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EDITORIAL NOTE

Biological collections in danger?

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The importance of biological collections has been emphasized several times in the literature (e.g., Suarez & Tsutsui 2004) and there is a general feeling that these specimens - some obtained with great difficulty-, are considered important for the society (e.g., National Academies of Sciences et al. 2021). However, there has been a gradual shortening of budgets regarding maintenance and storing facilities, along with a steady and undesired reduction of human resources to take care of scientific collections, that are raising eyebrows everywhere (e.g., Finkel 2024). On some occasions, the negligence of policymakers has led to disastrous consequences, as was the case of the recent tragic fire at the Museu Nacional/UFRJ, which housed the largest natural history collection in Brazil (e.g., Zamudio et al. 2018). The reconstruction of this institution is progressing even while facing enormous challenges (e.g., Kellner 2019), and, despite all efforts made by the staff to recover objects in the rubble of the palace (Rodrigues-Carvalho 2011), the lost pieces are lost forever.

It is also widely known that collecting activities carried out so far are not evenly distributed across the world (e.g., Johnson et al. 2023), a situation that will have to be faced in the near future. This does not only affect countries with developing economies that need to deal with significant challenges in preserving their biodiversity (e.g., Medeiros et al. 2022), as well as other problem such as trafficking of objects (e.g., Kellner 2023). For a number of reasons, significant biases in the way collections have been formed over time can also be identified in countries with stronger economies (e.g., Delsett 2024).

The issue is further complicated because the continued limitations of financial budgets for biological collections run counter to the need to increase field collection activities. In a very interesting article, Santos et al. (2024) examined herpetology collections housed in Portugal and attempted to provide an overview of areas where species information is not available. The authors came to the conclusion that the country's existing collections are quite incomplete, covering less than 30% of the Portuguese territory, which has negative consequences for science and conservation efforts.

In recent years, there has been increasing interest in trying to gain a better understanding of the representation of biological collections across a variety of taxonomic groups, from microorganisms (e.g., Zorzal-Almeida et al. 2022) to insects that occur in restricted areas (e.g., Bonfim-Kubatamaia et al. 2022). There have also been issues regarding the insane bureaucracy for obtaining collection licenses, widely criticized by the scientific community (e.g., Alves et al. 2018), which are not in line with scientific and educational progress.

One way or the other, funding for the maintenance of scientific specimens is not likely to increase in most countries, not even in those with long collecting tradition and comparatively strong economy. This is happening despite the overall sense of the need to strengthen collecting due to the gaps encountered is some surveys (e.g., Santos et al. 2024), which becomes more relevant as biodiversity is being lost as we speak, for the reasons that are quite known to everyone. Like it or not, institutions that guard scientific collections, especially museums, need to rethink their role in society. New ways of dealing with scientific items have been discussed for some time (e.g., Pyke & Ehrlich 2010) and some new ideas are being developed (e.g., Bakker et al. 2020).

There are also some possibilities being discussed about new ways of obtaining information to support biodiversity research, which could include the local community and volunteers (e.g., Forti & Szabo 2023). There is also a growing consensus on the need for greater involvement and professionalization of science communication (Massarani et al. 2022), that might also be a very important factor in this entire equation.

As a final note, it has become clear that the issue of conservation and maintenance of scientific collections, for all of those of biological nature that require special procedures, is a challenge that needs to be faced, better sooner than latter.

REFERENCES

ALVES RJV ET AL. 2018. Brazilian legislation on genetic heritage harms Biodiversity Convention goals and threatens basic biology research and education. An Acad Bras Cienc 90: 1279-1284. DOI 10.1590/0001-3765201820180460.

BAKKER FT ET AL. 2020. The Global Museum: natural history collections and the future of evolutionary science and public education. PeerJ 8: e8225. http://doi.org/10.7717/peerj.8225.

BONFIM-KUBATAMAIA EG, FONSECA CRV, BEVILAQUA M & FIGUEIREDO FOG. 2022. Richness and similarity of Passalidae (Coleoptera: Scarabaeoidea) from biological collections in the Brazilian Amazon. An Acad Bras Cienc 94: e20190642. DOI 10.1590/0001-3765202220190642.

DELSETT LL. 2024. Collecting whales: processes and biases in Nordic museum collections. PeerJ 12: e16794. DOI 10.7717/peerj.16794.

FINKEL E. 2024. Australian museum's plan to cut research draws fire from scientists. Science https://www.science.org/content/article/australian-museum-s-plan-cut-research-draws-fire-scientists.

FORTI LR & SZABO JK. 2023. The iNaturalist platform as a source of data to study amphibians in Brazil. An Acad Bras Cienc 95: e20220828. DOI 10.1590/0001-3765202320220828.

JOHNSON KR ET AL. 2023. A global approach for natural history museum collections. Science 379(6638): 1192-1194. DOI: 10.1126/science.adf6434.

KELLNER AWA. 2019. A reconstrução do Museu Nacional: bom para o Rio, bom para o Brasil. Ciência e Cultura 71(3): 4-5. http://dx.doi.org/10.21800/2317-66602019000300001.

KELLNER AWA. 2023. Cultural objects at risk - the responsibility of reviewers and editors. An Acad Bras Cienc 95: e2023951. DOI 10.1590/0001-37652023951.

MASSARANI L, DA SILVA CM, AMORIM L & MARIA DMS. 2022. Science communication activities at research institutes in Brazil: Recent expansion on the way to professionalization. An Acad Bras Cienc 94: e20201936. DOI 10.1590/0001-3765202220201936.

MEDEIROS NF, FERNANDES GW, RABELLO AM, BAHIA TO & SOLAR RRC. 2022. Can our current knowledge and practice allow ecological restoration in the Cerrado? An Acad Bras Cienc 94: e20200665. DOI 10.1590/0001-3765202120200665.

NATIONAL ACADEMIES OF SCIENCES ET AL. 2021. Biological collections: Ensuring critical research and education for the 21st century. Washington, DC. National Academies Press.

PYKE GH & EHRLICH PR. 2010. Biological collections and ecological/environmental research: a review, some observations and a look to the future. Biol Revi 85(2): 247-266.

RODRIGUES-CARVALHO C. 2021. 500 Days of Rescue - Memory, Courage and Image (Série Livros Digital). Rio de Janeiro: Museu Nacional.

SANTOS BS, MARQUES MP & CERÍACO LMP. 2024. Lack of country-wide systematic herpetology collections in Portugal jeopardizes future research and conservation. An Acad Bras Cienc 96: e20230622. DOI 10.1590/0001-3765202420230622.

SUAREZ AV & TSUTSUI ND. 2004. The value of museum collections for research and society. BioScience 54(1): 66-74. DOI 10.1641/0006 3568.

ZAMUDIO KR ET AL. 2018. Lack of science support fails Brazil. Science 361(6409): 1322-1323. DOI: 10.1126/science.aav3296.

ZORZAL-ALMEIDA S, LEHMKUHL EA, MARQUARDT GC, MORAIS KS, TRANCOSO MS & SILVA-LEHMKUHL AM. 2022. 177 years of diatom studies in Brazil: knowledge, gaps, and perspectives. An Acad Bras Cienc 94: e20210959. DOI 10.1590/0001-3765202220210959.

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