



iDigBio

Integrated Digitized Biocollections



iDigBio is funded by a grant from the National Science Foundation's Advancing Digitization of Biodiversity Collections Program (Cooperative Agreement EF-1115210). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation. All images used with permission or are free from copyright.

Wrapping it up!

Summit Highlights



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Give yourselves a big hand!



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Give NSF a healthy round of applause

Judy Skog

Anne Maglia

NIBA

Roland Roberts

Reed Beaman

Collections and biodiversity research

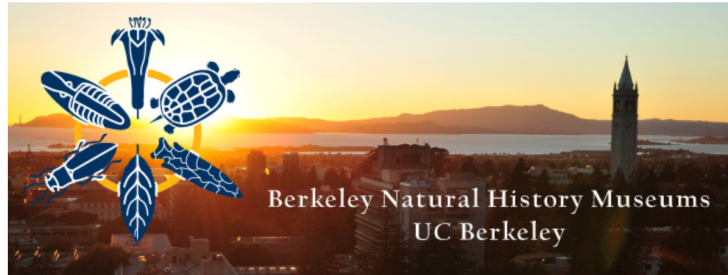
Community cohesiveness

**Exciting research outcomes from digital
data proliferation**

**2nd Digital Data in Biodiversity Research
Conference**

Save the Date: Emerging Innovations for Biodiversity Data

- Researchers**
Browse our specimen portal →
- Collections Staff**
Learn how your collection can benefit from our work →
- Teachers & Students**
Learning resources & opportunities to engage →




Second Annual Digital Data in Biodiversity Research Conference 4-6 June 2018, UC Berkeley Campus

The Berkeley Natural History Museums, the Berkeley Initiative for Global Change Biology, and iDigBio are pleased to announce the second annual **Digital Data in Biodiversity Research Conference**, to be held in **Berkeley, CA, 4-6 June 2018**. The rapid mobilization of digitized biodiversity data, led largely in the United States by the National Science Foundation's Advancing Digitization of Biodiversity Collections program, has resulted in a substantial increase in available data for research and related activities. The 2018 conference will again encompass the uses of digitized data across all biodiversity disciplines, with special emphasis on digitized specimen data and the potential for "big data" analytics in organismal biology. Planning is in process and further details will be released in several successive mailings later this autumn and in early 2018. A call for papers will be circulated in January. Please save the date and watch for further announcements via several listservs and on the iDigBio website (<http://www.idigbio.org>). This conference will provide an important opportunity to explore digital data tools, techniques, discoveries, and outcomes across the biodiversity sciences. For further information or to ensure that you are on the email list, please contact Gil Nelson at iDigBio (gnelson@bio.fsu.edu).



Raising the profiles of natural history museums and biodiversity collections

-  **TRILOBITES**
Slow and Steady, a Tortoise Is Winning Its Race With Extinction
-  **2017 Nobel Prize in Physics Awarded to LIGO Black Hole Researchers**
-  **As Seas Warm, Whales Face New Dangers**
-  **Scientists in Mexico Scramble to Deploy Seismic Sensors**
- PAID POST: UC DAVIS**
How Scientists and Farmers Are Protecting Oysters From Climate Change

Museum Specimens Find New Life Online

By **ERIK OLSEN** OCT. 19, 2015



Museums worldwide are spending millions to digitize their collections. The Berlin Museum of Natural History is undertaking one of the more ambitious efforts, using digital technology to create 3D images of so-called type specimens.
By **ERIK OLSEN** on October 19, 2015. [Watch in Times Video](#) >



BERLIN — In a brightly lit room on the third floor of the Museum of Natural History here, stacks of wooden drawers are covered in glass, some panes so dusty that it is difficult to discern exactly what's inside. When the

Planning
s Gunman
pened

2.

Las Vegas Gunman's
Girlfriend, Marilou
Danley, Arrives for
Questioning

3.

Las Vegas Shooting:
F.B.I. Still Seeking
Motive as Gunman's
Girlfriend Returns

4.

LIVE BRIEFING
Gunman's Girlfriend
Arrives in U.S. and Is
Expected to Be...

5.

OP-ED COLUMNIST
If Only Stephen
Paddock Were a
Muslim

6.

Rex Tillerson, Tru
Secretary of State,
Reaffirms Support
for President

A Guide to Digitized Natural History Collections

By MICHAEL ROSTON OCT. 19, 2015

Natural history museums around the world have been growing beyond display cases and dioramas for years, and many are digitizing their vast collections. These efforts create lasting records of the natural world that might otherwise be inaccessible, unless you know a friendly curator willing to take you behind the scenes. Below are several notable digitization efforts that you can explore, and even contribute to.

Do you have a favorite digitized science museum collection? Send it to us at scitimes@nytimes.com, and we'll look to expand this guide in the future.



SILICON VALLEY & TECHNOLOGY

February 15, 2016 9:44 AM

Elizabeth Lee

Museums Push to Get 'Dark Data' Into Light Through Digitization

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Museums Get 'Dark Data' into the Light Through Digitization

[Direct link ▾](#)

LOS ANGELES — Technology may be advancing rapidly in many fields, but many museums worldwide still do not have their collections of fossils easily searchable on-line. Specimens, called “dark data” are left in drawers, virtually hidden. There is an effort in the U.S. to bring this “dark data,” as it’s called, into the light through digitizing museum collections.

More Science & Innovation News

 Amazon Must Pay \$250 Million in Back

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BIG ISSUES

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from our column: [STRANGE BEHAVIORS](#) 🐾

Natural History Museums Go Digital in a Boon for Science

Digitizing animal specimens gives scientists global insight into the evolution of wildlife, the spread of invasive species, and the impact of climate change.

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(Photo: Richard Conniff)

JUL 29, 2016 · 3 MIN READ



Richard Conniff is the author of *House of Lost Worlds: Dinosaurs, Dynasties, and the Story of Life on Earth* and other books.

Bio



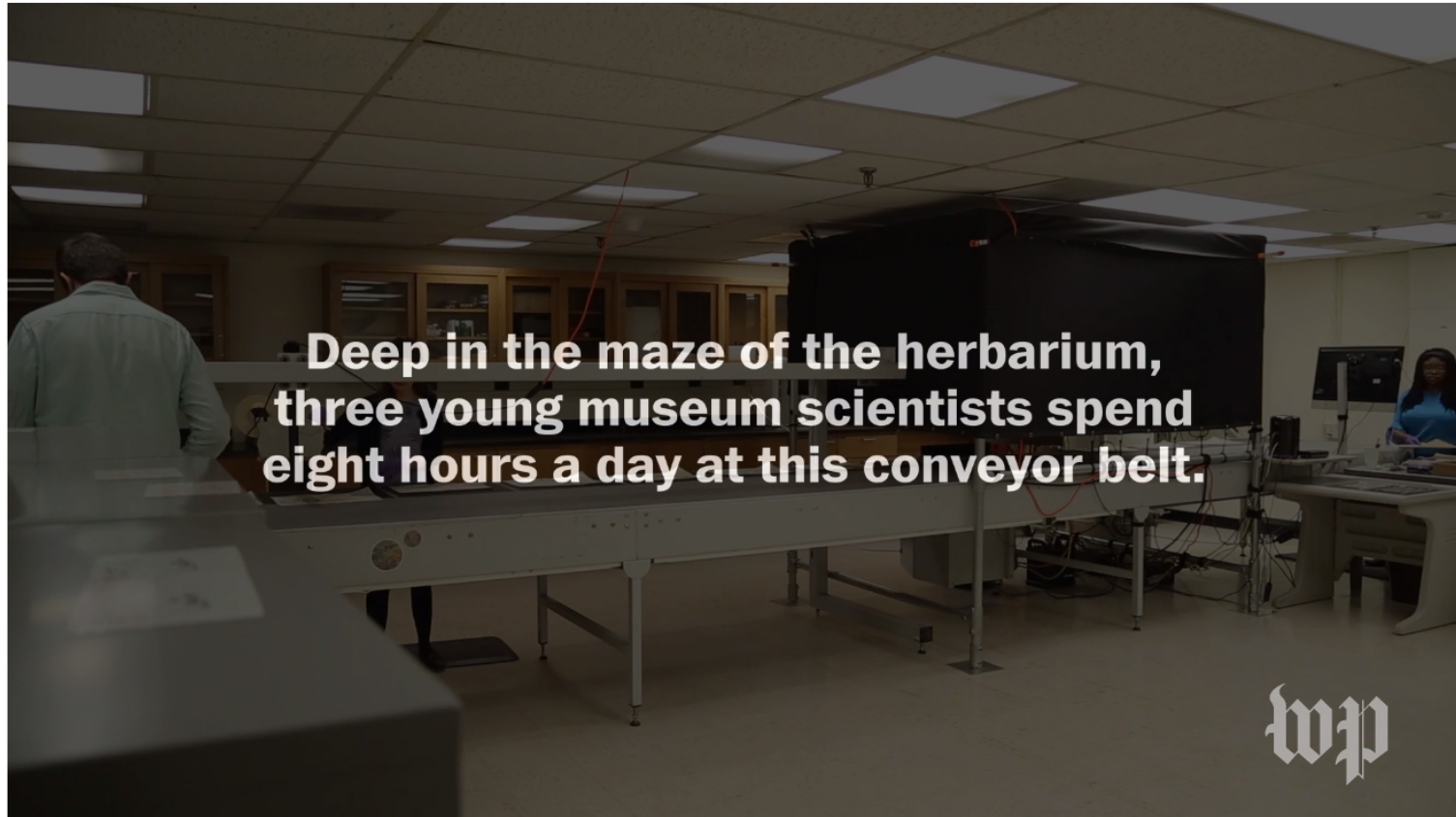


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Health and Science Video

Health and Science February 8, 2017



(Gillian Brockell/ The Washington Post)

These three people, and one conveyor belt, are digitizing millions of plant specimens

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Canadian Nature Museum digitizing 3 million specimens

Museum is part of an international movement to put archives online for researchers

By Max Paris Environment Unit, CBC News Posted: Jan 05, 2014 9:00 PM ET | Last Updated: Jan 05, 2014 9:00 PM ET



From bones to bytes 2:36

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The Canadian Museum of Nature is part of an international movement of natural history museums that are digitizing their archived collections of plants and animals.

The Ottawa museum has a collection of three million specimens and, so far, a million have been entered into an online database for the benefit of researchers and the general public.

"Essentially every museum and every institution that has a collection is part of this digitization movement," says Mark Graham, the museum's head of research and collections.

"This is a time in our history where information is hugely useful en masse in a digital way," he adds.

Along with its name, each specimen — no matter how large or small — has a tag attached to it with two



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Must Watch

RESEARCH & IDEAS

WEDNESDAY, MAY 29, 2013

Researchers enlist public to sort more than 1 million bugs online



BY J. HANNAH LEE | STAFF

LAST UPDATED MAY 29, 2013

Insect aficionados from across the world can now become part of a UC Berkeley entomology research team through a new citizen science project, which officially launched last Wednesday.

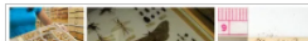
CalBug, a project initiated by UC Berkeley's Essig Museum of Entomology to digitize insect specimens, will employ volunteer archivists to catalog and sort through more than one million samples. CalBug will collaborate with [Notes from Nature](#), an online crowdsourcing platform to speed up the digitization

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What can you do with 300,000 dead bees?

A lot, as it turns out. With biodiversity under threat worldwide, scientists say old-school specimen collections — including an impressive hoard of bees at York University — have a crucial role to play in research.





Nobel Prize in Chemistry Awarded for 3D Views of Biological Molecules

SCIENCE



MATTER Ancient Viruses Are Buried in Your DNA



TRILOBITES Slow and Steady, a Tortoise Is Winning Its Race With Extinction



2017 Nobel Prize in Physics Awarded to LIGO Black Hole Researchers



As Seas Warm, Whales Face New Dangers

PAID POST: COLUMBIA BUSINESS SCHOOL Getting an MBA Isn't Just About the Degree

After 300 Years of Collecting, Nearly 12,000 Amazon Tree Species Are Found

Trilobites

By NICHOLAS ST. FLEUR JULY 13, 2016



A tree shows the height of floodwaters in 2014 near Manaus, Brazil on the Amazon river. Paulo Fridman/Corbis, via Getty Images

If [Pokémon Go players](#) think catching 151 different pocket monsters on their smartphones is tough, imagine trying to collect more than 15,000.

That's what botanists studying the trees of the Amazon rain forest have been attempting for more than 300 years. So far, intrepid explorers have found a total of 11,676 different tree species, [a new study](#) reports.

After analyzing more than 500,000 digitized samples taken of fruits, flowers and leaves, a team of ecologists has compiled what they call the first

RELATED COVERAGE



Deforestation May Threaten Majority of Amazon Tree Species, Study Finds

NOV. 20, 2015



TRILOBITES

Celebrate Earth Day With a 4,800-Year-Old Tree (If You Can Find It)

APRIL 22, 2016



TRILOBITES

Imagining a Forest of the Future

MARCH 24, 2016



Museum Specimens Find New Life Online

OCT. 19, 2015

Endangered insects at the Field Museum



Crystal Maier, collections manager for Insects, discusses the Arachnids and Myriapods collection at the Field Museum Friday, Sept. 1, 2017. (E. Jason Wambsgans / Chicago Tribune)

In case you missed it



Russian Facebook ads, now publicly released, show sophistication of influence campaign

10:18 AM



More than 40M fire extinguishers that may not work recalled

10:19 AM



House tax bill will cap mortgage interest deduction, leave 401(k)s unchanged

9:59 AM

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An advertisement for Health IQ life insurance. It features a man wearing a blue and white cycling helmet and a dark blue cycling jacket, riding a bicycle. The background is a blurred green landscape. The text reads: "Health IQ. 'I obtained a \$1,000,000 policy for half of the price I was paying for the \$500,000 policy that I had.'" Below this, it says "ERIC S. HEALTH IQ CLIENT" and "LIFE INSURANCE FOR CYCLISTS". At the bottom, there is a white button with the text "DO YOU QUALIFY?".

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Rare Beautiful & Fascinating 100 YEARS@FLORIDAMUSEUM

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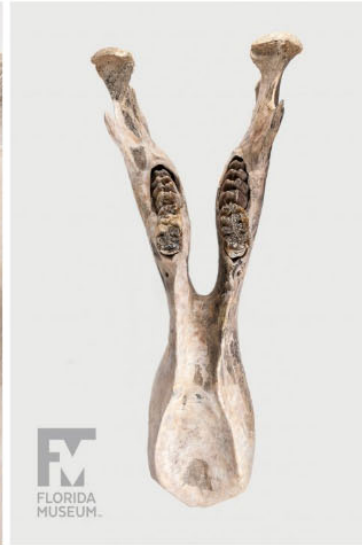
FLORIDA MUSEUM HOME

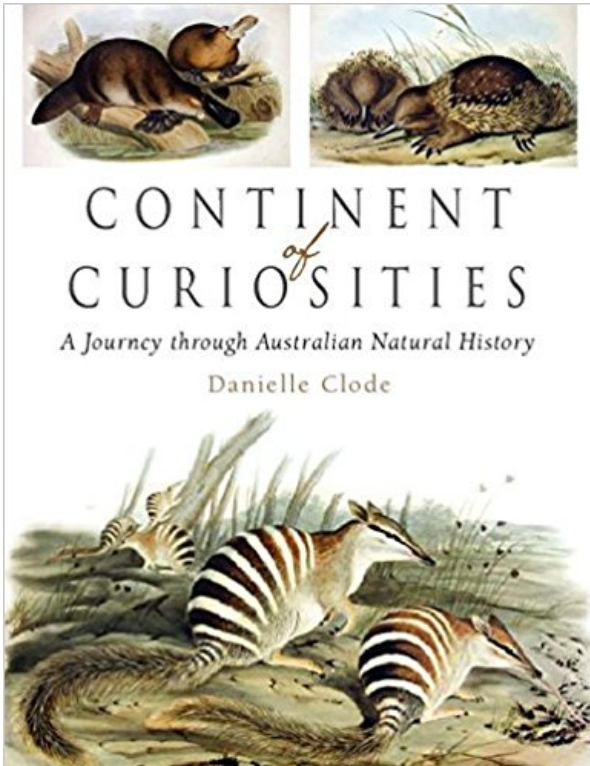


Rare, Beautiful & Fascinating: 100 Years @FloridaMuseum

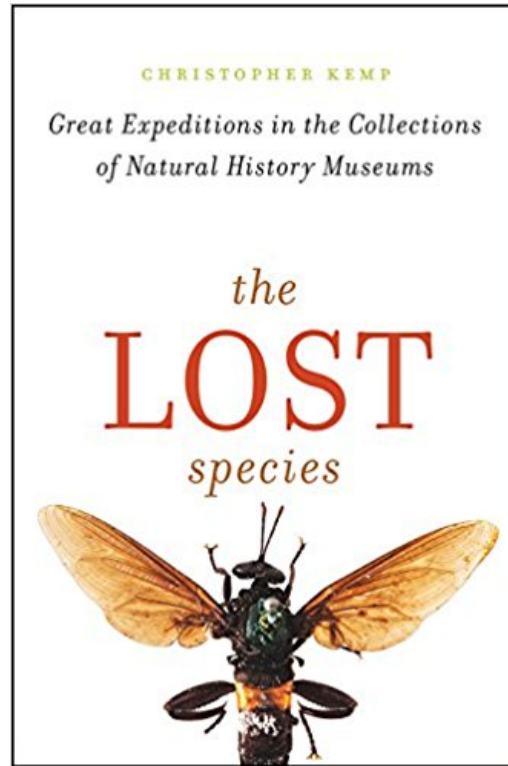
Collections held by natural history museums are like a library of life, with millions of objects that document change through time in the environment and in life itself. These records of life on Earth become even more vital as we face global challenges such as climate change and biodiversity loss.

With more than 40 million objects, the Florida Museum has the largest natural history collection in the South, and ranks among the top five nationwide. This exhibit travels through time, from the Museum's early years into the future, and explores the stories collections tell us.

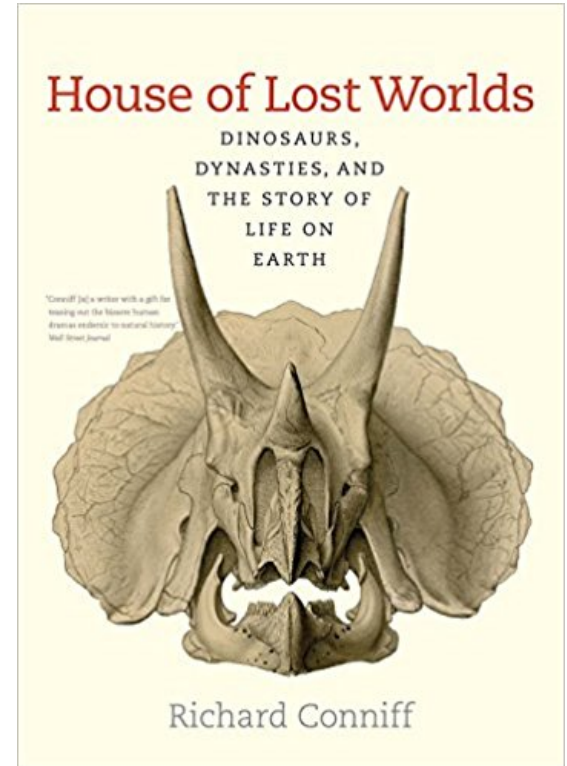




2007



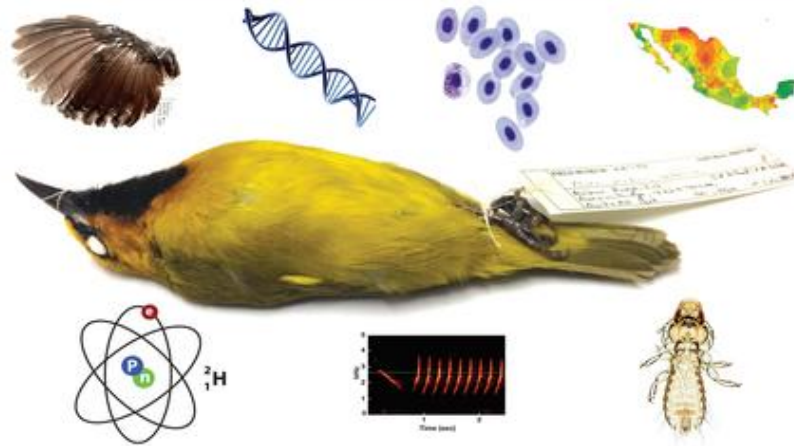
2017



2016

The Extended Specimen

Emerging Frontiers in Collections-Based Ornithological Research



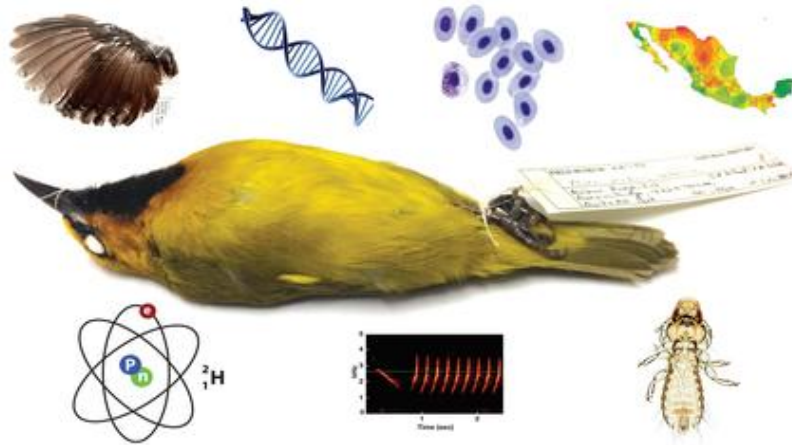
EDITED BY
Michael S. Webster

Studies in Avian Biology
American Ornithological Society

 **CRC Press**
Taylor & Francis Group

The Extended Specimen

Emerging Frontiers in Collections-Based Ornithological Research



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Taylor & Francis Group



ADBC pursuing its 7th year of operation.

Renewed September 1, 2016.

Potential for sunset in 2021??!!

What Next?

Metrics

BCoN

Innovation & new uses of collections/data

ADBC pursuing its 7th year of operation.

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Metrics

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Potential for **sunset in 2021??!!**

SUSTAINABILITY

What Next?

Metrics

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Innovation & new uses of collections/data

TCN Reports

oVert: first vertebrate TCN and first instance of CT imaging for a TCN; innovation & new twists pay

SoRo: beginning to expand into specialized biomes and niches

Both with strong broader impacts initiatives

Technological improvements in image production Megalopolis

SERNEC: persistence!

Vouchered Animal Communications: technology for linking collections

NEVP: leadership to and collaboration with the plant phenology community

Continuing commitment: Bryophytes & lichens, TriTrophic, Macrofungi, Invertnet, SCAN, Paleoniches (Thiers, Liberman, Cobb, Rabeler, Sierwald, Karim, Nash, and Zaspel apparently can't get enough of this stuff!)

People make the difference

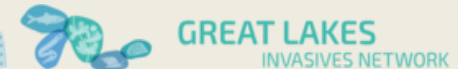
The Evolving Hierarchy Serving Aggregation

~130 Million
specimen
records

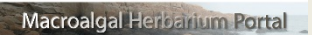


~105 Million
specimen
records

IPT
(Darwin Core)
(Audubon Core)



Consortium of
NORTH AMERICAN BRYOPHYTE HERBARIA



Institutionally specific Local and Networked Databases

Mobilizing Dark Data from Small Collections

In an early press release announcing the first round of Advancing the Digitization of Biodiversity Collections (ADBC) awards (July 8, 2011), the National Science Foundation (NSF) several times referenced the importance of what it called “**dark data**”—data that are essentially inaccessible to most biologists, ecologists, policy-makers, the general public, and other scientists.

The longest tail of these “dark data” may well be locked up in small collections that lack sufficient resources to mobilize them for broad use.

Search Records [Help](#) [Reset](#)

search all fields

Must have media Must have map point

Filters | Mapping | Sorting | Download

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Basis of Record [x](#)

Present Missing

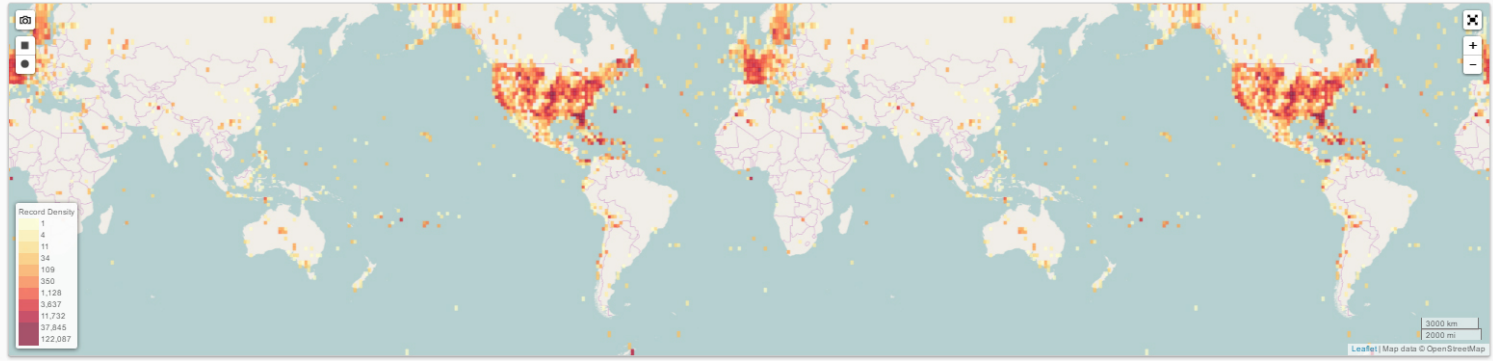
Scientific Name [Add COL](#) [Synonyms](#)

Present Missing

Date Collected Start: End: [x](#)

Present Missing

[Scroll To Bottom](#)



Total: 3,069,158

Family	Scientific Name	Date Collected	Country	Institution Code	Basis of Record	Columns
<i>no data</i>	Ectomaria	0033-08-08	<i>no data</i>	MCZ	FossilSpecimen	view
<i>no data</i>	Holopea ?	0033-08-08	<i>no data</i>	MCZ	FossilSpecimen	view
Lophospiidae	Lophospira sp. Ind.	0033-08-08	<i>no data</i>	MCZ	FossilSpecimen	view
Phillipsidae	Phillipsia tuberculata	0065-08-23	United States	MCZ	FossilSpecimen	view
Cardidae	Venericardia smithi	121-08-16	United States	UT	FossilSpecimen	view
<i>no data</i>	Crustacea	192-08-15	United States	UT	FossilSpecimen	view
HYRACODONTIDAE	epitriplpus sp	0199-07-01	USA	CM	FossilSpecimens	view
EMYDIDAE	trachemys platymarginata	0200-04-24	USA	UF	FossilSpecimen	view
Anazygidae	Zygospira cincinnatiensis	585	United States	UT	FossilSpecimen	view
Inoceramidae	Inoceramus sp.	0957-06-30	United States	KU	FossilSpecimen	view
Unranked	Coahuilites	965	United States	UT	FossilSpecimen	view
Unranked	Coahuilites	965	United States	UT	FossilSpecimen	view
EQUIDAE	<i>no data</i>	0971-08-20	USA	UF	FossilSpecimen	view
EQUIDAE	ephippus sp	1003-07-18	USA	CM	FossilSpecimens	view
PAMPATHERIIDAE	holmesina septentionalis	1063-05-25	USA	UF	FossilSpecimen	view
PAMPATHERIIDAE	holmesina septentionalis	1063-05-25	USA	UF	FossilSpecimen	view
CERVIDAE	odocoileus virginianus	1063-05-25	USA	UF	FossilSpecimen	view
<i>no data</i>	<i>no data</i>	1089-09-19	USA	UF	FossilSpecimen	view
Equidae	Equus conversidens	1696-06-03	Canada	ROM	FossilSpecimen	view
<i>no data</i>	Ammonites sp.	1700-01-01	United Kingdom	MCZ	FossilSpecimen	view
Cerionidae	Cerion sp.	1700-01-01	Commonwealth of the Bahamas	MCZ	FossilSpecimen	view
Hippuritidae	Hippurites sp.	1700-01-01	France	MCZ	FossilSpecimen	view
Leiolestegidae	Lloydia amplimarginata	1700-01-01	Canada	MCZ	FossilSpecimen	view
Vasidae	Vasum homdum	1700-01-01	United States	MCZ	FossilSpecimen	view

~105 million specimen records; ~22.5 million media records

ADBC Impacts on Community Expansion & Collaboration

SPNHC

ECN, ASB, BSA, ESA, ASIH, GSA, OBFS

iDigPaleo/Fossil Insects (Florissant, NPS, NMNH, iDigBio)

BLUE (Biodiversity Literacy in Undergraduate Education)

ePANDDA

MorphoSource

LepNet's Fieldguide collaboration

International collaboration on phenology scoring

Broadening participation

MolluscaBase

MilliBase

WoRMs

Argonne National Labs

Notes From Nature, WeDigBio

BONAP

CyVerse

Amateur involvement (mycologists and paleontologists)

International collaborations (NHM, European initiatives, ALA, GBIF, etc., etc.)

Correctional facilities

Paleo + Neo (oVert, Jenny McGuire, iDigPaleo)

Thank you all for coming

**Give yourselves another big round of
applause!**



iDigBio

Integrated Digitized Biocollections

