. 2: B [anterior], Suárez 2020b, fig. 1: D [anterior]). **Tarsometatarsus**: shaft of left, MNHNCu 75.4907, formerly MNHNCu 27.2. For discussion of incorrect data concerning the type series, see ‘Notes’.

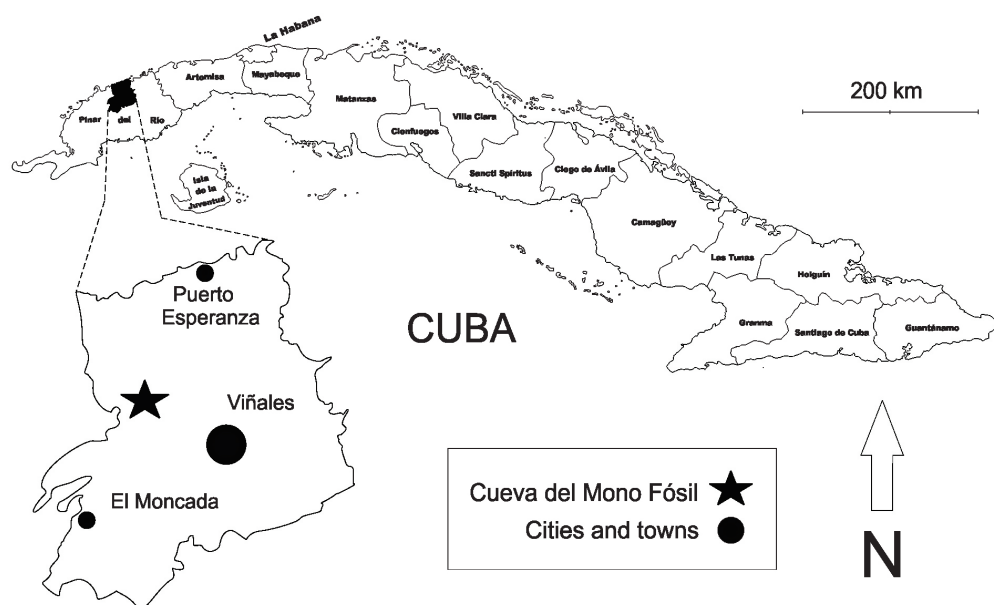


Figure 8. Cueva del Mono Fósil (PMF), Viñales, western Cuba. Type locality of †*Bubo osvaldoi* Arredondo & Olson.

Type locality.—Cueva del Mono Fósil (PMF), Sierra de Galeras, municipality of Viñales, Pinar del Río province, Cuba (Arredondo & Olson 1994: 438; see Rivero & Arredondo 1991, Jalagado *et al.* 1992, Arredondo & Rivero 1997). Fig. 8.

Distribution.—Cave deposit in west Cuba (see Appendix). *Pinar del Río*. Viñales: PMF (Arredondo & Olson 1994: 438).

Direct ^{14}C dating.—None.

Notes.—Extremely rare, unknown away from the type locality. The type series of *B. osvaldoi* was a composite, including two fossil bones from eastern Cuba that belong to another large strigid, *Ornimegalonyx ewingi* Suárez, of about the same size (Suárez 2020b: 391). The catalogue numbers ‘MNHNCu P4607’ and ‘MNHNCu P4608’, assigned by Díaz-Franco (2004: 156), replicated by Herrera-Uria *et al.* (2015: 114), represent a *lapsus calami* (= the digit 9 was substituted by digit 6 on both specimens; S. Díaz-Franco & WS pers. obs.), maintained until today. Both numbers are in use for another taxon in the same collection (Suárez & Olson 2003b: 73). In addition, incorrect data concerning the collection date and collector of the paratype femur (MNHNCu 75. 4908) was also republished (Herrera-Uria *et al.* 2015: 114). The femur was secured at Cueva Alta, in the type locality, by other members (names unknown) of GEPAB, on a different (unknown) date to both tarsometatarsi (O. Jiménez Vázquez *in litt.* 2021).

Genus †*Ornimegalonyx* Arredondo, 1958

Ornimegalonyx Arredondo, 1958, *El Cartero Cubano* 17(7): 11. Type, by monotypy (*contra* Brodkorb 1961: 634), *O. oteroi* Arredondo.

28. †*Ornimegalonyx oteroi* Arredondo, 1958 Cuban Giant Owl (Búho Gigante Cubano)

Ornimegalonyx oteroi Arredondo, 1958, *El Cartero Cubano* 17(7): 11.

Ornimegalonyx sp.: Arredondo 1964: 21.

Ornimegalonyx acevedoi: Arredondo, 1982: 45.

Ornimegalonyx minor: Arredondo 1982: 46.
Ornimegalonyx gigas: Arredondo 1982: 47.
Cathartes aura: Arredondo 1984: 9 (see Suárez 2001b: 110).
Ornimegalonyx oteroi: Weesie 1988: 62 (*lapsus calami*).
Ornimegalonyx oteroi: Arredondo Antúnez 2007: 153 (*lapsus calami*).
Ornimegalonyx gigas: Arredondo Antúnez 2007: 153 (*lapsus calami*).
Ornimegalonyx minor: Arredondo Antúnez 2007: 153 (*lapsus calami*).
Ornimegalonyx acevedoi: Arredondo Antúnez 2007: 153 (*lapsus calami*).
Ornimegalonyx minor: Gutiérrez Domech 2010: 12 (*lapsus calami*).
Ornimegalonyx oteroi: González Alonso 2011: 270 (*lapsus calami*).
Ornimegalonyx oteroi: González Alonso 2012: 207, 208 (*lapsus calami*).
Ornimegalonyx oteroi: Aranda *et al.* 2020: 2 (*lapsus calami*).

History.—2 January 1954: members of SEC collect the type material of what is initially considered a terror bird, family Phorusrhacidae Ameghino, at a cave deposit in western Cuba (Arredondo 1954, 1955, 1956, 1957a,b, 1958). July 1958: original description of *Ornimegalonyx oteroi* published (Arredondo 1958; see Brodkorb 1961). 27 March 1959: B. Patterson (MCZ, *in litt.* to O. Arredondo) reports an enormous owl identified in Cuban material sent to him for study (Arredondo 1964: 21). May 1961: lectotype designated and *O. oteroi* removed from Phorusrhacidae to Strigidae (Brodkorb 1961). July 1982: three additional species of *Ornimegalonyx* described from Cuba, *O. acevedoi*, *O. minor* and *O. gigas* (Arredondo 1982: 45–47). December 2000: first record in asphalt deposits at Las Breas de San Felipe, western Cuba (Iturralde-Vinent *et al.* 2000: 309, table 2). 2002: morphofunctional analysis of *O. oteroi* conducted (Alegre Lago 2002). 2020: direct ¹⁴C dating of material (22 May) from Las Breas de San Felipe (Suárez 2020a: table 1). Species described by Arredondo (1982) considered (9 December) junior subjective synonyms of *O. oteroi* (Suárez 2020b).

Lectotype.—Left tarsometatarsus lacking distal end, SEC P-383.E, at MCZ, designated by Brodkorb (1961: 634) (Arredondo 1954: 48, fig. top right unnumbered: top centre [anterior], 1955: 26, fig. unnumbered*: left [anterior], 1958: 12, fig. top unnumbered: bottom centre [anterior], 1964: 19, fig. right unnumbered: top centre [anterior], 1975: 135, figs. 1: top centre [anterior], 2*: right [anterior], 1976, figs. 5: top centre [anterior], 7*: b [anterior], 1982, figs. 5: top centre [anterior], 6* [anterior]). Collected on 2 January 1954 by Manuel Rivero de la Calle, Juan N. Otero and O. Arredondo, on the floor of the main gallery at the type locality (see Arredondo 1954: 46, 1975: 134).

Other material.—Skeletal elements from the same individual, SEC P-383.E (see Arredondo 1958: 10). **Skull:** small fragments (Arredondo 1955: 25, 1975: 136). **Mandible:** articular portions (Arredondo 1975: 136, figs. 13* [lateral], 14* [ventral], 1976: 177, fig. 9*A [ventral], 1982: 42, fig. 10*A [lateral]). **Vertebra:** few of unknown position (Arredondo 1975: 136). **Sternum:** fragments (Arredondo 1975, fig. 11*: A [lateral], B [ventral], 1976: 177, figs. 8*: left [ventral], right [lateral]). **Rib:** fragments of unknown laterality (Arredondo 1955: 25, 1975: 136). **Scapula:** one of unknown laterality (Arredondo 1976: 177). **Humerus:** fragments of right and left (Arredondo 1975: 136, 1976: 177, 1982: 43). **Ulna:** fragments of right and left (Arredondo 1955: 25, 1975: 136). **Radius:** fragments of right and left (Arredondo 1955: 25, 1975: 136). **Carpometacarpus:** proximal left (Arredondo 1975: 148, fig. 12*: A [lateral], Arredondo 1982: 42, fig. 10*A [lateral]). **Femur:** left without internal condyle (Arredondo 1954: 48, fig. top right unnumbered: top right [posterior], 1955: 25, 1958: 12, fig. top unnumbered: left bottom [posterior], 1964: 19, fig. right unnumbered: top right [posterior], 1975: 135, figs. 1: top right [posterior], 2*: left [posterior], 1976: figs. 5 [posterior], 7*C [posterior]; 1982, figs. 5: right [posterior]), fragments of right (Arredondo 1976: 177). **Tibiotarsus:** right fragmentary (Arredondo 1954: 48, fig. top right unnumbered: left [posterior], 1955: 25, 1958: 12, fig. top unnumbered: right [posterior], 1964: 19, fig. right unnumbered: left [posterior], 1975: 135, fig. 1: left [posterior], 1976: fig. 5 [posterior],

1982, fig. 5: left [posterior]), fragments of left (Arredondo 1976: 177). **Tarsometatarsus**: fragments of right (Arredondo 1976: 177). **Phalanges**: pedals (Arredondo 1954: 48, fig. top right unnumbered: bottom right [ventral], 1955: 25, 1958: 12, fig. top unnumbered: top left [ventral], 1964: 19, fig. right unnumbered: bottom right [ventral], 1975: 135, fig. 1 bottom: right [ventral], 1976: figs. 5: bottom right [ventral], 1982, figs. 5: bottom right [ventral]), unguals (Arredondo 1954: 48, fig. top right unnumbered: bottom centre [lateral], 1955: 26, fig. unnumbered*: top centre [lateral], 1958: 10, fig. left*: 3 [lateral], 12, fig. top unnumbered: top centre [lateral], 1964: 19, fig. right unnumbered: bottom centre [lateral], 1975: 135, fig. 1 bottom: centre [lateral], 1976: fig. 5: bottom centre [lateral], 1982: fig. 5: bottom centre [lateral]). Date, locality and collectors as in 'Lectotype'.

Type locality.—Caverna de Pío Domingo (PPD), Sierra de Sumidero, municipality of Minas de Matahambre, Pinar del Río province, Cuba (Arredondo 1958: 10). Fig. 3.

Distribution.—Cave and asphalt deposits in west and central Cuba (see Appendix). *Pinar del Río*. Minas de Matahambre: **PCH** (Alegre Lago 2002: 12–13; see Arredondo & Olson 1994: fig. 1A = tarsometatarsus [anterior]), **PPD** = type locality (Arredondo 1954: 48 ['especie grande de ave prehistórica'], 96 ['ave prehistórica de grandes y fuertes uñas'], 1955: 26 ['ave prehistórica, tal vez andadora'], 1958: 11 ['*Ornimegalonyx oteroi*...nueva especie'; see Brodkorb 1961], 1975: 144, figs. 10*A = digit II, phalanx 2: top [lateral], bottom [ventral], 10*C = ungual phalanx [lateral], 11* = sternum: A [lateral], B [ventral], 151, fig. 13* = hypothetical skull and mandible reconstruction [lateral], 152, fig. 14* = mandible [ventral], 182, fig. 28* = skeleton [lateral], 1982: 42, figs. 16* = skull [ventral], 17* = mandible [ventral], 1984: 26, Alegre Lago 2002: 15). *Artemisa*. Caimito: **ACP** (Arredondo 1964: 19, fig. left unnumbered, centre = tibiotarsus: top [lateral], bottom [posterior]; left = tarsometatarsus [posterior], 21, fig. bottom unnumbered: skull [posterior], 1971: 96, fig. bottom left unnumbered* = skull: 1 [ventral], 2 [lateral], 1972a: table 1, 1972c: table 1, 1975: 137, fig. 3 = tarsometatarsus [posterior], fig. 4* = idem: left [anterior], centre [posterior], right [proximal], 138, fig. 7 = tibiotarsus [lateral], 141 ['*Ornimegalonyx* sp.'], fig. 9 'A' = left: femur [posterior], 9'B' = right: femur [posterior], 144, fig. 10*D = digit IV, phalanx 2: top [lateral], bottom [dorsal], 147, fig. 11* = sternum: A [lateral], B [ventral], 155 ['*Ornimegalonyx* sp.'], figs. 15 = skull: A [anterior], B [ventral], 16* = skull [ventral], 1976: 177, figs. 4: a = tibiotarsus [lateral], b = tarsometatarsus [posterior], 8* = sternum: left [ventral], right [lateral], 9 = skull: b [anterior], c [ventral], 1982: 42, figs. 7: tarsometatarsus [posterior], fig. 8* idem: left [anterior], centre [posterior], right [proximal], fig. 14 = femur [posterior], 46 ['*Ornimegalonyx minor* sp. nov.']; see Suárez 2020b], 28 ['*Ornimegalonyx minor*'], Arredondo & Arredondo 2002a: table 1, 2002b: table 1, Alegre Lago 2002: 13–15, pl. 1: A = sternum [ventral], C = scapula: 1 [ventral], 2 [dorsal], pl. 7 = tibiotarsus: A [posterior], B [anterior], pl. 8 = tarsometatarsus: A [anterior], B [posterior]), **ACA** (Arredondo 1955: 4 ['ave fósil andadora'], 1958: 11, 1975: 148, 1982: 42, 1984: 26), **ASA** (Suárez 2000b: table 1, Alegre Lago 2002: 13–15, pl. 3B = ulna: 1 [ventral], 2 [dorsal], Arredondo & Arredondo 2002a: table 1, 2002b: table 1), **AQS** (WS unpubl.). Bauta: **ACL** (Arredondo 1984: 8–9 ['*Cathartes aura*', reidentified by Suárez 2001b: 110]). *La Habana*. Marianao: **HFT** (Alegre Lago 2002: 14). *Mayabeque*. Bejucal: **YCT** (Alegre Lago 2002: 14). Quivicán: **YBL** (Jiménez Vázquez *et al.* 1995, Alegre Lago 2002: 14–15, pl. 3A = radius: 2 [palmar], Arredondo & Arredondo 2002b: table 1), **YIN** and **YCH** (Alegre Lago 2002: 14–15), **YTU** (Arredondo 1964: 21 ['*Ornimegalonyx*'], Acevedo González *et al.* 1975: 19, Arredondo 1975: 138, fig. 6* = tarsometatarsus: left [anterior], right [medial], 144, fig. 10*B = digit II, phalanx 2: top [lateral], bottom [ventral], 183, fig. 29* = hypothetical external aspect [lateral], 1982: 42, 1984: 26, Alegre Lago 2002: 14–15). San José de las Lajas: **YCI** (Jiménez Vázquez & Valdés Ruiz 1995: 62 ['*Ornimegalonyx* sp.'], Rojas Consuegra *et al.* 2012: 10 ['*Ornimegalonyx* sp.'], Alegre Lago 2002: 13–15). *Matanzas*. Cardenas: **MCQ** (Arredondo 1964: 21 ['un

ejemplar mayor que el de “Pío Domingo”], 1975: 137 [*Ornimegalonyx* cf. *oteroi*], fig. 5* = tarsometatarsus: left [anterior], right [posterior], 183, fig. 29* = hypothetical external aspect [lateral], 1982: 45 [*Ornimegalonyx acevedoi* sp. nov.], fig. 12* = tarsometatarsus: left [anterior], right [posterior], 1984: 27–28 [*Ornimegalonyx acevedoi*]), **MCB** (Orihuela 2019, fig. 7 = tarsometatarsus: A [anterior], B [posterior], C [lateral]). Martí: **MLB** (Iturralde-Vinent *et al.* 2000: table 2, Alegre Lago 2002: 14–15, Suárez 2020a: 31–32, fig. 12E–H = tarsometatarsus: E [anterior], F [proximal], G [distal], H [posterior]). Jagüey Grande: **MFJ** (cf. CLV). *Sancti Spiritus*. Yaguajay: **SPH** (Arredondo 1964: 21 [*Ornimegalonyx*'], Alegre Lago 2002: 13, pl. 1B = coracoid [internal], 2 = humerus: A [anconal], B [palmar], 6 = femur: A [posterior], B [anterior]). Sancti Spiritus: **SPC** (Arredondo 1964: 21, 1975: 141, fig. 8* = femur [anterior], Arredondo 1982: 47 [*Ornimegalonyx gigas* sp. nov.], fig. 15* = femur [anterior]), Arredondo 1984: 29 [*Ornimegalonyx gigas*']). Camagüey. Sierra de Cubitas: **CEN** (Kurochkin & Mayo 1973 [*Ornimegalonyx*']). Isla de la Juventud: **IPE** (Arredondo 1982: 42).

Direct ¹⁴C dating.—Late Pleistocene (MLB): 22,000 ± 2,600 ¹⁴C yr BP (Suárez 2020a: table 2, tarsometatarsus).

Notes.—The commonest of the Cuban extinct species of Strigidae, its remains are frequently present in fossil deposits at low elevations (see Suárez & Olson 2015: 550). *O. otero* is the largest owl ever known, living or extinct (Arredondo 1975, 1976, 1982, 1984, Olson 1978, 1985; see also Alcover *et al.* 1999, Louchart 2005), a weak flier (but not ‘flightless’, see Alegre Lago 2002) with considerable sexual and individual variation (Arredondo 1975, Alegre Lago 2002, Suárez 2020b). *Ornimegalonyx* is a member of the Striginae, closely related to the modern genera *Strix* Linnaeus and *Ciccaba* Wagler, as noted by E. Kurochkin (Olson 1978, 1984). Erection of a separate subfamily for the Cuban taxon, announced by Arredondo Antúnez (2007: 153), is not supported by osteological characters. Some authors, in early studies of *Ornimegalonyx* (cf. Arredondo 1964, Kurochkin & Mayo 1973), but also more recently (Morgan & Albury 2013), called it a ‘flightless barn owl’ (= Tytonidae) which is incorrect (see comment in Arredondo 1975: 134, footnote).

29. †*Ornimegalonyx ewingi* Suárez, 2020

Ewing’s Owl (Búho de Ewing)

Ornimegalonyx ewingi Suárez, 2020b, Bull. Brit. Orn. Cl. 140: 391.

Bubo osvaldoi: Arredondo & Olson 1994: 438 (part).

History.—January 1947: Abelardo Moreno (Museo Felipe Poey, La Habana) sends to A. Wetmore (USNM) two fossil bones (type material) of a large bird collected in a ‘mine’ in eastern Cuba (Arredondo & Olson 1994: 436, 438, Suárez 2020b: 391). 15 January 1959: Wetmore (1959: 15) announces the presence of an undescribed, extinct ‘large barn owl’ (*Tyto*) from ‘a cave in eastern Cuba’ (see Brodkorb 1959: 357, Olson’s footnote in Arredondo 1976: 172, Olson 1978: 105). 4 October 1994: material identified by Wetmore (1959), and three other fossils from western Cuba, are described as *Bubo osvaldoi* (Arredondo & Olson 1994). 9 December 2020: the type series of *B. osvaldoi* is revealed to be composite—including specimens from eastern Cuba representative of another large extinct owl—when the original description of *O. ewingi* is published (Suárez 2020b).

Holotype.—Right femur without anterior surface of head, piece of posterior face of shaft, and internal condyle, USNM 447022 (Arredondo & Olson 1994: figs. 2A [anterior], 3*: A [posterior], B [anterior], C [proximal], Suárez 2020b: fig. 1C [anterior]). Collector and date unknown (Arredondo & Olson 1994: 438, Suárez 2020b: 391; see Mayo 1980: 223).

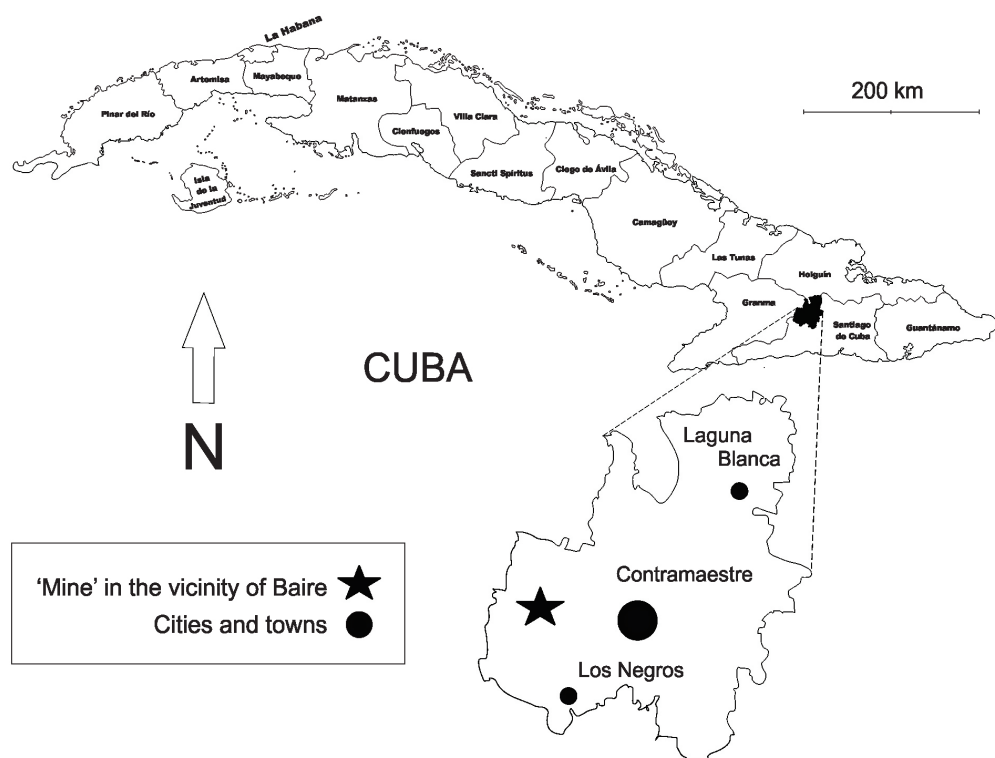


Figure 9. A 'mine' in the vicinity of Baire (SMB), Contramaestre, eastern Cuba. Type locality of †*Ornimegalonyx ewingi* Suárez. Note the star covers Baire and environs, but the precise location of the deposit is currently unknown.

Other material.—**Humerus:** left without proximal end and external part of distal articulation, USNM 447023 (Arredondo & Olson 1994: figs. 3*D [palmar], 4B [palmar], Suárez 2020b: fig. 1B [palmar]). See Suárez (2020b: 391).

Type locality.—A 'mine' in the vicinity of Baire (SMB), municipality of Contramaestre, Santiago de Cuba [formerly Oriente] province, Cuba (Suárez 2020b; see Arredondo & Olson 1994: 438, and 'Notes'). Fig. 9.

Distribution.—Restricted to the type locality in east Cuba (see Appendix). *Santiago de Cuba*. Contramaestre: SMB (Suárez 2020b: 391).

Direct ^{14}C dating.—None.

Notes.—Extremely rare. The smallest *Ornimegalonyx* (c.30% smaller than *O. oteroi*). The type series of *O. ewingi* represents the first material to be collected of the genus (Suárez 2020b). Apparently, the type locality is the same deposit named by Aguayo & Howell Rivero (1955: 1302) as 'minas de manganeso en Baire, Oriente' ['manganese mines in Baire, Oriente'], from where several mammalian fossils were sent to Museo Felipe Poey in 1942 (see Aguayo 1950: 122). Mayo (1980: 225) considered the locality to be possibly a cave (see Silva Taboada *et al.* 2008: 413). According to a distributional map published by Park (1942: pl. 21), a number of mines of this kind were known at that time not far from Baire. Some specimens from asphalt deposits at Las Breas de San Felipe, western Cuba, perhaps involve this taxon (Suárez 2020a: 32, 2020b: 391).

Order FALCONIFORMES Sharpe
Family FALCONIDAE Leach
Genus *Caracara* Merrem, 1826

Caracara Merrem, 1826, in Ersch & Gruber, *Allg. Encycl. Wiss. Kunste* 15: 159. Type, by subsequent designation, *Falco plancus* J. F. Miller.

30. †*Caracara creightoni* Brodkorb, 1959
Creighton's Caracara (Caraira de Creighton)

Caracara creightoni Brodkorb, 1959, *Bull. Fla. State Mus.* 4: 353.

Polyborus plancus: Olson 1976: 363.

Polyborus creightoni: Olson 1982: 36.

Caracara plancus ssp.: Jiménez Vázquez 1997a: 49.

Caracara creightoni: Suárez 2000a:120 (*lapsus calami*).

Caracara creightoni: Suárez 2004c:1, 10 (*lapsus calami*).

Caracara creightoni: Suárez 2020a: table 1 (*lapsus calami*).

History.—28 August 1958: holotype collected by J. C. Dickinson and W. Auffenberg at a cave deposit in the Bahamas (Brodkorb 1959: 353, 1964: 292). 3 June 1959: original description published (Brodkorb 1959). 22 January 1976: the single specimen known is considered a synonym (Olson 1976: 363) of living *C. plancus* (J. F. Miller, 1777). 5 August 1982: two additional fossils, a left quadrate and a distal end of a left tibiotarsus from the type locality provide characters to support the extinct species' validity (Olson & Hilgartner 1982: 28–31, fig. 2: B = tibiotarsus [anterior], D = idem [distal], F = quadrate [medial], H = idem [ventral]). Winter 1997: first record published from Cuba based on specimens from two cave deposits in the west (Suárez & Arredondo 1997: 101). 25 May 2001: species redescribed on basis of cranial and postcranial material from cave and sinkhole deposits in central and west Cuba (Suárez & Olson 2001a). 11 August 2003: identified in tar seeps at Las Breas de San Felipe, with description of previously unknown skeletal elements (Suárez & Olson 2003c: 307; see Suárez 2020a: 32–35). 11 December 2007: a well-preserved skull and its respective mandible reported from a blue hole, Sawmill Sink, Great Abaco, Bahamas (Steadman *et al.* 2007: fig. 6 [lateral]). 3 October 2014: first direct ¹⁴C dating on material (femur) from Great Abaco, Bahamas (Steadman & Franklin 2015: table 2, fig. 3: a [posterior], b [anterior]). November 2019: mitochondrial genome data obtained from a late Holocene (2,500 yr BP) right femur, Great Abaco, Bahamas (Oswald *et al.* 2019).

Holotype.—Incomplete left carpometacarpus, UF 3153 (Brodkorb 1959: 353, pl. 1, fig. 7 [lateral]). Collected 28 August 1958 by J. C. Dickinson and W. Auffenberg (Brodkorb 1959: 353, 1964: 292).

Type locality.—Banana Hole, New Providence Island, Bahamas (Brodkorb 1959: 351; see Olson & Pregill 1982: 4–5).

Referred material.—**Skull:** incomplete, OA 3928 (Suárez & Olson 2001b: 502, figs. 1B [lateral], 2B [dorsal]); rostrum, MNHNCu 75.4742 (Suárez 2020a: 32, fig. 13: A [lateral], B [dorsal]). **Notarium:** fragmentary, MNHNCu 75.4579. **Humerus:** proximal end of right, WS 1035 (Suárez & Olson 2003c: 305, fig. 2C [anconal]); shaft of right, MNHNCu 75.4759; left lacking proximal end, MNHNCu 75.4817 (Suárez 2020a: 32, fig. 13C [palmar]); proximal half of left, MNHNCu 75.4818 (Suárez 2020a: 32, fig. 13D [palmar]). **Ulna:** left, MPSPG 75 (Suárez & Olson 2001b: 502, fig. 3A: left [internal]). **Carpometacarpus:** right lacking minor metacarpal, MPSPG 77 (Suárez & Olson 2001b: 502, fig. 3B: left [internal]); left, MNHNCu 75.4819 (Suárez 2020a: 32, fig. 13E [internal]); proximal half of left, MPSPG 110. **Femur:** left, WS 1933 (Suárez & Olson 2003c: 305, fig. 2A [anterior], Jones *et al.* 2013, fig. 5*: 5 [posterior]); distal end of left, WS 0209; proximal half of right, WS 0142; proximal end of right, WS 587. **Tibiotarsus:** left lacking internal condyle, MPSPG 79 (Suárez & Olson 2001b: 502, fig. 3D: left

[anterior]); distal end of right lacking posterior rim of internal condyle, MPSC 83; distal halves of right, MNHNCu 75.4852–4853; distal ends of right, MNHNCu 75.4854–4856; shaft of left, MNHNCu 75.4851; distal ends of right, MNHNCu 75.4584–4585; distal ends of left, MNHNCu 75.4580–4583. **Tarsometatarsus:** right, MNHNCu 75.4820 (Suárez 2020a: 32, fig. 13: D [anterior]) and 75.4827–4828; proximal halves of right, MNHNCu 75.4844–4847; proximal ends of right, MNHNCu 75.4848–4850; right lacking proximal ends, MNHNCu 75.4829–4831; distal end of right, MNHNCu 75.4839; left, MPSC 103 (Suárez & Olson 2001b: 502, fig. 3C: left [anterior]); left without distal end, MNHNCu 75.4840; proximal ends of left, MNHNCu 75.4841–4843; distal halves of left, MNHNCu 75.4832–4835, MPSC 106; distal ends of left, MNHNCu 75.4592–4593, MNHNCu 75.4836–4838; distal ends of right, MNHNCu 75.4586–4591.

Distribution.—Cave, asphalt and sinkhole deposits in west and central Cuba (see Appendix). *Artemisa*. Caimito: **ACP** (Suárez & Olson 2003c: 305), **ASA** (Suárez & Arredondo 1997: 101, Suárez 2000b: table 1 [*‘Caracara sp.’*], Suárez & Olson 2003c: 305). *Mayabeque*. Quivicán: **YTU** (Suárez & Olson 2003c: 307 [*‘Caracara plancus ssp.’* of Jiménez Vázquez 1997a: 49]). *Matanzas*. Cárdenas: **MCA** (Suárez & Arredondo 1997: 101, Suárez & Olson 2001b: 502), Martí: **MLB** (Iturralde-Vinent *et al.* 2000: table 2 [*‘Caracara sp.’*], Suárez & Olson 2003c: 307, Suárez 2020a: 32). Jagüey Grande: **MFJ** (*cf.* CLV). *Villa Clara*. Corralillo: **VSM** (Suárez & Olson 2001b: 502, Arredondo Antúnez & Villavicencio Finalet 2006: tables I–II).

Direct ¹⁴C dating.—None from Cuba. Bahamas, Late Holocene (Sawmill Sink): 2,650 to 2,350 Cal BP (Steadman & Franklin 2015: table 2, femur).

Notes.—Common in Quaternary deposits in Cuba, from where the species seems to have originated and subsequently colonised the Lucayan Archipelago. Recorded from Cuba by Suárez & Arredondo (1997: 101), with additional material subsequently reported and the species redescribed (Suárez & Olson 2001b, 2003c, Suárez 2020a). One record from Dolphin Cave on Grand Cayman, Cayman Islands (Morgan 1994: 480 [*‘Polyborus creightoni’*]) is considered erroneous (Suárez & Olson 2001b: 507, Olson 2008: 265). The main features of Creighton’s Caracara vs. congeners is the presence of a massive and differently shaped rostrum (Suárez & Olson 2001b: 502, 2014: 308, Suárez 2020a: 33). Orihuela (2019: 61) commented that ‘Suárez & Olson (2001a) hypothesised a recent arrival to Cuba [of *C. creightoni*], along with *Cathartes*.’ but this is a misinterpretation (see Suárez 2020a: 35). Figueredo (2011: 11) cited the species as ‘ave de rapiña sin vuelo’ [*‘flightless bird of prey’*], which is incorrect. For material and distribution of *C. creightoni* in the Bahamas, see Brodkorb (1959), Olson (1976), Olson & Hilgartner (1982), Steadman *et al.* (2007) and Steadman & Franklin (2015, 2020).

Genus *Milvago* Spix, 1824

Milvago Spix, 1824, *Avium species novae Brasil*, Bd. 1, p. 12. Type, by monotypy, *Milvago ochrocephalus* Spix = *Polyborus chimachima* Vieillot.

31. †*Milvago carbo* Suárez & Olson, 2003 Cuban Caracara (Caraira Cubana)

Milvago carbo Suárez & Olson, 2003c, *Proc. Biol. Soc. Wash.* 116: 302.

Holotype.—Near-complete right tarsometatarsus, MNHNCu 75.4569, formerly P4569 (Suárez & Olson 2003c: 302, fig. 1: A [anterior], B [medial], C [posterior]; see Herrera-Uria *et al.* 2015: 114–115, not ‘P456’ [*lapsus calami*] as appears in Díaz-Franco 2004: 157). Collected in San Felipe II during expeditions conducted in 1998 by the Depto. de Geología y Paleontología, MNHNCu [= Stephen Díaz Franco, Manuel Iturralde Vinent and Reinaldo

Rojas Consuegra. Not 'W. Suárez, and S. Díaz-Franco' as indicated by Herrera-Uria *et al.* 2015: 115. See Iturralde-Vinent *et al.* 2000: 301] (Suárez & Olson 2003c: 302).

Other material.—**Notarium:** fragmentary, MNHNCu 75.4567. **Tibiotarsus:** distal ends of left, MNHNCu 75.4568, MNHNCu 75.4570–4571. **Tarsometatarsus:** proximal half of left without part of inner and outer calcaneal ridges, MNHNCu 75.4572; shaft of left, MNHNCu 75.4573; proximal end of right, MNHNCu 75.4574; distal halves of right, MNHNCu 75.4575–4576 (latter with abrasion); distal ends of left, MNHNCu 75.4577–4578. See Suárez & Olson (2003c: 303), Díaz-Franco (2004: 157), Herrera-Uria *et al.* (2015: 115).

Type locality.—Las Breas de San Felipe (**MLB**), c.5.5 km west of the town of Martí, San Felipe Valley, municipality of Martí, Matanzas province, Cuba (Suárez & Olson 2003c: 302–303; for description of this deposit see Iturralde-Vinent *et al.* 2000). Fig. 5.

Distribution.—Asphalt deposits in west Cuba (see Appendix). *Matanzas*. Martí: **MLB** (Suárez & Olson 2003c: 302–303, Suárez 2020a: 35–36).

Direct ^{14}C dating.—None. For dating of other bird species at the type locality, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = 11,880 $\pm$ 420 to 4,960 $\pm$ 280 years ^{14}C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—Very rare, known only from tar seeps in west Cuba. The largest representative of the genus *Milvago*, living or extinct (Suárez & Olson 2003c, Suárez 2020a). The smaller taxon recorded as *Milvago* sp. (see below) by Suárez & Arredondo (1997: 101) is not a synonym of the much larger *M. carbo* (*contra* Kirkconnell *et al.* 2020: table 4).

32. †*Milvago diazfrancoi* Suárez, 2020

Díaz Franco's Caracara (Caraira de Díaz Franco)

Milvago diazfrancoi Suárez, 2020a, *Zootaxa* 4780: 36.

Holotype.—Left tarsometatarsus lacking trochleae II and IV, MNHNCu 75.4610 (Suárez 2020a: 36, fig. 14: A [anterior], B [posterior]). Collected on 14 May 2009 by WS and Stephen Díaz Franco in San Felipe I, at the type locality (Suárez 2020a: 36).

Other material.—**Tibiotarsus:** distal third of left, MNHNCu 75.7021 (fig. 14: F [distal], G [anterior]). **Tarsometatarsus:** distal half of right, MNHNCu 75.7022; distal end of right, MNHNCu 75.4826; proximal half of right, MNHNCu 75.4825 (fig. 14: C [anterior]); distal half of left, MNHNCu 75.7023 (fig. 14: D [posterior], E [anterior]); distal end of left, MNHNCu 75.4824. Cited material and figures are from Suárez (2020a).

Type locality.—Las Breas de San Felipe (**MLB**), c.5.5 km west of the town of Martí, San Felipe Valley, municipality of Martí, Matanzas province, Cuba (Suárez 2020a; for description of locality see Iturralde-Vinent *et al.* 2000). Fig. 5.

Distribution.—Asphalt deposits in west Cuba (see Appendix). *Matanzas*. Martí: **MLB** (Suárez 2020a).

Direct ^{14}C dating.—None. For dating of other bird species at the type locality, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = 11,880 $\pm$ 420 to 4,960 $\pm$ 280 years ^{14}C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—Very rare. *M. diazfrancoi* is about the size of *M. alexandri* [= *Milvago wetmorei* Arredondo 1982: 36 (*lapsus calami*)] Olson, 1976, from Haiti, with a slenderer tarsometatarsus in the former, among other distinguishing characters (Suárez 2020a: 36; see Olson 1976: fig. 1). Both taxa appear related to the continental modern-day Yellow-headed Caracara *M. chimachima* (Olson 1976: 359, Suárez 2020a: 36–37), which is present in the fossil record of Florida (Emslie 1998: 44–46).

33. *Milvago* sp.

Referred material.—**Tarsometatarsus:** proximal left, WS 977.

Distribution.—Cave deposit in west Cuba (see Appendix). *Artemisa*. Caimito: **ACP** (Suárez & Arredondo 1997: 101).

Direct ¹⁴C dating.—None.

Notes.—The rarest and least known of the Cuban extinct caracaras. Orihuela (2019: 60–61) erroneously considered the *Milvago* sp., recorded by Suárez & Arredondo (1997: 101), as another Cuban species in the genus (*M. diazfrancoi*, described a year after Orihuela's paper), indicating 'Type locality: San Felipe tar pits, Martí, Matanzas province...' for it, but the present taxon has never been found in Cuban asphalt deposits (see Suárez 2020a: 36). At the same time, *Milvago* sp. was also incorrectly treated by Orihuela (2019: 60–61) as a synonym of the much larger extinct *Caracara creightoni* (see Suárez 2020a: 35, and 'Notes' under *M. carbo*).

Genus *Falco* Linnaeus, 1758

Falco Linnaeus, 1758, *Syst. Nat.*, edn. 10, vol. 1, p. 88. Type, by subsequent designation, *F. subbuteo* Linnaeus (AOU Comm., 1886).

34. ×*Falco femoralis* Temminck, 1822 Aplomado Falcon (Halcón Aplomado)

Falco femoralis Temminck, 1822, *Color Planches*, livr. 21, pl. 121 and text.

Referred material.—**Carpometacarpus:** right without minor metacarpal, MNHNCu 75.4606 (fig. 1D: right [internal]); right lacking distal end and minor metacarpal, MNHNCu 75.4607. **Tibiotarsus:** distal end of left, MNHNCu 75.4608. **Tarsometatarsus:** proximal end of left, MNHNCu 75.4609 (fig. 1E: right [anterior]). Cited material and figures are from Suárez & Olson (2003b). Collected on 25 February 2001 by Stephen Díaz Franco and WS, in San Felipe I, area C.

Distribution.—Asphalt deposits in west Cuba (see Appendix). *Matanzas*. Martí: **MLB** (Suárez & Olson 2003b: 73).

Direct ¹⁴C dating.—None. For dating of other bird species at MLB, see *Antigone cubensis*, *Gymnogyps varonai* and *Ornimegalonyx oteroi*, and of associated extinct mammals (*Parocnus browni* = 11,880 ± 420 to 4,960 ± 280 years ¹⁴C BP), see Jull *et al.* (2004) and Steadman *et al.* (2005).

Notes.—Very rare. Fossils from Las Breas de San Felipe are the only available material of this falcon in Cuba (Suárez & Olson 2003b). The species has also been reported from a prehistoric deposit on Middle Caicos, Bahamas (Steadman & Franklin 2020).

35. †*Falco kurochkini* Suárez & Olson, 2001 Cuban Falcon (Halcón Cubano)

Falco kurochkini Suárez & Olson, 2001a, *Proc. Biol. Soc. Wash.* 114: 35.

History.—1973: Eugene N. Kurochkin collects the first specimen, an incomplete tarsometatarsus at Cueva de los Fósiles, Camagüey province (Suárez & Olson 2001a: 34; see Olson 1985, Olson & Kurochkin 1987). 4 May 1997: holotype collected by WS in a cave deposit in western Cuba (Suárez & Olson 2001a: 35). Autumn 2000: specimens of the type series from western Cuba recorded as 'Falconidae indeterminate' (Suárez 2000b: table 1). 19 April 2001: original description published (Suárez & Olson 2001a). April 2004: reported from

its westernmost known fossil locality (Suárez 2004b: 156), Cueva El Abrón, an ancient barn owl pellet deposit in mountains of Pinar del Río province (Suárez & Díaz-Franco 2003: 375).

Holotype.—Left tarsometatarsus, MNHNCu 75.3229, formerly P3229, WS 1054 (Suárez & Olson 2001a: 35, fig. 2D [anterior]; see also Díaz-Franco 2004: 157, Herrera-Uria *et al.* 2015: 114). Collected 4 May 1997 by WS in a small sink known as ‘El Sumidero’, at the type locality (Suárez & Olson 2001a: 35; see Suárez 2000b).

Other material.—**Coracoid:** right, MNHNCu 75.3209 (fig. 1A [ventral]); left, USNM 510237. **Humerus:** left, MNHNCu 75.3210 (fig. 1B [anconal]), USNM 510238; left lacking pectoral crest, USNM 510239; incomplete left, MNHNCu 75.3211; proximal left, MNHNCu 75.3212–3214; right lacking proximal end, MNHNCu 75.3215; proximal right, USNM 510238; distal right, USNM 510241. **Ulna:** proximal right, MNHNCu 75.3217, USNM 510242; distal right, MNHNCu 75.3219; proximal left, MNHNCu 75.3216 (fig. 1C [internal]); distal left, MNHNCu 75.3218, USNM 510249 (fig. 1C [internal]). **Carpometacarpus:** proximal right, MNHNCu 75.3220 (fig. 1D [external]). **Notarium:** incomplete, MNHNCu 75.3221 (fig. 2A [ventral]). **Femur:** left, MNHNCu 75.3222 (fig. 2B [anterior]), USNM 510243; distal half of right, MNHNCu 75.3226; left lacking distal end, MNHNCu 75.3223; proximal left, MNHNCu 75.3224–3225, USNM 510244. **Tibiotarsus:** right, MNHNCu 75.3227 (fig. 2C [anterior]); left, USNM 510245; proximal half of left, USNM 510246; right lacking proximal end, MNHNCu 75.3230; distal right, MNHNCu 75.3228. **Tarsometatarsus:** right lacking proximal end, USNM 510247; left lacking distal end, IGP/ACC 406-3 (fig. 2E [anterior]); shaft of left, USNM 510248. Cited material and figures are from Suárez & Olson (2001a). See also Díaz-Franco (2004: 157), Herrera-Uria *et al.* (2015: 114).

Type locality.—Cueva de Sandoval (**ASA**), c.4 km south of the town of Vereda Nueva, municipality of Caimito, Artemisa [formerly La Habana] province, Cuba (Suárez & Olson 2001a: 35). Fig. 6.

Distribution.—Cave deposits in west and central Cuba (see Appendix). *Pinar del Río*. Los Palacios: **PEA** (Suárez 2004b: 156). *Artemisa*. Caimito: **ACP** (Suárez & Olson 2001a: 36), **ASA** = type locality (Suárez 2000b: table 1 [‘Falconidae indeterminate’], Suárez & Olson 2001a: 35–36 [‘*Falco kurochkini*, new species’]). *Mayabeque*. San José de las Lajas: **YCC** (Jiménez & Orihuela 2021: 169). *Camagüey*. Sierra de Cubitas: **CFO** (Suárez & Olson 2001a: 36).

Direct ¹⁴C dating.—None. For dating of associated fauna at PEA (17,406 ± 161 ¹⁴C yr BP), see Suárez & Díaz-Franco (2003: 373).

Notes.—Known by most postcranial elements. Present in some cave deposits (Suárez 2000b: 67, 2004b: 156, Jiménez & Orihuela 2021: 169) containing ancient barn owl pellets (*cf.* *Tyto furcata* and *T. noeli*), as this extinct falcon was frequently preyed by tytonids. *F. kurochkini* had marked terrestrial habits with hindlimb elements slenderer than in any congeneric (Suárez & Olson 2001a: 37).

Order Psittaciformes Wagler Family Psittacidae Rafinesque Genus *Ara* Lacépède, 1799

Ara Lacépède, 1799, *Tabl. Oiseaux*, p. 1. Type, by subsequent designation, *Psittacus macao* Linnaeus (see Ridgway 1916: 119).

36. †*Ara tricolor* Bechstein, 1811 Cuban Macaw (Guacamayo Cubano)

Ara tricolor Bechstein, 1811, in Latham, *Allg. Ueber*. 4(1): 64, pl. 1.

Le petit Ara d’Aubenton, 1779, *Planches Enl.* 641.

L’Ara tricolor Levaillant, 1801: 13.

Macrocercus aracanga: Vieillot, 1816: 258.
Macrocercus tricolor: Vieillot, 1816: 262.
Psittacus tricolor: Kuhl, 1820: 16.
Sittace. *tricolor*: Wagler, 1832: 669, 733.
Arara tricolor: Brehm, 1842: 3.
Sittace? lichtensteini: Wagler, *vide* Bonaparte 1856.
Ara cubensis Wetherbee, 1985: 174.

Type specimen.—Neontological material (extinct during second half of 19th century): adult mounted, MNHN CG 2000–726, with no date, precise locality, or collector (see Kirkconnell *et al.* 2020, pl. 58).

Referred material.—**Skull**: lacking zygomatic arches, right portion of frontal area, and most of bone around otic regions, AC-7 (Olson & Suárez 2008b: 287–288, fig. 1B: top [ventral], middle [dorsal], bottom [lateral]); rostrum, IGP/ACC unnumbered, at CZACC (Arredondo 1984: 18). **Carpometacarpus**: proximal half of right, AMNH unnumbered (Wetmore 1928: 4).

Distribution.—Cave and sinkhole deposits in west and central Cuba (see Appendix). *Artemisa*. Caimito: **ACP** (Arredondo 1984: 18, Arredondo & Arredondo 2002a: table 1, 2002b: table 1). *Cienfuegos*. Palmira: **CCM** (Wetmore 1928: 4). *Villa Clara*. Sagua La Grande: **VCB** (Olson & Suárez 2008b: 287–288).

Direct ¹⁴C dating.—None. For two indirect conventional dating from CCM (>30,000 to 25,000 ± 2,000 ¹⁴C yr BP), see Kulp *et al.* (1952: 419, table 2 [two samples: pine cones and wood]).

Notes.—Rare in Cuban Quaternary fossil localities with swampy palaeo-environmental indicators (Olson & Suárez 2008b). One record from a cave deposit in Mayabeque province (Arredondo & Arredondo 2002b: table 1) is erroneous (see section III). Fossils from Long Island, Bahamas, recently referred to Cuban Macaw by Steadman & Franklin (2020: table 1 [*Ara cf. tricolor*]). For archaeological records see Jiménez & Orihuela (2021: 171–172). For a summary of its distribution in historical times, natural history, taxonomy, phylogenetic position and skin specimens in collections, see Wiley & Kirwan (2013), Hume (2017), Johansson *et al.* (2018), Provost *et al.* (2018) and Kirkconnell *et al.* (2020).

II—SPECIES OF DUBIOUS IDENTITY

Geranoaetus melanoleucus (Vieillot, 1819).—Wetmore (1928: 3–4) recorded an incomplete left carpometacarpus ('AM [= AMNH] 6190', figs. 1* [internal], 2* [proximal]) and an ungual phalanx (AMNH unnumbered) as '*Geranoaëtus melanoleucus*' (see also Brodkorb 1964: 281 [= '*Buteo fuscescens* (Vieillot)']) from **CCM**, which material was subsequently referred by Acevedo-González & Arredondo (1982: table 1) and Arredondo (1984: 10) to the extant subspecies *G. m. australis* Swann, 1922. However, this material probably represents *Buteogallus borraisi*, the commonest extinct accipitrid found in Cuban Quaternary deposits (see section I), with a carpometacarpus similar in morphology including size (see Suárez 2020a: 17).

III—MISIDENTIFIED & SYNONYMISED TAXA

†Phorusrhacidae Ameghino, 1889.—Extinct family recorded as 'Phororhacidae' from **PPD**, **ACP** and **ALA** by Arredondo (1954: 92, 1955: 25–30, 1956: 5, 1957a: 72, 84, 1957b: 10–13, 1958: 10), based on postcranial elements and a large eggshell from an unidentified bird (Arredondo 1955: 26, unnumbered fig.*: bottom centre). Six species in this family (not 'four' as noted by Brodkorb 1961: 634) were reported by Arredondo (1958: 10, 12) as possibly

present in Cuba. The material was later referred to Strigidae, *Ornimegalonyx oteroi* (Brodkorb 1961, Bond 1964, Arredondo 1975, 1976), and Accipitridae, *Gigantohierax suarezi* (Arredondo & Arredondo 2002a; specimens formerly listed under '*Aquila*' *borrasi*, see Arredondo 1961, 1964, 1970a). Cited by Herrera Fritot (1957: 33), Pérez de Acevedo (1957: 273), Koopman (1958: 2) and Paula Couto (1967: 7). Koopman (1958: 2) reproduced information sent by Arredondo of 'an unknown bird allied to the extinct *Phororacos* of Argentina', but with a footnote: 'this identification maybe is erroneous'. *Coccyzus vetula* (Linnaeus, 1758).—Jamaican Lizard Cuckoo was indicated for Cuba as '*Sarothera* [sic] *vetula*' by Olson (1978: 114), based on two specimens, a fragmentary pelvis (Av. 875/67) and a partial left humerus (Av. 876/67), recorded from PPD as '*Saurothera merlini* d'Orbigny, 1839' by Fischer & Stephan (1971b: 597). I have examined additional material of *Coccyzus* from other cave deposits in western Cuba. Comparison with *C. vetula* indicates it is not the Jamaican species. Instead, some of the fossils agree in osteological characters and size with skeletal elements of the modern-day subspecies of Great Lizard Cuckoo *C. merlini decolor* (Bangs & Zappey, 1905), resident on Isla de la Juventud (= Isla de Pinos), and *C. m. santamariae* (Garrido, 1971) on some cays off northern Cuba (Kirkconnell *et al.* 2020: 139–140). Both subspecies seem to be more related taxonomically to these fossils than to the modern-day populations (also present in deposits of Holocene age, or maybe older) in the west of the archipelago. The same seems to be true for Bahamian *C. m. bahamensis* and a fossil humerus identified as '*Saurothera merlini*' from Grand Cayman, Cayman Islands (Morgan 1994: 482). The name *C. bahamensis* (H. Bryant, 1864), the oldest available, probably should be applied to some of these fossils. *C. merlini* apparently evolved in eastern Cuba, from where it colonised the rest of the main island. *Rallus sumiderensis* Fischer & Stephan, 1971.—Invalid species, described as extinct, based on abundant material from PPD (Fischer & Stephan 1971b: 593, table 1), but synonymised by Olson (1974: 445–447, table 2) with the relict Cuban endemic Zapata Rail *Cyanolimnas cerverai* Barbour & Peters, 1927 (see Olson 1977: 372, 1978: 107), which is similar in osteological characters and external morphology to the genus *Neocrex* Sclater & Salvin, 1869, of which *C. cerverai* probably represents only a highly specialised, near-flightless insular representative (WS unpubl.). †*Fulica picapicensis* Fischer & Stephan, 1971 (part).—An incomplete right ulna (Av. 843/67), paratype of *Fulica* (= *Nesotrochis*) *picapicensis* (Fischer & Stephan 1971b: 595), does not represent this taxon, but is probably a columbid (Olson 1974: 441, footnote; see 'Notes' under *N. picapicensis*). *Jabiru mycteria* (M. H. C. Lichtenstein, 1819).—A distal left tibiotarsus and proximal right tarsometatarsus (both AMNH unnumbered) from CCM were identified by Wetmore (1928: 2) as a Jabiru, but later referred to *Ciconia maltha* L. Miller, 1910, by Howard (1942: 202). †*Xenicibis* sp.—Recorded in Cuba by Acevedo-González & Arredondo (1982: table 1) without reference to specimens or a locality, and by Arredondo (1984: 6–7) based on material from PPD (which was incorrectly considered the 'type locality' for '*Xenicibis*' sp. by Gutiérrez Domech *et al.* 2018: 45) including a left humerus (OA 2969), a fragmentary distal left tibiotarsus (OA 2970a), two pieces of a left tarsometatarsus (OA 2971) and a phalanx (OA 2972). These were reidentified (Suárez 2001a) as a Limpkin *Aramus guarauna* Linnaeus, 1766. The extinct flightless ibis *Xenicibis xymptihicus* Olson & Steadman, 1977 (= *Xenicibus xymptihicus* Olson 1978: 115 [lapsus calami], *Xenioibis xymptiheous* Arredondo 1984: 6 [typographical error]) is endemic to Jamaica (see Olson & Steadman 1977, 1979, Longrich & Olson 2011), and the genus is unknown in Cuba (Suárez 2001a). †*Teratornis* L. Miller, 1909.—Material of the Cuban Teratorn formerly recorded as '*Teratornis* sp.' by Suárez & Arredondo (1997: 100) and described as '*Teratornis*' *olsoni* Arredondo & Arredondo, 2002, is now relocated under the genus *Oscaravis* (Suárez & Olson 2009a). *Antillovultur* Arredondo, 1972.—Extinct genus erected for Cuban Condor '*A.*' *varonai* Arredondo, but considered a junior synonym of

Gymnogyps Lesson (Emslie 1988, Suárez 2000a, Suárez & Emslie 2003). *Sarcoramphus* sp.?—First mentioned for Cuba in Acevedo-González & Arredondo (1982: table 1) without reference to material or locality. Subsequently, a single specimen (not a 'Few specimens... were assigned to *Sarcoramphus* (? sp.)' as reported by Orihuela 2019: 60), a distal fragment of left ulna (OA 2973) collected at HCI by O. Arredondo in July 1972, was tentatively recorded as '*Sarcoramphus* sp.?' (Arredondo 1984: 9), but reidentified as *Buteogallus borraasi* (Suárez 2001b, see section I). *Sarcoramphus* was not mentioned (*contra* Orihuela 2019: 60), nor were specimens 'assigned to' it, by Iturralde-Vinent *et al.* (2000). *Cathartes aura* (Linnaeus, 1758).—A proximal left ulna (OA 2974) from ALA was recorded as a Turkey Vulture (Arredondo 1984: 8), but the specimen is of the extinct Cuban Giant Owl *Ornimegalonyx oteroi* (Suárez 2001b: 110). Material from YCI reported as *C. aura* by Jiménez Vázquez & Valdés Ruiz (1995: 62) was reidentified as the smaller, extinct *C. emsliei* (Suárez & Olson 2020b: 335). **Cathartidae gen. et sp. indet.**—Comments in Arredondo (1976: 172, table 1) on fossils from YTU, identified as a 'large species of vulture' and recorded (Arredondo 1976: table 1) as 'Vulturidae gen. and sp. indet.', were later considered by him to have been misidentified (Suárez 2001b: 110). **Pandion sp.**—Arredondo Antúnez & Villavicencio Finalet (2006: tables I–II) recorded a '*Pandion* sp.' from VSM. I examined the fragmentary material on which this is based and found it does not represent a Pandionidae Sclater & Salvin, but a medium-sized Accipitridae (WS unpubl.). **Aquila sp.**—Cited by Fischer (1977: 214) from ALA without specifying material and by Arredondo (1984: 12) from ACP and SPF based on specimens of *Buteogallus borraasi* (see Suárez & Olson 2008), formerly described in *Aquila* Brisson (see section I). **Tyto alba** (Scopoli, 1769).—A proximal right tarsometatarsus (MNHNCu unnumbered) from SPL was identified as '*Tyto alba*' by Aranda *et al.* (2017: 118, fig. 1H [anterior]). Based on characters visible in the published photograph, the bone is of a New World *Cathartes* vulture, and is herein reidentified as *Cathartes* sp. Although by size the specimen probably represents *C. aura*, which is very common in modern late Holocene deposits (being occasionally intrusive in some older cave deposits), the specific identity and age of this bone will be subject to further comparisons and a direct ¹⁴C dating. **Tyto riveroi** Arredondo, 1972.—Described from MBE by Arredondo (1972b) based on a distal tarsometatarsus (DPUH 1252) of the large barn owl *Tyto pollens* Wetmore, 1937 (Suárez & Olson 2015: 539–540, see section I). **Ornimegalonyx acevedoi**, **O. minor** and **O. gigas** Arredondo, 1982.—These three supposed taxa were described from MCQ, ACP and SPC, respectively, by Arredondo (1982: 45–47), based on material of *O. oteroi* Arredondo, 1958, exhibiting sexual and individual variations (Suárez 2020b, see section I). **Gymnoglaux sp.**—Mentioned by Arredondo (1972a: table 1, 1972c: table 1, 1975: 150, 1976: 131) and Acevedo-González & Arredondo (1982: table 1), without indicating material or locality, and recorded as different from living '*Gymnoglaux*' (= *Margarobyas*) *lawrencii* (Sclater & Salvin, 1868) by Arredondo (1982: 41–42, 1984: 23–24), on the basis of a complete right (OA 2939) and distal end of left (OA 2940) tarsometatarsus from ACP. The validity of this supposed extinct taxon was rejected by Arredondo himself on 2 February 2000, when he and I considered describing it and finally compared the fossils with an adequate series of Bare-legged Owl material (O. Arredondo & WS unpubl.). Specimens referable to *Margarobyas* Olson & Suárez from fossil deposits in western Cuba (e.g., PEA, ACP, ASA), were compared with partial skeletons and isolated elements (representing >30 individuals) of *M. lawrencii* obtained from fresh pellets of *Tyto furcata* (WS unpubl.) throughout the main island, in which the endemic owl is its principal avian prey in some habitats (see Suárez 1998). Both fossil and modern specimens are indistinguishable in size and osteological characters. Material from fossil deposits in eastern Cuba is also variable (S. L. Olson pers. comm.), as is true of *Glaucidium siju* (d'Orbigny, 1839). External morphology in *M. lawrencii* is equally

subject to considerable variation across the Cuban archipelago, where the subspecies *M. l. 'exsul'* described by Bangs (1913: 91) for western Cuba and Isla de Pinos (= Isla de la Juventud), is considered invalid (Ripley & Watson 1956: 4, Bond 1957: 12, Parkes 1963: 130; see Kirkconnell *et al.* 2020: 240). *Margarobyas abronensis* Zelenkov & González 2021.—A species recently described based on fossils derived from barn owl predation in PEA and identified by the authors as the same taxon (= '*Gymnoglaux* sp.', see above) recorded by Arredondo (1984). Material from lower levels in El Abrón (= Late Pleistocene; Suárez & Díaz-Franco 2003: 373), including humeri, femora, tibiotarsi and tarsometatarsi, was collected, compared and identified as '*Gymnoglaux* *lawrencii*' by Suárez & Díaz-Franco (2011). Characters described as specific to '*M. abronensis*', including those of the tarsometatarsus, based on comparison apparently with a single skeleton of *M. lawrencii*, are present (and highly variable) in the living species, especially when examining both sexes. The fossil taxon was diagnosed as 'slightly smaller than extant *M. lawrencii*'. Although a chronocline consisting of a post-Pleistocene increase in size is present in some vertebrates from El Abrón (WS & S. Díaz-Franco unpubl.) and other Cuban stratified Quaternary deposits (see Silva Taboada 1974, 1979: 368), a modern tarsometatarsus (total length 33.7 mm) of *M. lawrencii* reported by Arredondo (1982: 42, 1984: 24) from Isla de la Juventud, western Cuba, is smaller than in '*M. abronensis*' (total length 35.7 mm, see Zelenkov & González 2021: table 1). Material (tarsometatarsi) originally identified as '*Gymnoglaux* sp.' by O. Arredondo from ACP is, contrarily, larger (total length 37.5 mm) than '*M. abronensis*' and near the largest limit of *M. lawrencii* recorded by Arredondo (1982: 42, 1984: 24). In addition, some paratypes of '*M. abronensis*' (Zelenkov & González 2021, figs. 1: K = quadrate [caudal], 3: J = ulna [ventral]) are more similar in size and characters to equivalent elements of the modern individual used for comparisons, and figured in the original description, but measurements were not presented. *Margarobyas abronensis* Zelenkov & González, 2021, is considered herein a junior subjective synonym of *Margarobyas lawrencii* (Sclater & Salvin, 1868). See section IV for the fossil record of *M. lawrencii*. †*Amplibuteo woodwardi* (L. Miller, 1911).—Originally recorded as *Amplibuteo* sp. from ASA (Suárez & Arredondo 1997: 100–101), based on a partial skeleton (later numbered WS 365). Subsequently, it was identified as *A. woodwardi* by Suárez (2004a), albeit with some differences from the continental taxon. The extinct genus *Amplibuteo* Campbell is now considered a junior synonym of *Buteogallus* Lesson and the Cuban material, along with a fossil from Hispaniola, was described (Suárez & Olson 2021) as the Antillean extinct species *B. irpus*. Navarro (2022: table 5) erroneously included both *A. woodwardi* and *B. irpus* as present in the fossil record of Cuba, overlooking the taxonomic history of the latter (see section I). †*Titanohierax* Wetmore, 1937.—Extinct genus described from the Bahamas (Wetmore 1937), combined for some time in the binomen *Titanohierax borraisi* (cf. Olson & Hilgartner 1982). The Cuban species (see section I) was redescribed in *Buteogallus* Lesson on the basis of abundant and more complete material (Suárez & Olson 2008). *Caracara plancus* ssp.—The left tarsometatarsus (GEPAB-P294) that constituted this record (Jiménez Vázquez 1997a: 49) from YTU was reidentified as the extinct *Caracara creightoni* (Suárez & Olson 2003c: 36). *Milvago* sp.—Although *Milvago* is well represented in the Cuban fossil record (Suárez & Olson 2003c, Suárez 2020a), the first indication by Acevedo-González & Arredondo (1982: table 1) was in error (O. Arredondo pers. comm.). The subsequent deletion of this record (cf. Arredondo 1984) was made without comment (see Suárez 2020a: 36), and the material (or taxon) on which it was based is currently unknown. †*Ara tricolor* Bechstein, 1811.—One record from YBL (Arredondo & Arredondo 2002b: table 1 ['*Ara cubensis*']) based on a tibiotarsus collected by O. Jiménez Vázquez, but the specimen is a Cuban Parrot *Amazona leucocephala* (Linnaeus, 1758) (O. Jiménez Vázquez *in litt.* 2021). ?*Scytalopus* sp.—A supposed extinct tapaculo (Rhinocryptidae

Wetmore) was recorded from cave deposits in western (ISC) and central (CFO) Cuba (Olson & Kurochkin 1987), and from Mayabeque (YBL) province (Jiménez Vázquez *et al.* 2005), based on specimens of the endemic Zapata Wren *Ferminia cerverei* Barbour (see Suárez & Olson 2020a: 559). *Dolichonyx kruegeri* Fischer & Stephan, 1971.—Described from PPD by Fischer & Stephan (1971b: 597) on a composite type series (Olson & Hilgartner MS), including the endemic Cuban Oriole *Icterus melanopsis* (Wagler, 1829) and migrant Bobolink *Dolichonyx oryzivorus* (Linnaeus, 1758). The latter was a common bird in Cuba in the past, migrating in large numbers throughout the archipelago (Gundlach 1876: 87–88, 1893: 117–118), with remains found in some fossil deposits derived from barn owl pellets (WS pers. obs.). Treated as a synonym of '*Agelaius phoeniceus* (Linnaeus)' by Brodtkorb (1978: 201). Acevedo-González & Arredondo (1982: table 1) and Arredondo (1984: 31–32), supposedly refined the identification to '*Agelaius phoeniceus assimilis* Lembeye'—which is currently considered a species, Red-shouldered Blackbird (see Kirkconnell *et al.* 2020: 319)—but skeletal elements of the latter taxon seem too large to match the fossil material (Olson & Hilgartner MS). Orihuela (2019: 64) incorrectly considered *D. kruegeri* as a 'Forgotten record since the original description', ignoring its taxonomic history as a synonym, and going further, as 'Likely extirpated or accidental record'. Following Orihuela (2019: 64), this invalid taxon was erroneously listed again in two consecutive lists of Cuban fossil birds compiled by Navarro (2020: 42, 2021: table 4). **'Unidentified bird'**.—MacPhee & Iturralde-Vinent (1994: table 2, 1995: table 1) recorded an 'unidentified bird' from Domo de Zaza (Early Miocene, Lagunitas Formation), Sancti Spiritus province, south-central Cuba, a locality with terrestrial and marine vertebrate remains. About two decades ago (*cf.* Suárez 2004c: 7), I examined the heavily worn, undiagnostic small specimen on which this record was based; although its identity remains uncertain, its morphology differs from any skeletal element in members of the class Aves.

IV—CUBAN NEOSPECIES IN FOSSIL DEPOSITS

(^Eendemic, ^Iintrusive)

ANATIDAE.—*Dendrocygna arborea* (Linnaeus, 1758): **MLB** (Suárez 2020a: 6). *Anas platyrhynchos* Linnaeus, 1758: **CCM** (Wetmore 1928: 3 [*'Anas platyrhyncha'*]). **PODICIPEDIDAE.**—*Podilymbus cf. podiceps* (Linnaeus, 1758): ^I**ASC** (*cf.* Acevedo-González & Arredondo 1982: table 1 [*'P[odilymbus]. cf. podiceps antillarum'*], Arredondo 1984: 3–4 [*'Podilymbus cf. podiceps antillarum'*]). **COLUMBIDAE.**—*Patagioenas inornata* (Vigors, 1827): **ACP** and **ASA** (WS unpubl.). *Columbina passerina* (Linnaeus, 1758): **ACP** (WS unpubl.), **YBL** (Jiménez Vázquez *et al.* 2005: 98), **YCC** (Jiménez & Orihuela 2021: 169), **MAF** (*cf.* CLV). *Columbina cf. passerina*: **ACP** (*cf.* Acevedo-González & Arredondo 1982: table 1 [*'C[olumbina]. cf. passerina aflavida'*], Arredondo 1984: 17–18 [*'Columbina cf. passerina aflavida'*]). *Zenaida aurita* (Temminck, 1809): **ASA** (Suárez & Arredondo 1997: 101 [*'Zenaida aurita zenaida'*], Suárez 2000b: table 1). *Zenaida cf. aurita*: **YBL** (Jiménez Vázquez *et al.* 2005: 98). *Zenaida macroura* (Linnaeus, 1758): **ACP** (*cf.* Acevedo-González & Arredondo 1982: table 1 [*'Z[enaida]. cf. macroura'*], Arredondo 1984: 17). **Columbidae indet.**: **PPD** (Olson 1974: 441 [footnote: 'possibly columbid'], **YBL** (Jiménez Vázquez *et al.* 1995: 25 [*'Bolumbidae [sic] ind.'*], Jiménez Vázquez *et al.* 2005: 98 [*'Columbidae indeterminado'*]), **YCC** (Jiménez & Orihuela 2021: 169), **YCI** (Jiménez Vázquez & Valdés Ruiz 1995: 62 [*'Columbidae ind.'*]). **CUCULIDAE.**—*Crotophaga ani* Linnaeus, 1758: **ACP** and **ASA** (Suárez & Arredondo 1997: 101, Suárez 2000b: table 1), **YBL** (Jiménez Vázquez *et al.* 2005: 99). *Coccyzus merlini* d'Orbigny, 1839: **PPD** (Fischer & Stephan 1971b [*'Saurothera merlini'*]), **YBL** (Jiménez Vázquez *et al.* 2005: 99 [*'Saurothera merlini'*]), **YCI** (Jiménez Vázquez & Valdés Ruiz 1995: 62 [*'Sauruthera [sic] merlini'*], Rojas Consuegra *et al.* 2012: 10 [*'Saurothera merlini'*]), **MCP** (Díaz

Franco 1999: 13 [*Saurothera merlini* ssp.'], **MFJ** (cf. CLV). *Coccyzus* cf. *merlini*: **ACP** (cf. Acevedo-González & Arredondo 1982: table 1 [*S[aurothera]. cf. merlini*'], Arredondo 1984: 19 [*Saurothera* cf. *merlini*']). *Coccyzus* sp.: **ACP**, **ACT** (WS unpubl.), **ASA** (Suárez 2000b: table 1 [*Saurothera* sp.']), **YTU** and **YCI** (WS unpubl.). See *Coccyzus vetula* in section III.

CAPRIMULGIDAE.—*Chordeiles gundlachii* Lawrence, 1856: **ASA** (Suárez 2000b: table 1). *Chordeiles* cf. *gundlachii*: **ACP** (cf. Acevedo-González & Arredondo 1982: table 1 [*Ch[ordeiles]. cf. minor gundlachii*'], Arredondo 1984: 30 [*Chordeiles* cf. *minor gundlachii*']).

APODIDAE.—*Streptoprocne zonaris* (Shaw, 1796): **ACP** (WS unpubl.). **Apodidae** indet.: **PEA** (Suárez & Olson 2020b: 559 [*a large species of swift* = *Cypseloides/Streptoprocne*]).

RALLIDAE.—^E*Cyanolimnas cerverai* Barbour & Peters, 1927: **PPD** (Fischer & Stephan 1971b: 593 [*Rallus sumiderensis*'], see section III), **PEA** (Suárez MS), **ISC** (Olson 1974: 445, table 2), **ACP** (Suárez MS), **ASA** (Suárez 2000b: table 1), **HGA** (Arredondo 1984: 15), **YIN** (Suárez MS), **YCC** (Jiménez & Orihuela 2021: 169), **YCI** (Jiménez Vázquez & Valdés Ruiz 1995: 62, Rojas Consuegra *et al.* 2012: 10), **MFJ** (cf. CLV), **SPH** and **SPS** (Suárez MS). *Rallus crepitans* J. F. Gmelin, 1789: **PEA** (Suárez & Díaz-Franco 2011 [*Rallus longirostris*']). *Rallus* sp.: **YCC** (Jiménez & Orihuela 2021: 169), **SPS** (Suárez 2004b: 157). *Gallinula galeata* (M. H. C. Lichtenstein, 1818): **CCM** (Wetmore 1928: 4 [*Gallinula chloropus*'], Brodkorb 1967: 135 [*Gallinula chloropus*'], Acevedo-González & Arredondo 1982: table 1 [*G[allinula]. chloropus cerceris*'], Arredondo 1984: 14 [*Gallinula chloropus cerceris*']).

ARAMIDAE.—*Aramus guarauna* (Linnaeus, 1766): **PPD** (Arredondo 1984: 6–7 [*Xenicibis* sp.'], Suárez 2001a: 109. See *Xenicibis* sp. in section III). **CICONIIDAE.**—*Mycteria americana* Linnaeus, 1758: **MLB** (Suárez & Olson 2003a: 151, Suárez 2020a: 10). **ARDEIDAE.**—*Ixobrychus exilis* (J. F. Gmelin, 1789): **ACP** (WS unpubl.), **CCM** (Wetmore 1928: 2). *Ardea alba* Linnaeus, 1758: **CCM** (Wetmore 1928: 1 [*Casmerodius albus*'], 2 [*Casmerodius albus egretta*'], Arredondo 1984: 4–5 [*Egretta alba egretta*']).

CATHARTIDAE.—*Cathartes aura* (Linnaeus, 1758): **YTU** (Arredondo & Varona 1974: 5, Acevedo González *et al.* 1975: 18–19 [*Cathartes aura aura*'], Arredondo 1975: 18, 1976: table 1, Acevedo-González & Arredondo 1982: table 1, Arredondo 1984: 8–9), **YCN** (Orihuela 2019: 59). See *Ornimegalonyx oteroi* section I and *Tyto alba* section III.

ACCIPITRIDAE.—*Accipiter striatus* Vieillot, 1808: **ACP** (Suárez & Arredondo 1997: 100 [*Accipiter striatus fringilloides*']), **YCI** (Rojas Consuegra *et al.* 2012: 10 [*Accipiter striatus* ssp.'], **MLB** (Iturralde-Vinent *et al.* 2000: table 2 [*Accipiter* sp.'], Suárez 2020a: 16). ^E*Accipiter gundlachi* Lawrence, 1860: **ASA** (Suárez 2000b: table 1), **YTU** (Suárez & Arredondo 1997: 100 [*Accipiter gundlachi gundlachi*']). *Buteo platypterus* (Vieillot, 1823): **PEA** (Suárez & Díaz-Franco 2011), **ACP** (Suárez & Arredondo 1997: 100 [*Buteo platypterus cubanensis*']), **ASA** (Suárez 2000b: table 1), **MLB** (Suárez & Olson 2003b: 73 [*B[uteo]. platypterus cubanensis*'], Suárez 2020a: 27). *Buteo jamaicensis* (J. F. Gmelin, 1788): **YCI** (Jiménez Vázquez & Valdés Ruiz 1995: 62, Jiménez Vázquez 1997a: 49 [*Buteo jamaicensis* ssp.'], Rojas Consuegra *et al.* 2012: 10 [*Buteo jamaicensis solitudinis*'], **MLB** (Suárez 2020a: 28). *Buteo* sp.: **PPD** (Fischer & Stephan 1971b: 593 [*Buteo*']).

TYTONIDAE.—*Tyto furcata* (Temminck, 1827): **PEA** (Suárez & Díaz-Franco 2003: 375 [*Tyto alba*']), **ACP** (Arredondo 1972a: table 1 [*Tyto alba* ssp.'], 1972c: table 1 [*Tyto alba* ssp.'], 1975: 150 [*Tyto alba* ssp.'], 1976: 171 [*Tyto alba furcata*'], 1982: 40–41 [*Tyto alba* ssp.'], 1984: 19 [*Tyto alba furcata*'], 20 [*Tyto alba* ssp.']), **ASA** (Suárez 2000b: table 1 [*Tyto alba*']), **YBL** (Jiménez Vázquez *et al.* 2005: 89 [*Tyto alba*']), **MLB** (Suárez 2020a: 29).

STRIGIDAE.—^E*Margarobyas lawrencii* (Sclater & Salvin, 1868): **PEA** (Suárez & Díaz-Franco 2011 [*Gymnoglaux lawrencii*'], Zelenkov & González 2021 [*Margarobyas abronensis*, sp. nov.']), **ACP** (Arredondo 1972a: table 1 [*Gymnoglaux* sp.'], 1972c: table 1 [*Gymnoglaux* sp.'], 1975: 150 [*Gymnoglaux* sp.'], 1976: table 1 [*Gymnoglaux* sp.'], 1982: 41 [*Gymnoglaux* sp.'], 1984: 23 [*Gymnoglaux* sp.'], see *Gymnoglaux* sp. in section III), Arredondo & Arredondo 2002a: table 1 [*Gymnoglaux* sp.'], 2002b: table 1 [*Gymnoglaux* sp.']), **ASA**, **APR** and **ACH**

(WS unpubl.), **YBL** (Jiménez Vázquez *et al.* 2005: 98 [*'Gymnoglaux lawrencii'*]), **YCI** (Jiménez Vázquez & Valdés Ruiz 1995: 62 [*'Gymnoglaux lawrencii'*], Jiménez Vázquez 1997a: 49 [*'Gymnoglaux lawrencii ssp.'*]), Rojas Consuegra *et al.* 2012: 10 [*'Otus lawrencii ssp.'*]), **YCN** (Orihuela *et al.* 2020b: table 4), **MCP** (Díaz Franco 1999: 13 [*'Otus lawrencii'*]), **MLB** (Suárez 2020a: 31), **MFJ** and **MAF** (cf. CLV), **VSM** (Arredondo Antúnez & Villavicencio Finalet 2006: tables I–II [*'Gymnoglaux lawrencii'*]). ^E**Glaucidium siju** (d'Orbigny, 1839): **PCA** (cf. Acevedo-González & Arredondo 1982: table 1, Arredondo 1984: 24–25), **PEA**, **ACP** and **ACH** (WS unpubl.), **YBL** (Jiménez Vázquez *et al.* 2005: 98), **YCI** (Jiménez Vázquez & Valdés Ruiz 1995: 62 [*'Cf. Glaucidium'*]), Rojas Consuegra *et al.* 2012: 10 [*'Glaucidium siju ssp.'*]). **Athene cunicularia** (Molina, 1782): **PEA** (Suárez 2004b: 156), **ACP** (cf. Suárez & Arredondo 1997: 101 [*'Athene [Speotyto] cunicularia'*]), **ASA** (Suárez 2000b: table 1 [*'Speotyto cunicularia'*]). **TROGONIDAE.**—^E**Priotelus temnurus** (Temminck, 1825): **PEA** (WS unpubl.), **ACP** and **ACH** (WS unpubl.), **MCP** (Díaz Franco 1999: 13 [*'Priotelus temnurus ssp.'*]). **TODIDAE.**—^E**Todus multicolor** Gould, 1837: **PEA** (Zelenkov & González 2020), **YBL** (Jiménez Vázquez *et al.* 2005: 98). **PICIDAE.**—**Melanerpes superciliaris** (Temminck, 1827): **YBL** (Jiménez Vázquez 1997a: 49 [*'Melanerpes superciliaris ssp.'*]), Jiménez Vázquez *et al.* 2005: 98). **Sphyrapicus varius** (Linnaeus, 1766): **YBL** (Jiménez Vázquez 1997a: 49 [*'Sphyrapicus varius ssp.'*]). ^E**Xiphidiopicus percussus** (Temminck, 1826): **PEA** (WS unpubl.), **ASA** (Suárez 2000b: table 1), **APR** and **ACH** (WS unpubl.), **YBL** (Jiménez Vázquez *et al.* 2005: 98). **Xiphidiopicus cf. percussus**: **ACP** (cf. Acevedo-González & Arredondo 1982: table 1, Arredondo 1984: 30–31). ^E**Colaptes fernandinae** Vigors, 1827: **ASA** (Suárez & Arredondo 1997: 101, Suárez 2000b: table 1). **Colaptes sp.**: **YBL** (Jiménez Vázquez *et al.* 2005: 98). **Campephilus principalis** (Linnaeus, 1758): **YCA** (Jiménez & Orihuela 2021: 170). **Picidae indet.** **YBL** (Jiménez Vázquez *et al.* 2005: 98 [*'Picidae indeterminado'*]). **FALCONIDAE.**—**Falco sparverius** Linnaeus, 1758: **ACP** (Suárez & Olson 2001a: 37), **ASA** (Suárez 2000b: table 1), **YBL** (Jiménez Vázquez 1997a: 49 [*'Falco sparverius ssp.'*]), **MLB** (Suárez 2020a: 38). **PSITTACIDAE.**—^E**Psittacara euops** (Wagler, 1832): **PEA** (Suárez & Díaz-Franco 2011 [*'Aratinga euops'*], Suárez & Olson 2020a: 559), **YCN** (Orihuela *et al.* 2020b: 17, table 4 [*'Psittacara eups [sic]'*]). **Amazona leucocephala** (Linnaeus, 1758): **PEA** (Suárez & Díaz-Franco 2011), **YBL** (Arredondo & Arredondo 2002b: table 1 [*'Ara cubensis'*], see *Ara tricolor* section III), **MCP** (Díaz Franco 1999: 13 [*'Amazona leucocephala ssp.'*]). **CORVIDAE.**—**Corvus palmarum** (Württemberg, 1835): **ASA** (Suárez & Arredondo 1997: 101 [*'Corvus palmarum cf. minutus'*], Suárez 2000b: table 1 [*'Corvus minutus'*]), **MLB** (Suárez 2020a: 38). **Corvus nasicus** Temminck, 1826: **MLB** (Iturralde-Vinent *et al.* 2000: table 2, Suárez 2020a: 39). **Corvus cf. nasicus**: **MCE** (Orihuela 2013: 13). **Corvus sp.**: **YCI** (Rojas Consuegra *et al.* 2012: 11). **HIRUNDINIDAE.**—**Petrochelidon fulva** (Vieillot, 1808): **ASA** (Suárez & Arredondo 1997: 101 [*'Hirundo fulva cavicola'*], Suárez 2000b: table 1), **YBL** (Jiménez Vázquez *et al.* 2005: 98). **TROGLODYTIDAE.**—^E**Ferminia cerverai** Barbour, 1926: **PEA** (Suárez & Olson 2020a: 559), **ACP** and **ASA** (WS unpubl.), **ISC** (Olson & Kurochkin 1987: 353 [*'?Scytalopus sp.'*]), **YBL** (Jiménez Vázquez *et al.* 2005: 99 [*'?Scytalopus sp.'*]), **CFO** (Olson & Kurochkin 1987: 354 [*'?Scytalopus sp.'*]). See *?Scytalopus sp.* section III. **MIMIDAE.**—**Mimus polyglottos** (Linnaeus, 1758): **YBL** (Jiménez Vázquez *et al.* 2005: 99). **Mimus cf. polyglottos**: **ACP** (cf. Acevedo-González & Arredondo 1982: table 1 [*'M[imus]. cf. polyglottos orpheus'*], Arredondo 1984: 33–34 [*'Mimus cf. polyglottos orpheus'*]). **Mimus sp.**: **ASA** (Suárez 2000b: table 1). **PASSERELLIDAE.**—^E**Torreornis inexpectata** Barbour & Peters, 1927: **PEA** (Suárez 2004b: 156), **ACP** (cf. Pregill & Olson 1981: 85, Acevedo-González & Arredondo 1982: table 1 [*'Torreornis sp.'*], Suárez & Arredondo 1997: 101), **ASA** (Suárez 2000b: table 1), **YBL** (Jiménez Vázquez *et al.* 2005: 99), **MCP** (Díaz Franco 1999: 13 [*'Torreornis inexpectata ssp.'*]), **SPH** (Suárez MS), **SPS** (Suárez 2004b: 157), **SCI** (cf. Pregill & Olson 1981: 85, González Alonso *et al.* 1986: 7). **ICTERIDAE.**—**Dolichonyx**

oryzivorus (Linnaeus, 1758): PPD (Fischer & Stephan 1971b: 597 [*Dolichonyx kruegeri*, n. sp.' (part)], Brodkorb 1978: 201 [*Agelaius phoeniceus*'], Acevedo-González & Arredondo 1982: table 1 [*A[gelaius]. phoeniceus assimilis*'], Arredondo 1984: 31 [*Agelaius phoeniceus assimilis*']. See *Dolichonyx kruegeri* section III), ACP, ASA and YIN (WS unpubl.), SCI (Olson & Hilgartner MS). *Sturnella magna* (Linnaeus, 1758): ASA (Suárez & Arredondo 1997: 101 [*Sturnella magna hippocrepis*'], Suárez 2000b: table 1), YBL (Jiménez Vázquez *et al.* 2005: 99). ^E*Icterus melanopsis* (Wagler, 1829): PPD (Fischer & Stephan 1971b: 597 [*Dolichonyx kruegeri*, n. sp.' (part), see section III]). *Agelaius humeralis* (Vigors, 1827): ACP (cf. Acevedo-González & Arredondo 1982: table 1, Arredondo 1984: 32). *Agelaius* sp.: YBL (Jiménez Vázquez *et al.* 2005: 99). ^E*Ptiloxena atrovioleacea* (d'Orbigny, 1839): ACP and HCI (cf. Acevedo-González & Arredondo 1982: table 1 [*A[gelaius]. atrovioleaceus*'], Arredondo 1984: 32–33 [*Dives* cf. *atrovioleaceus*']), YBL (Jiménez Vázquez *et al.* 2005: 99 [*Dives atrovioleacea*']), YCI (Jiménez Vázquez & Valdés Ruiz 1995: 62 [*Dives atrovioleacea* [sic]'], Rojas Consuegra *et al.* 2012: 11 [*Dives atrovioleacea*']). **THRAUPIDAE.**—*Tiaris* sp.: YBL (Jiménez Vázquez *et al.* 2005: 99). ^E*Melopyrrha nigra* (Linnaeus, 1758): YBL (Jiménez Vázquez *et al.* 2005: 99).

Notes.—The woodpeckers *Xiphidiopicus percussus* and *Colaptes fernandinae*, considered Cuban endemics in the modern era (see Kirkconnell *et al.* 2020) have been identified, or material referred to them, from Quaternary deposits in the Bahamas (Steadman & Franklin 2020).

Acknowledgements

The following persons deserve special mention for their support and help: the late Storrs L. Olson, the late Oscar Arredondo, Steven D. Emslie, Stephen Díaz Franco, Osvaldo Jiménez Vázquez, Carlos Arredondo Antúnez, Antonio Suárez, Aida Duque, Yuriel Urrea, the late James W. Wiley, Helen F. James, Orlando H. Garrido, Arturo Kirkconnell, Jesús Martínez, Yadira Alegre, Gabino La Rosa, Kenneth Campbell Jr., Fritz Hertel, Christopher Milensky, Brian Schmidt, Steven J. Parry, William Hilgartner, the late Gilberto Silva Taboada, Lázaro W. Viñola, Manuel Iturralde Vinent, Eduardo Abreu, Néstor Gómez, Lorenzo Morales, Raul Villavicencio Finalet, Joao G. Martínez, René Dekker, Douglas Causey, Aisling Farrell, George Barrowclough, Paul Sweet, Peter Capainolo, Kevin Seymour, Gary Graves, Brad Millen, Allan Baker, Leosdany Lima, Irving Himel, Freda Papoff, Janet Hinshaw, Julie Craves, Darrin O'Brien, Douglas Causey, Pamela Rasmussen, Luis M. Díaz, Luis M. Rodríguez, Angela Ortega, Catherine Levy, Ascanio Rincón, Fernando Rojas, Paolo Viscardi, Angel Nieves, Seriocha Amaro and Robert K. McAfee. The North American institutions and collections were visited thanks to funding provided by the Virginia Y. Hendry Fund, Alexander Wetmore Endowment Fund (USNM) and the Frank M. Chapman Memorial Fund (AMNH). The manuscript was greatly improved through critical review by Steven D. Emslie, Stephen Díaz Franco, Julian P. Hume, Helen F. James and Guy Kirwan.

References:

- Acevedo González, M. 1971. Geomorfología de la región de Sumidero, Sierra de los Órganos, Pinar del Río, Cuba. *Tecnológica* 9(3–4): 33–54.
- Acevedo-González, M. & Arredondo, O. 1982. Paleozoogeografía y geología del Cuaternario de Cuba: características y distribución geográfica de los depósitos con restos de vertebrados. Pp. 59–70 in *Resúmenes IX Jornada Científica del Instituto de Geología y Paleontología, La Habana*.
- Acevedo González, M., Arredondo, O. & González Gotera, N. 1975. *La Cueva del Túnel*. Pueblo y Educación, La Habana.
- Agnolin, F. 2009. El registro fósil de *Ciconia lydekkeri* Ameghino, 1891 [sic] en el Pleistoceno de Sudamérica. *Stud. Geol. Salmant.* 45(1): 53–58.
- Aguayo, C. G. 1950. Observaciones sobre algunos mamíferos cubanos extinguidos. *Bol. Hist. Nat. Soc. 'Felipe Poey'* 1: 121–134.
- Aguayo, C. G. & Howell Rivero, L. 1955. Sinopsis de los mamíferos cubanos. *Circ. Mus. Bibl. Zool. La Habana*: 1283–1324.
- Alcover, J. A., Bover, P. & Seguí, B. 1999. Una aproximació a la paleoecología de les illes. Pp. 169–204 in Alcover, J. A. (ed.) *Ecologia de les illes. Monografies de la Societat d'Història Natural de les Balears* 6.
- Alegre Lago, Y. 2002. Análisis morfofuncional de la locomoción del Búho Gigante *Ornimegalonyx oteroi* (Aves: Strigidae) del Cuaternario de Cuba. Tesis de diploma. Facultad de Biología, Univ. de La Habana.
- Alvarenga, H. M. F. & Olson, S. L. 2004. A new genus of tiny condor from the Pleistocene of Brazil (Aves: Vulturidae). *Proc. Biol. Soc. Wash.* 117: 1–9.

- Álvarez Conde, J. 1951. *Los perezosos cubanos; sus relaciones con el indio*. Imprenta La Milagrosa, La Habana.
- Álvarez Conde, J. 1957. Datos biográficos de los principales investigadores que han realizados [sic] estudios geológicos, mineralógicos y paleontológicos en Cuba. Pp. 187–248 in Álvarez Conde, J. (ed.) *Historia de la geología, mineralogía y paleontología en Cuba*. Junta Nacional de Arqueología y Etnología, La Habana.
- Ameghino, F. 1889. *Contribución al conocimiento de los mamíferos fósiles de la República Argentina*. Ac. Nac. Cienc. Rep. Arg. (Córdoba).
- American Ornithologists' Union (AOU). 1998. *Check-list of North American birds*. Seventh edn. American Ornithologists' Union, Washington DC.
- Anthony, H. E. 1917. A new rabbit and a new bat from Neotropical regions. *Bull. Amer. Mus. Nat. Hist.* 37: 335–337.
- Anthony, H. E. 1919. Mammals collected in eastern Cuba in 1917. With descriptions of two new species. *Bull. Amer. Mus. Nat. Hist.* 41: 625–643.
- Aranda, E., Viñola-López, L. W. & Álvarez-Lajonchere, L. 2020. New insights on the Quaternary fossil record of Isla de la Juventud, Cuba. *J. South Amer. Earth Sci.* 102: 102656.
- Aranda, E., Martínez-López, J. G., Jiménez, O., Alemán, C. & Viñola, L. W. 2017. Nuevos registros fósiles de vertebrados terrestres para Las Llanadas, Sancti Spiritus, Cuba. *Novit. Carib.* 11: 115–123.
- Arredondo Antúnez, C. 1997. Composición de la fauna de vertebrados terrestres extintos del Cuaternario de Cuba. *Rev. Elec. Órbita Cient., I.S.P.E.J.V.* 8(2): 1–13.
- Arredondo Antúnez, C. 2007. Oscar Paulino Arredondo de la Mata [obituary]. *Orn. Neotrop.* 18: 149–154.
- Arredondo, C. & Arredondo, O. 2000. Nuevo género y especie de perezoso (Edentata: Megalonychidae) del Pleistoceno de Cuba. *Rev. Biol.* 14: 66–72.
- Arredondo Antúnez, C. & Arredondo de la Mata, O. 2012. Geographic distribution and other considerations on the species of the Megalonychidae in Cuba. Pp. 295–303 in Borroto-Páez, R., Woods, C. A. & Sergile, F. (eds.) *Terrestrial mammals of the West Indies, Contributions*. Florida Museum of Natural History & Wachahoota Press, Gainesville, FL.
- Arredondo Antúnez, C. & Villavicencio Finalet, R. 2006 [for 2004]. Tafonomía del depósito arqueológico Solapa del Megalocnus en el noroeste de Villa Clara, Cuba. *Rev. Biol.* 18: 160–172.
- Arredondo, O. 1954. Toda una fauna extinguida hallada en las montañas de Pinar del Río. *Bohemia* 46(35): 46–48, 92.
- Arredondo de la Mata, O. 1955. Contribuciones a la paleontología de la Sociedad Espeleológica de Cuba. *Bol. Soc. Espeleol. Cuba* 1(2): 3–31.
- Arredondo, O. 1956. Como identificar los restos óseos de algunos mamíferos cubanos extinguidos que resultan de suma importancia en las investigaciones arqueológicas y antropológicas. *Bol. Soc. Espeleol. Cuba* 2(5): 4–10.
- Arredondo, O. 1957a. El trágico fin de los vampiros cubanos. *Bohemia* 49(43): 70–72, 84–85.
- Arredondo, O. 1957b. Origen y antigüedad de nuestra fauna extinguida y la unión de Cuba con el continente americano. *El Cartero Cubano* 16(12): 10–13.
- Arredondo, O. 1958. Aves gigantes de nuestro pasado prehistórico. *El Cartero Cubano* 17(7): 10–12.
- Arredondo, O. 1961. Descripciones preliminares de dos nuevos géneros y especies de edentados del Pleistoceno cubano. *Bol. Grupo Expl. Cient.* 1(1): 19–40.
- Arredondo, O. 1964. La lechuza gigante de la prehistoria cubana. *Bohemia* 56(27): 18–21, 90.
- Arredondo, O. 1970a. Nueva especie de ave pleistocénica del orden Accipitriformes (Accipitridae) y nuevo género para las Antillas. *Cienc. Biol. Univ. La Habana* 4(8): 1–19.
- Arredondo, O. 1970b. Dos nuevas especies subfósiles de mamíferos (Insectivora: Nesophontidae) del Holoceno precolombino de Cuba. *Mem. Soc. Cienc. Nat. La Salle* 30(86): 122–152.
- Arredondo, O. 1971. El Águila Cubana de la prehistoria. *Bohemia* 63(6): 94–97.
- Arredondo, O. 1972a. Nueva especie de ave fósil (Strigiformes: Tytonidae) del Pleistoceno superior de Cuba. *Bol. Soc. Venez. Cienc. Nat.* 29(122–123): 415–431.
- Arredondo, O. 1972b. Especie nueva de lechuza gigante (Strigiformes: Tytonidae) del Pleistoceno cubano. *Bol. Soc. Venez. Cienc. Nat.* 30(124–125): 129–140.
- Arredondo, O. 1972c [for 1971]. Nuevo género y especie de ave fósil (Accipitriformes: Vulturidae) del Pleistoceno de Cuba. *Mem. Soc. Cienc. Nat. La Salle* 31(90): 309–323.
- Arredondo, O. 1975. Distribución geográfica y descripción de algunos huesos de *Ornimegalonyx oteroi* Arredondo, 1958 (Strigiformes: Strigidae) del Pleistoceno superior de Cuba. *Mem. Soc. Cienc. Nat. La Salle* 35(101): 133–190.
- Arredondo, O. 1976. The great predatory birds of the Pleistocene of Cuba. Pp. 169–187 in Olson, S. L. (ed.) *Collected papers in avian paleontology honoring the 90th birthday of Alexander Wetmore*. *Smiths. Contrib. Paleobiol.* 27.
- Arredondo, O. 1982. Los Strigiformes fósiles del Pleistoceno cubano. *Bol. Soc. Venez. Cienc. Nat.* 37(140): 33–55.
- Arredondo, O. 1984. Sinopsis de las aves halladas en depósitos fosilíferos pleisto-holocénicos de Cuba. *Rep. Invest. Inst. Zool.* 17: 1–35.
- Arredondo, O. 1996. Lista de las especies extinguidas de vertebrados halladas en las provincias orientales de Cuba. *Garciana* 24–25: 1–2.

- Arredondo, O. & Arredondo, C. 2002a [for 1999]. Nuevos género y especie de ave fósil (Falconiformes: Accipitridae) del Cuaternario de Cuba. *Poeyana* 470–475: 9–14.
- Arredondo, O. & Arredondo, C. 2002b [for 1999]. Nueva especie de ave (Falconiformes: Teratornithidae) del Pleistoceno de Cuba. *Poeyana* 470–475: 15–21.
- Arredondo de la Mata, O. & Arredondo Antúnez, C. 2012. West Indian canids and prey bird ecological control on the Quaternary mammals of Cuba. Pp. 287–293 in Borroto-Páez, R., Woods, C. A. & Sergile, F. (eds.) *Terrestrial mammals of the West Indies, Contributions*. Florida Museum of Natural History & Wacahoota Press, Gainesville, FL.
- Arredondo, O. & González Gotera, N. 1982. Nuevo hallazgo de *Pulsatrix arredondoi* Brodkorb (Aves: Strigidae) del Pleistoceno de Cuba. *Misc. Zool.* 16: 1–2.
- Arredondo, O. & Rivero, M. 1997. Nuevo género y especie de Megalonychidae del Cuaternario cubano. *Rev. Biol.* 11: 105–112.
- Arredondo, O. & Olson, S. L. 1994. A new species of owl of the genus *Bubo* from the Pleistocene of Cuba (Aves: Strigiformes). *Proc. Biol. Soc. Wash.* 107: 436–444.
- Arredondo, O. & Varona, L. S. 1974. Nuevos género y especie de mamífero (Carnivora: Canidae) del Cuaternario de Cuba. *Poeyana* 131: 1–12.
- Bangs, O. 1903. New birds from Cuba and the Isle of Pines. *Proc. New England Zool. Cl.* 4: 89–92.
- Bangs, O. & Zappey, W. R. 1905. Birds of the Isle of Pines. *Amer. Natur.* 39: 179–215.
- Barbour, T. 1926. A remarkable new bird from Cuba. *Proc. New England Zool. Cl.* 9: 73–75.
- Barbour, T. & Peters, J. L. 1927. Two more remarkable new birds from Cuba. *Proc. New England Zool. Cl.* 9: 95–97.
- Bechstein, U. 1793. *Johann Lathams allgemeine Uebersicht der Vögel*, Bd. 1. A. C. Weigels & Schneiders, Nürnberg.
- Bechstein, U. 1811. *Johann Lathams allgemeine Uebersicht der Vögel*, Bd. 4. A. C. Weigels & Schneiders, Nürnberg.
- Berry, E. W. 1934. Pleistocene plants from Cuba. *Bull. Torrey Bot. Cl.* 61: 237–240.
- Bolufé Torres, R. 2016. Mamíferos del Cuaternario y su vinculación con los sitios arqueológicos aborígenes cubanos. Estudio del caso Cueva Calero. *Geoinformativa* 10(1): 37–44.
- Bonaparte, C. L. 1838. *A geographical and comparative list of the birds of Europe and North America*. John Van Voorst, London.
- Bond, J. 1957. Second supplement to the *Check-list of birds of the West Indies* (1956). Academy of Natural Sciences, Philadelphia.
- Bond, J. 1964. Ninth supplement to the *Check-list of birds of the West Indies* (1956). Academy of Natural Sciences, Philadelphia.
- Brehm, C. L. 1842–55. *Monographie der Papageien*. August Schmid, Jena.
- Brodkorb, P. 1959. Pleistocene birds from New Providence Island, Bahamas. *Bull. Fla. State Mus.* 4: 349–371.
- Brodkorb, P. 1961. Recently described birds and mammals from Cuban caves. *J. Paleontol.* 35: 633–635.
- Brodkorb, P. 1963. Catalogue of fossil birds [:] part 1 (Archaeopterygiformes through Ardeiformes). *Bull. Fla. State Mus.* 7: 179–293.
- Brodkorb, P. 1964. Catalogue of fossil birds: part 2 (Anseriformes through Galliformes). *Bull. Fla. State Mus.* 8: 195–335.
- Brodkorb, P. 1967. Catalogue of fossil birds: part 3 (Ralliformes, Ichthyornithiformes, Charadriiformes). *Bull. Fla. State Mus.* 11: 99–220.
- Brodkorb, P. 1969 [for 1968]. An extinct Pleistocene owl from Cuba. *Quart. J. Florida Acad. Sci.* 31: 112–114.
- Brodkorb, P. 1971. Catalogue of fossil birds: part 4 (Columbiformes through Piciformes). *Bull. Fla. State Mus.* 15: 163–266.
- Brodkorb, P. 1978. Catalogue of fossil birds [:] part 5 (Passeriformes). *Bull. Fla. State Mus.* 23: 139–228.
- Brown, B. 1913. Some Cuban fossils. A hot spring yields up the bones of animals that lived before the advent of man. *Amer. Mus. J.* 13: 221–228.
- Campbell, K. E. 1979. The non-passerine Pleistocene avifauna of the Talara Tar Seeps, northwestern Peru. *Life Sci. Contrib. Roy. Ontario Mus.* 118: 1–203.
- Campbell, K. E. 1980. A review of the Rancholabrean avifauna of the Itchtucknee River, Florida. *Contrib. Sci. Nat. Hist. Mus. Los Angeles Co.* 330: 119–129.
- Carlson, L. A. & Steadman, D. W. 2009. Faunal exploitation at two prehistoric inland villages from different time periods in Puerto Rico. *J. Island & Coastal Archaeol.* 4: 207–222.
- Castellanos, E. S. 1968. Halla restos fósiles expedición científica cubano-alemana. *El Mundo del Domingo* (abril 14): 4–5.
- Chapman, F. M. 1917. Descriptions of new birds from Santo Domingo and remarks on others in the Brewster-Sanford collection. *Bull. Amer. Mus. Nat. Hist.* 37: 327–334.
- Chawner, W. D. 1932. Geology and petroleum possibilities of northern Matanzas and Santa Clara provinces. Oficina Nacional, Recursos Minerales, Inv. 2520. Unpubl.
- Córdova Medina, A. P., Crespo Díaz, R. & Jiménez Vázquez, O. 1997. Importancia arqueológica y zoológica del sitio Solapa del Sílex. *El Caribe Arqueol.* 2: 78–83.
- Cory, C. B. 1883. Descriptions of three new species of birds from Santo Domingo. *Quart. J. Boston Zool. Soc.* 2: 45–46.

- Cuello, J. P. 1988. Lista de las aves fósiles de la región neotropical y las islas antillanas. *Paula-Coutiana* 2: 3–79.
- d'Aubenton, E.-L. 1779. *Planches enluminées d'histoire naturelle*, vol. 7. Paris.
- d'Orbigny, A. D. 1839. Aves. Pp. [1]–220 in de la Sagra, R. (ed.) *Historia física política y natural de la isla de Cuba*, pt. 2, vol. 3. Arthus Bertrand, Paris.
- Díaz Franco, S. 1999. Dos registros nuevos de aves endémicas en depósitos fosilíferos de Cuba. *El Pitirre* 12: 12–13.
- Díaz-Franco, S. 2004. Type specimens of fossil vertebrates housed in the Museo Nacional de Historia Natural, Cuba. *Rev. Biol.* 18: 155–159.
- Downer, A. & Sutton, R. 1990. *Birds of Jamaica*. Cambridge Univ. Press, Cambridge, UK.
- Dykstra, C. R., Hays, J. L. & Crocoll, S. T. 2020. Red-shouldered Hawk (*Buteo lineatus*), version 1.0. In Poole, A. F. (ed.) *Birds of the world*. Cornell Lab. of Ornithology, Ithaca, NY. <https://doi.org/10.2173/bow.reshaw.01>.
- Emslie, S. D. 1988. The fossil history and phylogenetic relationships of condors (Ciconiiformes: Vulturidae) in the New World. *J. Vert. Paleontol.* 8: 212–228.
- Emslie, S. D. 1998. Avian community, climate, and sea-level changes in the Plio-Pleistocene of the Florida peninsula. *Orn. Monogr.* 50: 1–113.
- Feduccia, A. 1980. A thick-knee (Aves: Burhinidae) from the Pleistocene of North America, and its bearing on ice age climates. *Contrib. Sci. Nat. Hist. Mus. Los Angeles Co.* 330: 115–118.
- Figueredo, A. E. 2011. Patrones de asentamiento y uso del paisaje en el carso antillano por los agroalfareros prehistóricos. *Cuba Arqueol.* IV(1): 9–23.
- Fischer, K.-H. 1968. Ein flugunfähiger kranich aus dem Pleistozän von Cuba. *Der Falke* 15: 270–271.
- Fischer, K. 1970. Quartärpaläontologische Grabungsexpedition 1967 in Cuba. *Wiss. Zeitsch. Humboldt-Univ. Berlin, Math.-Nat. R.* 19: 232–236.
- Fischer, K. 1977. Quartäre Mikromammalia Cubas, vorwiegend aus der Höhle San José de la Lamas, Santa Fé, Provinz Habana. *Z. geol. Wiss.* 5: 213–255.
- Fischer, K. & Stephan, B. 1971a. Ein flugunfähiger Kranich (*Grus cubensis* n. sp.) aus dem Pleistozän von Kuba — eine Osteologie der Familie der Kraniche (Gruidae). *Wiss. Zeitsch. Humboldt-Univ. Berlin, Math.-Nat. R.* 20: 541–592.
- Fischer, K. & Stephan, B. 1971b. Weitere Vogelreste aus dem Pleistozän der Pio-Domingo-Höhle in Kuba. *Wiss. Zeitsch. Humboldt-Univ. Berlin, Math.-Nat. R.* 20: 593–607.
- Garrido, O. H. 1971. Nueva raza del arriero, *Saurothera merlini* (Aves: Cuculidae) para Cuba. *Poeyana* 87: 1–12.
- Garrido, O. H. 2003. A new subspecies of the Least Pauraque (*Siphonorhis brewsteri*) (Aves: Caprimulgidae) from Gonave island, Haiti, with comments on the genus. *Solenodon* 3: 61–67.
- Gmelin, J. F. 1788. *Systema naturae*, vol. 1(1). Georg Emanuel Beer, Leipzig.
- Gmelin, J. F. 1789. *Systema naturae*, vol. 1(2). Georg Emanuel Beer, Leipzig.
- Goldberg, S. L., Novacek, M. J. & Alayón, G. 2017. *The history of scientific relations between Cuba and the American Museum of Natural History (AMNH), 160 years of collecting and collaborating (1857–2017)*. Amer. Mus. Nat. Hist. Spec. Publ.
- González Alonso, H. 2011. Aves. Pp. 270–291 in Larramendi, J. A. & Viña Dávila, N. (eds.) *Rostros en peligro. Especies cubanas amenazadas*. Ed. Polymita, Ciudad de Guatemala.
- González Alonso, H. 2012. Aves: Introducción. Pp. 207–208 in González Alonso, H., Rodríguez Schettino, L., Rodríguez, A., Mancina, C. A. & Ramos García, I. (eds.) *Libro Rojo de los vertebrados de Cuba*. Ed. Academia, La Habana.
- González Alonso, H., González Bermúdez, F. & Quesada, M. 1986. Distribución y alimentación del Cabrerito de la Ciénaga (*Torreornis inexpectata*) (Aves: Fringillidae). *Poeyana* 310: 1–24.
- Gundlach, J. 1876. *Contribución a la ornitología cubana*. Imprenta La Antilla, La Habana.
- Gundlach, J. 1893. *Ornitología cubana, o catálogo descriptivo de todas las especies tanto indígenas como de paso anual o accidental observadas en 53 años*. Archivos de la Policlínica, Imprenta La Moderna, La Habana.
- Gutiérrez Domech, M. R. 2010. Protecting the Cuban geological heritage. *Open J. Geol.* 4: 1–14.
- Gutiérrez Domech, M. R., Balado Piedra, E. J., Delgado Carballo, I., Oliva Martín, A., Cardona Muñiz, C. L. & Domínguez Samalea, Y. 2018. Las cuevas de Paredones y del túnel y la caverna de Pío Domingo: principales yacimientos fosilíferos de vertebrados del Pleistoceno en Cuba occidental. *Geoinformativa* 12(2): 37–48.
- Hecht, M. K. 1955. The comparison of recent and fossil amphibian, reptilian, and mammalian faunas in the Bahamas. *Yb. Amer. Philos. Soc.* 1954: 133–135.
- Herrera Fritot, R. 1957. Lección introductiva sobre la Arqueología antillana en el Museo Nacional. Pp. 30–40 in *Los museos y la educación*. Publicación del Comité Cubano de Museos, La Habana.
- Herrera-Uria, J., Aranda, E., Gutiérrez, E., Rojas, R., Garrido, O. H., Alayón, G. & Díaz, L. M. 2015. Type specimens housed in the National Museum of Natural History of Cuba. *Solenodon* 12: 84–123.
- Holland, W. J. 1917. The mammals of the Isle of Pines. *Ann. Carnegie Mus.* 11: 356–358.
- Howard, H. 1929. The avifauna of Emeryville Shellmound. *Univ. Calif. Publ. Zool.* 32: 301–394.
- Howard, H. 1932. Eagles and eagle-like vultures of the Pleistocene of Rancho La Brea. *Carnegie Inst. Wash. Publ.* 429: 1–82.
- Howard, H. 1935. The Rancho La Brea Wood Ibis. *Condor* 37: 251–253.

- Howard, H. 1942. A review of the American fossil storks. *Carnegie Inst. Wash. Publ.* 530: 187–203.
- Howard, H. 1946. A review of the Pleistocene birds of Fossil Lake, Oregon. *Carnegie Inst. Wash. Publ.* 551: 141–195.
- Hume, J. P. 2017. *Extinct birds*. Second edn. Bloomsbury, London.
- Hunt, A. P. & Lucas, S. G. 2018. The record of sloth coprolites in North and South America: implications for terminal Pleistocene extinctions. Pp. 277–298 in Lucas, S. G. & Sullivan, R. M. (eds.) *Fossil record 6. New Mex. Mus. Nat. Hist. Sci. Bull.* 79.
- Iturralde-Vinent, M. 1998. A small “Rancho La Brea” site discovered in Cuba, Manantiales de Asfalto de San Vicente: a fossiliferous tar spring. *Cocuyo* 7: 3–4.
- Iturralde-Vinent, M. A., MacPhee, R. D. E., Díaz Franco, S. & Rojas Consuegra, R. 1999. A small “Rancho La Brea” site discovered in Cuba. *J. Geol. Soc. Jamaica* 33: 20.
- Iturralde-Vinent, M. A., MacPhee, R. D. E., Díaz-Franco, S., Rojas-Consuegra, R., Suárez, W. & Lomba, A. 2000. Las Breas de San Felipe, a Quaternary fossiliferous asphalt seep near Martí (Matanzas Province, Cuba). *Carib. J. Sci.* 36: 300–313.
- International Commission on Zoological Nomenclature (ICZN). 1999. *International code of zoological nomenclature*. Fourth edn. International Trust for Zoological Nomenclature, London.
- Jiménez Vázquez, O. 1997a. Seis nuevos registros de aves fósiles en Cuba. *El Pitirre* 10: 49.
- Jiménez Vázquez, O. 1997b. La Biaya o Bambiaya de los indocubanos. *El Pitirre* 10: 96–97.
- Jiménez-Vázquez, O. 2001. Registros ornitológicos en residuarios de dieta de aborígenes precerámicos cubanos. *El Pitirre* 14: 120–126.
- Jiménez Vázquez, O. 2005. La cueva del Infierno: tafonomía de un sitio arqueológico del arcaico de Cuba. *Bol. Gabinete Arqueol.* 4(4): 73–87.
- Jiménez Vázquez, O. & Arrazcaeta Delgado, R. 2008. Las aves en la arqueología histórica de La Habana Vieja. *Bol. Gabinete Arqueol.* 7(7): 17–29.
- Jiménez Vázquez, O. & Arrazcaeta Delgado, R. 2015. Las aves y su relación con las culturas precolombinas de Cuba. *Bol. Gabinete Arqueol.* 11(11): 141–157.
- Jiménez, O. & Orihuela, J. 2021. Nuevos hallazgos de aves en contextos paleontológicos y arqueológicos de Cuba. *Novit. Carib.* 17: 163–176.
- Jiménez Vázquez, O. & Valdés Ruiz, P. 1995. Los vertebrados fósiles de la Cueva del Indio, San José de las Lajas, Habana, Cuba. Pp. 62–63 in *Resúmenes Congr. Intern. LV Aniversario de la Sociedad Espeleológica de Cuba, La Habana*.
- Jiménez Vázquez, O., Condís, M. M. & García Cancio, E. 2005. Vertebrados post-glaciales en un residuario fósil de *Tyto alba scopoli* [sic] (Aves: Tytonidae) en el occidente de Cuba. *Rev. Mex. Mastozool.* 9: 85–112.
- Jiménez Vázquez, O., Jaimez Salgado, E. & Crespo Díaz, R. 1995. Estudio de las espeluncas habaneras conocidas como “Cuevas Blancas”. Cuba. Pp. 24–25 in *Resúmenes Congr. Intern. LV Aniversario de la Sociedad Espeleológica de Cuba, La Habana*.
- Johansson, U. S., Ericson, P. G. P., Blom, M. P. K. & Irestedt, M. 2018. The phylogenetic position of the extinct Cuban Macaw *Ara tricolor* based on complete mitochondrial genome sequences. *Ibis* 160: 666–672.
- Jones O’Day, S. 2002. Late prehistoric Lucayan occupation and subsistence on Middle Caicos Island, northern West Indies. *Carib. J. Sci.* 38: 1–10.
- Jones, W. W., Rinderknecht, A., Migotto, R. & Blanco, R. E. 2013. Body mass estimations and paleobiological inferences on a new species of large caracara (Aves, Falconidae) from the late Pleistocene of Uruguay. *J. Vert. Paleontol.* 87: 151–158.
- Jull, A. J. T., Iturralde-Vinent, M., O’Malley, J. M., MacPhee, R. D. E., McDonald, H. G., Martin, P. S., Moody, J. & Rincón, A. 2004. Radiocarbon dating of extinct fauna in the Americas recovered from tar pits. *Nucl. Instrum. Methods Phys. Res. B* 223–224: 668–671.
- Kaup, J. J. 1852. Monograph of the owls-Strigidae. Part 2. Pp. 103–122 in Jardine, W. (ed.) *Contributions to Ornithology for 1852*. W. H. Lizars, Edinburgh.
- Keith, A. R., Wiley, J. W., Latta, S. C. & Ottenwalder, J. A. 2003. *The birds of Hispaniola: an annotated checklist*. BOU Checklist No. 21. British Ornithologists’ Union & British Ornithologists’ Club, Tring.
- Kilmer, J. A. & Steadman, D. W. 2016. A middle Pleistocene bird community from Saint Lucie County, Florida. *Bull. Fla. State Mus.* 55: 1–38.
- Kirkconnell, A., Kirwan, G. M., Garrido, O. H., Mitchell, A. D. & Wiley, J. W. 2020. *The birds of Cuba: an annotated checklist*. BOC Checklist No. 26. British Ornithologists’ Club, Tring.
- Koopman, K. F. 1958. A fossil vampire bat from Cuba. *Breviora* 90: 1–4.
- Kuhl, H. 1820. *Conspectus Psittacorum*. *Nova Acta Phys.-Med.* 10: 1–104.
- Kulp, J. L., Tryon, L. E., Eckelman, W. R. & Snell, W. A. 1952. Lamont natural radiocarbon measurements, II. *Science* 116(3016): 409–414.
- Kurochkin [sic = Kurochkin], E. & Mayo, N. A. 1973. Las lechuzas gigantes del Pleistoceno Superior de Cuba. *Actas, Res., Com. y Notas V Consejo Cient., Inst. Geol. A.C.C.* 3: 56–60.
- Latta, S., Rimmer, C., Keith, A., Wiley, J., Raffaele, H., MacFarland, K. & Fernández, E. 2006. *Birds of the Dominican Republic and Haiti*. Princeton Univ. Press.

- Lawrence, G. N. 1856. Descriptions of new species of birds of the genera *Chordeiles*, Swainson, and *Poliophtila*, Sclater. *Ann. Lyc. Nat. Hist. NY* 6: 165–169.
- Lawrence, G. N. 1860. Notes on some Cuban birds, with descriptions of new species. *Ann. Lyc. Nat. Hist. NY* 7: 247–275.
- Levaillant, F. O. 1801–05. *Histoire naturelle des perroquets*, 2 vols. Levrault frères & Levrault, Schoell & Co. Paris.
- Levy, C. 2008. History of ornithology in the Caribbean. *Orn. Neotrop.* 19 (suppl.): 415–426.
- Levy, C. 2013. William Thomas March, 1804–1872. *BirdLife Jamaica Broadsh.* 96 [originally published 2012; updated version https://www.academia.edu/3993413/William_Thomas_March_1804_1872].
- Lichtenstein, H. [= M. H. C.] 1819. Die Werke von Marcgrave und Piso über die Naturgeschichte Brasiliens, erläutert aus den wieder aufgefundenen Original-Abbildungen. Pp.155–178 in *Abh. Königl. Akad. Wiss. 1816–1817*. Berlin.
- Linnaeus, C. 1758. *Systema naturae*, vol. 1. Tenth edn. Laurentii Salvii, Holmiae.
- Linnaeus, C. 1766. *Systema naturae*, vol. 1. 12th edn. Laurentii Salvii, Holmiae.
- Livezey, B. C. 1998. A phylogenetic analysis of the Gruiformes (Aves) based on morphological characters, with an emphasis on the rails (Rallidae). *Philos. Trans. Roy. Soc. Lond.* 353: 2077–2151.
- Livezey, B. C. 2003. Evolution of flightlessness in rails (Gruiformes: Rallidae): phylogenetic, ecomorphological, and ontogenetic perspectives. *Orn. Monogr.* 53: 1–654.
- Longrich, N. R. & Olson, S. L. 2011. The bizarre wing of the Jamaican flightless ibis *Xenicibis xymptithecus*: a unique vertebrate adaptation. *Proc. Roy. Soc. B Biol. Sci.* 278(1716): 2333–2337.
- Louchart, A. 2005. Integrating the fossil record in the study of insular body size evolution: example of owls (Aves, Strigiformes). Pp. 155–174 in Alcover, J. A. & Bover, P. (eds.) *Proc. Intern. Symp. "Insular vertebrate evolution: the palaeontological approach"*. Monografies de la Societat d'Història Natural de les Balears 12.
- MacPhee, R. D. E. & Iturralde-Vinent, M. A. 1994. First Tertiary land mammal from Greater Antilles: an early Miocene sloth (*Xenarthra*, *Megalonychidae*) from Cuba. *Amer. Mus. Novit.* 3094: 1–13.
- MacPhee, R. D. E. & Iturralde-Vinent, M. A. 1995. Origin of the Greater Antillean land mammal fauna, 1: new Tertiary fossils from Cuba and Puerto Rico. *Amer. Mus. Novit.* 3141: 1–30.
- March, W. T. 1863. Notes on the birds of Jamaica. *Proc. Acad. Nat. Sci. Phil.* 15: 150–154.
- Martínez-López, J. G. 2019. Natural and anthropogenic factors as taphonomic agents in the differential preservation of paleontological remains from the fossil deposit "Las Llanadas", central Cuba. *Novit. Carib.* 13: 92–114.
- Matthew, W. D. 1931. Genera and new species of ground sloths from the Pleistocene of Cuba. *Amer. Mus. Novit.* 511: 1–5.
- Mayo, N. A. 1980. Nueva especie de *Neocnus* (Edentata: *Megalonychidae* de Cuba) y consideraciones sobre la evolución, edad y paleoecología de las especies de este género. *Actas II Congr. Argentino Paleontología y Bioestratigrafía y I Congr. Latinoamericano Paleontología* 3: 223–236.
- Mayr, G. 2019. Hypotarsus morphology of the Ralloidea supports a clade comprising *Sarothrura* and *Mentocrex* to the exclusion of *Canirallus*. *Acta Orn.* 54: 51–58.
- Mayr, G., Lechner, T. & Böhme, M. 2020. A skull of a very large crane from the late Miocene of southern Germany, with notes on the phylogenetic interrelationships of extant Gruinae. *J. Orn.* 161: 923–933.
- Milberg, P. & Tyrberg, T. 1993. Naïve birds and noble savages—a review of man-caused prehistoric extinctions of island birds. *Ecography* 16: 229–250.
- Miller, J. F. 1777. *Various subjects of natural history, wherein are delineated birds, animals and many curious plants*, pt. 3. London.
- Miller, L. H. 1909. *Teratornis*[,] a new avian genus from Rancho La Brea. *Univ. Calif. Publ. Bull. Dept. Geol.* 5: 305–317.
- Miller, L. H. 1910. Wading birds from the Quaternary asphalt beds of Rancho La Brea. *Univ. Calif. Publ. Bull. Dept. Geol.* 5: 439–448.
- Miller, L. H. 1911. A series of eagle tarsi from the Pleistocene of Rancho La Brea. *Univ. Calif. Publ. Bull. Dept. Geol.* 6: 305–316.
- Morejón, G. Y. 1974. ¿Cóncores en los cielos de Cuba? *Bohemia* 66(16): 84–85.
- Morgan, G. S. 1977a. Late Pleistocene fossil vertebrates from the Cayman Island, British West Indies. M.Sc. thesis. Univ. of Florida, Gainesville.
- Morgan, G. S. 1977b. Late Pleistocene fossil vertebrates from the Cayman Island, British West Indies. Abstract. *Fla. Sci.* 40 (Suppl. 1): 21.
- Morgan, G. S. 1994. Late Quaternary fossil vertebrates from the Cayman Islands. Pp. 465–508 in Brunt, M. A. & Davies, J. E. (eds.) *The Cayman Islands: natural history and biogeography*. Kluwer Academic, Dordrecht.
- Morgan, G. S. & Albury, N. A. 2013. The Cuban crocodile (*Crocodylus rhombifer*) from Late Quaternary fossil deposits in the Bahamas and Cayman Islands. *Bull. Fla. Mus. Nat. Hist.* 52: 161–236.
- Morgan, G. S. & Ottenwalder, J. A. 1993. A new extinct species of *Solenodon* (Mammalia: Insectivora: Solenodontidae) from the Late Quaternary of Cuba. *Ann. Carnegie Mus.* 62: 151–164.
- Morgan, G. S., Ray, C. E. & Arredondo, O. 1980. A giant extinct insectivore from Cuba (Mammalia: Insectivora: Solenodontidae). *Proc. Biol. Soc. Wash.* 93: 597–608.

- Morgan, G. S., MacPhee, R. D. E., Woods, R. & Turvey, S. T. 2019. Late Quaternary fossil mammals from the Cayman Islands, West Indies. *Bull. Amer. Mus. Nat. Hist.* 428: 1–79.
- Nascimento, R. & Silveira, L. F. 2020. The fossil birds of Peter Lund. *Zootaxa* 4743: 480–510.
- Navarro, N. 2020. *Annotated checklist of the birds of Cuba*. Third edn. Ed. Nuevos Mundos.
- Navarro, N. 2021. *Annotated checklist of the birds of Cuba*. Fourth edn. Ed. Nuevos Mundos.
- Navarro, N. 2022. *Annotated Checklist of the Birds of Cuba*. Fifth edn. Ed. Nuevos Mundos.
- Newton, I. 2003. *The speciation & biogeography of birds*. Academic Press, London.
- Olson, S. L. 1974. A new species of *Nesotrochis* from Hispaniola, with notes on other fossil rails from the West Indies (Aves: Rallidae). *Proc. Biol. Soc. Wash.* 87: 439–450.
- Olson, S. L. 1976. A new species of *Milvago* from Hispaniola, with notes on other fossil caracaras from the West Indies (Aves: Falconidae). *Proc. Biol. Soc. Wash.* 88: 355–366.
- Olson, S. L. 1977. A synopsis of the fossil Rallidae. Pp. 509–525 in Ripley, S. D. *Rails of the world: a monograph of the family Rallidae*. D. R. Godine, Boston, A.
- Olson, S. L. 1978. A paleontological perspective of West Indian birds and mammals. Pp. 99–117 in Gill, F. B. (ed.) *Zoogeography in the Caribbean*. The 1975 Leidy Medal Symposium. *Publ. Acad. Nat. Sci. Phil.* 13.
- Olson, S. L. 1982. Fossil birds of the Bahamas. *Bahamas Natur.* 6(1): 33–37.
- Olson, S. L. 1984. A very large enigmatic owl (Aves: Strigidae) from the late Pleistocene at Ladds, Georgia. Pp. 44–46 in Genoways, H. H. & Dawson, M. R. (eds.) *Contributions in Quaternary vertebrate paleontology: a volume in memorial to John E. Guilday*. *Carnegie Mus. Nat. Hist. Spec. Publ.* 8.
- Olson, S. L. 1985. A new species of *Siphonorhis* from Quaternary cave deposits in Cuba (Aves: Caprimulgidae). *Proc. Biol. Soc. Wash.* 98: 526–532.
- Olson, S. L. 1991. The fossil record of the genus *Mycteria* (Ciconiidae) in North America. *Condor* 93: 1004–1006.
- Olson, S. L. 2000. Fossil Red-shouldered Hawk in the Bahamas: *Calohierax quadratus* Wetmore synonymized with *Buteo lineatus* (Gmelin). *Proc. Biol. Soc. Wash.* 113: 298–301.
- Olson, S. L. 2008. A new species of large, terrestrial caracara from Holocene deposits in southern Jamaica (Aves: Falconidae). *J. Raptor Res.* 42: 265–272.
- Olson, S. L. & Alvarenga, H. M. F. 2002. A new genus of small teratorn from the Middle Tertiary of the Taubaté Basin, Brazil (Aves: Teratornithidae). *Proc. Biol. Soc. Wash.* 115: 701–705.
- Olson, S. L. & Hilgartner, W. B. 1982. Fossil and subfossil birds from the Bahamas. Pp. 22–56 in Olson, S. L. (ed.) *Fossil vertebrates from the Bahamas*. *Smiths. Contrib. Paleobiol.* 48.
- Olson, S. L. & Hilgartner, W. B. MS. Late Quaternary birds from a cave deposit in eastern Cuba. Unpubl.
- Olson, S. L. & Kurochkin, E. N. 1987. Fossil evidence of a tapaculo in the Quaternary of Cuba (Aves: Passeriformes: Scytalopodidae). *Proc. Biol. Soc. Wash.* 100: 353–357.
- Olson, S. L. & Pregill, G. K. 1982. Introduction to the paleontology of Bahaman vertebrates. Pp. 1–7 in Olson, S. L. (ed.) *Fossil vertebrates from the Bahamas*. *Smiths. Contrib. Paleobiol.* 48.
- Olson, S. L. & Steadman, D. W. 1977. A new genus of flightless ibis (Threskiornithidae) and other fossil birds from cave deposits in Jamaica. *Proc. Biol. Soc. Wash.* 90: 447–457.
- Olson, S. L. & Steadman, D. W. 1979. The humerus of *Xenicibis*, the extinct flightless ibis of Jamaica. *Proc. Biol. Soc. Wash.* 92: 23–27.
- Olson, S. L. & Suárez, W. 2008a. Bare-throated Tiger-Heron (*Tigrisoma mexicanum*) from the Pleistocene of Cuba: a new subfamily for the West Indies. *Waterbirds* 31: 285–288.
- Olson, S. L. & Suárez, W. 2008b. A fossil cranium of the Cuban Macaw *Ara tricolor* (Aves: Psittacidae) from Villa Clara province, Cuba. *Carib. J. Sci.* 44: 287–290.
- Olson, S. L. & Wingate, D. B. 2000. Two new species of flightless rails (Aves: Rallidae) from the Middle Pleistocene “crane fauna” of Bermuda. *Proc. Biol. Soc. Wash.* 113: 356–368.
- Orihuela, J. 2012. Late Holocene fauna from a cave deposit in western Cuba: post-Columbian occurrence of the vampire bat *Desmodus rotundus* (Phyllostomidae: Desmodontinae). *Carib. J. Sci.* 46: 297–312.
- Orihuela, J. 2013. Fossil Cuban Crow *Corvus* cf. *nasicus* from a Late Quaternary cave deposit in northern Matanzas, Cuba. *J. Carib. Orn.* 26: 12–16.
- Orihuela, J. 2019. An annotated list of Late Quaternary extinct birds of Cuba. *Orn. Neotrop.* 30: 57–67.
- Orihuela, J., Pérez Orozco, L., Álvarez Licourt, J. L., Viera Muñoz, R. A. & Santana Barani, C. 2020a. Late Holocene land vertebrate fauna from Cueva de los Nesofontes, western Cuba: stratigraphy, chronology, diversity, and paleoecology. *Palaeontol. Elec.* 23(3): a57. <https://doi.org/10.26879/995>.
- Orihuela, J., Viñola, L. W., Jiménez Vázquez, O., Mychajliw, A. M., Hernández de Lara, O., Lorenzo, L. & Soto-Centeno, J. A. 2020b. Assessing the role of humans in Greater Antillean land vertebrate extinctions: new insights from Cuba. *Quart. Sci. Rev.* 249: 106597.
- Oswald, J. A. & Steadman, D. W. 2018. The late Quaternary bird community of New Providence, Bahamas. *Auk* 135: 359–377.
- Oswald, J. A., Allen, J. M., Witt, K. E., Folk, R. A., Albury, N. A., Steadman, D. W. & Guralnick, R. P. 2019. Ancient DNA from a 2,500-year-old Caribbean fossil places an extinct bird (*Caracara creightoni*) in a phylogenetic context. *Mol. Phylo. & Evol.* 140: 106576.

- Oswald, J. A., Terrill, R. S., Stucky, B. J., LeFebvre, M. J., Steadman, D. W., Guralnick, R. P. & Allen, J. M. 2021. Ancient DNA from the extinct Haitian cave-rail (*Nesotrochis steganinos*) suggests a biogeographic connection between the Caribbean and Old World. *Biol. Lett.* 17(3): 20200760.
- Park, C. F. 1942. Manganese deposits of Cuba. *Bull. US Geol. Survey* 935B: 75–97.
- Parkes, K. C. 1963. Notes on some birds from Cuba and the Isle of Pines. *Ann. Carnegie Mus.* 36: 129–132.
- Paula Couto, C. de 1967. Pleistocene edentates of the West Indies. *Amer. Mus. Novit.* 2304: 1–55.
- Pérez de Acevedo, R. 1957. *El respetable e inquietante Arcaico II cubano*. Imprenta El Arte, La Habana.
- Peterson, O. A. 1917. Report upon the fossil material collected in 1913 by the Messrs. Link in a cave in the Isle of Pines. *Ann. Carnegie Mus.* 11: 359–361.
- Pontoppidan, E. 1763. *Den danske atlas, eller Konge-riget Danmark*, vol. 1. Godiche, Copenhagen.
- Pradas, T. 1998. ¿Hubo un Neanderthal en Cuba? *Bohemia* 90(20): 4–13.
- Pregill, G. K. & Olson, S. L. 1981. Zoogeography of West Indian vertebrates in relation to Pleistocene climatic cycles. *Ann. Rev. Ecol. Syst.* 12: 75–98.
- Provost, K. L., Joseph, L. & Smith, B. T. 2018. Resolving a phylogenetic hypothesis for parrots: implications from systematics to conservation. *Emu–Austral Orn.* 118: 7–21.
- Raffaele, H., Wiley, J., Garrido, O., Keith, A. & Raffaele, J. 1998. *A guide to the birds of the West Indies*. Princeton Univ. Press.
- Raffaele, H., Wiley, J., Garrido, O., Keith, A. & Raffaele, J. 2003. *Birds of the West Indies*. Princeton Univ. Press.
- Richards, H. G. 1935. Pleistocene mollusks from western Cuba. *J. Paleontol.* 9: 253–258.
- Ridgway, R. 1916. The birds of North and Middle America. *Bull. US Natl. Mus.* 50(7)
- Ripley, S. D. & Watson, G. E. 1956. Cuban bird notes. *Postilla* 26: 1–6.
- Rivero, M. & Arredondo, O. 1991. *Paralouatta varonai*, a new Quaternary platyrrhine from Cuba. *J. Human Evol.* 21: 1–11.
- Reichenbach, H. G. L. 1852. *Avium systema naturale*. Expedition der vollständigsten Naturgeschichte, Dresden & Leipzig.
- Rojas Consuegra, R., Jiménez Vázquez, O., Condis Fernández, M. M. & Díaz Franco, S. 2012. Tafonomía y paleoecología de un yacimiento paleontológico del Cuaternario en la Cueva del Indio, La Habana, Cuba. *Espelunca digital* 12: 1–12.
- Salgado, E. J., Calvache, D. G., MacPhee, R. D. E. & Gould, G. C. 1992. The monkey caves of Cuba. *Cave Sci.* 19: 25–28.
- Slater, P. L. 1861. List of a collection of birds made by the late Mr. W. Osburn in Jamaica, with notes. *Proc. Zool. Soc. Lond.* 1861: 69–82.
- Slater, P. L. & Salvin, O. 1868. Descriptions of new or little-known American birds of the families Fringillidae, Oxyrhamphidae, Bucconidae, and Strigidae. *Proc. Zool. Soc. Lond.* 1868: 322–329.
- Scopoli, J. A. 1769. *Annus historico-naturalis*. C. G. Hilscher, Leipzig.
- Silva Taboada, G. 1974. Fossil Chiroptera from cave deposits in central Cuba, with description of two new species (genera *Pteronotus* and *Mormoops*) and the first West Indian record of *Mormoops megalophylla*. *Acta Zool. Cracov.* 19(3): 33–73.
- Silva Taboada, G. 1979. *Los murciélagos de Cuba*. Ed. Academia, La Habana.
- Silva Taboada, G., Suárez Duque, W. & Díaz Franco, S. 2008. *Compendio de los mamíferos terrestres autóctonos de Cuba, vivientes y extinguidos*. Ed. Boloña, La Habana.
- Steadman, D. W. & Franklin, J. 2015. Changes in a West Indian bird community since the late Pleistocene. *J. Biogeogr.* 42: 426–438.
- Steadman, D. W. & Franklin, J. 2020. Bird populations and species lost to Late Quaternary environmental change and human impact in the Bahamas. *Proc. Natl. Acad. Sci. USA* 117: 26833–26841.
- Steadman, D. W. & Hilgartner, W. B. 1999. A new species of extinct barn owl (Aves: *Tyto*) from Barbuda, Lesser Antilles. Pp. 75–83 in Olson, S. L., Wellnhofer, P., Mourer-Chauviré, C., Steadman, D. W. & Martin, L. D. (eds.) *Avian paleontology at the close of the 20th century: Proc. 4th Intern. Meet. Soc. Avian Paleontology & Evolution*, Washington, DC, 1996. *Smiths. Contrib. Paleobiol.* 89.
- Steadman, D. W. & Takano, O. M. 2016. A new extinct species of snipe (Aves: Scolopacidae: *Gallinago*) from the West Indies. *Zootaxa* 4109: 345–358.
- Steadman, D. W., Martin, P. S., MacPhee, R. D. E., Jull, A. J. T., McDonald, H. G., Woods, C. A., Iturralde-Vinent, M. & Hodgins, G. W. L. 2005. Asynchronous extinction of late Quaternary sloths on continents and islands. *Proc. Natl. Acad. Sci. USA* 102: 11763–11768.
- Steadman, D. W., Franz, R., Morgan, G. S., Albury, N. A., Kakuk, B., Broad, K., Franz, S. E., Tinker, K., Pateman, M. P., Lott, T. A., Jarzen, D. M. & Dilcher, D. L. 2007. Exceptionally well preserved late Quaternary plant and vertebrate fossils from a blue hole on Abaco, the Bahamas. *Proc. Natl. Acad. Sci. USA* 104: 19897–19902.
- Steadman, D. W., Morris, J. R. & Wright, N. A. 2013. A new species of Late Pleistocene rail (Aves: Rallidae) from Abaco, the Bahamas. *Paleontol. J.* 47: 1355–1364.
- Steadman, D. W., Almonte Milan, J. N. & Mychajliw, A. M. 2019. An extinct eagle (Aves: Accipitridae) from the Quaternary of Hispaniola. *J. Raptor Res.* 53: 319–333.

- Suárez, W. 1998. Lista preliminar de las aves cubanas depredadas por *Tyto alba furcata* (Aves: Tytonidae). *El Pitirre* 11: 12–13.
- Suárez, W. 2000a. Contribución al conocimiento del estatus genérico del cóndor extinto (Ciconiiformes: Vulturidae) del Cuaternario cubano. *Orn. Neotrop.* 11: 109–122.
- Suárez, W. 2000b. Fossil evidence for the occurrence of Cuban Poorwill *Siphonorhis daiquiri* in western Cuba. *Cotinga* 14: 66–68.
- Suárez, W. 2001a. Deletion of the flightless ibis *Xenicibis* from the fossil record of Cuba. *Carib. J. Sci.* 37: 109–110.
- Suárez, W. 2001b. A reevaluation of some fossils identified as vultures (Aves: Vulturidae) from Quaternary cave deposits of Cuba. *Carib. J. Sci.* 37: 110–111.
- Suárez, W. 2004a. The identity of the fossil raptor of the genus *Amplibuteo* (Aves: Accipitridae) from the Quaternary of Cuba. *Carib. J. Sci.* 40: 120–125.
- Suárez, W. 2004b. The enigmatic snipe *Capella* sp. (Aves: Scolopacidae) in the fossil record of Cuba. *Carib. J. Sci.* 40: 155–157.
- Suárez, W. 2004c. Biogeografía de las aves fósiles de Cuba. In Iturralde-Vinent, M. A. (ed.) *Origen y evolución del Caribe y sus biotas marinas y terrestres*. CD. Centro Nacional de Información Geológica, La Habana.
- Suárez, W. 2020a. The fossil avifauna of the tar seeps Las Breas de San Felipe, Matanzas, Cuba. *Zootaxa* 4780: 1–53.
- Suárez, W. 2020b. Remarks on extinct giant owls (Strigidae) from Cuba, with description of a new species of *Ornimegalonyx* Arredondo. *Bull. Brit. Orn. Cl.* 140: 387–392.
- Suárez, W. MS. Registro fósil de la Gallinuela de Santo Tomás, *Cyanolimnas cerverai*, y el Cabrerito de la Ciénaga, *Torreornis inexpectata*, con análisis de su evolución post-pleistocénica. Unpubl.
- Suárez, W. & Arredondo, O. 1997. Nuevas adiciones a la paleornitología cubana. *El Pitirre* 10: 100–102.
- Suárez, W. & Díaz-Franco, S. 2003. A new fossil bat (Chiroptera: Phyllostomidae) from a Quaternary cave deposit in Cuba. *Carib. J. Sci.* 39: 371–377.
- Suárez, W. & Díaz-Franco, S. 2011. Estudio paleontológico del depósito fosilífero El Abrón, Pinar del Río (sinopsis de las aves fósiles de Cueva El Abrón, Pinar del Río, Cuba). Informe final del proyecto 022 AMA-CITMA, 074 MNHN: Biodiversidad Paleontológica del Archipiélago Cubano: bases cartográficas y conservacionistas. Mus. Nac. Hist. Nat. La Habana.
- Suárez, W. & Emslie, S. D. 2003. New fossil material with a redescription of the extinct condor *Gymnogyps varonai* (Arredondo, 1971) from the Quaternary of Cuba (Aves: Vulturidae). *Proc. Biol. Soc. Wash.* 116: 29–37.
- Suárez, W. & Olson, S. L. 2001a. A remarkable new species of small falcon from the Quaternary of Cuba (Aves: Falconidae: *Falco*). *Proc. Biol. Soc. Wash.* 114: 34–41.
- Suárez, W. & Olson, S. L. 2001b. Further characterization of *Caracara creightoni* Brodkorb based on fossils from the Quaternary of Cuba (Aves: Falconidae). *Proc. Biol. Soc. Wash.* 114: 501–508.
- Suárez, W. & Olson, S. L. 2003a. New records of storks (Ciconiidae) from Quaternary asphalt deposits in Cuba. *Condor* 105: 150–154.
- Suárez, W. & Olson, S. L. 2003b. Red-shouldered Hawk and Aplomado Falcon from Quaternary asphalt deposits in Cuba. *J. Raptor Res.* 37: 71–75.
- Suárez, W. & Olson, S. L. 2003c. A new species of caracara (*Mitvago*) from Quaternary asphalt deposits in Cuba, with notes on new material of *Caracara creightoni* Brodkorb (Aves: Falconidae). *Proc. Biol. Soc. Wash.* 116: 301–307.
- Suárez, W. & Olson, S. L. 2008 [for 2007]. The Cuban fossil eagle *Aquila borraisi* Arredondo: a scaled-up version of the Great Black-Hawk *Buteogallus urubitinga* (Gmelin). *J. Raptor Res.* 41: 288–298.
- Suárez, W. & Olson, S. L. 2009a. A new genus for the Cuban teratorn (Aves: Teratornithidae). *Proc. Biol. Soc. Wash.* 122: 103–116.
- Suárez, W. & Olson, S. L. 2009b. The generic position of *Miraquila terrestris* Campbell: another addition to the buteogalline radiation from the Pleistocene of Peru. *J. Raptor Res.* 43: 249–253.
- Suárez, W. & Olson, S. L. 2014. A new fossil species of small crested caracara (Aves: Falconidae: *Caracara*) from the Pacific lowlands of western South America. *Proc. Biol. Soc. Wash.* 127: 299–310.
- Suárez, W. & Olson, S. L. 2015. Systematics and distribution of the giant fossil barn owls of the West Indies (Aves: Strigiformes: Tytonidae). *Zootaxa* 4020: 533–553.
- Suárez, W. & Olson, S. L. 2020a. Systematics and distribution of the living and fossil small barn owls of the West Indies (Aves: Strigiformes: Tytonidae). *Zootaxa* 4830: 544–564.
- Suárez, W. & Olson, S. L. 2020b. A new fossil vulture (Cathartidae: *Cathartes*) from Quaternary asphalt and cave deposits in Cuba. *Bull. Brit. Orn. Cl.* 140: 335–343.
- Suárez, W. & Olson, S. L. 2021. A new fossil raptor (Accipitridae: *Buteogallus*) from Quaternary cave deposits in Cuba and Hispaniola, West Indies. *Bull. Brit. Orn. Cl.* 141: 256–266.
- Swainson, W. 1827. On several groups and forms in ornithology, not hitherto defined. *Zool. J.* 3: 343–363.
- Swainson, W. 1834. Mexico. Natural geography. Zoology. Pp. 1382–1384 in Murray, H. (ed.) *An encyclopaedia of geography*. Longman, Rees, Orme, Brown, Green, & Longman, London.
- Temminck, C. J. 1809. *Histoire naturelle générale des pigeons*, livraison 6. Paris.

- Temminck, C. J. & Laugier, M. 1820–1839. *Nouveau recueil de planches coloriées d'oiseaux*, 102 livraisons. F. G. Levrault, Paris.
- Vergara, R. R. 2003. Relaciones biogeográficas de la avifauna cubana. II. Biogeografía descriptiva. *Orn. Neotrop.* 14: 441–467.
- Vigors, N. A. 1827. Sketches in ornithology: on some species of birds from Cuba. *Zool. J.* 3: 432–448.
- Vieillot, L. P. 1808 [1807]. *Histoire naturelle des oiseaux de l'Amérique septentrionale*, vol. 1. Desray, Paris.
- Vieillot, L. P. 1816–19. *Nouveau dictionnaire d'histoire naturelle appliquée aux arts*, vol. 2. Second edn. Paris.
- Vieillot, L. P. 1823. *Tableau encyclopédique et méthodique des trois règnes de la nature. Ornithologie*, pt. 3. Second edn. Paris.
- Wagler, J. G. 1829. Beiträge und Bemerkungen zu dem ersten Band seines Systema Avium. *Isis von Oken* 22: 645–664.
- Wagler, J. G. 1832. Monographia Psittacorum. *Abh. Math.-phys. Kl. König. Bayer. Akad. Wiss.* 1: 464–750.
- Weesie, P. D. M. 1988. The Quaternary avifauna of Crete, Greece. *Palaeovertebrata* 18: 1–94.
- Wetherbee, D. K. 1985. The extinct Cuban and Hispaniolan macaws (*Ara*, Psittacidae), and description of a new species, *Ara cubensis*. *Carib. J. Sci.* 21: 169–175.
- Wetmore, A. 1918. Bones of birds collected by Theodor de Booy from kitchen midden deposits in the islands of St. Thomas and St. Croix. *Proc. US Natl. Mus.* 54: 513–522.
- Wetmore, A. 1920. Five new species of birds from cave deposits in Porto Rico. *Proc. Biol. Soc. Wash.* 33: 77–82.
- Wetmore, A. 1922. Bird remains from the caves of Porto Rico. *Bull. Amer. Mus. Nat. Hist.* 46: 297–333.
- Wetmore, A. 1928. Bones of birds from the Ciego Montero deposit of Cuba. *Amer. Mus. Novit.* 301: 1–5.
- Wetmore, A. 1937. Bird remains from cave deposits on Great Exuma Island in the Bahamas. *Bull. Mus. Comp. Zool.* 80: 427–441.
- Wetmore, A. 1956. A check-list of the fossil and prehistoric birds of North America and the West Indies. *Smiths. Misc. Coll.* 131(5): 1–105.
- Wetmore, A. 1959. Birds of the Pleistocene in North America. *Smiths. Misc. Coll.* 138(4): 1–24.
- Wetmore, A. 1960. Pleistocene birds in Bermuda. *Smiths. Misc. Coll.* 140(2): 1–11.
- Wiley, J. W. & Kirwan, G. M. 2013. The extinct macaws of the West Indies, with special reference to Cuban Macaw *Ara tricolor*. *Bull. Brit. Orn. Cl.* 133: 125–156.
- Williams, E. 1950. *Testudo cubensis* and the evolution of Western Hemisphere tortoises. *Bull. Amer. Mus. Nat. Hist.* 95: 1–36.
- Woods, C. A. 1980. Collecting fossil mammals in the Greater Antilles: an immense journey. *The Plaster Jacket* 34: 1–13.
- Württemberg, P. W. 1835. *Erste Reise nach dem nördlichen Amerika in den Jahren 1822 bis 1824*. Stuttgart.
- Zeiger, J. M., Proctor, J. & Inman, S. E. 2017. Observations of leucistic Turkey Vultures (*Cathartes aura*) in Jamaica. *J. Carib. Orn.* 30: 128–133.
- Zelenkov, N. V. & Gonzalez [sic = González], S. F. 2020. The first fossil tody (Aves: Todidae) from Cuba. *Paleontol. J.* 54: 414–419.
- Zelenkov, N. V. & González, S. F. 2021. A new extinct species of *Margarobyas* (Strigiformes) and the evolutionary history of the endemic Cuban bare-legged owl (*M. lawrencii*). *J. Vert. Paleontol.* <https://doi.org/10.1080/02724634.2021.1995869>.

Address: P.O. Box 16477, West Palm Beach, FL 33416, USA, e-mail: ws@wsbirdingtours.com

Appendix: Cuban Quaternary deposits with avian remains

Ordered from west to east —the special municipality (*sm*) of Isla de La Juventud (= Isla de Pinos) is at the end—by provinces, including municipality (*m*), near location (*l*) and locality (with its respective acronym). For map of localities, see Fig. 1.

1. Pinar del Río

Guane (*m*). Sierra de San Carlos (*l*): **PCA**.—Cueva de los Carabalies, **PCH**.—Cueva de Chefa [Sistema Cavernario Majaguas-Canteras].
 Minas de Matahambre (*m*). Sumidero (*l*): **PPD**.—Caverna [or 'Cueva'] de Pío Domingo.
 Viñales (*m*). Sierra de Galeras (*l*): **PMF**.—Cueva del Mono Fósil.
 Los Palacios (*m*). Sierra de La Güira (*l*): **PEA**.—Cueva El Abrón.

2. Artemisa

Caimito (*m*). Sierra de Anafe (*l*): **ACA**.—'Cueva de la Sierra de Anafe' (*cf.* Arredondo 1958: 11. This uncertain locality, a cave formerly in the municipality of Guanajay and province of Pinar del Río, is the same mentioned by Arredondo 1955: 4, 30, 1976: 177, 1982: 42, 1984: 26, according to O. Arredondo pers. comm. Not 'Abra de San Andrés' or 'Abra de Andrés', which is a different deposit in Sierra de Anafe, *contra* Morgan & Ottenwalder 1993: 160), **APR**.—Cueva Prieta, **ACH**.—Cueva del Ahorcado, **ACT**.—Cueva del Campo de Tiro. Ceiba del Agua (*l*): **ACP**.—Cueva de Paredones, **ASC**.—Cueva Siete Caballerías. Vereda Nueva (*l*): **ACF**.—Cueva del Fósil, **ASA**.—Cueva de Sandoval, **AQS**.—Cueva de Quito Suárez.

Bauta (*m*). Near [c.2 km south-west] Playa Santa Fé [La Habana] (*l*): **ALA**.—Cueva Lamas, **ACL**.—‘Cueva próxima a la Cueva Lamas’ [*cf.* Arredondo 1984: 8].

3. La Habana

Marianao (*m*). Marianao (*l*): **HFT**.—Fisuras en Túnel Popular.

Boyeros (*m*). Calabazar [Reperto América] (*l*): **HGA**.—Gruta del Reparto América. Calabazar [Reperto El Globo] (*l*): **HCI**.—Cueva del Indio.

4. Mayabeque

Bejucal (*m*). Cuatro Caminos (*l*): **YCT**.—Cueva La Trampa.

Quivicán (*m*). La Salud (*l*): **YTU**.—Cueva del Túnel, **YIN**.—Cueva de Insunsa, **YCH**.—Cueva del Chicharrón. Aguacate (*l*): **YBL**.—Cuevas Blancas.

San José de las Lajas (*m*). Las Charcas (*l*): **YCC**.—Cuevas de Las Charcas, **YCA**.—Cueva del Aguacate, **YCM**.—Cueva de los Muertos. Tapaste (*l*): **YCI**.—Cueva del Indio.

Madrugá (*m*). Loma del Palenque (*l*): **YCN**.—Cueva de los Nesofontes.

5. Matanzas

Matanzas (*m*). Matanzas (*l*): **MBE**.—Cueva de Bellamar [Sistema Cavernario Bellamar].

Cárdenas (*m*). Carbonera (*l*): **MCE**.—Cueva La Centella (or ‘Cueva Centella’), **MCP**.—Cueva del Campamento. Camarioca (*l*): **MCQ**.—Cueva de Quinto. Cantel (*l*): **MCA**.—Cueva Calero.

Jagüey Grande (*m*). Jagüey Grande (*l*): **MFJ**.—Fisuras en Canteras J-4. Agramonte (*l*): **MCB**.—Cueva Beruvides, **MAF**.—Cueva Afán.

Martí (*m*). Valle de San Felipe (*l*): **MLB**.—Las Breas de San Felipe.

6. Cienfuegos

Palmira (*m*). Ciego Montero (*l*): **CCM**.—Baños de Ciego Montero.

7. Villa Clara

Corralillo (*m*). El Charcón (*l*): **VSM**.—Solapa del Megalocnus.

Sagua La Grande/Quemado de Güines [shared territory] (*m*). Mal Páez (*l*): **VHC**.—Casimba Hueco Chico, **VCB**.—Casimba en los Buentes.

8. Sancti Spiritus

Yaguajay (*m*). Cayo Salinas (*l*): **SPF**.—Cueva Funeraria de Los Niños [= ‘Cueva de los Niños’ or ‘Cueva de los Sacrificios’ (Arredondo 1984: 12)]. Cayo Palma (*l*): **SPS**.—Cueva del Salón. Caguanes (*l*): **SPH**.—Cueva de Humboldt.

Sancti Spiritus (*m*). Sancti Spiritus (*l*): **SPC**.—Cantera de los Hornos de Cal, **SPM**.—‘Cantera situada cerca de la Loma de Mozas’ [= Moza] [*cf.* Arredondo 1984: 21, Suárez & Olson 2015: 542. Perhaps the same as **SPC** and formerly recorded as ‘quarries near Sancti Spiritus [*sic*]’ or ‘Canteras de Sancti Spiritus’ by Arredondo 1976: 183, 1982: 38–39].

Jatibonico (*m*). Sierra de Jatibonico (*l*): **SPL**.—Casimba de Las Llanadas.

9. Ciego de Ávila

Florencia (*m*). Loma de los Rubíes (*l*): **GCJ**.—Cueva de la Jutía.

10. Camagüey

Sierra de Cubitas (*m*). Sierra de Cubitas (*l*): **CFO**.—Cueva de los Fósiles, **CEN**.—Cueva del Centenario.

11. Holguín

Gibara (*m*). Polja del Cementerio (*l*): **OCB**.—Cueva La Bandera.

Mayarí (*m*). Seborúco (*l*): **OCS**.—Cueva de Seborúco.

12. Santiago de Cuba

Contramaestre (*m*). Baire (*l*): **SMB**.—‘Mina’ [or ‘Cueva’] cerca de Baire.

Santiago de Cuba (*m*). Daiquirí (*l*): **SCI**.—Cueva de los Indios.

13. Isla de La Juventud [= Isla de Pinos]

Isla de la Juventud (*sm*). Sierra de Caballos (*l*): **ISC**.—Cueva en Sierra de Caballos. Punta del Este (*l*): **IPE**.—Cueva de Isla (or ‘Cueva de las Pictografías’).