

Welcome to ADBC!

## The iDigBio Team ADBC Summit 2018







~ # A A @ )





*iDigBio is funded by grants from the National Science Foundation's Advancing Digitization of Biodiversity Collections Program. 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.* 



### iDigBio, Coordinating Center for NSF's Program to Improve Accessibility to Specimenbased Data in U.S. Biodiversity Collections

Larry M. Page, Director of iDigBio Curator, Florida Museum of Natural History University of Florida, Gainesville



1 October 2018



*iDigBio is funded by grants from the National Science Foundation's Advancing Digitization of Biodiversity Collections Program. 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.* 



## iDigBio: 8th Year

Began summer 2011 Renewal summer 2016





### **Principal Investigators:**

Greg Riccardi, Digitization & Training (FSU) Jose Fortes, Cyberinfrastructure (UF/ACIS) Pam Soltis, Research Collaborations (FLMNH) Bruce MacFadden, EO&D Collaborations (FLMNH) Larry Page, Director (FLMNH)



Context: Biodiversity Collections

### Institutional collections in U.S. date back to 1812, with some specimens collected 250 years ago

1,500 collections in USA

1 billion specimens in USA







3 billion specimens globally



## Context: Biodiversity Collections





### 1,500 collections in USA

1 billion specimens in USA





### 3 billion specimens globally



Natural History Collections are fundamental to understanding biodiversity and to address "Big Science" questions:

- How many species are there?
- How are species distributed on the planet, and why?
- How do species vary, and what factors are responsible?
- Etc.
  - **Specimens of extinct species**
  - only source of information on those species
  - paleoenvironments







### **Context: Biodiversity Collections**



### <u>Problem</u>: Data in collections have been inaccessible to most potential users

1 billion specimens in USA



3 billion specimens globally



NSF's Advancing Digitization of Biodiversity Collections Program, based on the national digitization effort as outlined in NIBA Strategic Plan, was launched in 2010 with the goal:

> To digitize and make available online data associated with all specimens in all non-federal natural history collections in the U.S.



**Funding:** 

- 1. Thematic Collections Networks (TCNs)
- 2. Central coordinating unit (iDigBio)



### **1. Thematic Collections Networks**

- Two-to-four year awards to collaborating institutions to digitize existing specimens based on a research theme
- Institutions digitize and mobilize the specimen-based data (but not necessarily pursue the research)
- Major emphasis has been on databasing, georeferencing, and imaging





### 23 Thematic Collections Networks (TCNs)

~ # # # # > + h × D + # m +

- InvertNet: An Integrative Platform for Research on Environmental Change, Species Discovery and Identification (Illinois Natural History Survey, University of Illinois)
- Plants, Herbivores, and Parasitoids: A Model System for the Study of Tri-Trophic Associations (American Museum of Natural History)
- North American Lichens and Bryophytes: Sensitive Indicators of Environmental Quality and Change (University of Wisconsin Madison)
- Digitizing Fossils to Enable New Syntheses in Biogeography-Creating a PALEONICHES-TCN (University of Kansas)
- The Macrofungi Collection Consortium: Unlocking a Biodiversity Resource for Understanding Biotic Interactions, Nutrient Cycling and Human Affairs (New York Botanical Garden)
- Mobilizing New England Vascular Plant Specimen Data to Track Environmental Change (Yale University)
- Southwest Collections of Arthropods Network (SCAN): A Model for Collections Digitization to Promote Taxonomic and Ecological Research (Northern Arizona University)
- The Macroalgal Herbarium Consortium: Accessing 150 Years of Specimen Data to Understand Changes in the Marine/Aquatic Environment (University of New Hampshire)
- Developing a Centralized Digital Archive of Vouchered Animal Communication Signals (Cornell University)
- Fossil Insect Collaborative: A Deep-Time Approach to Studying Diversification and Response to Environmental Change (University of Colorado at Boulder)
- Great Lakes Invasives: Documenting the Occurrence through Space and Time of Aquatic Non-indigenous Fish, Mollusks, Algae, and Plants Threatening North America's Great Lakes (University of Wisconsin Madison)
- InvertEBase: Reaching Back to See the Future: Species-rich Invertebrate Faunas Document Causes and Consequences of Biodiversity Shifts (Field Museum of Natural History)
- The Key to the Cabinets: Building and Sustaining a Research Database for a Global Biodiversity Hotspot (Appalachian State University)
- The Microfungi Collections Consortium: A Networked Approach to Digitizing Small Fungi with Large Impacts on the Function and Health of Ecosystems (INHS, University of Illinois)
- Documenting Fossil Marine Invertebrate Communities of the Eastern Pacific: Faunal Responses to Environmental Change over the last 66 million years
   (University of California-Berkeley)
- Cretaceous World: The Cretaceous World: Digitizing Fossils to Reconstruct Evolving Ecosystems in the Western Interior Seaway (University of Kansas)
- LepNet: Lepidoptera of North America Network: Documenting Diversity in the Largest Clade of Herbivores (Northern Arizona University)
- MAM: The Mid-Atlantic Megalopolis: Achieving a greater scientific understanding of our urban world (University of Pennsylvania)
- Soro: Using Herbarium Data to Document Plant Niches in the High Peaks and High Plains of the Southern Rockies (University of Colorado)
- oVert: Open Exploration of Vertebrate Diversity in 3D (University of Florida)
- Capturing California's Flowers: Using Digital Images to Investigate Phenological Change in a Biodiversity Hotspot (California Polytechnic State University San Luis Obispo)
- The Pteridological Collections Consortium: An Integrative Approach to Pteridophyte Diversity Over the Last 420 Million Years (University of California Berkeley)
- Digitizing "Endless Forms": Facilitating Research on Imperlied Plants with Extreme Morphologies (New York Botanical Garden)



## 2. iDigBio

- Engage the collections community find the specimens
- Enable digitization of biodiversity collections data Develop efficient & effective standards & workflows Workforce education & training via workshops/webinars
- **Provide portal access to biodiversity data** Enable data access & discoverability Respond to cyberinfrastructure needs



- **Promote use of data to address environmental and economic challenges** Researchers, educators, general public, policy-makers, etc.
- Assist in planning long-term sustainability of national digitization effort



All of this has required iDigBio to engage the collections community through workshops, webinars, and other events to develop workflows, train IT and collections staff, mobilize data, etc.











iDigBio Events Summary





### Participants in iDigBio Events



Fiscal Year



## - ~ ? / + @ » + h × 0 2 \* @

## iDigBio is working with 750 collections in 411 institutions

iDigBio Portal has 115M records for **345M specimens** with 27M associated media records





# Flexible search across all data, indexed fields, media, geolocation, map boundary, auto-completion, synonyms, ...



### https://www.idigbio.org/portal

### View search results as list, labels, or media

List Labels	Media Recordsets								Total: 188,896
Family	Scientific Name	Date Collected	Country	Institution Code	Collected By	Locality	Occurrence ID	Catalog Number	Column
Subertidae	Tuberella aaptos	1899-10-19	Puerto Rico	USNM	Unded States Fish Commis	Mayaguez Harbox	http://n21.net/ark./65665/331	7662	View
Pieridae	Abaels nicippe	1081-10	Puerto Rico	UPRM	Emmer, J. C.	Guayanilla	23df77d9-ccb0-11e4-8f8b-0	4626	View
Plendae	Abaels nioppe	11/15/81	Puerto Rico	UPRM	De Jesé*s, L	Ponce	23df7219-ccb0-11e4-8f8b-0	4524	VIDW
Pleridae	Abaeis nicippe	11/15/87	Puerto Rica	UPRM	De Jesé*s, L	Ponce	23df79b7-ccb0-11e4-8f8b-0	4627	view
Plendae	Abaels nicippe	9/4/89	Puerto Rica	UPRM	Banco, J.	Aguadea	23aa6164-ccb0-t1e4-6/8b-	820	view
Pierktae	Abaels nicippe	11/14/48	Puerto Rico	UPRM	Torres, C.	Mayaguez	23df75f4-ccb0-11e4-6f8b-0 .	4625	WerW
Calgidae	Abasia sp.	1977-10-07	Puerlo Rico	USNM	S. Altchuler	La Parguera	http://n2t.net/ark:/65665/3e	266843	View
Delphacidae	Abbrosoga errata	1914-07-27	PUERTO RICO	AMINET	Unknown	Maricao	um uuid 886a07f8-d8e1-11	UDCC_TCN 00016859	View
Delphacidae	Abbrosoga errata	1947-11-14	Puerto Rico	USNM	00-33475	Toro Negro MT.; P.R.	http://n2t.oet/arik:/65665/3a	He date	View
Delphacktae	Abbrosoga errata	1962-07-01	PUERTO RICO	LI SP4M	J. Maldonado Capriles	Punita	um uuid 28ab0c86-ca62-11.	UDCC_TCN 80042679	WOW
Teinhacidae	Abberosona emata	1995-05-05	P FR10 8/00	i BÓB	C. W. CERIER & F. Kovarik	Hey 120 km 14 Mitiran St	um unit 93a/6716.ca62.tt	UDOC: TCN 00042678	Here

List

Recordsets Media

#### Abbrosoga errata Caldwell & Martorell,1951

PUERTO RICO, Maricao, none, Maricao Lat: 18°10' 58" Lon: -66°58' 49" AMNH, UDCC\_TCN 00016869, Unknown

Labels

Animalia, Arthropoda, Insecta, Hemiptera

## Delphacidae

1914-07-27

#### Abelmoschus moschatus medik. Medik.

Puerto Rico, Mayaqüez (MITA), Lat: 18°12' 15" Lon: -67°6' 1" NY, 01007392, A. H. Liogier

Plantae, Tracheophyta, Magnoliopsida, Malvales

#### Pecten mayaguezensis Dall & Simpson

1981-03-

Malvaceae

Puerto Rico, Mayaguez Harbor Lat: 18°25' 30" Lon: -67°9' 11" USNM, Invertebrate Zoology, 160062, United States Fish



Animalia, Cnidaria, Anthozoa, Scleractinia

Commission





## **Publications Citing Portal Data Use**







## Digitization

### **Collection Management Software**

ARCTOS

### • Arctos

- Symbiota
- Specify
- Axiell EMu
- collectionspace

### **Community Building**

- GRBio to GBIF
- SCNet
- ECN
- Darwin Core Hour
- Working Groups: DROID, GWG, SWG, PaleoDigi, NANSH,...

### **Data Mobilization**

- TDWG Biodiversity Information Standards
- DwC Darwin Core
- AC Audubon Core
- GBIF INTEGRATED PUBLISHING TOOLKIT [IPT]
- Kurator
- GEOLocate
- DAMS Digital Asset Management
- ABBYY, Tesseract
- Unique identifiers
  - GUID, UUID, ARK, IGSN







BIODIVERSITY





- = + ~ ? A + P > > + h × 0 2

## Data aggregation and Data use **Biodiversity Data Mobilization and Use**

- EoL Encyclopedia of Life
- **BHL** Biodiversity Heritage Library
- **NEON** National Ecological Observatory Network
- CyVerse facilitating scientific research in the cloud
- GBIF Global Biodiversity Information Facility KGBIF
- iDigBio
- VertNet
- **BISON** Biodiversity Serving our Nation **GBIF North American Node**
- **USVH** United States Virtual Herbarium
- ALA, DigiVol Atlas of Living Australia
- Canadensys
- SiBBr Brazilian Biodiversity Information System
- Aggregating <u>Specimen</u> Data **CONABIO** (Mexico)
  - CRIA (Brazil) and SpeciesLink







VerbNeb

CONABIO

US<mark>Virtual</mark> Herbarium









DICIVOL





## **Education, Outreach, Inreach**



• AIM-UP!

BLUE

- Advancing Integration of Museums into Undergraduate Programs; using collections data in undergraduate education

- Notes from Nature

iNaturalist

ePandda

Crowdsourcing collections transcription, creating communities

observation app, connecting scientists and the general public

**Biodiversity Literacy in Undergraduate Education** 

connecting scientific literature with specimens

- Naturalist
  - ePANDDA



The Carpentries - Data Carpentry & Software Carpentry, Reproducible Science Curriculum....

Enhancing Paleontological and Neontological Data Discovery API,

Biodiversity informatics skills for those in the biodiversity community.
 Focus on tidy data, fit for reproducible research.





## Publishing



- Pensoft
  - ARPHA Writing Tool (AWT), BISS
- DataCite
   DataCite, DOI (Digital Object Identifier)

**Open Researcher and Contributor ID** 

management best practices

diversity of data types

- Find, share and reuse, cite data, connect and get credit
- A Mendeley Mendeley

ORCiD

Free reference manager; organize papers, read & annotate your PDFs

DataONE

Data Dryad

ORCID







- Figshare
  - online repository where researchers can preserve and share their research outputs, including figures, datasets, images, and videos. #openData

Curated resource making the data underlying scientific publications

Data Observation Network for Earth (DataONE) – data repository and data

discoverable, freely reusable, and citable general-purpose home for a wide





# iDigBio Resources







## **iDigBio Website Resources**

### https://www.idigbio.org

## General

- iDigBio and TCN info
- TCN Resources page
- Collaborators map
- ADBC proposal tips
- Staff Directory
- Calendar of upcoming events (workshops, webinars...)
- News
- Event recaps
- Press releases
- Community announcements

## Research

- Monthly Research Spotlights
- List of genetic repositories
- Links to ADBC research
- Tutorials
- API information
- iDigBio R package
- Research tools
- Collaborators
- Links to GitHub







DigBio fulbice image availability 08/08/2018 ( DigBio media futching disabled 08/20/2018 (/	All dey) to 10/01/2018 (All dey)						
About (Die Rie Collaborators II	Incoming Events Nave Control Site Man						
About Digisio Collaborators C	pcoming Events News Contact Site Mep						
	Thematic Collections Networks						
	Each Thematic Collections Network (TCN) is a network of institutions with a strategy for						
Recearchern	digitizing information that addresses a particular research theme, such as impacts of climate						
Browse our specimen portal	research and educational use. Other institutions and collections may join an existing TCN as a						
Collections Staff	Partner to Existing Network (PEN). The following are the TCNs, and any associated PENs,						
Learn how your collection can	currently funded by the Advancing Digitization of Biodiversity Collections (ADBC) project:						
benefit from our work	Award Year 2018						
Teachers & Students	(TCN) Capturing California's Flowers: Using Digital Images to Investigate Phenological     Change in a Biodimensity Hotepot (CAP)						
opportunities to engage	(TCN) The Pteridological Collections Consortium: An Integrative Approach to Pteridophyte						
	(TCN) Digitizing "Endless Forms": Facilitating Research on Imperiled Plants with Extreme      key below for With the Terment						
	Morphologies (Endless Forms)						
	Award Year 2017:						
	<ul> <li>(TCN) Using Herbarium Data to Document Plant Niches in the High Peaks and High Plains of the Southern Rockles - Past, Present, and Future (SoRo)</li> </ul>						
	(TCN) oVert: Open Exploration of Vertebrate Diversity in 3D (oVert)						
	<ul> <li>(PEN) 2018 oMEGA - Online Metrology of Extant Giant Animals for the oVert TCN</li> </ul>						
	Award Year 2016:						
	(TCN) The Cretaceous World: Digitizing Fossils to Reconstruct Evolving Ecosystems in the Western Interior Seaway (Cretaceous World)						
	(PEN) 2017 Expanding and enhancing a TCN digitizing feesils to reconstruct evolving     eccsystems the Cretaboous Western Interior Segway						
	(TCN) Lepidoptera of North America Network: Documenting Diversity in the Largest Clade of Herbivores (LepNet)						
	(TCN) The Mid-Atlantic Megalopolia: Achieving a greater scientific understanding of our						
	urban world (MAM)						

Contents [hide]

ŕ	Digitization TCN: The Pteridological Collections Consortium: An Integrative Approach to Pteridophyte Diversity (PCC
	1.1 Project Summary
	1.2 Current Research
	1.3 Project Websites & Social Media
	1.4 Citizen Science & Outreach Projects
	1.5 Project Leadership
	1.6 Project Collaborators
	1.6.1 University of California - Berkeley
	1.6.2 University of Michigan
	1.6.3 University of Florida
	1.6.4 Missouri Botanical Garden
	1.6.5 University of Vermont and State Agricultural College
	1.6.6 Yale University
	1.6.7 New York Botanical Garden
	1.6.8 Field Museum of Natural History
	1.6.9 University of North Carolina at Chapel Hill
	1.7 Protocols & Workflows
	1.8 Publications
	1.9 Professional Presentations
	1.10 Other project documentation

### Digitization TCN: The Pteridological Collections Consortium: An Integrative Approach to Pteridophyte Diversity (PCC)[edit]

#### Project Summary[edit]

Ferns, lycophytes, and their free-sporing relatives ("pteridophytes") arose approximately 420 million years ago and were the dominant plant groups for hundreds of millions of years afterwards. Today the pteridophytes are outnumbered Thematic Collections Network (TCN) brings together nine core institutions whose goal is to make digital images and data on the distribution and biology of 1.6 million tossil and modern ferns and their relatives available to researchers. T about the evolution, distribution, and biology of land plants. This project will train students and reach the public through teacher training opportunities, the development of curriculum and education boxes and through the production of im

The Pteridological Collections Consortium TCN is an interdisciplinary initiative that will database, image, and disseminate information on an unprecedented number of extant and fossil pteridophyte specimens. The combining of neo- an an important group of vascular plants. Pteridophytes are important because they 1) are relatively diverse and have extensive global distributions, 2) are associated with evolutionary innovations that shaped adaptations to terrestrial ecotime questions.

### Current Research[edit]

Project Websites & Social Media[edit]

Citizen Science & Outreach Projects[edit]

#### Project Leadership[edit]

Project sponsor: University of California - Berkeley (NSF Award #1802504) # Principal Investigator (PI): Carl Rothfels

#### Project Collaborators[edit]

#### University of California - Berkeley[edit]

Carl Rothfels (Lead PI), University of California - Berkeley (NSF Award #1802504) Diane Erwin (Co-PI), University of California - Berkeley Cynthia Looy (Co-PI), University of California - Berkeley



~ ** @ * (	r å d	•		• • >	( []	2 #	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	A	8
	Abc	out iDigBio Rese	arch Teo	My account	n Educ	ation			
CligBle fulfsize image availability 08/08/2018 (All day DigBle media fetzzing disabled 08/20/2018 (All day	y) to 10/01/2018 (AB day) ) to 10/01/2018 (AB day)								
About iDigBio Collaborators Upco	ming Events News	Contact Site M	Мар						
Upcoming Events									
Create New Event Calendar View									
Want to learn more about adding this calend	ar to your device? Click h	ere							
Filter by Event Type	100								
IDigBio Events (Not meetings)									
Event	Location			Event Date	Event Ty	pe			
ADBC Summit 2018	UF Cultural Plaza (Gair	esville, FL)		10-01-2018 to	iDigBio				
	https://idigbio.adobeco	onnect.com/summit8		10-03-2018	Worksho	p			
Broadening Participation in the Biological				10-12-2018 to					
Sciences: Arizona				10-13-2018					
WeDigBio 2018	Global			10-18-2018 to					
				10-21-2018					
WeDigBio at the Florida Museum of Natural History	Florida Museum of Nat	ural History (Gainesville	e, FL)	10-20-2018					
Natural Areas Association Conference				10-23-2018 to					
				10-25-2018					
2018 Internal Advisory Committee Meetings	UF Building 105 Room https://idigbio.adobeco	310 (Gainesville, FL) annect.com/iac/		11-07-2018					
5th Life Discovery: Doing Science Biology				03-21-2019 to					
Education Conference (LDC)				03-23-2019					
Past Events						¢.			
Event	Location			E	event Date				
2018 iDigBio Core Team Meetings	UF 105 Clar	eroom Building Boom	312 (Gainerul	In EI) (	9-26-2018				
Contraction of the second s		saroonn bunuing, noonn	215 (Capit legal	0, (L)	0 L0 L010				



## **iDigBio Website Resources**

### https://www.idigbio.org

## General

- iDigBio and TCN info
- TCN Resources page
- Collaborators map
- ADBC proposal tips
- Staff Directory
- Calendar of upcoming events (workshops, webinars...)
- News
- Event recaps
- Press releases
- Community announcements

## Research

- Monthly Research Spotlights
- List of genetic repositories
- Links to ADBC research
- Tutorials
- API information
- iDigBio R package
- Research tools
- Collaborators
- Links to GitHub







#### Looking for research ideas?

Read the monthly Research Spotlight, and if you have a contribution, contact us!

Watch the presentations and read discussions from the iDigBio workshop Using Biodiversity Specimen-Based Data to Study Global Change.

Be enlightened by speakers at the Ecological Society of America 2016 session Leveraging the Power of Biodiversity Specimen Data for Ecological Research.

Learn about Biodiversity Information Standards by watching the talks from the 2016 annual TDWG meeting.

Discuss open research project ideas on GitHub with iDigBio and collaborators.



#### Looking for research tools?

#### · IDigBio Specimen Portal has over 104 million records.

- Try the Research Tools being developed by the community.
- · Look in the Glossary of Terms for tools, tricks and APIs.
- DNA? Try DNA Banks and Genetic Resource Repositories in the U.S.
- · Learn some new skills with Data
- Carpentry or Software Carpentry. Check out the monthly Biodiversity Spotlight for tips and tricks!
- · Need to archive your biodiversity data? Learn more about Research Data Repositories,
- · Check out the Biodiversity Informatics Training website.

- · Publications using the iDigBio data portal and/or authored by iDigBio personnel are available via the DigBio Google Scholar Profile
- Publications citing ADBC, ADBC funded initatives including iDigbio and TCNS, using ADBC funded data portals, and/or authored by ADBC funded personnel. [Note: This resource is under development!]
- iDigBio content tagged "Research"

How about scientific publications?

 Supporting references for Nelson & Ellis (2018) The History and Impact of Digitization and Digital Data Mobilization on Biodiversity Research

https://www.idigbio.org

## iDigBio Website Resources

## **Technical Information**

- Working group information
- Bibliography of relevant presentations and publications
- Digitization workflows
- Equipment recommendations
- Workshop summaries
- Workshop and webinar recordings
- Data ingestion guidance

## Education

- Links to ADBC educational products
- Monthly Biodiversity Spotlights
- Portal Curiosities
- Coding Corner
- K-12 lesson plans
- Undergraduate modules
- Information about Citizen Science
- Educational collaborators



#### Technical Info Working Groups Workshops Digitization Proposals Wiki

å d

Eligible full-line image availability 08/08/2018 (All dw) to 30/01/2018 (All dw))

Digitio made fetching diadoled 06/20/2018 (All day) to 10/01/2018 (All day)



One of iDigBio's critical roles is enabling and facilitating the digitization of biological and paleobiological specimens and their associated data. Essentially, digitization involves converting physical objects to high quality digital images, associated descriptive text to electronic records, and analog sound and motion recordings to digital representations. The digitization of biodiversity specimens allows museums and academic institutions across the U.S. to make their collections easily available to researchers, enthusiasts, constituents, and interested consumers worldwide through searchable online networks, thus facilitating discovery, learning, and enhanced appreciation for the fascinating array of biodiversity resources housed in US institutions.

#### Workshops

iDigBio could be teaching near you check the schedule

Working Groups Join in, contribute, be part of the community

Latest Publications

DocumentProjectCountsFINAL.pdf

Posted Date: 6 months 1 week ago I iDigBio Travel Policy 20140912.pdf

Posted Date: 4 years 7 week ago

Posted Date: 4 years 1 week ago

Proposals

workshop needs

Share your ideas for tool and



1 4 # 07

Latest Reports

September 2016 Biodiversity Spotlight Post date: 09-21-2018 Research Spotlight: September 2018 Post date: 09-17-2018 August 2018 Biodiversity Spotlight Post date: 08-14-2018

more archives >>

#### **API Documentation**

The IDigBio API is a RESTful pattern HTTP API that primarily delivers data in JSON format. The iDigBio API also tries to follow the REST paradigm's HATEOAS (Hypermedia as the Engine of Application State) model, which basically means that within each API endpoint we provide a list of relevant links to further API actions. This list typically is stored in either the "idigbio:links" in v1 or below or the "links" property in v3. In general, the lamest

### Just Added to the Portal

Acidaspis sp.

more documents >>



George Oeh Locality:

IDigBio Workshop Request Process 20160721.pdf

North America; USA; Ohio; Hamilton County; Cincinnati Provider ID:

urmuuid:6b99598f-b496-4f3ah0+0-01040012+36+

### **Digitization Resources**



This page provides resources and information for the series of digitization training workshops being conducted by DigBio as well as a plethors of digitization information and resources. Inducted is a growing li

1 DigBig Introduction 2 Recommendations for the Acquisition, Processing, and Archiving of Digital Media 3 Interest/Working Groups 4 Digitization Avenue 5 DigBio Workshops, Reports, and Wikis 8 Videos- Digitization Resources and Workflows

#### iDigBio Introduction[edit]



More than 1,600 natural history collections across the United States house over 1 billion biological specimens ranging from lungi to fish to fossils. collections.

#### Recommendations for the Acquisition, Processing, and Archiving of Digital Media[edit]

DigBio has created recommendations for capturing, processing, and storing digital media.

Recommendations for the Acquisition, Processing, and Archiving of Digital Media

#### Interest/Working Groups[edit]

The following links take you to Interest Working Groups focused on Digitization. For other working groups please use the following link Digition Working Groups (a

- International Whole-Drawer Digitization Interest Group
- NANSH Working Group (North American Network of Small Herbaria)
- · Fluid-preserved Arthropod and Microscopic Blide Imaging Interest Group
- · Paleontology Digitization Working Group
- · Small Collections Network Working Group
- Vertebrate Digitization Interent Group
- · Field Station Interest Group

#### Digitization Avenue[edit]

The following links provide information on the task clusters that enable efficient and effective digitization of Biological and Paleontological Collections. If you are unfamiliar with the task clusters please read the

- · Pre-digitization Curation and Staging
- · Specimen Image Capture
- Specimen Image Processing
- · Electronic Data Capture
- Georeferencing Locality Descriptions
- Digitization Workflows and Protocols
- · More on digitization

#### iDigBio Workshops, Reports, and Wikis[edit]

iDigBio's Workshop and Report page contains links to materials from completed iDigBio workshops, conferences, and symposia.

- · Calendar Year 2018
- Calendar Year 2017
- · Calendar Year 2016
- . Calendar Year 2015
- · Calendar Year 2014
- Calendar Year 2013
- · Calendar Year 2012
- · Calendar Year 2011

Videos- Digitization Resources and Workflows[edit]

	children's second se	
Click for Collapsible List of Videos	[Expand]	

.0
https://www.idigbio.org

## iDigBio Website Resources

## **Technical Information**

- Working group information
- Bibliography of relevant presentations and publications
- Digitization workflows
- Equipment recommendations
- Workshop summaries
- Workshop and webinar recordings
- Data ingestion guidance

## Education

- Links to ADBC educational products
- Monthly Biodiversity Spotlights
- Portal Curiosities
- Coding Corner
- K-12 lesson plans
- Undergraduate modules
- Information about Citizen Science
- Educational collaborators









DigBio is posting all of our undergraduate material on the BLUE website. Visit here to find all of the currently available resources.



Digital Encyclopedia of Ancient Life (DEAL)





### 2 # 06 .

### Citizen Scientist



Learn how your collection can benefit from our work

Teachers & Students Learning resources & opportunities to engage Public engagement in scientific research (sometimes referred to as citizen science) is not new, but new web resources (e.g., from the Zooniverse, Cornell Lab of Omthology, and USA National Phenology Network suites of projects) provide scientists with opportunities to engage the public in ways and at scales not previously possible. At the same time, the public is increasingly provided with opportunities to learn how to do science and, in some cases, ondesign and implement the experiments with scientist partners (e.g., with functionality at Criticscorg). This is leading to a democratization of science, in which the public has a more direct role in doing research meaningful to them (e.g., determining floristic changes in a local natural area).

Many of the current ecological/environmental citizen science projects focus on generating present-day occurrence data on populations, species, and communities. Biodiversity research collections (biocollections) represent an opportunity to produce complementary historical baseline data on distributions using the roughly 1 billion specimens in U.S. institutions collected over the past 250 years. However, information about a majority of those specimens has yet to be digitized and made available to the world online. (DigBio is working to enable the creation of this digital historical baseline in many ways, including ways that engage the public in the digitization of specimens that are most relevant to the contributor's interests. Engaging the public in digitization, Cyberinfrastructure, and Research goals.



to partner with other projects to produce the inaugural Worldwide Engagement for Digitizing **Biocollections (WeDigBio)** Event-a potentially huge boost for engaging the public in digitization and increasing science literacy in this domain. The event's core leadership team includes researchers from Florida State University, Smithsonian Institution, University of Florida's Florida Museum of Natural History, Australian Museum, and the major

online transcription

This year, iDigBio is excited

platforms, including the U.S.-based Smithsonian Transcription Center, Zooniverse Notes from Nature, and Symbiota, the Australia-based DigiVol, the UK-based Herbaria@Home, and the France-based Les Herbonautes. The 2015 WeDigBio event is from October 22–25, and we hope that it will become a major annual event for the biocollections community thereafter. During the event, participants can contribute at one of more than twenty onsite transcription parties globally or from a web browser at the location and time most convenient to them. For more information on how to participate, visit the event website. If you are a curator and would like additional context for the event, check out the plenary talk from the 2015 Society for the Preservation of Natural History Collections Conterence by IDIgBio's Austin Mast.



· iDigBio	ۍ ۲		Gwegle Cuntz	My account in the con	4		. MF	87		
Digite fulfore image evolution of the fulform of the fulfore f	Northin y) to: 10/01/2018 (AE day) ) to: 10/01/2018 (AE day)	hope Cittar	n Scientint Colluboration	n#	ľ	Ň	×.	E.C.	2	đ
DBBC Make image evelopies (W109/08/2018 (W109/ Cogen event forming decides (W20)/2018 (W109/ Environmentation of the second seco	y) to EXPUIJ2DER (AR easy) ) to EXPUIJ2DER (AR easy) CONTINUE RESSON Welcome to our p from the Advancel If you use any of What are you tool Lesson I Tutorials Videos Apps an Lesson Plans Project IDigPaleo IDigPaleo IDigPaleo IDigPaleo IDigPaleo IDigPaleo	OUICES urces for K- age for aggrega ing Digitization these resource king for? Plans d Websites Grade /Stanstards MS-LS4-1,2 (NGSS) MS-LS4-1,2 (NGSS) MS-LS4-1,2 (NGSS) MS-LS4-1,2 (NGSS) SC.912.CS- PC3.4 SC.912.CS- PC3.4 SC.912.N.1.4 (Florida) NC Essential Standards for 6-8 MS-L4-1,2	12 Students and Edu ing educational resources for of Biodiversity Collections (A is please consider filling out Keywords Keywords Middle School fossils, paleo, insects fossils, paleo, ecosystems, insects ecosystems, co-occurence, conservation, plants, birds citizen science, biodiversity, museum, herbärium, plants citizen science, plants	Cators from ADBC K-12 students and educators JDBC) program! this brief questionnaire.						
	EPICC	NGSS)	identification	what is a fossil? Teacher guide Student guide Virtual Field Experiences: field to museum Teacher guide Student guide						4



# Researchers Image: Second se

Teachers & Students Learning resources & opportunities to engage



Just like in all other STEM disciplines, the biodiversity sciences has a human diversity problem. IDigBio is committed to broadening participation for all underrepresented groups and is working to do so through multiple initiatives:

NSF-Funded Workshop Series



Broadening Diversity in the Biological Sciences: A Series of Workshops for Undergraduate and Graduate Students included three workshops for undergraduate students and recent graduates that focused on opportunities for careers and graduate study in field and environmental biology, biodiversity, ecology, and evolution,

Florida Museum Shadowing Day

- Orlando Workshop
- Chicago Workshop
- · Raleigh Workshop

A follow-up to the first series was recently funded. This time iDigBio is collaborating with multiple groups including Central Michigan University, BLUE, Rancho Santa Ana Botanic Garden, North Carolina Museum of Natural Sciences and La Brea Tar Pits & Museum.

Find out more about the first workshop in the series in Los Angeles.

Moving the Needle Initive: Broadening Participation in the Biodiversity Sciences

A working group to develop best practices and help synergize current efforts in broadening participation has formed based on a collaborations with Biodiversity Literacy

In Undergraduate Education (BLUE), the DigBio Education and Outreach Working Group, Biodiversity Collections Network (BCoN), and the Small Collections Network (SCNet).

Learn more about the Working Group. Learn more about the 2018 Webinar Series.







CligBt: Subare image availability 00/08/2018 (All day) to 15/01/2018 (All day) CligBt: media fetching shabled 08/20/2018 (All day) to 15/01/2018 (All day)

Researchers Browse our specimen portal

Collections Staff Learn how your collection can benefit from our work

Teachers & Students Learning resources & opportunities to engage Part of DigBio's Vision and Mission is to promote a better understanding and appreciation of biodiversity by engaging the research community, collections community, citizen scientists, and general public through outreach. DigBio's outreach activities include hosting and participating in a variety of events, creating outreach materials and resources, and engaging with a diverse audience online through our website and social media.

### **Outreach Materials**

Are you looking for outreach materials to help engage with people about biodiversity, digitization, or iDigBio?



Libraries of Life Collection Cartis were created by the DigBio Augmented Reality Public Education/Outwach Working Group. The fifteen cards each feature a different project funded by NSF's Advancing Digitization of Biodriversity Collections program, and each card launches a 3D model in the mobile device's viewer that brings specimens to life for the public. The cards are available to

download and print through the app, and further resources are available at www.libraries-oflife.org, including educational materials.

Notes from Nature Outreach Activities Notes from Nature is an excellent outreach tool because people can directly participate in the digitization of museum collections. The website hosts multiple collections at all times and is fun and easy to use. DigBio has created an activity intended for a tabling event — for a general, or younger audience. We used this activity with Girl Scouts, but it could be easily adapted for other groups. Visit the K-12 page to find Notes from Nature activities meant for formal education.

Why Digitize? Video: This video discusses the importance of natural history collections and digitization and the national digitization effort and iDigBio. You can find this video and more on the iDigBio Vineo page.





Biodiversity Spotlights: Since October 2014, DigBio has promoted the importance of biodiversity by highlighting a different organism each month in our newsletter, The IDigBio Spotlight, Each article includes natural history information, current research, and links to relevant research, and links to



## I can't find X, or I want to know about Y





### Bringing Herbarium Workflows Up To Date | iDigBio

https://www.idigbio.org/content/bringing-herbarium-workflows-date

Bringing Herbarium Workflows Up To Date. Following its DROID (Developing Robust Object to Image to Data) workshop in May 2012, iDigBio launched a series ...

## 1 1 2 # 1 4 + +

#### Developing Herbarium Workflows | iDigBio

#### https://www.idigbio.org/content/developing-herbarium-workflows

Developing Herbarium Workflows. This workshop brings together 25 experts in herbarium digitization for the purpose of developing and publishing a community ....

#### Herbarium | iDigBio

https://www.idigbio.org/tags/herbarium

Coding Phenological Data from Herbarium Sheets Workshop. Tags: phenology · Herbarium ... Bringing Herbarium Workflows Up To Date. Tags: Digitization.

#### University of Vermont Herbarium Workflow | iDigBio

https://www.idigbio.org/.../university-vermont-herbarium-workflow

Subscribe to RSS - University of Vermont Herbarium Workflow - University of Florida logo - Florida State University logo - Florida Museum logo - National Science ...

Increasing the efficiency of digitization workflows for herbarium .... https://www.idigbio.org/.../increasing-efficiency-digitization-workflows- herbarium-specime ns

Increasing the efficiency of digitization workflows for herbarium specimens ... Abstract, The New York Botanical Garden Herbarium has been databasing and ...

Day 1:Workflows Herbarium Digitization 10:30am-12:30pm | iDigBio https://www.idigbio.org/.../day-1workflows-herbarium-digitization-1030am-1230pm Day 1:Workflows Herbarium Digitization 10:30am-12:30pm. Title, Day 1: Workflows Herbarium Digitization 10:30am-12:30pm. Publication Type, Conference ...

Day 1:Workflows Herbarium Digitization 8:30am-10:15am | iDigBio https://www.ldigbio.org/.../day-1workflows-herbarium-digitization-830am-1015am Day 1:Workflows Herbarium Digitization 8:30am-10:15am. Title, Day 1:Workflows Herbarium Digitization 8:30am-10:15am. Publication Type, Conference ...

#### Workflows | iDigBio

#### https://www.idigbio.org/tags/workflows

Workflows · Standards · Digitization · Paleontology · Read more about GSA2016: ... Bringing Herbarium Workflows Up To Date. Tags: Digitization · Workflows.

#### Digitization workflow for a small herbarium | iDigBio

https://www.idigbio.org/.../digitization-workflow-small-herbarium

iDigBio media fetching disabled 08/20/2018 (All day) to 10/01/2018 (All day). Bibliography. Back to Biblio - Multimedia Resources. Digitization workflow for a ...

Mass Digitizing a Working Herbarium using a conveyor belt ...

https://www.ldigbio.org/.../mass-digitizing-working-herbarium-using- conveyor-belt-workflo ws-strategies-challenges

Oct 18, 2016 ... Please join us for Mass Digitizing a Working Herbarium using a conveyor belt: Workflows, Strategies, Challenges, a webinar presentation by ...

# 

# Flexible search across all data, indexed fields, media, geolocation, map boundary, auto-completion, synonyms, ...



## https://www.idigbio.org/portal



# **Get Involved!**



## Step 1: Sign up for the iDigBio Newsletter

- TCN and digitization news
- Upcoming workshops and webinars
- Event recaps
- Articles featuring innovative collections-based research **Biodiversity Spotlights**



iDidBio Rockets Past 100 Million Specimen Records

iDigBio, the coordinating center for NSF's Advancing Digitization of Biodiversity Collections Program, now houses more than 100 million specimen records in its online database. Now in its seventh year, iDigBio has amassed data from more than 1,900 collections from about 820 institutions in its online portal. The volume of data has reached a "oritical mass" at



**July 2017** 

### https://www.idigbio.org/newsletter-subscribe

# 

## **Step 2: Social media**





Wiki

idigbio.org/events-calendar/export.ics

www.idigbio.org/wiki

# Step 3: Get involved with a Community Working Group

	-D:- About iDigBlo Research Technical Infor	mation Education
		Log Out
DigBio Home	Wiki Working Groups Workshops Wiki Formatting Help	
/	Grungle Talk Preference	ces Watchlist Contributions
Viki Hop	age Discussion Read Edit 🏠 Delete Move Protect Search	Q
North R	JIDig Pie Working Crouns	
	TDIgBio Working Groups	
5	Contents [hide]	
Groups	19 1 Overview	
sioups	2 Forming or Dissolving a Working/Interest Group	
DigBio	3 Active Working Groups	-
search	3.1 Augmented Reality Public Education/Outreach Working Group (ARP	EOI
vication	3.3 Biodiversity Informatics Management (BIM) Working Group	
ols	3.4 Cyberinfrastructure (CYWG)	
0.0	3.5 Data Management Interest Group (DMI)	-
ools	3.6 Developing Robust Object to Image to Data (DROID1)	E
	3.7 Developing Robust Object to Image to Data (DROID2)	DB
	3.8 Developing Robust Object to Image to Data (DROID3): Things in Sp	A A
	3.9 Developing Robust Object to Image to Data (DROID4): 3D objects in	Trays
	3.10 Education & Outreach (E&O)	
	3.11 Fluid-preserved Arthropod and Microscopic Slide Imaging Interest	Group
	3.12 Georeferencing Working Group (GWG)	
	3.13 International Whole-Drawer Digitization Interest Group (WDD)	
	3.14 Interoperability for Public Participation in Digitization (CitSciInterop	<b>)</b>
	3.15 North American Network of Small Herbaria Working Group (NANS)	4)
	3.16 Outlier Detection and Documentation by Collectors Working Group	(ODD Collectors)
	3.17 Paleo Digitization Working Group (PaleoDigi)	
	3.18 Project Management Interest Group (PMIG)	
	3.19 Sustainability Working Group (SWG)	
	3.20 Symbiota Working Group (SWG)	
	3.21 User Engagement for Public Participation in Digitization (CitSciEng	age)
	3.22 Website Content Providers Editorial Board and Interest Group	



Workshops, Webinars



## **Step 4: Watch a webinar...or star in one!**

https://www.idigbio.org/tags/webinar https://www.idigbio.org/wiki/index.php/Web\_Conferencing





## Step 5: Contribute to the iDigBio website

- Submit an article for the Research Spotlight
- Write an article about your project
- Contribute your workflows
- Update your individual TCN wiki pages
- Write about your iDigBio experience
- Post an event
- Share education/outreach resources

Bering Land Bridge and the MyCoPortal

Contributed by: Teresa Itumaga, Rhianna Baldree, Alex Kuhn, Andrew Miller



Mycologists long to collect areas remote to most men where fungi today may thrive keeping plants, trees, and cycles alive.

Bridges are to their liking since one can go underneath connecting with what lies beneath About fungi this is most striking

In summer some may float if the bridge is over a moat. Fungi are versatile and persistent to new niches they aren't resistant.



96 938

217460

gbif reference added m

...

## Step 6: Use the portal for research and data cleaning – feedback!

s il	DigBio				About	Real	aarch   Technical in	tormistion Education Log Out		
(DigBis Hom	e Portal Home	Search Records	Tutunai Dinu	a Research Tool	Feedback			¥ grungle		
Search Re	cords	Help Reset	m	(1) (注) (1)	SAUL.	Contraction of	RI ANT.L.	AX N		
search all field				Contraction of	1	10.00	Or Market	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
III Must hay	er media 🔅 Musi	have map point		No and and	A line	111	all to a los			
Filters Me	oping   Sorting   Dow	rikuid			1216.51	19-14		1,500,000,000		
Add a feet	1	Chief.	240.5	1 - A .		100 (23)	A MULTING	The second second		
Scientific Name	the scientificitian	for for	* 1920 ·			484		Data Corrected Data Use	Raw	Recordset
	E Present S	Masing	5000	10.	St. AL	Contraction of the	A 165 1 20	This table shows any data corrections that	were performed on this recordset to im	prove the capabilities of iDigBir
Date	Blart.	Eve	× interactionship	Baselin T	100	201		Search. The first column represents the co	prrection performed. The last two column	ns represent the number and
1, or man clara	Present	Washing		States -	12 - AGA	64.25	1.20	found here. Clicking on a data flag name w	ill take you to a search for all records w	with this flag in this recordset.
Country	T		x 177 .		10.00	See.		Flag	Records With This Flag +	(%) Percent With This Flag
	the control		1.000		20864	54	ara 👘 🧶	dwc_kingdom_added	224195	99.94
	E Present S	Masing	31,413	Lantin	7900 SK G		- 1 S &	dwc_phylum_added	223860	99.79
	_		00.00	44 AN 175	1.1.1.1.1	<u>.</u>	Marin Th	dwc_datasetid_added	221486	98.732
List.	Labels Med	ia Recordsets						dwc parentnameusageid added 🕥	221486	98 7 32
Family	Scientific Name	Date Collected	Country	Institution Code	Basis of Record	Earliest Epoch	Collection Code L	dwc taxonid added	221486	98 792
Satumidae	"automents" calls	no dute	00.000	USNW	PreserverdSpeci	na data	Entomology =		201400	00.102
Brahami America	The distance in the second	no chite	no more	USNBA	PreservedSpeci	ing date	Entomology -	dwc_taxonomicstatus_added	221400	30.732
Saturnacee	automente cam									
Satumadae Satumadae	"automens" can	ngi iduta:	no data	USINA	PreservedSpeci	mut diamigr	Entomology =	dwc_taxonrank_added	221486	98.732
Satumidae Satumidae	"automens" can "automens" cane	no date	no data na alafa	USNM	PreservedSpeci. PreservedSpeci.	not durine institutie	Entomology -	dwc_taxonrank_added () dwc_taxonrank_replaced ()	221486 221486	98.732 98.732
Saturnidae Saturnidae Saturnidae Saturnidae	"automene" cale "automene" cine "automene" cine	no date no date no date	no chata no chata no chata no chata	USNM USNM USNM	PreservedSpeci PreservedSpeci PreservedSpeci	ind date ind date ind date ind state	Entomology - Entomology - Entomology -	dwc_taxonrank_added  dwc_taxonrank_replaced  gbif_canonicalname_added	221486 221486 221486	98.732 98.732 98.732
Saturnistae Saturnistae Saturnistae Saturnistae	"automens" cae "automens" coe "automenti" cine "automenti" cine	no data no data no data no data	no data na itala no data no data	USNM USNM USNM USNM	PreservedSpeci. PreservedSpeci. PreservedSpeci.	nd date ne date na state na state	Estamology = Estamology = Estamology = Estamology =	dwc_taxonrank_added () dwc_taxonrank_replaced () gbif_canonicalname_added () gbif_taxon_corrected ()	221486 221486 221486 221486 221486	98.732 98.732 98.732 98.732 98.732



## Step 7: Collaborate!







Researchers

Browse our specimen portal

Collections Staff Learn how your collection can benefit from our work

Teachers & Students Learning resources & opportunities to engage

Biodiversity Information Standards



## iDigBio Collaborations Enabling Research

To facilitate the study of biodiversity, a number of software products are being collaboratively developed with researchers and projects. These websites, tools, and workflows take advantage of the data being digitized at US and global institutions and made available by IDigBio through our data services. Many other tools and services can be found through the Biodiversity Catalogue. If you have a great idea for using IDigBio data and web services,

get in touch with us or submit a proposal





### riDigBio: an R interface to the iDigBio Data API



nbiota

Familiar with R? The riDigBio package is a great way to interface with the data shared by iDigBio. Contributions to this R package can be made via GitHub.

### FreshData and Effechecka









# **TCN Responsibilities**

# 

## **TCN Responsibilities (1 of 2)**

- Maintain a TCN wiki page
  - <u>https://www.idigbio.org/wiki/index.php/TCNs</u>
- Submit requested info for Summit resources
- Provide feedback via annual community survey and other solicitations
- Prepare annual report for NSF
  - <u>https://www.idigbio.org/wiki/images/3/34/ADBC</u>
     <u>AnnualReportInfoSheet.pdf</u>

## 

## **TCN Responsibilities (2 of 2)**

- Participate in quarterly TCN meetings
  - Feb, May, Aug, and Nov on 1<sup>st</sup> Wed @ 2:00 PM
     Eastern; minutes published on wiki
  - <u>https://www.idigbio.org/content/2018-internal-</u> advisory-committee-meetings
- Submit quarterly reports to iDigBio
  - Due by the quarterly meeting; published on wiki
  - <u>https://www.idigbio.org/content/tcn-quarterly-</u> progress-report-idigbio



### https://www.idigbio.org/wiki/index.php/Using Herbarium Data to Document Plant Niches in the Hi gh Peaks and High Plains of the Southern Rockies - Past, Present, and Future

🍪 iDigE		Research   Technical Information   Education My Account Log Cu
Digthis Monte - With	Working Groups - Workshops - Wild Formatting Relp	
		S Djerringe Ten Preferences Watchief Contribution
THE Home	Page Structurer Head Edd View Nilowy 😂	Delete Maxe Protect Description
Working Group Lief Spectreer Partal	Using Herbarium Data to Document Plant Niches in the High Peaks and High Plains of the Southern Rockies - Past, Present, a	and Future
Digilio Data Ingonton Ingonton Ingonton Deficient D	Contracts Joint, 1 DisplayItan 75H. Using Humanian Data to Dissessed Plank Names in the High Plane of the Establish Resister - Past, Present, and Plane (Establish 1 Planet Manager & 2 Estand Manager & Some Vester 1. Second Mana	
<ul> <li>Navigation Tools</li> </ul>	Digitization TCN: Using Herbarium Data to Document Plant Niches in the High Peaks and High Plains of the Southern Rockies - Past, Present, and Future (SoRo)[edit]	2
+ Toola	Project Summary[edit]	Solio TCN
	The rugged and expansive tensor of the floathern Body Mountains (bolto) yould the most souch to burnan existence in western North America. Water: First upper resister of the high peaks of Colorade, Wyoning, New Mecco, and surraining states. The hash-advest of numerous rugger tensor of numerous rugger tensor of the biddecember Water and to provide and give rule to the signed to burnan existence in western North America. Water: First upper resisters of the high peaks of Colorade, Wyoning, New Mecco, and surraining upper resisters of the high peaks and calculate provide and give to the signed to burnan existence in western North America. Water: First upper resisters of the high peaks of Colorade, New Orling, Colorade, and Orling Upper resisters and related to the high peaks and the plant of the high best for the signed to burnan and terms the basis to be all 50th burnan to be plant to the high best for a social term and plant of the high best for an orbit of the Water and exceeding plant of the burnan to be plant to the high best for all best fo	
	The Southern Trace, Mountains (Srifes) support a therma and highly adapted frain of apacies with versal decologies, ranging them agains to strangture preview. The prest topic of the Subhorn topics and previous spectrum previews and spectra service of the Subhorn topics and previous preview. The previous spectrum preview and apacet preview, and an enclosed and previous spectrum previews and spectra service of the Subhorn topics and prevident again and apacet preview and apacet preview. The prevident again accessible information areas are arrange the mediand prevident again a service strategies are prevident again accessible information areas and prevident again accessible information areas and prevident again accessible information areas are arrange the mediand prevident again accessible information areas are arrange the mediand prevident again accessible information areas are areas and apacet prevident again accessible information areas are areas and accessible information areas are areas and accessible information areas are areas and apacet and accessible information areas are areas and apacet and accessible information areas areas areas and and an excessible information areas areas and accessible information areas areas areas and and and accessible information areas areas and and and accessible information areas areas areas and accessible information areas areas areas areas and accessible information areas ar	SORO
	Current Research[edit]	Current Research
	Proposed research uses of data generated through the SkRo project include:	Propert Websites
	Documenting species occuments using museum speciment. Using museum data to locate potentially under collected areas of the Southern Rockes. Species distribution modering in the Southern Rocky Mountains	Publications



## **Quarterly Meeting Minutes & Reports**

 <u>https://www.idigbio.org/wiki/index.php/Inter</u> <u>nal\_Advisory\_Committee</u>

e iDigE	<u> Θίο</u>	About Digitio Rinkerth Technical Information Education My Account Log Cor
(Ligthin Home) Wisi	Working George Workinger Will Formating Imp	
		& Djenninger Tallt Pyellarenzes Webblatt Cambinations
Will Hame Watching Scoterup et	Page (Discasor)	Need Edd View haboy 🖓 Dealer More Protect (Territh Q)
Working Gosta Littl Specanier Protat	Internal Advisory Committee	
<ul> <li>OgBio Data Ngestion System Dataset Foliation System Catlene</li> </ul>	C 1 Overview 2 Menticys 3 Menticys 4 TCH Program Reports	centerin (hani)
Data 471 Digitization Resources	Overview[edit]	6
DigBo Working Groups     DigBo     Research     Navenation	The internal Advacry Committee SAC) is composed of Digitian Project Mission? (I). Digitian Madvemby Internation Manager (I), Digitian Project Ex digitization projects and collectors working with IDgBia. The IAC meets regularly to report on progress in digitization efforts, shall best practices and Meetings[edit]	elucitin III, representatives from the Thematic Callectoros Nativoria (TCNs) and Patheris to Existing Networks, IECR), NSE Program Offices (0, and other standards, identify gaps in Sigitzation areas and fectorology, enhance training efforts, and report on collaborations.
Tools Tools	AC meetings are held quartery (February, May, August, and November) on the first Websenbay of the month at 2.56 PM Quarters, they Webverhed and a statement of the first spatial statement of the	ergeventent/vlagon-internal enungy-connecting a
	Meeting Summaries[edit]	
	The following are the remarks from part IAC meetings: 2018 [Contasted] File IAC Meeting Winutes 2018 00 01 part File IAC Meeting Winutes 2018 02 07 08	
	2017 (Excand)	
	2016 IE xoardi	



## **TCN Resources**

# <u>https://www.idigbio.org/wiki/index.php/TCN</u> <u>Resources</u>

🤹 iDigl	About Butter   Tensenth   Techninal Information   Education	a ut
illights three. With	Weiding Groups Weidings Wild Encounting Holp	
	& Dannings Tell Publication Weblief Combulier	-
Well Forms Workshop Scienceres Westing Group Lat Spaces Forty	Page Distances	2
<ul> <li>Outlin Data Argention Parameter</li> <li>Personant Control</li> <li>Personant Control</li> <li>Personant Control</li> <li>Outline Working Groups</li> <li>Outline Working Groups</li> <li>Outline Working Groups</li> <li>Outline Working Groups</li> <li>Outline Working Groups</li> <li>Navegation Tools</li> <li>Navegation</li> <li>Navegation</li> <li>Navegation</li> </ul>	Content to Deal 1 How the researce regist to instal 2 Ministrational 2 Ministrational 3 Ministrational 3 Ministrational 4 Ministrati	S COOPERATE
	How this resource might be useful[edit]	
	The information may be used in the garden interaction of the property interaction of t	
	Brief background[edit]	
	MSP's Advanced Digitization of Biological Collections (ADBC) initiative is funding (Digitization for the fund to serve the digitization collections into a finite data in the field construction of the	
	References[odit]	
	who is Digite them OFHHO 2018 (Rpp. Aveca implex angular data the Aveching or executed an Automatic 2012 (Rpp. Aveca implex angular data the Aveca implex angular data aveca implex av	
	Information about ADBC[edit]	



## **Other Helpful Resources**

- Welcome to iDigBio: <u>https://www.idigbio.org/wiki/index.php/Welcome\_</u> <u>to\_iDigBio</u>
- MediaWiki Reference Card: <u>https://meta.wikimedia.org/wiki/File:MediaWikiRe</u> <u>fCard.pdf</u>
- Workshop Planning and Deliverables: <u>https://www.idigbio.org/wiki/index.php/Workshop</u> <u>Planning\_and\_Deliverables</u>
- Content Style Guide and Workflow: <u>https://www.idigbio.org/wiki/index.php/Content\_S</u> <u>tyle\_Guide\_and\_Workflow</u>



# How To Get Your Data To iDigBio



## What's In This For You?

# Meet the iDigBio Staff Overview of the ingestion process

Learn how to get your data published



## iDigBio Data Mobilization Staff

## Kevin Love klove@flmnh.ufl.edu



Biodiversity Informatics Manager Dan Stoner dstoner@acis.ufl.edu



**Data Integration Expert** 



# data@idigbio.org



## The go-to guide for data ingestion

Everything you wanted to know about preparing data for ingestion:

https://www.idigbio.org/wiki/index.php/Data\_Inge stion\_Guidance

- Identifiers
- Darwin Core occurrence data (specimen records)
- Audubon Core media



## **Ingestion Process**





## What do we mean by publishing data?

making biodiversity data publicly accessible & discoverable, in a standardized form, via a URL.

\* that is reproducible and automated







## Data publishing – where to begin

- Email <u>data@idigbio.org</u>
   *"I'm ready"*
- Review your data and publishing options together



Code	Calleding Name	Dall Anima	Moderated	Puik Date
LAC	Also Cutege	2HC4(1.8V)	1986.	2010/06/08
MANNE .	(Dell Ories	[Dell 4 (1941)	1946	10-7-06-08
MC	Danied Mohgae University	(DwD.Aptier)	466.	2017-08-01
MC .	Eastern Mongan University Hettanium	(0+0+0.04) (	IM.	27-0-09-01
WE	Elimite Velley fissie (Inventig	(Sec A Ji Mr)	URA.	2017-06-08
6.8C	History Corps Herbeture	(Sec. 4 (1981)	1441.	2717-108-108
576	Https: Gillege	- (Ind.4)(-04)	DM.	897-00-08
9,91	the designed Linkerson (Instance)	(DeC-4(0.401)	846.	1017-08-08
4,6	Bros hours Hutes Greek	Dec.4 (0: M)	- 8ML	2117-06-01
ND	Indexe (Avenity Integrate (Saen-Antenati)	[2aC+(1461	PM.	2010/108-08
#14.	a. F. Bet Museum of Nexuel Heavy Testantist	(5424)14.001	1044.	100-08-00
41.	Mani Unvesty Whet Sterral Said Independ	(HC4(138))	764.	2010.06-08
10.0	Martin Advantage	(bc4(0.00)	10041	2010/08-08

	CONT. Has all one areas to be dentil	Construction of the						
este	d resources available thro	uch this PT						
5.672							ĥié	
-spi	Nove .	- Dyumdon	201	Ment.	1000	-	14 petrole	ALC patter
-	Apresidente Manufalson Exclusion	.481	-boureres	toore	8,962	301m. 00	2014-06	-
a:	BUCK Salas Mathews National Deal Manager	Males.	Occurrent	loome.	32.48	四柱第 社	III148-11	23
8	BEC.hat fast (unstated) Indust	815	Doornerse	Seene	19	298	11193	20
•	DE Connel Russe Gener Instatute Constatus	DEC	Courrense	Solorer,	10.00	2001% U	308-15-6	+
Ð	(Will Dan Date to Net Denty	34	Gaurente	linenar.	6.4	gain.	Sayor St.	
	MCR. Dehene Selectors	HLOR.	dearest	Societarian de la constante de	1216	2012E	211.00	5.
	UU Bries & Sales Selectors and Sales en Data Dynamic - Alam	COLUMN :	Secontration	Serv		2014b 11	3214631	20
ani i	LBJ Brite, C. Sales (Arbeitet at Liabout Dire Disset) - Drawline	duates	Occurrence .	Secre	1.16	2014). 31	2117-35-31	-
-	LEU Roser C. Two remains a Lookers This Liberts - Cohen	the law	Surger,	later of	31.95	311.00	ani ani	
	101 Brine C. Salar Henelut & Universifiate Driverty, Vacula Term	SEGRA	Scorers	losone:	18,58	2018- 11	11110-11	
a.	10.40 December Versional Technics at Laurence Taxa Linearti-	alun#	laurene	loone.	352	2118	80.60	



## **Ingestion Queue**

<u>https://www.idigbio.org/wiki/index.php/Data</u>
 <u>Ingestion\_Report</u>

## Milestones:

- Negotiating
- Mobilizing
- Ingesting
- Evaluating









# DATASET INFO: info about the provider (metadata)

Document your dataset **metadata** with your provider information:

- responsible parties (name, address, email, role)
- institution name, institution code, collection code, logo
- URL to the collection at your institution
- descriptive paragraph about the institution, collection, and the dataset


## **DATASET INFO: rights**

• Use Creative Commons standards:

– CC0 for data (not copyrightable)



- CC BY for media (at least)





## **IDENTIFIERS**

Every specimen and media record needs an identifier. [Robust and persistent]

We like UUIDs with a prefix: urn:uuid:2d5d3a8f-7a18-4825-a129-4a32b4ae58b8



## Contact us!



Cathy Bester Event Coordinator cbester@flmnh.ufl.ed U



David Jennings Project Manager djennings@flmnh.ufl. edu



Gil Nelson **Digitization Process** Specialist gnelson@bio.fsu.edu



Deb Paul Informatics Analyst dpaul@fsu.edu



Shari Ellis **Project Evaluator** sellis@ufl.edu



Jillian Goodwin **Project Assistant** jvgoodwin@fsu.edu



Molly Phillips Education & Outreach Coordinator mphillips@flmnh.ufl.e du



Kevin Love **IT Expert** klove@fimnh.ufl.edu







V

facebook.com/iDigBio

twitter.com/iDigBio



idigbio.org/rss-feed.xml



webcal://www.idigbio.org/events-calendar/export.ics



*iDigBio is funded by grants from the National Science Foundation's Advancing Digitization of Biodiversity Collections Program. 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.*