NATURAL SCIENCE COLLECTIONS ALLIANCE

950 Herndon Parkway Suite 450
Herndon, VA 20170
www.nscalliance.org
Email: membership@nscalliance.org

December 23, 2025

Michael Kratsios
Director
White House Office of Science and Technology Policy
Executive Office of the President
1650 Pennsylvania Avenue
Washington, D.C. 20504

Re: OSTP RFI on Accelerating the American Scientific Enterprise

Dear Director Kratsios,

The Natural Science Collections Alliance (NSC Alliance) appreciates the opportunity to provide comments in response to the Request for Information (RFI) on Accelerating the American Scientific Enterprise issued by the White House Office of Science and Technology Policy (OSTP) on November 26, 2025.

The NSC Alliance is a non-profit association that supports natural science collections, their human resources, the institutions that house them, and their research activities for the benefit of science and society. Our membership consists of institutions that are part of an international network of museums, botanical gardens, herbaria, universities, and other institutions that contain natural science collections and use them in research, exhibitions, academic and informal science education, and outreach activities.

Biodiversity is both a national resource and a shared responsibility. Across the United States, museums, herbaria, universities, botanical gardens, zoos, and federal repositories steward hundreds of millions of natural history specimens that document the nation's biological, geological, and environmental heritage across space and time. Together, the nation's more than 1,600 scientific collections constitute essential national research and evidence infrastructure, built over more than two centuries of scientific exploration, discovery, and inventory of past and present biodiversity.

These collections preserve more than one billion specimens, many of which have been digitized through sustained federal investment—particularly from the National Science Foundation (NSF)—and made accessible through online databases that now underpin a wide array of research and applications. By enabling discovery-driven and use-inspired science, informing policy and resource management, reducing risk, and strengthening preparedness for emerging challenges such as infectious disease, invasive species, climate impacts, and food security, natural science collections have become increasingly vital to the nation's scientific enterprise. Continued federal investment has dramatically expanded their accessibility, scientific utility, and economic relevance, positioning biodiversity collections as foundational assets for innovation, data-driven discovery, and the growing bioeconomy.

950 Herndon Parkway Suite 450
Herndon, VA 20170
www.nscalliance.org
Email: membership@nscalliance.org

U.S. Natural Science Collections: An Irreplaceable Resource

U.S. scientific collections encompass preserved specimens and samples of plants, animals, fungi, microbes, fossils, minerals, and myriad other types of materials. These specimens are irreplaceable records of biodiversity and earth history, providing verifiable, vouchered evidence that underpins research in taxonomy, systematics, ecology, genomics, agriculture, medicine, and environmental science. Federal investments—particularly through NSF and the Institute of Museum and Library Services (IMLS)—have dramatically expanded access to this infrastructure. Through programs such as the NSF-funded Integrated Digitized Biocollections (iDigBio), more than 150 million specimen records have been mobilized and made openly accessible, greatly extending the reach and impact of collections beyond traditional museum-based research.

Data Mobilization as Translation: From Discovery to Application

Digitization has not only increased access to collections but has fundamentally changed how specimen data are used. Studies demonstrate substantial growth in the use of digitized specimen data across disciplines well beyond taxonomy and systematics, including agriculture, genomics, climate science, disease ecology, and invasive species management. This expansion represents a powerful model of cross-disciplinary translation, in which federal investment in data infrastructure accelerates downstream discovery, application, and market-relevant innovation.

Specimen-derived data have helped support:
- Identification and monitoring of disease vectors and zoonotic disease risk[1].
- Detection, prediction, and management of invasive species[2].
- Wetlands management, flood mitigation, and water conservation strategies that protect communities and agricultural productivity[3].
- Crop improvement and breeding[2], including insights into the evolution of key traits such as nitrogen fixation that inform sustainable agriculture[4].

---

[1] Colella, JP, Bates J, Burneo SF, Camacho MA, Carrion Bonilla C, Constable I, D'Elía G, Dunnum JL, Greiman S, Hoberg EP, Lessa E, Liphardt SW, Londoño-Gaviria M, Losos E, Lutz HL, Ordóñez Garza N, Peterson AT, Martin ML, Ribas CC, Struminger B, Torres Pérez F, Thompson CW, Weksler M, Cook JA. 2021. Leveraging natural history biorepositories as a global, decentralized, pathogen surveillance network. PLoS Pathogens, 17(6), p.e1009583.

[2] National Academies of Sciences, Engineering, and Medicine 2020. Biological Collections: Ensuring Critical Research and Education for the 21st Century. Washington, DC: The National Academies Press. https://doi.org/10.17226/25592.

[3] Stein, E.D., Dark, S., Longcore, T., Grossinger, R., Hall, N. and Beland, M., 2010. Historical ecology as a tool for assessing landscape change and informing wetland restoration priorities. Wetlands, 30(3), pp.589-601.

[4] Kates, H. R., O'Meara, B. C., LaFrance, R., Stull, G. W., James, E. K., Liu, S.-Y., Tian, Q., Yi, T., Conde, D., Kirst, M., Ané, J.-M., Douglas E. Soltis, Pamela S. Soltis, Guralnick, R. P., & Folk, R. A. (2024). Shifts in evolutionary lability underlie independent gains and losses of root-nodule symbiosis in a single clade of plants. Nature Communications, 15, 4262. doi:10.1038/s41467-024-48036-3.

NATURAL
SCIENCE
COLLECTIONS
ALLIANCE

950 Herndon Parkway Suite 450
Herndon, VA 20170
www.nscalliance.org
Email: membership@nscalliance.org

These applications demonstrate how open, trusted, and verifiable data from collections directly support economic resilience, public health, and environmental management.

Collections as Engines for Innovation, AI, and Regional Ecosystems
Natural history collections are uniquely positioned to advance emerging technologies, including artificial intelligence (AI), and to strengthen regional innovation ecosystems. Specimen-derived data are inherently trusted, reproducible, and verifiable, making them well suited for AI-enabled discovery when combined with continued investment in digitization, data standards, georeferencing, imaging, and genomic integration. Because collections data are largely open source and well curated, they are poised for responsible use in AI training, hypothesis generation, and predictive modeling across the life sciences. Strategic growth of collections and their associated digital assets will further enable the testing, validation, and refinement of AI-driven models.

Collections also serve as regional innovation hubs. They anchor place-based expertise, workforce training, and partnerships with agriculture, biotechnology, conservation, and environmental services. Investing in existing nationwide collections infrastructure—rather than duplicating capacity—lowers barriers for small- and medium-sized businesses and enables industry partners to engage with biodiversity data, genomics, and AI without having to build new systems from the ground up.

Need for Sustained Infrastructure Investment and Coordination
To maximize the future contribution of specimen-derived data, sustained and predictable federal investment is essential. Biodiversity collections require long-term support for physical care, digitization, data curation, and strategic growth through coordinated collecting. Interruptions in funding, federal shutdowns, or staffing shortfalls can permanently compromise irreplaceable national assets.

NSC Alliance urges OSTP to consider policies that:
● Recognize natural history collections as national research infrastructure and fund them accordingly.
● Support long-term, inflation-adjusted investment in collections care, digitization, and data integration.
● Ensure federal collections and their professional staff are fully supported to sustain this critical national evidence infrastructure.
● Advance a coordinated national strategy for strategic collecting and long-term biodiversity monitoring.

Additional Recommended Actions
Several targeted policy reforms and actions would substantially strengthen the role of collections in the U.S. science and technology ecosystem:

950 Herndon Parkway Suite 450
Herndon, VA 20170
www.nscalliance.org
Email: membership@nscalliance.org

1. **Ensure sustained and predictable federal funding for science agencies and research infrastructure**
   a. Fully fund and staff NSF, IMLS, Smithsonian Institution's National Museum of Natural History, and programs that curate scientific collections within the Department of the Interior, Department of Agriculture, Department of Commerce, and other federal departments.
   b. Provide stable, long-term funding for collections that supports discovery, infrastructure maintenance, data stewardship, and workforce development.

2. **Strengthen federal coordination and leadership**
   a. Appoint a dedicated liaison within OSTP to engage with the Interagency Working Group on Scientific Collections (IWGSC).
   b. Direct agencies to sustain and advance IWGSC initiatives that improve coordination, standards, and shared infrastructure across the government.

3. **Support the National Action Center for Biological Collections**
   a. Prioritize funding and operationalizing the National Action Center for Biological Collections, as envisioned with bipartisan support in the CHIPS and Science Act of 2022.
   b. Leverage the Action Center to connect collections with industry, small businesses, and emerging technology sectors, addressing a long-recognized gap between biodiversity infrastructure and the private sector.

4. **Modernize permitting, data sharing, and security policies**
   a. Streamline federal permits (e.g., collecting, import/export) and reporting requirements for consistency and to reflect modern research practices while preserving conservation and ethical safeguards.
   b. Fully staff agencies responsible for permitting activities to ensure application wait times are reasonable.
   c. Update policies governing data sharing and security to distinguish appropriately between sensitive data (e.g., pathogens or vulnerable species locations) and data where open access and international exchange fuel innovation.
   d. Modernize and simplify online systems used by government agencies to manage permit applications and reporting, import and export declarations, collection inventories, lists of protected species, and other related resources and processes, to make the work of agencies, businesses, museums, and researchers more efficient and effective.
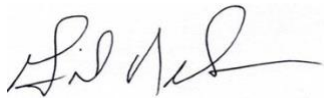
5. **Invest in workforce and talent mobility**
   a. Ensure immigration and visa policies facilitate, rather than hinder, the ability of museums, universities, research organizations, and small businesses to recruit and retain global scientific talent critical to collections-based research, data science, and bioinformatics.

NATURAL
SCIENCE
COLLECTIONS
ALLIANCE

950 Herndon Parkway Suite 450
Herndon, VA 20170
www.nscalliance.org
Email: membership@nscalliance.org

Natural history collections are foundational to the nation's scientific enterprise, economic competitiveness, public health, and ability to manage risk in an era of rapid environmental and technological change. By investing in existing collections infrastructure, expanding digitization and data mobilization, and modernizing policies to support collaboration, AI-enabled discovery, and workforce development, the federal government can unlock the full potential of biodiversity data for science, innovation, and the public good.

The NSC Alliance stands ready to work with OSTP and federal partners to ensure that America's scientific collections continue to serve as trusted national evidence infrastructure—supporting discovery, informing policy, and driving innovation for generations to come.

We appreciate the opportunity to weigh in on this important issue. Please do not hesitate to contact Executive Director Jyotsna Pandey at jpandey@aibs.org or (202) 628-1500 x 225 if NSC Alliance can be of further assistance.

Sincerely,

Gil Nelson, Ph.D.
President