Uses for Digitized Data
ADBC & Essential Data to be Digitized

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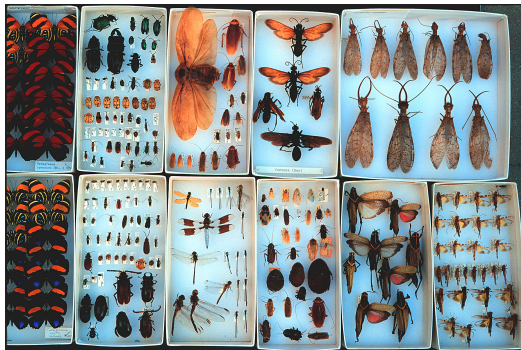
NSF EF-1115210

Collections for the 21st Century

A symposium sponsored by iDigBio and Natural Science Collections Alliance

…. the next step

- May 5-6, 2014

- University of Florida, Gainesville

- Goals:
  - Emphasize the value of collections data in meeting grand challenges facing biodiversity and human society
  - Demonstrate that value to policy-makers, administrators, others who determine the levels of support for collections

Topics will include uses of taxonomic, spatial and temporal data on biodiversity to address questions related to human health, climate change, food security, etc., as well as more fundamental investigations related to biological diversification.

Idibio.org -> upcoming events -> register

Essential Data to be Digitized - ?

Why are our natural history collections data essential? (Uses for Digitized Data)

Why are our data essential?
For research, education, outreach

Why are our data essential?
For research, education, outreach
Intellectual merit, broader impacts

Research -- *Biodiversity Collections are used by:*

taxonomists to study variation among individuals & populations to discover and describe species

phylogeneticsts and other evolutionary biologists to study history of life on Earth

ecologists to understand interrelationships among organisms and their environments

Big Science Questions & Collections to be addressed with Big Data

What are the characteristics of biological diversity on Earth?

- How many species are there?

- How are species distributed on the planet, and why are they distributed as they are?

- How do species vary, and what historical and ecological factors are responsible for the variation?

- How do sets of species covary across habitats and how do they respond to environmental perturbations?

Big Science Questions & Collections to be addressed with Big Data
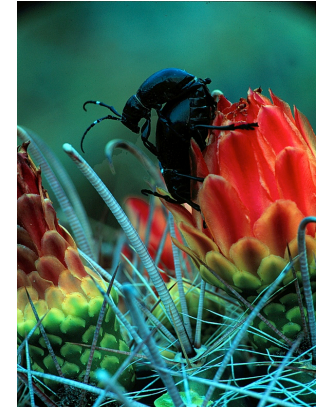
What is the history of life on Earth?

- **How are species interrelated genetically?**

- **How has biological diversification taken place through space and time?**

- **What environmental factors lead to speciation, dispersal, and extinction?**

Why are our data essential?
For education, outreach
For broader impacts

Broader Impacts -- *It is clear that:*

Humans are modifying the landscape in major ways, resulting in the irreversible loss of biodiversity and natural ecosystems.

It is clear that:

Global commerce is increasing, leading to more invasions of alien species that lead to further loss of biodiversity and modifications of natural communities.

It is clear that:

Increasing CO_2 is causing changes in our climate that are leading to additional modifications of ecosystems and losses of biological diversity.

It is clear that:

Things are changing rapidly

Huge amount that we do not know about our planet

Our window is closing

30 years before major changes occur
- UN Report 2013

Why do we care?   *Why is biodiversity important?*

Food security

Freshwater availability

Human heath and safety

Sustaining ecosystems

Land use planning

Invasive species predictive models

Discovery and exploration

Climate change

Management of agricultural pests

Identification of disease vectors

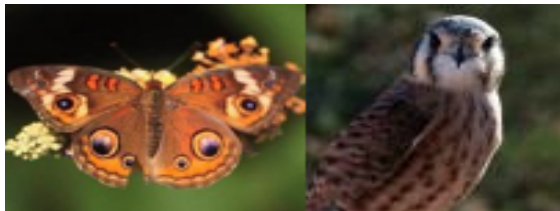**International trade**

Recreation

Conservation planning

Prevention of wildlife trafficking

Bioprospecting for new medicines, foods, and fibers

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Why do we care?   *Why is biodiversity important?*

Biodiversity is everything: oxygen, food, security, availability of fresh water, recreation, etc.

Why are our data essential?

Education and outreach – not just afterthoughts!

Data –

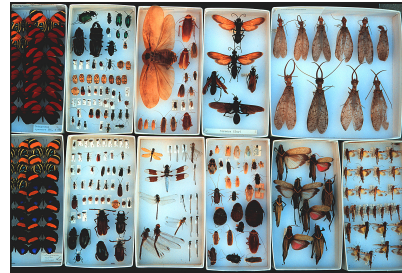**We need to demonstrate the link between collections data and ecosystem services.**

The linkages need to demonstrated. Problem-solving is key.
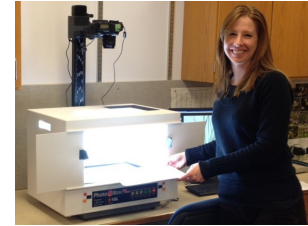
Biodiversity

Collections: Specimens, Images, DNA

Digitization
Databases
Georeferencing
Imaging

Environmental Policy
Management, Use,
Appreciation, Protection
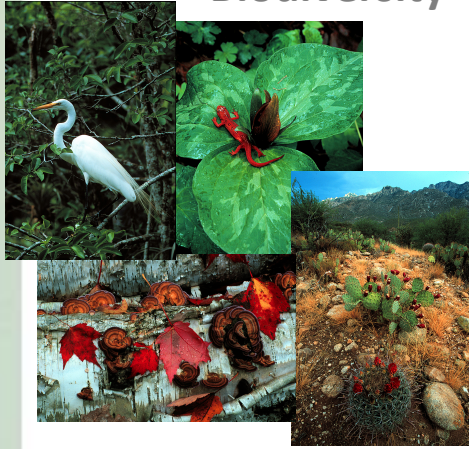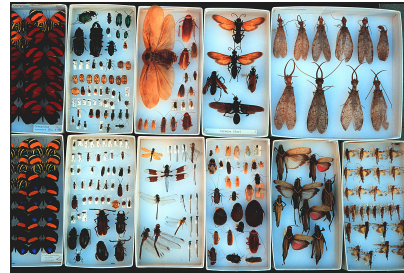
New Discoveries

Understanding

Appreciation

Research

Education

Outreach

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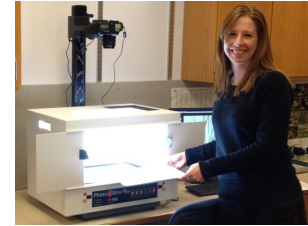
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Collections: Specimens, Images, DNA

Digitization
Databases
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Environmental Policy
Management, Use,
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New Discoveries

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THANK YOU

Photos: M. Jeffords & G. Paulay