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Another white tiger at the museum, oh no!

ABSTRACT

The relationship among natural history museums, zoos, and aquariums needs a debate. The success of “white tigers”, the result of artificial selection in these facilities, stimulates a personal point of view emphasizing the epistemological value of the continuous scientific collection and cataloging of life on Earth.

Keywords. Mammalia, CITES, zoos, natural history collections, ZIMS.

*This work is dedicated to Oscar de Beaux (1879-1955)
on the 70th anniversary of his death*

As a zookeeper, mammal conservationist, taxonomist, and later museum specialist, one of my recurring nightmares is the news of a further white tiger reaching the exhibition hall of a natural history museum.

The white tiger is a rare phenotype in the wild but is currently widespread in captivity in authorized zoos, circuses and private menageries. Often, as in the case of dogs' breeds, severe artificial selection has led to health issues in white tigers related to inbreeding depression (Mongera & Dooley, 2013).

Today, unlike black leopards and jaguars, white tigers are more the result of artificial selection than a part of the “tree of life”. The white tiger, if exhibited, must be placed in the correct educational context. Considering the stagnation of many zoological collections in European museums (Andreone *et al.*, 2022; Gippoliti *et al.*, 2024), we should ask ourselves if the white tiger represents a reasonable investment when more scientifically valuable specimens are potentially available in the continent authorized zoos (Kitchener, 1997; Gippoliti, 2006; Palombo *et al.*, 2021).

This state of affairs is also due to the lack of specialists among museum staff, which is the result of the limited size and resources available to local museums, which do not allow for the presence of a mammalian specialist and often not even a vertebrate specialist as curator of the collection.

A possible solution could be to seek advice in the literature or to contact an external expert, but this rarely happens. Sometimes, the museums have the resources to modernize their exhibits, so a short “hunting season” is opened to introduce new specimens into the museum. Often, this happens without any attempt or chance to collect specific specimens of scientific value. It is worrying because authorized Italian zoos, while not the richest or most

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diverse in Europe, have relevant stocks of species that are poorly or not at all represented in our national museum system. To cite a recent list of mammal species held in Italian zoos (Fraschetti & Gippoliti, 2022), threatened species such as *Addax nasomaculatus* (Bergamo, Roma, Valcorba), *Oryx leucoryx* (Valcorba), *Bos javanicus* (Rome), *Rusa alfredi* (Agrate Conturbia), *Choeropsis liberiensis* (Benevento, Pistoia), *Cryptoprocta ferox* (Verona), *Equus africanus somaliensis* (Torino), and *Nomascus gabriellae* (Agrate Conturbia, Pistoia), should all be priorities for an Italian museum. Furthermore, a close relationship with zoos would provide access to osteological materials (cranial and post-cranial), including those belonging to juveniles of known age, which are rare but crucial for several studies. Although taxonomic research on zoo animals (cf. Gippoliti, 2001; Peters *et al.*, 2014) is now made more difficult by the scarcity of animals of wild origin, there are still exceptions (Schneiderova *et al.*, 2024), and this issue is crucial for both *in situ* and *ex-situ* conservation (Gippoliti & Ziegler, 2024).

Accurate labeling and cataloging of materials must also be emphasized. Zoo materials are not without value, and their scientific relevance is enhanced by additional data that are not always available for wild specimens, such as age. Identity, exact place/date of death, taxonomic details, and ZIMS number (Zoological Information Management System) (Cohn, 2006), if available, should be recorded. The zoo of origin may also be interested in keeping these records.

For example, a specimen labeled leopard should be more carefully cataloged as Leopard, *Panthera pardus japonensis*, ZIMS n. 10985648, male, died in 2018 at “Zoo XXX”. If the ZIMS identification number is not available, any details, especially the age, should be added, such as visible pathologies (de Beaux, 1915, 1923). In addition, the cranial and post-cranial elements of young specimens of known age are valuable.

Preserved specimens can be crucial for *ex-situ* wildlife management (Poo *et al.*, 2022), so zoos authorized by EU legislation (Direttiva Zoo 1999/22 CE) should collaborate with natural history museums as part of their mission and legal obligations. The same applies to natural history museums recognized by CITES in the International Register of Scientific Institutions and, as such, with an additional ethical and legal obligation to serve research for biodiversity conservation. Finally, specimen selection and conservation methods are issues that deserve to be addressed by the scientific staff, not only by taxidermists, both employed or external to the institution.

It should also be emphasized that live animals confiscated by CITES, especially if they originated from the wild, should be also seriously considered for preservation as vouchers after they die in a zoo or rescue center after death. As a former member of the Italian CITES Scientific Commission, I consider it is inappropriate that confiscated specimens are often donated to a museum, while precious live animals, such as *Ara rubrogenys* or *Pan troglodytes verus*, are destined for incineration after death.

A few years ago, I organized the donation of some animal spoils from the Gallorose Zoo Park in Cecina (Livorno, Tuscany) to the Natural History Museum of the University in Pisa. Among the spoils was an aged male *Arctictis binturong*, whose mounted skin is now in the Borneo diorama (Figs. 1-2).

At the end of this short note, it is appropriate to cite the words of the most relevant Italian specialist in the field, Oscar de Beaux, mammalogist and director of the Natural History Museum in Genoa: “The remains from captivity have relevant advantages for perfect taxidermic naturalization and therefore have a value for public display. They also have a definite scientific value as long as they are accompanied by their exact history and studied by experts in the field” (de Beaux, 1933).



Fig. 1. A male binturong *Arctictis binturong* at the Zoo Park Gallorose, Cecina, April 2016 (photograph by S. Gippoliti).



Fig. 2. The Borneo rainforest diorama with the binturong mounted skin at the Natural History Museum of Pisa University (photograph by S. Farina, Natural History Museum of Pisa University).

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RIASSUNTO

Il rapporto tra musei di storia naturale, giardini zoologici e acquari merita un approfondimento. Il successo delle “tigri bianche”, risultato della selezione artificiale adottata in queste strutture, è alla base di una riflessione personale volta a evidenziare il valore epistemologico di continuare la raccolta e la catalogazione scientifica della vita sulla Terra.

Parole chiave: Mammalia, CITES, giardini zoologici, collezioni di storia naturale, ZIMS.

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