Expanding Access to Natural History Collections

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At universities throughout the United States, tight budgets are threatening the continued vitality of research based on natural history collections (see “Are University Natural Science Collections Going Extinct?” BioScience 53: 550). In response, members of the taxonomy and natural history collection community undertook a self-assessment. Their finding: Natural history collections and collection-based research are vital to understanding biodiversity and to informing public policy on such issues as invasive species and emerging public health threats. Thus, scientists are also now thinking about the components of a new national initiative that could reinvigorate collection-based research.

Larry Page, adjunct curator of fish at the Florida Museum of Natural History (MNH), is among those who advocate a larger federal investment in natural history collections and in the research they enable. In November 2003, with support from the National Science Foundation (NSF), Page coordinated a workshop at the Florida MNH that brought together 59 representatives from 48 institutions, including 31 scientific societies and agencies. The charge to the group was simple: Develop a 10-year plan for taxonomy and natural history collections. To do so, workshop participants sought first to identify shared research questions and infrastructure needs.

One common need is to “figure out how to network data to support basic and other types of research,” according to Gregory Mueller, curator of the Department of Botany at the Field Museum of Natural History in Chicago and a representative to the Natural Science Collections Alliance (NSCA). For Mueller and others at the Florida workshop, this was the crucial realization: For there to be a renaissance in research based on natural history collections, new technologies must be put into play to expand remote access to collection materials.

Separate meetings convened by the NSCA and the New York Botanical Garden also explored the potential for increasing access to networked data. Dennis Stevenson, of the New York Botanical Garden, coordinated a meeting at which researchers considered how technology such as remote-controlled cameras can be used to increase access to specimens held in collections around the country. Innovative thinking such as this may ultimately increase research productivity and the application of collection-generated knowledge.

The report from the Florida workshop, like accounts from a US Geological Survey–supported meeting convened by NSCA, articulates the resource and investment needs of the collection-based research community. The heart of the Florida MNH report, which is targeted primarily at NSF, is a call for the creation of a “Legacy Infrastructure Network for Natural Environments” (LINNE), a coordinated network of collection nodes in each state. In acknowledgment that the basic infrastructure for LINNE exists as natural history collections in universities and museums, the proposal calls for a coordinated federal funding stream dedicated to modernizing collection facilities, updating specimen identifications, and expanding the electronic availability of collection databases. A distributed network, some researchers assert, would enable collections to be used to their full potential.

The network approach also allays concerns of scientists such as Neil Snow, curator of the herbarium at the University of Northern Colorado, who initially worried that smaller collections might be left out of a national initiative. Snow left the Florida workshop comfortable with the inclusiveness of the planned network. Echoing Snow’s sentiments, Mueller affirms that any initiative to improve the infrastructure for collections-based research must include “smaller and regional collections,” which together encompass large amounts of valuable data.

Participants in the Florida workshop also expressed strong support for existing biodiversity research programs at NSF, recommending that these programs be made permanent. Moreover, a growing number of scientists would like to see Congress provide NSF with new funding for the Biological Research Collections program budget—from $6 million to $20 million per year—so the scientific community can better address the problems associated with maintaining collections in perpetuity.

The history of science does not lack for examples of good ideas that have failed to garner public and political support, as LINNE supporters realize. A sustained campaign is required to build support for LINNE, particularly given the budget challenges facing the federal government. But Page thinks the community is up to the task: “The systematics community is genuinely excited about an initiative that emphasizes the discovery and documentation of biodiversity and recognizes the importance of biological collections—the irreplaceable documentation of life on Earth.”

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