Importance of Collections

Sustaining Biological Collections

Essential Infrastructure for Science and Society

Biological collections are critical long-term research infrastructure that connect physical specimens with digital data, human expertise, and cutting-edge technology. As such, they provide the foundation for biodiversity science, environmental monitoring, public health, agriculture, conservation, education, and evidence-based policy. Collections and their associated data require an ongoing investment to remain well-maintained, reliable, relevant, and publicly accessible.

Core Collections Infrastructure

Adequate Physical Spaces: Temperature- and humidity-controlled facilities keep specimens from degrading.

Skilled Experts and Trainees: Curators, taxonomists, and data specialists who identify, preserve and interpret collections and train the next generation of experts.

Data Infrastructure: Modern, interconnected digital platforms that keep data easy to find, access, share, use, and ethically manage.

Reliable Support: Steady funding and strong institutional oversight to ensure collections survive long-term.

Powered by People

Collections are inherently powered by people; from curators to collections managers to donors. Maintaining expertise is as essential as maintaining specimens and facilities. Once specialist knowledge is lost, it can take decades to rebuild. Human capacity depends on supporting the entire professional ecosystem, from students, interns, and early career professionals, to networks of researchers, community partners, and the professional communities that foster collaboration, training and shared best practices.

Risks for Collections

- Degraded specimens due to neglect or improper maintenance, leading to irreversible data loss.
- Specimens and their associated data being used in ways which do follow FAIR data stewardship principles.
- Reduced accessibility and usability for students and researchers to continue scholarly research or public use.
- Diminished capacity to respond to emerging scientific and societal challenges.





Collections are ESSENTIAL!

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Modern Solutions

The Power of AI	Artificial intelligence is unlocking new potential in collections. This potential includes automating specimen digitization, identifying traits from photos, and spotting hidden patterns across millions of records.
Utilize the Collective	Conversations about sustainability can't happen in silos. Individual museums and labs must come together to identify and implement shared solutions to the on-going risks facing collections.
Stabilize the Funding Model	Short-term grants are not sufficient for long-term preservation of these irreplaceable resources. Collections require persistent core funding that reflects their status as essential public infrastructure.

Innovation in Action

Conversational AI for Biodiversity

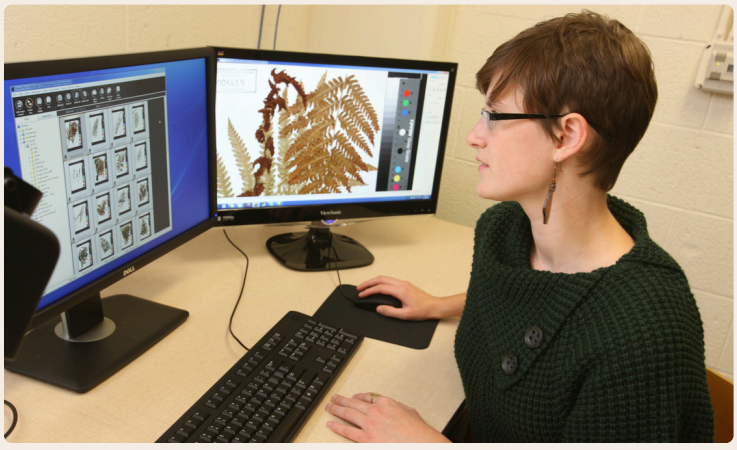
AI-powered assistants, like iChatBio, allow researchers and the public to query vast biological databases using natural, everyday language. By linking repositories across global portals (like iDigBio, GBIF, and the Biodiversity Heritage Library), AI automates complex searches, data cleanup, and visualization tasks that previously took days of manual labor.

AI-Ready Infrastructure

Initiatives, such as the Web of Biological Data proposed by the National Security Commission on Emerging Biotechnology, aim to establish a centralized federal framework for biological data. By standardizing datasets across government agencies and research institutions, this initiative ensures biological data is structured, interoperable, and fully "AI-ready"--transforming scattered collections into an integrated research grid.

Investing in the Future

Biological collections are investments that grow in value over time. Long-term planning, coordination, and funding are essential to ensure these irreplaceable resources continue to provide verifiable evidence for research while supporting discovery, innovation, conservation, and informed decision-making.



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