

# NATURAL SCIENCE COLLECTIONS

## Informing Climate Change and Biodiversity

Climate change and biodiversity conservation are major issues of concern to the public and policymakers. Informed policy and economic responses to these challenges requires timely and accurate scientific information. Natural science collections, such as those at public and private natural history museums, government laboratories, or university-based research centers provide this knowledge, and help point us toward solutions to preserving America's climate-dependent economic resources and protecting the country's astounding natural beauty.

### Conserving Biodiversity

Natural science collections chronicle Earth's biological diversity, past and present.

- Resource managers at Everglades National Park could not locate Miami blue or Atala hairstreak butterflies. The park's **natural science collections showed that these species had once existed in the park.** In 2004, the National Park Service launched an initiative to restore these butterflies to the park, attracting visitors to see the rare butterflies.
- In only 10,000 years, the climate of Bighorn Basin, Wyoming, went from one similar to Florida to one like southern Mexico. **Scientists are using fossil plants stored at natural science collections to study patterns of plant migration and death** during this period. This information may inform current plant conservation strategies for responding to climate change.
- Biodiversity data provided by natural science collections are **irreplaceable and available through no other scientific resources or endeavors.** Protecting such resources is necessary to maintain accurate records of Earth's natural history.

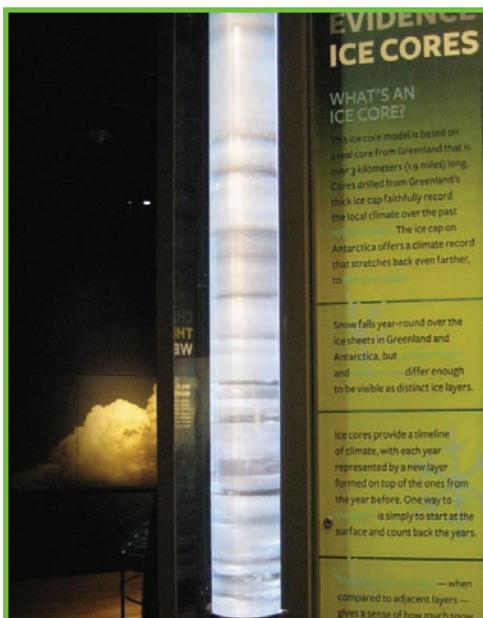


© incognita

### A Record of Climate Change

Natural science collections provide a record of the environmental changes that have occurred throughout Earth's history.

- Ice cores at the National Ice Core Lab in Lakewood, Colorado, are records of temperature, precipitation, atmospheric gas composition and chemistry over thousands of years. **Ice cores from Antarctica allow scientists to chart variations in carbon dioxide** and reveal how the atmosphere has changed in the postindustrial age.
- Information in collections allows scientists to reconstruct Earth's climate history and determine what processes or events were associated with major cooling and warming periods, **thus enabling better forecasting of the consequences of climate change.**
- Programs, such as the Marian Koshland Science Museum's "Global Warming: Facts and Our Future," are important for educating the public about climate change. **Museum exhibits such as this are built around data contained in natural science collections.**



© unforth

## Tracking Ecological Change

Researchers use collections to monitor shifts in species ranges.

- Researchers at the University of Mississippi Field Station **used scientific collections to chart the spread of the Argentine ant**. This invasive pest species displaces beneficial native species and destroys ecosystems. Distribution data from collections helped scientists devise methods for controlling further spread of this pest and for protecting plants and animals.
- **Butterfly collections are used worldwide to document environmental changes**. By comparing museum notes to current distribution patterns, scientists, such as those who study the Apollo butterfly in the Rocky Mountains, have shown that a warming climate is isolating populations and may lead to extinction.



© Curious Expeditions



© kikiliii

## Offering Hope for the Future

Research conducted using natural science collections can help inform environmental mitigation strategies.

- Using natural science collections dating back to the 1880s, researchers have chemically **analyzed feathers from museum specimens to understand why the endangered marbled murrelet is disappearing**. Scientists reconstructed the murrelet's historical diet and found a shift from fish to nutritionally poor invertebrates, apparently as a result of overfishing. This finding allowed scientists to focus restoration efforts on food supply, rather than on protection of nest sites or territories.

## What To Do

Several recent surveys have assessed the condition of US science collections. These reports have noted that many science collections need greater funding to improve specimen and data curation, and to hire and maintain appropriate levels of staff. Roughly 59% of museums have had budget cuts in the past year, 40% reported declining numbers of staff, and only 27% have budget lines to maintain collections. In this environment, collections-based research and education are hindered. In some cases, science collections are being abandoned or permanently closed. When this happens, we risk losing specimens and data that are important to our ability to understand how the world around us functions.

Improved federal coordination and a national commitment to governmental and nongovernmental science collections are required. To learn more about natural science collections and how you can support initiatives that will increase the utility of collections for society, please visit [www.NSCAlliance.org](http://www.NSCAlliance.org).

### Contact information

e-mail: [publicpolicy@aibs.org](mailto:publicpolicy@aibs.org)  
phone: 202-628-1500 x250

Natural Science Collections Alliance  
[www.nscalliance.org](http://www.nscalliance.org)

American Institute of Biological Sciences  
[www.aibs.org](http://www.aibs.org)

