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The role of zoological gardens in the multiple origins of Italian Primatology

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Parole chiave: Storia della Scienza, Etica biologica, conservazione, benessere animale.

Riassunto — Il ruolo dei giardini zoologici nell'avanzamento della scienza ha ricevuto scarsa attenzione in tempi recenti anche nel caso, come quello della Primatologia italiana, dove sembrano avere avuto un ruolo considerevole, in particolare negli studi comportamentali. È interessante notare che la relazione tra zoo e primatologia precede la nascita ufficiale della Primatologia 40 anni fa. La storia della connessione tra giardini zoologici e primatologi può rivelare molto circa la filosofia dei primi e, per quanto riguarda la Primatologia, può svelare alcuni particolari importanti sullo sviluppo di campi di ricerca quali la conservazione ed il benessere animale.

Key words: Science history, Biological ethics, conservation, animal welfare.

Summary — The scientific role of zoological gardens has received scanty attention even in cases, such as Italian Primatology, where they seemed to have played a considerable role, especially in the field of behavioral studies. Notably, the relationship between zoos and primatology in Italy is much longer than the 40 years of life of official Primatology. The history of this relationship and connections between zoos and primatologists can reveal not only much about zoo philosophy but also about the origin of Italian Primatology. Among the various aspects that deserve attention is the history of increased interest toward issues such as primate conservation and welfare.

Introduction

Modern zoological gardens (but not aquaria) were, compared to other European countries, a relatively recent acquisition for Italy. The history of Italian zoos is not well known, therefore, even less is known about the relationship of Zoos and scientific research. It should be noted that after death zoo primates were often utilized for anatomical studies (see De Stefano, 1984-1985). However, the focus was almost invariably for evolutionary comparison with *Homo sapiens*. There was little interest in the order Primates *per se*.

While the history of zoological gardens is receiving increasing attention within a general interest toward human/animals relationship (Serna, 2017), not the same can be said of the contribution of zoos to the development of

biological sciences. In the present paper, a brief overview on the multiple origin of Primatology in Italy is presented and relationships with zoological gardens are highlighted. I note that primatological research often involved and developed in collaboration with zoos.

Michele Lessona

In 1889 Michele Lessona (1823-1894), Zoology docent at Turin University and one of the major Italian supporter of Darwin's theories, described an ideal orangutan *Pongo* sp. zoo exhibit, certainly based on his observations of some young great apes at the Royal Zoological Garden of Turin. He proposed the building of a large greenhouse with living trees, shrubs, running water, poles and bars to allow arboreal locomotion typical of the species. Lessona also cited the need to maintain other individuals of compatible animal species together with orangutans, evidently recognizing the necessity of both a physical and social enriched habitat for captive apes (Lessona, 1889; Gippoliti, 2000). Lessona was ahead of his time for his concern regarding the behavioral needs of great apes, and currently welfare research is a growing field of 'applied primatology' both in Italy and abroad (cfr. Sandri *et al*., 2017) that will not discussed further in this essay.

Gioacchino Leo Sera

Gioacchino Leo Sera (Rome 1878-Florence 1960) (Fig. 1) is considered a pioneer of primatological research, in fact he published in Pavia the first ever journal dedicated to Primates; the short-lived *Giornale per la Morfologia dell' Uomo e dei Primati* founded in 1917. Sera was a strong supporter of a polyphyletic origins of '*Homo sapiens*' and of a similarly extravagant theory of an aquatic habitat for extinct giant lemurs (Sera, 1935) and Neotropical Primates (Sera, 1938). Yet Sera's research program included an extensive study of most of the primatological collections found in the major Italian Zoological and Anthropological museums (Genoa foremost, but also Turin, Milan, Pisa, Florence, Pavia, and Rome) (Sera, 1918). Furthermore, in one of his primatological papers (Sera, 1923) on the relationship between skeleton characters and locomotion in primates, he particularly acknowledged the help of Theodor Knottnerus-Meyer (1876-1936) (Fig. 2), then director of the Giardino Zoologico in Rome «*che gli facilitò le frequenti e lunghe visite al Giardino Zoologico di Roma, di cui tanto giovamento ha tratto questo lavoro*» (Sera, 1923, 5). The author cites his observations of two geladas (*Theropitecus gelada*), in Rome noting their scarce arboreal capabilities.

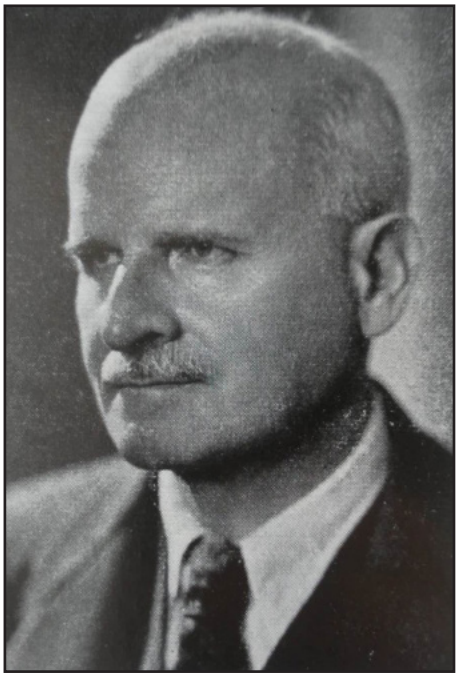

Fig 1. *Gioacchino Leo Sera.*

Fig 2. *Theodor Knottnerus-Meyer with the first chimpanzee of the Giardino Zoologico in Rome and a keeper (1911).*

Knottnerus-Meyer deserved the merit to have developed in Rome the 'Monkeys Village' that housed a troop of rhesus macaques living in an open air exhibit year-round (Fig. 3).

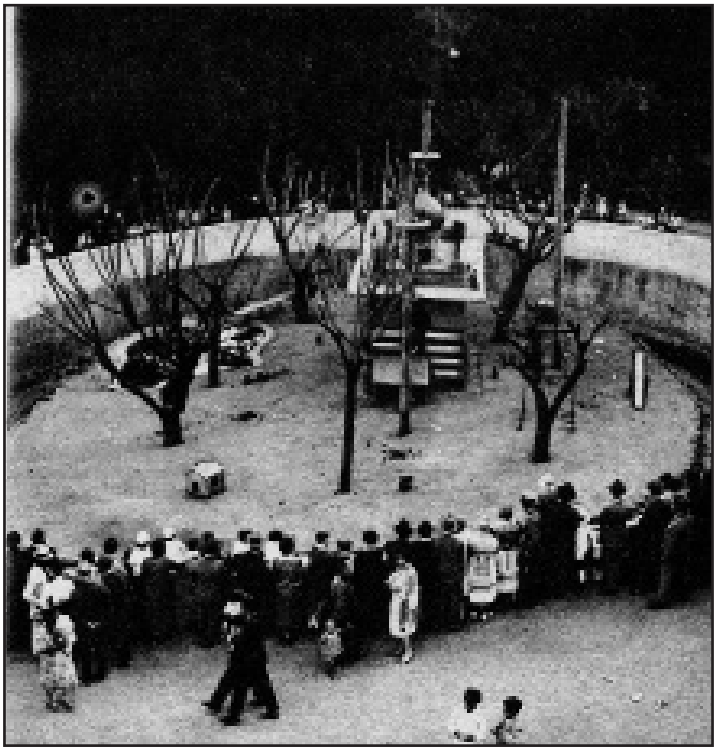

Fig 3. *The Villaggio delle Scimmie at the Giardino Zoologico, circa 1925.*

In his book, *Nel Giardino Zoologico. Osservazione e Studi* (Knottnerus-Meyer, 1925), which was translated in several languages the author included his behavioral observations on these macaques and formulated the hypothesis that grooming had a mainly hygienic function. Sera was greatly helped also by another zoo biologist, Oscar de Beaux (Gippoliti, 2006a), who was a fine mammal taxonomist and at the time was curator of vertebrates at the Genoa Natural History Museum. De Beaux contributed several papers to Sera's Giornale and greatly helped him furnishing taxonomically well-identified specimens. Before the Great War de Beaux had served for three years as zoologist in the famous Hagenbeck's Tierpark near Hamburg. Among his many primatological papers there is one regarding the penis morphology in the genus *Macaca* based on individuals that he studied living at the zoo and that later preserved as museum specimens (de Beaux, 1917): this

study exemplifies how zoos and museums could collaborate for advancing comparative primate biology.

Brunetto Chiarelli

But it was only in the 1960s that a vigorous re-birth of primatology occurred in Italy. Brunetto Chiarelli received the first chair of Primatology in Italy at Turin University. He profitted from the attention given to research by the local zoological garden, and in 1962 a Primatological Centre of the University of Turin inside the zoo was established. This Primatological Centre was perhaps the first one in Europe (Torchio, 1963). Chiarelli recalled that «*Thanks to the help of its owner Mr Arduino Terni and its director Prof. Alula Taibel I also create laboratory of Primatology in the Zoological Garden of Parco Michelotti, in homology with the Primate Center I started the previous years at the Zoological Garden of Rome*» (Chiarelli, 2006). I was unable to find any further reference to a formal Primate Center in Rome, but by 1961 Chiarelli had published on *Nature* the chromosomes of orangutan utilizing the pair living in the Giardino Zoologico in Rome (Chiarelli, 1961). We now known that the male *Carlo* (Fig. 4) was a Sumatran orangutan *Pongo abeli* while the female *Tuta* belonged to the Borneo species *Pongo pygmaeus* (Gippoliti and D'Alessandro, 2013).

Fig 4. *Male Sumatran orangutan Carlo. The history of Primatology is also the history of individual primates and of their care-givers.*

Chiarelli's main interest was in karyological research and the rich taxonomic assemblages of zoos was a great opportunity for him. Other than a number of foreign zoos, Turin, Rome and Naples zoological gardens furnished valuable materials to his research (Chiarelli, 1962). Chiarelli soon understood the importance of taxonomy for modern primatology, and tried to integrate chromosome research on zoo primates with taxonomy (Chiarelli, 1972). Yet the absence of true taxonomists in Italian museums and a general neglect of the discipline led to severe criticism (Herskovitz, 1973). Several zoos and researchers contributed to a review paper on captive Catharrine Primate hybrids, an issue of great interest to Chiarelli (Chiarelli, 1973) that is regaining importance because of its potential role in speciation (Zinner *et al.*, 2011).

Turin Zoo was also the place where the first behavioral studies on Primates were done in Italy (Giacoma, 1983; Giacoma and Messeri, 1992) before the zoo had to close in 1988. But the more organized attempts were done some years later in Rome.

The official birth of Primatology in Rome

Two different behavioral projects developed contemporaneously inside the «Giardino Zoologico di Roma». One project, in collaboration with the Institute of Comparative Psychology of the National Research Council (CNR) saw the creation of a research unit to study the behavior and cognitive development of capuchin monkeys belonging to genus *Sapajus* which at that time were housed at the zoo (Antinucci and Visalberghi, 1986). In the second project, an intensive research program was developed on the Japanese macaque (*Macaca fuscata*) colony. This colony arrived in Rome in 1977 directly from Takasakiyama, Japan, as a result of selection process of a Japanese commission (Fig. 5). The Japanese macaque colony occupied a renovated 'Villaggio delle Scimmie' where the previous one existed before 1935 on which grooming research was among the issues investigated for nearly 40 years. In 1981 a special issue of the journal *Antropologia Contemporanea*, edited in Florence by Chiarelli, included the results of a first interdisciplinary scientific campaign done on the Rome macaque colony (Chiarelli, 1981). Subsequently, behavioral studies on the macaque colony proceeded under the leadership of Alfonso Troisi (later at Rome II University) and Gabriele Schino (now at CNR) (Fig. 6). Other species were studied in a more opportunistic way in Rome (Visalberghi, 1984; Troisi and Schino, 1987). The time was ripe for the birth in Rome, on 22 march 1982, of the Associazione Primatologica Italiana (API), the Italian Primatological Association (De Stefano, 1985). While the CNR Primatological Centre was (and still is) managed separately from the zoo, the colony of Japanese macaques offers a unique Italian example of long-term collaboration between

researchers and a zoo that, despite no specific funding, is able to produce abundant high quality research (for a review see Majolo *et al*., 2005; see also Tiddi *et al*., 2017). In the first decade following the official birth of primatology in Italy, Visalberghi (1988) recorded only three zoos involved with behavioral research, Turin, Rome and Cavriglia. Cavriglia was a municipal 'faunistic park' that received a small group of Japanese macaque from Rome (Camperio Ciani *et al*., 1984), but never had a true scientific direction and it is now closed.

Fig 5. *Prof Bronzini seated among the Japanese commission looking for a new home for a colony of Japanese macaques. First on the left is Guglielmo Mangili, naturalist of the Giardino Zoologico (Rome 6 April 1974).*

Fig 6. *The team of primatologists studying Japanese macaques in Rome (Convegno API 1989). Among the project's leaders Gabriele Schino (first from left), Alfonso Troisi (fourth from left), Filippo Aureli (sixth from left) and Francesca D'Amato (second from right).*

Despite this small number of ethological research groups operating in Zoos, Visalberghi (1988) found that for the first six Italian Primatological Meetings, almost 20% of the total communications were based on data gathered in Italian zoos. It is notable that this percentalge was about double that of communications in the International Primatological Meetings of a similar time period.

In the last two decades two other zoos have had long-term links with primatological research; the Pistoia Zoological Garden and the Parco Natura Viva near Verona. In Pistoia, the main target species was *Lemur catta* studied by researchers of the University of Pisa (Palagi *et al.*, 2002; 2005; Palagi, 2009), while a wider number of species, belonging to both haplorrhines and strepsirrhines, is subject to behavioral research by universities and the zoo's scientific staff at the Parco Natura Viva (e.g. Huffman *et al.*, 2010; Regaiolli *et al.*, 2018). Finally, Parco Natura Viva, Cavriglia and the Rome Zoological Garden (including the Museum of Zoology) were more than once hosts of the meetings of the Italian Primatological Association (API).

Perspectives for a deeper collaboration between zoos and primatologists

Although Primates in zoos are recognized as a valuable educational resource for primary and secondary schools (e.g. Falchetti *et al.*, 1999), it seems that in the present university courses rarely the importance of zoological gardens as research and educational facilities is emphasized, and it is fairly common to find harsh criticism against zoos even among newly graduated biologists and naturalists (Gippoliti, pers. observ.). Although a specific investigation is lacking, available evidence suggests that most primatologists recognize figures such as Jane Goodall and Diane Fossey as their «iconic» masters and model of field primatologists, overly neglecting the history of Primatology and the opportunities offered by captive settings. It is a duty for zoological gardens to pay greater attention to their history also in relation with the development of scientific research and theories. When possible, zoo personal should be allowed to teach primate management, welfare and scientific potential of zoo primates in university courses. As showed by the present paper, primatology advanced not only through scientific interest at universities but also thanks to the wide knowledge of zoo staff and their interest to increase scientific knowledge and animal's welfare. Researchers and students should be made aware that zoo design and management evolve constantly as a result of development in medicine science and behavior studies (cfr. Gippoliti, 2006c). Contrary to what is usually believed today, concern for the survival of wild species and the ethical problems around

human mistreatment of wild animals is well embodied within the history of Italian zoological gardens (Gippoliti, 2021). The already cited Oscar de Beaux (Florence 1879-Torre Pellice 1955) wrote a booklet titled *Etica Biologica* (de Beaux, 1930) just two years before opening a small zoo in Genoa Nervi. The mission of the Nervi Zoo included «education and zoophilia», recognizing the potential of natural history museums, zoos and botanical gardens in communicating not only knowledge, but also respect toward the diverse life forms (biodiversity). It should be not overlooked that primatology benefitted from some of the few scientifically managed zoos in Italy; one (Turin) directed by Prof Alula Taibel (1892-1984) that was the most prolific zoo-biologist in Italy (Gippoliti, 2019) and the second (Rome) directed by Prof Ermanno Bronzini (La Spezia 1914-Rome 2004), a leader in zoo cultural development and a follower of de Beaux's biological ethics (Gippoliti, 2021).

A relatively little-known chapter is represented by the contribution Italian zoos had furnished in changing the attitude toward non-human primates in the society. Papers on primates and their cognitive capacities appeared on the journal of the Giardino Zoologico in Rome well in the 60's of the twenty century (Chiarelli, 1960; Mangili, 1962) (Fig. 7) while two decades later a book on primates was published by Giusto Benedetti (Vittorio Veneto 1943-Turin 2011), then vice-director of the Turin Zoo (Benedetti, 1979). Important births, such as that of the orangutan Petronilla in Rome in 1970 (Fig. 8) were amply utilized by new conservation associations such as the World Wide Fund for Nature – WWF Italy Appeal, that received a strong support by several zoos, foremost those of Naples and Rome (Gippoliti, 2021).

Fig 7. *A young Sapajus in front of a mirror (from Mangili, 1962).*

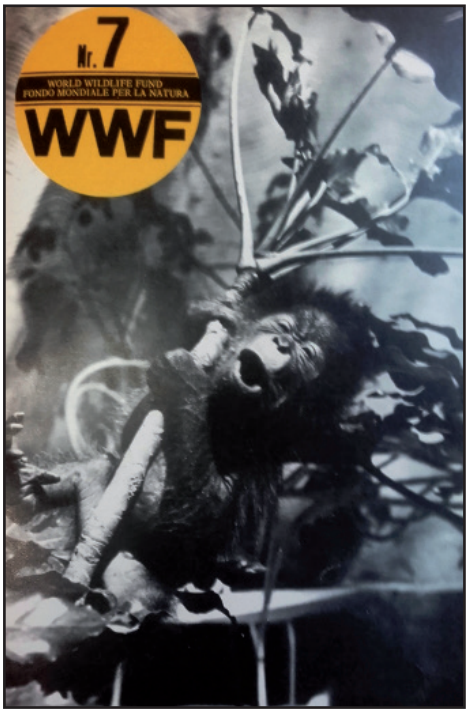

Fig 8. *Petronilla on the cover of one of the first issues of the WWF Italy bulletin.*

It is urgently required that Italian zoos, Primatologists and Zoologists became aware of their history. They need to better disseminate knowledge regarding their past and current role, with a special attention to promoting the conservation of biodiversity that is based on sound scientifically principles. Certainly they should avoid any resemblance of a neo-colonialism approach in tropical countries and a bias toward only a few charismatic wild species at the expense apparently less spectacular species and of ecological (and social) eco-systems.

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Bibliographical References

Antinucci, F., Visalberghi, E. 1986. Tool use in *Cebus apella*: a case study, *International*

Journal of Primatology, 7: 351-363.
Beaux, O. de 1917. Osservazioni morfologiche e sistematiche sul penis del *Macacus arctoides* Js. Geoffr. e di cinque altre specie di Macachi, *Giornale per la Morfologia dell' Uomo e dei Primati*, 1: 6-12.
Beaux, O. de 1930. *Etica Biologica*. Trento: Temi.
Benedetti, G. 1979. *La scimmia*. Turin: SEI.
Camperio Ciani, A., Corradino, C., Lunardini A., Righi, E. 1984. A general description of the ecology and organization of the *Macaca fuscata* colony established in the Cavriglia Natural Park (Arezzo), Italy, *Antropologia Contemporanea*, 7: 233-238.
Chiarelli, B. 1960. Vita psichica delle Antropomorfe, *Il Giardino Zoologico*, 2(6): 25-27.
Chiarelli, B. 1961. Chromosomes of the orang-utan (*Pongo pygmaeus*), *Nature*, 192: 121.
Chiarelli, B. 1962. Comparative morphometric analysis of primate chromosomes. II. Chromosomes of the genera *Macaca*, *Papio*, *Theropithecus* and *Cercocebus*, *Caryologia*, 15: 401-420.
Chiarelli, B. 1972. *Taxonomic atlas of living primates*. London: Academic Press.
Chiarelli, B. 1973. Check-list of Catarrhine primate hybrids, *Journal of Human Evolution*, 2: 301-305.
Chiarelli, B. 1981. Ricerche su un gruppo di *Macaca fuscata* presente nel Giardino Zoologico di Roma, *Antropologia Contemporanea*, 4: 1-2.
Chiarelli, B. 2006. Personal Remembrance: the Origin and Development of Primate Cytogenetics and Evolutionary Karyology. In: L. Sineo, R. Stanyon (eds.), *Primate Cytogenetics and Comparative Genomics*. Florence: Firenze University Press: 119-125.
De Stefano, G.F. 1984-1985. Considerazioni sulla Primatologia in Italia, *Rivista di Antropologia*, 63: 357-362.
Falchetti, E., Tranchida, F., Visalberghi E. 1999. *I Primati e l'evoluzione biologica. Un approccio costruttivista all'educazione scientifica*. Roma: Istituto di Psicologia del CNR e Museo civico di Zoologia.
Giacoma, C. 1983. Early social interactions of juvenile pigtail macaques, *Macaca nemestrina*, *Italian Journal of Zoology*, 50: 41-45.
Giacoma, C., Messeri, P. 1992. Attributes and validity of dominance hierarchy in the female pigtail macaque, *Primates*, 33: 181-189.
Gippoliti S. 2000. Orangutans in zoos: husbandry, welfare and management in an atypical arboreal solitary mammal, *International Zoo News*, 47(6): 356-368.
Gippoliti, S. 2006a. Oscar de Beaux: a noteworthy Italian mammalogist and conservationist, *Italian Journal of Zoology*, 73: 285-289.
Gippoliti, S. 2006b. Le potenzialità delle collezioni primatologiche italiane nella conservazione biologica. In: E. Bruner, S. Gippoliti (eds.), *Le Collezioni Primatologiche Italiane*. Rome: Istituto Italiano di Antropologia: 29-52.
Gippoliti S. 2006c. Applied primatology in zoos: history and prospects in the field of wildlife conservation, public awareness and animal welfare, *Primate Report*, 73: 57-71.
Gippoliti, S. 2019. Alulah Taibel (1892-1984) a remarkable ornithologist, aviculturist and zoo-biologist, *Rivista Italiana di Ornitologia*, 89(2): 21-26.
Gippoliti, S. 2021. Giardini Zoologici e Conservazione della biodiversità: Il contributo italiano, *Atti Società Naturalisti Matematici Modena*, 152: 109-125.
Gippoliti, S., D'Alessandro, A. 2013. Great apes in the Giardino Zoologico of Rome (1910-1998): an overview, *Der Zoologische Garten*, NF 82: 113-128.
Herskovitz, P. 1973. Book Review. Taxonomic Atlas of Living Primates, *American Journal of Physical Anthropology*, 41: 155-156.

Huffman, M.A., Spiezio, C., Sgaravatti, A., Leca, J.-B. 2010. Leaf swallowing behavior in chimpanzees (*Pan troglodytes*): biased learning and the emergence of group level cultural differences, *Animal Cognition*, 13: 871-880.

Knottnerus-Meyer, T. 1925. *Nel Giardino Zoologico. Osservazione e studi*. Rome: Maglione e Strini.

Lessona, M. 1889. *Storia Naturale Illustrata. I Mammiferi*. Milano: Sonzogno.

Majolo, B., Schino, G., Troisi, A. 2005. Towards thirty years of ethological research on the Japanese Macaque (*Macaca fuscata*) colony of the Rome Zoo: a review, *Journal of Anthropological Sciences*, 83: 43-60.

Mangili, G. 1962. Le scimmie sono curiose, *Il Giardino Zoologico*, 4(2): 18-23.

Palagi, E. 2009. Adult play fighting and potential role of tail signals in ringtailed lemurs (*Lemur catta*), *Journal of Comparative Psychology*, 123: 1-9.

Palagi, E., Dapporto, L., Borgognini Tarli, S. 2005. The neglected scent: On the marking function of urine in *Lemur catta*, *Behavioral Ecology and Sociobiology*, 58: 437-445.

Palagi, E., Gregorace, A., Borgognini Tarli, S. 2002. Development of olfactory behavior in captive ring-tailed lemurs (*Lemur catta*), *International Journal of Primatology*, 23: 587-599.

Regaiolli, B., Spiezio, C., Hopkins, W.D. 2018. Asymmetries in mother-infant behavior in Barbary macaques (*Macaca sylvanus*), *Peer Journal*, doi: 10.7717/peerj.4736.

Sandri, C., Regaiolli, B., Vespiniani, A., Spiezio, C. 2017. New food provision strategy for a colony of Barbary macaques (*Macaca sylvanus*), effects on social hierarchy?, *Integrative Food, Nutrition and Metabolism*, 4: 1-8.

Sera, G.L. 1918. I caratteri della faccia e il polifiletismo dei Primati, *Giornale per la Morfologia dell' Uomo e dei Primati*, 2: 1-296.

Sera, G.L. 1923. Sopra alcune caratteristiche morfologiche differenziali di valore statico meccanico nella colonna vertebrale e nel bacino dei Primati, *Giornale per la Morfologia dell'Uomo e dei Primati*, 4: 1-120, 129-216.

Sera, G.L. 1935. I caratteri morfologici di *Palaeopropithecus* e l'adattamento acquatico primitivo dei Mammiferi e dei Primati in particolare, *Archivio Italiano di Anatomia e di Embriologia*, 35: 229-370.

Sera, G.L. 1938. Alcuni caratteri anatomici delle Platirrine ed il recente abbandono da parte di esse dell' abitato acquatico, *Archivio Zoologico Italiano*, 25: 202-217.

Serna, P. 2017. *Comme des bêtes. Histoire politique de l'animal en Révolution (1750-1840)*. Paris: Fayard.

Tiddi, B., Polizzi di Sorrentino, E., Fischer, J., Schino, G. 2017. Acquisition and functional consequences of social knowledge in macaques, *Royal Society open science*, 4: 160639. Internet Edition: http://dx.doi.org/10.1098/rsos.160639.

Torchio, M., 1963. Il Centro di Primatologia dell'Università di Torino: sua finalità ed attualità, *Atti Società Italiana Scienze Naturali Museo Civico di Storia Naturale, Milano*, 103: 154-162.

Visalberghi, E. 1984. Aspects of space representation in an infant gorilla. In: F. King, A. Taub (eds.), *Current perspectives in primate social dynamics*. New York: Van Nostrand Reinhold: 445-452.

Visalberghi, E. 1988. *Giardini zoologici e ricerche sul comportamento dei primati*. Ms non pubblicato.

Zinner, D., Arnold, M.L., Roos, C. 2011. The strange blood: natural hybridization in primates, *Evolutionary Anthropology*, 20: 96-103.