

**Overview of  
iDigBio, the HUB  
for Advancing  
Digitization of  
Biological  
Collections**

Larry Page



iDigBio External Advisory Board Meeting  
2012 (Project Year 1)  
Supported by NSF Award EF-1115210

# ADBC

- The enormous amount of information in biological collections is inaccessible to most potential users.





The **goal of ADBC is to remove this inaccessibility** by putting information online so that researchers, educators, students, environmentalists, and policymakers will have access.

# NATIONAL HUB, THEMATIC COLLECTION NETWORKS, AND COLLABORATORS



iDigBio National Hub  
Florida Museum of Natural History/  
University of Florida

## Thematic Collection Networks

-  InvertNet - An Integrative Platform for Research on Environmental Change, Species Discovery and Identification  
University of Illinois at Urbana-Champaign
-  North American Lichens and Bryophytes: Sensitive Indicators of Environmental Change and Quality  
University of Wisconsin - Madison
-  Plants, Herbivores and Parasitoids: A Model System for the Study of Tri-Trophic Associations  
American Museum of Natural History
-  Collaborating Institutions

# *Mission of iDigBio:*

To make ADBC a success.

# *Vision of iDigBio: Two Primary Outcomes*

1. iDigBio is a primary source for information from biological collections in the U.S.



information from biological collections reaches users as seamlessly and as usefully as possible

# *Vision of iDigBio: Two Primary Outcomes*

2. iDigBio a primary source for information on standards and methods for digitization of biological collections



and digitization becomes routine in all institutions with biological collections

# Grand Challenges in Science and Society

“... grand challenge efforts ...  
alter the boundaries of existing knowledge,  
established disciplines and available capabilities.”

Susan J Winter, National Science Foundation  
Brian S Butler, University of Pittsburgh  
Journal of Information Technology (2011) 26, 99–108

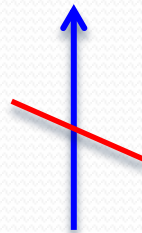


# BIODIVERSITY





# Biodiversity



Inadequate → **Biodiversity Crisis**

Environmental Policy  
Management, Use,  
Protection

# ADBC

- **Address the Biodiversity Crisis in substantial ways**

# Biodiversity



## Collections: Specimens, Observations, DNA



**1 billion  
specimens  
in U.S.**

**Environmental Policy**  
Management, Use,  
Appreciation, Protection

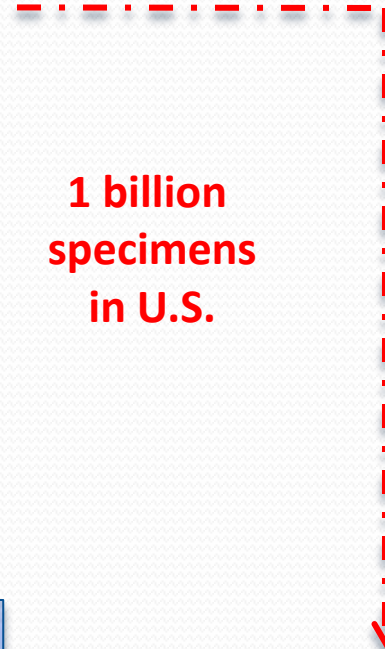
**Understanding**

**Appreciation**

# Biodiversity



## Collections: Specimens, Observations, DNA



**1 billion  
specimens  
in U.S.**

**Environmental Policy**  
Management, Use,  
Appreciation, Protection



**New Discoveries**

**Understanding**

**Appreciation**

**Research**

**Education**

**Outreach**





# Biodiversity



Collections: Specimens, Observations, DNA



Digitization

Environmental Policy  
Management, Use,  
Appreciation, Protection

**New Discoveries**

**Understanding**

**Appreciation**

Research

Education

Outreach

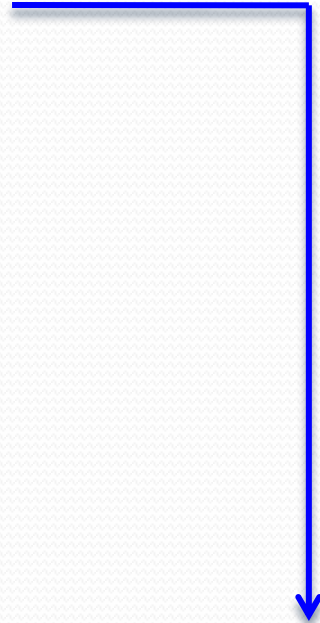
# Biodiversity



Human Benefits



Environmental Policy  
Management, Use,  
Appreciation, Protection



1

Understanding

Appreciation

# Biodiversity



## Collections: Specimens, Observations, DNA



Human Benefits



Environmental Policy  
Management, Use,  
Appreciation, Protection



Understanding

Appreciation

“To justify this level of investment and effort, grand challenges must be perceived as having the potential to significantly impact not only multiple academic fields, but also **community, national, or international concerns such as competitiveness, security, economic development or well-being.**”

Susan J Winter & Brian S Butler (2011) 26, 99–108



Human health and safety  
Homeland security  
International trade  
Conservation planning  
Prevention of wildlife trafficking  
Sustaining ecosystems  
Land use planning  
Invasive species predictive models  
Discovery and exploration  
Climate change  
Emerging infection diseases  
Management of agricultural pests  
Biological control  
Identification of disease vectors  
Forensic science  
Bioprospecting for new medicines, foods, and fibers

# Collections: Specimens, Observations, DNA

- Human health and safety
- Homeland security
- International trade
- Conservation planning
- Prevention of wildlife trafficking
- Sustaining ecosystems
- Land use planning
- Invasive species predictive models
- Discovery and exploration
- Climate change
- Emerging infection diseases
- Management of agricultural pests
- Biological control
- Identification of disease vectors
- Forensic science
- Bioprospecting



## ***What are the barriers?***

**New Discoveries**

**Understanding**

**Appreciation**

Research

Education

Outreach

# Collections: Specimens, Observations, DNA

- Human health and safety
- Homeland security
- International trade
- Conservation planning
- Prevention of wildlife trafficking
- Sustaining ecosystems
- Land use planning
- Invasive species predictive models
- Discovery and exploration
- Climate change
- Emerging infection diseases
- Management of agricultural pests
- Biological control
- Identification of disease vectors
- Forensic science
- Bioprospecting



**Digitization**

***What are the barriers?***

**Data have been inaccessible**

**New Discoveries**

**Understanding**

**Appreciation**

Research

Education

Outreach

# Collections: Specimens, Observations, DNA

- Human health and safety
- Homeland security
- International trade
- Conservation planning
- Prevention of wildlife trafficking
- Sustaining ecosystems
- Land use planning
- Invasive species predictive models
- Discovery and exploration
- Climate change
- Emerging infection diseases
- Management of agricultural pests
- Biological control
- Identification of disease vectors
- Forensic science
- Bioprospecting



Digitization

***What are the barriers?***

**Biodiversity scientists lack an effective voice**

**New Discoveries**

**Understanding**

**Appreciation**

Research

Education

Outreach



American Arachnological Society  
American Bryological & Lichenological Society  
American Fern Society  
American Malacological Society  
American Ornithologists' Union  
American Society for Microbiology  
American Society of Ichthyologists and Herpetologists  
American Society of Mammalogists  
American Society of Parasitologists  
American Society of Plant Taxonomists  
American Society of Primatologists  
Botanical Society of America  
California Botanical Society  
Cooper Ornithological Society  
Crustacean Society  
Entomological Society of America  
Helminthological Society of Washington  
International Society of Protistologists  
Lepidopterists' Society  
Mycological Society of America  
Paleontological Society  
Phycological Society of America  
Society for Integrative & Comparative Biology  
Society for Study of Amphibians & Reptiles  
Society of Nematologists  
Society of Systematic Biologists  
Society of Vertebrate Paleontology

# Ad Hoc AIBS Committee



- As a result of several meetings associated with **CollectionsWeb** and NSF's "Future Directions for Systematics and Biodiversity", a common theme emerged: biodiversity science lacks a united voice.
- The **Ad Hoc AIBS Committee** was developed to propose a long-term mechanism to develop and promote a shared agenda of biodiversity biologists.

**NSCA:** The Natural Science Collections Alliance is a Washington, D.C.-based nonprofit 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.

headquartered in AIBS

**ADBC**



**NSCA**

*Collection Support*

**AIBS**

*One Voice*

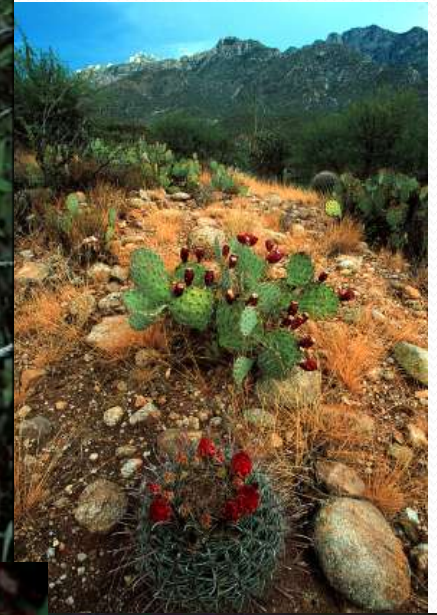
**USGS**

**BISON**

**Biodiversity**



**Collections**





- Long-term Sustainability

-- a discussion to begin in earnest in Year 2

New, improved, innovative research on biodiversity

Education and outreaches programs that reach downstream users

Also, focus on value of biodiversity collections data for human benefit  
(improves human health, addresses energy needs, drives economic  
growth, and enables sustainable management of our natural resources}



# BIODIVERSITY



Photos: M. Jeffords  
& G. Paulay

