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REVIEW AND HISTORICAL NOTES ON THE NON HUMAN PRIMATE COLLECTION OF THE NATURAL HISTORY MUSEUM, ZOOLOGICAL SECTION «LA SPECOLA», FLORENCE UNIVERSITY, ITALY

Abstract - The primatological collection housed in the Natural History Museum, Zoological Section «La Specola» of Florence University, is considered one of the most important in Italy in terms of both the quantity and the historical value of the specimens. In recent years a complete review, reorganization and revaluation of the historical value of the collection has been performed. The results indicate that the collection comprises 501 specimens of non-human primates, including 71 complete post-cranial skeletons, 297 skulls and 256 mandibles, 229 stuffed samples, 69 skins and 23 monkeys preserved in alcohol. The collection is the result of contributions from activities such as expeditions, donations, purchases and exchanges from all over the world since the second half of the 18th century. Most of the primates are free-ranging animals captured in ancient times. «La Specola» collection houses the holotype of *Cercopithecus boutourlinii*, described by Giglioli in 1887 (now *Cercopitecus mitis boutourlinii* Giglioli, 1887) and the paralectotype of *Cercopithecus brazzae* Milne Edwards, 1886 (now *Cercopithecus neglectus* Schlegel, 1876). 120 species, approximately 31.6% of those described, are represented in the collection. In this work we present the results of the review with new and up-to-date taxonomic attributions and a complete list of samples including information on the preservation status for each specimen.

Key words - Naturalistic Collection, Primates, review, Italy, Florence.

Riassunto - *Revisione e cenni storici della collezione di primati non umani del Museo di Storia Naturale «La Specola» Università di Firenze*. La collezione Primatologica ospitata nel Museo di Storia Naturale, Sezione Zoologica «La Specola» dell'Università di Firenze, è considerata una delle più importanti in Italia per quantità e valore storico degli esemplari. In seguito ad una completa revisione della collezione al fine di rivalutarla dal punto di vista storico e scientifico risulta che essa comprende 501 esemplari di primati non umani, tra cui 71 scheletri post-craniali completi, 297 crani e 256 mandibole, 229 individui naturalizzati, 69 pelli e 23 animali conservati in alcool. La collezione è composta da reperti acquisiti tramite spedizioni, donazioni, acquisti e scambi da tutto il mondo a partire dalla seconda metà del XVIII secolo, la maggior parte dei quali catturati in natura. La collezione de «La Specola» ospita l'olotipo di *Cercopithecus boutourlinii*, descritto da Giglioli nel 1887 (ora *Cercopitecus mitis boutourlinii* Giglioli, 1887) e il paralectotype *Cercopithecus brazzae* Milne Edwards, 1886 (ora *Cercopithecus neglectus* Schlegel, 1876). Nella collezione si contano 120 specie, circa 31,6% di quelle attualmente descritte. In questo lavoro presentiamo i risultati della revisione con le nuove attribuzioni tassonomiche aggiornate e un elenco completo dei campioni incluse le informazioni sul loro stato di conservazione.

Parole chiave - Collezione museale, Primati, revisione, Italia, Firenze.

Introduction

The primatological collection housed in the Natural History Museum, Zoological Section «La Specola» of Florence University, is one of the oldest and most important primatological collections in Italy (Agnelli, 2006; Bruner & Gippoliti, 2006). In recent years a complete review of the collection has been performed, comprising new and up-to-date assessments of the taxonomic attributions. The previous review, carried out in 1980, merely updated the scientific names in line with recent literature without checking the correct attribution of the samples. Moreover, many of the localities given as provenance for the specimens were not the actual collection sites but rather deductions made on the base of the species' attribution. Many specimens had incorrect identification numbers, while others were without information. Although several studies have been performed on this collection in the past (among them Olson, 1979; Moggi Cecchi & Crovella, 1991; Venerosi Pesciolini & Borgognini Tarli, 1992; Crovella & Ardito, 1994; Gippoliti, 2006; Veracini *et al.*, 2006) a complete review of species' attribution was lacking, and there was an urgent need for a thorough control of the preservation status of the entire collection so that it could be more fruitfully exploited in further scientific and historical studies. This paper presents the results of this latest review of the collection, complete with new and up-to-date diagnoses for taxonomic attributions and new information on its history.

Historical notes on the Collection

The «Regio Museo di Fisica e Storia Naturale» was opened to the public in 1775 by the Grand Duke of Tuscany Pietro Leopoldo II. The initial collection of animals and plants of «La Specola» also included primates (Fig. 1). Following a recent historical review (Rossi, 2008), we were able to ascertain six specimens reported in the oldest Catalogue dated prior to 1793, including no. 201, *Loris tardigradus* (Linnaeus 1758) (Fig. 2) and no. 126, *Cebus apella macrocephalus* Spix, 1823 (Fig. 3). After the opening of the Museum, the acquisition of primates increased constantly (Fig. 4). In 1845-1846 the Grand Duchess of Tuscany Maria Antonia donated to the Museum 17 neotropical specimens collected in the Brazilian Amazon. Later, in 1863-71, the King Vittorio Emanuele II, provided «La Specola» with some

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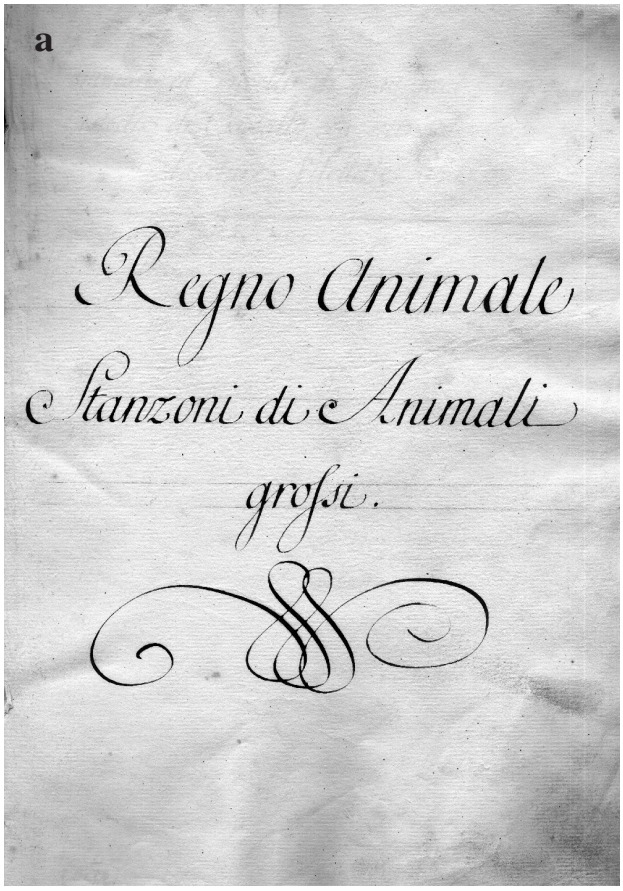

Fig. 1 - a) The first catalogue of the Natural History Museum «La Specola», dating to before 1793; b) detail.

dead specimens from the «Regio Giardino Zoologico» in Florence (Agnelli *et al.*, 1991). Among these we can mention: a specimen of the genus *Chlorocebus* (probably *Chlorocebus sabaeus* (Linnaeus, 1766)) that was transferred from the *menagerie* of the nearby Boboli garden to the «Regio Museo della Specola» in 1794. It was listed under catalogue number 1129, with the name of *Simia sabea* (Sabean monkey) or *Scimmiotto verde* (= little green monkey) (Masseti & Bruner, 2009). Between the end of the 19th and the beginning of the 20th centuries, a great number of primates were gathered all over the world by famous explorers. Among these we can mention Orazio Antinori, who travelled in Ethiopia for the Italian Geographic Society in 1880 (Antinori, 1883); Odoardo Beccari who travelled in Borneo (Pofferi, 1970); Leonardo Fea (Fea, 1888) who travelled in Birmania, and Count Giacomo Savorgnan di Brazzà who collected many important specimens in the French and Belgian Congo in 1884 (Savorgnan di Brazzà, 1887). Through the efforts of Enrico H. Giglioli, Director of the Museum's Vertebrate Collections, in 1875 «La Specola» received several specimens of orang-utan currently identified as belonging to two distinct species: *Pongo pygmaeus* (Linnaeus, 1760) and *Pongo abellii* (Lesson, 1827). In 1872 Giglioli published a paper on the craniology of chimpanzees utilising specimens that are still present in the collection. In his work he described the new species *Troglodytes schweinfurthii*, (Giglioli, 1872), currently a subspecies of *Pan troglodytes* (Blumenbach, 1775). The «La Specola» collection also houses the holotype of *Cercopithecus boutourlinii*, described by Giglioli in 1887 (now *Cercopitecus mitis boutourlinii* Giglioli, 1887) and the paralectotype of *Cercopithecus brazzae* Milne Edwards, 1886 (now *Cercopithecus neglectus* Schlegel, 1876) (Fig. 5). For historical reasons, particular attention is devoted to the 27 specimens collected by Nello Beccari in English Guyana (1931-1932) (Pofferi, 1970). Nello Beccari (son of the great naturalist Odoardo Beccari) visited Guyana looking for an alleged neotropical ape (*Ameranthropoides loysi)* described on the base of a photo, which was in actual fact a badly preserved specimen of *Ateles.* In his diary he reported the search for a mysterious primate called *dai-dai*, which the local people described as half man and half animal. He brought back many specimens of primates which were important in his work on the cerebral morphology of Atelidae, such as the *Alouatta macconelli* (Elliot, 1910), to which he attributed the taxonomic *status* of *Ameranthropoides* (Beccari, 1942).

In 1950 Vittorio Emanuele, Duke of Savoy, bequeathed many specimens of varied provenance, some of which had been collected in an expedition in East and Central Africa. Nevertheless, the majority of the 20th century collections came from the Italian Biological Expedition in Somalia (1959-1970), directed by the Tropical Eco-Zoology Study Centre of the Italian National Research Council (CNR) and carried out in liaison with the tropical agronomist Dr. Ugo Funaioli.

In conclusion, only a few primates were collected at the end of the 18th century, while the majority were gathered during the 19th and at the beginning of the 20th century, during the main period of Italian exploration and colonisation in Africa. There appear to be three peak periods in the augmentation of the collection (Fig. 4): a) between 1870 and 1900, when the then director, Giglioli, increased the collection through the acquisition and exchange of specimens b) the 1930s, when Nello Beccari gathered many specimens during his expedition in British Guyana (1931-1932); and c)

Fig. 2 - *Loris tardigradus* (Linnaeus, 1758): one of the oldest specimens in the collection, collected before 1793 (Photo S. Bambi).

Fig. 3 - *Cebus apella macrocephalus* Spix, 1823, preserved in alcohol, collected before 1793 (Photo S. Bambi).

the period between 1950 and 1969 when the University of Florence carried out several biological expeditions in Somalia (see Lanza & Simonetta, 2009).

Materials and methods

As a general reference, taxonomy follows Groves (2001, 2005) supplemented by Rylands *et al.* (2000), Grubb *et al.* (2003), Brandon-Jones (2004), Mittermeier *et al.* (2008); some additional notes are briefly discussed throughout the text. Taxon recognition was based upon morphological keys for taxonomic rank, in accordance with the descriptions available in literature (Auricchio, 1995; Rowe, 1996; Swindler, 2002; Defler, 2004; Kingdon, 2004; Mittermeier *et al.*, 2008; Walker & Molur, 2008).

Morphological analysis

In assessing the taxon we considered the following aspects: 1) sex; 2) estimated age; 3) fur and skin colour and their possible alteration through exposure to light; and 4) diagnostic keys of the taxon considered. In the analysis we took into consideration the general state of preservation of the specimen (at times parts of the body or the fur have been lost or damaged) and the type of preservation method (sometimes the preservation techniques can alter the colour or morphology of the animal).

Provenance and geographic distribution

Information on the exact provenance of the specimens was often unknown or incorrect. Thus, for a precise identification, priority was given to specimen morphology rather than provenance. In some cases a cross-referenced reconstruction was made, considering the collector, the year of collection and also the provenance of other animals brought back by the same person. The unknown provenance of many specimens created considerable difficulties in the assessment of species or subspecies of those taxa that feature an elevated individual variability in skin colour, since they are

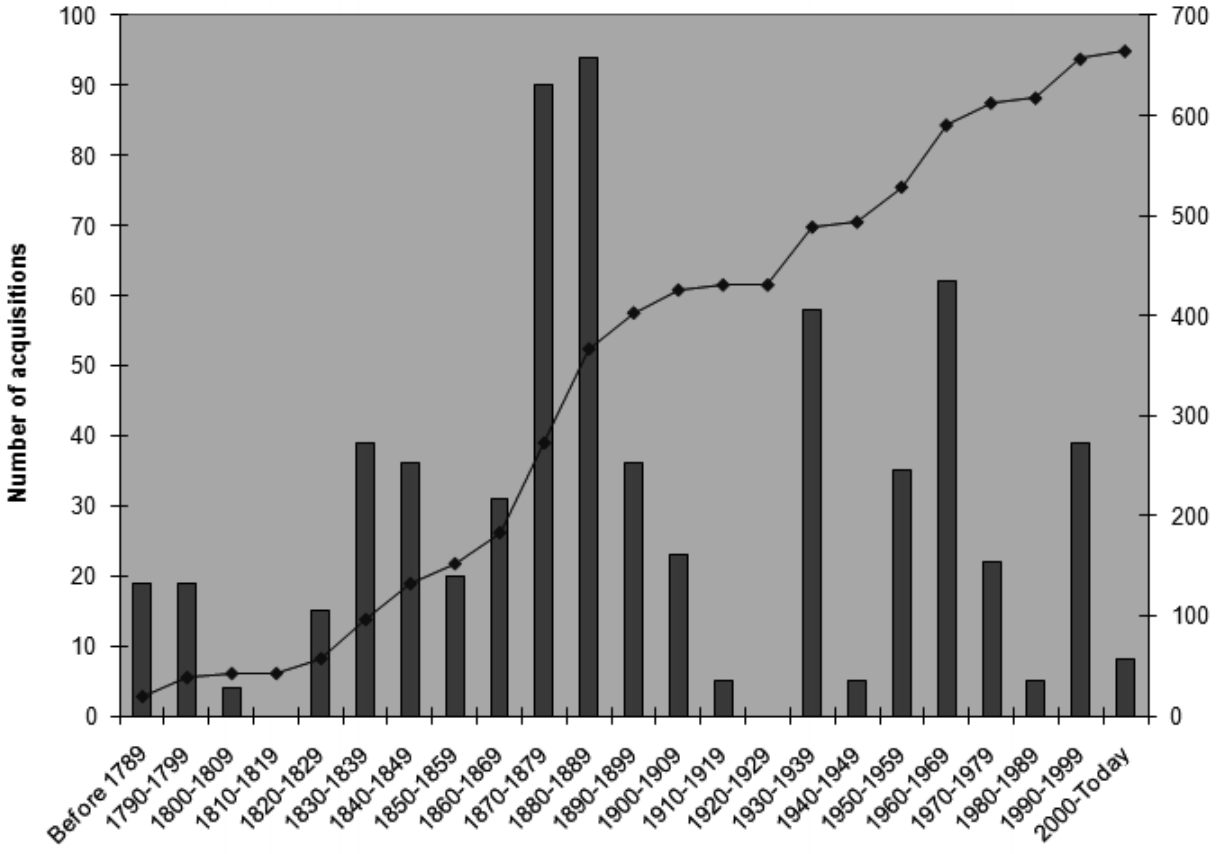

Fig. 4 - Expansion of the primatological collection.

often identified on the basis of geographic or genetic information. We indicated the subspecies only when the provenance was definite or when the taxon was easy to identify (see Tab. 2).

Taxonomic notes

– *Galago*: we follow Groves (2001) who uses the genus *Galago* for all bushbabies, although Grubb *et al.* (2003) placed all the smaller galago members of the *demidovii*, *orinus*, *zanzibaricus* and *granti* groups in the *Galagoides,* leaving the *senegalensis* group in *Galago* while the *alleni* group is assigned to *Sciurocheirus*. The genus *Galagoides* includes small forest species with a body mass of less than 200 g, and with shorter limbs and lighter build than the *Galago* in the strict sense.
– We retain the genera *Mico* and *Cebuella* as indicated by Rylands *et al.* (2000), although Groves (2001, 2005) considers them as Subgenera.
– *Saguinus*: we follow Groves (2001, 2005) who considered *S. pileatus* as a full species while Rylands *et al.* (2000) consider it as subspecies of *S. mystax*.
– *Callicebus*: we follow Groves (2001) who considers *C. nigrifons* and *personatus* as subspecies of *C. personatus*, although Rylands *et al.* (2000) consider them as full species. The two specimens housed in the museum are not easily identifiable at subspecific level due to the lack of information about provenance.
– In a recent work Silva Junior (2006) confirms all the taxa of *Chiropotes* as full species. The Guyana specimens are now *Chiropotes sagulatus* and the Amazonian south of Rio Amazonas, *C. utahickae*.
– *Alouatta macconelli* is considered a species by Groves (2001), whereas Rylands *et al.* (2005) dispute this interpretation.
– *Chlorocebus*: Groves (2001, 2005) recognises this genus while Grubb *et al.* (2003) comprise it in the genus *Cercopithecus*.
– *Piliocolobus*: we adopt the classification of Groves (2001), though as suggested by Grubb *et al.* (2003) there are not sufficient evidences to allocate members of the central African taxon assemblage of this genus to species since relevant data concerning the phylogeny of the red colobus are not yet available.
– *Semnopithecus thersites* and *Semnopithecus schistaceus* are considered full species in the work of Walker & Molur (2008) while Groves (2005) considers

Fig. 5 - The paralectotype of *Cercopithecus brazzae* Milne Edwards, 1886 (now *Cercopithecus neglectus*, Schlegel, 1876) (Photo P. Agnelli).

all the taxa of *Semnopithecus* as subspecies of *Semnopithecus entellus.*

– *Hoolock*: we follow the work of Mootnick & Groves (2005) who consider this as a full genus.

Results and discussion

Our review noted the generally good state of preservation of the majority of the samples in the collections, especially of the stuffed ones. Many of the ancient specimens are well preserved and can yield fascinating information about the old techniques used for stuffing animals. Before the review, the collection comprised 11 families and 30 genera, according to the taxonomic key of Corbet & Hill (1991). Following the review we discovered that the specimens belong to 16 different families and we also found 10 new genera: *Eulemur*, *Mico*, *Chlorocebus*, *Lophocebus*, *Piliocolobus*, *Semnopithecus*, *Trachypithecus*, *Pygathrix*, *Hoolock*, *Symphalangus.* As a result of the unknown provenance of many of the old specimens and the change in their colouration, some of them remained without certain identification. The collection now houses 501 specimens of non-human primates with 71 complete postcranial skeletons, 297 skulls and 256 mandibles, 229 stuffed samples, 69 skins and 23 monkeys preserved in alcohol (see Tab. 1).

Fig. 6 - A primate exhibition hall with the 19th century showcase (Photo S. Bambi).

There is a single specimen in alcohol, *Tarsius bancanus* (Horsfield, 1821) (no. 205 in the catalogue) collected in Sumatra before the year 1843, representing the Tarsidae family. The previous identification of this specimen was *Tarsius spectrum.* This is probably a specimen originating from the ancient nucleus of the collection; in fact, the catalogue of 1792 lists a specimen with the name of *Lemur spectrum* (no. 1268).

The suborder Strepsirrhini represents a minor part of the collection (15%), with 74 specimens. Most of these belong to the Lemuridae family from Madagascar. Almost all the samples of the Lemuridae family in the museum date to the 19th century and do not record the site of collection, except for two specimens of *Eulemur fulvus* (male and female) collected in the Mayotte Islands, Comores Archipelago in 1888. There are also many specimens of the Galagidae family from Somalia, such as the *Otolemur garnetti* (Ogilby, 1838) and the *Galago gallarum* Thomas, 1901. The Somali specimens were collected in the last century during the Italian Biological Expedition to Somalia (1959-1970). All the samples record the place of collection. The aforementioned *Loris tardigradus* (no 201, Fig. 2), one of the oldest specimens housed in the collection (Rossi, 2008) and previously identified as *Loris gracilis,* was collected in the island of Sri Lanka. This specimen was present in the catalogue of 1792 as *Simia apedia* (no. 37).

The variety of the neotropical primates is well represented in the primate collection, with 147 specimens accounting for 29% of the entire collection, with *Cebus* and *Alouatta*, *Callithrix* and *Saguinus* being the best represented taxa. Particularly notable are the 16 specimens donated to the Museum by the Grand Duchess Maria Antonia, wife of Leopold II of Lorraine, in 1845-

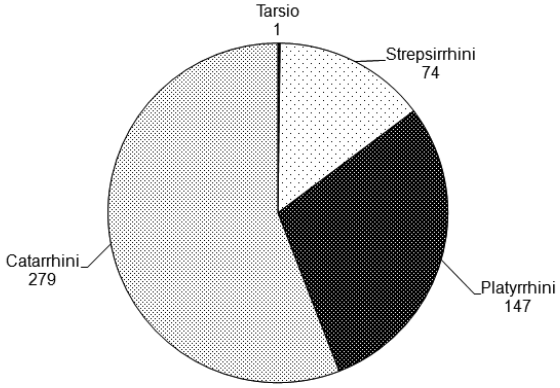

Fig. 7 - Number of specimens of the major taxonomic groups.

46. The group comprises three specimens of *Cacajao*, two specimens of *Saguinus*, two specimens of *Ateles*, two of *Callicebus* one *Saimiri*, two *Cebus* and one *Aotus.* Through the species identification we know that they were captured in a region of the central Amazon, near the Purus and Juruá rivers. We do not at present have historic evidence about how the Grand Duchess obtained these specimens, but the most plausible hypothesis is that she acquired the monkeys in Vienna shortly after the return there of the famous explorer and zoologist Johann Natterer after extensive travels in the Amazon. As regards Callitrichidae, the collection comprises 4 of the 5 genera of this family. The skins belong to animals originating from various parts of Central and South America, including the genera *Cebuella*, *Mico* and *Saguinus* originating from Amazonia and the genera *Callithrix* and *Leontopithecus* originating from the Atlantic Forest of Brazil. Two individuals of *Leontopithecus rosalia* (nos. 161 and 21251) are present in the «Aumenti» catalogue of 1819-21 as «Scimmie leonine», no. 3970. They were collected by Raddi, a naturalist sent by the Museum to Brazil with the delegation that accompanied the Prince Leopoldina of Austria who had to married Don Peter of Braganza heir of Brazil and Portugal. Although his research was primarily focused on botany, on his return journey he also brought back various mammals originating from the regions in the vicinity of the city of Rio de Janeiro, including the two golden lion tamarins (see Parrini, 2007).

Old world monkeys represent the largest section (55%) of the collection. More generally, Cercopithecidae proves to be the best-represented group in the collection (see Tab. 1), largely on account of the elevated prevalence of *Papio*, *Macaca*, *Cercopithecus* and *Chlorocebus* specimens. Colobidae are represented in the series by 52 specimens, 18 from the Asian clade and 34 from the African one. Among the Cercopithecinae we found 4 species of the genus *Chlorocebus*, including the Somali specimens *C. pygerythrus hilgerti* collected during the Italian Biological Expedition in Somalia (Lanza & Simonetta, 2009). Also from Somalia are many specimens of the species *Papio cynocephalus*, some of which can be identified as the subspecies *ibeanus.* As mentioned above, the «La Specola» collection houses the holotype of *Cercopithecus bouturlini* Giglioli, 1887, now *Cercopithecus mitis boutourlinii* (no. 75). This originated from the region of Kaffa, Ethiopia (Giglioli, 1887) and it was donated to the museum in 1885 by Leopoldo Traversi. The name was given to it by Giglioli in honour of Count Augusto Boutourline, a Russian millionaire resident in Florence who had projected the expedition to Ethiopia with Traversi in 1884-85 (Lupi, 2004). Also present is the paralectotype of *Cercopithecus brazzae* Milne Edwards, 1886 (now *Cercopithecus neglectus* Schlegel, 1876) (no. 74). The latter was collected in the Congo in 1884 by Count Savorgnan di Brazza (see Vanni *et al.*, 1991). The exemplars belonging to the genus *Piliocolobus* consist of a series of skins and several craniums that were collected by Vittorio Emanuele, Duke of Savoy, during his African expedition. In order to discover precise information about the site of collection, we consulted archive documents to reconstruct the probable itinerary of Vittorio Emanuele, which unwound through Kenya, Uganda and Zaire. The *Piliocolobus* were probably collected in Uganda in an area between Lake Albert and Lake Edward. Considering the phenotype of the skin and the probable collection site we were able to identify the two species they belonged to: *Piliocolobus foai* and *Piliocolobus tephrosceles*. The *Macaca* genus is well represented in the collection, with 40 individuals belonging to 9 different species. Some of these derive from the private collection of Professor Magi, a Florentine physician and a scholar of comparative anatomy active from around 1856, which was donated to the museum by his heirs. The bequest consists of 21 specimens in bone belonging to various genera in addition to the macaques. Among the Asian Colobinae are various naturalised animals belonging to the *Trachypithecus* genus originating from Borneo, Malabar in India and Sri Lanka, which reached the museum between 1843 and 1845. These specimens were collected during the expeditions of Leonardo Fea. Among this subfamily the *Presbytis hosei everetti* (no. 44, previous identification *Presbytis comata*) was collected in the Batu-Sang, (Baran river) region of Borneo by the animal trader G. A. Frank from London in 1892.

The Hylobatidae family is well represented with 13 specimens of the three genera *Symphalangus, Hylobates* and *Hoolock*, all collected in the 19th century. One specimen of *Symphalangus* was collected in Malacca in 1824 and the others in Sumatra between 1832 and 1839. Two *Hoolock*, (a male and a female) and two *Hylobates lar* originate from Birmania, collected by Leonardo Fea between 1887 and 1888. Two *Hylobates muelleri funereus* originate from the Batu Sang region of northern Borneo and were purchased from G.A. Frank of London in 1892 (see Tab. 2).

The Hominidae family consists of 37 specimens. Particularly significant is a skeleton of a male *Gorilla beringei graueri* (Savage, 1847) a specimen donated by Vittorio Emanuele, Duke of Savoy, and three skins

Tab. 1 - List of the taxa and number of samples broken down by method of preservation.

Taxon	N	cfr.	ssp.	SKI	ST	SKU	M	SKE	AL	Oth
Order Primates Linnaeus, 1758										
SUBORDER Strepsirrhini										
INFRAORDER Lemuriformes										
Family Cheirogaleidae										
Microcebus sp.	**1**					**1**	**1**	**1**		
Phaner sp.	**1**					**1**	**1**			
Phaner pallescens Groves and Tattersall, 1991	**1**				**1**	**1**	**1**			
Family Lemuridae										
Eulemur sp.	**3**				**1**	**3**	**3**			
Eulemur albifrons (É.Geoffroy, 1796)	**1**				**1**					
Eulemur fulvus (É Geoffroy, 1796)	**3**	**1**			**3**	**3**	**3**			
Eulemur macaco (Linnaeus, 1766)	**2**		**1**		**2**			**1**		
Eulemur mongoz (Linnaeus, 1766)	**4**	**1**			**4**	**3**	**3**	**1**		
Eulemur rubriventer (I. Geoffroy, 1850)	**1**				**1**	**1**	**1**			
Lemur catta Linnaeus, 1758	**3**	**1**			**1**	**3**				
Varecia variegata (Kerr,1792)	**6**		**1**		**5**	**5**	**5**			
Family Lepilemuridae										
Lepilemur microdon (Forsyth Major, 1894)	**1**	**1**			**1**	**1**	**1**			
Family Indriidae										
Indri indri (Gmelin,1788)	**5**				**4**	**4**	**4**			
Propithecus sp.	**1**					**1**	**1**			
Propithecus diadema Bennet, 1832	**3**		**1**		**3**	**3**	**3**			
INFRAORDER Chiromyiformes										
Famiglia Daubentoniidae										
Daubentonia madascariensis (Gmelin, 1788)	**2**				**1**	**2**	**2**	**1**		
INFRAORDER Lorisiformes										
Famiglia Lorisidae										
Loris sp.	**3**					**2**	**1**		**2**	
Loris tardigradus (Linnaeus, 1758)	**1**				**1**					
Loris lydekkerianus Cabrera, 1908	**1**								**1**	
Nycticebus bengalensis (Lacépède,1800)	**3**				**3**	**1**	**1**			
Perodictus potto (Muller, 1766)	**1**				**1**	**1**	**1**	**1**		
Family Galagidae										
Galago sp.	**1**				**1**	**1**	**1**			
Galago alleni Waterhouse,1838	**1**				**1**					
Galago gallarum Thomas, 1901	**19**			**7**	**1**	**11**	**9**	**4**	**8**	
Galago demidoff Fisher,1806	**1**	**1**							**1**	
Galago thomasi Elliot,1907	**1**	**1**			**1**					
Otolemur garnetti (Ogilby, 1838)	**4**			**3**		**4**	**4**	**1**		
SUBORDER HAPLORRHINI										
INFRAORDER Tarsiiformes										

Tab. 1 - List of the taxa and number of samples broken down by method of preservation.

Taxon	N	cfr.	ssp.	SKI	ST	SKU	M	SKE	AL	Oth
Family Tarsiidae										
Tarsius balcanus Horsfield, 1821	**1**								**1**	
INFRAORDER Simiiformes										
Parvorder Platyrrhini										
Family Aotidae										
Aotus sp.	**1**				**1**					
Aotus nigriceps Dollman, 1909	**1**	**1**			**1**					
Family Atelidae										
Undetermined	**1**					**1**	**1**			
Subfamily Alouattinae										
Alouatta sp.	**5**					**3**	**3**		**2**	
Alouatta belzebul (Linnaeus, 1766)	**1**				**1**	**1**	**1**			
Alouatta caraya (Humboldt, 1812)	**3**				**3**					
Alouatta guariba (Humboldt, 1812)	**4**				**4**	**1**	**1**			
Alouatta pigra Lawrence, 1933	**4**				**3**	**4**	**4**			
Alouatta seniculus (Linnaeus, 1766)	**2**		**1**		**2**					
Alouatta macconelli Elliot, 1910	**3**			**2**		**3**	**3**			
Subfamily Atelinae										
Ateles chamek (Humboldt 1812)	**2**				**2**					
Ateles fusciceps (Gray, 1866)	**1**		**1**		**1**					
Ateles geoffroyi Kuhl, 1820	**3**		**1**		**3**	**1**	**1**			
Ateles paniscus (Linnaues 1758)	**7**			**2**	**1**	**3**	**3**		**2**	**3**
Lagothrix lagothricha (Humboldt, 1812)	**1**				**1**					
Family Callitrichidae										
Cebuella pygmaea (Spix,1823)	**1**				**1**					
Callithrix sp.	**7**					**7**	**7**			
Callithrix jacchus (Linnaeus, 1758)	**5**	**1**			**4**	**2**	**2**	**1**		
Callithrix penicillata (É. Geoffroy, 1812)	**7**	**1**			**6**				**1**	
Callithrix aurita (È. Geoffroy, 1812)	**2**				**2**					
Mico melanurus (È. Geoffroy, 1812)	**2**				**2**					
Leontopithecus chrysomelas (Kuhl,1820)	**1**				**1**					
Leontopithecus rosalia (Linnaeus, 1766)	**6**				**6**	**1**	**1**			
Saguinus geoffroyi (Pucheran, 1845)	**2**				**2**	**2**	**2**			
Saguinus midas (Linnaeus1758)	**4**				**4**	**2**	**2**			
Saguinus niger (È. Geoffroy, 1803)	**2**								**2**	
Saguinus nigricollis (Spix, 1823)	**1**				**1**	**1**	**1**	**1**		
Saguinus oedipus (Linnaeus, 1758)	**2**				**2**					
Saguinus pileatus (I. Geoffroy and Deville, 1848)	**2**				**2**					
Family Cebidae										
Subfamily Cebinae										
Cebus sp.	**11**					**9**	**9**	**4**	**1**	
Cebus albifrons (Humboldt,1812)	**4**		**1**		**3**	**1**	**1**	**1**		
Cebus apella (Linnaeus, 1758)	**11**		**2**	**3**	**6**	**5**	**5**			
Cebus capucinus (Linnaeus, 1758)	**2**				**2**					

Tab. 1 - List of the taxa and number of samples broken down by method of preservation.

Taxon	**N**	**cfr.**	**ssp.**	**SKI**	**ST**	**SKU**	**M**	**SKE**	**AL**	**Oth**
Cebus libidinosus Spix, 1823	**1**				**1**					
Cebus olivaceus Schomburgk, 1848	**3**				**2**	**1**	**1**			
Cebus xanthosternos Wied-Neuwied, 1826	**1**	**1**			**1**					
Subfamily Saimirinae										
Saimiri sp.	**1**					**1**	**1**			
Saimiri sciureus (Linnaues, 1758)	**8**			**3**	**4**	**4**	**3**			
Family Pitheciidae										
Subfamily Callicebinae										
Callicebus sp.	**1**					**1**	**1**			
Callicebus cupreus (Spix, 1823)	**1**				**1**					
Callicebus melanochir (Wied-Neuwied, 1820)	**1**	**1**			**1**					
Callicebus personatus È. Geoffroy 1812	**2**				**2**					
Callicebus purinus Thomas 1927	**1**				**1**					
Subfamily Pitheciinae										
Chiropotes sagulatus (Humboldt, 1811)	**3**			**2**	**1**	**3**	**3**			
Chiropotes utahickae Hershkovitz, 1985	**1**				**1**					
Cacajao calvus (I. Geoffroy 1847)	**3**		**2**		**3**					
Pithecia albicans Gray, 1860	**1**				**1**					
Pithecia monacus (É. Geoffroy, 1806)	**1**				**1**					
Pithecia pithecia (Linnaeus, 1766)	**7**		**1**	**1**	**3**	**3**	**3**			
Parvorder Catarrhini										
Family Cercopithecidae										
Undetermined	**1**							**1**		
Subfamily Cercopithecinae										
Cercopithecus sp.	**14**					**14**	**7**	**4**		
Cercopithecus ascanius (Audebert, 1799)	**1**		**1**	**1**		**1**	**1**	**1**		
Cercopithecus cephus (Linnaeus, 1758)	**3**	**1**	**1**		**2**	**2**	**2**	**1**		
Cercopithecus albogularis Pousargues, 1896	**10**		**2**	**8**	**1**	**10**	**10**			**3**
Cercopithecus mitis Wolf, 1882	**2**		**1**		**2**	**1**	**1**	**1**		
Cercopithecus mona (Schreber, 1774)	**3**	**1**			**3**	**1**	**1**			
Cercopithecus neglectus Schlegel, 1876	**1**				**1**	**1**	**1**			
Cercopithecus petaurista (Schreber, 1774)	**2**		**1**		**2**	**1**	**1**			
Cercopithecus pogonias Bennet, 1833	**1**		**1**	**1**						
Cercocebus atys (Audebert, 1797)	**1**				**1**					
Chlorocebus sp.	**7**					**6**	**5**	**2**		
Cholorocebus aethiops (Linnaeus, 1758)	**7**	**1**		**1**	**4**	**4**	**4**	**2**		
Cholorocebus sabaeus (Linnaeus, 1766)	**4**	**1**			**3**	**2**	**2**			
Cholorocebus tantalus (Ogilby,1841)	**1**				**1**					
Cholorocebus pygerythrus (F. Cuvier,1821)	**12**	**1**	**1**	**1**	**4**	**10**	**10**	**1**		**1**
Erythrocebus patas (Schreber, 1775)	**3**				**3**	**1**	**1**	**1**		
Lophocebus albigena Gray 1850	**1**				**1**	**1**				
Macaca sp.	**6**					**6**	**4**	**4**		
*Macaca assamensis (*M'Clelland 1840)	**3**				**3**	**3**	**2**			

Tab. 1 - List of the taxa and number of samples broken down by method of preservation.

Taxon	N	cfr.	ssp.	SKI	ST	SKU	M	SKE	AL	Oth
Macaca fascicularis (Raffles, 1821)	4		1		4	2	2			
Macaca maura (F. Cuvier, 1823)	1				1	1				
Macaca mulatta (Zimmermann, 1780)	6	3			5	5	4	4	1	
Macaca nemestrina (Linnaeus, 1766)	5	1		1	2	3	3	2		
Macaca nigra (Desmarest, 1822)	2				2	1	1			
Macaca radiata (É. Geoffroy, 1812)	3				4	1	1	1		
Macaca sinica (Linnaeus, 1771)	4	3				3	2	2		
Macaca sylvanus (Linnaeus, 1758)	6				3	3	3	2		
Mandrillus sphinx (Linnaeus, 1758)	6			1	2	5	4	2		
Papio sp.	5			2		4	3	1		
Papio anubis (Lesson, 1827)	11	3				9	6	1		
Papio cynocephalus (Linnaeus, 1766)	24		1	4	2	23	16	1		
Papio hamadryas (Linnaeus, 1758)	14	3		1	6	9	9	2		
Papio papio (Desmarest, 1820)	2				4	1	1			
Papio ursinus (Kerr,1792)	2			1		2	2			
Subfamily Colobinae										
Colobus guereza Ruppel, 1835	17	1	1	10	3	8	8	4		1
Colobus polykomos (Zimmermann, 1780)	1				1					
Nasalis larvatus (Wurmb, 1781)	1				1					
Piliocolobus sp.	5					5	5			
Piliocolobus foai (da Pousargues, 1899)	9			7		2				
Piliocolobus tephrosceles (Elliot, 1907)	2			2						
Presbytis hosei (Thomas, 1889)	1		1		1	1	1			
Presbitys melalophos (Raffles, 1821)	1				1					
*Pygathrix nemaeus (*Linnaeus, 1771)	1				1					
Semnopithecus sp.	2					2	2			
Semnopithecus schistaceus (Hodgson, 1840)	2					2	2			
Semnopithecus entellus (Dufresne, 1797)	4	1			3					1
*Semnopithecus thersites*Blyth, 1844	1					1	1			
Trachypithecus cristatus (Raffles, 1821)	1				1					
Trachypithecus johnii (J. Fischer, 1829)	1				1					
Trachypithecus obscurus (Reid, 1837)	1				1					
Trachypithecus vetulus (Erxleben, 1777)	2		2		2	1	1			
Family Hylobatidae										
Undetermined	1					1	1	1		
Hylobates lar (Linnaeus, 1771)	3	1			3	2	2			
Hylobates muelleri Martin, 1841.	2		1		2	2	2			
Hoolock leuconedys (Groves, 1967)	2				2	2	2			
Symphalangus syndactylus (Raffles, 1821)	5				4	1	1	1		
Family Hominidae										
Subfamily Ponginae										
Pongo sp.	1					1	1	1		
Pongo abelli Lesson, 1827	2	1				1	1	1		
Pongo pygmaeus (Linnaeus, 1760)	4				3	1	1			

Tab. 1 - List of the taxa and number of samples broken down by method of preservation.

Taxon	**N**	**cfr.**	**ssp.**	**SKI**	**ST**	**SKU**	**M**	**SKE**	**AL**	**Oth**
Subfamily Homininae										
Gorilla sp.	**1**									**1**
G*orilla gorilla* (Savage, 1847)	**4**		**1**		**2**	**2**	**2**	**1**		
Gorilla beringei (Matschie, 1903)	**7**		**1**	**4**		**3**	**2**	**2**		
Pan sp.	**2**							**2**		
Pan troglodytes (Blumenbach, 1775)	**15**	**1**	**2**	**1**	**4**	**11**	**7**	**5**	**1**	
Total	**501**	**34**	**31**	**69**	**229**	**297**	**256**	**71**	**23**	**10**

(N: individual's numbers; cfr.: number of specimens whose determination of the species has to be confirmed; ssp.: number of subspecies (see also Tab. 2); SKI: skin; ST: stuffed; SKU: skull; M: mandible; SKE: skeletons post-cranial; AL: alcohol; Oth: other).

Tab. 2 - List of the subspecies.
Eulemur macaco macaco (Linnaeus, 1766)
Varecia variegata variegata (Kerr,1792)
Propithecus diadema diadema Bennet, 1832
Cebus apella apella (Linnaeus, 1758)
Cebus apella macrocephalus Spix, 1823
Cebus albifrons unicolor Spix, 1823.
Cacajao calvus calvus (I. Geoffroy 1847)
Cacajao calvus rubicundus (I. Geoffroy & Deville, 1848)
Pithecia pithecia pithecia (Linnaeus, 1766)
Alouatta seniculus juara Elliot, 1910
Ateles fusciceps rufiventris Sclater, 1872
Ateles geoffroyi vellerosus Gray, 1870
Cercopithecus ascanius whitesidei Thomas, 1909
Cercopithecus mitis bouturlini Giglioli, 1887
Cercopithecus albogularis albotorquatus Pousargues, 1896
Cercopithecus albogularis zammaranoi de Beau, 1924
Cercopithecus cephus cephus (Linnaeus, 1758)
Cercopithecus petaurista petaurista (Schreber, 1774)
Cercopithecus pogonias pogonias Bennet, 1833
Cholorocebus pygerythrus hilgerti (Neumann, 1902)
Macaca fascicularis aureus (É. Geoffroy, 1831)
Papio cynocephalus ibeanus (Thomas, 1893)
Colobus guereza guereza Ruppel, 1835
Presbytis hosei everetti (Thomas, 1892)
Trachypithecus vetulus nestor (Bennett, 1833)
Trachypithecus vetulus vetulus (Erxleben, 1777)
Hylobates muelleri funereus I. Geoffroy, 1850
Gorilla gorilla gorilla (Savage, 1847)
Gorilla beringei graueri Matschie, 1914
Pan troglodytes schweinfurthii (Giglioli, 1872)
Pan troglodytes troglodytes (Blumenbach, 1775)

of this species, one adult male, one adult female and an infant. These specimens were collected during his aforementioned travels in East Africa in 1909. The collection houses some samples of *Pan troglodytes schweinfurthii* (Giglioli, 1872). These were collected in 1872 when Giglioli was the director of the Museum. His numerous contacts with Italian and foreign museums and his renown as a scientist made him a great promoter of the collection. Among the specimens of the *Pongo* genus of certain provenance are the two *Pongo pygmaeus* originating from Borneo, the region of Sarawak and the city of Sambas (region of Kalimantan Barat), and a specimen of the species *Pongo abelli* originating from southern Sumatra (city of Palembang), both purchased from G.A. Frank of London between 1888 and 1890.

Conclusion

The scientific importance of the primatological collection of the Natural History Museum, Zoological Section «La Specola» is testified by the abundance of well-preserved specimens broadly representative of the various orders and by the fact that the majority of them were free-ranging animals captured in ancient times. Many specimens housed in the collection are today included in the IUCN Critically Endangered category (IUCN, 2010), such as *Varecia variegata* (Kerr, 1792), *Loris tardigradus* (Linnaeus, 1758), *Ateles fusciceps* Gray, 1866, *Saguinus oedipus* (Linnaeus, 1758), *Macaca nigra* (Desmarest, 1822), *Pongo abellii* Lesson, 1827, *Gorilla gorilla* (Savage, 1847). The collection also has an historical value, in view of the important contribution made by some specimens to the history of primatology (see for instance Giglioli, 1872, 1887, 1888). In the collection 120 species are represented, that is approximately 31.6% of those known today. Although the individual groups have yet to be studied specifically, our work can help support the educational and scientific commitments of the museum. The primatological collection of «La Specola» has a further historic significance. It has played an important role in the Italian and European primatology of the last two centuries and, unlike other Italian collections (see Bruner & Gippoliti, 2006; Lunardini & Palagi, 2000), «La Specola» still has a great deal of historic archive data that can make a significant contribution to scientific and historical studies. As stressed by many authors (e.g. Capanna, 1996; Bullini, 2004; Gippoliti, 2005) the modern biological collections are very important for biodiversity studies and the historical collections have great importance for understanding present and former diversity at population and species level. Moreover, the materials housed at «La Specola» and their fascinating stories about zoology, geography and exploration offer a considerable enhancement to the history of the city of Florence.

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