

Article

Not peer-reviewed version

---

# Knowing is better than wondering. The cataloging of natural heritage between museum studies and forensic sciences

---

Annarita Franza , Federica Scali , Luciano Garofano , [Giovanni Pratesi](#) \*

Posted Date: 19 July 2023

doi: 10.20944/preprints202307.1266.v1

Keywords: theft, security, natural heritage, museum collections, cataloging



Preprints.org is a free multidiscipline platform providing preprint service that is dedicated to making early versions of research outputs permanently available and citable. Preprints posted at Preprints.org appear in Web of Science, Crossref, Google Scholar, Scilit, Europe PMC.

Copyright: This is an open access article distributed under the Creative Commons Attribution License which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

*Article*

# Knowing Is Better Than Wondering. The Cataloging of Natural Heritage between Museum Studies and Forensic Sciences

Annarita Franza <sup>1</sup>, Federica Scali <sup>2</sup>, Luciano Garofano <sup>3</sup> and Giovanni Pratesi <sup>4,\*</sup>

<sup>1</sup> Department of Earth Sciences; University of Firenze; annarita.franza@unifi.it

<sup>2</sup> Faculty of Natural Sciences, University of Firenze; federica.scali@stud.unifi.it

<sup>3</sup> Italian Academy of Forensic Sciences; lugarofano@gmail.com

<sup>4</sup> Department of Earth Sciences, University of Firenze

\* Correspondence: giovanni.pratesi@unifi.it

**Abstract:** This paper aims to analyze the role of natural heritage cataloging when criminal events challenge natural history museums. This study investigates the rhino horn thefts in Italian natural history museums from 2011 to 2015 to provide a comprehensive framework for these robberies while highlighting the weaknesses and strengths to prevent thefts and safeguard both rhino horns and natural history collections from future targeting.

**Keywords:** theft; security; natural heritage; museum collections; cataloging

## 1. Introduction

Crime and museums have long been a question of great interest in a wide range of fields, starting –as underlined by Regener [1]– with the establishment of criminological museums in the 19<sup>th</sup> century. Referring to the possible relationships between these two terms, crime can serve as the central theme of a cultural facility such as the Tuol Sleng Genocide Museum in Cambodia (e.g., [2]), the Alcatraz East Crime Museum in Tennessee (e.g., [3]), or the Museum of Criminal Anthropology Cesare Lombroso Museum in Turin (e.g., [4,5]). In this case, crime becomes the core of museum studies focusing on scientific research, ethics, visitors' experience, public education, communication, criminal justice issues, dark tourism, and thanatourism (e.g., [6–16]).

Crime can also be the topic of curatorial theories and practices when turning in evidentiary exhibits such as the Chamberlain collections at the National Museum of Australia [17] or the Criminal Museum founded in 1993 by the School of Forensic Medicine of the University of Athens [18]. As Thurston [19] and Yun [20] rightly pointed out, these practices also concern display, narrative, pedagogical, visual, and ethical issues relating to the exhibition of objects often used in heinous crimes. The research examines the curatorial approaches and strategies chosen by police and penal history museums in Canada to represent wardens, violence, gender, and victimization [21–23]. Regarding the Italian scenario, the Museum of Criminal Anthropology Cesare Lombroso Museum represents an emblematic case. For instance, in their recent article, Arford & Madfis [24] analyzed the museography transposition and the museological approaches chosen in the museum, following the previous investigations of Giacobini et al. [25] and Garlandini & Montaldo [26]. Therefore, as outlined by Sakki et al. [27], Elek [28], and Biedermann [29,30], crime collections are objects embodying multi-layered meanings, ranging from their visual/material dimensions and their possible virtual representations to the visitors' perspectives during different periods.

Finally, museum collections' historical, scientific, social, cultural, and economic values (e.g., [31]) connect crime to museums in episodes of theft and vandalism. It is also important to note the occurrence of other types of crimes in museum contexts, such as malpractice management, illicit collecting, white-collar crimes, and terrorism (e.g., [32–35]). However, the investigation of the latter typologies is outside the scope of this paper.

Much of the current literature on theft and vandalism (together with fraud and forgery) in museum contexts pays particular attention to art museums and galleries [e.g., 36–39]. In this regard, Brisman [40] argued how the thefts of art objects and the vandalism of works of art affected not only the memory and the values of these cultural items but also the perception and the experience of a museum tour after such criminal events. On this topic, Runhovde [41]) discussed the over-securitization of the Munch Museum and how these policy changes affected the museum experience, which was previously focused on accessibility and art mediation, of both visitors and staff after the Edvard Munch's artworks have been the target of numerous criminal incidents [42]. Art museums are also involved in the lively debate on displaying historic objects realized from endangered animal species, such as ivory artworks (e.g., [43]). On this subject, Good et al. [44] outlined how the exhibition of these artworks might offer instead new insights into conservation education, raising awareness among different audiences on the illicit ivory trade.

Regarding crime and natural history museums, the research focuses mainly on museums and wildlife crimes. In this regard, Dorfman [45] underlined how the black market is increasingly paying attention to zoological collections in search of endangered specimens such as elephants, rhinoceros, and pangolins. In particular, the numerous thefts of rhino horns kept in natural history museum collections have been carefully investigated in the last few years. Concerning this subject, Zhao et al. [46] highlighted that the demand for rhino horns on the China black market escalated around 2010 to supplying affordable luxury commodities and traditional Oriental medicine products. In his seminal article on the use of animal products in traditional Chinese medicine (TCM), Still [47] outlined how TCM has been increasingly practiced all around the world and even the most newly published handbooks still prescribed remedies based on animal tissues, including tiger bones, bear or snake bile, and rhino horns. Although the clinical efficacy of these products has yet to be proven, what is certain is that their use is strictly connected to ecological, ethical, legal, and health hazards such as illegal poaching and trading of endangered species and zoonoses. For instance, Truong et al. [48] argued that in Vietnam, which they identified as one of the world's largest recipients of illegal rhinoceroses trading, consumers also used rhino horns as a symbol of economic wealth and social status. In this regard, Thomas-Walters et al. [49] identified five common motivations for wildlife use that can be grouped as follows: experimental, social, functional, financial, and spiritual categories. And again, Biggs et al. [50] underlined how rhino horns represent highly moneymaking items to the point that even international criminal networks are involved in their illegal trade. Collectively, these studies outline a critical role of wildlife crime in criminological literature to the end that conservation and green criminology are considered two specific multi- and interdisciplinary research frameworks (e.g., [51,52]).

Although extensive research has been carried out in this area (e.g., [53]), only some studies have attempted to investigate rhino horn thefts in natural history museums since most incidents still need to be discovered or are exclusively described in reports and newspapers. Viscardi [54] stated that the first robberies occurred in South Africa in 2008-2009 when the Grahamstown Observatory, the Oudtshoorn Museum, and Cape Town's National Iziko Museum were targeted. However, Teixeira et al. [55] suggest that the first incident occurred in 2002, and eight other thefts happened between 2007 and 2010, mainly in African museums. According to the authors [55], the last knowing robberies occurred in 2017 in France and USA. Between 2010 and 2011, Viscardi [54] reported 26 thefts in museums, historic houses, auctioneers, and zoos, such as the thievery at the Ipswich Museum when two men stole a horn from a stuffed rhino [56]. It is noted that similar crimes also happened in private collections [57]. It is also interesting to point out that social media progressively became a new source of profit for illegally selling loot [58]. Most of the incidents occurred during the opening hours, and occasionally, as happened at the Museum of Hunting and Nature in Paris [59]. Other incidents happened overnight, but these burglaries were preceded by careful inspections of the museum halls by thieves mingled among visitors in the days before.

Viscardi [54] then recalled that after the outbreak of the thefts, various museum associations and law enforcement in European countries issued some best practices for preventing the thieveries and thus safeguarding rhino horns in museum collections. In sum, this guidance suggested taking off the

display and storing all the specimens at risk of being stolen in a more secure location. Otherwise, they could be loaned to institutions that look after rhino horns with increased security or replaced by replicas, as suggested in the years that followed by Grove & Thomas [60]. However, this expedient did not secure the museum and staff from being harassed, as occurred at the Natural History Museum in Tring (Hertfordshire), where two replicas made of resin were stolen anyway [61]. Viscardi [54] also mentioned rumors about destroying rhino horns kept in museum collections to minimize the chances of being targeted. The author strongly rejected this possibility since museum objects such as rhino horns are polysemic and thus represent information carriers for unique historical and scientific investigations, even from the perspective of deterring future illegal trafficking [e.g., 62–63]. The guidance then advised to alert staff about the robberies and to pay attention to any suspicious behavior. In this regard, it is worth mentioning that the museum personnel stopped the attempted robbery at the Norwich Castle Museum and recovered the loot [64]. Finally, museums had to check with insurance companies for the value of the rhino horns and gave no information about the specimens they preserved.

Although Europol uncovered an Irish organized crime group in 2011 [65], robberies continued in later years. Since Italy was one of the European countries most affected by the crime wave, the specific object of this study is to examine the rhino horn thefts that occurred in the Italian natural history museums between 2011 and 2015. The aim is to provide a comprehensive framework of the robberies, highlighting the weaknesses and strengths to prevent and safeguard both rhino horns and natural history collections from future targeting.

2. Materials and Methods

The current study adopts a case study approach to obtain an in-depth and multi-faceted understanding of rhino horn thefts in Italy in their real-life settings [66]. In this regard, Table 1 shows the burglaries in the Italian natural history museums between 2011 and 2015.

**Table 1.** The rhino horn thefts in the Italian natural history museums between 2011 and 2015. Dates refer to the discovery of the incidents and the later release of the news in the press.

When	Where	What
9 June 2011	Natural History Museum “La Specola” – University Museum System of Firenze	3 rhino horns
18 November 2011	Natural History Museum Milano	1 rhino horn (replica)
29 July 2014	Natural History Museum - Macerata	2 rhino horns
22 January 2015	Museum of Zoology and Comparative Anatomy – University Museum System of Modena	1 rhino horn
9 March 2015	Natural History Museum – University of Pisa	1 rhino horn 1 narwhal tooth
2 June 2015	Collection of Zoology – University Museum System of Bologna	1 rhino horn 1 narwhal tooth
7 August 2015	Natural History Museum “Giacomo Doria” – Genova	2 rhino horns (replicas)
10 September 2015	Museum of Zoology - Natural and Physical Science Museum Center – University of Napoli Federico II	6 rhino horns

The first theft (Case#1) happened at the Natural History Museum La Specola, now part of the University Museum System of Firenze. A museum housekeeper spotted the thievery on the morning of 9 June 2011. On his way to the Skeleton Hall, he noticed the main entrance was forced. Once he entered the Hall, he found a broken display case with two mission rhino horns. Moreover, the horn mounted on a rhino skeleton was also missing (Figures 1 and 2).





**Figure 1.** Rhino horns Inventory numbers 8606 and 8607. Size: 1 meter height per 9 kilograms (Inv. n. 8606); ca. 60 centimeters height per 6.5 kilograms (Inv. n. 8607). Photo courtesy University Museum System of Firenze.



**Figure 2.** Rhino horn mounted on its complete skeleton (Inv. n. 735)—photo courtesy University Museum System of Firenze.

Apart from the three rhino horns, everything was in place. Law enforcement arrived shortly after the crime was spotted and reconstructed the details of the scene. As happened before in other natural history museums across Europe, the thieves visited La Specola and the Skeleton Hall by mingling with visitors. Then, they hid in the visitor toilets in the courtyard and waited for the museum to be closed. Then they broke into the gallery, stole the horns, and escaped from the doorway [67]. There was no alarm system in Skeleton Hall, and the surveillance cameras did not cover the crime scene, so the robbery was not recorded. The stolen horns were described in inventory numbers 8606, 80607, and 735 of the museum catalogs. The first two references referred to the specimens displayed in the showcase [Figure 1], which were given to the Imperial and Royal Museum of Physics and Natural History by the Count of Turin, Vittorio Emanuele di Savoia-Aosta (1870–1946) [68]. The last inventory number concerned a Sumatran rhino skeleton (*Dicerorhinus sumatrensis*) coming from Indonesia that had always been displayed in the Skeleton Hall since it entered the museum collection in 1824.

The second theft (Case#2) occurred at the Natural History Museum of Milano on 18 November 2011. The thievery happened around 9.30 am when a loud noise came from room number 8. While the staff was rushing and the janitor realized that the side panel of a display case was torn off, a man was seen escaping from a backdoor. However, the loot was not what the thief expected since the stolen rhino horn was a replica made of plastic. The real one was locked in a secure environment since the museum personnel knew the robberies were spreading across Europe [69].

The third theft (Case#3) occurred at the Natural History Museum of Macerata on 29 July 2014. After scaling a wall about 4 meters high overnight, the thieves reached the museum rooms, where they turned off the alarm system and blacked out the surveillance cameras. Here the criminals found two wall-mounted black rhino (*Diceros bicornis*) heads whose horns they ripped off. The specimens were donated to the museum collections by the Bernocchi family from Milano in 2013. Since the horns were brutally turned off, even the rhino heads were damaged [70].

The fourth incident happened at the Museum of Zoology and Comparative Anatomy of the University System of Modena, where a white rhino horn was stolen on 20 January 2015 (Case#4). The theft occurred around lunchtime while a guided tour for a local kindergarten school class was taking place. The operator spotted the robbery because he noticed a suspicious man walking away with a briefcase. There were no alarms, and the cameras, whose system was not suited for continuous surveillance, were out of order [71].

The fifth thievery occurred at the Natural History Museum of the University of Pisa on 9 March 2015 (Case#5), where a 17<sup>th</sup>-century rhino horn was stolen from the Historical Gallery. The theft was discovered by a museum operator on a guided tour the day after its occurrence. The thieves entered by breaking the French door that opened onto the olive grove outside the Charterhouse of Calci, probably using an axe found on the scene. Once the thieves accessed the museum rooms, they forced the showcase in which the horn of a white rhinoceros (*Ceratotherium simum*) and a narwhal tooth were on display. Both the specimens were stolen, and the burglars left the museum unnoticed. Although the surveillance system was operating, the private security officers, who rushed to the scene, believed the strong wind that night triggered the alarm [72].

The sixth thievery occurred on 2 June 2015 when a rhino horn and a narwhal tooth were stolen from the Collection of Zoology of the University Museum System of Bologna (Case#6). The burglary happened overnight, and the thieves entered the exhibition rooms through a security door without triggering the alarm system. Since the horn was mounted on a taxidermized rhinoceros kept in the museum hall, even the latter, which already was in poorly conservative condition, was severely damaged. Both the rhino horn and the narwhal tooth were part of the Antonio Alessandrini (1786–1861) [73] comparative anatomy collections. In particular, the rhino horn dated to 1840 belonged to an Indian female specimen, part of the menagerie of a circus temporarily based in Bologna [74].

The seventh robbery happened at Genova's Natural History Museum "Giacomo Doria" on 7 August 2015 (Case#7). The thievery entered the museum rooms overnight, breaking a century-old

stained-glass window. They acted in the dark, thus showing prior knowledge of the exhibition design, and stole two horns mounted on taxidermized specimens. However, as reported on an explanatory panel, the horns were plaster and polystyrene replicas since the original samples were removed from the display to avoid possible robberies [75].

The last theft occurred at the Museum of Zoology of the University of Napoli "Federico II" on 10 September 2015 (Case#8). The thieves, which probably visited the collections the days before committing the robbery, forced the main entrance and stole five rhino horns placed on a wooden support next to a rhino skeleton, whose horn was roughly ripped off, thus causing damage to its skeletal structure. The six specimens were part of a 19<sup>th</sup>-century Bourbonic collection. No surveillance systems were present at the time of the incident, but a thief was caught holding a huge black sack by the cameras placed outside the building [76].

### 3. Results

The eight case studies' analysis showed that 14 rhino horns and three replicas were stolen in Italian natural history museums between 2011 and 2015. None of these specimens were ever recovered.

All the specimens were part of historical collections, except for the two rhino horns stolen at the Natural History Museum of Macerata that entered the museum in 2013 with no supplementary information (Case#3).

The methods used to commit the thieveries highlighted that the thieves had visited the zoological collections the days before the robberies since only the rhino horns were targeted, apart from the two narwhal tusks that were placed beside the horns in Case#5 and Case#6.

Although no museum operators or visitors were injured in the robberies, the violence used by the thieveries in ripping off the horns caused severe conservative damages when the specimens were mounted on skeletal or taxidermized rhinoceros (Case#3, Case#6, and Case#8).

Overall, the data from the case studies indicate that the targeted natural history museums had significant deficiencies in their surveillance systems.

### 4. Discussion

This study set out to investigate the thefts of rhino horns in Italian natural history museums between 2011 and 2015. The stolen specimens were never recovered. The only two rhino horns found by Italian law enforcement belonged to an antique dealer based in Milano that was robbed on 31 January 2012 [69].

As mentioned in the literature review, the phenomenon spread across Europe in 2011 since the rhino horns preserved in museum contexts represented an easy and remunerative source of new specimens to feed the black market.

Case #1 was on 9 June 2011, while Case#2 occurred on 11 November 2011. This finding suggested that both cases fell into the wave of European thefts that year. Interestingly, Case#3 happened three years later than the first incident, as the thieves wanted to let the dust settle. All the following six thieveries occurred from January to September 2015. This observation supported the hypothesis that the criminals rushed to target the museums still displaying rhino horns. In this regard, it has to be noted that only the museums involved in Case#2 and Case#7 removed the rhino horns from the exhibitions and replaced them with replicas, even though the Italian Association of Scientific Museums (ANMS) forwarded the day after the robbery occurred at La Specola museum (Case#1), a warning about the emergence of the crime wave in Italy. This finding indicated that the institutions underestimated the risk.

Another interesting result is that, besides the horns, only two narwhal tusks were stolen (Case#5 and Case#6) since these specimens are sought-after in the illegal trade as they are made of ivory [77,78].

Thanks to the repeated warnings launched by the targeted institutions in the last two decades, Italian natural history museums, following the rest of the European ones, progressively removed rhino horns from the public display, and even today, they are replaced by replicas [55]. This finding



proves that the wave of thefts contributed to highlighting the state of emergency regarding rhino conservation in both wild and museum environments. Speaking of this, in 2016, the Natural History Museum “La Specola”(Case#1) organized the temporary exhibition “Il corno violato. Il rinoceronte fra superstizione e estinzione” to raise awareness among the citizens on the illegal trade of endangered species as well as the vulnerability of the natural museum collections, and therefore on the urgency of improving their safeguard [79]. With this respect, the insurance compensation relative to Case#1 was used to strengthen the surveillance systems at La Specola and other museum sections to guarantee better protection for all the collections from possible future incidents. Consistent with the literature (e.g., [80,81]), the Florentine exhibition represented an example of strategic museum communication showing how to make the best of a significant loss toward institutional improvement.

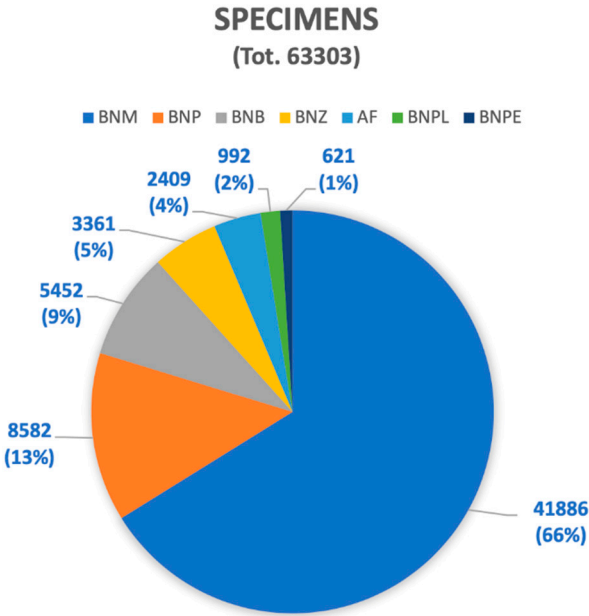
Another finding that stands out from the results reported earlier is that two of the three museums (Case#2, Case#6, and Case#8) whose rhinoceros had been damaged by the brutal removal of the horns restored the skin-mount specimens and made a horn replica of the stolen samples. In 2015, the Zoology Collection of the University System of Bologna restored its rhinoceros and remodeled the horn using plaster and marble dust (Case#6). One year later, the Natural History Museum of Macerata restored its wall-mounted rhino heads, and the Academy of Fine Arts in Urbino realized two replicas in polyurethane and plaster to replace the stolen horns (Case#3).

Perhaps the most striking finding is the pivotal role played by the catalographic documentation (e.g., Case#1). As previously mentioned, the rhino horns stolen in the Italian natural history museums were never recovered. This is unsurprising because, as usually happens in those cases, the horns are immediately destroyed to be sold as powered products on the black market [48]. Therefore, the catalog reports represent the only evidence of their existence and collecting history. Photographic documents—when present—return information about the exterior of a specimen (e.g., shape, color, etc.), but only an in-depth cataloging process can retrieve scientific, economic, historical, material, and technical data that otherwise will remain unknown. This kind of documentation is even more important when dealing with stolen specimens, whose only surviving evidence is the accuracy and comprehensiveness of catalographic data. This information can be crucial for law enforcement engaged in their recovery.

To be truly effective, it is then crucial that the cataloging process be carried out with standardized procedures so that the data collection and dissemination do not get lost in the grey literature, which includes unpublished reports, offline and local databases, and studies published outside widely available journals (e.g., [82]). Regarding the Italian scenario, the Central Institute for Cataloging and Documentation (ICCD), which is part of the Ministry of Culture (MiC), has issued 30 national standards to catalog the Italian cultural heritage in all its polyhedric complexity according to nine conceptual categories: archeological heritage, architectural and landscape heritage, anthropological and ethnographic heritage, photographic heritage, musical instruments heritage, natural heritage, numismatic heritage, scientific and technological heritage, and artworks heritage [83–98]. The catalographic datasheets are processed using the web-based platform SIGECweb [99,100] and then published, in full Open Access, on the Italian General Catalog of Cultural Heritage database [101,102].

Among the 30 ICCD catalographic standards, six are devoted to the catalog of natural heritage [89–95]. In this regard, Figure 3 shows an overview of the natural heritage in the General Catalog of Cultural Heritage, highlighting the number of specimens and their distribution according to the abovementioned standards.





**Figure 3.** Natural specimens present on the General Catalog of Cultural Heritage cataloged according to the following standards: BNM (Natural Heritage-Mineralogy), BNP (Natural Heritage-Paleontology), BNB (Natural Heritage-Botany), BNZ (Natural Heritage-Zoology), AF (Physical Anthropology), BNPL (Natural Heritage-Planetology), and BNPE (Natural Heritage-Petrology).

It is apparent from Figure 3 that the cataloging of the zoological heritage needs to be improved since the specimens that have been cataloged using the BNZ (Natural Heritage—Zoology) standard [94] represent only 5% of the total records. Therefore, launching new catalographic campaigns can improve the knowledge of the zoological collections kept in Italian natural history museums. These actions are an incentive to foster interdisciplinary research, thus representing unique opportunities for the next generations of biodiversity scientists to be trained in a growing continuum between humanities, social sciences, and natural sciences involving collaborative teams within and across institutions [103,104]. Moreover, cataloging campaigns represent the first affordable step toward improving museums’ security, pointing out what specimens are particularly endangered and thus suggesting preventive security measures such as removing them from the display and new specialized accommodations. However, it is important that the new catalographic campaigns are carried out using the ICCD standard BNZ [94] and by uploading the records on the General Catalog of Cultural Heritage to depict an exhaustive framework of the Italian zoological heritage and its potential vulnerabilities.

5. Conclusions

The present research aimed to examine the rhino horn thefts in the Italian natural history museums between 2011 and 2015. One of the more significant findings from this study is that cataloging documentation represents the only surviving evidence of the stolen specimens since they were never recovered. This result supports the idea that cataloging using national standards can concretely increase the knowledge of natural history museum collections from a scientific and cultural perspective and a management point of view, outlining vulnerabilities that otherwise will remain unknown or underestimated.

A natural progression of this work is to analyze the possible integration of a paragraph into the national catalographic normative concerning the study of vulnerability to crime incidents (e.g., theft and vandalism). Moreover, future research might explore forwarding the catalographic records of endangered and sensitive specimens to law enforcement databases (e.g., [105]) to enhance the chances of recovering them in case of theft.

**Author contributions:** Conceptualization, Annarita Franza; methodology, Luciano Garofano; investigation, Federica Scali; Validation, Giovanni Pratesi. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research was funded by Firenze University Fund 2023 (Grant n. 58517).

**Data Availability Statement:** No new data were created or analyzed in this study. Data sharing is not applicable to this article.

**Acknowledgments:** The authors gratefully acknowledge the support of the museum curators Dr. Paolo Agnelli (Natural History Museum "La Specola" – University Museum System of Firenze), Dr. Federico Landi (Natural History Museums of Macerata), Dr. Andrea Gambarelli (Collection of Zoology and Comparative Anatomy – Museum University System of Modena), Dr. Simone Farina (Natural History Museum of the University of Pisa), Dr. Valeria Federici (Museum of Zoology – Museum University System of Bologna), and Dr. Roberta Improta (Museum of Zoology - Natural and Physical Science Museum Center – University of Napoli Federico II).

**Conflicts of Interest:** The authors declare no conflict of interest. The funder had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

## References

1. Regener, S. Criminological museums and the visualization of evil. *Crime Hist. Soc.* **2003**, *7*(1), 43–56.
2. Carrabine, E. The Tuol Sleng Museum of Genocidal Crimes: Phnom Penh, Cambodia. In *50 Dark Destinations: Crime and Contemporary Tourism*; Lynes, A., Craig, K., Treadwell, J., Eds.; Bristol University Press: Bristol, United Kingdom, 2023; pp. 107–115.
3. Hammond, L. The Alcatraz East Crime Museum: Pigeon Forge, Tennessee, USA. In *50 Dark Destinations: Crime and Contemporary Tourism*, Lynes, A., Craig, K., Treadwell, J., Eds.; Bristol University Press: Bristol, United Kingdom; 2023, pp. 41–49.
4. Montaldo, S. The Lombroso Museum from its origins to the present day. In *The Cesare Lombroso Handbook*, Knepper, P., Ystehede, P., Eds.; Routledge: New York, USA; pp. 98–112.
5. Bianucci, P., Cilli, C., Giacobini, G., Malerba, G., Montaldo, S. *Cesare Lombroso Museum of Criminal Anthropology*, University of Turin; Hapax: Turin, Italy.
6. Cilli, C., Malerba, G., Giacobini, G., Montaldo, S. Il video "Torino 1911: le promesse della scienza" del Museo di Antropologia criminale "Cesare Lombroso". Un esempio di progetto condiviso. *Museologia Scientifica Memorie* **2016**, *15*, 68–71.
7. Mangiapane, G., Spanu, L., Cilli, C., Malerba, G., Giacobini, G. I visitatori del Museo di Antropologia criminale "Cesare Lombroso" dell'Università di Torino. Un primo bilancio dopo un anno di apertura al pubblico. *Museologia Scientifica* **2011**, *5*, 146–155.
8. Benzaquen, S. . Looking at the Tuol Sleng Museum of Genocidal Crimes, Cambodia, on Flickr and YouTube. *Media Cult. Soc.* **2014**, *36*(6), 790–809.
9. Spanu, L., Cilli, C., Malerba, G. Far parlare oggetti di collezioni storiche. Esempi dal Museo Lombroso di Torino. *Museologia Scientifica Memorie* **2014**, *11*, 37–41.
10. Isaac, R.K., Çakmak, E. Understanding the motivations and emotions of visitors at Tuol Sleng Genocide Prison Museum (S-21) in Phnom Penh, Cambodia. *Int. J. Tour. Cities* **2016**, *2*(3), 232–247.
11. Light, D. Progress in dark tourism and thanatourism research: An uneasy relationship with heritage tourism. *Tour. Manag.* **2017**, *61*, 275–301.
12. Ciliberti, R., Monza, F., De Stefano, F., Licata, M. The trial of the skull studied by the founder of Criminal Anthropology: The war of the Lombroso Museum. *J. Forensic Leg. Med.* **2018**, *59*, 13–15.
13. Carlos, A.F., Poloni, T.E., Medici, V., Chikhladze, M., Guaita, A., Ceroni, M. From brain collections to modern brain banks: A historical perspective. *Alzheimer's Dement.: Transl. Res. Clin. Interv.* **2019**, *5*, 52–60.
14. Knackmuhs, E., Farmer, J., Knapp, D. Addressing contemporary criminal justice issues as interpretive outcomes at a prison museum. *Visit. Stud.* **2020**, *24*(1), 1–16.
15. Motena, M.S. Museums as Dark Tourism Destinations: The Kgoši Mampuru Correctional Service Prison Museum. *SAMAB* **2022**, *44*(1), 38–46.
16. Williams, T. Remembering and silencing complexity in post-genocide memorialisation: Cambodia's Tuol Sleng Genocide Museum. *Mem. Stud.* **2022**, *15*(1), 3–19.
17. Biber, K. Evidence in the museum. Curating a miscarriage of justice. *Theor. Criminol.* **2017**, *22*(4), 505–522.
18. Stamatopoulou, E., Argyropoulos, V., Panagiaris, G., Papadakis, N., Christodoulou, P., Koutselinis, A., Low-budget collection management at the Criminal Museum, School of Forensic Medicine, University of Athens. *Museologia* **2003**, *3*, 95–100.
19. Thurston, H. Museum ethnography: researching punishment museums as environments of narrativity. *Methodol. Innov.* **2017**, *10*(1), 1–12.
20. Yun, S. Curiosity, wonder and museum education. *J. Philos. Educ.* **2018**, *52*(3), 465–482.

21. Walby, K., Piché, J., Friesen, B. "... they didn't just do it because it was a job": Representing wardens in Canadian penal history museums. *Int. J. Law Crime Justice* **2018**, 53, 1–8.
22. Walby, K., Piché, J., Ferguson, M. "Everybody criticizes police, but nobody criticizes museums": Police Headquarters and Museums as Public Culture. *TOPIA* **2021**, 43, 81–99.
23. Pauls, H., Walby, K., Piché, J. Regimes of representation in Canadian police museums: Othering, police subjectivities, and gunscapes. *Crime Media Cult.* **2023**, 19(1), 114–134.
24. Arford, T., Madfis, E. Whitewashing criminology: A critical tour of Cesare Lombroso's Museum of Criminal Anthropology. *Crit. Criminol.* **2022**, 30(3), 723–740.
25. Giacobini, G., Cilli, C., Malerba, G. Il riallestimento del Museo di Antropologia criminale" Cesare Lombroso" dell'Università di Torino. Patrimonio in beni culturali e strumento di educazione museale. *Museologia Scientifica* **2010**, 137–147.
26. Garlandini, A., Montaldo, S. The Lombroso Museum in Turin: A reflection on the exhibition and scientific study of human remains. In *Museums, Ethics and Cultural Heritage*, Murphy B.L., Ed, Routledge: New York, 2016, pp.341–349.
27. Sakki, Z., Athanasis, S., Spiliopoulou, C., Stefanidou, M. The Values and Meanings of a Crime Collection. *Int. J. Incl. Mus.* **2015**, 8(4), 1–14.
28. Elek, L. Analysis of the crime scene model using three objects from the Hans Gross Museum of Criminology collection of the University of Graz. *Arch. Kriminol.* **2016**, 239 (5–6), 181–192.
29. Biedermann, B. 'Virtual museums' as digital collection complexes. A museological perspective using the example of Hans-Gross-Kriminalmuseum. *Mus. Manag. Curatorship* **2017**, 32(3), 281–297.
30. Biedermann, B. The Potentials of the Digital Cultural Heritage: A Best Practice Example of Presentation and Use. The Digital Representation of the Hans Gross Kriminalmuseum. In *Digital Cultural Heritage*, Kremers, H., Ed., Cham: Springer, Switzerland, 2020, pp. 195–207.
31. Pratesi, G., Vannozzi, F., Eds. *I valori del museo. Politiche di indirizzo e strategie di gestione*. FrancoAngeli: Milano, Italy.
32. Brodie, N., Proulx, B.B. Museum malpractice as corporate crime? The case of the J. Paul Getty Museum. *J. Crim. Justice* **2014**, 37(3), 399–421.
33. Cox, S.P. White collar crime in museums. *Curator* **2017**, 60(2), 235–248.
34. Ganciu, I. Heritage for Sale! The Role of Museums in Promoting Metal Detecting and Looting in Romania. *Heritage* **2018**, 1(2), 437–452.
35. Atkinson, C., Yates, D., Brooke, N. 'Now that you mention it, museums probably are a target': museums, terrorism, and security in the United Kingdom. *Mus. Manag. Curatorship* **2020**, 35(2), 109–124.
36. Bessette, A. Vandalism in Art Museums: Case studies from 1985 to 2013. *Journal of Art Crime* **2016**, 15, 15.
37. Hufnagel, S., Chappell, D. Eds. *The Palgrave Handbook on art crime*. Palgrave Macmillan: London, United Kingdom, 2019.
38. Runhovde, S.R. Perspectives on Police Specialization in Art Theft Investigations. *Policing* **2021**, 15(3), 1729–1743.
39. Burmon, K.M. Challenges to study: Difficulties arising in studying fine art theft. In *Global Perspectives on Cultural Property Crime*, Fabiani, M.D., Burmon, K.M., Hufnagel, S., Eds., Routledge: London, United Kingdom, 2023, pp. 160–174.
40. Brisman, A. Vandalizing meaning, stealing memory: Artistic, cultural, and theoretical implications of crime in galleries and museums. *Crit. Criminol.* **2011**, 19, 1–28.
41. Runhovde, S.R. Risking Munch. The art of balancing accessibility and security in museums. *J. Risk Res.* **2021**, 24(9), 1113–1126.
42. Runhovde, S.R. In the dark, all art dealers are grey: Discretion and rationalisation in the Munch art market. *Int. J. Crime Justice Soc. Democr.* **2021**, 10(2), 1–14.
43. Levy, M.P. Works of art and ivory: what are the issues? *Curator* **2018**, 61(1), 47–60.
44. Good, C., Tyrrell, P., Zhou, Z., Macdonald, D.W. Elephants never forget; should art museums remember too? Historic ivory collections as ambassadors for conservation education. *Biodivers. Conserv.* **2019**, 28, 1331–1342.
45. Dorfman, E.J. Elephants and ivory: coordinating natural history museum action to address wildlife crime. *Curator* **2018**, 61(1), 133–145.
46. Zhao, Y., Xu, L., Xiao, Y., Guan, J., Lau, W. Revisiting China's ivory markets in 2017. *Traffic* **2017**, August, 1–21.
47. Still, J. Use of animal products in traditional Chinese medicine: environmental impact and health hazards. *Complement Ther. Med.* **2003**, 11(2), 118–122.
48. Truong, V.D., Dang, N.V., Hall, C. M. The marketplace management of illegal elixirs: illicit consumption of rhino horn. *Consum. Mark. Cult.* **2016**, 19(4), 353–369.
49. Thomas-Walters, L., Hinsley, A., Bergin, D., Burgess, G., Doughty, H., Eppel, S., MacFarlane, D., Meijer, W., Lee, T.M., Phelps, J., Smith, R.J., Motivations for the use and consumption of wildlife products. *Conserv. Biol.* **2021**, 35(2), 483–491.

50. Biggs, D., Cooney, R., Roe, D., Dublin, H., Allan, J.R., Challender, D.W., Skinner, D. Developing a theory of change for a community-based response to illegal wildlife trade. *Conserv. Biol.* **2017**, 31(1), 5–12.
51. Gibbs, C., Gore, M.L., McGarrell, E.F., Rivers, III L. Introducing conservation criminology: Towards interdisciplinary scholarship on environmental crimes and risks. *Brit. J. Criminol.* **2010**, 50(1), 124–144.
52. South, N., Beirne, P. *Green Criminology*. Routledge: London–New York, United Kingdom–USA, 2017.
53. Vigne, L. The rhino horn and ivory trade, 1980–2020, Doctoral Thesis, Oxford Brookes University, United Kingdom, 2020.
54. Viscardi, P. The horns of a dilemma: the impact of the illicit trade in rhino horn. *NatSCA News* **2012**, 8–13.
55. Teixeira, C., Waterhouse, D.M., Moura, L., Andrade, P., Displaying a taxidermy rhinoceros in a museum: the Lisbon conservation approach. *Conserv. Patrim.* **2020**, 33, 10–23.
56. Donovan, C.T. Rhinos and the Illegal Horn Trade Top CITES Agenda. *Nat. resour. environ.* **2014**, 29(3), 51–53.
57. Rhino horn stolen from Michael Flatley home in Cork. Available online: <https://www.bbc.com/news/uk-northern-ireland-25924136> (Accessed on 13 July 2023).
58. Watford man advertised rhino horns on Instagram. Available online: <https://www.bbc.com/news/uk-england-beds-bucks-herts-41943387> (Accessed on 13 July 2023).
59. Rhino horn thieves use stun gas in Paris Museum raid. Available online: <https://www.bbc.com/news/world-europe-16067019> (Accessed on 13 July 2023).
60. Grove, L., Thomas, S. 'The rhino horn on display has been replaced by a replica': museum security in Finland and England. *Journal of conservation & museum studies* **2016**, 14(1), 1–11.
61. Rhino horn raiders steal replicas from Tring Museum. Available online: <https://www.bbc.com/news/uk-england-beds-bucks-herts-14693144> (Accessed on 13 July 2023).
62. Dicks, K.L. Developmental validation of a forensic profiling system for black rhinoceros (*Diceros bicornis*) and extraction of nuclear DNA from historic rhinoceros horns. Master thesis, University of Chester, United Kingdom, 2014.
63. Ewart, K.M., Frankham, G.J., McEwing, R., Webster, L.M.I., Clavaglia, S.A., Linacre, A.M.T., Dang, T.T., Ovouthan, K., Johnson, R.N. An internationally standardized species identification test for use on suspected seized rhinoceros horn in the illegal wildlife trade. *Forensic Sci. Int. Genet.* **2018**, 32, 33–39.
64. Rhino horn robbers stopped by Norwich Castle Museum staff. Available online: <https://www.bbc.com/news/uk-england-norfolk-17112582> (Accessed on 13 July 2023).
65. Irish rhino horn racket uncovered by Europol. Available online: <https://www.bbc.com/news/world-europe-14066052> (Accessed on 13 July 2023).
66. Crowe, S., Cresswell, K., Robertson, A., Hubby, G., Avery, A., Sheikh, A. The case study approach. *BMC Med. Res. Methodol.* **2011**, 11, 100.
67. Furto alla Specola, rubati 3 corni di rinoceronte. Available online: [https://www.lanazione.it/firenze/cronaca/2011/06/09/521427-spariti\\_corni.shtml](https://www.lanazione.it/firenze/cronaca/2011/06/09/521427-spariti_corni.shtml) (Accessed on 13 July 2023).
68. Di Nomaglio, G.N. Vittorio Emanuele Conte di Torino. *Rivista del Collegio Araldico* **2022**, 109(1), 49–72.
69. Per un pugno di cheratina. Available online: <https://www.cicap.org/n/articolo.php?id=274894> (Accessed on 13 July 2023).
70. Furto al Museo di Storia Naturale: rubati due corni di rinoceronte. Accessible online: <https://www.ilrestodelcarlino.it/macerata/cronaca/furto-corno-rinoceronte-museo-naturale-1.87849> (Accessed on 13 July 2023).
71. Corno di rinoceronte rubato all'Ateneo di Modena: il giallo dell'hard disk. Accessible online: <https://www.gazzettadimodena.it/modena/cronaca/2015/06/12/news/corno-rubato-il-giallo-dell-hard-disk-1.11596780> (Accessed on 13 July 2023).
72. Furto al Museo di Storia Naturale di Calci: rubato corno afrodisiaco. Accessible online: <https://www.lanazione.it/pisa/cronaca/calci-furto-corno-afrodisiaco-1.742259> (Accessed on 13 July 2023).
73. Veggetti, A., Maestrini, N. *L'insegnamento della medicina veterinaria nell'Università di Bologna:(1783/84-2000)*. Bononia University Press: Bologna, Italy, 2004.
74. Rubati dal Museo un corno di rinoceronte e un dente di narvalo. Accessible online: <https://www.ilrestodelcarlino.it/bologna/cronaca/furto-museo-corno-rinoceronte-dente-narvalo-1.1024405#> (Accessed on 13 July 2023).
75. Rubano corni di rinoceronte al Museo di Storia Naturale, ma sono copie. Accessible online: <https://liguriaoggi.it/2015/08/09/rubano-corni-di-rinoceronte-al-museo-di-storia-naturale-ma-sono-copie/> (Accessed on 13 July 2023).
76. Museo zoologico rubati cinque corni di rinoceronte. Accessible online: [https://napoli.repubblica.it/cronaca/2015/09/11/foto/museo\\_zoologico\\_rubati\\_cinque\\_corni\\_di\\_rinoceronte-122658168/1/](https://napoli.repubblica.it/cronaca/2015/09/11/foto/museo_zoologico_rubati_cinque_corni_di_rinoceronte-122658168/1/) (Accessed on 13 July 2023).
77. Baker, B., Jacobs, R., Mann, M., Espinoza, E., Grein, G., Eds. *CITES Identification Guide for Ivory and Ivory Substitutes*, World Wildlife Fund Inc.: Washington DC, USA, 2020.



78. Accused Narwhal Ivory Smuggler Detained in U.S. Accessible online: <https://www.nationalgeographic.com/animals/article/160320-wildlife-trafficking-crime-blotter> (Accessed on 13 July 2023).
79. Il corno violato. Il rinoceronte tra estinzione e superstizione. Available online: [http://www.anms.it/eventi/dettaglio\\_evento/1317](http://www.anms.it/eventi/dettaglio_evento/1317) (Accessed on 13 July 2023).
80. Ebrahimi, S. Art Theft: The Isabella Stewart Gardner Museum Heist & An Investigation into Title and Statute of Limitations. *Journal of Art Crime* **2009**, 1, 61.
81. Evans, L. Making the Best of the Worst: How the Isabella Stewart Gardner Museum Turned Its Loss Into Gain. *Journal of Art Crime* **2015**, 14, 39.
82. Rothstein, H.R., Hopewell, S. Grey Literature. In *The Handbook of research synthesis and meta-analysis*, Cooper, H., Hedges, L.V., Valentine, J.C., Eds., Russell Sage Foundation: New York, USA, 2009, pp. 103–125.
83. Beni archeologici. Accessible online: <http://www.iccd.beniculturali.it/it/scarica-i-documenti> (Accessed on 13 July 2023).
84. Beni architettonici. Accessible online: [http://www.iccd.beniculturali.it/it/ricercanormative/44/a-architettura-3\\_00](http://www.iccd.beniculturali.it/it/ricercanormative/44/a-architettura-3_00) (Accessed on 13 July 2023).
85. Beni demoetnoantropologici materiali. Accessible online: [http://www.iccd.beniculturali.it/it/ricercanormative/65/bdm-beni-demoetnoantropologici-materiali-4\\_00](http://www.iccd.beniculturali.it/it/ricercanormative/65/bdm-beni-demoetnoantropologici-materiali-4_00) (Accessed on 13 July 2023).
86. Beni demoetnoantropologici immateriali. Accessible online: [http://www.iccd.beniculturali.it/it/ricercanormative/51/bdi-beni-demoetnoantropologici-immateriali-3\\_00](http://www.iccd.beniculturali.it/it/ricercanormative/51/bdi-beni-demoetnoantropologici-immateriali-3_00) (Accessed on 13 July 2023).
87. Beni fotografici. Accessible online: [http://www.iccd.beniculturali.it/it/ricercanormative/10/f-fotografia-3\\_00](http://www.iccd.beniculturali.it/it/ricercanormative/10/f-fotografia-3_00) (Accessed on 13 July 2023).
88. Strumenti musicali. Accessible online: <http://www.iccd.beniculturali.it/it/ricercanormative/64/sm-strumenti-musicali-4> (Accessed on 13 July 2023).
89. Beni Naturalistici—Botanica. Accessible online: [http://www.iccd.beniculturali.it/it/ricercanormative/12/bnb-beni-naturalistici-botanica-3\\_01](http://www.iccd.beniculturali.it/it/ricercanormative/12/bnb-beni-naturalistici-botanica-3_01) (Accessed on 13 July 2023).
90. Beni Naturalistici—Mineralogia. Accessible online: [http://www.iccd.beniculturali.it/it/ricercanormative/13/bnm-beni-naturalistici-mineralogia-3\\_01](http://www.iccd.beniculturali.it/it/ricercanormative/13/bnm-beni-naturalistici-mineralogia-3_01) (Accessed on 13 July 2023).
91. Beni Naturalistici—Paleontologia. Accessible online: [http://www.iccd.beniculturali.it/it/ricercanormative/14/bnp-beni-naturalistici-paleontologia-3\\_01](http://www.iccd.beniculturali.it/it/ricercanormative/14/bnp-beni-naturalistici-paleontologia-3_01) (Accessed on 13 July 2023).
92. Beni Naturalistici—Petrologia. Accessible online: [http://www.iccd.beniculturali.it/it/ricercanormative/15/bnpe-beni-naturalistici-petrologia-3\\_01](http://www.iccd.beniculturali.it/it/ricercanormative/15/bnpe-beni-naturalistici-petrologia-3_01) (Accessed on 13 July 2023).
93. Beni Naturalistici—Planetologia. Accessible online: [http://www.iccd.beniculturali.it/it/ricercanormative/16/bnpl-beni-naturalistici-planetologia-3\\_01](http://www.iccd.beniculturali.it/it/ricercanormative/16/bnpl-beni-naturalistici-planetologia-3_01) (Accessed on 13 July 2023).
94. Beni Naturalistici—Zoologia. Accessible online: [http://www.iccd.beniculturali.it/it/ricercanormative/17/bnz-beni-naturalistici-zoologia-3\\_01](http://www.iccd.beniculturali.it/it/ricercanormative/17/bnz-beni-naturalistici-zoologia-3_01) (Accessed on 13 July 2023).
95. Beni Naturalistici—Antropologia Fisica. Accessible online: [http://www.iccd.beniculturali.it/it/ricercanormative/1/at-reperiti-antropologici-3\\_01](http://www.iccd.beniculturali.it/it/ricercanormative/1/at-reperiti-antropologici-3_01) (Accessed on 13 July 2023).
96. Beni Numismatici. Accessible online: [http://www.iccd.beniculturali.it/it/ricercanormative/18/nu-beni-numismatici-3\\_00](http://www.iccd.beniculturali.it/it/ricercanormative/18/nu-beni-numismatici-3_00) (Accessed on 13 July 2023).
97. Patrimonio scientifico e tecnologico. Accessible online: [http://www.iccd.beniculturali.it/it/ricercanormative/66/pst-patrimonio-scientifico-e-tecnologico-4\\_00](http://www.iccd.beniculturali.it/it/ricercanormative/66/pst-patrimonio-scientifico-e-tecnologico-4_00) (Accessed on 13 July 2023).
98. Beni opere/ oggetti d'arte. Accessible online: [http://www.iccd.beniculturali.it/it/ricercanormative/29/oa-opere-oggetti-d-arte-3\\_00](http://www.iccd.beniculturali.it/it/ricercanormative/29/oa-opere-oggetti-d-arte-3_00) (Accessed on 13 July 2023).
99. Calosso, B., Di Lorenzo, A., Lattanzi, M. SIGEC: Sistema Informativo Generale del Catalogo. Il sistema per la catalogazione integrata delle collezioni museali e del contesto territoriale. *Museologia Scientifica Memorie* **2008**, 2, 21–24.
100. Desiderio, M.L., Mancinelli, M.L., Negri, A., Plances E., Saladini, L. Il SIGECweb nella prospettiva del catalogo nazionale dei beni culturali. *DigItalia* **2013**, 8(1), 69–82.
101. Catalogo Generale dei Beni Culturali. Accessible online: <https://catalogo.beniculturali.it> (Accessed on 13 July 2023).
102. Veninata, C. Dal Catalogo generale dei beni culturali al knowledge graph del patrimonio culturale italiano: il progetto ArCo. *DigItalia* **2020**, 15(2), 43–56.

103. Krishtalka, L., Humphrey, P.S. Can natural history museums capture the future? *Bioscience* **2000**, *50*(7), 611–617.
104. Lando, F. Studio e catalogazione della collezione di chiroteri del Museo di Zoologia dell'Università di Padova. Master Thesis, University of Padova, Italy, 2022.
105. Danese, L. Il Sistema Leonardo e la Banca Dati dei beni culturali illecitamente sottratti: struttura, processi, prospettive e contesto della base di dati del Comando Carabinieri Tutela Patrimonio Culturale, Master Thesis, University of Venezia Ca' Foscari, Italy, 2020.

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.