



## Societal Benefits of Collections

Biological collections include living and preserved plants, animals, fungi, microbes, tissues, DNA, images, and associated data that document biodiversity across time and space. Housed in museums, herbaria, universities, and research institutions, these collections serve as permanent, verifiable records of life on Earth.

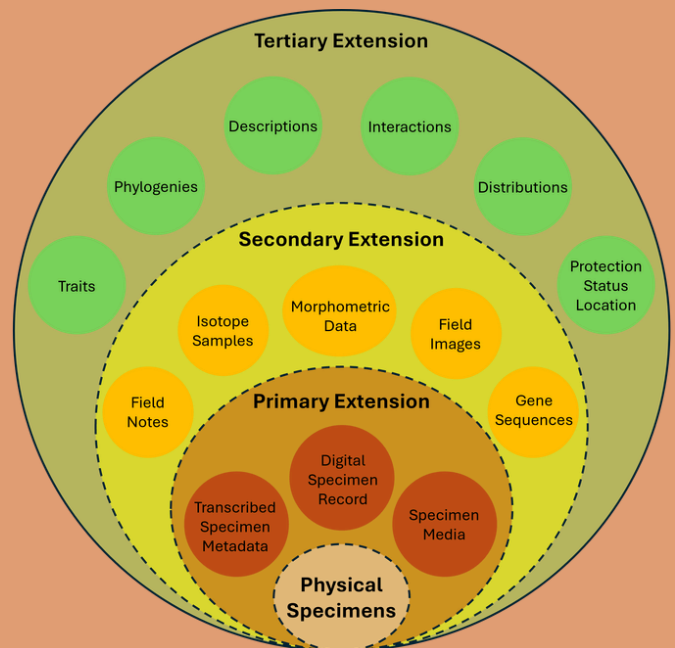
**Biological collections are critical societal infrastructure for supporting human health, environmental resilience, and informed decision-making.**

## Biological Collections as Research Infrastructure

The significance of biological collections continues to grow in ways that were unanticipated even a decade ago.

Collections now support:

- Genomic sequencing and molecular systematics
- Trait-based ecology and evolutionary biology
- Climate change research
- Environmental monitoring
- Biosecurity and pathogen research
- STEM education and workforce training
- ...and more!



## Biological Collections as National and Global Resources

Biological collections represent a shared scientific heritage and a long-term investment in understanding Earth's biodiversity. They are irreplaceable once lost. Strategic coordination, digitization, and sustained support are essential to ensure that collections continue to serve research, education, and society into the future.





## How Collections are Used



### Health & Public Safety

- Studying disease dynamics and identifying reservoirs and vectors before outbreaks are recognized.
- Supporting research on pathogens and host evolution
- Forensic entomology and plant identification in criminal cases.
- Detecting invasive species and tracking biological introductions.
- Improving aviation safety through bird strike research.

**Example:** In the 1970s, Chinese scientist Tu Youyou reviewed ancient medical texts for a cure to malaria. Her discovery of artemisinin, a derivative of sweet wormwood, became the world's most effective anti-malarial drug. This discovery has saved millions across Asia and Africa and earned her a Nobel Prize.

### Environment & Conservation

- Detecting long-term shifts in species distributions under environmental change.
- Understanding how organisms adapt to human-altered environments (e.g., phenology).
- Studying domestication & human/wildlife interactions.
- Identifying species at risk, documenting population declines, and informing recovery efforts.
- Informing conservation policy and land management.

**Example:** The olinguito, a small carnivorous mammal inhabiting Andes cloud forests, was discovered in 2013 using specimens from 18 different museum collections. Later, collections records and citizen science data were used to redefine the olinguito's distribution and improve conservation efforts.

### Educational Resources

- Incorporating collections and specimens into classroom curricula.
- Teaching data literacy and ethical use.
- Enhancing undergraduate research experiences through year-round research opportunities.
- Integrating with community science platforms: Notes from Nature, Bumble Bee Watch, and more!

**Example:** In 2020, faculty established BCEENET, a network of collections-based undergraduate research opportunities which allow students to investigate morphological traits and geographic distributions of plants and insects using digital natural history collections.

### Humanities and Social Sciences

- Inspiring art and literature.
- Supporting archaeology and anthropological research on diet, trade, migration, & resource use.
- Aiding linguistic and ethnobiological research (e.g., species naming practices across cultures).
- Informing studies of long-term socio-ecological change, including climate impacts on human societies.

**Example:** Poet and novelist Helen Humphrey used her experiences in the Fowler Herbarium to discuss the intersection between nature and people in her work "Field Study: Meditations on a Year at the Herbarium".

**Collections are  
ESSENTIAL!**

Citations



Additional One-Pagers



BCoN Website

