iDigBio
Integrated Digitized Biocollections

Welcome to ADBC!

The iDigBio Team

ADBC Summit 2017

iDigBio is funded by a grant 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.

2010. Strategic Plan for the Network Integrated Biocollections Alliance (NIBA)

"The plan outlines the elements required for an inclusive, vibrant, partnership of US biological collections that collectively will **document the nation's biodiversity resources and create a dynamic electronic resource** that will serve the country's needs in answering critical questions about the environment, human health, biosecurity, commerce and the biological sciences."

Collections community

NSF's Advancing Digitization of Biodiversity Collections (ADBC) Program (1st funding in 2011)

2013. Implementation Plan for the Network Integrated Biocollections Alliance (NIBA)

U.S. National Science Foundation

In response to the scientific community

Advancing Digitization of Biodiversity Collections Program (ADBC)

- The goal of ***ADBC is to remove the inaccessibility of data*** through **digitization and making the data available online--**for researchers, educators, policymakers, etc.

$100 million over 10 years
non-federal collections

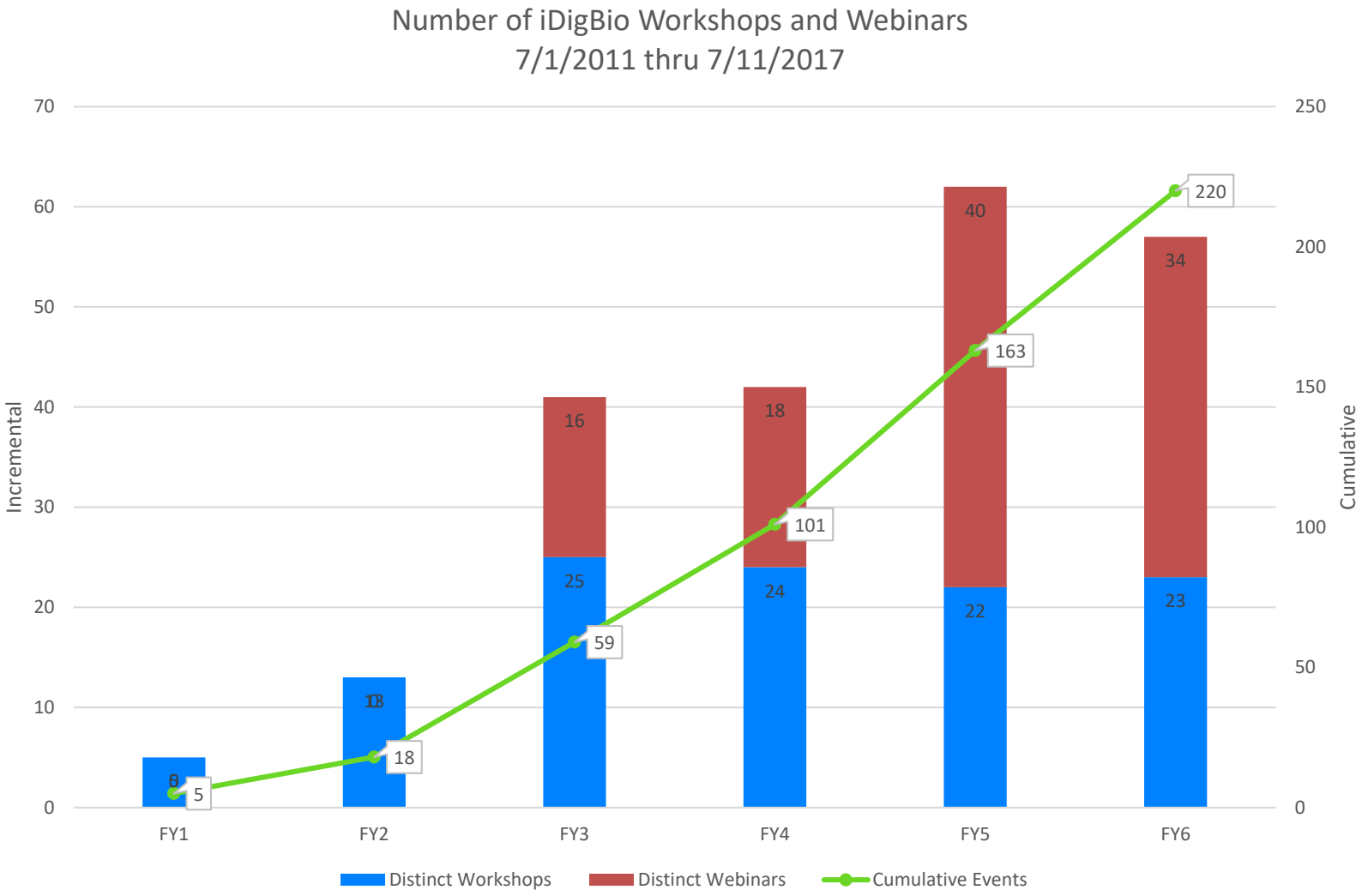
Coordinating Center Advancing Digitization of Biodiversity Collections (ADBC)

Principal Investigators:
Greg Riccardi, Digitization & Training (FSU)
Jose Fortes, Computational Activities (UF/ACIS)
Pam Soltis, Research Collaborations (FLMNH)
Bruce MacFadden, E&O Collaborations (FLMNH)
Larry Page, Director (FLMNH)

What does iDigBio do?

- **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 in a cloud computing environment**
  - Enable data access & discoverability
  - Respond to cyberinfrastructure needs
- **Promote use of biodiversity data to address key environmental and economic challenges**
  - Researchers, educators, general public, policy-makers, etc.
- **Assist in planning for long-term sustainability of the national digitization network & effort**

Number of Workshops and Webinars



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20 Thematic Collections Networks (TCNs)

- **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*)

279 institutions

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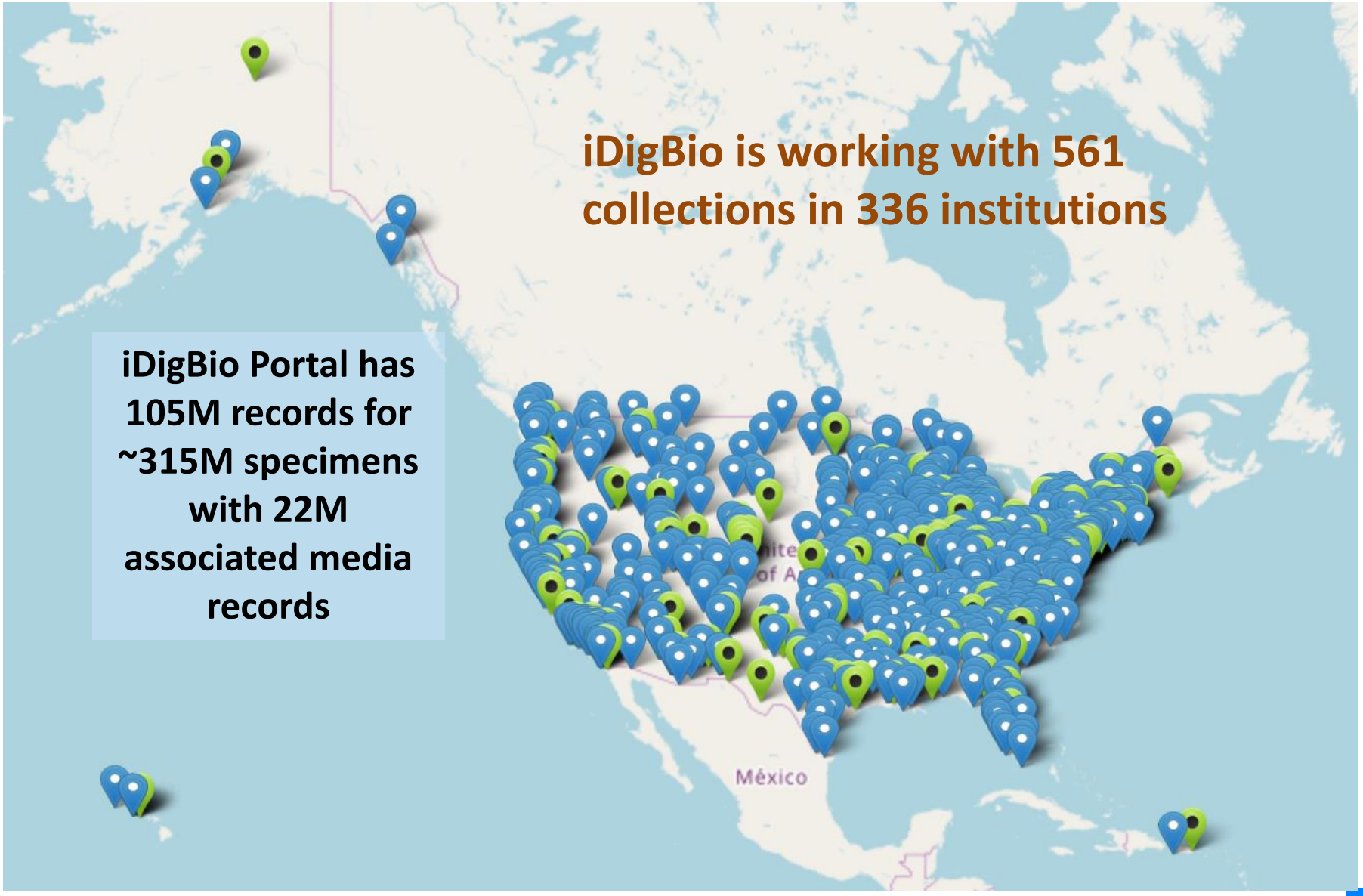
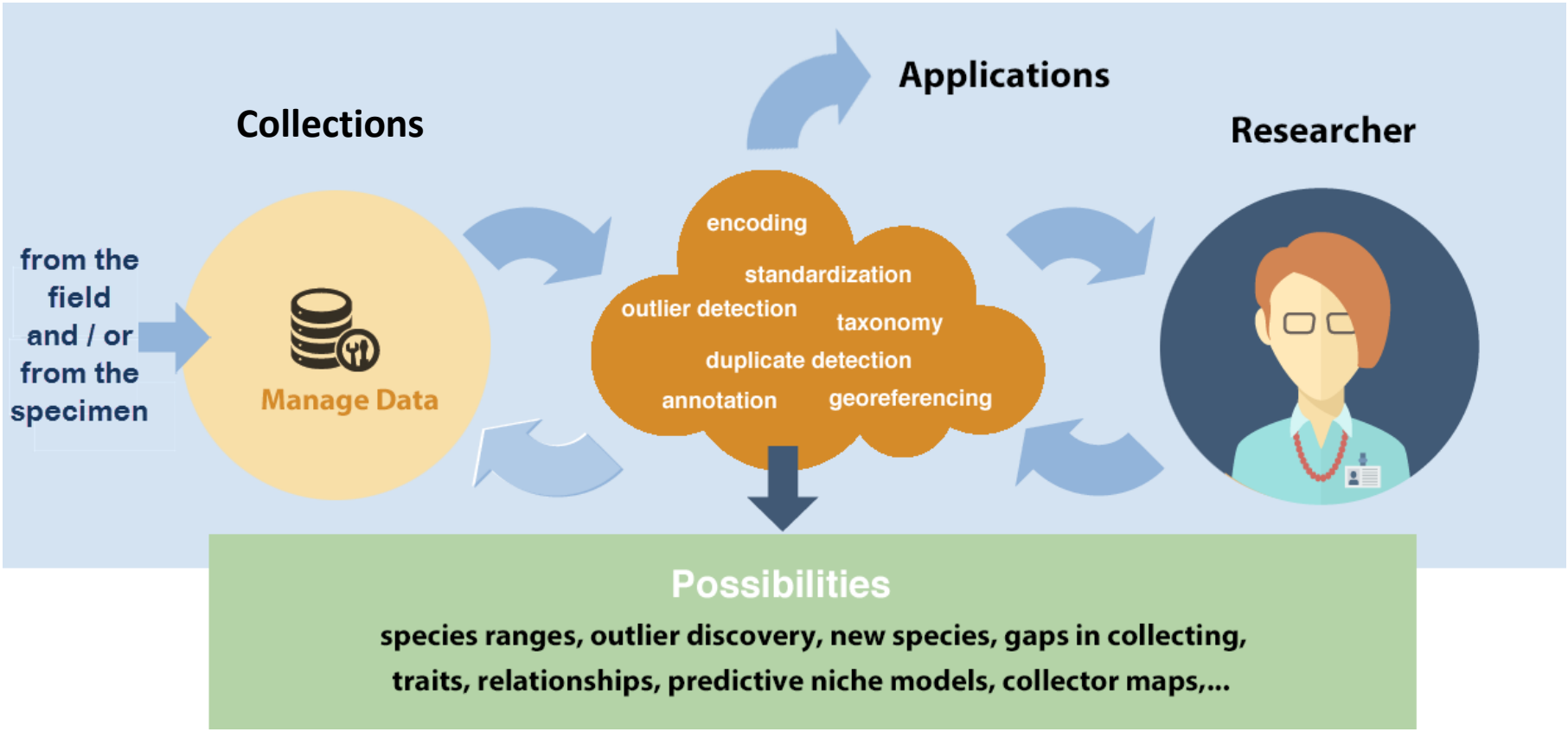


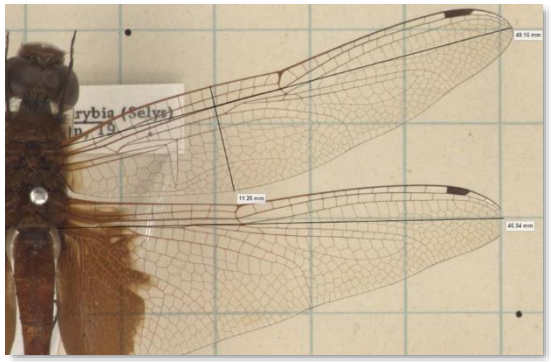
So Many Acronyms!

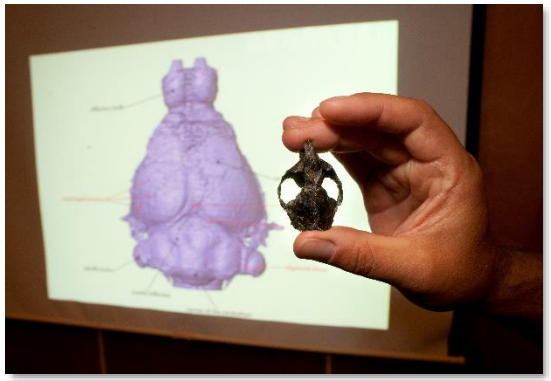


An acronym overview

- ADBC, TCNs and PENs
- Digitization, Data mobilization, Community Building
- Aggregators +
- Education, Outreach, Inreach
- Publishing
- Got more? (Of course you do!)

- Full glossary on the Wiki
  - http://bit.ly/adbcterms





Got More?

http://bit.ly/adbcterms

ry GEOLocate LBCC NSF SCAN

ACIS Net OCR SEINET

ADBC raries of Life Open Refine SEPASAL

AIM-UP! DataCite GUID, UUID Lifemapper ORCiD SERNEC

ALA DataONE GUODA MaCC oVert SoRo

API Digitarium ICBN MaM PaleoCore Spark

Arctos DiSSCo ICZN MaNIS PaleoDb Specify

ARK DOI iDigBio MapsData Paleoniches SPNHC

ARPHA Drupal IGSN Mendeley PEN SQL

Audubon Core DataDryad iNaturalist MiCC Pensoft SQLite

Axiell EMu DwC InverteBase Morphbank Phylolink SYMBIOTA

BCoN EarthCube InvertNet Morphobank Picturae SYNTHESYS

BHL EoL iPlant MorphoSource Plazi TCN

BISON ePandda IPNI MySQL PlutoF TDWG

Canadensys EPICC IPT NEON Python TTD

CartoDB figShare iSamples NIBA QGIS USVH

CONABIO FOSSIL ITIS Notes from Nature R, ridigbio, rgbif, rvertnet VACS VertNet

CRIA GBIF IUCN

CSIRO GenBank Red List NEVP ROpenSci WeDigBio

DAMS GitHub Kurator NSCA RStudio WoRMS

From NIBA to BCoN & the ADBC

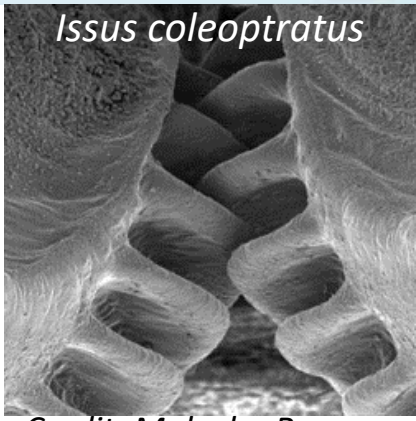
- Networked Integrated Biocollections Alliance (NIBA)
  - Resulted in Advancing the Digitization of Biological Collections (ADBC)

- Biodiversity Collections Network (BCoN)
  - AIBS (American Institute for Biological Sciences), iDigBio & NSC Alliance (Natural Science Collections Alliance)

BIODIVERSITY COLLECTIONS NETWORK

http://bcon.aibs.org/

Advancing the Digitization of Biological Collections (ADBC)



Credit: Malcolm Burrows

- iDigBio, that's
  - Integrated Digitized Biocollections
- Thematic Collection Networks (TCNs)
  - network of institutions digitizing around a research theme
- Partners to Existing Networks (PENs)
  - digitizing specimens for existing TCN to fill gaps

- Cretaceous World
- Fossil Insect Collaborative
- Fossil Marine Invertebrates (EPICC)
- Great Lakes Invasives
- InvertEBase
- InvertNet
- LepNet
- Lichens & Bryophytes
- Macroalgal Consortium
- Macrofungi Consortium
- Microfungi Consortium
- Mid-Atlantic Megalopolis (MAM)
- NEVP
- PALEONICHES
- SCAN
- SERNEC
- SoRo
- Tri-Trophic
- Vouchered Animal Communication Signals
- oVert

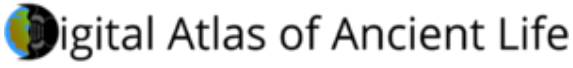
Thematic Collections Networks (TCNs) and Partners to Existing Networks (PENs)

TCN: network of institutions strategically digitizing information for a particular research theme, such as impacts of climate change or biota of a region.

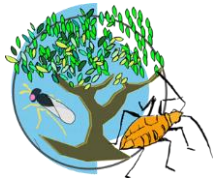
Cretaceous World

invertnet

The Mid-Atlantic Megalopolis



SoRo



oVert

iDigBio – related projects

- Libraries of Life (a free app)
  - Collections in 3-D, developed in collaboration with TCNs, Arizona State University
- WeDigBio (Worldwide Engagement for Digitized Collections)
  - 4-day worldwide transcription event
- The FOSSIL Project
  - Engaging amateur fossil clubs and societies as downstream users of digitized data

Digitization

Collection Management Software

- Arctos
- Symbiota
- Specify
- Axiell EMu
- collectionspace

Community Building

- SPNHC
- GRBio
- 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) free and open access to biodiversity data
- Kurator
- GEOLocate
- DAMS – Digital Asset Management
- ABBYY, Tesseract
- *Unique identifiers*
  - GUID, UUID, ARK, IGSN

Data aggregation and Data use

Biodiversity Data Mobilization and Use

- **EoL -** Encyclopedia of Life
- **BHL –** Biodiversity Heritage Library
- **NEON –** National Ecological Observatory Network
- **CyVerse** (iPlant) **-** facilitating scientific research in the cloud

Aggregating Specimen Data

- **GBIF –** Global Biodiversity Information Facility
- **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
- **CONABIO** (Mexico)
- **CRIA** (Brazil) and **SpeciesLink**

Education, Outreach, Inreach

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

- BLUE
  - Biodiversity Literacy in Undergraduate Education

- Notes from Nature
  - Crowdsourcing collections transcription, creating communities

- iNaturalist
  - observation app, connecting scientists and the general public

- ePandda
  - Enhancing Paleontological and Neontological Data Discovery API, connecting scientific literature with specimens

- The Carpentries - Data Carpentry & Software Carpentry, Reproducible Science Curriculum,…
  - **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, DOI (Digital Object Identifier)
  - Find, share and reuse, cite data, connect and get credit
- Mendeley
  - Free reference manager; organize papers, read & annotate your PDFs
- ORCiD
  - Open Researcher and Contributor ID
- DataONE
  - Data Observation Network for Earth (DataONE) – data repository and data management best practices
- Data Dryad
  - Curated resource making the data underlying scientific publications discoverable, freely reusable, and citable general-purpose home for a wide diversity of data types
- Figshare
  - online repository where researchers can preserve and share their research outputs, including figures, datasets, images, and videos. #openData

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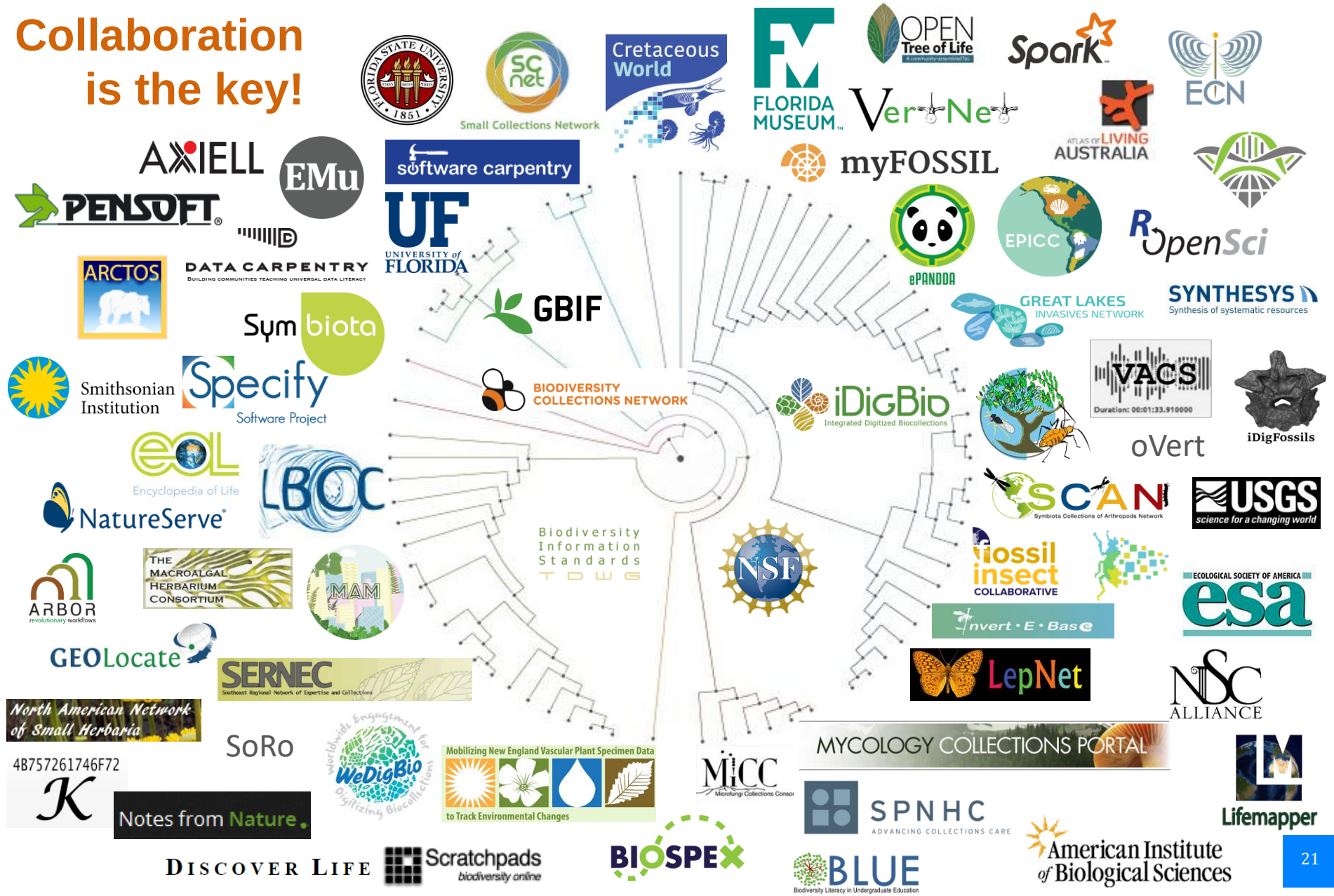
Collaboration is the key!



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Got More?

http://bit.ly/adbcterms

A2iA
ADW
AIM-L
ALA
Amph
APC
API
APNI
Arbor
ArcGIS
Arctos
ARK
ARPHA
AudioNote
Audubon Core
AutoMontage
Axiell
bccvl
BCoN
BoL
BerkeleyMapper
BHL
BHL - China
BHL - Europe
Bio2RDF
BioCASe
biocode
BioGeoMancer
BioGUID
BioNames
BioOffice
BioSharing
BIOTA
BioVeL
BiSciCol
BISON
BITC
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BSA
BugGuide
CABIN
CalPhotos
Canadensys
CartoDB
Catalogue of Life
CBIF
CCH
CF21
COOL
CRIA
CrossRef
CSIRO
CyVerse
DAMS
DataCarpentry
Software Carpentry
DataCite
DataONE
DataONE Dash
DataTurbine
DBTNT
DiGIR
Digital Florida
Digitarium
DINA
Discover Life
DIVA-GIS
djatoka
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DroidDB
Drupal
Dryad
DSLR
DwC
DwC Terms
EarthCube
eBiodiversity
eBird
EcoInforma
ECOS
Effechecka
EMu
KE EMu
EnviroAtlas
EOL
EpiCollect
ePandda
ESFRI
EPICC
EU BON
EUROPEANA
Exploring Genomics Data
EXIF
EZID
Falling rain
Fauna Europaea
FOSSIL
From the Page
Fuzzy Gazetteer
GBIF
GCI
Grey Card Index
GDAL
GenBank
geneious
Gene Ontology
Geopaparazzi
Geotag Photos Pro
Thesaurus of Geographic Names
GitHub
GIMP
GLANSIS
GloBI
GLOBIS
GNIS
GEOLocate
Georeferencing
Georeferencing Calculator
GEOS
Geotools
GLI
GigaPan
CaptureStudio
Global Plants
GLoBIS
GLOBIS-B
GNA
Google Analytics
Google Earth
Google Maps
GPlates
GPS Visualizer
Grass GIS
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HerpNET
HOLOS
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INBio
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InverteBase
InvertNet
iPlant
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IPT 2
IrfanView
iSamples
ITIS
IUCN
Red List
IWGSC
JAI
Jetstream
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JSTOR Plant Science
JTS
KML
Kurator
LBCC
LepNet
LibXML
Libraries of Life
LifeDesks
Lifemapper
LifeWatch
LINCAOCNET
Lucid
Macaulay Library
MaCC
Magnolia grandiFLORA
MaM
MaNIS
MANTIS
MapWindow GIS
MapReduce
MapsData
MBB
Mendeley
MIBBI
MiCC
MOBOT
ModestR
MOL
Morphbank
Morphobank
MorphoSource
Morphster
MHC
mx
MySQL
NameBank
ClassificationBank
National Biodiversity Data Center
NatureServe
NCSA
NEOMAP
NEON
NeotomaDB
NESCent
NEVP
NIBA
NIMBUS
NLP
Notes from Nature
NSCA
NSF
NSII
OBIS
OBO Foundry
OCR
OCRopus
ODBC
OA
Open Annotation
Open Atrium
Atrium
openModeller
Open Refine
OpenStack
Open Tree of Life
OpenUp!
OpenZoom
Oracle
ORCiD
ORNIS
OWL
PaleoCore
PaleoDb
PaleoNICHES
PaleoPortal
PEN
Pensoft
PeriodO
PhenoBlast
Phenoscape
Photoshop
Photosimile
Phylocode
Phylojive
Phylolink
Picturae
Planting Science
PLANTS Database
Plazi
PlutoF
PNW Herbaria
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ReFindit
REST
ridigbio
RMCA
ROpenSci
RStudio
SCAN
Scratchpads
SEINET
SEPASAL
SERNEC
SiB
SilverCollection
SilverLining
SOAP
Spark
SPARQL
Species 2000
speciesLink
Specify
SPNHC
SQL
SQLite
STEM
SYMBIOTA
SYNTHESYS
SysTax
TACC
TAPIR
Taxonworks
TCN
TDWG
Tesseract
The Field Book Project
TNRS
TOLKIN
TORCH
tranScriptorium
Transkribus
TreeBASE
Trifacta
TROPICOS
TRY
TTD
Tri-Trophic TCN
TurboScan
uBio
UFBI
UNITE
Universal Chalcidoidea Database
USVH
VACS
VASCAN
Vernon Systems
VertNet
ViBRANT
VIVO
VMWare
WCSP
Windows Azure
WeDigBio
WISFlora
WoRMS
WSDL
Xen
XML
XSEDE
YAMZ
Zenodo
Zoomify
Zooniverse

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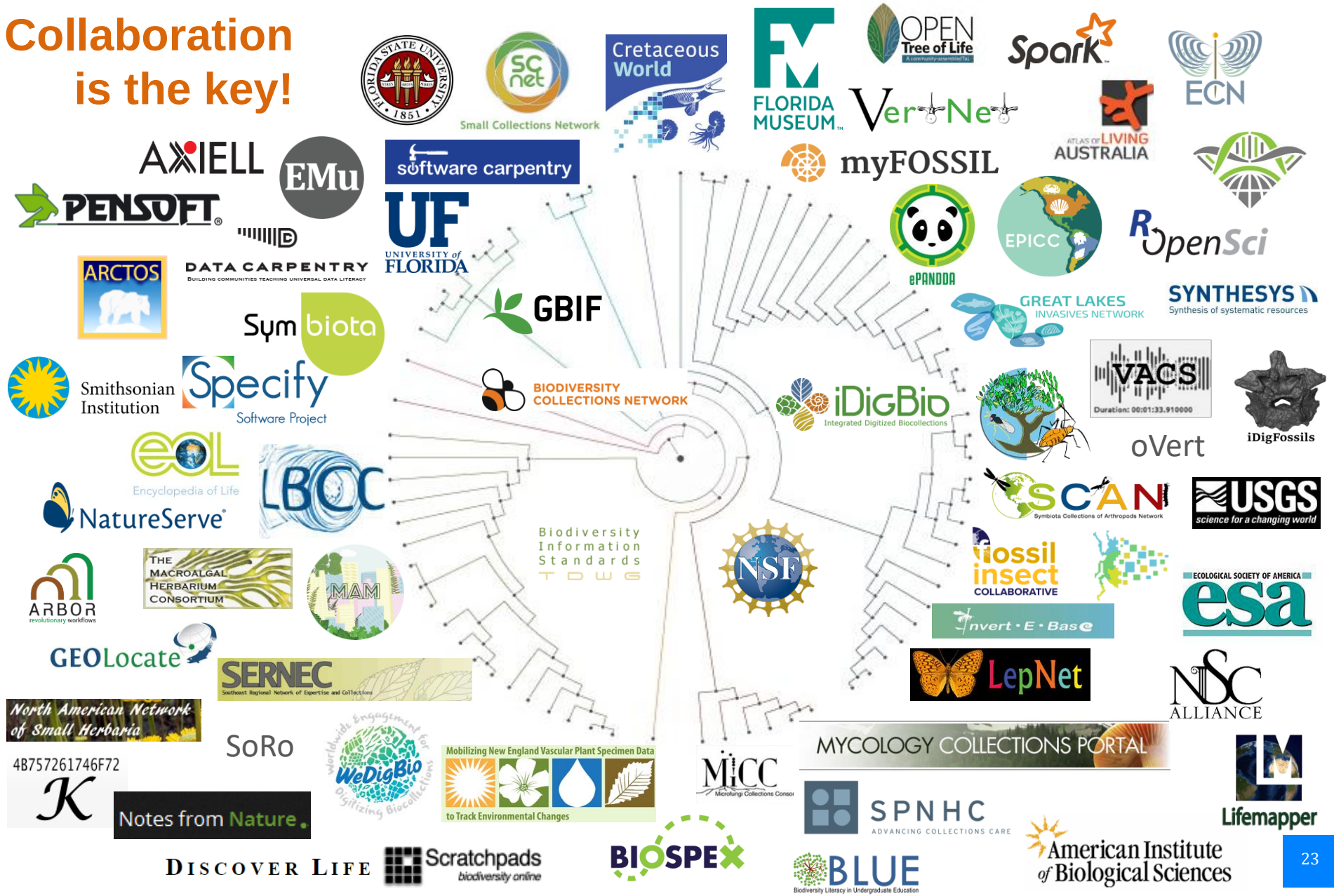
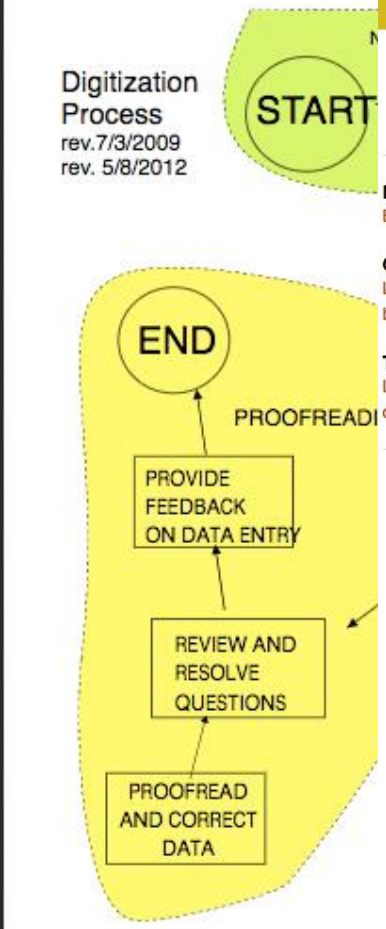
Collaboration is the key!



iDigBio Resources



Researchers
Browse our specimen portal

Collections Staff
Learn how your collection can benefit from our work

Teachers & Students
Learning resources & opportunities to engage

Undergraduate Resources

Online Resources for Undergraduate Students and Educators

WeDigBio collaborated with collectionseducation.org to create an undergraduate classroom exercise about citizen science. Find this resource (others coming soon) on their education exercises page.

Other Resources

AIM-UP!: Advancing Integration of Museums into Undergraduate Programs

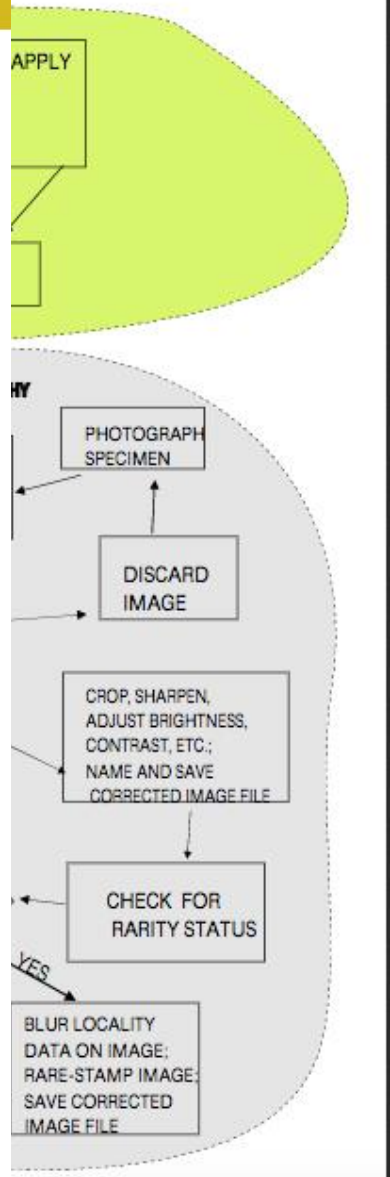
> *"AIM-UP! is an NSF-funded Research Coordination Network exploring the use of natural history collections in undergraduate education. AIM-UP! is refining existing efforts and developing new integrated approaches to collections-based training in large-scale questions using the expertise of educators, curators, collection managers, database managers, and scientists whose work spans disciplines and relates topics covering a spectrum of time and space."*

The AIM-UP! project includes educational modules and tutorials to be used in college-level courses.
Learn more about AIM-UP! through a recent presentation (pdf and recording link) given at SPNHC 2015 or the recent publication "Natural History Collections as Emerging Resources for Innovative Education."

SERC: the Science Education Resource Center at Carleton College

> *"Whether you're an undergraduate faculty member or a K-12 science teacher our suite of partner projects have materials you can use today. Connect with a community of peers as they share what really works in their classrooms."*

SERC includes resources for both undergraduate education and K-12 education with an



Canadensys: revealing the biodiversity of Canada (Anne
Overview of the Biodiversity Heritage Library Recent Activ
The Catalogue of Life: Infrastructure for Science (Tom Or

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
- Recordings of conference presentations
- List of genetic repositories
- Tutorials
- API information
- iDigBio R package
- Research tools
- Collaborators
- Links to GitHub

iDigBio Website Resources

https://www.idigbio.org

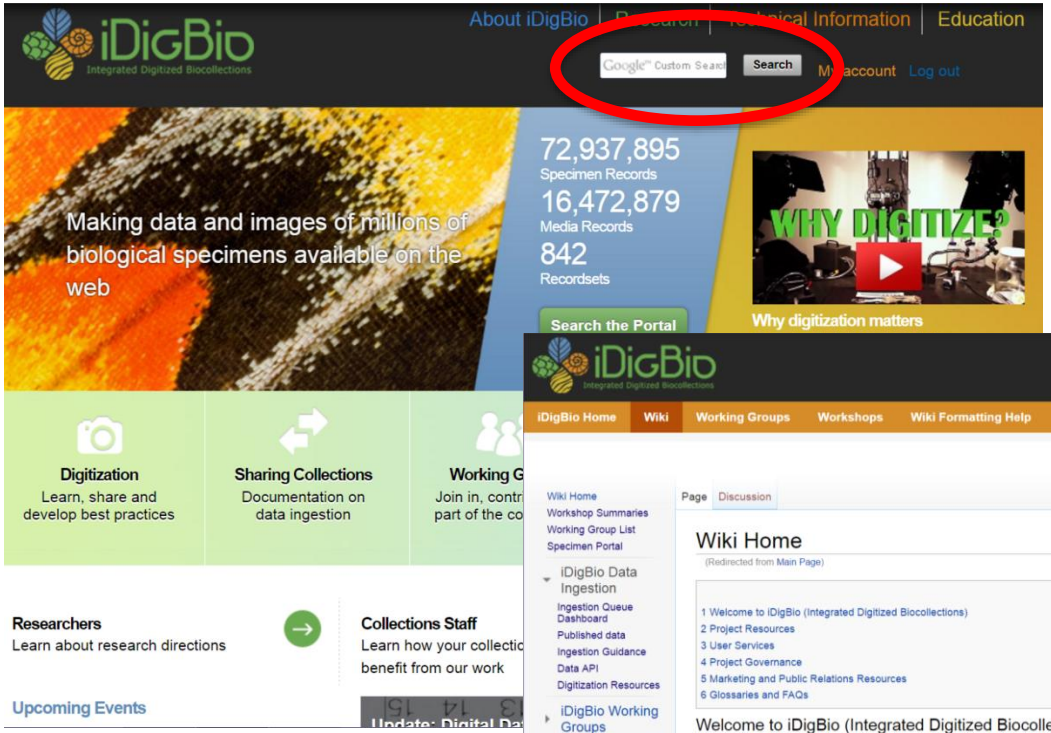
Technical Information

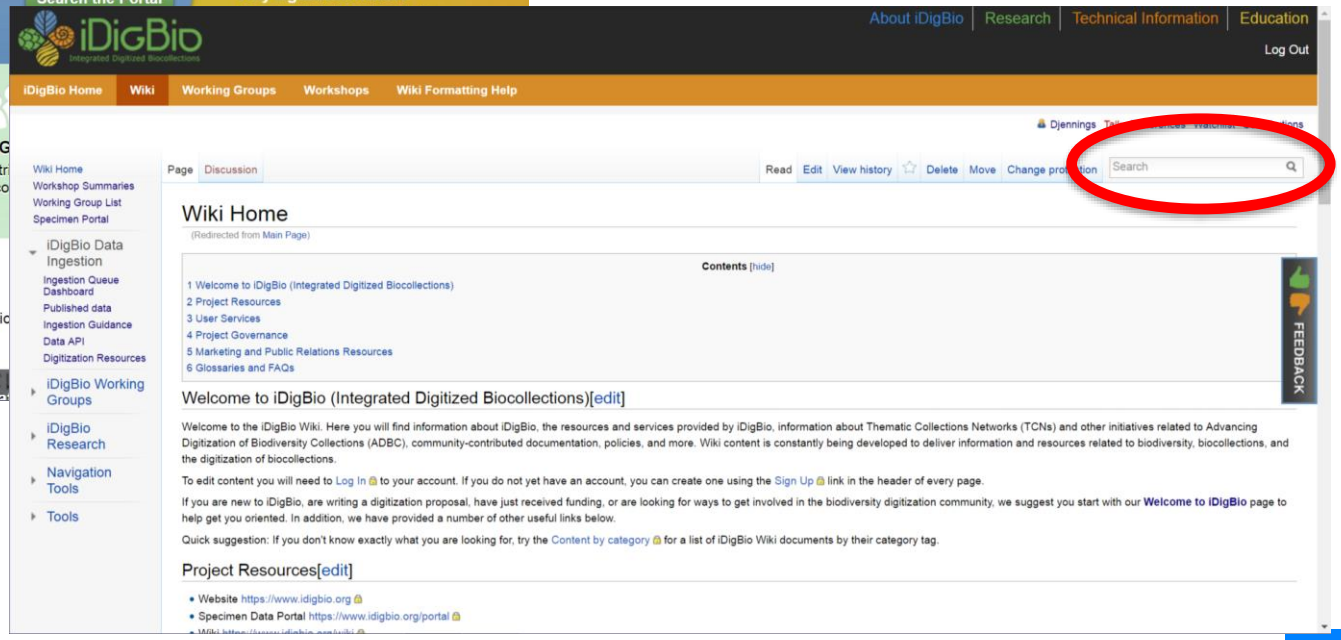
- Working group information
- Bibliography of relevant presentations and publications
- Digitization workflows
- Equipment recommendations
- Workshop summaries
- Workshop and webinar recordings
- Data ingestion guidance

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

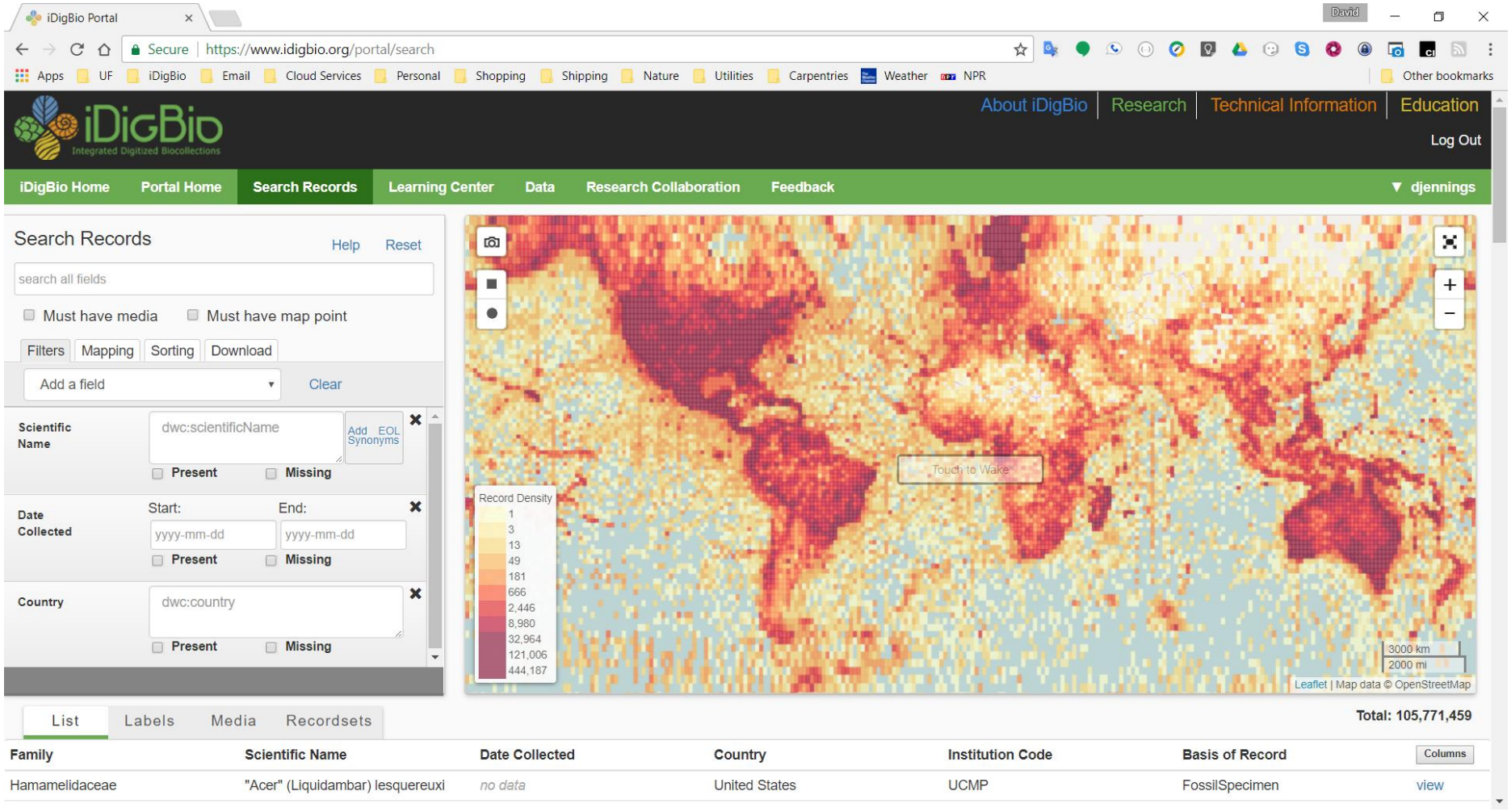
I can’t find X, or I want to know about Y





Use the search boxes!

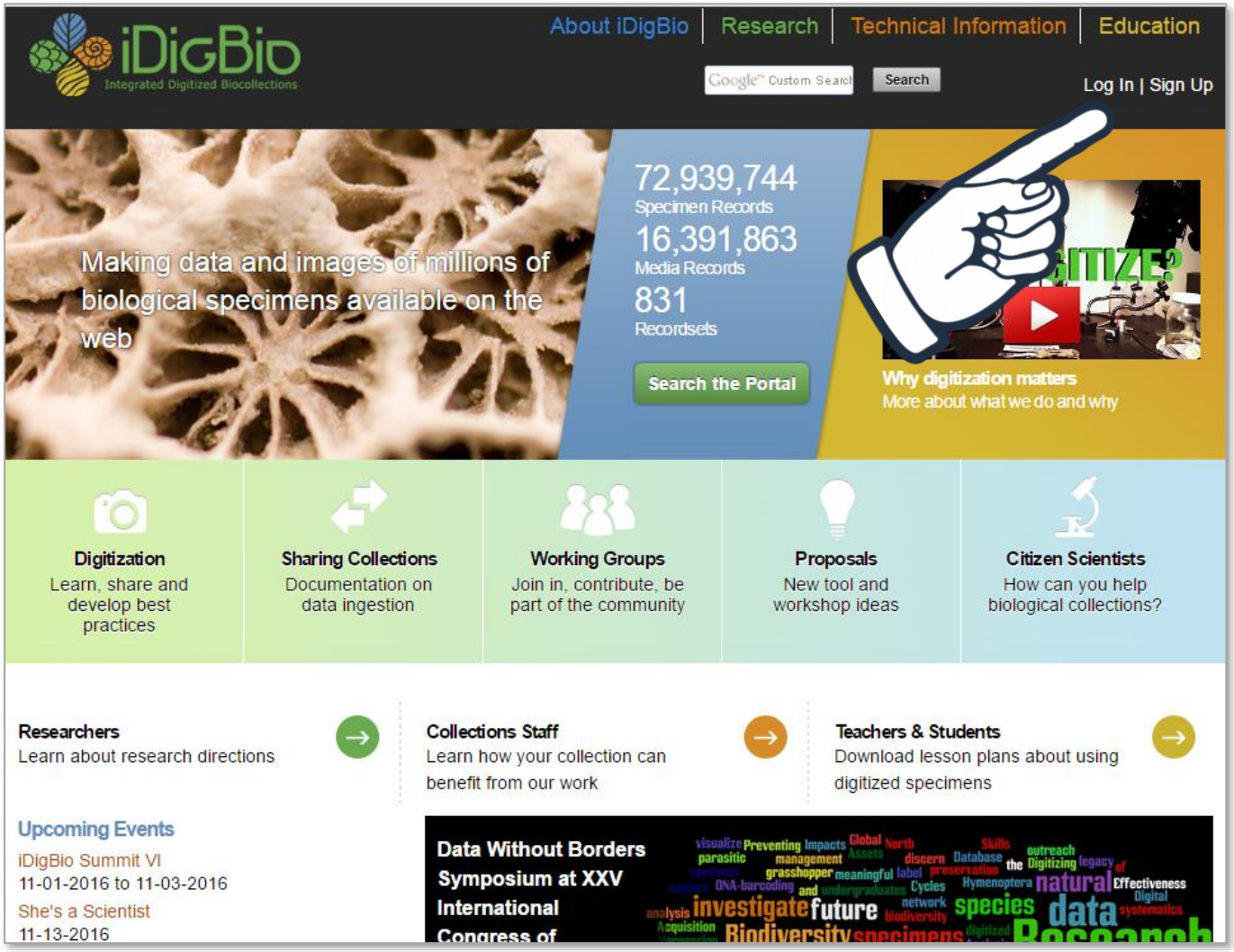
Flexible search across all data, indexed fields, media, geolocation, map boundary, auto-completion, synonyms, …



https://www.idigbio.org/portal

Get Involved!

Step 1: Sign up for an account!



Step 2: Sign up for the iDigBio Newsletter

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

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

Step 3: Social media

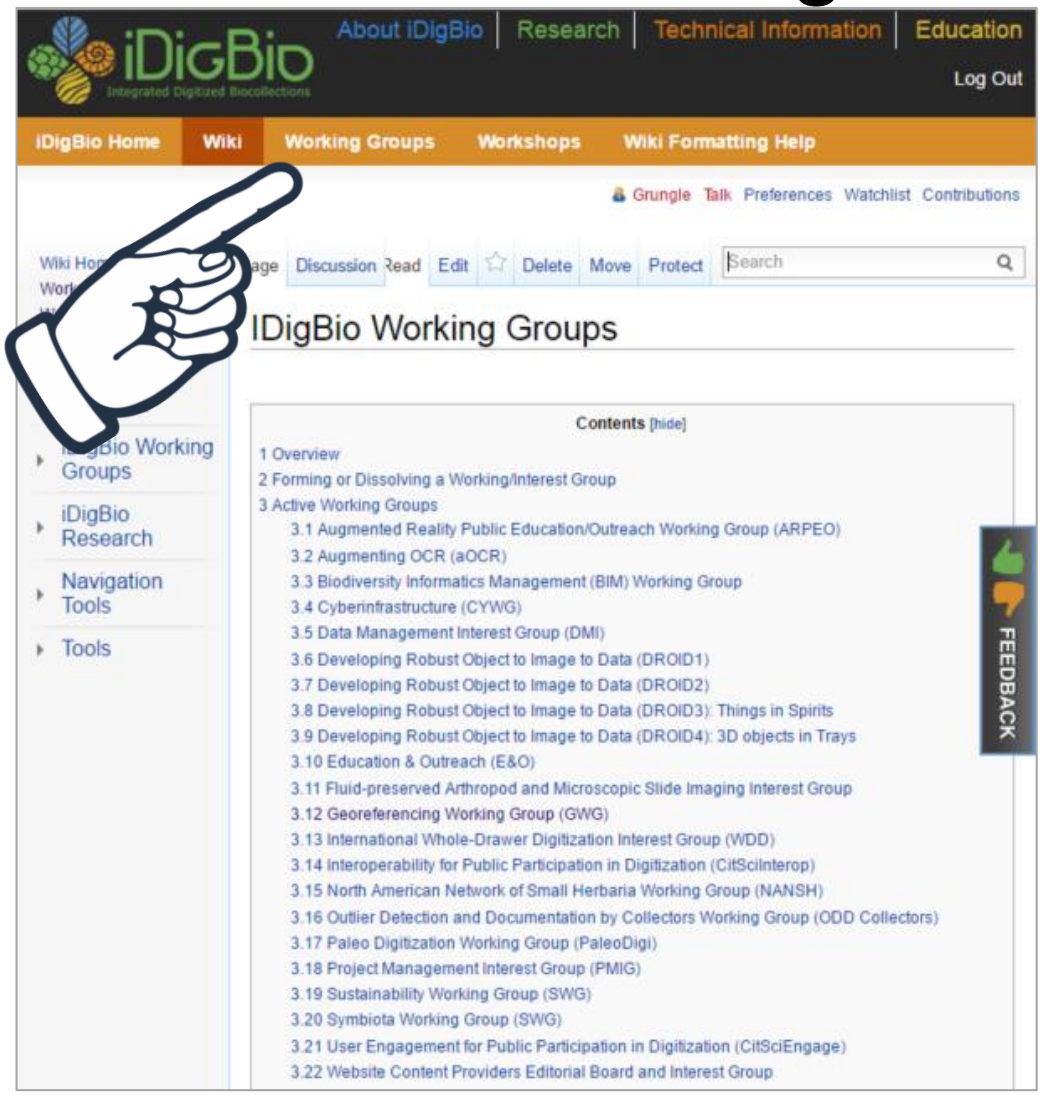
vimeo.com/idigbio

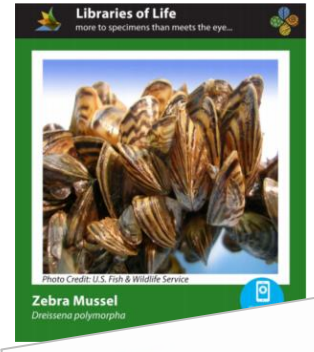
idigbio.org/rss-feed.xml

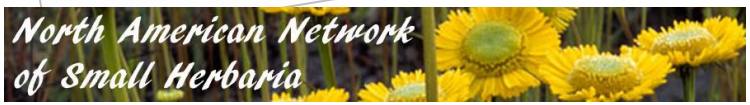
idigbio.org/events-calendar/export.ics

www.idigbio.org/wiki

Step 4: Get involved with a Community Working Group



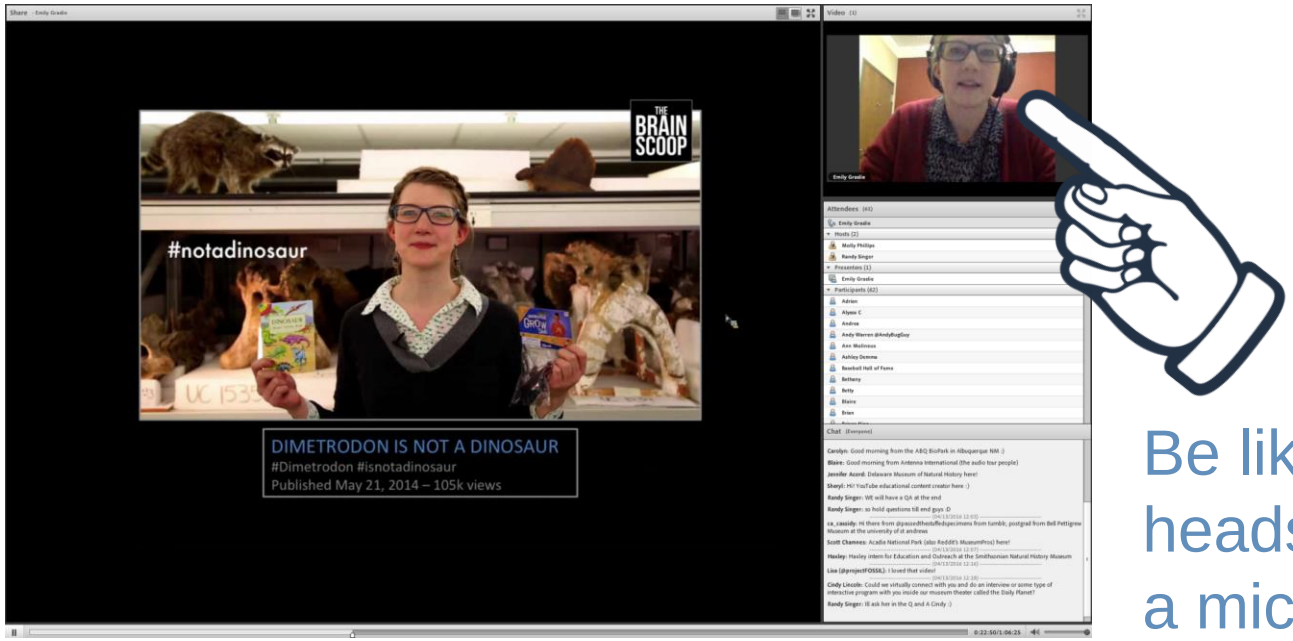




- Documentation
- API development
- Workflows
- Standards
- Best practices
- Hackathons
- Workshops, Webinars

Step 5: Watch a webinar…or star in one!

https://www.idigbio.org/tags/webinar
https://www.idigbio.org/wiki/index.php/Web_Conferencing

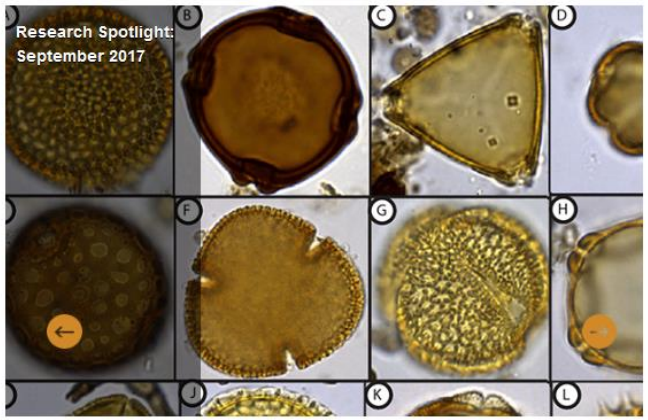


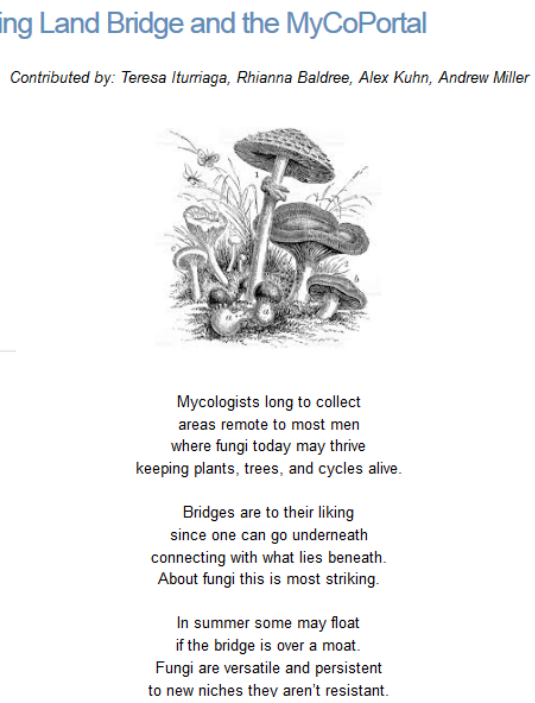
Workshops
Symposia
Webinars

Be like Emily: get a headset preferably with a microphone!

Step 6: 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**





Bering Land Bridge and the MyCoPortal

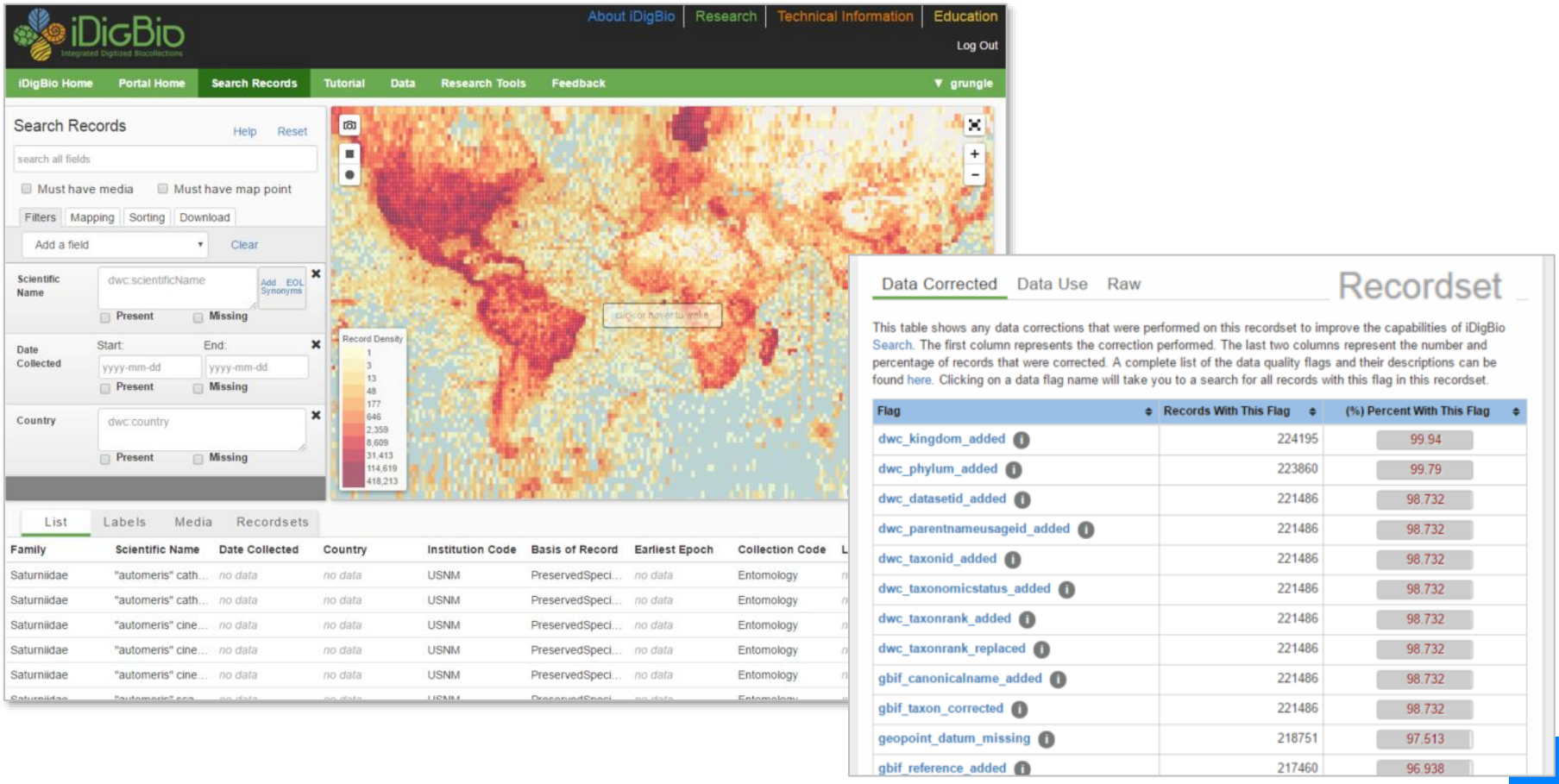
Contributed by: Teresa Iturriaga, Rhianna Baldree, Alex Kuhn, Andrew Miller

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.

Step 7: Use the portal for research and data cleaning – feedback!



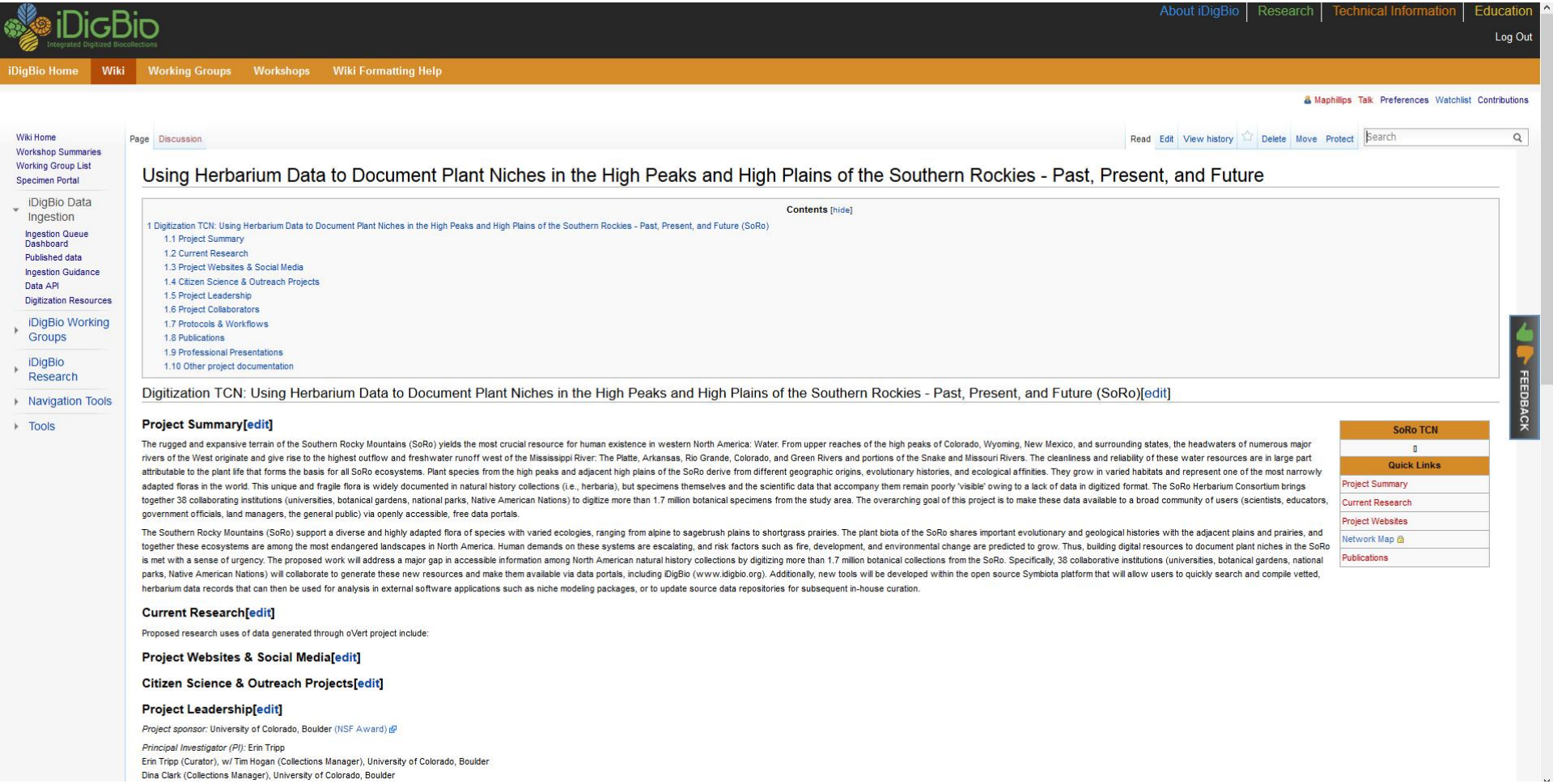
Step 8: Collaborate!

TCN Responsibilities

TCN Responsibilities

- **Maintain a TCN wiki page**
- Submit requested info for Summit resources
- Participate in TCN meetings
- Submit bi-monthly reports to iDigBio
- Provide feedback via annual community survey and other solicitations
- Prepare annual report for NSF

https://www.idigbio.org/wiki/index.php/Using_Herbarium_Data_to_Document_Plant_Niches_in_the_High_Peaks_and_High_Plains_of_the_Southern_Rockies_-_Past,_Present,_and_Future



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Using Herbarium Data to Document Plant Niches in the High Peaks and High Plains of the Southern Rockies - Past, Present, and Future

Contents [hide]

1 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)
- 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
- 1.7 Protocols & Workflows
- 1.8 Publications
- 1.9 Professional Presentations
- 1.10 Other project documentation

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]

Project Summary[edit]

The rugged and expansive terrain of the Southern Rocky Mountains (SoRo) yields the most crucial resource for human existence in western North America: Water. From upper reaches of the high peaks of Colorado, Wyoming, New Mexico, and surrounding states, the headwaters of numerous major rivers of the West originate and give rise to the highest outflow and freshwater runoff west of the Mississippi River: The Platte, Arkansas, Rio Grande, Colorado, and Green Rivers and portions of the Snake and Missouri Rivers. The cleanliness and reliability of these water resources are in large part attributable to the plant life that forms the basis for all SoRo ecosystems. Plant species from the high peaks and adjacent high plains of the SoRo derive from different geographic origins, evolutionary histories, and ecological affinities. They grow in varied habitats and represent one of the most narrowly adapted floras in the world. This unique and fragile flora is widely documented in natural history collections (i.e., herbaria), but specimens themselves and the scientific data that accompany them remain poorly 'visible' owing to a lack of data in digitized format. The SoRo Herbarium Consortium brings together 38 collaborating institutions (universities, botanical gardens, national parks, Native American Nations) to digitize more than 1.7 million botanical specimens from the study area. The overarching goal of this project is to make these data available to a broad community of users (scientists, educators, government officials, land managers, the general public) via openly accessible, free data portals.

The Southern Rocky Mountains (SoRo) support a diverse and highly adapted flora of species with varied ecologies, ranging from alpine to sagebrush plains to shortgrass prairies. The plant biota of the SoRo shares important evolutionary and geological histories with the adjacent plains and prairies, and together these ecosystems are among the most endangered landscapes in North America. Human demands on these systems are escalating, and risk factors such as fire, development, and environmental change are predicted to grow. Thus, building digital resources to document plant niches in the SoRo is met with a sense of urgency. The proposed work will address a major gap in accessible information among North American natural history collections by digitizing more than 1.7 million botanical collections from the SoRo. Specifically, 38 collaborative institutions (universities, botanical gardens, national parks, Native American Nations) will collaborate to generate these new resources and make them available via data portals, including iDigBio (www.idigbio.org). Additionally, new tools will be developed within the open source Symbiota platform that will allow users to quickly search and compile vetted, herbarium data records that can then be used for analysis in external software applications such as niche modeling packages, or to update source data repositories for subsequent in-house curation.

SoRo TCN

Quick Links
- Project Summary
- Current Research
- Project Websites
- Network Map
- Publications

Current Research[edit]

Proposed research uses of data generated through oVert project include:

Project Websites & Social Media[edit]

Citizen Science & Outreach Projects[edit]

Project Leadership[edit]

Project sponsor: University of Colorado, Boulder (NSF Award)

Principal Investigator (PI): Erin Tripp
Erin Tripp (Curator), w/ Tim Hogan (Collections Manager), University of Colorado, Boulder
Dina Clark (Collections Manager), University of Colorado, Boulder

FEEDBACK

TCN Responsibilities

- Maintain a TCN wiki page
- Submit requested info for Summit resources
- Participate in TCN meetings
- Provide feedback via annual community survey and other solicitations
- **Submit bi-monthly reports to iDigBio**
- **Prepare annual report for NSF**

Helpful Links for Reporting

- idigbio.org/content/tcn-bi-monthly-progress-report-idigbio
- idigbio.org/wiki/images/3/34/ADBC_AnnualReportInfoSheet.pdf

How To Get Your Data To iDigBio, Data Standards and IPT

Joanna McCaffrey, iDigBio Biodiversity Informatics Manager

Summit 2017

1 November, 2017

https://www.idigbio.org/wiki/index.php/Data_Ingestion_Guidance

iDigBio is funded by a grant 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.

What's In This For You?

Learn how to get your data ***published***

- correctly,
- fully,
- with an eye to quality,
- optimized for the aggregate

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*

Why publish data?
The 4 biggies of data aggregation

ACCESSIBILITY

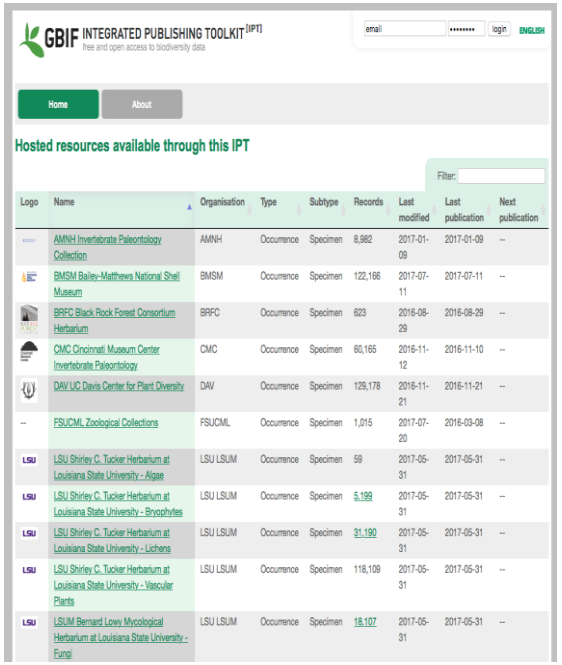
Data Use

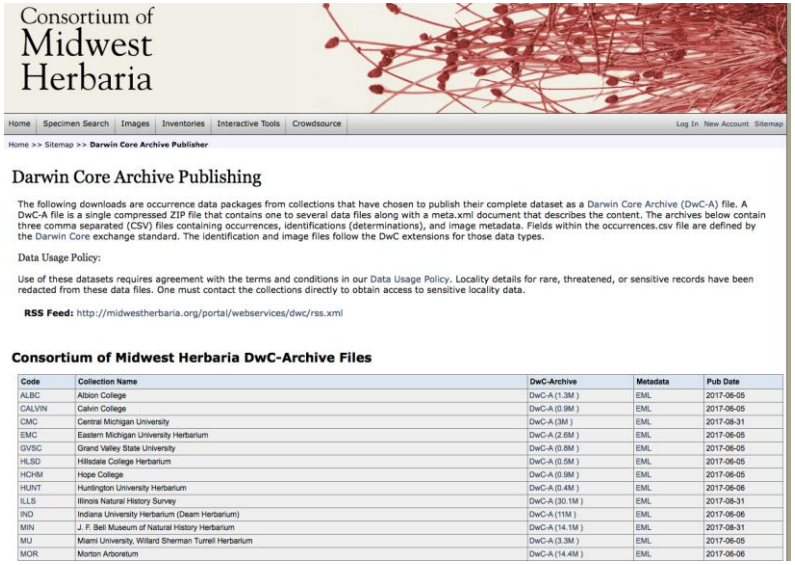
Data Quality

Attribution

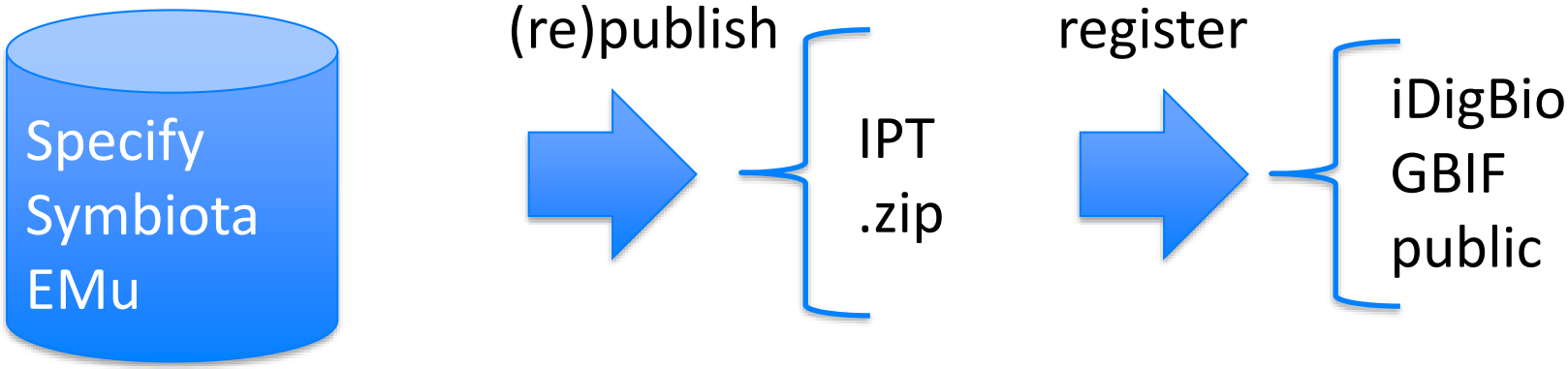
Data publishing – where to begin

- Email data@idigbio.org
  -"*I'm ready*"
- The way to mobilize data -> IPT:
  1) Your IPT: IPT, VertNet, Symbiota
  2) Our IPT: http://ipt.idigbio.org





Where do I start?



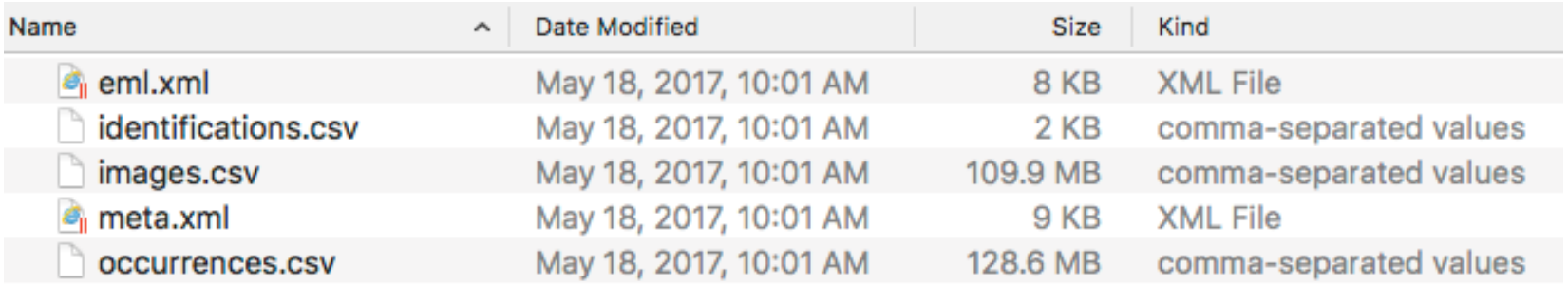
publish -> register -> { republish cycle }

IPT

Definition: The Integrated Publishing Toolkit (IPT) is a free open source software tool written in Java that is used to publish and share biodiversity datasets through the GBIF network. (and other aggregators)

Produces a Darwin Core Archive (DwC-A) [COLO]

Symbiota IPT
(https://botanydb.colorado.edu/collections/datasets/datapublisher.php)



Name	Date Modified	Size	Kind
eml.xml	May 18, 2017, 10:01 AM	8 KB	XML File
identifications.csv	May 18, 2017, 10:01 AM	2 KB	comma-separated values
images.csv	May 18, 2017, 10:01 AM	109.9 MB	comma-separated values
meta.xml	May 18, 2017, 10:01 AM	9 KB	XML File
occurrences.csv	May 18, 2017, 10:01 AM	128.6 MB	comma-separated values

The go-to guide for data ingestion

Everything you wanted to know about preparing data for ingestion:

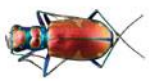
- https://www.idigbio.org/wiki/index.php/Data_Ingestion_Guidance
  - Identifiers
  - **Darwin Core** – occurrence data (specimen records)
  - **Audubon Core** - media

DATA WAY #1: IPT benefits

- Make data available to GBIF, iDigBio, public
- Setup assistance and ongoing service
- Self-serve if that is your preference
- **GBIF -> Once endorsed by our country node manager – USGS – data are registered for ingestion by GBIF**

DATA Way #2 - Symbiota

- When you click your data to publish, all the necessary parts of the Darwin Core archive package (.zip) are generated.
  - Custom Darwin Core Archive (DwC-A) on an RSS feed produced by Symbiota
  - And almost automatic media
  - http://symbiota.org



Symbiota Promoting Bio-Collaboration

Publishing – more info to remember

- Searching is not the same as publishing on a Symbiota node. The data can be in the portal, data are searchable, but not necessarily published.

http://symbiota.org/docs/darwin-core-archive-data-publishing/

You have to **re-publish the DwC-A** for us to pick up your updates [RSS feed]

3 ways to get media into iDigBio and linked to the specimen record:

1. Import Audubon Core data into the IPT extension
2. If using Symbiota – built in support
3. Media appliance

Media Metadata – the necessaries

- id (coreid of the specimen record it links to)
- identifier (media has its own GUID)
- format (image/jpeg)
- accessURI (public path to your best quality jpg)

Can include richer data – EXIF, IPTC

DATASET INFO: info about the provider (metadata)

Document your dataset metadata with your provider information (eml.xml):

- 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)

DATASET INFO: update collections lists

1. iDigBio Collections Catalog https://www.idigbio.org/portal/collections
2. Index Herbariorum http://sweetgum.nybg.org/ih/
3. GRBio.org Repositories: http://grbio.org/find-biorepositories

Please use a collectionCode

Do you know what your institutionCode is?

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

Data Quality: Consider searchability in the aggregate

Dates – dwc:eventDate, dwc:day, dwc:month, dwc:year:

- this is not a month: Spring
- this is not a day: 10-18
- this is not a year: 1989? Or [1989]

Taxonomy – fill in dwc:scientificName, parse out the elements, fill in higher taxonomy

- this is not a species: shrimp, daisy

Tics: * [] {} ?, 0 fillers, NA place holders

- Use the verbatim and remarks fields for things that do not fit the definitions.

Data Quality: Grooming and tics – top 10

Your dataset **is no longer just for making labels**, there are other considerations for being digital, and out in the wild:

1) Put dates in ISO 8601 format, i.e., YYYY-MM-DD, e.g., 2015-09-17
2) Parse apart scientific name
3) Conversely, put the piece parts into a scientific name
4) Provide as much higher taxonomy as your feel comfortable with, fill in tribe, sub+super family, kingdom, division, class, order), get out of ‘family’ land.
5) Make sure lat and lon coordinates are in decimal, and no N, S, E, W
6) Do not export '0' “n/a” in fields to represent no value, e.g., lat or lon, height
7) put elevation in METERS units in the elevation field without the units (e.g., the fields dwc:minimumElevationInMeters and dwc:maximumElevationInMeters already assume the numeric values are in meters, so there no need to include the units with the data)
8) Leave out ‘County’, ‘Co.’ in county field
9) And not to get too esoteric, do not use un-escaped newline characters or embedded tabs
10) Watch out for diacritics, save in UTF-8

à á â ã ä å

When is my work done?

- Digitization is never done
  - Label data
  - Georeferenced
  - Image
  - **+ AND +**

For TCNs/PENs: Not until your data are in iDigBio.

  - It is not enough to get to it to Symbiota
    - Publish, *re-publish* with updates

Symbiota Users / IPT users

- Your dataset naming
  - Give it a complete name, institution, collection/herbarium
  - Description of the collection – what is in THIS data
  - Good contacts - the person who will respond to requests
- Join the Symbiota working group – community, webinars

Example of good naming (2)

University of Vermont, Pringle Herbarium, North American bryophytes

Specimen Records: 17,697 Media Records: 16,941

iDigBio Last Ingested Date: 2016-07-28

The Pringle Herbarium (VT) contains 300,000 specimens, including vascular plants, bryophytes, lichens, algae and fungi. This portal contains our North American bryophyte specimens, numbering about 18,000. Other digitization projects cover type specimens, vascular plant specimens, North American lichens, macroalgae and macrofungi. These images and data are available through various portals. The herbarium does not maintain its own online database.

Contacts

Name *none*
Role *none*
Email CNABHadmin@asu.edu

Name Dorothy Allard, Virtual Herbarium Coordinator
Role *none*
Email djallard@uvm.edu

iDigBio
Integrated Digitized Biocollections

Get involved!

idigbio.org/wiki

facebook.com/iDigBio

twitter.com/iDigBio

vimeo.com/iDigBio

idigbio.org/rss-feed.xml

idigbio.org/events-calendar/export.ics

iDigBio is funded by a grant 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.

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