Welcome!

And a few logistical details

Wiki: https://www.idigbio.org/wiki/index.php/Fluid_Preserved_Invertebrate_Imaging
Adobe Connect (Kevin Love): http://idigbio.adobeconnect.com/paleo
  - Being broadcast and recorded
  - Be observant of remote audience; use microphone to make comments, ask questions
  - Chat box for remote participants
Efficiency: Starting on time; staying on track
Lunch: 1.25 hours/day
Meals: Breakfast and lunch provided in Kalamazoo Room. Dinner on your own.

Origin of this workshop
Working/interest group

This material is based upon work supported by the National Science Foundation under Cooperative Agreement EF-1115210. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.
Integrated Digitized Biocollections (iDigBio)
An Introduction

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Fluid-preserved Invertebrate and Microscopic Slide Imaging Workshop
16-18 September 2013
University of Michigan
Museum of Zoology

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The U.S. National Science Foundation estimates there may be as many as 1.8 billion biological and paleontological specimens stored in U. S. museums and academic institutions (perhaps as many as 3 billion worldwide). But, no one really knows!

In an effort to make these collections universally accessible to taxonomists, ecologists, researchers, and the general public, in 2011 NSF launched a $100 million, 10-year Advancing Digitization of Biodiversity Collections program and named Florida State University and University of Florida jointly as the national resource for digitization.
The goal is to digitize and make available via the Web at least 1 billion biological and paleontological records over the 10-year life of the project.
Mandate and Responsibility

- Provide/facilitate portal access to collections data
  - Make information available and discoverable
  - Label Data and images
- Enable digitization and research
  - Facilitate digitization workflows
  - Oversee implementation of standards and best practices for digitization
  - Allow for data discovery across organismal groups
- Be a client of digitization projects/networks
  - Actively seek partners and data sources
  - Respond to cyberinfrastructure needs
- Engage communities
  - Collections
  - Research
  - Citizen science and education
- Support ADBC goals
  - Access to information
  - Support for collections
  - Sustainability
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Grand Challenge

Develop a cloud computing infrastructure that links biological data from collections across the U.S. through one or more unified web interfaces to overcome the limitations of “data silos.”
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Grand Challenge

More recently, we have been encouraged by NSF to enhance international collaboration and sharing to overcome the limitations of "data silos."
The challenges being pursued by iDigBio are reflective of worldwide trends in digitization

- Global Biodiversity Informatics Facility (GBIF)
- OpenUp! (European Union)
- Atlas of Living Australia (ALA)
- SYNTHESYS (20 European natural history museums)
Ten Thematic Collections Networks (TCNs) plus 2 Partner to Existing Networks (PENs)


- Digitizing Fossils to Enable New Syntheses in Biogeography - Creating a PALEONICHES-TCN (University of Kansas)


- Mobilizing New England Vascular Plant Specimen Data to Track Environmental Change (Yale University)

- Southwest Collections of Anthropods Network (SCAN): A Model for Collections Digitization to Promote Taxonomic and Ecological Research (Northern Arizona University) http://hasbrouck.asu.edu/symbiota/portal/index.php

New as of 1 July 2013
- iDigPaleo: Fossil Insect Collaborative: A Deep-Time Approach to Studying Diversification and Response to Environmental Change

- Developing a Centralized Digital Archive of Vouchered Animal Communication Signals

- The Macroalgal Herbarium Consortium: Accessing 150 Years of Specimen Data to Understand Changes in the Marine/Aquatic Environment
National Resource (iDigBio), Thematic Collection Networks (TCNs)

To date: 10 TCNs, 2 PENs, 160+ participating institutions, 49 states
PEN: Lichens & Bryophytes
TCN: MacroFungi
TCN: SCAN
TCN: Tri-Trophic
TCN: Animal Sounds
TCN: iDigPaleo—Fossil Insects
TCN: Macroalgal
Building the iDigBio Cloud

- Cloud-based strategy
  - Providing useful services/APIs (programmatic and web-based Application Programming Interface)
  - Federated scalable object storage and information processing
  - Digitization-oriented virtual appliances
  - Reliance on standards, proven solutions, and sustainable software
- Continuous consultation with stakeholders
  - Surveys, working groups, interest groups, workshops, person-to-person
Key Features of iDigBio

- Ingest all contributed data with emphasis on use of GUIDs, no restrictions
- Maintain persistent datasets and versioning, allowing new and edited records to be uploaded as needed while preserving existing records
- Ingest textual specimen records, plus associated still images, video, audio, and other media (or links to these resources as determined by the provider)
- Ingest linked documents and associated literature, including field notes, ledgers, monographs, related specimen collections, etc.
- Provide virtual annotation capabilities and track annotations back to the originating collection (collaborating with FilteredPush)
- Facilitate sharing and integration of data relevant to biodiversity research
- Provide computational services for biodiversity research
Recent, Ongoing, Upcoming Activities

- Assessment of common and effective digitization practices (paper in *ZooKeys*)
- Working groups
  - Minimum information for scientific collections working group (MISC)
  - Digitization workflows working groups
  - Georeferencing
  - Optical character recognition (OCR)
  - Biodiversity Informatics Manager working group
- Workshops - year 2:
  - > 150 institutions, 9 workshops, 3 symposia
  - 368 sponsored participants
  - Video archives on Vimeo, live streaming for remote participation
  - New model this year: train the trainer
  - Series of digitization training workshops (herbaria, wet collections, entomology, paleontology, fluid-preserved invertebrate imaging, small herbaria, )
- Server hosting: 8 virtual machines, TCN support
- Specimen data portal and website – continuous improvements
- Call for appliances, frequent opinion surveys
In March 2012, the Steering Committee established a series of preparation-specific digitization training workshops focused on helping collections managers get started with and/or enhance local digitization programs, all to be held at host institutions.

- DROID (Developing Robust Object->Image->Data, May 2012)
- Herbarium digitization (Valdosta State, September 2012)
- Fluid-preserved collections digitization (U. Kansas, March 2013)
- Dried insect collections digitization (Field Museum, April 2013)
- Collections Digitization (West Virginia, ASB, April 2013)
- Imaging fluid-preserved invertebrates (U. Michigan, September 2013)
- Paleontology digitization (Yale Peabody Museum, September 2013)
- Small Herbarium Digitization (Florida State University, December 2013)
- Broadening Biodiversity in the Biodiversity Sciences (Atlanta, January, 2014)
- Original Source Materials Digitization (Yale Peabody Museum, March 2014)
- Digitization in the South Pacific (Honolulu, March 2014)
- Recruiting and Retaining Small Collections in Digitization (Mt. Pleasant, MI, April 2014)
Developed a community-oriented digitization resources wiki in support of our workshops and to serve digitization-related information across all preparation types.

Established a digitization list serv to promote workshop follow-up as well as community discussion and sharing.