

Boll. Mus. reg. Sci. nat. Torino	Vol. 39 - N. 1-2	pp. 403-424	30.12.2022
----------------------------------	------------------	-------------	------------

Luca GHIRALDI\*, Anderson FEIJÓ§

## Catalogue of Xenarthra in the collections of the Museo Regionale di Scienze Naturali in Turin

### ABSTRACT

The mammal and osteological historic collections of the Museo di Zoologia and of Anatomia Comparata of the Torino University (Italy), now hosted at Museo Regionale di Scienze Naturali of Torino, contains almost 3000 specimens and an undefined number of skeletal units. Unfortunately, the lack of specialized curatorial staff over time had the consequence that many specimens have not yet been studied and the taxonomic status of such material is in many cases still undetermined. The present work was focused on the 63 flat and mount specimens and 62 skeletal units of orders Cingulata (armadillos) and Pilosa (sloths and anteaters). The study allowed the implementation of a new commented catalogue, the update of the taxonomic nomenclature and a new determination of 30 specimens and 46 skeletal units. Unfortunately, it was not possible to identify at specific level two specimens due to their early ontogenetic stage and three more specimens lacking collecting localities. Overall in the collection are preserved nine species belonging to the order Cingulata and nine species belonging to the order Pilosa of which five are anteaters and four are sloths.

Keywords: catalogue, Cingulata, Pilosa, mammalogy, zoological collection.

### INTRODUCTION

The deep association between collections and natural sciences dates to the earliest period of collecting and classifying nature and continues to this day. As collections contribute to research across an array of critical disciplines including biodiversity studies, emerging diseases, biological invasions, environmental contaminants, and global climate change (Suarez & Tsutsui, 2004). The natural history collections represent essential infrastructure for research, training, and education that continue to play vital roles in long-established fields (e.g., systematics, taxonomy, and evolution) while also contributing to new research areas (e.g., genomics, stable isotopes, pathogen discovery) (Dunnum *et al.*, 2018).

---

\* Museo Regionale di Scienze Naturali, Turin

§ Institute of Zoology, Chinese Academy of Sciences, Beijing

However, achieving these goals will depend on whether or not collections remain adequately positioned in terms of taxonomic, temporal, and spatial coverage to address new questions in a period of unprecedented environmental change (Malaney & Cook, 2018). As stewards and builders of these invaluable resources, curators must critically evaluate specimen holdings and their accessibility in order to make the scientific community aware of this biological heritage (Dunnum *et al.*, 2018).

Unfortunately, the theriological and osteological collections of the Museo di Zoologia dell'Universita' di Torino (MZUT), nowadays preserved at Museo Regionale di Scienze Naturali of Torino (MRSN), suffered from the lack of specialized curatorial staff, especially after the death of Enrico Festa in 1939, with the consequence that the specimens held in collection are mostly unknown both at national and international level. This prevented studies by modern taxonomic revisors as a result of which many specimens have not yet been studied and the taxonomic status of such material is in many cases still undetermined. In addition, as pointed out by Tortonese (1957), the numerous relocation to which the collection has been subjected over time, often in not appropriate conditions, have contributed to the deterioration and even the loss of specimens, while others are currently associated with incomplete or even lacking information (Ghiraldi *et al.*, 2021).

In order to overcome these problems and providing to the scientific community an exhaustive and updated list of the material preserved in MZUT, several works of revision and taxonomic updates have been carried out during the last years (Passerin D'Entrèves & Gavetti, 2014; Calvini *et al.*, 2016; Ghiraldi *et al.*, 2021). The present work focuses on the specimens of the supraorder Xenarthra, an early diverging lineage of American placental mammals, currently represented by 20 species in the orders Cingulata (armadillos) and 16 species in the order Pilosa (six for the sloths and ten for the anteaters). It is therefore a further contribution to a broader project whose aim is to review the entire theriological and osteological collections of the MZUT, but also to make available to a wider audience the results of ancient and often forgotten biological surveys in the Neotropics led by Italian explorers and naturalists (Gippoliti & Castiglia, 2020).

#### XENARTHRA IN TURIN'S THERIOLOGICAL AND OSTEOLOGICAL SCIENTIFIC COLLECTIONS

If compared to the entire collection, which contains more than 3000 specimens, the number dealt within this work represents only a minor part. Overall there are 63 specimens of xenarthrans (39 mount, 20 flat skins, and four preserved in ethanol) of which about 30% had the species undetermined. Similarly, the osteological collection consists of 62 skeletal units (53 skulls and nine skeletons) approximately 60% were undetermined.

These specimens were collected mainly in the second half of the XIX century and are the result of different contributions. Specimens have been gathered during

scientific expeditions undertaken by scientists and explorers connected to the Royal Zoological Museum of Torino. Among them worthy mentioning: the zoologist Antonio Caffer, engaged as a member of the scientific staff during the voyage of the “Fregata Regina” (1839-1840); Filippo De Filippi, director of the Royal Zoological Museum of Torino, and his assistant Enrico Hillyer Giglioli (future director of the museum “La Specola” of Firenze) that were embarked on the Italian warship “Pirocorvetta Magenta” for a voyage around the globe (1865-1868); Alfredo Borelli, who explored between 1893 and 1896 northern Argentina, Paraguay, and the region between the Bolivian and Brazilian borders; and Enrico Festa who traveled between 1895 and 1898 from Panama to Ecuador.

The number of specimens was also enhanced through the exchange with other museums, thanks to donations by Italian emigrants, as well as from different European animal dealers.

## MATERIAL AND METHODS

In order to get as much information as possible about the past and present consistency of the collections and the origin of the specimens lacking historic labels, two major archival sources were used: the historic manuscript catalogues of the mammal specimens and of the osteological materials, and a bachelor’s thesis (Tadini, 1937) addressing the state of the art of the specimens updated to 1937.

Specimens were identified based on the external and osteological diagnostic traits described by Miranda *et al.* (2018) for *Cyclopes*, Wetzel (1975) for *Tamandua*, Hayssen (2009a; 2009b; 2010) and Hautier *et al.* (2014) for *Choloepus* and *Bradypus*, and Wetzel *et al.* (2008); Feijó *et al.* (2018) for armadillos.

On demand we can provide images of selected individuals that can be used in potential research focused on the analysis of inter and intraspecific morphological variation. All skulls of the adult specimens, defined based on fused sutures, have been photographed at high resolution in dorsal, lateral and ventral view using a digital camera placed on a tripod at one-meter distance and in a way that the parallelism with the camera plane was ensured. We also provide skull measurements (Table I; II; III), following Feijó *et al.* (2018) for armadillos; Hossotani *et al.* (2017) for the anteaters of the genus *Tamandua* and *Myrmecophaga*, and Anderson & Handley (2001) for sloths.

The catalogue follows the general structure proposed by Ghiraldi *et al.* (2021), where all the specimens have a unique identification code that replaces the previous ones (which are reported, if present, in parentheses). It begins with the acronym MZUT (Museo di Zoologia dell’Università di Torino) or MACUT (Museo di Anatomia Comparata dell’Università di Torino) followed by the letter T (theriology) and a progressive number. If for a given specimen, the skull or the skeleton can be recognized, the same identification code has been used. We further list the method of preservation: mount, unmount (previously mounted), flat skin or ethanol fixed; the sex (if known); the age; the collecting locality and date; the name

of the person who bestowed the specimens in the museum, and lastly, if necessary, some additional note. If the specimens have no associated data the acronym w.d. (without data) was used.

## RESULTS AND DISCUSSION

Overall the work of revision allowed to detect 63 skins of which 32 are armadillos (four flat skin, one shield; three in ethanol and 24 mount) belonging to eight species, 16 are anteaters (eight flat skin and eight mount), and 15 are sloths (eight flat skin and seven mount) representing five and four species respectively.

As highlighted in a previous work (Ghiraldi *et al.*, 2021), we detected a lack of alignment with the historic catalogue, which listed 27 armadillos, seven anteaters, and nine sloths, and with the list provided by Tadini (1937): 27 armadillos, five anteaters, and seven sloths. The discrepancy between the archival sources and our inventory is probably due to the lack of registration of some specimens, particularly those collected after the first decade of the XX Century. In addition, the list provided by Tadini did not report the catalogue numbers of the specimens as well as those preserved in ethanol. Moreover, it reports exemplars that are no longer in the collection, probably discarded in the following years due to their bad state of conservation, and does not include those which, on the contrary, are still preserved. In summary, the work of revision and verification of the taxonomic nomenclature allowed both to identify 27 skin specimens previously undetermined and to review the identity of ten additional specimens.

As regards the osteological materials, the historic catalogue reported nine complete skeletons and 49 skulls, whereas our inventory documents nine partial skeletons and 53 skulls, of which 13 are sloths (four skeletons), 12 anteaters (two skeletons), and 37 armadillos (three skeletons). The work of revision allowed to identify 44 osteological units previously undetermined, and to review the identity of five new specimens, resulting in a total of four taxa of anteaters; two of sloths, and seven of armadillos. Unfortunately, it was not possible to identify two juvenile skulls of armadillos given the early ontogenetic stage and lack the collecting localities.

Concerning the anteaters it was not possible to identify at specific level two specimens. The diagnostic traits of the species of the genus *Tamandua* are not clearly defined and the identification is largely based on the collection locality. Some diagnostic traits proposed by Wetzel (1985) include the dark black vest and the presence of four pairs of cranial foramina and the shape of the palatal border of the infraorbital foramen in *T. mexicana*. This species is distributed from the west side of the Andes in northern South America to Mexico. The work of revision highlighted that all the individuals from collecting localities on the west side of the Andes have a very dark vest and skull traits fitting what Wetzel proposed. Two skins and two skulls of *Tamandua* without defined locality were included in the list of undetermined specimens. As regards the sloths it was not possible to identify at a

specific level one juvenile specimen as it lacks precise information on collecting locality.

Finally, if compared to living species in Xenarthra supraorder, the percentage of representativeness in the collections are 42,8% for Cingulata (Dasypodidae: 25%; Chlamyphoridae: 53,8%); 50% for Pilosa, Vermilingua (Myrmecophagidae: 100%; Cyclopedidae: 28,5%); 66% for Pilosa, Folivora (Megalonychidae: 50%; Bradypodidae: 75%).

The results presented in this and previous papers highlight the importance of studying the mammalogical collections. Would be important that also the other major Italian museums make an effort to boost revision implementing online databasing as the results can be put together in a sort of diffuse collection or metamuseum, more easily available to external researchers, as already proposed by Andreone *et al.* (2014).

#### RIASSUNTO

##### *Catalogo degli Xenarthra nelle collezioni del Museo Regionale di Scienze Naturali di Torino*

Le collezioni teriologiche e osteologiche dei Musei di Zoologia e di Anatomia Comparata dell'Università di Torino (Italia), oggi conservate presso il Museo Regionale di Scienze Naturali di Torino, sono costituite da oltre 3000 esemplari e da un numero indefinito di materiale osteologico. Purtroppo la mancanza cronica di personale curatoriale specializzato ha avuto come conseguenza che molti degli esemplari conservati non sono ancora stati studiati e ad oggi risultano essere ancora privi di determinazione. Il presente lavoro è focalizzato sui 63 esemplari conservati a secco o in etanolo e sulle 62 unità scheletriche appartenenti agli ordini Cingulata (armadilli) e Pilosa (bradipi e formichieri). Il lavoro di revisione ha permesso una nuova determinazione per 30 esemplari e 46 unità scheletriche precedentemente indeterminate e quindi l'implementazione di un catalogo aggiornato anche dal punto di vista tassonomico. Sfortunatamente non è stato possibile identificare a livello specifico due esemplari giovani e tre esemplari di cui mancava la località di raccolta. Complessivamente in collezione sono preservate nove specie appartenenti all'ordine Cingulata e nove all'ordine Pilosa di cui cinque sono formichieri e 4 sono bradipi.

Parole chiave: catalogo, collezione zoologica, Cingulata, mammalogia, Pilosa.

Luca GHIRALDI  
 Museo Regionale di Scienze Naturali  
 Via G. Giolitti, 36  
 I-10123 TORINO  
 luca.ghiraldi@regione.piemonte.it

Anderson FEIJÓ  
 Key Laboratory of Zoological Systematics and Evolution  
 Institute of Zoology  
 Chinese Academy of Sciences  
 100101, Chaoyang District, BEIJING  
 andefeijo@gmail.com

## COMMENTED CATALOGUE

Order CINGULATA Illiger, 1811

Family DASYPODIDAE Gray, 1821

Genus *Dasypus* Linnaeus, 1758*Dasypus novemcinctus* Linnaeus, 1758<sup>1</sup>

Nine-banded armadillo

MZUT T571 (CG. 252); mount; sex undetermined; juv; Colonia Risso<sup>2</sup>, Concepcion, Paraguay; 1893; leg. A. Borelli

MZUT T572 (CG. 290); mount; sex undetermined juv; Colonia Risso, Concepcion, Paraguay; 1893; leg. A. Borelli

MZUT T573 (CG. 533); mount; sex undetermined ad.; Guyana; no date; ex coll. Carhuri di Cefalonia

MZUT T574 (CG. 534); mount; sex undetermined juv; no date; Brazil

MZUT T575 (CG. 1479); mount; male ad.; San José<sup>3</sup>, Ecuador; 1896; E. Festa

MZUT T575 (MACUT 3952); skull

MZUT T576 (CG. 1480); mount; male ad.; Santiago Valley, Ecuador; 1896; leg. E. Festa

MZUT T577 (CG. 1481); mount; sex undetermined juv; Santiago Valley, Ecuador; 1896; leg. E. Festa

MZUT T577 (MACUT 3954); skull

MZUT T578 (CG. 1482); mount; sex undetermined juv; Santiago Valley<sup>4</sup>, Ecuador; 1896; leg. E. Festa

---

<sup>1</sup> The identity of all specimens, excepting for MZUT T571, T572, T573, and T574, were formerly undetermined.

<sup>2</sup> The locality called Colonia Risso doesn't appear on the map but following the ornithological gazetteer of Paraguay (Raymond and Paynter, 1989) it is located 25 km south the confluence of Rio Apa with Rio Paraguay.

<sup>3</sup> The locality of San José (Ecuador) doesn't appear on maps available to us, but examining the map included in the trip report written by Festa (1909) the village is located halfway between Rosario and Gualaquiza. In that area, Erinco Festa remained from 6 to 30 of May 1896.

- MZUT T578 (MACUT 3955); skull  
 MZUT T579; skin; sex undetermined ad.; Vinces<sup>5</sup>, Ecuador; 1897; leg. E. Festa  
 MZUT T580; skin; sex undetermined ad.; Vinces, Ecuador; 1897; leg. E. Festa  
 MZUT T581; skin; sex undetermined ad.; w.d. (probably from Argentina or Mexico)  
 MZUT T582; skin; sex undetermined ad.; w.d. (probably from Argentina or Mexico)  
 MZUT T583; shield; sex undetermined ad.; w.d.  
 MZUT T584; ethanol; sex undetermined juv; La Concepcion<sup>6</sup>, Ecuador; 1897; leg. E. Festa  
 MZUT T585; ethanol; sex undetermined juv; La Concepcion, Ecuador; 1897; leg. E. Festa  
 MZUT T586 (MACUT 4700); skull; sex undetermined ad.; Ecuador; no date; leg. E. Festa  
 MZUT T587 (MACUT 4702); skull; sex undetermined ad.; San Josè, Ecuador; 1896; leg. E. Festa  
 MZUT T588 (MACUT 4703); skull; female ad.; Vinces, Ecuador; 1897; leg. E. Festa  
 MZUT T589 (MACUT 7742); skull; sex undetermined ad.; Brazil; 1916; leg. A. Bovero<sup>7</sup>  
 MZUT T590 (MACUT 7743); skull; sex undetermined ad.; Brazil; 1916; leg. A. Bovero  
 MZUT T591 (MACUT 7744); skull; sex undetermined ad.; Brazil; 1916; leg. A. Bovero  
 MZUT T592 (MACUT 7746); skull; sex undetermined ad.; Brazil; 1916; leg. A. Bovero  
 MZUT T593 (MACUT 7747); skull; sex undetermined ad.; Brazil; 1916; leg. A. Bovero  
 MZUT T594 (MACUT 7748); skull; sex undetermined juv; Brazil; 1916; leg. A. Bovero

---

<sup>4</sup> Enrico Festa reached the Santiago Valley at the point where it is formed by the confluence of the Zamora and Namangoza rivers. He sets up his camp on a hill located at about -3,03 S; -78,23 E from 4<sup>th</sup> to 26<sup>th</sup> February 1896.

<sup>5</sup> Enrico Festa remained in the Vinces area from 2<sup>nd</sup> to 30<sup>th</sup> September 1897.

<sup>6</sup> Enrico Festa remained in La Concepcion from 2<sup>nd</sup> to 30<sup>th</sup> April 1897.

<sup>7</sup> Alfonso Bovero was born in 1871 in a town near Turin (Italy). In 1914 moved to Brazil where he occupied the chair at the medical faculty of the University of Sao Paulo. Thanks to his donations, the Turin museum was enriched with numerous skulls of the Brazilian fauna.

MZUT T595 (MACUT 7749); skull; sex undetermined juv; Brazil; 1916; leg. A. Bovero

MZUT T596 (MACUT 7750); skull; sex undetermined juv; Brazil; 1916; leg. A. Bovero

MZUT T597 (MACUT 7752); skull; sex undetermined juv; Brazil; 1916; leg. A. Bovero

MZUT T598 (MACUT 7753); skull; sex undetermined juv; Brazil; 1916; leg. A. Bovero

MZUT T599; skull; sex undetermined ad.; Brazil; 1916; leg. A. Bovero

MZUT T600; skull; sex undetermined ad.; Brazil; 1916; leg. A. Bovero

MZUT T601; skull; sex undetermined ad.; Brazil; 1916; leg. A. Bovero

MZUT T602; skull; sex undetermined ad.; Brazil; 1916; leg. A. Bovero

***Dasyops septemcinctus*** Linnaeus, 1758

Brazilian lesser long-nosed armadillo

MZUT T603 (CG. 2768); mount; sex undetermined juv; Argentina; 1928; leg. Principe di Piemonte Umberto II di Savoia.

MZUT T604; ethanol; sex undetermined ad.; w.d.<sup>8</sup>

MZUT T605 (MACUT 3476); skull; sex undetermined ad.; 1896; purchased from T. Crivelli<sup>9</sup>

MZUT T606 (MACUT 3484); skull; sex undetermined ad.; 1896; purchased from T. Crivelli

MZUT T607 (MACUT 7751); skull; sex undetermined ad.; Brazil; 1916; leg. A. Bovero<sup>10</sup>

***Dasyops septemcinctus hybridus*** (Desmarest, 1804)

Southern long-nosed armadillo

MZUT T608 (CG. 1310); mount; sex undetermined ad.; Buenos Aires, Argentina; 1888; T. Crivelli<sup>11</sup>

---

<sup>8</sup> Formerly undetermined.

<sup>9</sup> Telemaco Crivelli was a passionate of natural sciences settled in Argentina. He donated numerous specimens to the museum.

<sup>10</sup> Formerly undetermined.

<sup>11</sup> Formerly undetermined.

*Dasypus* sp.

MZUT T637; skull; sex undetermined juv; w.d.

MZUT T638; skull; sex undetermined juv; w.d.

Family **CHLAMYPHORIDAE** Gray, 1821Genus *Euphractus* Linnaeus, 1758*Euphractus sexcinctus* (Linnaeus, 1758)<sup>12</sup>

Six-banded armadillo

MZUT T609 (CG. 532); mount; sex undetermined ad.; Paraguay; 1827; leg. Mr. Bonomi<sup>13</sup>

MZUT T610 (CG. 1628); mount; sex undetermined ad.; Urucum, Mato Grosso, Brazil; 1893; leg. A. Borelli

MZUT T611 (CG. 2813); mount; sex undetermined ad.; Argentina; 1911; donation by Argentinian committee during International Expo of Torino

MZUT T612 (CG. 2814); mount; sex undetermined ad.; Argentina; 1911; donation by Argentinian commity during International Expo of Torino

MZUT T613 (MACUT 222); skeleton; sex undetermined ad.; w.d.

MZUT T614 (MACUT 7741); skull; sex undetermined ad.; Brazil; 1916; leg. A. Bovero

MZUT T615; skull; sex undetermined ad.; Brazil; 1916; leg. A. Bovero

MZUT T616; skull; male ad.; Brazil; 1916; leg. A. Bovero

MZUT T617; skull; sex undetermined ad.; Brazil; 1916; leg. A. Bovero

MZUT T618; skull; sex undetermined juv; Brazil; 1916; leg. A. Bovero

MZUT T619; skull; sex undetermined ad.; Brazil; 1916; leg. A. Bovero

---

<sup>12</sup> All the specimens were Formerly undetermined except MZUT T609, T613 and T614.

<sup>13</sup> The taxidermy laboratory of the Bonomi family, based in Milano, was for most of the 19<sup>th</sup> Century one of the reference firms of the Italian natural history museums.

Genus *Chaetophractus* Fitzinger, 1871

*Chaetophractus villosus* (Desmarest, 1804)

Large hairy armadillo

MZUT T620 (CG. 1346); mount; sex undetermined ad.; Valparaiso, Chile; 1867; donation by Mr. Brignardello during the stop of the Italian warship "Pirocorvetta Magenta"

MZUT T621 (CG. 2033); mount; male ad.; Argentina; donation by E. Festa.

MZUT T621 (MACUT 6785); skull.

MZUT T622; mount; sex undetermined ad.; w.d.; purchased from an itinerant menagerie.

MZUT T623 (MACUT 3477); skull; sex undetermined ad.; 1896; purchased from T. Crivelli.

Genus *Zaedyus* Ameghino, 1889

*Zaedyus pichiy* (Desmarest, 1804)

Pichi

MZUT T624 (CG. 861); mount; sex undetermined ad.; Pampas, Patagonia, Argentina; 1855; purchased from G.A. Franck

MZUT T625 (CG. 1069); mount; sex undetermined ad.; Chile; 1867; donation by museum of Santiago during the visit of E. H. Giglioli

MZUT T626 (MACUT 3473); skull; sex undetermined ad.; 1896; purchased from Crivelli<sup>14</sup>

MZUT T627 (MACUT 3584); skull; sex undetermined ad.; w.d.

MZUT T628 (MACUT 3598); skull; sex undetermined ad.; w.d.

---

<sup>14</sup> Formerly undetermined.

Genus *Chlamyphorus* Harlan, 1825*Chlamyphorus truncatus* Harlan, 1825

Pink fairy armadillo

MZUT T629; mount; sex undetermined ad.; Angaco, San Juan, Argentina; no date;  
donation by Mr. Ottolenghi

Genus *Priodontes* F. Cuvier, 1825*Priodontes maximus* (Kerr, 1792)

Giant armadillo

MZUT T630 (CG. 900); mount; sex undetermined ad.; Suriname; 1861; donation by  
Dr. Kranz from Stuttgart museum

MZUT T630 (MACUT 223); skeleton

MZUT T631 (CG. 1999); mount; sex undetermined ad.; Corumbà, Mato Grosso,  
Brazil; 1905; donation by M. Carcano<sup>15</sup>

Genus *Cabassous* F. Cuvier, 1825*Cabassous tatouay* (Desmarest, 1804)

Greater naked-tailed armadillo

MZUT T632; Skull; sex undetermined ad.; w.d.<sup>16</sup>

Genus *Tolypeutes* Illiger, 1811*Tolypeutes matacus* (Desmarest, 1804)

Southern three-banded armadillo

MZUT T633 (CG. 854); mount; sex undetermined ad.; La Plata, Argentina; 1853;  
donation Dr. Olivieri

---

<sup>15</sup> Massimiliano Carcano was a consular agent of the King of Italy at Corumbà in the State of Mato Grosso do Sul (Brazil).

<sup>16</sup> Formerly undetermined.

MZUT T634 (CG. 1308); mount; male ad.; Buenos Aires, Argentina; 1888; leg. T. Crivelli<sup>17</sup>

MZUT T635 (MACUT 3480); skull; sex undetermined ad.; 1896; purchased from T. Crivelli

MZUT T636 (MACUT 3586); skull; sex undetermined ad.; w.d.<sup>18</sup>

Order **PILOSA** Flower, 1883

Family **MYRMECOPHAGIDAE** Gray, 1825

Genus *Myrmecophaga* Linnaeus, 1758

*Myrmecophaga tridactyla* Linnaeus, 1758

Giant anteater

MZUT T639 (CG. 527); mount; sex undetermined ad.; Rio de Janeiro, Brazil; 1839; purchased by Mr. Corelli during A. Caffer expedition

MZUT T640 (MACUT 215); skull; w.d.

MZUT T641 (MACUT 3467); skull; sex undetermined ad.; 1896; purchased from T. Crivelli

MZUT T642 (MACUT 7712); skull; sex undetermined ad.; 1919; leg. A. Bovero<sup>19</sup>

Genus *Tamandua* Rufinesque, 1815

*Tamandua mexicana* (Sussure, 1860)

Northern tamandua

MZUT T643; skin; sex undetermined ad.; Vinces, Ecuador; 1897; leg. E. Festa

MZUT T643 (MACUT 3981); skeleton

MZUT T644; skin; female ad.; Forest of Peripa River, Ecuador; 1897; leg. E. Festa

MZUT T644 (MACUT 4699); skull<sup>20</sup>

---

<sup>17</sup> Formerly undetermined.

<sup>18</sup> Formerly undetermined.

<sup>19</sup> Formerly undetermined.

MZUT T645; skin; sex undetermined ad.; Vinces, Ecuador; 1897; leg. E. Festa  
 MZUT T646; skin; sex undetermined ad.; Vinces, Ecuador; 1897; leg. E. Festa

***Tamandua tetradactyla*** (Linnaeus, 1758)

Southern tamandua

MZUT T647 (CG. 112); mount; sex undetermined ad.; Bolivia; 1853; donation by Mr. Olivieri

MZUT T648 (CG. 528); mount; sex undetermined ad.; Brazil; 1830; purchased from Mr. Bonomi

MZUT T649 (CG. 531); mount; sex undetermined ad.; South America; 1826; exchange with Geneve museum

MZUT T650 (CG. 2807); mount; sex undetermined ad.; Argentina; 1911; donation by Argentinian Committee at Torino International EXPO<sup>21</sup>

MZUT T651 (MACUT 7816); skull; sex undetermined ad.; Brazil; 1916; A. Bovero<sup>22</sup>

MZUT T652; skull; sex undetermined ad.; Brazil; 1916; leg. A. Bovero

MZUT T653; skull; sex undetermined ad.; w.d.

***Tamandua* sp.**

MZUT T659; skin; sex undetermined ad.; Ecuador; 1897; leg. E. Festa

MZUT T660; skin; sex undetermined ad.; Ecuador; 1897; leg. E. Festa

---

<sup>20</sup> T644 was formerly undetermined. All the other *Tamandua* specimens were labeled as *T. tetradactyla*.

<sup>21</sup> Formerly undetermined.

<sup>22</sup> The specimen MZUT T651 from Brazil shows four foramens and the shape of the infraorbital as in *T. mexicana*. According to Wetzel (1985), the number of foramens is variable in the populations of *Tamandua* from Brazil, being more consistent in the areas closer to the Andes. To our knowledge no published studies assessed the reliability of the diagnostic traits proposed by Wetzel (1985), thus we took a conservative approach considering all specimens from Brazil as *T. tetradactyla*.

Family **CYCLOPEDIDAE** Pocock, 1924Genus *Cyclopes* Gray, 1821*Cyclopes dorsalis* (Gray, 1865)

Central American silky anteater

MZUT T654; skin; female ad.; Vinces, Ecuador; 1897; leg. E. Festa (Field id 117)

MZUT T654 (MACUT 4704); skull<sup>23</sup>MZUT T655; skin; female ad.; Vinces, Ecuador; 1897; leg. E. Festa (Field id 119)<sup>24</sup>

MZUT T655 (MACUT 4705); skull

MZUT T656 (CG. 1421); mount; sex undetermined ad.; Chiriqui province, Panama; 1895; E. Festa (Field id 24)<sup>25</sup>*Cyclopes didactylus* (Linnaeus, 1758)

Common silky anteater

MZUT T657 (CG. 529); mount; sex undetermined ad.; South America 1810; leg. F.A. Bonelli from Paris museum<sup>26</sup>

MZUT T658 (CG. 530); mount; sex undetermined ad.; French Guiana; 1822; purchased from Mr. Bonomi

*Cyclopes* sp.

MZUT T661 (MACUT 217); skeleton; sex undetermined ad.; w.d.

MZUT T662 (MACUT 220); skull; sex undetermined ad.; w.d.

---

<sup>23</sup> Formerly undetermined.<sup>24</sup> Formerly undetermined.<sup>25</sup> Formerly labeled as *Cicoples didactylus*, but according to Miranda *et al.* (2018), *Cyclopes dorsalis* has a similar distribution as *T. mexicana*, extending from the west side of Andes in Colombia and Venezuela northwards to southern Mexico.<sup>26</sup> Although lacking the collecting locality, the specimen MZUT T657 fits with the description of *C. didactylus*, showing a general brownish-yellow colour in dorsal and ventral views with both dorsal and ventral stripes, and greyish legs.

Family **MEGALONYCHIDAE** Gray, 1821Genus *Cholopeus* Illiger, 1811*Cholopeus didactylus* (Linnaeus, 1758)

Linnaeus's two-toed sloth

MZUT T663 (CG. 524); mount; sex undetermined ad.; Brazil; 1835; A. Caffer from  
Marseilles museum

MZUT T664; mount; sex undetermined ad.; Colombia; 1842

MZUT T665; skin; female ad.; Vinces, Ecuador; 1897; leg. E. Festa (Field id 126)

MZUT T665 (MACUT 4011); skeleton<sup>27</sup>

MZUT T666; skin; sex undetermined juv; Vinces, Ecuador; 1897; leg. E. Festa  
(Field id 163)<sup>28</sup>

MZUT T666 (MACUT 4698); skull

*Chlopeus* sp.

MZUT T682 (CG. 525); mount; sex undetermined juv; South America; 1824; Count  
Bellino from Paris

Family **BRADYPODIDAE** Gray, 1821Genus *Bradypus* Linnaeus, 1758*Bradypus variegatus* Schinz, 1825

Brown-throated three-toed sloth

MZUT T667; mount; sex undetermined ad.; Brasil; 1864<sup>29</sup>

<sup>27</sup> Formerly undetermined.

<sup>28</sup> Formerly undetermined.

<sup>29</sup> Formerly labeled as *B. tridactylus*.

- MZUT T668; skin; female ad.; Vinces, Ecuador; 1897; leg. E. Festa (field id 107)  
 MZUT T668 (MACUT 3979); skeleton  
 MZUT T669; skin; female juv; Vinces, Ecuador; 1897; leg. E. Festa (field id 106)  
 MZUT T669; (MACUT 4697); skull  
 MZUT T670; skin; sex undetermined ad.; Vinces, Ecuador; 1897; leg. E. Festa (field id 108)  
 MZUT T670; (MACUT 3978); partial skeleton  
 MZUT T671; skin; sex undetermined ad.; Vinces, Ecuador; 1897; leg. E. Festa (field id 105)  
 MZUT T671; (MACUT 3979); skeleton  
 MZUT T672 (CG. 2805); skin; sex undetermined ad.; Argentina; 1911; donation by Argentinian Commeteete at Torino International EXPO  
 MZUT T672; partial skull  
 MZUT T673 (CG. 2806); skin; sex undetermined sad.; Argentina; 1911; donation by Argentinian Committee at Torino International EXPO  
 MZUT T673; partial skull  
 MZUT T674 (MACUT 216); skull; sex undetermined ad.; w.d.<sup>30</sup>  
 MZUT T675; skull; sex undetermined ad.; Brazil; 11/II/1919; leg. A. Bovero  
 MZUT T676; skull; sex undetermined sad.; Rio de Janeiro, Brazil; V/1929; leg. A. Bovero  
 MZUT T677; partial skull; female ad.; Brazil; 1919; leg. A. Bovero  
 MZUT T678; skull; sex undetermined ad.; Manguinhos, Brazil; 1913 leg. A. Bovero<sup>31</sup>

***Bradypus tridactylus*** Linnaeus, 1758

Pale-throated three-toed sloth

- MZUT T679; mount; female ad.; South America; 1810; F.A. Bonelli from Paris museum  
 MZUT T680; mount; sex undetermined juv; Suriname; 1810; F.A. Bonelli from Paris museum

---

<sup>30</sup> Formerly labeled as *B. tridactylus*.

<sup>31</sup> Formerly labeled as *B. tridactylus*.

***Bradypus torquatus*** Illiger, 1811

Maned three-toed sloth

MZUT T681 (CG. 523); mount; sex undetermined ad.; Bahia, Brazil; 1840; leg. A. Caffer

## REFERENCES

- Anderson R.P., Handley C.O.J., 2001. A new species of three-toed sloth (Mammalia: Xenarthra) from Panamá, with a review of the genus *Bradypus*. - Proceedings of the Biological Society of Washington, 114: 1-33.
- ANDREONE F., BARTOLOZZI L., BOANO G., BOERO F., BOLOGNA M., BON M., BRESSI N., CAPULA M., CASALE A., CASIRAGHI M., CHIOZZI G., DELFINO M., DORIA G., DURANTE A., FERRARI M., GIPPOLITI S., LANZINGER M., LATELLA L., MAIO N., MARANGONI C., MAZZOTTI S., MINELLI A., MUSCIO G., NICOLOSI P., PIEVANI T., RAZZETTI E., SABELLA G., VALLE M., VOMERO V., ZILLI A., 2014. Italian natural history museums on the verge of collapse? - ZooKeys, 456: 139-146.
- CALVINI M., SIORI M.S., GIPPOLITI S., PAVIA M., 2016. Catalogue of the primatological collection of the Torino University. - Natural History Sciences, 3 (2): 3-26
- DUNNUM J.L., MCLEAN B.S., DOWLWER R.C., 2018. Mammal collections of the Western Hemisphere: a survey and directory of collections. - Journal of Mammalogy, 99 (6,5): 1307-1322.
- FEJO A., PATTERSON B.D. CORDEIRO-ESTRELA P., 2018. Taxonomic revision of the long-nosed armadillos, Genus *Dasyus* Linnaeus, 1758 (Mammalia, Cingulata). - PLoS ONE, 13 (4): e0195084.
- GHIRALDI L., CARMIGNOTTI A.P., TOSETTO V., INGLEBY S., ELDRIDGE M.D.B., 2021. Revised catalogue of monotremes and marsupials in the historic mammal collection housed at Museo Regionale di Scienze Naturali of Torino, Italy. - Bonn zoological Bulletin, 70 (1): 1-14.
- GIPPOLITI S., CASTIGLIA R. 2020. Neotropical mammals in natural history collections and research in Rome, Italy. - Bol. Mus. Para. Emilio Goeldi. Cienc. Nat., Belém, 15 (3): 851-862.
- HAUTIER L., BILLET G., EASTWOOD B., LANE J., 2014. - Patterns of morphological variation of extant sloth skulls and their implication for future conservation efforts. - The Anatomical Record, 297 (6): 979-1008.
- HAYSEN V., 2009a. *Bradypus torquatus* (Pilosa: Bradypodidae). - Mammalian Species, 829 (194): 1-5.
- HAYSEN V., 2009b. *Bradypus tridactylus* (Pilosa: Bradypodidae). - Mammalian Species, 839: 1-9.
- HAYSEN V., 2010. *Bradypus variegatus* (Pilosa: Bradypodidae). - Mammalian Species, 42 (850): 19-32.

- MALANEY J. L., COOK J. A., 2018. A perfect storm for mammalogy: declining sample availability in a period of rapid environmental degradation. - *Journal of Mammalogy* 99: 773–788.
- HOSSOTANI C.M., RAGUSA-NETTO J., HELDER S., 2017. Skull morphometry and vault sutures of *Myrmecophaga tridactyla* and *Tamandua tetradactyla*. - *Iheringia Série Zoologia*, 107: 1-7.
- MIRANDA F., DE MELO CASALI D., PERINI F. A., MACHADO F. A., SANTOS F., 2018. 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.
- PASSERIN D'ENTREVES P., GAVETTI E., 2014. La collezione di cetacei dei Musei di Zoologia e Anatomia comparata dell'Università di Torino. - *Museologia Scientifica Memorie*, 12: 13-21.
- RAYMOND A., PAYNTER J.R., 1989. Ornithological gazetteer of Paraguay. – Bird Department Museum of Comparative Zoology Harvard University, Cambridge Massachusetts.
- SUAREZ A.V., TSUTSUI N.D., 2004. The value of museum collections for research and society. - *BioScience*, 54: 56–74.
- TADINI G., 1937. I mammiferi del Museo di Torino. - Tesi di Laurea inedita della Facoltà di Scienze della Regia Università di Torino (unpublished).
- TORTONESE E., 1957. Venticinque anni di vita del museo Zoologico di Torino (1930-1955). - *Natura*, 48 (1): 1-27.
- WETZEL R.M., 1975. The species of *Tamandua* Gray (Edentata, Myrmecophagidae). - *Proceedings of Biological Society of Washington*, 88 (11): 95–112.
- WETZEL R.M., 1985. The identification and distribution of Recent Xenarthra (= Edentata). In G. G. Montgomery (ed.), *The evolution and ecology of armadillos, sloths, and vermilinguas* (pp 5–21). - Smithsonian Institution Press, Washington, D.C.
- WETZEL R.M., GARDNER A. L., EDFORD H. L., EISEMBERG F., 2008. Order Cingulata. In (A. L. Gardner, ed.), *Mammals of South America. Marsupials, xenarthrans, shrews and bats*. Vol. 1 (pp 128-156). - University of Chicago Press, Chicago, Illinois.
- WILSON D.E., MITTERMEIER R.A., 2018. Insectivores, Sloths and Colugos. - *Handbook of the mammals of the World* Vol. 8. Lynx Edicions, Barcelona.

SPECIES	MZUT	AGE	SEX	GLS	NL	RL	AB	PC	ZB	BB	ML	PL	APL	MT	PB	MB	LL	HI	MNL	HM	LMT	AML
DASNOV	T575	ad.	M	/	/	/	34.40	24.20	43.30	34.40	/	17.40	/	22.60	16.10	30.20	10.70	7.95	80.50	19.60	24.40	20.90
DASNOV	T586	ad.	U	92.60	30.70	56.20	30.90	23.20	39.10	30.00	39.20	/	/	20.00	14.70	/	9.20	5.80	73.30	17.00	22.70	18.90
DASNOV	T587	ad.	U	100.00	31.40	61.50	35.25	23.00	44.20	31.60	/	18.90	/	23.30	15.60	30.00	10.30	8.20	/	22.40	24.20	/
DASNOV	T588	ad.	F	100.6	32.40	63.00	37.80	26.60	46.40	32.80	41.70	13.40	22.10	23.80	16.70	30.00	11.40	8.00	82.10	22.50	25.30	21.10
DASNOV	T589	ad.	U	96.80	31.40	58.20	30.90	22.00	42.20	31.30	40.50	16.00	21.70	22.70	13.70	26.90	12.90	6.10	77.50	21.60	23.80	20.70
DASNOV	T590	ad.	U	94.70	30.90	58.00	30.20	22.00	39.00	29.20	35.90	16.00	21.00	23.60	14.50	26.70	10.80	5.40	75.80	20.00	23.30	/
DASNOV	T591	ad.	U	98.80	32.70	62.00	31.80	23.00	39.70	29.70	40.90	20.10	24.40	22.60	14.70	25.60	12.70	6.50	79.50	19.00	24.40	21.80
DASNOV	T592	ad.	U	94.40	31.50	58.20	30.50	23.00	40.10	31.00	38.00	18.70	21.30	23.80	13.70	25.60	10.00	5.50	75.00	21.90	24.60	20.10
DASNOV	T593	ad.	U	95.40	32.00	55.90	32.50	23.90	41.10	33.30	38.60	19.40	22.20	23.20	14.70	27.10	11.90	6.60	77.20	21.50	26.00	18.30
DASNOV	T599	ad.	U	96.60	33.60	58.80	33.00	22.70	41.80	31.00	38.40	16.50	22.60	24.10	15.10	27.10	9.90	6.10	78.00	19.35	25.10	19.90
DASNOV	T600	ad.	U	97.50	30.20	60.20	31.70	22.10	39.60	30.30	37.30	18.10	22.10	23.80	15.00	/	11.30	7.00	78.30	22.00	25.40	19.30
DASNOV	T601	ad.	U	91.50	30.40	56.50	29.40	21.30	36.80	29.60	/	15.90	/	/	13.70	/	11.20	5.90	75.25	16.60	24.70	20.00
DASSEP	T605	ad.	U	69.30	29.40	38.80	24.00	18.30	32.60	25.60	27.00	16.40	/	15.70	12.40	23.00	7.20	5.50	51.20	16.00	16.40	14.40
DASSEP	T606	ad.	U	68.30	20.00	38.00	22.10	17.00	30.70	24.60	24.00	17.60	15.80	16.30	11.30	22.20	7.30	4.90	/	16.40	17.40	/
DASSEP	T607	ad.	U	70.00	21.00	40.20	23.00	18.00	30.60	25.30	25.90	13.00	16.50	15.80	11.60	23.60	7.40	3.90	55.10	16.70	17.40	14.20
EUPSEX	T613	ad.	U	101.8	29.00	52.00	41.80	23.80	59.50	32.00	/	/	/	/	/	/	/	/	/	/	/	/
EUPSEX	T614	ad.	U	110.2	30.40	57.70	44.90	26.40	62.40	34.40	33.30	21.60	12.50	50.80	21.00	59.30	7.50	7.00	87.70	44.60	55.70	5.40
EUPSEX	T615	ad.	U	116.9	31.00	61.10	50.75	27.40	69.30	37.50	38.70	22.50	12.00	52.7	23.00	63.40	8.50	7.70	91.60	48.80	56.80	6.50

Table 1. Continued

EUPSEX	T616	ad.	M	113.30	25.90	60.50	48.30	26.30	65.80	35.80	36.20	21.60	12.40	52.20	23.80	61.70	8.00	6.50	90.00	47.30	55.50	6.60
EUPSEX	T617	ad.	U	113.80	28.20	58.65	50.00	26.40	70.00	36.00	35.60	22.70	12.70	51.20	22.60	62.00	9.80	7.50	90.50	47.70	54.50	7.60
EUPSEX	T619	ad.	U	121.20	34.25	61.00	55.25	26.70	75.10	48.60	37.80	23.50	13.50	55.30	23.70	67.00	7.60	11.70	/	/	/	/
CHAVIL	T621	ad.	M	92.90	25.40	51.40	49.00	24.20	62.90	32.00	26.60	15.60	10.00	41.50	19.40	52.40	9.00	6.70	76.60	38.40	46.50	6.00
CHAVIL	T623	ad.	U	93.50	33.00	51.40	44.60	22.70	56.20	30.90	28.40	15.10	11.30	40.20	18.00	46.30	9.00	7.70	74.3	34.6	44.4	5.60
ZAEPIC	T626	ad.	U	68.80	22.20	38.00	32.20	19.70	41.20	25.10	20.90	9.90	11.20	26.40	14.60	36.40	7.30	6.80	/	/	/	/
ZAEPIC	T627	ad.	U	69.50	22.40	38.80	31.40	19.10	42.70	24.30	21.10	9.60	11.40	27.00	13.70	39.80	5.70	8.30	54.30	27.10	29.70	7.15
ZAEPIC	T628	ad.	U	64.60	19.60	35.20	29.80	18.20	39.50	26.20	18.20	9.70	10.90	24.60	/	/	/	/	/	/	/	/
PRIOMAX	T630	ad.	U	199.60	78.50	109.20	58.00	46.10	84.40	64.00	60.30	52.35	25.70	73.70	31.30	79.30	21.90	7.70	157.5	42.70	72.30	33.50
CABTAT	T632	ad.	U	105.20	41.80	55.90	43.70	33.30	52.40	38.30	/	/	/	36.00	22.00	46.70	13.40	4.20	/	/	/	/
TOLMAT	T635	ad.	U	69.90	18.30	35.00	25.80	16.60	32.80	23.30	20.30	14.00	10.70	29.70	12.60	26.40	6.30	3.10	57.00	24.70	30.30	10.80
TOLMAT	T636	ad.	U	71.90	21.40	39.00	23.10	17.10	34.40	22.90	21.30	/	11.30	32.00	13.50	27.60	8.00	3.00	/	/	/	/

Table 1. Cranio-dental measurements (mm) of adult (ad.) specimens of armadillos housed in historic osteological collection of Torino University. In the age column M = male; F = female; U = undetermined sex. Measurements taken following Fejo *et al.* (2018) where GLS = greatest length of skull; NL = nasal length; RL = rostral length; AB = anteorbital breadth; PC = postorbital constriction; ZB = zygomatic breadth; BB = braincase breadth; ML = maxilla length; PIL = palatine length; APL = anterior palatal length; MT = maxillary toothrow length; PB = palatal breadth; MB = mastoid breadth; LL = lacrimal length; HJ = height of jugal bone; MNL = mandibular length; HM = height of mandible; LMT = mandibular toothrow length; AML = anterior mandibular length. Abbreviations used for taxonomic identifications: CABTAT = *Cabassous tatouay*; CHAVIL = *ChaetophRACTUS villosus*; DASNOV = *Dasyptus novemcinctus*; DASSEP = *Dasyptus septemcinctus*; EUPSEX = *Euphractus sexcinctus*; PRIOMAX = *Priodontes maximus*; TOLMAT = *Tolypeutes matacus*; ZAEPIC = *Zaedyus pichiy*.

SPECIES	MZUT	AGE	SEX	OL	ML	PW	PTB	INB	OCB	FMD	FH	NL	NB	FL	SL	ZB	NC	PL	CB	SOL	CH
MYRTRI	T640	ad.	U	63.90	230.20	19.50	42.50	23.80		20.70	22.60	181.00	15.60	139.30	347.20	69.10	167.4	25.00	66.80	33.00	59.30
MYRTRI	T641	ad.	U	63.70	189.40	16.80	34.80	22.90	39.80	20.45	15.70	143.3	13.75	96.20	292.40	56.10	157.2	20.90	56.50	21.20	51.70
MYRTRI	T642	sad.	U	44.90	136.00	16.10	35.40	22.80	36.30	17.85	15.50	92.00	13.00	81.80	229.70	52.80	136.5	22.00	56.70	24.75	45.80
TAMMEX	T644	ad.	F	30.85	59.20	13.30	23.10	8.10	23.00	12.00	10.40	40.60	7.70	42.65	112.40	37.30	78.15	21.25	37.40	15.10	35.25
TAMMEX	T643	ad.	U	27.00	61.00	13.20	/	8.40	24.50	12.25	10.70	43.40	/	38.70	122.10	40.70	75.70	22.65	39.70	12.20	38.00
TAMTET	T651	ad.	U	32.45	64.85	13.40	24.40	8.40	22.00	12.40	9.40	42.20	8.20	52.30	129.00	43.60	87.70	22.75	42.70	16.85	36.00
TAMTET	T652	ad.	U	33.55	49.00	17.00	22.20	9.00	25.25	14.20	9.15	34.00	6.00	45.10	112.40	37.60	79.60	16.60	40.85	18.50	34.35
TAMTET	T653	ad.	U	28.70	57.60	14.25	20.30	9.00	23.40	12.40	10.80	39.80	6.90	49.90	123.10	38.70	84.40	20.00	38.70	15.10	35.10

Table II. Cranio-dental measurements (mm) of subadult (sad.) and adult (ad.) specimens of anteaters housed in historic osteological collection of Torino University. In the age column M = male; F = female; U = undetermined sex. Measurements taken following Hosotani *et al.* (2017) where OL = orbital length; ML = maxilla length; PW = palatal width; PTB = pterygoids breadth; INB = inner nostril breadth; OCB = occipital condyle breadth; FMD = foramen magnum diameter; FH = foramen magnum height; NL = nasal length; NB = nasal breadth; FL = frontal length; SL = skull length; ZB = posterior zygomatic arch breadth; NC = neurocranium length; PL = parietal length; CB = cranial breadth; SOL = Supraoccipital length; CL = cranial height. Abbreviations used for taxonomic identifications: MYRTRI = *Mymecophaga tridactyla*; TAMMEX = *Tamandua mexicana*; TAMTET = *Tamandua tetradactyla*.

SPECIES	MZUT	AGE	SEX	GLS	POC	AZB	PZB	SPL	MTRL	PB	PPL	ABAR	DPJL	EAM	SPB	ARB	BD
BRAVAR	T668	sad.	F	74.40	23.30	45.00	42.20	27.40	25.40	19.10	41.30	3.90	14.75	4.90	4.50	16.70	32.00
BRAVAR	T670	ad.	F	75.20	23.70	44.80	44.20	27.00	24.30	18.40	40.40	4.30	12.95	4.70	6.00	16.00	32.00
BRAVAR	T671	ad.	F	74.30	24.00	42.30	42.60	26.30	24.60	19.00	41.50	5.20	16.90	4.950	7.50	19.00	31.30
BRAVAR	T672	ad.	U	/	24.60	48.80	47.10	30.65	25.30	20.00	42.20	5.40	17.70	5.90	9.00	21.00	30.50
BRAVAR	T673	sad.	U	/	23.00	47.00	43.70	24.20	24.00	16.35	36.30	4.40	18.20	/	7.00	17.70	/
BRAVAR	T674	ad.	U	72.90	24.65	49.25	42.40	31.60	25.80	19.30	39.25	6.50	16.60	6.30	7.10	19.50	31.70
BRAVAR	T675	sad.	U	72.50	21.80	46.30	45.30	25.10	26.10	19.50	38.00	5.00	16.40	5.40	7.60	20.80	35.30
BRAVAR	T677	ad.	F	/	24.70	53.20	50.30	29.40	30.90	23.00	45.80	6.70	11.70	6.20	9.70	24.80	/
BRAVAR	T678	ad.	U	76.70	25.20	44.40	47.60	28.20	27.00	19.00	40.50	5.10	14.40	5.70	7.30	19.80	/
CHLDID	T665	ad.	U	101.90	36.80	58.00	62.30	25.60	37.90	21.40	44.70	6.20	21.20	6.70	4.90	/	46.80

Table III. Cranio-dental measurements (mm) of subadult (sab) and adult (ad.) specimens of sloths housed in historic osteological collection of Torino University. In the age column M = male; F = female; U = undetermined sex. Measurements taken following Anderson & Handley (2001), where GLS = greatest length of skull; POC = post-orbital constriction; AZB = anterior zygomatic breadth; PZB = posterior zygomatic breadth; SPL = squamosal process length; MTRL = maxillary toothrow length; PB = palatal breadth; PPL = postpalatal length; ABAR = antorbital bar breadth; DPJL = descending jugal process length; EAM = greatest external auditory meatus diameter; SPB = squamosal process breadth; ARB = Ascending mandibular ramus breadth; BD = Braincase depth. . Abbreviations used for taxonomic identifications: BRAVAR = *Bradypus variegatus*; CHLDID = *Chloepus didactylus*.