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Photo: Nick Ramsey

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Cover Page: Puerto Rican Tody (*Todus mexicanus*) at Cerro de Punta, Jayuya, Puerto Rico on 14 March 2024. Photograph by Nick Ramsey.

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Abstract

The Puerto Rican Tody's scientific name *Todus mexicanus* prompts the question of how an endemic Puerto Rican species acquired such a confusingly inappropriate name. Here we address the nomenclatural history of this species to address how and when this misnomer arose, and we use this case study to discuss the pros and cons of changing scientific names. We argue that a variety of circumstances warrant changing *mexicanus* to *borinquensis*, despite strong opposition based on International Commission on Zoological Nomenclature rules discouraging changes of toponyms (names based on geographical locations). We discuss several alternatives for the change, emphasizing the potential role of Puerto Ricans.

Keywords

conservation, International Commission on Zoological Nomenclature, Latin names, nomenclatural history, Puerto Rican Tody, Todidae, *Todus mexicanus*

Resumen

El San Pedrito de Puerto Rico (*Todus mexicanus*): ¿Qué hay en un nombre? • El nombre científico del San Pedrito de Puerto Rico, *Todus mexicanus*, plantea la pregunta de cómo una especie endémica de Puerto Rico adquirió un nombre tan confusamente inapropiado. Aquí abordamos la historia nomenclatural de esta especie para entender cómo y cuándo surgió este error de denominación, y utilizamos este estudio de caso para discutir los pros y los contras de cambiar los nombres científicos. Argumentamos que una variedad de circunstancias justifican cambiar *mexicanus* a *borinquensis*, a pesar de la fuerte oposición basada en las reglas de la Comisión Internacional de Nomenclatura Zoológica que desaconsejan los cambios de topónimos (nombres basados en ubicaciones geográficas). Discutimos varias alternativas para el cambio, destacando el papel potencial de los puertorriqueños.

Palabras clave

Comisión Internacional de Nomenclatura Zoológica, conservación, historia nomenclatural, nombres científicos, San Pedrito de Puerto Rico, Todidae, *Todus mexicanus*

Résumé

Le Todier de Porto Rico (*Todus mexicanus*) : qu'est-ce qu'un nom ? • Le nom scientifique du Todier de Porto Rico *Todus mexicanus* soulève la question de savoir comment une espèce endémique portoricaine a pu acquérir un nom aussi inapproprié qui prête à confusion. Nous abordons ici l'histoire nomenclaturale de cette espèce afin de déterminer comment et quand cette erreur de nom est apparue, et nous utilisons cette étude de cas pour discuter des avantages et des inconvénients d'un changement de nom scientifique. Nous soutenons que plusieurs considérations justifient le changement de *mexicanus* en *borinquensis*, malgré une forte opposition fondée sur les règles de la Commission internationale de nomenclature zoologique décourageant les changements de toponymes (noms basés sur des emplacements géographiques). Nous examinons plusieurs possibilités de changement, en insistant sur le rôle potentiel des Portoricains.

Mots clés

Commission internationale de nomenclature zoologique, conservation, histoire nomenclaturale, Todidae, Todier de Porto Rico, *Todus mexicanus*

Species names are critically important for a variety of purposes. Scientific names are attached to species, identifying them uniquely. Names are handles for virtually all the work we do as ecologists and evolutionary biologists, for starters, so the foundation, stability over time, and universal acceptance of names are clearly indispensable (Winker 2022, Ceríaco *et al.* 2023). Names can also honor people and circumstances associated with the discovery of new species.

As ornithologists, we depend on two classes of names in our publications, used almost interchangeably, namely scientific names (Latin names = binomials = binomens) and common or colloquial names. The stability of both types enhances our ability to conduct science by communicating clearly, consistently, and authoritatively.

However, scientific names differ from colloquial names in how they are established and changed. New species binomials require formal, published descriptions, which then serve as the basis for any relevant subsequent studies. Authors of these names have considerable latitude in name choice, but the nomenclature of animal scientific names is largely controlled by an elaborate and extensive set of rules honed over the past 100 years or so by the International Commission on Zoological Nomenclature (ICZN). Important principles include priority, in which the earliest legitimate (published) species name takes precedence; and synonymy, in which different names for the same species (synonyms) are disallowed in deference to the earliest legitimate name for that species. Binomials can be, and are, changed routinely, particularly in light of new information about species (and genus and family) boundaries, but these changes almost always follow ICZN rules. Case in point: upon discovering that American Redstarts (*Setophaga ruticilla*) fall phylogenetically within the clade of otherwise monophyletic *Dendroica* warblers (Lovette *et al.* 2010), the AOS North American Classification Committee agreed to subsume 33 former *Dendroica* warbler species into *Setophaga*, which name had priority over *Dendroica*, among a number of other changes—not always widely appreciated—designed to create uniformly monophyletic taxa within Parulidae (see Chesser *et al.* 2022).

By contrast to ICZN, ornithological societies such as the American Ornithological Society (AOS) determine English colloquial names in the Western Hemisphere. These names were created and standardized to facilitate communication about birds to a broad (English-speaking) audience. A few of these names have been changed recently for ethical reasons, e.g., Oldsquaw (*Clangula hyemalis*) re-named Long-tailed Duck. Moreover, AOS recently proposed to eliminate all English eponyms for similar reasons, including the moral repugnance of some people formerly honored by these names, and they decided that changing all eponyms would be simpler than deciding on whether or not to change each piecemeal (AOS 2024, Liu *et al.* 2024). Moreover, clear criteria and guidelines have been developed to foster communication and accessibility to broad audiences (Winker 2022). Clearly, ethical and moral arguments rise to the level of justifying the ornithological community revising colloquial names, despite their potential threats to nomenclatural stability, although—surprisingly—English colloquial names have been more stable than scientific names since the first AOS (formerly the American Ornithologists' Union and Cooper Ornithological Society) checklist over a century ago (Winker 2022). Thus, both scientific and colloquial names can be and have been changed for multiple reasons, despite the concern about nomenclatural stability, and these changes have not been, to our knowledge, overly disruptive to ornithological practice. We recognize that such changes should be rare and well justified.

Scientific names are not easily changed on moral or ethical grounds. ICZN strongly resists changing binomials on moral grounds for a variety of good reasons, particularly the inherently subjective nature of many such adjudications (Ceríaco *et al.* 2023). The ICZN code addresses potentially inappropriate names, and the ethics of naming species in the first place, but the code distinguishes between rules (which must be adhered to, with the force of law), and recommendations (which are entirely optional and discretionary). Provisions regarding ethics are in the latter category, lacking the force of law and unable to compete with genuine rules. An important reason to resist name changes, implicit in the ICZN argument, is the slippery slope concept: changing one name for a particular reason might be interpreted as inviting requests for other similarly motivated changes, although ICZN rules explicitly preclude basing new case decisions on previous case precedents. Included in these potentially offensive (to some people) binomials are eponyms, which honor particular people or groups thereof (~20% of all zoological names in use; Ceríaco *et al.* 2023) and toponyms, which refer to a place or topographic feature (~10% of such names). These two categories alone involve hundreds of thousands of animal species.

We argue here that Latin binomials should be changed under some restricted circumstances that do not threaten overall zoological nomenclatural stability, even if not sanctioned by ICZN rules. Some circumstances rise to the level of warranting change even of scientific names, and for multiple reasons. We use a case study of the endemic Puerto Rican Tody, incongruously named *Todus mexicanus*, to highlight circumstances in which one scholarly tradition (nomenclatural rules) conflicts with other traditions of historical scholarship, intellectual integrity, and conservation imperative; and we evaluate alternative potential ways forward.

Case Study: Puerto Rican Tody

The todies (Todidae, Coraciiformes) are a clade of five species strictly endemic to the Greater Antilles—one per island except for Hispaniola with two species (Kepler 1977, Rivera-Cianchini and Mojica-Sandoz 1981, Raffaele *et al.* 1998, Bond 1999, Zelenkov and González 2020). These birds are phylogenetically somewhere near motmots and kingfishers based on molecular (Overton and Rhoads 2004, Prum *et al.* 2015) and fossil (Olson 1976, Mayr and Knopf 2007) evidence. The fossil evidence suggests tody ancestors were more widespread than today, in both North America and Europe, as early as the mid-Oligocene. These birds are fascinating for other reasons than their fossils and phylogenetic and taxonomic confusion: they are charismatic (e.g., Kepler 1977) because they are so abundant, colorful, and fearless enough to be approachable (making them easy to observe and study except when breeding in cavities in soil banks). Many islanders recognize them, despite (or maybe because of?) their small size. None of the species are currently of conservation

concern, but recent storms such as Hurricane Maria have had devastating effects on species such as the Puerto Rican Parrot (*Amazona vittata*) and Puerto Rican Plain Pigeon (*Patagioenas inornata wetmorei*), and multiple hurricanes in quick succession could do the same to the tody.

Importantly, poor dispersal capacity characterizes all five extant todies. This was not always the case, based on the fossil *Palaeotodus emryi* (Olson 1976), from the "middle" Oligocene of Wyoming, ~30 MYA. Based on size and body proportions, this Oligocene species probably had greater powers of flight than todies today; interestingly, this fossil probably occurred around the time of marked sea level lowering, and so may have reached the Greater Antilles overland, or at least across shorter over-water distances than available today. Additionally, the two todies on Hispaniola are not each other's closest relative, indicating a double colonization, at least one of which was from Cuba (Overton and Rhoads 2004). Nonetheless, contemporary todies, as opposed to fossil species, are widely acknowledged to be poor dispersers, as strongly suggested by the fact that none has reached any other large island, let alone mainland Mexico. However, more-or-less modern tody-like birds probably did disperse somewhat, as suggested by their phylogenies and distribution patterns. In the case of the Puerto Rican Tody specifically, it is not found on nearby islands like Desecheo (21 km west of Puerto Rico proper), Caja de Muertos (12.8 km south), or Vieques (11 km east)—although these all contain appropriate habitat. All five todies are characterized by a weak, buzzy flight (González Díaz and Collazo Torres 2019, Zelenkov and Gonzalez 2020, Sherry 2021). Additionally, Bryant (1866:250) noted: "Its plumage is loose, the wings feeble and its legs long." Pérez Mena and Mora (2011) document the Cuban Tody's sedentary forest habits with geographic song variation, reinforcing De La Sagra's observation (1845:103): "El Todus [sic] multicolor no puede en manera alguna ser un pájaro viajero, porque su vuelo es mui corto, y asi vive sedentario en la isla, donde anida." (Translation: "*Todus multicolor* cannot in any way travel, because its flight is very short, and it also lives sedentarily on the island where it nests.") The relevance of poor dispersal ability in contemporary tody species is that all five species are endemic to a single island, do not hybridize to our knowledge, never occurred naturally in Mexico (nor could they have, at least given what we know about their dispersal capabilities today), and represent a relictually distributed family endemic to the Greater Antilles.

Todies are thus a perfect candidate species group for Greater Antillean and Caribbean conservation, except for one species, the Puerto Rican Tody (*Todus mexicanus* Lesson 1838), due primarily to its species epithet. How did a poorly dispersing, endemic Puerto Rican species end up *mexicanus*, and why does it matter? We provide a brief history of tody taxonomic nomenclature, a story as fascinating as all else tody, specifically the problem of the species epithet "*mexicanus*" for the Puerto Rican Tody. The broader issue here is whether and how to bring issues other than strictly traditional taxonomic rules to bear on species scientific names. We dedicate this effort to the two Puerto Rican ornithologists, José González Díaz and Felisa Collazo Torres (co-authors here), whose scholarly efforts beginning more than a decade ago informed what we now know about a taxonomic history worthy of a Shakespearean drama (González Días and Collazo Torres 2019, Sherry 2021). We argue that some aspects of this story are unique, although multiple avian taxonomists have assured us that avian nomenclature is rife with equally convoluted histories.

Selected tody nomenclatural history—The early history of tody descriptions and taxonomy is riddled with confusion, both in written and illustrated accounts. Early ornithologists aligned todies alternatively with trogons, tyrannid flycatchers, cotingas, kingfishers, motmots, hornbills, caprimulgids, jacamars, and manakins (González Díaz and Collazo Torres 2019). As late as the early to mid 19th century, only one tody species was recognized, probably based on overall plumage similarity of all five tody species recognized today. The Jamaican species was the type species, known initially by *Alcedo todus* Linnaeus, and then by *Todus viridis* Linnaeus, with a description included in Linnaeus' 1758 work; this was later changed to *Todus todus* (Ridgway 1914, González Díaz and Collazo Torres 2019). Ornithologists began to distinguish different tody species in the 1830s, starting with John Gould's description of the Cuban Tody (*T. multicolor*) in his lavishly illustrated Icones Avium (Gould 1837). René-Primevère Lesson (henceforth René Lesson) described three tody species, two of them new species, in 1838. He described what we now know as the Cuban Tody as *T. portoricensis* and the Puerto Rican Tody as *T. mexicanus*; he also distinguished these two new species from the third already known species, the Jamaican *T. viridis*. Soon thereafter, the Haitian Tody (now known as the Broad-billed Tody, *T. subulatus* Gray 1847) and Narrow-billed Tody (*T. angustirostris* Lafresnaye, 1851), both endemic to the island of Hispaniola, were described.

The simplicity of the above account belies its true complexity. Ridgway (1914) attributed Gould as the authority for the Cuban Tody, which is legitimate by nomenclatural rules of priority of descriptions, but listed *T. portoricensis* as a junior synonym for this species based on René Lesson's (1838) application of the name *T. portoricensis* to what turned out to be this Cuban species. Ridgway recognized the name *portoricensis* as an "error", but importantly did not follow up on the origin of the error—as explained below. Problems with Gould's (1837) description of *T. mexicanus* in Icones Avium are severalfold. Gould mentions three tody species, of which only two species are listed, namely *T. multicolor* and *T. viridis*; and Gould's hasty description of *T. multicolor*—it turns out—does not mention the third species at all. Additionally, Gould's recognition of multiple tody species in Icones Avium was never followed up in the 1837 Proceedings of Zoological Society Part V, as "promised", and cited, in Icones Avium (Zimmer 1926). Although Gould purportedly presented his description of the Cuban Tody officially to the Zoological Society in 1837 (Jardine *et al.* 1838), he in fact became distracted by a commitment to Australian research (Zimmer 1926)—and the 920 pages of the Proceedings of the Zoological Society Part V (1837) contain no reference to any todies, leaving Gould's brief Icones Avium description as the official one. Included in this description, Gould states that, "I am unable to state the precise locality from whence this beautiful species [now *T. multicolor*] was received: it has been for some years in the Museum of the Zoological Society of London, and formed a part of the extensive collection presented to that society by N. A. Vigors, Esq., but has never before been characterized as distinct from *Todus*

viridis. Of this peculiar form, distinguished by a bright scarlet throat, I am acquainted with three distinct species." Thus, Gould described *T. multicolor* as a new species without knowledge of where it resided! Moreover, the Vigors specimen(s), the presumptive "type" specimens, are nowhere to be found in the Zoological Society of London (ZSL; E. Milnes pers. comm.), the British Natural History Museum, which received many ZSL specimens (M. Adams pers. comm.), or the Henry Sotheran Ltd. materials (Henry Sotheran purchased the John Gould estate in 1881; C. Saunders pers. comm.). Cory (1918) and Peters (1945) followed Ridgway's (1914) determination of the description of *T. multicolor*, also without following up on the source of the "error" associated with the *T. portoricensis* synonym. Thus, the authority for *T. multicolor* rests on a shakier foundation than many ornithologists may recognize.

José González Díaz and Felisa Collazo Torres unraveled the mystery of the "error" Ridgway noted for the Cuban Tody, namely why the species epithet *portoricensis* is associated with the Cuban Tody, and why the Puerto Rican Tody retains *mexicanus* as the official species epithet (González Díaz and Collazo Torres 2019). We know that René Lesson (1838) described what was subsequently identified as the Cuban Tody and labeled it *T. portoricensis*. Gould (1837) beat him to this description, and by priority gave this species the epithet *multicolor*. In his 1838 publication, René Lesson described the Puerto Rican Tody for the first time and gave it the name *mexicanus*. René Lesson's name *mexicanus* for the Puerto Rican species was available, used, and repeated by multiple subsequent ornithologists, making René Lesson owner of both the authoritative species description and the misnomer *mexicanus*.

René Lesson (1838) acknowledged that he obtained the two specimens he used to describe the Cuban and Puerto Rican specimens from his brother Pierre Adolphe Lesson (henceforth Adolphe Lesson), who had himself collected a tody in the field in Puerto Rico and obtained the second tody specimen in a Tampico, Mexico market, towards the end of his more than a year-long journey across the Caribbean Sea—we know this based on Adolphe Lesson's (1836) ship's logbook. We also know that Adolphe Lesson was a botanist and pharmacist, with little ornithological experience, and stated about Puerto Rico in his logbook (1836:26), "Lonely, cool and gloomy; I had only seen him [Tody] go quickly from one hole to another and had just shot another bird when I discovered the second, which, far from being silent, was vocalizing on a branch and where its shining necklace revealed it more than its song. These little birds are for me, in short, only Todiers that one and the other are new - see the description and the drawings in a work of my brother. But what a good country, I will say to finish, a country where we have such beliefs: Why can't I stay there for a long time?". We thus know that Adolphe himself collected a tody specimen in Puerto Rico. Adolphe's brother René Lesson (1838) inadvertently reinforced the difficulty Adolphe would have had distinguishing the two todies, referring to his 1838 published descriptions, post-dating Adolphe's logbook entry: "These three types of *Todus* have the same forms, the same size, and at first glance, a coloration that can only be distinguished by their shades and by close comparison. At present, these three species can only be differentiated by the comparative description given of each of them." René Lesson also clearly intended to honor the geographic origins of the two new tody species (making them toponyms) but misnamed them based on incorrect information provided by his brother Adolphe.

René Lesson also would not have questioned a tody occurring naturally in Mexico, considering the evolutionary convergence of todies with tody-flycatchers—themselves widespread in Mexico—and confusion thus engendered. In fact, he would have expected todies to occur in Mexico based on his knowledge of prior literature on todies, including multiple illustrations juxtaposing (Caribbean) todies with the widespread mainland Central and South American Common Tody-Flycatcher (*Todirostrum cinereum*; Sherry 2021). Lesson (1838) explicitly mentions prior ornithologists (de la Fresnaie, Vieillot, and Bonnaterre) confusing todies with tody-flycatchers, which he describes as "véritables Moucherolles du genre Platyrhynque" (roughly translated "true flycatchers of the genus Platyrhynque", a genus at that time containing different birds than the current *Platyrinchus*). René Lesson likely made this distinction between mainland tody-like birds (actually tyrant flycatchers, Tyrannidae) and todies to help justify describing—as new to science—the two new *Todus* species in this publication; he could not have known the true phylogenetic relationship of Todidae and Tyrannidae. The five recognized todies have never occurred outside their current ranges in the Greater Antilles, let alone in Mexico.

We thus know that Adolphe Lesson presented two different tody specimens to his brother René, who described them as new species (Lesson 1838). René applied the name *portoricensis* to the specimen Adolphe indicated originated in Puerto Rico, but which was subsequently identified by plumage as the Cuban Tody. Since Adolphe indicated that the other tody came from a Mexican market, René named it *mexicanus*; it must actually have been the Puerto Rican Tody by process of elimination. It is difficult to avoid the conclusion that Adolphe Lesson confused the two specimens and mislabeled them as to their geographic origin, which is the fundamental explanation for why Puerto Ricans inherited the name *Todus mexicanus*. The type specimens for René Lesson's (1838) work have also gone missing, like the Vigors skins Gould used to describe *T. multicolor*. The Lesson brothers' two location-swapped specimens are apparently neither in the Paris Museum of Natural History (R. Seitre pers. comm.) nor the Rochefort, France, Natural History Museum, where the Lesson brothers lived and purportedly deposited a number of their scientific specimens.

Sharpe (1874) recognized the absence of Gould's formal description of *Todus multicolor*, the confusion surrounding the naming of both the Cuban and Puerto Rican Tody species (and thus their intertwined nomenclatural histories), and the origin of the linkage of the two tody species with René Lesson (1838). Sharpe (1874: 344) also linked the error appropriately to Lesson: "the chief offender being Lesson, who called the *Todus* from Porto Rico *T. mexicanus*, and gave the title of *portoricensis* to the Cuban species." Sharpe's knowledge could have corrected the record, but neither Sharpe nor Ridgway pursued these issues further, to our knowledge.

Adding to the tody confusion, Ridgway (1914) listed a sixth species, Sharpe's Tody (*T. pulcherrimus* Sharpe 1874), purportedly from Jamaica, based on specimens that turned out to

represent a plumage variant, and not a new species; and Bryant (1866) described *T. hypochondriacus* as a new species from Puerto Rico, which has also not survived scrutiny (Ridgway 1914).

Why does this history matter?—For one thing, the species epithet *mexicanus* clashes with the colloquial English name of the endemic Puerto Rican Tody. For another, given convincing evidence based on the scholarship of González Díaz and Collazo Torres (2019) for how the *mexicanus* epithet became attached to the Puerto Rican Tody and cemented by ICZN rules, it would be dishonest intellectually not to take these facts into consideration. This situation pits taxonomic rules, built in this case on a weak scientific foundation, against scholarly historical research; and unfortunately, the rules have taken precedence.

Puerto Ricans care. A practical reason to formally re-name the Puerto Rican Tody with something other than *T. mexicanus* is public confusion. On three different occasions, from 1980 to the 1990s, Puerto Rican ornithologists tried to convince the legislature to adopt a national bird species, and the tody was never even mentioned—because the professional ornithologists objected to the *mexicanus* epithet, preferring species with a colloquial epithet referring explicitly to Puerto Rico (RAPR pers. obs.). Species considered included the Critically Endangered Puerto Rican Parrot ("Iguaca", once occupying Vieques and Mona Islands), the widespread and non-endemic Loggerhead Kingbird (*Tyrannus caudifasciatus*, "Clérigo"), the widespread and non-endemic Red-tailed Hawk (*Buteo jamaicensis*, "Guaraguao"), the Puerto Rican Woodpecker (*Melanerpes portoricensis*, "Carpintero de Puerto Rico", endemic to Puerto Rico and Vieques), and the Puerto Rican Lizard-Cuckoo (*Coccyzus vieilloti*, "Pájaro Bobo Mayor"). None of these species was selected for various reasons, basically related to politicians' aversion to negative connotations of either Latin or colloquial names (RAPR pers. obs.). Pérez-Rivera (unpubl. data) followed up by polling the general public and university students (1983–present) with simple questions: which birds of Puerto Rico could you describe correctly, which species do you consider the most common in Puerto Rico, which of the following are endangered, what is an endemic species, which of the following are endemic, do we have a national bird, which species would you suggest as our national bird, etc. The Puerto Rican Tody was largely overlooked as a Puerto Rican endemic, almost certainly because of its scientific name. These surveys indicated that the general public, as well as many university students, failed to recognize the Puerto Rican Tody as an endemic species. The understandably justifiable presumption by the public is that official binomials are meaningful, and specifically that *mexicanus* must denote some legitimate association with Mexico, which is not the case with *T. mexicanus*.

A proposal by the Puerto Rican legislature to adopt the Puerto Rican Tody as the national/commonwealth bird was recently rejected—again, almost certainly due to the *mexicanus* species epithet (RAPR pers. obs.). The fact that a bird species misnomer, even if legitimate by ICZN rules, should impede Puerto Rico's conservation interests is unfortunate. Correcting the Puerto Rican Tody's binomial would significantly enhance potential for Puerto Rican conservation. The Puerto Rican Tody is a perfect flagship species for the Commonwealth of Puerto Rico because it is charismatic and not known to occur elsewhere than Puerto Rico proper. Such characteristics favor the Puerto Rican Tody as an ideal ambassador for rallying conservation pride (Smith and Sutton 2008) if used carefully (Douglas and Veríssimo 2013, Douglas and Winkel 2014). Endemic bird species also provide a critical foundation for the Caribbean Birding Trail (caribbeanbirdingtrail.org), which affects tourism and local livelihoods, and the annual Caribbean Endemic Bird Festival, which use endemic species as a tool to build local pride and conservation momentum. Indeed, the entire family Todidae is strictly endemic to the Greater Antilles islands, portending invaluable conservation leverage regionally. We cannot emphasize strongly enough how seriously global, not just Caribbean, threats to biological diversity have become, and how poorly appreciated these threats are by many of us (Bradshaw *et al.* 2021). Human global impacts have changed our planet profoundly, warranting reconsideration of frustrating nomenclature and rules (particularly to Puerto Ricans), including strict adherence to ICZN rules.

Another reason to change the species epithet of the Puerto Rican Tody is ethical. The AOS has recently adopted guidelines to enhance its diversity, equity, inclusion, belonging, and justice (AOS 2023). Supporting this Puerto Rican-initiated effort to right a historical wrong is a great place to proceed, particularly after Puerto Ricans hosted the AOS 2022 annual conference. Two AOS presidents signed an informal petition in support of changing the Puerto Rican Tody's species epithet, in association with a roundtable we organized at this conference, but AOS has since declined to pursue this support as a society (C. Handel pers. comm.). Signing such a petition was of course a personal, unofficial act, but signals at least philosophical agreement with the cause, if not a particular solution.

We recommend for the Puerto Rican Tody the new name *Todus borinquensis*, honoring the indigenous Taíno name for Puerto Rico. This avoids the name *portoricensis*, which is a junior synonym for the Cuban Tody (Ridgway 1914) and thus ineligible for the Puerto Rican Tody in deference to ICZN rules.

Alternative Solutions

Given these facts and history, it is surprising how difficult it is to change the Puerto Rican Tody's *mexicanus* epithet. ICZN largely controls scientific names with rules that explicitly or implicitly preclude changing eponyms and toponyms except where principles such as priority and synonymy allow. Our numerous communications with taxonomists, including present or former AOS representatives of the North American Classification Committee (NACC), have evoked sympathy, and the assertion that this tody case is not unique. These people have also consistently directed us to the ICZN, indicating changing a Latin binomial toponym is considered beyond the jurisdiction of AOS. Insofar as AOS has routinely supported changing scientific names—admittedly based on new systematic information and not toponymic misnomers—we believe it is not strictly correct that AOS could not become engaged in this issue.

The assertion that "hundreds" of other similar misnomers exist is also arguable, depending on what is meant by "similar". We know of two situations in the 18th and 19th centuries in which avian misnomers arose from uncertain origins of described species, including *T. mexicanus*/*T. multicolor* as described above, and the Oriole Blackbird (*Gymnomystax mexicanus*) mentioned below. Compilations of such errors would be interesting, but

beyond the scope of this paper. Nonetheless, we believe the Puerto Rican Tody's *mexicanus* misnomer is a rare, if not unique situation involving a botanist with little ornithological experience, evolutionary convergence of todies with tody-flycatchers (Sherry 2021), a highly local endemic and non-migratory species, a charismatic species with high conservation potential, and failure by multiple prominent ornithologists, especially Ridgway, to follow up once recognizing that the epithet *portoricensis* for the Cuban Tody was problematical.

Almost all other potentially inappropriate avian toponyms are different, most of them belonging to widely distributed and migratory species for which any toponym would be inappropriate, e.g., the Far Eastern Curlew (*Numenius madagascariensis*) which is migratory throughout continental Asia, Africa, and the USA (and Alaska), so is clearly not limited to Madagascar. The Paradise Tanager (*Tangara chilensis*) similarly inhabits parts of Colombia, Bolivia, Brazil, Peru, and Venezuela, albeit not currently found in Chile. The Silvery Wood-Pigeon (*Columba argentina*) from Sumatra and parts of western Borneo derived its name from its silver color ("argentum" in Latin) rather than a country. The *mexicanus* epithet belongs to 14 bird species, all but two widely distributed in the Neotropics including Mexico; besides the Puerto Rican Tody, the Oriole Blackbird is restricted to northern South America and represents a genuine misnomer (Montgomerie 2019). This latter species obtained its inappropriate epithet via a historical error, in which Mathurin Jacques Brisson linked the origin of this species in his description mistakenly to "New Spain" (Brisson 1760), an error that Carl Linnaeus propagated in his 12th edition of Systema Naturae.

ICZN?—The standard way to redress zoological scientific names is to submit an ICZN case for consideration and a vote. We circulated a manuscript arguing for changing the Puerto Rican Tody's name *mexicanus*, drafted according to Bulletin of Zoological Nomenclature (BZN) author guidelines, and several ICZN commissioners reviewed it systematically. These informal reviews came back with the recommendation "needs major revision", which is challenging to do satisfactorily, in our view, considering that the tody case fails to fit any of the ICZN template situations. Even if we could revise sufficiently for publication in BZN, we would still face the hurdle of a vote by commissioners, who would likely oppose changing a toponym (D. Yanega pers. comm.). Thus, we conclude that formalizing a change of *mexicanus* via ICZN is presently unlikely.

Western Hemisphere Ornithological Societies?—Another option is for AOS along with BirdsCaribbean to adopt this case, and potentially vote to change the name as we have suggested. This is not as difficult as it may seem. As multiple ICZN commissioners have emphasized in informal communications, they have no ability to enforce decisions contrary to ICZN rules, and one commissioner has in fact encouraged us to work with ornithologists to try and make the change despite ICZN rules. Precedents for this extra-ICZN option exist: "the ICZN issued an opinion in 2018 that the name *Grallaria fenwickorum* is both available and valid. The IOC (International Ornithological Congress) refused to accept the ruling, and declared that *Grallaria urraoensis*, published later, was the valid name" (D. Yanega pers. comm.). The community of lepidopterists refused to comply with gender agreement, and herpetologists boycotted scientifically inappropriate, self-published Ray Hoser species descriptions, both code violations (see also Ortega 2023). We hope that, as details of the Puerto Rican Tody nomenclatural history become more widely known, ornithologists will reconsider supporting a new name for it, such as *Todus borinquensis*—consistent with AOS's new guidelines to enhance its diversity, equity, inclusion, belonging, and justice initiatives. BirdsCaribbean, a regional non-profit that has been committed to conserving Caribbean birds for more than 35 years, implicitly supports this change insofar as two co-authors of our perspective piece are officers therein.

Puerto Rico?—Another circumstance contributing to the uniqueness of the Puerto Rican Tody misnomer is the species' endemism on a single Caribbean island whose people have a critical perspective. Few, if any, other such stark misnomers occur in Puerto Rico, the Caribbean region, or elsewhere to our knowledge, and few are as absurd as *T. mexicanus* for an endemic Puerto Rican species. Puerto Ricans took the initiative to try to change this situation for all the reasons described above and more (González Díaz and Collazo Torres 2019, Sherry 2021). Another potential solution available to Puerto Ricans (and anyone else who supports the name change) is to refer to the Puerto Rican Tody in publications as *Todus borinquensis* (*T. mexicanus*), which would serve to highlight this misnomer and the frustration of Puerto Ricans with what some of them see as an imposition of this name on them by the broader scientific community historically, however "legitimate" via ICZN rules.

Another possibility is for Puerto Ricans to continue to pursue establishment of the Puerto Rican Tody as the official Commonwealth bird despite the misleadingly off-putting name *mexicanus*, and thereby take advantage of its official status for purposes of education and conservation. Puerto Ricans have been trying solutions along these lines for over a decade, without success to date. This latter option of living with *mexicanus* would probably require a massive public relations effort, to which AOS, BirdsCaribbean, and other ornithological societies could certainly contribute. Changing the local name for the Puerto Rican Tody ("San Pedrito") might be a step in this direction; in a recent informal survey of Puerto Rican high school-aged students, 88% of 90 respondents failed to recognize the bird represented by this name. Our perspectives piece is intended to promote the public relations perceptions that could lead to meaningful change.

Conclusions

Scientific names can occasionally be so erroneous or offensive as to warrant change. Such animal name changes, even when outside the purview of ICZN commissioners and rules, are possible, with negligible threat to the stability and authority of the hundreds of thousands of other names. Precluding changes to all toponyms, for example, is not always the only or best way to advance the causes of nomenclatural clarity and stability. Occasionally, as demonstrated with the Puerto Rican Tody, we need to account for a variety of considerations other than those strictly dictated by nomenclatural rules of ICZN. When the information from different scientific traditions or sources of information conflict, as they do with the Puerto Rican Tody, ornithologists face challenging but not insurmountable decisions. The default decision of leaving the Puerto Rican Tody as *T. mexicanus*, strongly favored by ICZN rules, undermines potential Puerto

Rican and Caribbean conservation efforts. (Bird) names matter beyond their taxonomic values, sometimes in unforeseen ways.

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Author Contributions

JGD and FCT initiated the manuscript, and have long persevered with the effort to understand the origins of the Puerto Rican Tody's Latin name misnomer, and to effect a change; TWS wrote first draft and made final edits; JP and AT supported earlier writings that helped provide a foundation for this manuscript, and all authors contributed valuable suggestions throughout this article's many drafts.

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