Mammals collected by Johann Jakob von Tschudi in Peru during 1838-1842 for the *Muséum d'Histoire Naturelle de Neuchâtel*, Switzerland

Mamíferos coletados por Johann Jakob von Tschudi no Peru, durante 1838-1842, para o Museu de História Natural de Neuchâtel, Suíça

José Eduardo Serrano-Villavicencio[I, II] | Tomás Bartoletti[III] | Celia Bueno[IV]

[I]Museu de Zoologia. Universidade de São Paulo. Pós-Graduação em Sistemática, Taxonomia Animal e Biodiversidade. São Paulo, São Paulo, Brasil

[II]Centro de Investigación Biodiversidad Sostenible (BioS). Lima, Perú

[III]Swiss Federal Institute of Technology (ETH) Zürich. Postdoctoral Fellow at the Chair for History of the Modern World. Zürich, Switzerland

[IV]Muséum d'Histoire Naturelle de Neuchâtel. Neuchâtel, Switzerland

Abstract: During his first trip to Latin America (1838-1842), the Swiss naturalist Johann Jakob von Tschudi collected a large series of Peruvian fauna, including birds, reptiles, fish, amphibians, and mammals. On this last group, Tschudi published two pioneering works, "Mammalium conspectus" and "Untersuchungen über die Fauna Peruana", in which he described new species and presented the first systematic lists of the Peruvian fauna. Despite the relevance of Tschudi's work, his lists of mammals have been poorly consulted in contemporary research. In order to rectify and update these lists, we reviewed all of Tschudi's writings on mammals, situating his expedition in its global context. Additionally, we looked and reviewed the material collected by Tschudi, including types, held at the *Muséum d'Histoire Naturelle de Neuchâtel* (Neuchâtel, Switzerland). Of the 119 species listed by Tschudi, approximately 87 are currently recognized as valid. Furthermore, at least 21 type specimens representing 14 of the 24 species described by Tschudi are still held at Neuchâtel's collection. We finally corrected and clarified the date of publication of Tschudi's new species. Tschudi's Peruvian expedition drew international recognition in his days, being a milestone in the history of scientific institutionalization in Switzerland, and remains as a relevant legacy for the study of Peruvian biodiversity.

Keywords: History. Mammalogy. Scientific collections. Travels in Peru. Type material.

Resumo: Durante sua primeira viagem à América Latina (1838-1842), o naturalista suíço Johann Jakob von Tschudi coletou uma grande amostra da fauna peruana, incluindo aves, répteis, peixes, anfíbios e mamíferos. Sobre o último grupo, publicou dois trabalhos pioneiros, "Mammalium conspectus" e "Untersuchungen über die Fauna Peruana", nos quais descreveu novas espécies e apresentou as primeiras listas sistemáticas da fauna peruana. Apesar da relevância destas obras, suas listas de mamíferos foram pouco consultadas por autores modernos. Objetivando retificar e atualizar essas listas, revisamos toda a literatura relacionada aos mamíferos de Tschudi, situando sua expedição em um contexto global. Adicionalmente, examinamos e revisamos o material de Tschudi, incluindo os tipos depositados no *Muséum d'Histoire Naturelle de Neuchâtel* (Neuchâtel, Suíça). Das 119 espécies listadas por Tschudi, aproximadamente 87 são consideradas válidas atualmente. Além disso, pelo menos 21 espécimes-tipo representando 14 das 24 espécies descritas por Tschudi ainda estão depositados na coleção de Neuchâtel. Finalmente, corrigimos e esclarecemos as datas de publicação das novas espécies de Tschudi. A expedição peruana de Tschudi obteve reconhecimento internacional da elite científica em seus dias, sendo um marco na história da institucionalização científica na Suíça e permanece como legado relevante para o estudo da biodiversidade peruana.

Palavras-chave: História. Mastozoologia. Coleções científicas. Viagens no Peru. Material-tipo.

SERRANO-VILLAVICENCIO, J. E., T. BARTOLETTI & C. BUENO, 2020. Mammals collected by Johann Jakob von Tschudi in Peru during 1838-1842 for the *Muséum d'Histoire Naturelle de Neuchâtel*, Switzerland. **Boletim do Museu Paraense Emílio Goeldi. Ciências Naturais** 15(3): 905-931. DOI: http://doi.org/10.46357/bcnaturais.v15i3.249.

Autor para correspondência: José Eduardo Serrano-Villavicencio. Museu de Zoologia. Universidade de São Paulo. Mastozoologia. Programa de Pós-Graduação em Sistemática, Taxonomia Animal e Biodiversidade. Avenida Nazaré, 481 – Ipiranga. São Paulo, SP, Brasil. CEP 04263-000 (serranovillavicencio@gmail.com).

Recebido em 21/12/2019
Aprovado em 12/11/2020
Responsabilidade editorial: Alexandra Maria Ramos Bezerra

INTRODUCTION

The histories of zoological collections assembled in the 19th century tend to be reconstructed from the standpoint of programmatic motivations. Various museums and university institutions needed to expand their inventory with the desire —first of a fixist nature then later evolutionist (Robert *et al.*, 2017; Wilkins, 2018)—to broaden the number of specimens in the Book of Nature (Forgan, 1994; Outram, 1997; Alberti, 2005, 2018). Other communities took an interest in the conservation of local natural heritage (Kohler, 2006). Although this expansion generally occurred in European museums due to their connections with (post) colonial territories, collections also emerged in non-European territories that emulated these 19th century "cathedrals of science" (Sheets-Pyenson, 1988), particularly in Latin America (Horta Duarte, 2013), making it possible to establish fluent exchanges in global scientific networks (*cf*. Gänger, 2017). Extraordinary factors can be identified in these histories, typical of the 19th century and its dynamic global order, including developments in transport and communication, and key political events occurring in African and southern Asian colonies and in the emergent South American independent states (Bayly, 2004; Osterhammel, 2014). Without possessing colonies, Switzerland actively participated in this European expansion by collaborating with transimperial projects of different kinds (Purtschert *et al.*, 2012; Purtschert & Fischer-Tiné, 2015; Eichenberger *et al.*, 2017). This participation was by means of mercenaries and missionaries networks, but also by means of scientific expeditions (Harries, 2007; Zangger, 2011; Kupper & Schär, 2015; Schär, 2015). One paradigmatic case is the collection currently in the *Muséum d'Histoire Naturelle de Neuchâtel*, gathered by Johann Jakob von Tschudi (born in Glarus 1818-died in Wiener Neustadt 1889; see Schazmann, 1956; Kaulicke, 2001) in Peru during 1838-1842, whose fundamental legacy for South American Zoology is the motivation for this article.

The collection of the *Muséum d'Histoire Naturelle de Neuchâtel* originated in a donation from General Charles-Daniel de Meuron, founder of a Swiss mercenary regiment that served first in the Dutch East India Company and later in the British East India Company (Meuron, 1982; Schlup, 1996; Fässler, 2007, p. 133-134, 159-160). During his military campaigns in southern India and Cape Town in the late 18th century, de Meuron collected animals and cultural objects belonging to the natives in the region, thus creating a natural history cabinet and gaining prestige in the Swiss intellectual scene (Kaehr, 2000). The transformation of the cabinet into an actual museum was the responsibility of the de Coulon family, especially Louis, who signed on as director in 1835 (Favre, 1893-1894; *cf*. Schubiger, 2008). The expedition that took Tschudi to further map South American biogeography (Browne, 1983, 1992), a project begun on Alexander von Humboldt's famous voyage, was initially sponsored by the de Grenus banking family of Geneva, who arranged for a ship to sell Swiss products abroad and invited different museums to send scientists on the voyage (Godet, 1901). The professor Louis Agassiz, who had already made an international name for himself for his work with fossil fish (Agassiz, 1833-1843), passed up the trans-Atlantic adventure due to his planned visit to the northern region of the Americas (Lurie, 1960, p. 72-121). He gave his backing to Tschudi, a young naturalist from Glarus no doubt due to his academic record, but also because of his skills 'in the field' (fishing, hunting, riding, taxidermy). Prior to his Peruvian journey, he had already published works on Swiss reptiles (Tschudi, 1837) and the classification of batrachians (Tschudi, 1838). Furthermore, the 'von' in Tschudi's surname refers to the patrician lineage of the Glarus canton that goes back to the first chronicler of the early Swiss Confederation, Aegidius Tschudi. Practical knowledge of hunting was part of the patrician elite's social capital and influenced him throughout his life, as evidenced by the two decades he devoted to editing a hunting manual (Winkell, 1858-1878). Hunting as a practice of the Central European elite may go back as far as the Middle Ages or even Ancient times. Until the mid-19th century (early 19th century in Switzerland) it was a privilege of the nobility

and in the imperial context this practice was passed on to the African and Asian colonies (Thompsell, 2015; Gissibl, 2016), especially stressing their 'scientific' dimension, as MacKenzie (1988, p. 300) described it:

> The true sportsman was a natural historian and a scientist. Killing was in a sense legitimated by his understanding of his quarry, its environment and its anatomy, and his knowledge of firearms and ballistics added an extra scientific dimension. The hunter had become a member of an exclusive club, its rules defined by Western technology and science.

This biographical summary of Tschudi's practical skills aims to indicate what historians of science have emphasized during the last decades: the fundamental role of socio-historic conditions in the production of scientific knowledge. Following these canonical studies, Tschudi's Peruvian collections are a paradigmatic case of the formation of scientific knowledge and Central European elites in the 19th century (Browne, 1995, 2002; Shapin, 2010). That is, both in the cabinet that Meuron collected on his mercenary campaigns and in the scientific education Agassiz gave to the young patrician Tschudi, it is possible to identify the social context of Swiss museums and universities, their colonial ties and the global circulation of knowledge, from Ceylon to Peru, via Neuchâtel. Consequently, the history of zoological collections in general and of the *Muséum d'Histoire Naturelle de Neuchâtel* in particular should be read as a 'social and global' history of science (Chambers & Gillespie, 2000; Roberts, 2009; Sivasundaram, 2010; Habermas & Przyrembel, 2013; Finnegan & Wright, 2015).

The extraordinary circumstances of this expedition were the events that caused the ship l'Edmond to divert its course after crossing the Atlantic Ocean, reaching Peru via the Strait of Magellan. The war between Peru and Chile prevented the free movement of ships, with some temporary exceptions (Godet, 1901, p. 44), with the result that l'Edmond had to set sail from the port of Callao (near Lima, Peru), before Tschudi could finish his research. Consequently, Tschudi stayed four years longer than expected in Peru, but also had time to accumulate a monumental collection of over 665 specimens. The diversity of the specimens is not only associated with their variety, but also the regions he travelled across. Tschudi's journeys covered the coast and the Andes to the pre-Amazon jungle. In "Untersuchungen über die Fauna Peruana" (Tschudi, 1844b, 1845) and "Peru: Reiseskizzen, 1838–1842" (Tschudi, 1846), the locations are clarified with some approximation, be it the surroundings of Lima, the Quebrada de Huaytara, the Huascacocha lagoon, the Cerro Pasco, the Chanchamayo River, or the Monte San Carlos de Vitoc. Tschudi's expedition and the unexpected abandonment by l'Edmond had logistical consequences that he details in his books and some correspondence. Among the descriptions of the social life in Lima and impressions of Inca antiquities, he recounts how he worked as a doctor to cover his costs and an accident with his mule in which he lost a large part of his instruments and notes from the first years. However, the true difficulties and needs of Tschudi's scientific expedition can be read in the letters that he sent home from Peru[1]. Particularly, letters from 1839 addressed to his friend Alfred Escher and Louis de Coulon from the foothills of Montaña de Vitoc show successive requests for money, weapons, gunpowder, dissection instruments, and several artifacts to trade with the locals. He also outlines the logistics and number of specimens he had sent so far. The requested money was not only for his subsistence, but also that of the Prussian sailor Eduard Klee, who accompanied Tschudi during his travels in order to hunt animals for the collection (Tschudi, 1846, II, p. 270-286) (Figure 1). The Grey Tinamou *Tinamus tao kleei* (Tschudi, 1845) (Aves: Tinamidae), originally described as *Crypturus kleei*, was named after him (see Tschudi, 1845, p. 284-286). All these

[1] Some of these letters were published and translated into Spanish in *Boletín de Lima* 117 (Zennibar, 1999). Letters from this period are found in the historical archive of the Museum in Neuchâtel and in the digital edition of Alfred Escher's letters (Alfred Escher-Stiftung, n. d.).

data document the logistical factors in assembling zoological collections in the context of expanding global trade in the 19th century (Coote *et al.*, 2017).

Tschudi did not rely only on his European practice of hunting with scientific ends. Other species, such as camelids, were taken using the traditional Andean method of domestication called *chacu*, herding them into funnel traps (Custred, 1979). Tschudi participated in this way of domesticating camelids and, as he detailed in one of his last publications (Tschudi, 1885), he developed an ethnozoological perspective to explain the Andean attitudes towards the fauna. The vicuñas currently in the Neuchâtel were collected in a *chacu* (Tschudi, 1845, p. 223-238), and are one of the most significant pieces. He had already covered some of this ethnozoological perspective in "Peru: Reiseskizzen, 1838–1842" (Tschudi, 1846, p. 79-112) and in "Untersuchungen über die Fauna Peruana" (Tschudi, 1844b, 1845), a summary of his scientific work in Peru, over 800 pages long and featuring 70 illustrations. Composed on his return in 1843 and after visiting the collections of Paris, Berlin, Munich, and Vienna, "Untersuchungen über die Fauna Peruana" is the first systematic study of the Peruvian fauna associated with his geognostic understanding, a focus typical of "Humboldtian Science" (Nicolson, 1987; Böhme, 1999). In it we can see the contemporary state of zoology in the mid-19th century and also identify a certain culturalist perspective, as Tschudi explains domestic uses of the animals and different local hunting forms. "Untersuchungen über die Fauna Peruana" was explicitly dedicated to Alexander von Humboldt, whom Tschudi met in Berlin in 1844, and who provided Tschudi with sketches of illustrations from his first journey. The famous London ornithologist John Gould would also remark on the birds collected by Tschudi, one of the Neuchâtel museum's most valuable collections. With the interest of broadening the late Joseph Blumenbach's renowned collection, Rudolf Wagner wrote to Tschudi from Göttingen about the mummies and skulls he brought back from Peruvian *huacas* (see Rivero y Ustáriz & Tschudi, 1851, p. 22-37). It can be said then

Figure 1. Refuge inhabited by J. J. von Tschudi and Eduard Klee during their stay in the Montaña de Vitoc, Peru (Tschudi, 1846, p. 279).

that Tschudi and his South American journey along with his extensive "Fauna Peruana" and the zoological collection connected to it drew international recognition in his day from the scientific elite. Tschudi's laborious expedition retains to this day a relevant legacy in the *Muséum d'Histoire Naturelle de Neuchâtel* for the study of Peruvian biodiversity in the mid-19th century.

As part of a collective multi-local and interdisciplinary work, this research seeks to reconstruct the historical and epistemological material collected by Tschudi during his first travel to Peru (1838-1842) for the *Muséum d'Histoire Naturelle de Neuchâtel* (MHNN, Switzerland). For this purpose, we reassembled the historical material from the archives and publications together with the mammal collection. We also updated the taxonomy of Tschudi's (1844a, 1844b, 1845) lists by contrasting his original descriptions and illustrations with the material store at the MHNN collected by this author and with recent literature. This represents a first step towards the complete reassembly of the materials in the *Muséum d'Histoire Naturelle de Neuchâtel* linked to Tschudi's expedition in a context of global formation of natural history collections during the 19th century.

MATERIALS AND METHODS

In order to update and reinterprate the lists given by Tschudi in his "Mammalium conspectus" (Tschudi, 1844a) and "Untersuchungen über die Fauna Peruana" (Tschudi, 1844b, 1845, hereafter "Fauna Peruana"), we reviewed the material collected by Tschudi in Peru, which is held in the *Muséum d'Histoire Naturelle de Neuchâtel* (hereafter MHNN). Additionally, we reviewed Tschudi's publications and accounts regarding mammals and compared them with historical and recent literature of Peruvian mammals. The taxonomic arrangement of Primates follows Schneider & Sampaio (2015) and Garbino & Martins-Junior (2017) for genera and families, and Mittermeier *et al.* (2013) for species with some modifications. We followed Hershkovitz's (1987a) taxonomic arrangement of *Pithecia* Desmarest, 1804. The new genera of titi monkeys proposed by Byrne *et al.* (2016), *Cheracebus* and *Plecturocebus*, are here treated as subgenera following Serrano-Villavicencio *et al.* (2017), Gutiérrez & Marinho-Filho (2017), Garbino & Aquino (2018), and Brandão *et al.* (2019). In the same way, we recognize all capuchin monkeys as *Cebus*, with the subgenera *Cebus* Erxleben, 1777 (gracile species) and *Sapajus* Kerr, 1792 (robust species), following Feijó & Langguth (2013), Garbino (2015), Gutiérrez & Marinho-Filho (2017), and Teta *et al.* (2018); we followed Hershkovitz's (1949) arrangement for gracile capuchin species. The taxonomy of Didelphimorphia, Pilosa, Cingulata, and Chiroptera follows authors in Gardner (2008 [2007]), with the update of Miranda *et al.* (2017) for the silky anteaters (*Cyclopes*). The taxonomy of Rodentia follows authors in Patton *et al.* (2015), and Carnivora and Artiodactyla following Wozencraft (2005) and Grubb (2005), respectively, and Acosta, L. *et al.* (2020) for Tayassuidae.

RESULTS AND DISCUSSION

TSCHUDI'S COLLECTION AT THE *MUSÉUM D'HISTOIRE NATURELLE DE NEUCHÂTEL*

Over 665 specimens collected by Tschudi are preserved at the MHNN. His contributions not only cover birds (407 specimens), reptiles (116), and mammals (93), but also amphibians (46), bony fishes (two), and at least one mollusk. This collection includes over 200 type specimens, mostly of birds. The 93 mammals include 21 type specimens covering 14 species described by Tschudi. Six type specimens were reviewed by specialists: holotype of *Rhipidomys leucodactylus* (MHNN-94.2043F) by Christopher J. Tribe in 1990, Syntypes of *Phyllostoma erythromos* (MHNN-94.2539), *Phyllostoma oporaphilum* (MHNN-94.2540 and MHNN-94.2540A) by Timothy J. McCarthy in 1989, and the lectotypes of *Oligoryzomys destructor* (MHNN 94.2043A) and *Oligoryzomys melanostoma* (MHNN-94.2043B) (Gyldenstolpe, 1932; Serrano-Villavicencio, 2019).

Type specimens for another eight mammal species might be mislabeled and still remain to be located upon further revision of the Tschudi's collection at the MHNN. These unlocated type specimens belong to the following species: *Glossophaga* (*Choeronycteris*) *peruana*, *Ursus frugilegus*, *Nasua leucorhynchos*, *N. vittata*, *Mustela agilis*, *Lutra montana*, *Didelphys* (*sic*) *impavida*, *Molossus anonymus*. The two remaining species described by Tschudi, *Phyllostoma innominatum* and *Glossophaga* (*Choeronycteris*) *mexicana* have their type specimens inexistent, lost, or deposited elsewhere outside the MHNN. The available material collected by Tschudi can be found at the MHNN's online database (MHNN, n. d.).

PUBLICATION DATES OF THE MAMMAL SPECIES DESCRIBED BY TSCHUDI

There has been a persistent confusion about the year of authorship of some mammals described by Tschudi. This confusion was mainly caused by three factors: (1) the publication of Tschudi's "Mammalium conspectus" (Tschudi, 1844a) dated December 1843 but published in 1844, which included the names of the new species later described by him; (2) the list of species presented at the beginning of Tschudi's "Fauna Peruana" (Tschudi, 1844b, p. 6-20) also containing the names of his new species without descriptions; and (3) the different years in which the sections of the "Fauna

Peruana" were published, although the section of mammals is dated 1844 in the cover. Tribe (2015, p. 586) gave an accurate explanation in order to solve the problems concerning the availability of Tschudi's new names. In agreement with Tribe (2015), the names that appeared in Tschudi's (1844a) "Mammalium conspectus" and in "Fauna Peruana"'s lists represent *nomina nuda* since they do not present a proper definition nor description as dictated by Article 12 of the International Code of Zoological Nomenclature (ICZN).

Point (3) is harder to ascertain. Tribe (2015) argued that Sherborn (1922, p. cxxiv) would arrange this confusion surrounding the dates of the "Fauna Peruana"'s sections. This is in part accurate. C. D. Sherborn allowed B. B. Woodward to use his ongoing manuscripts into the "Catalogue of the Books, Manuscripts, Maps and Drawings: In the British Museum (Natural History)" (see British Museum, 1903, p. viii). The information regarding Tschudi's publications given by Sherborn was first published in British Museum (1915, p. 2147). Sherborn's amendments were based on data published in Lorenz Oken's journal Isis. According to Oken (1844, 1845, 1846, 1847), Tschudi's "Fauna Peruana" was published between 1844 and 1846 in 12 parts as follows: Mammals (Therologie) (1) pp. 1-20, 1844; (2) pp. 21-76, 1844; (3) pp. 77-132, 1845; (4) pp. 133-188, 1845; (5) pp. 189-244, 1845; (6) pp. 245-262 and Birds (Ornithologie), pp. 1-32, 1846; (7-12) and end of Birds, Reptiles (Herpetologie), pp. 1-80 and Fish (Ichthyologie), pp. 1-35, 1846.

According to Oken (1845, p. 875), the species of mammals Tschudi described in 1844 were *Phyllostoma erythromos*, *Phyllostoma oporaphilum*, *Phyllostoma innominatum*, *Glossophaga* (*Choeronycteris*) *peruana*, and *Glossophaga* (*Choeronycteris*) *mexicana*, whereas Tschudi described the following species in 1845: *Molossus naso*, *Molossus anonymus*, *Molossus myosuros*, *Ursus frugilegus*, *Nasua leucorhynchos*, *Nasua vittata*, *Nasua montana*, *Mustela agilis*, *Lutra montana*, *Otaria ulloae*, *Didelphys* (*sic*) *ornata*, *Didelphys* (*sic*) *noctivaga*, *Didelphys* (*sic*) *impavida*, *Drymomys parvulus*, *Hesperomys destructor*, *Hesperomys melanostoma*, *Hesperomys leucodactylus*, *Sphingurus bicolor*, and *Dasyprocta variegata* (see Oken, 1845, p. 935; 1846, p. 312; 1847, p. 880). Likewise, the 18 plates of mammals presented by Tschudi in "Fauna Peruana" were also published on different dates as indicated by Oken. Plates 1-12 were published in 1844 (see Oken, 1844, p. 938; 1845, p. 875), whereas plates 13-18 appeared in 1845 (see Oken, 1847, p. 880)

Although this publication issue has been explained and corrected by several authors (see Sherborn, 1922; Patton & Emmons, 2015; Tribe, 2015), this confusion still persists. One example of this confusion is Pacheco *et al.* (2009, p. 20), who listed *Marmosops impavidus* and *M. noctivagus* as authored by Tschudi, 1845 and Tschudi, 1844, respectively. However, both species were described in the same section (Therologie, section 4 according to Oken), hence are attributable to Tschudi, 1845. As a recent example, we present the case of *Oligoryzomys destructor* and *O. melanostoma.* Since both species were properly described on page 182 of "Fauna Peruana" and, as in the previous example, their correct publication date is Tschudi, 1845. Nonetheless, *Oligoryzomys destructor* and *O. melanostoma* have been recently assessed and the names have been mistakenly attributed to Tschudi, 1844 (see Weksler & Bonvicino, 2015; Hurtado & D'Elía, 2019; Serrano-Villavicencio, 2019).

MAMMALS OF PERU ACCORDING TO TSCHUDI

Tschudi presented the first lists of Peruvian mammals in his (1) "Mammalium conspectus" (Tschudi, 1844a) and (2) "Fauna Peruana" (Tschudi, 1844b). In (1), 119 species of mammals were listed; although Tschudi's new species were not properly described. On the other hand, in (2) the list was reduced to 109 mammal species. In addition to the disparity in number of species, there are other differences between these two works. For instance, *Molossus longimanus* (Wagner, 1843) was considered as a species in (1) but as a synonym of *M. ferox* Poeppig, 1832 in (2). *Lagidium pallipes* Bennett, 1835 appeared only in (2); in (1) *Myrmecophaga* Linnaeus, 1758 has two species: *M. tetradactyla* Linnaeus, 1758 and *M. didactyla* Linnaeus, 1758

whereas in (2) the two species are *M. tamandua* Cuvier, 1798 and *M. didactyla*.

Besides the differences among the lists published by Tschudi in "Mammalium conspectus" and "Fauna Peruana", there are also discrepancies related to the number of species presented in the list and in the body of the latter work. Some of these discrepancies are: *Glossophaga* (*Choeronycteris*) *mexicana* Tschudi, 1845 appears in the body but not in the list. In the list, there are only two species of the genus *Nasua* Storr, 1780, *N. socialis* Wied, 1826 and *N. montana* Tschudi, 1845; nonetheless, in the body are listed five species: *N. socialis*, *N. solitaria* Schinz, 1821, *N. leucorhynchos* Tschudi, 1845, *N. vittata* Tschudi, 1845, and *N. montana*. In the list, four species of *Canis* appear: *C. familiaris* Linnaeus, 1758, *C. caraibicus* (*sic*) Lesson, 1827, *C. ingae* Tschudi, 1845, and *C. azarae* Wied, 1824; however, in the body only the last species is listed. The genus *Myopotamus* É. Geoffroy Saint-Hilaire, 1805 is in the list but it was removed from the body due to uncertainty regarding its presence in Peru. The genera *Equus* Linnaeus, 1758, *Sus* Linnaeus, 1758, *Bos* Linnaeus, 1758, *Capra* Linnaeus, 1758, and *Ovis* Linnaeus, 1758 are only in the list, not in the body.

Tschudi (1844b) separated wild and native species from the introduced or domestic ones, describing them in the section "Über die Haussäugethiere in Peru" (= about the domestic animals in Peru). In this section, the author described species of domestic dogs as *Canis caraibicus* (*sic*) (Peruvian hairless dog) or *Canis ingae* (mongrel dog from the Andes). Other animals described in this section are the domestic cat, *Felis silvestris catus* Linnaeus, 1758; the *cuy* or guinea pig, *Cavia porcellus* Blumenbach, 1779, which Tschudi wrote was widely consumed in the Andes; pigs, *Sus scrofa domesticus* Linnaeus, 1758; cattle, *Bos taurus* Linnaeus, 1758; sheep, *Ovis orientalis aries* Linnaeus, 1758; goats, *Capra aegagrus hircus* Linnaeus, 1758; llamas, *Lama glama* Linnaeus, 1758; and alpacas, *Vicugna pacos* (Linnaeus, 1758).

Regarding cetaceans, Tschudi (1844a, 1844b) noted the difficulty of elaborating a detailed list of these mammals due to the lack of material. Tentatively, Tschudi listed *Manatus americanus* (= *Trichechus manatus* Linnaeus, 1758), *Catodon macrocephalus* (= *Physeter catodon* Linnaeus, 1758), *Balaena mysticeta* (*sic*) (= *Balaena mysticetus* Linnaeus, 1758) and *B. lunulata* [= *Eubalaena japonica* (Lacepède, 1818)], and *Balaenoptera punctata* (= *Balaenoptera* sp.). In addition to this list, Tschudi (1844b, p. 20) gives a brief account about a beached whale (*Balaenoptera* sp.) of approximately 17 meters on the coast of Miraflores (Lima) in January 1839. Although Tschudi thought that this individual may represent a new species of *Balaenoptera*, he stated that there was no comparative material and never described it as such.

In addition to the above mentioned accounts of mammals presented by Tschudi, there are numerous illustrations that he published in "Fauna Peruana". They represent relevant visual evidence for our collation with the existing collection in MHNN, as well as the media through which the naturalists were circulating and exchanging their knowledge (Heßler, 2006; Mersch, 2006). Those illustrations published by Tschudi followed the trend of his time. Animal illustrations did not have a single process of creation and each particular case should be analyzed separately. What can be assured is that scientific illustrations had different stages as sketches in the field, comparison with specimens from other collections, comparison with other illustrations and/or sketches made by other naturalists, and precisely the illustration from the taxidermied specimen itself (Wittmann, 2008). Moreover, some authors replicated original illustrations and published them with lesser quality and details. For instance, Reichenbach (1862, Plate IV, V) presented plates of several Neotropical primates copied from other authors, between them, we found replicas of Spix's (1823) *Pithecia inusta* and *P. capillamentosa* or I. Geoffroy Saint-Hilaire & Deville's (1848) *Callicebus discolor* original illustrations. A paradigmatic case is that of Tschudi's *Otaria ulloae*, which was based both on the specimen he sent from Peru to Neuchâtel and on a sketch that Alexander von Humboldt gave as a present to him in 1844 (Bayerl, 2017).

The lists of Peruvian mammals presented by Tschudi (1844a, 1844b) were analyzed and interpreted by Hershkovitz (1987b). This latter author identified 119 species

in 48 genera, including some duplicated names of native species and others not known to occur in Peru. Hershkovitz (1987b, p. 68, table 9) presented a list with the names given by Tschudi and the current names of each species at that time. After reviewing Tschudi's accounts, we believe that, although Tschudi misapplied some scientific names, he was actually referring to mammals that occur in Peru. The descriptions of some species listed by Tschudi were based on communications with natives and local hunters (as probably in the case of *Ursus frugilegus*) or literature available at that time (e.g. *Mycetes flavicaudatus* based on Humboldt's *Simia flavicauda*). In Table 1, we present an updated list of the Peruvian mammals recorded by Tschudi. The identification of some species remains as tentative due to the lack of details in Tschudi's accounts. Our list follows the order established by Tschudi in "Fauna Peruana".

PHOTOGRAPHIC RECORDS OF TSCHUDI'S TYPE MATERIAL

Although the material collected by Tschudi has been mentioned by some authors (see Thomas, 1908, 1927; Gyldenstolpe, 1932; Hershkovitz, 1987b), its plates have appeared in few works. Hershkovitz (1987b, p. 66) reproduced Tschudi's plates of *Auchenia vicunia*, *Didelphys* (*sic*) *ornata*, *Dasyprocta variegata*, and *Nasua montana*. Similarly, Zennibar (1999, p. 57) presented Tschudi's plate of *Cervus antisiensis* (= *Hippocamelus antisensis*) accompanied by a photo of the specimen in Neuchâtel, MHNN-94.1588A. Velazco & Cornejo (2014) also presented Tschudi's plate of *Dasyprocta variegata*. Finally, Serrano-Villavicencio (2019) presented the lectotypes of *Hesperomys destructor* (MHNN-94.2043A) and *H. melanostoma* (MHNN-94.2043A), held at the MHNN. For this reason, we found relevant and necessary to present the first photographic catalog of the type material collected by Tschudi in Peru. We expect that this catalog will be useful for future assessments of the Peruvian mammal fauna. When possible, we present the photograph of the specimen alongside the plates published by Tschudi (1844-1845) (Figures 2-14).

CONCLUSION

As part of interdisciplinary research, we demonstrate the novel relevance of natural history museums in reconstructing the species richness and uniqueness of Peruvian mammals. In this sense, natural history museums can be considered as 'archives of biodiversity'. Research in 'archives of biodiversity' implies an understanding of the collections as natural, social and historical assemblages, which necessarily includes an insight into the biographical and social aspects of the collector (Johann Jakob von Tschudi) and the institution (*Muséum d'Histoire Naturelle de Neuchâtel*). This interdisciplinary engagement between the natural and social sciences in natural history museums therefore provides convincing arguments against their dispersal or deactivation and in favour of their conservation and improved accessibility for researchers.

The legacy of Johann Jakob von Tschudi has been investigated only on the surface. His more complete work regarding the Peruvian fauna, "Fauna Peruana", is full of details and valuable information that has not been properly dissected nor used. Nonetheless, his contributions could and should be considered as the starting point of the scientific study on the Peruvian mammals (Velazco & Cornejo, 2014). Tschudi's works were the first attempt to make a systematized compendium of Peruvian mammals, for which he reviewed not only European literature but also had the merit of worrying about understanding the Peruvian fauna in a regional context. This concern is evidenced in the colonial literature he cited as José de la Acosta's (1590) "Historia natural y moral de las Indias", or even Inca Garcilaso de la Vega's (1609) "Los comentarios reales de los incas", a fact rarely seen before. Tschudi's impetus for integrating the fauna with its natural history could only be realized because of his commitment to the Peruvian culture. Tschudi did not only study the Peruvian fauna, but also engaged in indigenous and local management with animals, which provides a relevant source for further ethnozoological research.

Table 1. Peruvian mammals according to J. J. von Tschudi. Current scientific names were inferred from Tschudi's (1844a, 1844b, 1845) descriptions; when relevant, we provide comments for some species. In the case of type material, its corresponding museum information is provided. '?' represents uncertainty on identification due to lack of detailed information.

(Continue)

Order/Current name	Name in Tschudi's list	Comments
Primates		
Ateles belzebuth É. Geoffroy Saint-Hilaire, 1806	*Ateles marginatus* É. Geoffroy Saint-Hilaire, 1809	*Ateles marginatus* is endemic to Brazil (Rylands *et al*., 2013b). Tschudi described this spider monkey as having a white part in the front of the head and white belly. In Peru the only species of *Ateles* presenting these characters is *A. belzebuth.*
Ateles chamek (Humboldt, 1812)	*Ateles ater* F. Cuvier, 1823	*Ateles ater* and *A. pentadactylus* are currently considered as junior synonyms of *A. paniscus.* Hill (1962) considered *A. chamek* as subspecies *of A. paniscus.* Due to the morphological similarity of these two species and because *A. paniscus* does not occur in Peru, we consider that Tschudi referred to *A. chamek.*
	Ateles paniscus (Linnaeus, 1758)	
	Ateles pentadactylus É. Geoffroy Saint-Hilaire, 1806	
Lagothrix lagothricha poeppigii Schinz, 1844	*Lagothrix humboldtii* É. Geoffroy Saint-Hilaire, 1812	According to Fooden (1963), *Lagothrix humboldtii* is a synonym of *Lagothrix lagothricha lagothricha*, *L. l. cana*, and *L. l. poeppigii.* Tschudi described a brownish monkey with black head which matches the phenotype of *L. l. poeppigii.*
Lagothrix lagothricha cana (É. Geoffroy Saint-Hilaire, 1812)	*Lagothrix canus* (É. Geoffroy Saint-Hilaire in Humboldt, 1812)	
Alouatta seniculus (Linnaeus, 1766)	*Mycetes stramineus* (É. Geoffroy Saint-Hilaire in Humboldt, 1812)	According to Gregorin (2006), *Mycetes stramineus* is a current synonym of two species of *Alouatta: A. caraya* and *A. macconnelli.* Tschudi (1844b, p. 39) stated that he saw a live specimen of *M. stramineus* in captivity that was captured in the woods east of Moyobamba (San Martín, Peru). He also affirmed that another species of *Mycetes* inhabited further south, *M. rufimanus*. Pacheco *et al.* (2020) listed two species of reddish howler monkeys, *A. seniculus,* inhabiting northeastern Peru and *A. sara* in the southeastern, which agrees with Tschudi's statement. For these reasons, *A. seniculus* is the most suitable option.
Alouatta sara Elliot, 1910	*Mycetes rufimanus* Kuhl, 1820	*Mycetes rufimanus* is a current synonym of *Alouatta belzebul* (Gregorin, 2006). *Alouatta sara* matches the description and the coordinates given by Tschudi.
Lagothrix flavicauda (Humboldt, 1812)	*Mycetes flavicaudatus* (Humboldt, 1812)	Based on Humboldt's (1812) *Simia flavicauda.* It is highly probable that Tschudi never saw individuals of this species.
Cebus (*Sapajus*) *apella* (Linnaeus, 1758)	*Cebus robustus* Kuhl, 1820	This is a species which does not occur in Peru only in the Brazilian Atlantic forest (Lynch Alfaro *et al*., 2012; Rylands *et al*., 2013a). It is probable that Tschudi referred to *Cebus apella.*

Table 1. (Continue)

Order/Current name	Name in Tschudi's list	Comments
Cebus (*Cebus*) *albifrons unicolor* Spix, 1823 *Cebus* (*Cebus*) *albifrons yuracus* Hershkovitz, 1949 *Cebus* (*Cebus*) *albifrons cuscinus* Thomas, 1901	*Cebus capucinus* (Linnaeus, 1758)	*Cebus capucinus* inhabits the eastern portion of Panama and the north-western portion of South America, which does not occur in Peru (Lynch Alfaro *et al*., 2012; Rylands *et al*., 2013a). The description given by Tschudi lacks of diagnostic specific characters and matches any of the three subspecies of *Cebus albifrons* proposed by Hershkovitz (1949) for Peru.
Cebus (*Cebus*) *albifrons unicolor* Spix, 1823 *Cebus* (*Cebus*) *albifrons yuracus* Hershkovitz, 1949 *Cebus (Cebus) albifrons cuscinus* Thomas, 1901	*Cebus albifrons* (Humboldt, 1812)	As in the case above, Tschudi's description does not allow us to determine the species he was referring to. *Cebus albifrons unicolor*, *C. a. yuracus*, and *C. a. cuscinus* are equally likely options.
Callicebus (*Plecturocebus*) sp.	*Callithrix personatus* (É. Geoffroy Saint-Hilaire in Humboldt, 1812)	*Callithrix personatus* is a current synonym of *Callicebus (Callicebus) personatus*. This species is endemic to the Brazilian Atlantic Forest (Hershkovitz, 1990). *Callicebus cupreus*, *C. toppini*, or *C. urubambensis* match Tschudi's description.
Callicebus (*Cheracebus*) *torquatus* (Hoffmannsegg, 1807)	*Callithrix amictus* É. Geoffroy Saint-Hilaire, 1812	
Saimiri boliviensis peruviensis Hershkovitz, 1984	*Chrysothrix sciureus* (Linnaeus, 1758)	
Aotus nigriceps Dollman, 1909	*Nyctipithecus trivirgatus* (Humboldt, 1812)	
Pithecia monachus (É. Geoffroy Saint-Hilaire, 1812)	*Pithecia satanas* (Hoffmannsegg, 1807)	*Pithecia satanas* is a synonym of *Chiropotes satanas*. The genus *Chiropotes* does not occur in Peru (Hershkovitz, 1985). Based on the description and the coordinates given by Tschudi, the recorded species might be *Pithecia monachus.*
Saguinus (*Leontocebus*) *fuscicollis* (Spix, 1823)	*Midas rufimanus* É. Geoffroy Saint-Hilaire, 1812	Although *Midas rufimanus* is a current synonym of *Saguinus midas*, the description given by Tschudi does not match the phenotype of the latter species; he probably mentioned a species of the *S. fuscicollis* group.
Saguinus (*Leontocebus*) *labiatus* (É. Geoffroy Saint-Hilaire, 1812)	*Midas labiatus* É. Geoffroy Saint-Hilaire, 1812	
Callicebus (*Plecturocebus*) *discolor*? (I. Géoffroy Saint-Hilaire & Deville, 1848)	*Midas chrysomelas* (Kuhl, 1820)	Clearly Tschudi did not see a specimen of *Leontopithecus chrysomelas* at that time which is a species endemic to the Brazilian Atlantic Forest (Hershkovitz, 1977; Rylands *et al*., 1993). From the characters given, it is probable that he referred to *C. discolor*.
Chiroptera		
Phyllostomus elongatus (É. Geoffroy Saint-Hilaire, 1810)	*Phyllostoma* (*Phyllostoma*) *elongatum* É. Geoffroy Saint-Hilaire, 1810	
Phyllostomus hastatus (Pallas, 1767)	*Phyllostoma (Phyllostoma) hastatum* (Pallas, 1767)	

Table 1. (Continue)

Order/Current name	Name in Tschudi's list	Comments
Phyllostomus discolor (Wagner, 1843)	*Phyllostoma (Phyllostoma) innominatum* Tschudi, 1844	This species is attributed to Tschudi. Nonetheless, Tschudi did not pretend to describe it as a new taxon. The specific epithet *innominatum* (= nameless) was a provisional name because Tschudi expected that E. F. Poeppig eventually describe it as new, although that never happened. Kwiecinski (2006) and Williams & Genoways (2008 [2007]) recognized *P. innominatum* as synonym of *Phyllostomus discolor.* Type material non-existent. This species was based on the description provided by Poeppig using material collected by himself in Maynas (Loreto, Peru).
Artibeus glaucus Thomas, 1893	*Phyllostoma* (*Artibeus*) *pusillum* Wagner, 1843	*Phyllostoma pusillum* is a synonym of *Vampyressa pusilla*, a species that does not occur in Peru (Arroyo-Cabrales, 2008 [2007]). *Artibeus glaucus* matches Tschudi's description of *P. pusillum* and the collection locality falls within *A. glaucus*'s distribution.
Sturnira erythromos (Tschudi, 1844)	*Phyllostoma (Sturnira) erythromos* Tschudi, 1844	Type material: MHNN-94.2539 here selected as lectotype (Figure 2 this work).
Sturnira oporaphilum (Tschudi, 1844)	*Phyllostoma (Sturnira) oporaphilum* Tschudi, 1844	Type material: syntypes MHNN-94.2540 (Figure 3 this work) and MHNN-94.2540A.
Glossophaga soricina valens? Miller, 1913	*Glossophaga* (*Glossophaga*) *amplexicaudata* (Spix, 1823)	According to Hershkovitz (1987b), Tschudi referred to *Glossophaga soricina* when listed *G. amplexicaudata.* Griffiths & Gardner (2008 [2007]) recognized three subspecies of *G. soricina: G. s. mutica, G. s. soricina*, and *G. s. valens.* According to these authors, only the latter inhabits Peru. We could not confirm this identification due to lack of material collected by Tschudi.
Anoura peruana (Tschudi, 1844)	*Glossophaga* (*Choeronycteris*) *peruana* Tschudi, 1844	Griffiths & Gardner (2008 [2007]) proposed this Tschudi's species as subspecies of *Anoura geoffroyi*, *A. g. peruana.* Mantilla-Meluk & Baker (2010), based on morphological and ecological evidence, elevated it to the species level. This species was named as *Choeronycteris peruanus* (not *peruana*) in its plate (see Tschudi, 1844b, Plate 3, figures 1 and 2). Type material: not yet located.
Choeronycteris mexicana (Tschudi, 1844)	*Glossophaga* (*Choeronycteris*) *mexicana* Tschudi, 1844	It seems that Tschudi included this species after reviewing material coming from Mexico housed at the "Museum von Berlin". Although Tschudi described its morphology, he did not provide further information of this species or if would inhabit Peru. We do not know the reasons why Tschudi included this species in his works of Peruvian fauna. This species was named as *Choeronycteris mexicanus* (not *mexicana*) in its plate (see Tschudi, 1844b, Plate 3, figure 3) Type material was not deposited at the MHNN and we do not know about its current existence.
Eptesicus innoxius (Gervais, 1841)	*Vespertilio* (*Vesperus*) *innoxius* Gervais, 1841	

Table 1. (Continue)

Order/Current name	Name in Tschudi's list	Comments
Histiotus velatus (I. Geoffroy Saint-Hilaire, 1824)	*Vespertilio* (*Vesperugo*) *velatus* (I. Geoffroy Saint-Hilaire, 1824)	
Noctilio leporinus leporinus (Linnaeus, 1758)	*Noctilio unicolor* Desmarest, 1818	
Noctilio albiventris albiventris Desmarest, 1818	*Noctilio affinis* d'Orbigny, 1837	
Tadarida brasiliensis brasiliensis (I. Geoffroy Saint-Hilaire, 1824)	*Molossus naso* Tschudi, 1845	Type material: syntype MHNN-94.2547 (Figure 4 this work)
Molossus molossus crassicaudatus É. Geoffroy Saint-Hilaire, 1805	*Molossus velox* (Temminck, 1826)	Gray (1843) considered *Molossus velox* a valid species with *Dysopes velox* as synonym. We follow Eger (2008 [2007]) which considered *Dysopes velox* as junior synonym of *Molossus molossus crassicaudatus.* The description given by Tschudi also matches this species.
Molossus sp.	*Molossus fumarius* Spix, 1823	*Molossus fumarius* is a current synonym of *Promops nasutus*, species which does not occur in Peru (Eger, 2008 [2007]). Due to the vague description of both species given by Tschudi, we could not identify which species this author was referring to.
	Molossus anonymus Tschudi, 1845	
Eumops glaucinus (Wagner, 1843)	*Molossus ferox* Poeppig, 1832	There are some inaccuracies regarding the authorship of *Molossus ferox*. Best *et al.* (1997) and Eger (2008 [2007]) attributed this species to Gundlach in W. Peters (1861, p. 149) with type locality "Cuba". Nonetheless, this species was originally described by Poeppig (1832, p. 230) based on bats he saw in Peru. Tschudi stated that he based his *M. ferox*'s description on the original work of E. F. Poeppig. It is probable that *ferox* has priority over *glaucinus*, a revision is needed.
Molossus rufus É. Geoffroy Saint-Hilaire, 1805	*Molossus myosuros* Tschudi, 1845	Type material: syntype MHNN-94.1203 (Figure 5 this work).
Carnivora		
Tremarctos ornatus (Cuvier, 1825)	*Ursus ornatus* Cuvier, 1825	
	Ursus frugilegus Tschudi, 1845	There is no reference of any material collected by Tschudi of *U. frugilegus*. He only stated that, due to the climate, preserving skins of this species was a difficult task. It is most likely that Tschudi's description of *U. frugilegus* was based on information provided by natives. Type material: not yet located.
Nasua nasua montana Tschudi, 1845	*Nasua socialis* Wied-Neuwied, 1826	
	Nasua solitaria Schinz, 1821	
	Nasua leucorhynchos Tschudi, 1845	Type material: not yet located.
	Nasua montana Tschudi, 1845	Gompper & Decker (1998) recognized *Nasua nasua montana* as a valid subspecies with *Nasua monticola* Schinz, 1844 as synonym. Nonetheless, these authors claimed that the specific epithet *monticola* may have priority over *montana*. A taxonomic reassessment of the current recognized subspecies is needed. Type material: holotype MHNN-94.1383A by monotypy (Figure 6 this work).

Table 1. (Continue)

Order/Current name	Name in Tschudi's list	Comments
Nasua nasua vittata Tschudi, 1845	*Nasua vittata* Tschudi, 1845	Type material: not yet located.
Potos flavus (Schreber, 1774)	*Cercoleptes caudivolvulus* (Pallas in Schreber, 1777)	Tschudi (1845, p. 106) stated that natives from the "Montana von Uchubamba" brought to him a specimen in bad condition. The skin had a blackish shade in the back and brown-reddish belly. The specimen would have been collected in the "Montana von Moyobamba", where this animal was said to be common. *Potos flavus* in Peru and throughout its distribution need taxonomic reassessment, subspecies limits are unknown (Ford & Hoffmann, 1988).
Eira barbara (Linnaeus, 1758)	*Galictis barbara* (Linnaeus, 1758)	
Mustela frenata agilis Tschudi, 1845	*Mustela agilis* Tschudi, 1845	Type material not yet located.
Conepatus sp.	*Mephitis mapurito* Lesson, 1827	
	Mephitis furcata Wagner in Schreber, 1840	
	Mephitis amazonica Lichtenstein, 1836	
Lontra felina (Molina, 1782)	*Lutra chilensis* Bennett, 1832	
Lontra longicaudis (Olfers, 1818)	*Lutra montana* Tschudi, 1845	According to Thomas (1908, p. 393) and Cabrera (1958, p. 273) *Lutra montana* is an undetermined species. Both authors agreed that *L. montana*'s description could have been based on an *Eira barbara* specimen. We disagree. Tschudi clearly stated that *L. montana* was a freshwater otter whereas *Lutra chilensis* was a sea otter. Additionally, Tschudi reported *Eira barbara* as a completely different species. Here we propose that this author recorded a dark variation of *Lontra longicaudis*. Type material not yet located.
Lycalopex culpaeus andinus (Thomas, 1914)	*Canis azarae* Wied-Neuwied, 1824	*Canis azarae* is a current synonym of *Cerdocyon thous azarae*, species that does not occur in Peru (Wozencraft, 2005). The description given by Tschudi matches that of the Andean fox, *Lycalopex culpaeus andinus*.
Puma concolor (Linnaeus, 1771)	*Felis concolor* Linnaeus, 1771	
Panthera onca (Linnaeus, 1758)	*Felis onza* Linnaeus, 1758	
Leopardus wiedii (Schinz, 1821)	*Felis macrura* (*sic* = *Felis macroura*) Wied-Neuwied, 1822	
	Felis celidogaster Temminck, 1824	
Leopardus pardalis (Linnaeus, 1758)	*Felis pardalis* Linnaeus, 1758	
Puma yagouaroundi (É. Geoffroy Saint-Hilaire, 1803)	*Felis yaguarundi* (É. Geoffroy Saint-Hilaire, 1803)	
Otaria flavescens (Shaw, 1800)	*Otaria jubata* (Schreber, 1776)	
	Otaria ulloae Tschudi, 1845	Type material: syntypes MHNN-94.1513 (Figure 7 this work) and MHNN-94.1514.

Table 1. (Continue)

Order/Current name	Name in Tschudi's list	Comments
Otaria flavescens (Shaw, 1800)	*Otaria aurita* Humboldt in Tschudi, 1845	
Didelphimorphia		
Didelphis pernigra Allen, 1900	*Didelphys* (*sic*) *azarae* Temminck, 1824	Tschudi (1845, p. 144) informed that this species was known as "Muca" or "Mucamuca" on the coast of Peru, whereas in the Andes as "*Jarachupa*" (hairless tail, in Quechua). He also stated that *Didelphis azarae* had a very wide distribution area, occuring in all regions of Peru, but especially in the western part of the Andes. According to Cerqueira & Tribe (2008 [2007]), *D. azarae* is a synonym of three species: *D. albiventris*, *D. aurita*, and *D. pernigra*. Due to its morphology and distribution, *D. pernigra* is the most suitable option.
Philander canus (Osgood, 1913)	*Didelphys* (*sic*) *opossum* Linnaeus, 1758	Voss *et al.* (2018) reassessed the taxonomy of *Philander.* These authors proposed that two species of *Philander* would occur in Peru, the revalidated *P. canus* and the new species *P. pebas.* The distribution of *P. canus* proposed by these authors agrees with *D. opossum*'s distribution informed by Tschudi.
Metachirus myosuros (Temminck, 1824)	*Didelphys* (*sic*) *myosuros* Temminck, 1824	Hershkovitz (1959, 1976, 1997) claimed that *Didelphis myosuros* was a synonym of *Philander opossum.* On the other hand, Patton & da Silva (2008 [2007]) located *D. myosuros* into the synonymy of *Metachirus nudicaudatus.* Recently, Voss *et al.* (2019), using morphological and molecular data, recognized *Metachirus myosuros* as a valid species and distinct from *M. nudicaudatus.*
Marmosa murina (Linnaeus, 1758)	*Didelphys* (*sic*) *murina* Linnaeus, 1758	
Caluromys lanatus ornatus (Tschudi, 1845)	*Didelphys* (*sic*) *ornata* Tschudi, 1845	Type material: holotype MHNN-94.1008D by monotypy (Figure 8 this work).
Marmosops noctivagus (Tschudi, 1845)	*Didelphys* (*sic*) *noctivaga* Tschudi, 1845	Gardner & Creighton (2008 [2007]) treated *Marmosops noctivagus* as monotypic, arguing that a taxonomic revision is pending. Type material: syntypes MHNN-94.1008A, MHNN-94.1008B, MHNN-94.1008C (Figure 9 this work).
Marmosops impavidus (Tschudi, 1845)	*Didelphys* (*sic*) *impavida* Tschudi, 1845	Type material not yet located.
Rodentia		
Notosciurus pucheranii (Fitzinger, 1867)	*Sciurus variabilis* I. Geoffroy Saint-Hilaire, 1832	*Sciurus variabilis* is a synonym of several species. Nevertheless, Tschudi gave a detailed description of this species which exactly matches the description of *Notosciurus pucheranii* given by de Vivo & Carmignotto (2015, p. 40).
Hadrosciurus spadiceus tricolor (Tschudi, 1845)	*Sciurus tricolor* Poeppig in Tschudi, 1845	
Guerlinguetus aestuans (Linnaeus, 1766)	*Sciurus aestuans* Linnaeus, 1766	

Table 1. (Continue)

Order/Current name	Name in Tschudi's list	Comments
Simosciurus nebouxii (I. Geoffroy Saint-Hilaire, 1855)	*Sciurus stramineus* Gervais in Vaillant, 1841	Based on the morphological and geographical description given by Tschudi and as the only species occurring in the West of the Andes in northern Peru at Amatope, *Simosciurus nebouxii* is the most suitable species to be chosen (see de Vivo & Carmignotto, 2015, p. 44).
Chinchilla chinchilla (Lichtenstein, 1830)	*Eriomys chinchilla* Lichtenstein, 1830	
Lagidium viscacia (Molina, 1782)	*Lagidium peruvianum* (*sic*) Meyen, 1835	
	Lagidium pallipes Bennett, 1835	
Octodon degus (Molina, 1782)	*Octodon cummingii* (*sic*) Bennett, 1832	Species of the genus *Octodon* are mainly distributed in Chile but also in part of Argentina (Verzi *et al*., 2015). Nonetheless, Tschudi collected one specimen of *Octodon* (MHNN 94.2459A) at the "Quebrada von San Mateo, in der Nähe des Dorfes San Juan de Matucana, etwa 9000' ü. M", Lima, Peru. Thomas (1927, p. 557) stated that this specimen was probably an escaped pet. How the animal reached that locality is unknown.
Proechimys sp.	*Echinomys leptosoma* Wagner in Schreber, 1842	*Echinomys leptosoma* is a current synonym of *Trinomys setosus setosus,* a species that does not occur in Peru (Pessôa *et al.*, 2015). Based on Tschudi's description, this taxon may be a species of *Proechimys*.
Mus musculus Linnaeus, 1758	*Mus musculus* Linnaeus, 1758	
	Mus decumanus Pallas, 1779	
Akodon boliviensis Meyen, 1833	*Acodon* (*sic*) *boliviense* Meyen, 1833	Tschudi (1845, p. 178) wondered why Meyen named this is species "*boliviense*" since the latter never visited Bolivia and its type material was collected in the Chucuito Province (Puno, Peru) (see Myers *et al.*, 1990, p. 49-50).
Mus musculus? Linnaeus, 1758	*Drymomys parvulus* Tschudi, 1845	According to Carleton & Musser (2005) this name would be a synonym of *Mus* (*Mus*) *musculus domesticus*. We could not confirm its identity. Type material: syntype MHNN-94.2043E labeled as *Acodon* (*sic*) *parvulus* (Figure 10 this work).
Phyllotis limatus Thomas, 1912	*Hesperomys* (*Hesperomys*) *darwinii* (Waterhouse, 1837)	*Hesperomys darwinii* is a current synonym of *Phyllotis darwini* but this species does not occur in Peru (Steppan & Ramírez, 2015). Based on the geographical and morphological description given by Tschudi (1845, p. 181), we propose *Phyllotis limatus* as the most likely option.
Oligoryzomys destructor (Tschudi, 1845)	*Hesperomys* (*Hesperomys*) *destructor* Tschudi, 1845	Hurtado & D'Elía (2019), arguing that Tschudi's original material does not longer exist, mistakenly designated neotypes for *H. destructor* and *H. melanostoma* selecting specimens from a locality that Tschudi never visited. This designation was invalidated by Serrano-Villavicencio (2019), who presented evidence against Hurtado & D'Elía's (2019) argument. Type material: lectotype MHNN-94.2043A designated by Serrano-Villavicencio (2019) (Figure 11 this work).

Table 1. (Continue)

Order/Current name	Name in Tschudi's list	Comments
Oligoryzomys melanostoma (Tschudi, 1845)	*Hesperomys* (*Hesperomys*) *melanostoma* Tschudi, 1845	Hurtado & D'Elía (2019) regarded *O. melanostoma* as a synonym of *O. destructor*, but this could be a result of the improper designation of neotypes for the two species. Type material: lectotype MHNN-94.2043B designated by Serrano-Villavicencio (2019) (Figure 11 this work).
Rhipidomys leucodactylus (Tschudi, 1845)	*Hesperomys* (*Rhipidomys*) *leucodactylus* Tschudi, 1845	Tribe (2015, p. 602), based on Tschudi's itinerary, invalidated the "upper Huallaga" restriction of the type locality made by Cabrera (1961, p. 421), stating that the area proposed by this author as type locality was never visited by Tschudi. Tribe (2015) proposed the Montaña de Vitoc area, a region widely sampled by Tschudi, as type locality. Type material: syntypes MHNN-94.2043C, MHNN-94.2043D (Figure 12 this work), and MHNN-94.2043F.
Coendou bicolor (Tschudi, 1845)	*Sphingurus bicolor* Tschudi, 1845	Tschudi (1845) stated that the specimen that he sent to Neuchâtel was a female individual collected by a native in the jungle between the Tullumayo and Chanchamayo rivers. He also stated that the specimen was used to describe and illustrate this species (see Tschudi, 1845, Plate XV). Type material: holotype MHNN-94.2432A by monotypy (Figure 13 this work).
Myoprocta pratti Pocock, 1913	*Dasyprocta aguti* Linnaeus, 1766	*Dasyprocta aguti* is a current synonym of *D. leporina*, a species not present in Peru (Patton & Emmons, 2015). The description given by Tschudi matches that of *Myoprocta pratti*.
Dasyprocta variegata Tschudi, 1845	*Dasyprocta variegata* Tschudi, 1845	Type material: syntypes MHNN-94.2445A and MHNN-94.2445B (Figure 14 this work).
Cuniculus paca (Linnaeus, 1766)	*Coelogenys fulvus* Cuvier, 1807	
Hydrochoerus hydrochaeris (Linnaeus, 1766)	*Hydrochoerus capybara* Erxleben, 1777	
Cavia tschudii tschudii Fitzinger, 1867	*Cavia cuttleri* (*sic*) Bennett, 1836	A misspelling of *Cavia cutleri* Bennet, 1836. Nonetheless, Bennet's *C. cutleri* referred to the domestic form of Guinea pig, *Cavia porcellus* whereas Tschudi to the wild populations.
Sylvilagus brasiliensis (Linnaeus, 1758)	*Lepus brasiliensis* Linnaeus, 1758	Tschudi never saw this species in Peru. He based his description on observations made by E. F. Poeppig in Maynas (Loreto, Peru) and the lower Marañon river.
Pilosa		
Bradypus variegatus Schinz, 1825	*Bradypus infuscatus* Wagler, 1831	
Bradypus torquatus Illiger, 1811	*Bradypus torquatus* Illiger, 1811	Perhaps an incorrect inference based on bibliography and comments of locals.
Tamandua tetradactyla (Linnaeus, 1758)	*Myrmecophaga tetradactyla* Linnaeus, 1758	

Table 1. (Conclusion)

Order/Current name	Name in Tschudi's list	Comments
Cyclopes thomasi? Miranda, Casali, Perini, Machado & Santos, 2017	*Myrmecophaga didactyla* Linnaeus, 1758	Following Miranda *et al.* (2017), *Cyclopes thomasi* occurs in western Amazon, from its northern limit on the Juruá River to the southwest, in the Ucayali River region, in the provinces of Pasco and Ucayali (Peru). Tschudi (1845, p. 209) stated that he saw skins of *M. didactyla* with a longitudinal line on both dorsum and ventrum. According to Miranda *et al.* (2017), *C. thomasi* does not possess these lines and the coloration of this new taxon does not match that of Tschudi's description. This identification remains as tentative.
Cingulata		
Cabassous unicinctus (Linnaeus, 1758)	*Dasypus tatuay* (*sic* = *tatouay*) (Desmarest, 1804)	
Dasypus novemcinctus Linnaeus, 1758	*Dasypus novemcinctus* Linnaeus, 1758	
Artiodactyla		
Tapirus terrestris (Linnaeus, 1758)	*Tapirus americanus* (Gmelin in Linnaeus, 1758)	
Tapirus pinchaque (Roulin, 1829)	*Tapirus villosus* Wagner in Schreber, 1835	
Dicotyles tajacu (Linnaeus, 1758)	*Dicotyles torquatus* Cuvier, 1817	Ramírez-Pulido *et al.* (2014) and Acosta, L. *et al.* (2020) showed that *Dicotyles* Cuvier, 1817 is the oldest available generic name for the collared peccary, with *Pecari* Reichenbach, 1835 as a junior synonym.
Tayassu pecari (Link, 1795)	*Dicotyles labiatus* Cuvier, 1817	
Lama glama (Linnaeus, 1758)	*Auchenia lama* Frisch, 1775	
Lama guanicoe (Müller, 1776)	*Auchenia huanaco* (C. H. Smith, 1827)	
Vicugna pacos (Linnaeus, 1758)	*Auchenia paco* Desmarest, 1822	
Vicugna vicugna (Molina, 1782)	*Auchenia vicunia* Fischer, 1829?	The authorship of *Auchenia vicunia* is debatable. According to Cabrera (1958) the author of this name would be Tschudi (1845, p. 223). Nonetheless, Tschudi (1845) attributed the authorship of *A. vicunia* to Fischer (1829) without any further references, whereas the latter listed *Auchenia vicunna* (*sic*) Desmarest, 1822 within the synonymy of *Lama vicugna*. A nomenclatural clarification becomes urgent.
Mazama americana (Erxleben, 1777)	*Cervus rufus* Illiger, 1811	
Mazama gouazoubira nemorivaga (Cuvier, 1817)	*Cervus nemorivagus* Cuvier, 1817	
Hippocamelus antisensis (d'Orbigny, 1834)	*Cervus antisiensis* d'Orbigny, 1843	

Figure 2. Type material of *Phyllostoma* (*Sturnira*) *erythromos* Tschudi, 1844: A) lectotype MHNN-94.2539; B) original illustration of *P. erythromos* edited from Tschudi (1844b, Plate I).

Figure 4. Syntype of *Molossus naso* Tschudi, 1845, MHNN-94.2547.

Figure 3. Type material of *Phyllostoma* (*Sturnira*) *oporaphilum* Tschudi, 1844: A) syntype MHNN-94.2540; B) Original illustration of *P. oporaphilum* edited from Tschudi (1844b, Plate II).

Figure 5. Type material of *Molossus myosuros* Tschudi, 1845: A) syntype MHNN-94.1203; B) original illustration of *M. myosuros* edited from Tschudi (1844b, Plate IV).

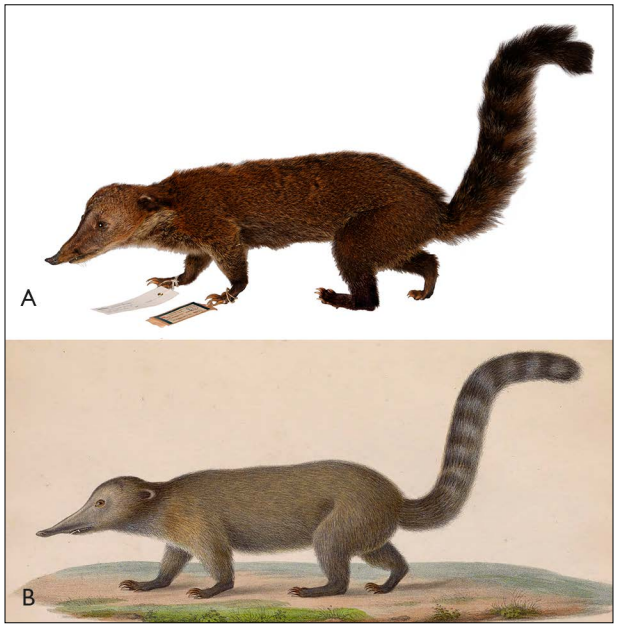

Figure 6. Type material of *Nasua montana* Tschudi, 1845: A) holotype MHNN-94.1383A; B) original illustration of *N. montana* edited from Tschudi (1844b, Plate V).

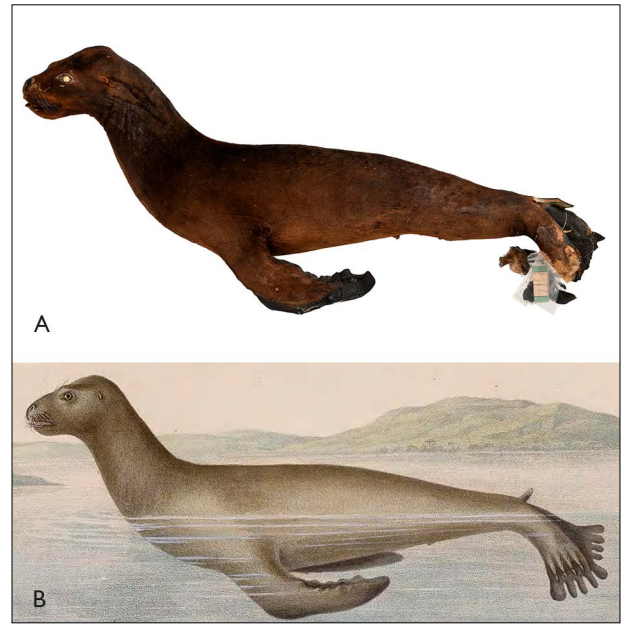

Figure 7. Type material of *Otaria ulloae* Tschudi, 1845: A) syntype MHNN-94.1513; B) original illustration of *O. ulloae* edited from Tschudi (1844b, Plate VI).

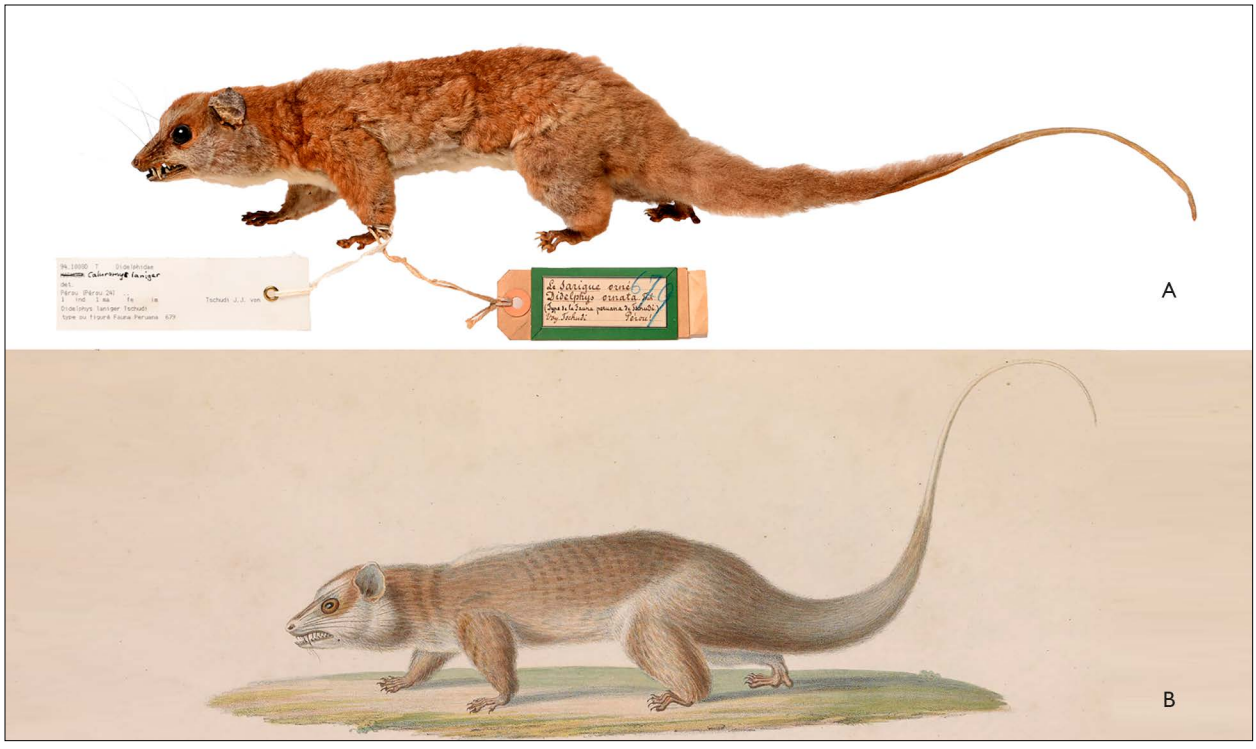

Figure 8. Type material of *Didelphys* (*sic*) *ornata* Tschudi, 1845: A) holotype MHNN-94.1008D; B) original illustration of *D. ornata* edited from Tschudi (1844b, Plate VII).

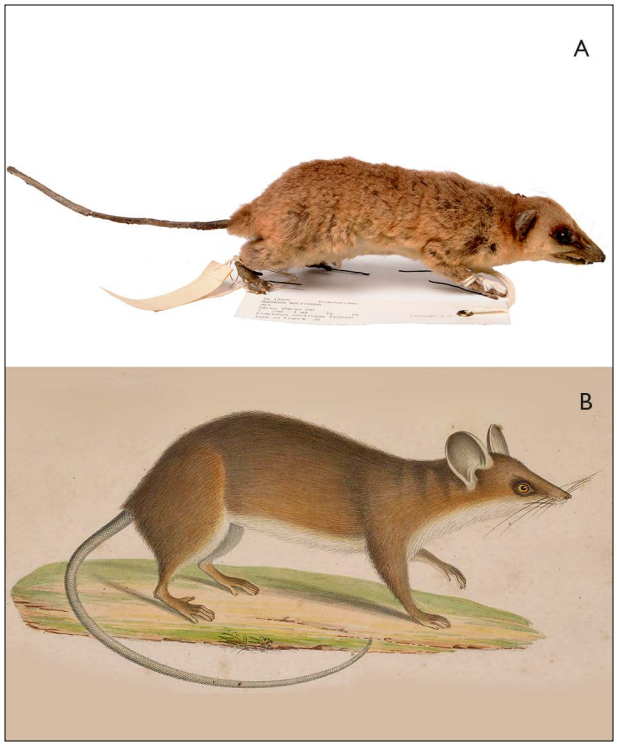

Figure 9. Type material of *Didelphys* (*sic*) *noctivaga* Tschudi, 1845: A) syntype MHNN-94.1008C; B) original illustration of *D. noctivaga* edited from Tschudi (1844b, Plate VIII).

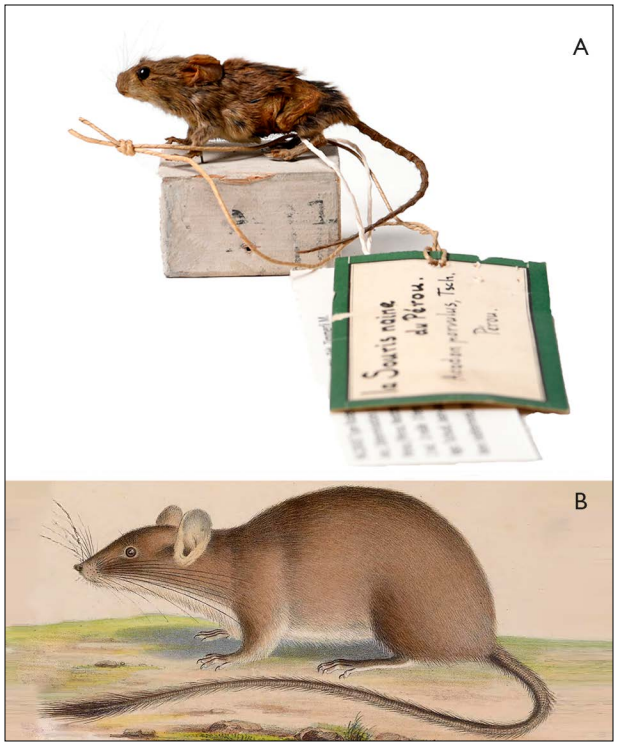

Figure 10. Type material of *Drymomys parvulus* Tschudi, 1845: A) syntype MHNN-94.2043E; B) original illustration of *D. parvulus* edited from Tschudi (1845, Plate X, figure 2).

Figure 11. Type material of *Hesperomys destructor* Tschudi, 1845 and *H. melanostoma* Tschudi, 1845: A) left, lectotype of *H. destructor* MHNN-94.2043A; right, lectotype of *H. melanostoma* MHNN-94.2043B; B) original illustration of *H. destructor* (left) and *H. melanostoma* (right), edited from Tschudi (1845, Plate XI, figures 1 and 2).

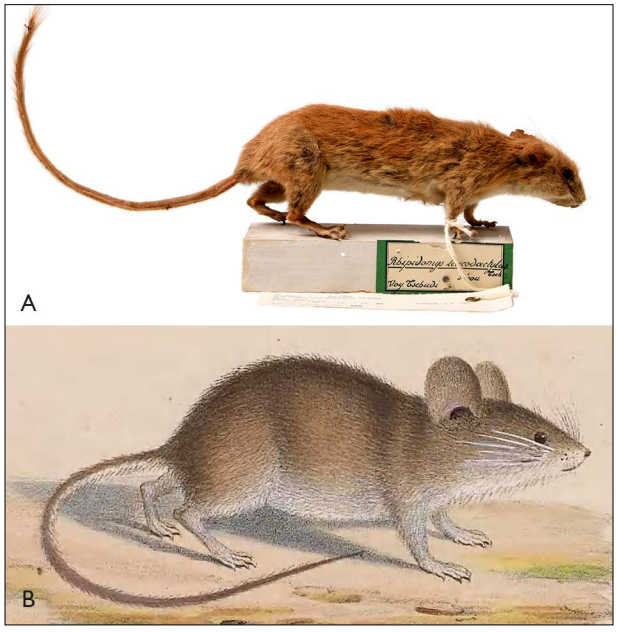

Figure 12. Type material of *Hesperomys* (*Rhipidomys*) *leucodactylus* Tschudi, 1845: A) syntype MHNN-94.2043D; B) original illustration of *H. leucodactylus* edited from Tschudi (1845, Plate X, figure 1).

Figure 13. Type material of *Sphingurus bicolor* Tschudi, 1845: A) holotype MHNN-94.2432A; B) original illustration of *S. bicolor* edited from Tschudi (1845, Plate XV).

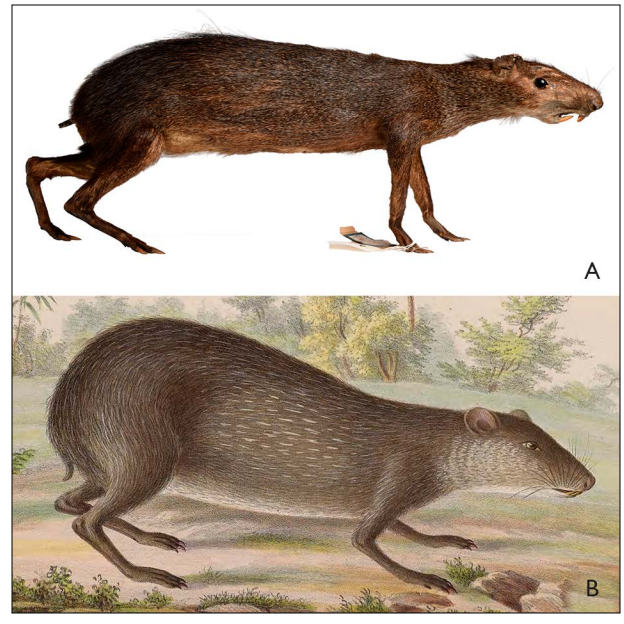

Figure 14. Type material of *Dasyprocta variegata* Tschudi, 1845: A) syntype MHNN-94.2445B; B) original illustration of *D. variegata* edited from Tschudi (1845, Plate XVI).

ACKNOWLEDGMENTS

We would like to thank Louise Robert and Théa Bilat for taking the pictures of the type specimens at MHNN and for their care of its scientific collection. Dione Seripierri from the *Museu de Zoologia - Universidade de São Paulo*, is acknowledged for her willingness to help us search literature and clarify the problems of when Tschudi's works were published.

Alexandre R. Percequillo and Edgar Rengifo offered help identifying rodents. Fábio Oliveira do Nascimento, Rafaela L. Vendramel, Guilherme Garbino, and Rafael Nascimento made comments of the manuscript. We thank Malika Gottstein for helping us with translations from German and for reviewing the manuscript. We thank Bruce D. Patterson, the three anonymous reviewers, and Alexandra Bezerra for their suggestions and comments that clearly improved the quality of the manuscript. Finally, we thank Alexandra Bezerra for inviting us to participate in this special edition. JES-V received financial support from the Brazilian Federal Agency for Support and Evaluation

of Graduate Education (CAPES). This study was financed in part by the *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* – Brasil (CAPES) – Finance Code 001.

REFERENCES

ACOSTA, J., 1590. **Historia natural y moral de las Indias**: 1-535. Imprenta de Juan de León, Sevilla.

ACOSTA, L. E., G. S. T. GARBINO, G. M. GASPARINI & R. P. DUTRA, 2020. Unraveling the nomenclatural puzzle of the collared and white-lipped peccaries (Mammalia, Cetartiodactyla, Tayassuidae. **Zootaxa** 4851(1): 60-80. DOI: https://doi.org/10.11646/zootaxa.4851.1.2

AGASSIZ, L., 1833-1843. **Recherches sur les poissons fossils**. Buchdruckerei Petitpierre, Neuchâtel.

ALBERTI, S., 2005. Objects and the Museum. **Isis** 96(4): 559-571.

ALBERTI, S., 2018. Museum nature. In: H. CURRY (Ed.): **Worlds of Natural History**: 348-362. Cambridge University Press, Cambridge.

ALFRED ESCHER-STIFTUNG, [n. d.]. **Herzlich willkommen bei der Alfred Escher-Briefedition**. Available at: https://www.briefedition.alfred-escher.ch/. Accessed on: 17 December 2019.

ARROYO-CABRALES, J., 2008 [2007]. Genus *Vampyressa*. In: A. L. GARDNER (Ed.): **Mammals of South America**: vol. 1: Marsupials, xenarthrans, shrews, and bats: 346-350. The University of Chicago Press, Chicago.

BAYERL, J., 2017.Tierzeichnungen Alexander von Humboldts und deren Verwendung im amerikanischen Reisewerk sowie in den zoologischen Schriften von Franz Julius Ferdinand Meyen und Johann Jakob von Tschudi. In: J. DREWS, O. ETTE, T. KRAFT, B. SCHNEIDER-KEMPF & J. WEBER (Ed.): **Forster – Humboldt – Chamisso**. Weltreisende im Spannungsfeld der Kulturen: 315-334. V & R unipress, Göttingen.

BAYLY, C. A., 2004. **The birth of the modern world, 1780-1914**: global connections and comparisons: 1-564. Wiley-Blackwell, New Jersey.

BEST, T. L., W. M. KISER & J. C. RAINEY, 1997. *Eumops glaucinus*. **Mammalian Species** 551: 1-6. DOI: https://doi.org/10.2307/3504261

BÖHME, G., 1999. Die Physiognomie einer Landschaft. **Geographische Zeitschrift** 87(2): 98-104.

BRANDÃO, M. V., G. S. T. GARBINO, T. B. F. SEMEDO, A. FEIJÓ, F. O. NASCIMENTO, H. FERNANDES-FERREIRA, R. V. VIEIRA ROSSI, J. DALPONTE & A. P. CARMIGNOTTO, 2019. Mammals of Mato Grosso, Brazil: annotated species list and historical review. **Mastozoologia Neotropical** 26(2): 1-44. DOI: https://doi.org/10.31687/saremMN.19.26.2.0.03

BRITISH MUSEUM (NATURAL HISTORY), 1903. Library. **Catalogue of the books, manuscripts, maps and drawings in the British Museum (Natural History)**: vol. 1: i-viii. Printed by order of the Trustees of the British Museum, London.

BRITISH MUSEUM (NATURAL HISTORY), 1915. **Catalogue of the books, manuscripts, maps and drawings in the British Museum (Natural History)**: vol 5. Printed by order of the Trustees of the British Museum, London.

BROWNE, J., 1983. **The secular ark**: studies in the history of biogeography: 1-276. Yale University Press, New Haven.

BROWNE, J., 1992. A science of empire: British biogeography before Darwin. **Revue d'Histoire des Sciences** 45(4): 453-475.

BROWNE, J., 1995. **Charles Darwin**: vol. 1: Voyaging: 1-622. Princeton University Press, New Jersey.

BROWNE, J., 2002. **Charles Darwin**: vol. 2: The Power of Place: 1-624. Princeton University Press, New Jersey.

BYRNE, H., A. B. RYLANDS, J. C. CARNEIRO, J. W. LYNCH ALFARO, F. BERTUOL, M. N. F. SILVA, M. MESSIAS, C. P. GROVES, R. A. MITTERMEIER, I. FARIAS, T. HRBEK, H. SCHNEIDER, I. SAMPAIO & J. P. BOUBLI, 2016. Phylogenetic relationships of the New World titi monkeys (*Callicebus*): first appraisal of taxonomy based on molecular evidence. **Frontiers in Zoology** 13: 1-26. DOI: https://doi.org/10.1186/s12983-016-0142-4

CABRERA, A., 1958. Catálogo de los mamíferos de América del Sur. **Revista del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Zoología** 4: xvi+iv+308.

CABRERA, A. L., 1961. Catálogo de los mamíferos de América del Sur II (Sirenia, Perissodactyla, Artiodactyla, Lagomorfa, Rodentia, Cetacea). **Revista del Museo Argentino De Ciencias Naturales "Bernardino Rivadavia"** 4: 309-732.

CARLETON, M. D. & G. G. MUSSER, 2005. Order Rodentia. In: D. E. WILSON & D. A. M. REEDER (Ed.): **Mammal species of the world**: a taxonomic and geographic reference: 3. ed.: 745-752. Johns Hopkins University Press, Baltimore.

CERQUEIRA, R. & C. TRIBE, 2008 [2007]. Genus *Didelphis* Linnaeus, 1758. In: A. L. GARDNER (Ed.): **Mammals of South America**: vol. 1: Marsupials, xenarthrans, shrews, and bats: 17-25. The University of Chicago Press, Chicago.

CHAMBERS, D. W. & R. GILLESPIE, 2000. Locality in the history of science: colonial science, technoscience, and indigenous knowledge. **Osiris** 15: 221-240.

COOTE, A., A. HAYNES, J. PHILP & S. VILLE., 2017. When commerce, science, and leisure collaborated: the nineteenth-century global trade boom in natural history collections. **Journal of Global History** 12(3): 319-339. DOI: https://doi.org/10.1017/S1740022817000171

CUSTRED, G., 1979. Hunting technologies in Andean culture. **Journal de la Société des Américanistes** 66: 7-19.

EGER, J., 2008 [2007]. Family Molossidae. In: A. L. GARDNER (Ed.): **Mammals of South America**: vol. 1: Marsupials, xenarthrans, shrews, and bats: 399-439. The University of Chicago Press, Chicago.

EICHENBERGER, P., Th. DAVID, M. LEIMGRUBER, L. HALLER, B. C. SCHÄR & C. WIRTH, 2017. Beyond Switzerland: reframing the Swiss historical narrative in light of transnational history. **Traverse: Zeitschrift für Geschichte** 17(1): 137-152.

FÄSSLER, H., 2007. **Une Suisse esclavagiste**. Voyage dans un pays au-dessus de tout soupçon (Préface de Doudou Diène): 1-286. Duboiris, Paris.

FAVRE, L., 1893-1894. Louis de Coulon 1804-1894. **Bulletin de la Société des Sciences Naturelles de Neuchâtel** 22: 273-304.

FEIJÓ, A. & A. LANGGUTH, 2013. Mamíferos de médio e grande porte do Nordeste do Brasil: distribuição e taxonomia, com descrição de novas espécies. **Revista Nordestina de Biologia** 22(1): 3-225.

FINNEGAN, D. A. & J. J. WRIGHT, 2015. **Spaces of global knowledge**: exhibition, encounter and exchange in an age of empire: 1-304. Routledge, London.

FISCHER, J. B., 1829. **Synopsis mammalium**: 1-752. J. G. Cottae, Stuttgardtiae.

FOODEN, J., 1963. A revision of the Woolly Monkeys (genus *Lagothrix*). **Journal of Mammalogy** 44(2): 213-247. DOI: https://doi.org/10.2307/1377454

FORD, L. S. & R. S. HOFFMANN, 1988. *Potos flavus*. **Mammalian Species** 321: 1-9. DOI: https://doi.org/10.2307/3504086

FORGAN, S., 1994. The architecture of display: museums, universities, and objects in Nineteenth-Century Britain. **History of Science** 32(2): 139-162. DOI: https://doi.org/10.1177/007327539403200202

GÄNGER, S., 2017. Circulation: reflections on circularity, entity, and liquidity in the language of global history. **Journal of Global History** 12(3): 303-318. DOI: https://doi.org/10.1017/S174002281700016X

GARBINO, G. S. T., 2015. Defining genera of New World monkeys: the need for a critical view in a necessarily arbitrary task. **International Journal of Primatology** 36: 1049-1064. DOI: https://doi.org/10.1007/s10764-015-9882-9

GARBINO, G. S. T. & A. M. MARTINS-JUNIOR, 2017. Phenotypic evolution in marmoset and tamarin monkeys (Cebidae, Callitrichinae) and a revised genus-level classification. **Molecular Phylogenetics and Evolution** 118: 156-171. DOI: https://doi.org/10.1016/j.ympev.2017.10.002

GARBINO, G. S. T. & C. C. AQUINO, 2018. Evolutionary significance of the entepicondylar foramen of the humerus in New World monkeys (Platyrrhini). **Journal of Mammalian Evolution** 25: 141-151. DOI: https://doi.org/10.1007/s10914-016-9366-5

GARCILAZO DE LA VEGA, I., 1609. **Primera parte de los comentarios reales de los Incas**: 1-504. Officina de Pedro Crasbeeck, Lisboa.

GARDNER, A. L. (Ed.), 2008 [2007]. **Mammals of South America**: vol. 1: Marsupials, xenarthrans, shrews, and bats: 1-690. The University of Chicago Press, Chicago. DOI: https://doi.org/10.7208/chicago/9780226282428.001.0001

GARDNER, A. L. & G. K. CREIGHTON, 2008 [2007]. Genus *Marmosops*. In: A. L. GARDNER (Ed.): **Mammals of South America**: vol. 1: Marsupials, xenarthrans, shrews, and bats. The University of Chicago Press, Chicago.

GEOFFROY SAINT-HILAIRE, I. & E. DEVILLE, 1848. Note sur huit espèces nouvelles de singes américains, faisant partie des collections de MM. De Castelnau et Emilie Deville. **Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences de Paris** 27: 498.

GISSIBL, B., 2016. **The nature of German imperialism conservation and the politics of wildlife in colonial East Africa**: 1-374. Berghahn, New York.

GODET, P., 1901. J.-J. de Tschudi et le Musée d'Histoire Naturelle de Neuchâtel, années 1838–1841. **Bulletin de la Société Neuchâteloise des Sciences Naturelles** 29: 36-56.

GOMPPER, M. E. & D. M. DECKER, 1998. *Nasua nasua*. **Mammalian Species** 580: 1-9.

GRAY, J. E., 1843. **List of the specimens of Mammalia in the collection of the British Museum**: 1-216. George Woodfall and Son, London.

GREGORIN, R., 2006. Taxonomy and geographic variation of species of the genus *Alouatta* Lacépède (Primates, Atelidae) in Brazil. **Revista Brasileira de Zoologia** 23(1): 64-144.

GRIFFITHS, T. A. & A. L. GARDNER, 2008 [2007]. Subfamily Glossophaginae. In: A. L. GARDNER (Ed.): **Mammals of South America**: vol. 1: Marsupials, xenarthrans, shrews, and bats: 224-244. The University of Chicago Press, Chicago.

GRUBB, P., 2005. Order Artiodactyla. In: D. E. WILSON & D. M. REEDER (Ed.): **Mammal species of the world**: a taxonomic and geographic reference: 3. ed.: 637-722. The Johns Hopkins University Press, Baltimore.

GUTIÉRREZ, E. E. & J. MARINHO-FILHO, 2017. The mammalian faunas endemic to the Cerrado and the Caatinga. **ZooKeys** 644: 105-157. DOI: https://doi.org/10.3897/zookeys.644.10827

GYLDENSTOLPE, N., 1932. A manual of Neotropical sigmodont rodents. **Kungliga Svenska Veten- Skapsakademiens Handlingar, Tredje Serien** 11: 1-164.

HABERMAS, R. & A. PRZYREMBEL, 2013. **Von Käfern, Märkten und Menschen**. Kolonialismus und Wissen in der Moderne: 1-320. Vandenhoeck & Ruprecht, Göttingen.

HARRIES, P., 2007. **Butterflies and barbarians**: swiss missionaries and systems of knowledge in Southeast Africa: 1-286. Ohio University Press, Oxford.

HERSHKOVITZ, P., 1949. Mammals of northern Colombia. Preliminary report No. 4: Monkeys (Primates) with taxonomic revisions of some forms. **Proceedings of the United States National Museum** 98: 323-427.

HERSHKOVITZ, P., 1959. Nomenclature and taxonomy of the Neotropical mammals described by Olfers, 1818. **Journal of Mammalogy** 40: 337-53.

HERSHKOVITZ, P., 1976. Comments on generic names of four-eyed opossums (family Didelphidae). **Proceedings of the Biological Society of Washington** 89: 295-304.

HERSHKOVITZ, P., 1977. **Living New World monkeys (Platyrrhini), with an introduction to Primates**: 1-1117. The University of Chicago Press, Chicago.

HERSHKOVITZ, P., 1985. A preliminary taxonomic review of the South American bearded saki monkeys genus *Chiropotes* (Cebidae, Platyrrhini), with the description of a new subspecies. **Fieldiana Zoology** 27: 64.

HERSHKOVITZ, P., 1987a. The taxonomy of South American sakis, genus *Pithecia* (Cebidae, Platyrrhini): a preliminary report and critical review with the description of a new species and a new subspecies. **American Journal of Primatology** 12(4): 387-468. DOI: https://doi.org/10.1002/ajp.1350120402

HERSHKOVITZ, P., 1987b. A history of the recent mammalogy of the Neotropical region from 1492 to 1850. **Fieldiana Zoology** 39: 11-98.

HERSHKOVITZ, P., 1990. Titis, New World monkeys of the genus *Callicebus* (Cebidae, Platyrrhini): A Preliminary Taxonomic Review. **Fildeana Zoology** 55: 1-109.

HERSHKOVITZ, P., 1997. Composition of the Family Didelphidae Gray, 1821 (Didelphoidea: Marsupialia), with a review of the morphology and behavior of the included four-eyed opossums of the genus *Philander* Tiedemann, 1808. **Fieldiana Zoologia** 86: vi + 1–103.

HEßLER, M., 2006. Einleitung. Annäherung an Wissenschaftsbilder. In: M. HEßLER (Ed.): **Konstruierte Sichtbarkeiten**. Wissenschafts- und Technikbilder seit der Frühen Neuzeit: 11-40. Frink, München.

HILL, W., 1962. **Primates, comparative anatomy and taxonomy**: IV, Cebidae, Part A: 1-537. Edinburgh University Press, Edinburgh.

HORTA DUARTE, R., 2013. Between the national and the universal: Natural History networks in Latin America in the Nineteenth and Twentieth Centuries. **Isis** 104(4): 777-787. DOI: https://doi.org/10.1086/674944

HUMBOLDT, A., 1812. Sur les Singes du royaume de la Nouvelle-Grenade et des rives de l'Amazone. In: A. HUMBOLDT & A. BONPLAND (Ed.): **Recueil d'observations de Zoologie et d'Anatomie Comparée, faites dans l'Océan Atlantique, dans l'intérieur du Nouveau Continent et dans la mer du Sud pendant les années 1799–1803**. Voyage de Humboldt et Bonpland, Deuxième partie. Observations de zoologie et d'anatomie comparée, Premier volume: 336-344. Schoell and Dufour & Co, Paris.

HURTADO, N., & G. D'ELÍA, 2019. Taxonomy of the long-tailed mouse *Oligoryzomys* destructor (Sigmodontinae: Oryzomyini) with the designation of neotypes for *Hesperomys destructor* Tschudi, 1844 and *Hesperomys melanostoma* Tschudi, 1844. **Journal of Zoological Systematics and Evolutionary Research** 57(1): 127-144. DOI: https://doi.org/10.1111/jzs.12232

KAEHR, R., 2000. **Le mûrier et l'épée**: le Cabinet de Charles Daniel de Meuron et l'origine du Musée d'ethnographie à Neuchâtel: 1-432. Musée d'Ethnographie, Neuchâtel.

KAULICKE, P. (Ed.), 2001. **Aportes y vigencia de Johann Jakob von Tschudi (1818-1889)**: 1-243. Pontificia Universidad Católica del Perú, Lima.

KOHLER, R., 2006. **All creatures**: naturalists, collectors and biodiversity, 1850–1950: 1-384. Princeton University Press, Princeton.

KUPPER, P. & B. SCHÄR (Ed.), 2015. **Die Naturforschenden**. Auf der Suche nach Wissen über die Schweiz und die Welt, 1800-2015. Hier und Jetzt, Baden.

KWIECINSKI, G. G., 2006. *Phyllostomus discolor*. **Mammalian Species** 801: 1-11. DOI: https://doi.org/10.1644/801.1

LURIE, E., 1960. **Louis Agassiz, a life in science**: 1-500. Johns Hopkins University Press, Chicago.

LYNCH ALFARO, J. W., J. P. BOUBLI, L. E. OLSON, A. DI FIORE, B. WILSON, G. A. GUTIÉRREZ-ESPELETA, K. L. CHIOU, M. SCHULTE, S. NEITZEL, V. ROSS, D. SCHWOCHOW, M. T. NGUYEN, I. FARIAS, C. H. JANSON & M. E. ALFARO, 2012. Explosive Pleistocene range expansion leads to widespread Amazonian sympatry between robust and gracile capuchin monkeys. **Journal of Biogeography** 39: 272-288. DOI: https://doi.org/10.1111/j.1365-2699.2011.02609.x

MACKENZIE, J., 1988. **The empire of nature**: hunting, conservation and British imperialism: 1-352. Manchester University Press, Manchester.

MANTILLA-MELUK, H. & R. J. BAKER, 2010. New species of *Anoura* (Chiroptera: Phyllostomidae) from Colombia, with systematic remarks and notes on the distribution of the *A. geoffroyi* complex. **Occasional Papers, Museum of Texas Tech University** 292: 1-19.

MERSCH, D., 2006. Naturwissenschaftliches Wissen und bildliche Logik. In: M. HEßLER (Ed.): **Konstruierte Sichtbarkeiten**. Wissenschafts- und Technikbilder seit der Frühen Neuzeit: 405–420. Fink, München.

MEURON, G., 1982. **Le Régiment Meuron 1781-1816**: 1-396. Editions d'En bas, Lausanne.

MIRANDA, F. R., D. M. CASALI, F. MACHADO, F. PERINI & F. R. SANTOS, 2017. Taxonomic review of the genus *Cyclopes* Gray, 1821 (Xenarthra: Pilosa), with the revalidation and description of new species. **Zoological Journal of the Linnean Society** 183(3): 687-721. DOI: https://doi.org/10.1093/zoolinnean/zlx079

MITTERMEIER, R. A., A. B. RYLANDS & D. E. WILSON, 2013. **Handbook of the mammals of the World**: vol. 3: Primates: 1-952. Lynx Edicions, Barcelona.

MUSÉUM D'HISTOIRE NATURELLE DE NEUCHÂTEL (MHNN), [n. d.]. Available at: http://orion3.unine.ch/collections/formulaire/welcome.asp. Accessed on: 11 November 2019.

MYERS, P., J. L. PATTON & M. F. SMITH, 1990. A review of the boliviensis group of *Akodon* (Rodentia: Sigmodontinae), with emphasis on Peru and Bolivia**. Miscellaneous publications. Museum of Zoology, University of Michigan** 177: iv + 1-104.

NICOLSON, M., 1987. Alexander von Humboldt, Humboldtian science, and the origins of the study of vegetation. **History of Science** 25(2): 167-194.

OKEN, L., 1844. **Isis oder encyclopädische Zeitung von Oken**. Jena, Expedition der Isis [etc.], Leipzig.

OKEN, L., 1845. **Isis oder encyclopädische Zeitung von Oken**. Jena, Expedition der Isis [etc.], Leipzig.

OKEN, L., 1846. **Isis oder encyclopädische Zeitung von Oken**. Jena, Expedition der Isis [etc.], Leipzig.

OKEN, L., 1847. **Isis oder encyclopädische Zeitung von Oken**. Jena, Expedition der Isis [etc.], Leipzig.

OSTERHAMMEL, J., 2014. **The transformation of the World**. A global history of the Nineteenth Century: 1-1192. Princeton University Press, Princeton.

OUTRAM, D., 1997. New spaces in natural history. In: N. JARDINE *et al.* (Ed.): **Cultures of Natural History**: 249-265. Cambridge University Press, Cambridge.

PACHECO, V., L. GRAHAM-ANGELES, S. DIAZ, C. M. HURTADO, D. RUELAS, K. CERVANTES & J. SERRANO-VILLAVICENCIO, 2020. Diversidad y distribución de los mamíferos del Perú I: Didelphimorphia, Paucituberculata, Sirenia, Cingulata, Pilosa, Primates, Lagomorpha, Eulipotyphla, Carnivora, Perissodactyla y Artiodactyla. **Revista Peruana de Biología** 27(3): 289-328. DOI: http://dx.doi.org/10.15381/rpb.v27i3.18356

PACHECO, V., R. CADENILLAS, E. SALAS, C. TELLO & H. ZEBALLOS, 2009. Diversidad y endemismo de los mamíferos del Perú. **Revista Peruana de Biología** 16(1): 5-32. DOI: https://doi.org/10.15381/rpb.v16i1.111

PATTON, J. L. & M. N. F. DA SILVA, 2008 [2007]. Genus *Philander* Brisson, 1762. In: A. L. GARDNER (Ed.): **Mammals of South America**: vol. 1: Marsupials, xenarthrans, shrews, and bats: 27-35. The University of Chicago Press, Chicago. DOI: https://doi.org/10.7208/chicago/9780226169606.001.0001

PATTON, J. L. & L. H. EMMONS, 2015. Family Dasyproctidae Bonaparte, 1838. In: J. L. PATTON, U. F. J. PARDIÑAS & G. D'ELÍA (Ed.): **Mammals of South America**: vol. 2: Rodents: 733-756. The University of Chicago Press, Chicago. DOI: https://doi.org/10.7208/chicago/9780226169606.001.0001

PATTON, J. L., U. F. J. PARDIÑAS & G. D'ELÍA (Ed.), 2015. **Mammals of South America**: vol. 2: Rodents. The University of Chicago Press, Chicago. DOI: https://doi.org/10.7208/chicago/9780226169606.001.0001

PESSÔA, L. M., W. C. TAVARES, J. A. OLIVEIRA & J. L. PATTON, 2015. Genus *Trinomys* Thomas, 1921. In: J. L. PATTON, U. F. J. PARDIÑAS & G. D'ELÍA (Ed.): **Mammals of South America**: vol. 2: Rodents: 999-1019. The University of Chicago Press, Chicago. DOI: https://doi.org/10.7208/chicago/9780226169606.001.0001

PETERS, W., 1861. Eine Ubersicht der von Hrn. Dr. Gundlach beobachteten Fledertheire auf Cuba mit. Die nach dem Leben gemachten Bescreibungen de Hrn. Dr. Gundlach wurden vorgelegt, welche nebst den Originalexemplaren durch Hrn. Geheimerath Sezekorn in Kassel zur näheren Vergleichung übersandt worden waren. Monatsber. König. Preuss. **Abhandlungen der Königlichen Akademie der Wissenschaften zu Berlin** 1862: 149-156.

POEPPIG, E. F., 1832. Doctor Pöppig's naturhistorische Berichte aus Chile. **Notizen aus dem Gebiete der Natur- und Heilkunde** 697: columns 225-234.

PURTSCHERT, P., B. LÜTHI & F. FALK (Ed.), 2012. **Postkoloniale Schweiz**: Formen und Folgen eines Kolonialismus ohne Kolonien: 1-422. Transcript, Bielefeld.

PURTSCHERT, P. & H. FISCHER-TINÉ (Ed.), 2015. **Colonial Switzerland**: rethinking colonialism from the margins: 1-334. Palgrave Macmillan UK, London.

RAMÍREZ-PULIDO, J., N. GONZÁLEZ-RUIZ, A. L. GARDNER & J. ARROYO-CABRALES, 2014. List of recent land mammals of Mexico, 2014. **Special Publications, Museum of Texas Tech University** 63: 1-69. DOI: https://doi.org/10.5962/bhl.title.142891

REICHENBACH, H. G. L. VON, 1862. **Die vollständigste Naturgeschichte der Affen**: Les singes: 1-260. Expedition der vollständigsten Naturgeschichte, Dresden und Leipzig.

RIVERO Y USTÁRIZ, M. E. & J. J. TSCHUDI, 1851. **Antigüedades peruanas**: 1-330. Impr. Imperial de la Corte y del Estado, Viena.

ROBERT, A., C. FONTAINE, S. VERON, A.-C. MONNET, M. LEGRAND, J. CLAVEL, S. CHANTEPIE, D. COUVET, F. DUCARME, B. FONTAINE, F. JIGUET, I. LE VIOL, J. ROLLAND, F. SARRAZIN, C. TEPLISTKY & M. MOUCHET, 2017. Fixism and conservation science. **Conservation Biology** 31(4): 781-788. DOI: http://doi.org/10.1111/cobi.12876

ROBERTS, L., 2009. Local encounters and the global circulation of knowledge, 1750-1850. **Itinerario** 33(1): 9-30.

RYLANDS, A. B., A. F. COIMBRA-FILHO & R. A. MITTERMEIER, 1993. Systematics, distributions, and some notes on the conservation status of the Callitrichidae. In: A. B. RYLANDS (Ed.): **Marmosets and Tamarins**: systematics, behaviour, and ecology: 11-77. Oxford University Press, Oxford.

RYLANDS, A. B., R. A. MITTERMEIER, B. M. BEZERRA, F. P. PAIM & H. L. QUEIROZ, 2013a. Family Cebidae (squirrel monkeys and capuchins). In: R. A. MITTERMEIER, A. B. RYLANDS & D. E. WILSON (Ed.): **Handbook of the Mammals of the World**: vol. 3, Primates: 348-413. Lynx Edicions, Barcelona.

RYLANDS, A. B, R. A. MITTERMEIER, F. M. CORNEJO, T. R. DEFLER, K. E. GLANDER, W. R. KONSTANT, L. P. PINTO & M. TALEBI, 2013b. Family Atelidae (Howlers, Spider and Woolly Monkeys and Muriquis). In: R. A. MITTERMEIER, A. B. RYLANDS & D. E. WILSON (Ed.): **Handbook of the Mammals of the World**: vol. 3: Primates: 484-549. Lynx Edicions, Barcelona.

SCHÄR, B., 2015. **Tropenliebe**: Schweizer Naturforscher und niederländischer Imperialismus in Südostasien um 1900: 1-374. Campus Verlag, Frankfurt am Main.

SCHAZMANN, P.-E., 1956. **Johann Jakob von Tschudi**: Forscher, Arzt, Diplomat: 1-374. Campus Verlag GmbH, Bern.

SCHLUP, M., 1996. **Biographies neuchâteloises**: vol. 1: 1-287, Hauterive, Neuchâtel.

SCHNEIDER, H., & I. SAMPAIO, 2015. The systematics and evolution of New World primates: A review. **Molecular Phylogenetics and Evolution** 82(B): 348-357. DOI: https://doi.org/10.1016/j.ympev.2013.10.017

SCHUBIGER, B., 2008. **Sammeln und Sammlungen im 18**. Jahrhundert in der Schweiz: Akten des Kolloquiums Basel: 16-18. Oktober 2003. Geneva.

SERRANO-VILLAVICENCIO, J. E., 2019. A comment on Hurtado & D'Elía (2019): Neotypes for von Tschudi's *Hesperomys destructor* and *Hesperomys melanostoma* are invalid. **Journal of Zoological Systematics and Evolutionary Research** 57(4): 1000-1003. DOI: https://doi.org/10.1111/jzs.12295

SERRANO-VILLAVICENCIO, J. E., R. L. VENDRAMEL & G. S. T. GARBINO, 2017. Species, subspecies, or color morphs? Reconsidering the taxonomy of *Callicebus* Thomas, 1903 in the Purus-Madeira interfluvium. **Primates** 58: 159-167. DOI: https://doi.org/10.1007/s10329-016-0555-x

SHAPIN, S., 2010. **Never pure**. Historical studies of science as if it was produced by people with bodies, situated in time, space, culture, and society, and struggling for credibility and authority: 1-564. The Johns Hopkins University Press, Baltimore.

SHEETS-PYENSON, S., 1988. **Cathedrals of science**. The Development of Colonial Natural History Museums during the Late Nineteenth Century: 1-156. McGill-Queen's University Press, Montreal.

SHERBORN, C. D., 1922. **Index Animalium**: Part I: Introduction, Bibliography and Index A - Aff.: 1-128. 1801-1850: [i]-cxxxi, [1]-128. British Museum (Natural History), London.

SIVASUNDARAM, S., 2010. Sciences and the global: on methods, questions, and theory. **Isis** 101(1): 146-158. DOI: https://doi.org/10.1086/652694

SPIX, J., 1823. **De Simarium et Vespertiliarum brasilienses species novae, ou histoire naturelle des espèces nouvelles de singes et de chauve-souris observées et recueillies pendant le voyage dans l'intérieur du Brésil**: 1-72. Typis Francisci Seraphici Hübschmanni, Monaco.

STEPPAN, S. J. & O. RAMÍREZ, 2015. Genus *Phyllotis* Waterhouse, 1837. In: J. L. PATTON, U. F. J. PARDIÑAS & G. D'ELÍA (Ed.): **Mammals of South America**: vol. 2: Rodents: 535-555. The University of Chicago Press, Chicago.

TETA, P., A. M. ABBA, G. H. CASSINI, D. A. FLORES, C. A. GALLIARI, S. O. LUCERO & M. RAMÍREZ, 2018. Lista revisada de los mamíferos de Argentina. **Mastozoolgía Neotropical** 25(1): 163-198. DOI: https://doi.org/10.31687/saremMN.18.25.1.0.15

THOMAS, O., 1908. On certain African and South American otters. **The Annals Magazine of Natural History** 8(1): 387-395.

THOMAS, O., 1927. The Godman-Thomas expedition to Peru. V. On mammals collected by Mr. R. W. Hendee in the Province of San Martin, North Peru, mostly at Yurac Yacu. **Annals and Magazine of Natural History** 9(19): 361-375.

THOMPSELL, A., 2015. **Hunting Africa**: British sport, African knowledge and the nature of empire: 1-229. Palgrave Macmillan UK, London.

TRIBE, C. J., 2015. Genus *Rhipidomys* Tschudi, 1845. In: J. L. PATTON, U. F. J. PARDIÑAS & G. D'ELÍA (Ed.): **Mammals of South America**: vol. 2: Rodents: 583-617. The University of Chicago Press, Chicago. DOI: https://doi.org/10.7208/chicago/9780226169606.001.0001

TSCHUDI, J. J., 1837. **Monographie der schweizerischen Echsen**. Buchdruckerei Petitpierre, Neuchâtel.

TSCHUDI, J. J., 1838. **Classification der Batrachier**: mit Berücksichtigung der fossilen Thiere dieser Abtheilung der Reptilien. Buchdruckerei Petitpierre, Neuchâtel.

TSCHUDI, J. J., 1844a. Mammalium conspectus quae in Republica Peruana reperiuntur et pleraque observata vel collecta sunt in itinerere. **Archiv für Naturgeschichte** 10: 244-255.

TSCHUDI, J. J., 1844b. **Untersuchungen über die Fauna Peruana**: Therologie. Scheitlin und Zollikofer, St. Gallen.

TSCHUDI, J. J., 1845. **Untersuchungen über die Fauna Peruana**: Ornithologie. Scheitlin und Zollikofer, St. Gallen.

TSCHUDI, J. J., 1846. **Peru**: Reiseskizzen, 1838–1842: vol. II. Verlag Scheitlin und., St. Gallen.

TSCHUDI, J. J., 1885. Das Lama (*Auchenia Lama* Fisch) in seinen Beziehungen zum altperuanischem Volksleben. **Zeitschrift für Ethnologie** 17: 93-109.

VELAZCO, P. M. & F. M. CORNEJO, 2014. Historia de la mastozoología en Perú. In: J. ORTEGA, J. L. MARTÍNEZ & D. G. TIRIRA (Ed.): **Historia de la mastozoología en Latinoamérica, las Guayanas y el Caribe**: 359-380. Editorial Murciélago Blanco y Asociación Ecuatoriana de Mastozoología, Quito y México, D. F.

VERZI, D. H., M. M. DÍAZ & R. M. BARQUEZ, 2015. Family Octodontidae. In: J. L. PATTON, U. F. J. PARDIÑAS & G. D'ELÍA (Ed.): **Mammals of South America**: vol. 2: Rodents: 1023-1024. The University of Chicago Press, Chicago. DOI: https://doi.org/10.7208/chicago/9780226169606.001.0001

DE VIVO M. & A. P. CARMIGNOTTO, 2015. Family Sciuridae Fisher 1817. In: J. L. PATTON, U. F. J. PARDIÑAS & G. D'ELÍA (Ed.): **Mammals of South America**: vol. 2: Rodents: 1-48. The University of Chicago Press, Chicago. DOI: https://doi.org/10.7208/chicago/9780226169606.001.0001

VOSS, R. S., J. F. DÍAZ-NIETO & S. A. JANSA, 2018. A revision of *Philander* (Marsupialia: Didelphidae), Part 1: *P. quica*, *P. canus*, and a new species from Amazonia. **American Museum Novitates** 3891: 1-70. DOI: https://doi.org/10.1206/3891.1

VOSS, R. S., D. W. FLECK & S. A. JANSA, 2019. Mammalian diversity and matses ethnomammalogy in Amazonian Peru, Part 3: Marsupials (Didelphimorphia). **Bulletin of the American Museum of Natural History** 432: 1-90. DOI: https://doi.org/10.1206/0003-0090.432.1.1

WEKSLER, M., & C. R. BONVICINO, 2015. Genus *Oligoryzomys*. In: J. L. PATTON, U. F. J. PARDIÑAS & G. D'ELÍA (Ed.): **Mammals of South America**: vol. 2: Rodents: 417-437. The University of Chicago Press, Chicago.

WILKINS, J., 2018. **Species**: the evolution of an idea: 1-427. Taylor and Francis, Boca Raton.

WILLIAMS, S. L. & H. H. GENOWAYS, 2008 [2007]. Subfamily Phyllostominae Gray, 1825. In: A. L. GARDNER (Ed.): **Mammals of South America**: vol. 1: Marsupials, xenarthrans, shrews, and bats: 255-300. The University of Chicago Press, Chicago.

WINKELL, G. F. D., 1858-1878. **Handbuch für Jäger, Jagdberechtigte und Jagdliebhaber**. Brockhaus, Leipzig.

WITTMANN, B., 2008. Das Porträt der Spezies. Zeichnen im Naturkundemuseum. In: C. HOFFMANN (Ed.): **Daten sichern**. Schreiben und Zeichnen als Verfahren der Aufzeichnung: 47-72. Diaphanes, Zürich.

WOZENCRAFT, W. C., 2005. Order Carnivora. In: D. E. WILSON & D. M. REEDER (Ed.): **Mammal species of the world**: a taxonomic and geographic reference: 3. ed.: 532-628. The Johns Hopkins University Press, Baltimore.

ZANGGER, A., 2011. **Koloniale Schweiz**. Ein Stück Globalgeschichte zwischen Europa und Südostasien (1860-1930): 348-399. Transcript, Bielefeld.

ZENNIBAR, H., 1999. Tschudi y su contribución al conocimiento de la fauna peruana. **Boletín de Lima** 117: 53-78.