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.
Who are we?

• Coordinating center for the national effort to digitize non-federal U.S. natural history collections
  – Based at the University of Florida and Florida State University

• Central resource for NSF’s Advancing Digitization of Biodiversity Collections (ADBC) program
  – 10 year, $100 million nationwide effort
  – National network of institutions organized by theme to focus research, drive digitization efforts, & build community
    • Thematic Collection Networks (TCNs)
    • Partners to Existing Networks (PENs)

“To advance scientific knowledge by improving access to digitized information in vouchered scientific collections across the US.”
What do we do?

• **Enable digitization of biodiversity collections data**
  – Develop efficient & effective standards & workflows
  – Workforce education & training

• **Provide portal access to biodiversity data in a cloud computing environment**
  – Respond to cyberinfrastructure needs
  – Enable access & discoverability

• **Facilitate use of biodiversity data to address key environmental and economic challenges**
  – Researchers, educators, general public, policy-makers, ...

• **Plan for long-term sustainability of the national digitization network & effort**
  – Expand participation: partners, data sources, public, ...
  – Proliferate and broaden uses of biodiversity data
Why are we doing it?

Estimates suggest there are between 500 million and 1 billion biological and paleobiological specimens in the United States and potentially 3-4 billion worldwide.

Many are digitized, but most are not.

An untapped trove of information!
National Network of the Advancing Digitization of Biodiversity Collections Program

Vertebrates, invertebrates, plants, fossils, fungi, tissues, sounds, videos, 2D, 3D, ...

Portal has 799 recordsets containing 65M records for ≈195M specimens with 14M associated media records

500+ collections in 275+ institutions in 50 states (18 TCNs + 17 PENs)
How do we do it? **Collaboration!**
Where are we headed?

• More recordsets from “all” providers
• Improve data access & discoverability
• Highlight, promote, & facilitate broad and diverse uses of biodiversity data
• Promote/improve data quality & standards
• Develop sustainability strategies
• Facilitate public participation/crowdsourcing
Before we get too far… Enjoy your alphabet soup…

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>iDigBio</td>
<td>Integrated Digitized Biocollections</td>
</tr>
<tr>
<td>NSF</td>
<td>National Science Foundation</td>
</tr>
<tr>
<td>ADBC</td>
<td>Advancing Digitization of Biodiversity Collections</td>
</tr>
<tr>
<td>TCN</td>
<td>Thematic Collection Network</td>
</tr>
<tr>
<td>PEN</td>
<td>Partner to Existing Network</td>
</tr>
<tr>
<td>CSBR</td>
<td>Collections in Support of Biological Research</td>
</tr>
<tr>
<td>IMLS</td>
<td>Institute for Museum and Library Services</td>
</tr>
<tr>
<td>GBIF</td>
<td>Global Biodiversity Information Facility</td>
</tr>
<tr>
<td>BCoN</td>
<td>Biodiversity Collections Network</td>
</tr>
<tr>
<td>GRBio</td>
<td>Global Registry of Biodiversity Repositories</td>
</tr>
<tr>
<td>DwC</td>
<td>Darwin Core</td>
</tr>
<tr>
<td>IPT</td>
<td>Integrated Publishing Toolkit</td>
</tr>
<tr>
<td>API</td>
<td>Application Programming Interface</td>
</tr>
</tbody>
</table>

Welcome to the iDigBio Portal

If you are familiar with our portal’s interface, you can start searching Specimen Records. If this is your first time here, you might consider browsing our tutorial. Our data are based on the Darwin Core and Audubon Core standards.

Search 799 Recordsets

Jump To

Advanced Search  Publishers List

Tutorial  iDigBio API

Biodiversity Information Standards TDWG

Darwin Core
Audubon Core
Search across all data, all/individual fields, customize, use autocompletion, synonyms, ...
View search results as table, pseudolabels, or images

<table>
<thead>
<tr>
<th>Family</th>
<th>Scientific Name</th>
<th>Institution Code</th>
<th>Collection Code</th>
<th>Date Collected</th>
<th>Collected By</th>
<th>Country</th>
<th>Locality</th>
<th>Occurrence ID</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinaceae</td>
<td>Abies amabilis</td>
<td>UAM</td>
<td>Plant specimens</td>
<td>1993-07-08</td>
<td>Collector(s): John D.</td>
<td>United States</td>
<td>Just I., mouth of Fill...</td>
<td><a href="http://arctos.databa">http://arctos.databa</a>...</td>
<td>10032 view</td>
</tr>
<tr>
<td>Pinaceae</td>
<td>Abies amabilis</td>
<td>UAM</td>
<td>Plant specimens</td>
<td>1997-08-26</td>
<td>Collector(s): Mary C.</td>
<td>United States</td>
<td>Thorne Arm, Revilla...</td>
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<td>19196 view</td>
</tr>
<tr>
<td>Pinaceae</td>
<td>Abies amabilis</td>
<td>UAM</td>
<td>Plant specimens</td>
<td>2013-07-15</td>
<td>Collector(s): K. Sma...</td>
<td>United States</td>
<td>S of Pt. Baker, E of...</td>
<td><a href="http://arctos.databa">http://arctos.databa</a>...</td>
<td>250713 view</td>
</tr>
<tr>
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<td>Abies lasiocarpa</td>
<td>MO</td>
<td>MO</td>
<td>1879-07-19</td>
<td>John Muir</td>
<td>United States</td>
<td>Head of Navigation...</td>
<td><a href="http://arctos.databa">http://arctos.databa</a>...</td>
<td>100327950 view</td>
</tr>
</tbody>
</table>

**Acalypta elegans**
- United States, Alaska, Kanuti NWR
  - Lat: 66°22' 15" Lon: -152°1' 16"
  - UAM, Insect specimens, 164024, Collector(s): Derek S. Sites

**Acanthocinus pusillus**
- United States, Alaska, Fairbanks, Creamer's Field
  - Lat: 64°52' 6" Lon: -147°44' 12"
  - UAM, Insect specimens, 89687, Collector(s): Luke Werner

**Cerambycidae**
- United States, Alaska, Eotolin Is.
  - Lat: 56°6' 33" Lon: -132°20' 7"
  - UAM, Insect specimens, 234152, Collector(s): Derek S. Sites

**Acartophthalmidae**
- United States, Alaska

**Acalypta elegans** UAM, Insect specimens

**Abietinella abietina** MICH

**Mammuthus** UAM, Earth Science

**Acer pseudospretum subsp. douglasii** UAM, Plant specimens (ALA)

**Actitis macularia** MVZ, Bird egg nests
Results mapped/rendered and downloadable
### Specimen Record

**Adiantum aleuticum**

From UAM Herbarium (ALA), Vascular Plant Collection (Arctos)

<table>
<thead>
<tr>
<th>Continent</th>
<th>North America</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>United States</td>
</tr>
<tr>
<td>State/Province</td>
<td>Alaska</td>
</tr>
<tr>
<td>Locality</td>
<td>E Side Of Island, No Entrance Of Red Bluff Bay</td>
</tr>
<tr>
<td>Latitude</td>
<td>56.8512</td>
</tr>
<tr>
<td>Longitude</td>
<td>-134.7091</td>
</tr>
</tbody>
</table>

**Institution**

| Code | Plant Specimens (ALA) |

**Catalog Number**

| Number | 244018 |

**Collected By**

| Collector(s): Mary C. Stensvold, Michael E. Shephard |

**Date Collected**

| 2000-08-17 |

**Taxonomy**

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Adiantum aleuticum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Classification</td>
<td>; Filicopsida, Polypodiales; Pteridaceae; (Ruprecht) Paris</td>
</tr>
<tr>
<td>Kingdom</td>
<td>pteridophyta</td>
</tr>
<tr>
<td>Phylum</td>
<td>Filicopsida</td>
</tr>
<tr>
<td>Class</td>
<td>Polypodiales</td>
</tr>
<tr>
<td>Order</td>
<td>Pteridaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Adiantum</td>
</tr>
<tr>
<td>Specific Epithet</td>
<td>aleuticum</td>
</tr>
</tbody>
</table>

| Nomenclatural Code | ICBN |

**Data Flags Raw**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
</table>

- **geopoint_datum_error**
  - Geographic Coordinate has Invalid Geodetic Datum.
- **idigbio_isocountrycode_added**
- **dwc_phylum_added**
  - Darwin Core Phylum Added.
- **dwc_class_added**
  - Darwin Core Class Added.
- **dwc_kingdom_added**
  - Darwin Core Kingdom Added.
Advantages of sharing data with iDigBio

- Quality
- Continual improvement
- Attribution/metrics
- Discoverability
- Depth/breadth
Monthly Spotlight on Biodiversity

- [www.idigbio.org/tags/biodiversity-spotlight](http://www.idigbio.org/tags/biodiversity-spotlight)
  - Natural history info, current research, & links to specimens in iDigBio
  - Tips & tricks for using the iDigBio portal and search API

- Madagascar
  - February 2016
  - Portal Corner: using the portal search interface

- Graygreen Reindeer Moss (*Cladonia rangiferina*)
  - January 2016
  - Coding Corner: using R and iDigBio Search API

- Fathead Minnow (*Pimephales promelas*)
  - May 2016
  - Coding Corner: using R and iDigBio Search API
Monthly Spotlight on Research

- [www.idigbio.org/tags/research-spotlight](http://www.idigbio.org/tags/research-spotlight)
  - Use of iDigBio data in research projects
  - Importance of vouchered specimen collections & data for research
  - Ways that collections data can be used in research projects
  - Positive outcomes of data use, such as policy or conservation actions

- Preserving historic bee specimens to protect future bee biodiversity (Aug 2016)
  - Bee conservation, decline, and shifts in community species composition in relation to environmental disturbances

- Playing with biological specimen data in iDigBio – limitations and solutions for research (May 2016)
  - iDigBio Data Quality Flags to assist with cleaning data
  - iDigBio Working Groups as a mechanism for community
**iDigBio Data Flow**

**Collections**
Specify, EMu, Symbiota

**Publishers**
IPT, Symbiota, iDigBio Feeder

**Data Ingestion**
Python, PostgreSQL, JSON, Redis

**iDigBio API**
PostgreSQL, Riak

**Searchable Index**
Elasticsearch

**iDigBio Portal Website**
HTML5, jQuery, Backbone, Node.js, Express

**Scientific Community**
Researchers, Scientists, Developers, Citizen Scientists, Downstream consumers

www.idigbio.org/portal
Myriad of uses for biodiversity specimen data

- Biomemetics
- Bio-engineering
- Data mining
- Collection management
- Aquatic ecosystems
- Digitization
- Innovation
- Traits
- Phenology
- Climate effects
- Human impacts
- Land /water management
- Niche modeling
- Gap analysis
- DNA
- Chemical
- Species distribution
- Species identification
- Plant-animal relationship
- Conservation
- Restoration
- Diet analysis
- Parasites & microbes
- Environment assessment
- Evolutionary systems
- Biodiversity
- Disease vectors
- Agricultural Science
- Bio-geography
- Forestry
- Systematics
- Your topic here
- Bio-inventory
- Ecological relationships
- Community structure
- Functional communities
- Taxonomy
- Animal-insect interactions
- Invasive species
- Herbivory
- New species discovery
- Human history
- Expeditions
- Educational tools
- Neo & paleo
- Space & time
iDigBio ACTIVITIES SUPPORTED BY CYBERINFRASTRUCTURE

- **Relationships**
- **Self-service**
- **Indexing**
- **Bulk Media**
- **iDigBio IPT**
- **IPT RSS Feed**
- **AudubonCore**
- **Specimen CSV**
- **Specimen DwC-A**
- **3D-images**
- **Sound**
- **Statistics**
- **Download**
- **APIs**
- **Mapping**
- **Images**
- **Specimen Search**
- **Correlation**
- **Outliers**
- **Pattern Analysis**
- **Vocabularies**
- **Publishers**
- **Higher Taxonomy**
- **Country Codes**
- **GUIDs**
- **Filters**
- **Summary**
- **Bulk updates**
- **Annotation**
- **Networking**
- **Adapters**
- **Versioning**
- **Mobilizers**
- **Agriculture**
- **Functional**
- **Molecular**
- **Ecosystem**
- **Trait Evolution**
- **Communities**
- **Medicinal**
- **Niche Modeling**
- **Phylogenetics**

- **Ingestion**
- **Access & Visualization**
- **Data Quality**
- **Feedback**
- **Research**
We want you to engage with us!

• iDigBio has access to data and the means to quickly answer questions about it

• Lots of opportunity for collaboration and potential funding:
  – Using the data we already have
    • (e.g., niche modeling)
  – Mining the data we have to discover the things we don’t know we have
    • (e.g., extract measurements/characteristics from images or 3D models)
  – Gathering the data we don’t have (“dark data”)
    • (e.g., SCNet, TCN proposal)
  – Enhancing and enriching the data
    • (e.g., field notes, data linking)
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

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