

# Establishing the availability of the mammalian genus name *Antillomys* and species name *Antillomys rayi* (Rodentia, Cricetidae)

SELINA BRACE<sup>1</sup>, SAMUEL T. TURVEY<sup>2\*</sup>, MARCELO WEKSLER<sup>3\*</sup>, MENNO L. P. HOOGLAND<sup>4</sup>, AND IAN BARNES<sup>5</sup>

<sup>1</sup>Department of Earth Sciences, Natural History Museum, London SW7 5BD, UK. Email: [S.Brace@nhm.ac.uk](mailto:S.Brace@nhm.ac.uk) (SB).

<sup>2</sup>Institute of Zoology, Zoological Society of London, Regent's Park, London NW1 4RY, UK. Email: [samuel.turvey@ioz.ac.uk](mailto:samuel.turvey@ioz.ac.uk) (STT).

<sup>3</sup>Departamento de Vertebrados, Museu Nacional, Universidade Federal do Rio de Janeiro, Quinta da Boa Vista, São Cristóvão, 20940-040 Rio de Janeiro, RJ, Brazil. Email: [mweksler@mn.ufrj.br](mailto:mweksler@mn.ufrj.br) (MW).

<sup>4</sup>Faculty of Archaeology, Leiden University, Einsteinweg 2, 2333CC Leiden, The Netherlands. Email: [m.l.p.hoogland@arch.leidenuniv.nl](mailto:m.l.p.hoogland@arch.leidenuniv.nl) (MLPH).

<sup>5</sup>Department of Earth Sciences, Natural History Museum, London SW7 5BD, UK. Email: [I.Barnes@nhm.ac.uk](mailto:I.Barnes@nhm.ac.uk) (IB).

\*Corresponding authors: <https://orcid.org/0000-0002-3717-4800> (STT), <https://orcid.org/0000-0001-8111-4779> (MW).

The rodent genus name *Antillomys* and the species name *Antillomys rayi* (Cricetidae: Sigmodontinae) are unavailable, given that the publication where they originally appear did not satisfy the requirements of the International Code of Zoological Nomenclature (ICZN). The names were formally described in the supplementary information (electronic online text) in Word format, and the work itself did not contain evidence that it was registered in ZooBank, as per Article 8.5.3 (amended) of the ICZN. In this note we establish the availability of the names *Antillomys* and *Antillomys rayi*, by fulfilling ICZN's requirements.

El nombre del género *Antillomys* y el nombre de la especie *Antillomys rayi* (Cricetidae: Sigmodontinae) no están disponibles, dado que la publicación donde apareció originalmente no cumplió todos los requisitos del Código Internacional de Nomenclatura Zoológica (ICZN). Los nombres fueran formalmente descriptos en la información complementaria (texto electrónico) en formato Word, y la obra en sí no contenía evidencia de que estuviera registrada en ZooBank, según el Artículo 8.5.3 (modificado) del ICZN. En esta nota, establecemos la disponibilidad de los nombres *Antillomys* y *Antillomys rayi*, cumpliendo con los requisitos de la ICZN.

**Keywords:** Caribbean Region; nomenclature; Oryzomyini; Sigmodontinae; taxonomy.

© 2023 Asociación Mexicana de Mastozoología, [www.mastozoologiamexicana.org](http://www.mastozoologiamexicana.org)

## Introduction

*Antillomys rayi* was described by [Brace et al. \(2015\)](#) in a phylogenetic study of extinct oryzomyine rodents from the Caribbean. This genus and species were formally described in the supplementary information (electronic online text) of the paper, and although the taxonomic acts were registered in the Official Register of Zoological Nomenclature (ZooBank), the work itself did not contain evidence that such registration had occurred, as per Article 8.5.3 (amended) of the International Code of Zoological Nomenclature ([ICZN 1999, 2012](#)). In addition, the supplementary information of [Brace et al. \(2015\)](#) was in a Microsoft Word© document file, which cannot be considered a format with fixed content and layout as per Article 8.1.3.2 (amended; [ICZN 1999, 2012](#)).

Thus, despite having ZooBank's Life Science Identifiers (LSIDs), the names *Antillomys* and *Antillomys rayi* are not available and some authorities do not recognize these taxa. For instance, the Mammal Diversity Database ([MDD 2022](#)) states that "the species was described in a supplemental word file from the original description publication, which makes the species and genus name unavailable for nomenclatural purposes and it needs to be described correctly".

The objective of this note is to comply with the provisions of the International Code of Zoological Nomenclature to make the names *Antillomys* and *Antillomys rayi* available. Therefore, we provide here the complementary informa-

tion for the new genus and species described by [Brace et al. \(2015\)](#). This published work and the nomenclatural act it contains have been registered in ZooBank. The LSID for this publication is: [urn:lsid:zoobank.org:pub:84469DB9-3BA3-466C-A107-42046A0CEF56](https://lsid.zoobank.org:pub:84469DB9-3BA3-466C-A107-42046A0CEF56). The year of availability of *Antillomys* n. gen. and *Antillomys rayi* n. sp. is 2023 and must be referred as such in future works.

Taxonomy  
Rodentia Bowditch, 1821  
Muroidea Illiger, 1811  
Cricetidae Fischer, 1817  
Sigmodontinae Wagner, 1843  
Oryzomyini Vorontzov, 1959

*Antillomys* n. gen.

LSID: [urn:lsid:zoobank.org:act:499EF449-A4F2-48A0-949D-527EEE717BC8](https://lsid.zoobank.org:act:499EF449-A4F2-48A0-949D-527EEE717BC8).

Type species: *Antillomys rayi* sp. nov. (Figure 1)

Etymology: After the Antilles.

Diagnosis: Differs from other Antillean oryzomyines in the following combination of characters: nasal bones with blunt posterior margins, extending posteriorly approximately at same level as lacrimal bones; lacrimals with maxil-

lary and frontal sutures of similar lengths; interorbital region symmetrically constricted, frontal with squared (angular) relief of dorsal and lateral facies and without supraorbital ridges; incisive foramina very small, not extending posteriorly between M1 alveoli, teardrop-shaped; palate with one small posterolateral palatal pit at each side of mesopterygoid fossa; mesopterygoid fossa extending anteriorly between molar rows; M1 anterocone divided by anterome-

dian flexus; M2 protoflexus absent; anterolophid absent on m2-3; M1 without accessory labial root (four roots total); m1-3 with two roots.

*Antillomys rayi* n. sp.

LSID: urn:lsid:zoobank.org:act:81F61159-AFC5-4FB9-98D8-4B6E93E5E2AE.



**Figure 1.** *Antillomys rayi* craniodontal material. a-c, partial skull (holotype, UF A.98.2): a, dorsal view; b, ventral view; c, lateral view. d, left premaxilla (UF A.98 series), lateral view. e, h, left dentary (UF A.98.20): e, internal view; h, external view. f, left maxillary (UF A.98 series), occlusal view. g, i, left dentary (UF A.98.23): g, occlusal view; i, external view. Scale bar = 5 mm.

Holotype: Partial skull, Florida Museum of Natural History (University of Florida), Zooarchaeology Collection A.98.2 (Figure 1a-c).

Type locality: Indian Creek (AD 900-1100 archaeological site), Antigua Island, Antigua and Barbuda ( $17^{\circ} 00' 36''$  N /  $61^{\circ} 44' 48''$  W).

Etymology: After Clayton Ray, paleontologist who first identified the distinctiveness of *Antillomys*.

Diagnosis: Differs from other sigmodontine rodents in the following combination of features: very large size, as large or larger than any extant sigmodontine; stout and wide rostrum; dual articulation of lacrimal with maxillary and frontal; symmetrically constricted anterior interorbital region without supraorbital crests; incisive foramen very short and teardrop-shaped; short bony palate (mesopterygoid fossa extends anteriorly between M3); capsular process present in mandibular ramus; M1 with divided anterocone, well developed mesoloph, and anterior protocone-paracone crista (Figure 2); M2 without protoflexus, and mesoflexus with single internal fossette; M3 with developed mesoloph, small posteroloph, and hypoflexus persistent after moderate wear; m1 with enclosed anteromedian fossettid but lacking anteromedian flexid, ectolophid or ectostyliid; mesolophid and mesostyliid present, connected to entoconid by lingual cingulum; M1-3 with anterolabial cingula; M1 with four roots; M2-M3 with three roots; m1-3 with two roots.

Holotype measurements: length of molar series (occlusal) = 9.32 mm; length of incisive foramina = 5.13 mm; length of diastema = 13.70 mm; breadth of zygomatic plate = 6.53 mm; minimum interorbital width = 7.44 mm.

Distribution: Recorded from 10 Holocene or undated late Quaternary fossil and zooarchaeological assemblages on the islands of Antigua (Indian Creek, Mill Reef; [Ray 1962](#); [Brace et al. 2015](#)), Barbuda (Two Feet Bay Cave II, "Pleistocene Cave"; [Ray 1962](#); [Brace et al. 2015](#)), Guadeloupe (Roseau, Pointe-des-Châteaux I, Grotte des Bambous; [Goedert et al. 2020](#)), and Marie Galante (Blanchard 2, Anse Talisronde, Folle-Anse; [Brace et al. 2015](#); [Goedert et al. 2020](#)) in the eastern Caribbean (Figure 3).

Other examined material: Named specimen repositories: NHM, Natural History Museum (London), Paleontology Collection; UF, Florida Museum of Natural History (University of Florida), Zooarchaeology Collection; G, Musée Edgar Clerc, Le Moule, Guadeloupe. Antigua, Indian Creek: UF Zooarch. A36 (maxillary), UF Zooarch. A47 (maxillary), UF Zooarch. A98 series (44 dentaries, maxillaries and premaxillaries), UF Zooarch. A.98.5 (dentary); Barbuda, Pleistocene Cave: NHM Paleo. M26901 (several dentaries and maxillaries); Two Feet Bay Cave II: NHM Paleo. M20210 (dentary); UF Zooarch., uncatalogued skull; Guadeloupe, Grotte des Bambous and Roseau: G-30 (dentary), G-34 (maxillary), G-35 (maxillary) (Figure 2), G-16 (dentary), G-01 (dentary), G-series (31 dentaries and maxillaries), G-36 (maxillary);



Figure 2. Molar series of *Antillomys rayi*. a, upper molar dentition (Musée Edgar Clerc G-35); b, lower molar dentition (UF A.98 series). Scale bar = 2 mm.

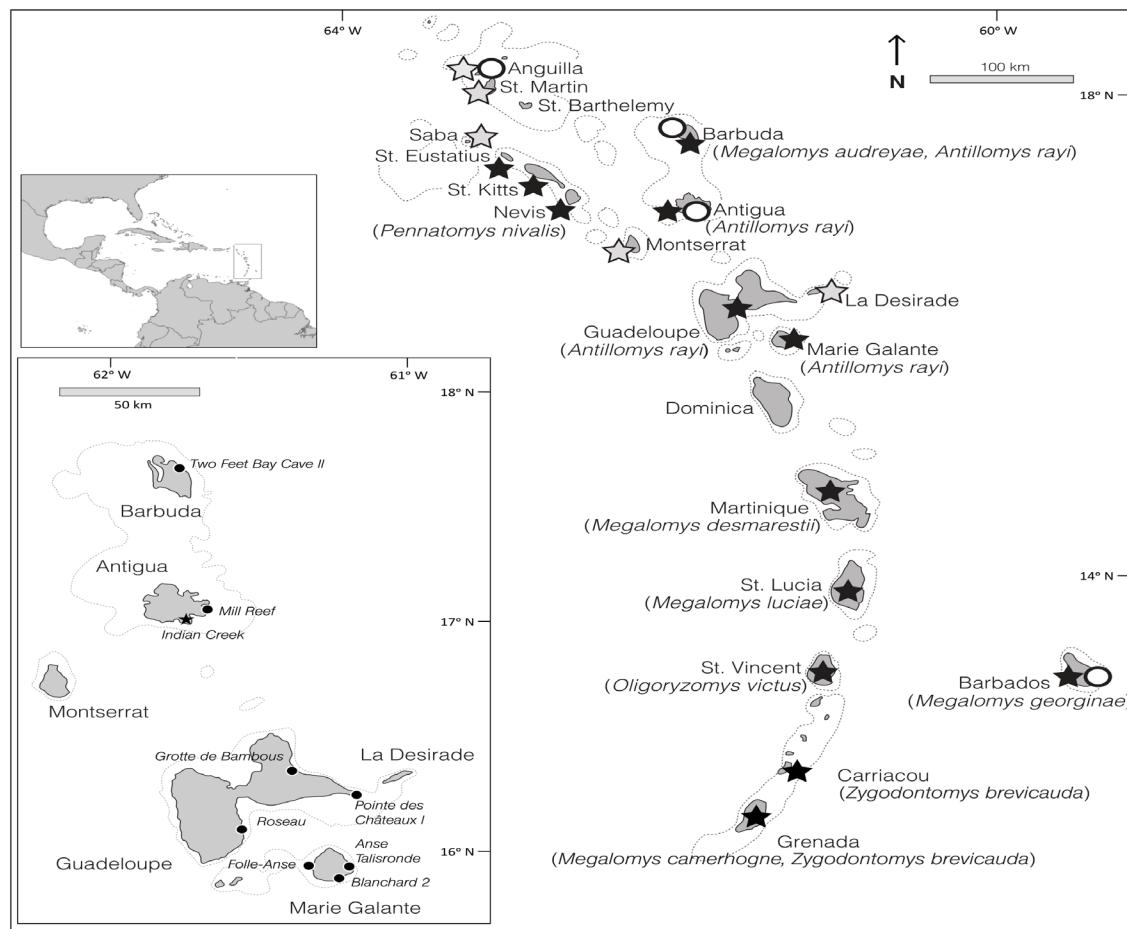
Marie Galante, Anse Talisronde, Pits 1 and 2: UF Zooarch. series (several dentaries, maxillaries and humeri; Figure 1d-i). Other than several specimens from Barbuda, all this material is late Holocene (pre-Columbian, >500 ya) in age.

Description: Skull large and robust, with stout and wide rostrum flanked by deep zygomatic notches; interorbital region symmetrically constricted (hourglass shaped), without supraorbital ridges; braincase squared, with very subtle temporal crests. Nasal bones with blunt posterior margins, extending posteriorly approximately at the same level as the lacrimal bones; premaxillaries extending at about same level as nasal; lacrimals with maxillary and frontal sutures of similar lengths. Interorbital region hourglass shaped, frontal with squared (angular) relief of dorsal and lateral facies, without supraorbital ridges. Parietals with broad lateral expansions, a large portion dipping below the temporal ridge posteriorly. The zygomatic plate lacks an anterodorsal spinous process, and its posterior margin lies level to the alveolus of M1. Incisive foramina very small, not extending posteriorly between M1 alveoli, teardrop-shaped. The palatal bridge lacks deep furrows or median ridges, and bony palate is small, with mesopterygoid fossa extending anteriorly between molar rows; palate with one small postero-lateral palatal pit at each side of mesopterygoid fossa. The

posterior portion of all preserved skulls is broken, and thus most information regarding the basicranium is not available. Mental foramen situated at lateral surface of mandible body; capsular process of lower incisor present, ranging from reduced to well developed (polymorphic). Masseteric ridges can form a single open chevron or be conjoined anteriorly (polymorphic); anterior edge of ridges ventral to m1. Incisors ungrooved and without anterolateral bevel.

Molars bunodont; M1 without accessory labial root (four roots total), M2 and M3 with three roots each; lower molars with two roots each. Labial cingula closing labial flexi present; incipient lophodonty, flexi of opposite sides interpenetrate planes.

M1 anterocone well developed (equal in length and width to protocone-paracone), and divided by anteromedian flexus. Anteroloph reaching labial margin, separated from anterocone by short anteroflexus, which can disappear with slight wear. Protostyle absent; protoflexus broad and deep, with large, gently squared apex. Paraflexus transversely oriented from labial wall, deflected posteriorly close to crown midline and extended along entire length of paracone. Mesoloph well developed; mesoflexus long, transverse, reaching midline of tooth. Paracone connected by enamel bridge to anterior moiety of protocone (prepro-



**Figure 3.** Map of the Lesser Antilles, showing distribution of extinct oryzomyines in archaeological sites (stars) and late Quaternary paleontological sites (open circles). Grey stars indicate islands with archaeological sites containing undescribed oryzomyine material. Modern-day sea level and 200 m isobath are both indicated. Lower inset, map of the islands of the northern Lesser Antilles, showing locations of archaeological sites from which *Antillomys rayi* material has been collected; type locality indicated by star.

tocrista); median mure (prehypocrista) connected to posterior moiety of protocone (postprotocrista). Hypoflexus slightly deeper than protoflexus. Metaflexus deep, crescentic, extending over 50 % distance across crown and almost reaching hypoflexus. Posteroflexus small, transverse notch at posterior margin of metacone. Posteroloph discernible on worn teeth.

Second upper molar protoflexus absent; a small indentation anterior to protocone might be present. Mesoflexus present as single internal fossette; paracone without accessory loph. Paraflexus slightly posterolinguad, extending 50 % distance across crown. Hypoflexus very deep, sometimes with slightly rounded, expanded apex, and antero-posteriorly shorter than on M1. Metaflexus crescentic, deep and broad, extending well over 50 % distance across crown. Posteroflexus very small and faint, apparently apically bifurcated.

Third upper molar with developed mesoloph and small posteroloph (discernible from metacone by internal fossette). Hypoflexus present, small but persistent after moderate wear. Paraflexus broad and deep on unworn teeth, becoming greatly reduced by wear; can form separate small internal fold adjacent to apex. Mesoflexus large, transverse; can become isolated as an island. Paracone transverse, anteroposteriorly short or triangular; almost isolated by paraflexus and mesoflexus.

Anteroconid well developed, connected to protoconid by paracristid; anteromedian flexid of m1 absent or vestigial, but large anteromedian fossettid apparent in unworn teeth; anterolabial cingulum of m1 present; ectolophid and ectostylid absent; mesolophid present, well developed on m1 and m2 but sometimes joined to entoconid. Anterolabial cingulum present but anterolophid absent on m2 and m3. Posteroflexid of m3 present, well developed.

**Comparisons:** The only oryzomyine taxon formally described from within the geographic range of *A. rayi* is "*Megalomys*" *audreyae*, known only from a poorly preserved dentary and incisor from "Pleistocene cave-breccia" (specific locality and stratigraphic context unknown) on Barbuda (Hopwood 1926; see also Turvey et al. 2012 for further details). Although this taxon is based on very limited material, it displays several morphological and morphometric characteristics that distinguish it from *A. rayi*. While *A. rayi* specimens always show a capsular process of the lower incisor alveolus, the only available dentary of *M. audreyae* (NHM Paleo. M7406) does not show any evidence of this process. In addition, the available *M. audreyae* dentary possesses an alveolus for an additional rootlet in the lingual position of m1, whereas no *A. rayi* specimens have such an additional rootlet. The alveolar length of the mandibular toothrow of *M. audreyae* (8.30 mm) is much smaller than that shown by any specimens of *A. rayi* (9.24–10.32 mm, mean = 9.72 mm;  $n = 40$ , including specimens from Antigua, Barbuda, and Guadeloupe); this difference is statistically significant in a one-sample t-test ( $t = 29.8$ ,  $p <$

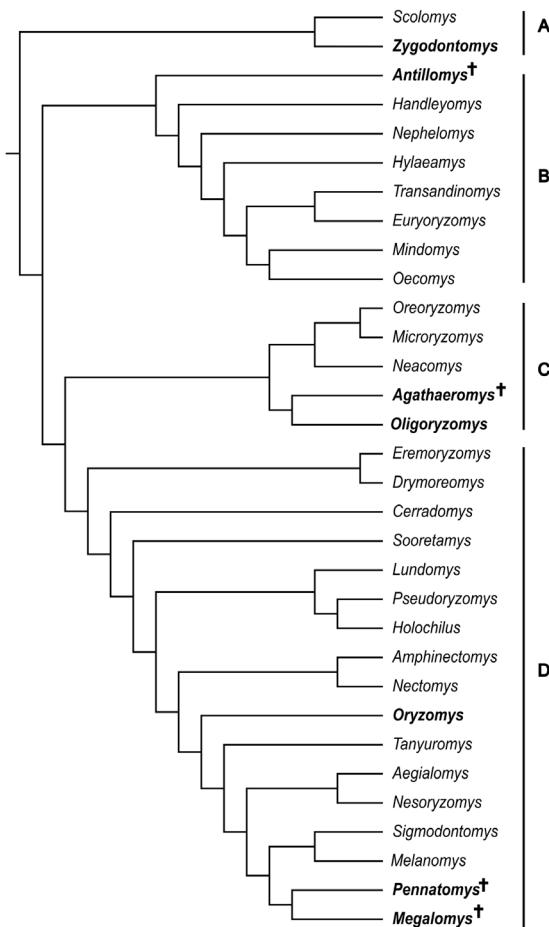
0.001). Additional paleontological research on Barbuda is necessary to further evaluate the phylogenetic status of *M. audreyae*, and the stratigraphic relationship between material assigned to *M. audreyae* and *A. rayi*.

*Antillomys* differs from its sister taxon *Hylaeamys* (see [Brace et al. 2015](#); but see [Mistretta et al. \(2021\)](#) for alternative placement within Clade 2 of Oryzomyini; Figure 4) in several cranial and dental characters: the interorbital region of *Hylaeamys* is slightly anteriorly convergent with weakly developed supraorbital ridges, while in *Antillomys* the interorbital region is hourglass-shaped without any raised ridge or beads; in *Hylaeamys* the parietals are restricted to the dorsal surface of the braincase, while in *Antillomys* the parietals are expanded onto the lateral surface of the braincase; the mesopterygoid fossa of *Hylaeamys* does not extend anteriorly between the maxillary bones, while in *Antillomys* the mesopterygoid extends between the molar tooth rows; the posterolateral palatal pits in *Hylaeamys* are conspicuous large perforations, while in *Antillomys* the pits are small foramina; and the capsular process is absent in *Hylaeamys*, but present in *Antillomys*. Dentally, the anterocone of M1 is undivided in *Hylaeamys* and divided into labial and lingual conules by an anteromedian flexus in *Antillomys*; the paracone is connected to the protocone by a posterior enamel bridge in *Hylaeamys*, but by an anterior bridge in *Antillomys*; a protoflexus is present on M2 and a posteroloph is present on M3 in specimens of *Hylaeamys*, but consistently absent in *Antillomys*; and ectolophids and ectostylids are present in *Hylaeamys* but not in *Antillomys*.

**Remarks:** Oryzomyine material from Barbuda was referred to as "*Ekbletomys hypenemus*" by [Ray \(1962\)](#), but this name is not available as it was only reported in an unpublished PhD thesis. Additional material from Guadeloupe and Marie Galante was reported by [Goedert et al. \(2020\)](#). See [Jones \(1985\)](#) and [Rouse and Morse \(1999\)](#) for further details on the type locality.

Three characters are variable within the sampled material of *Antillomys*: size of capsular process of the lower incisor alveolus; shape of anterior connection of the masseteric ridges; and presence of a supratrochlear foramen in the humerus. Although examined material of *A. rayi* displays some morphological variation, no consistent morphological differences are observed between *Antillomys* populations on the Antigua–Barbuda or Guadeloupe banks, and our assignment of *Antillomys* material from Guadeloupe and Marie Galante to *A. rayi* is based on the close morphological similarity shown to material from Antigua and Barbuda.

The Caribbean remains a priority area for the study of mammalian diversity and extinction dynamics, and further systematic research is needed to understand the oryzomyine radiation in this region (Figure 4). Our description of *A. rayi* from Antigua, Barbuda, Guadeloupe, and Marie Galante confirms the overall impact of the anthropogenic extinction event in the Caribbean during the late Holocene



**Figure 4.** Phylogenetic relationships of oryzomyines based on maximum likelihood (ML) analysis of morphology, mtDNA (cytochrome b, 12S) and nuclear (ADH1, IRBP) sequence data (after Mistretta *et al.* 2021: fig. 4). Genera with Caribbean insular representatives are highlighted in bold. Vertical bars on right-hand side of figure indicate taxon membership in clades A–D (see Weksler 2006). See Mistretta *et al.* (2021:437–438) for methodological details.

(Cooke *et al.* 2017) and highlights the need for further work to document and describe the undescribed rice rat material known from zooarchaeological sites on other Lesser Antillean islands, including Anguilla, Montserrat, Saba, and St. Martin (Mistretta *et al.* 2021).

## Acknowledgments

We thank the associate editor and three anonymous reviewers for their valuable suggestions and proposals, which helped to improve this work.

## Literature cited

BRACE, S., *ET AL.* 2015. Unexpected evolutionary diversity in a recently extinct Caribbean mammal radiation. *Proceedings of the Royal Society B* 282:20142371.

COOKE, S. B., *ET AL.* 2017. Anthropogenic extinction dominates Holocene declines of West Indian mammals. *Annual Review of Ecology, Evolution, and Systematics* 48:301–327.

GOEDERT, J., *ET AL.* 2020. Isotopic ecology and extirpation chronology of the extinct Lesser Antillean native rodent *Antillomys rayi* Brace *et al.* (2015). *Quaternary Science Reviews* 245:106509.

HOPWOOD, A. T. 1926. A fossil rice-rat from the Pleistocene of Barbuda. *Annals and Magazine of Natural History, Series 9* 17:328–330.

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE (ICZN). 1999. *International Code of Zoological Nomenclature*. Fourth Edition. International Trust for Zoological Nomenclature. London, U.K.

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE (ICZN). 2012. Amendment of Articles 8, 9, 10, 21 and 78 of the International Code of Zoological Nomenclature to expand and refine methods of publication. *ZooKeys* 219:1–10.

JONES, A. R. 1985. Dietary change and human population at Indian Creek, Antigua. *American Antiquity* 50:518–536.

MAMMAL DIVERSITY DATABASE (MDD). 2022. *Antillomys rayi* (ASM Mammal Diversity Database #1002502), accessed on 31 March 2022. <https://www.mammaldiversity.org/explore.html#species-id=1002520>

MISTRETTA, B. A., *ET AL.* 2021. Extinct insular oryzomyine rice rats (Rodentia: Sigmodontinae) from the Grenada Bank, southern Caribbean. *Zootaxa* 4951:434–460.

RAY, C. E. 1962. Oryzomyine rodents of the Antillean subregion. Unpublished PhD thesis, Harvard University.

ROUSE, I., AND B. F. MORSE. 1999. Excavations at the Indian Creek site, Antigua, West Indies. *Yale University Publications in Anthropology* 82, Peabody Museum of Natural History, New Haven, U.S.A.

TURVEY, S. T., S. BRACE, AND M. WEKSLER. 2012. A new species of recently extinct rice rat (*Megalomys*) from Barbados. *Mammalian Biology* 77:404–413.

WEKSLER, M. 2006. Phylogenetic relationships of oryzomine Rodents (Muroidea: Sigmodontinae): separate and combined analyses of morphological and molecular data. *Bulletin of the American Museum of Natural History* 296:1–149.

Associated editor: Guillermo D'Elía

Submitted: October 3, 2022; Reviewed: October 25, 2022

Accepted: March 6, 2023; Published on line: March 27, 2023