iDigBio
Integrated Digitized Biocollections

Logo draft

Reaching Back to See the Future:

Species-rich Invertebrate Faunas Document Causes and Consequences of Biodiversity Shifts in North America

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.

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Symbiota Web Portal

Four –Year Project: Six institutions, 10 collections

The Field Museum

EF 14-02667, **Petra Sierwald**, **Rudiger Bieler**

AUBURN UNIVERSITY

EF 14-01176, Jason Bond

The Frost Entomological Museum

EF 14-00993, **Andy Deans**

LSA MUSEUM OF ZOOLOGY UNIVERSITY OF MICHIGAN

EF 14- 04964, Diarmaid O'Foighil, **Taehwan Lee**

Delaware Museum of Natural History

EF 14-02697, **Elizabeth Shea**

Cleveland Museum of NATURAL HISTORY

EF 14-02785, **Gavin Svenson**

MUSEUM OF COMPARATIVE ZOOLOGY
HARVARD UNIVERSITY

FilteredPush
EF 14-01450, **James Hanken, David Lowery**

Symbiota *Promoting Bio-Collaboration*

UF UNIVERSITY of FLORIDA

FLORIDA STATE UNIVERSITY 1851

FLORIDA MUSEUM OF NATURAL HISTORY

NSF

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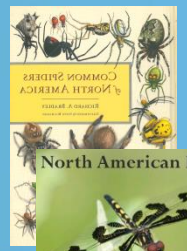

North American Invertebrates

- Terrestrial and aquatic mollusks: 2014 first inclusion of mollusks in ADBC
- Terrestrial and aquatic insects, arachnids, myriapods
  - Collaboration with existing TCNs with Arthropod focus
- Three museums will serve data first time online (DMNH, AUMNH, CMNH)
- Automate retroactive data capture through use of
  - Label imaging
  - Voice Recognition
  - OCR
- Digitize, mobilize, georeference up to 3Mill specimen data

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Research theme: invertebrate biodiversity hot spot identification and description, identification of biodiversity shifts in recent past to assist future monitoring and advances of niche modeling

Large specimen-based georeferenced data sets

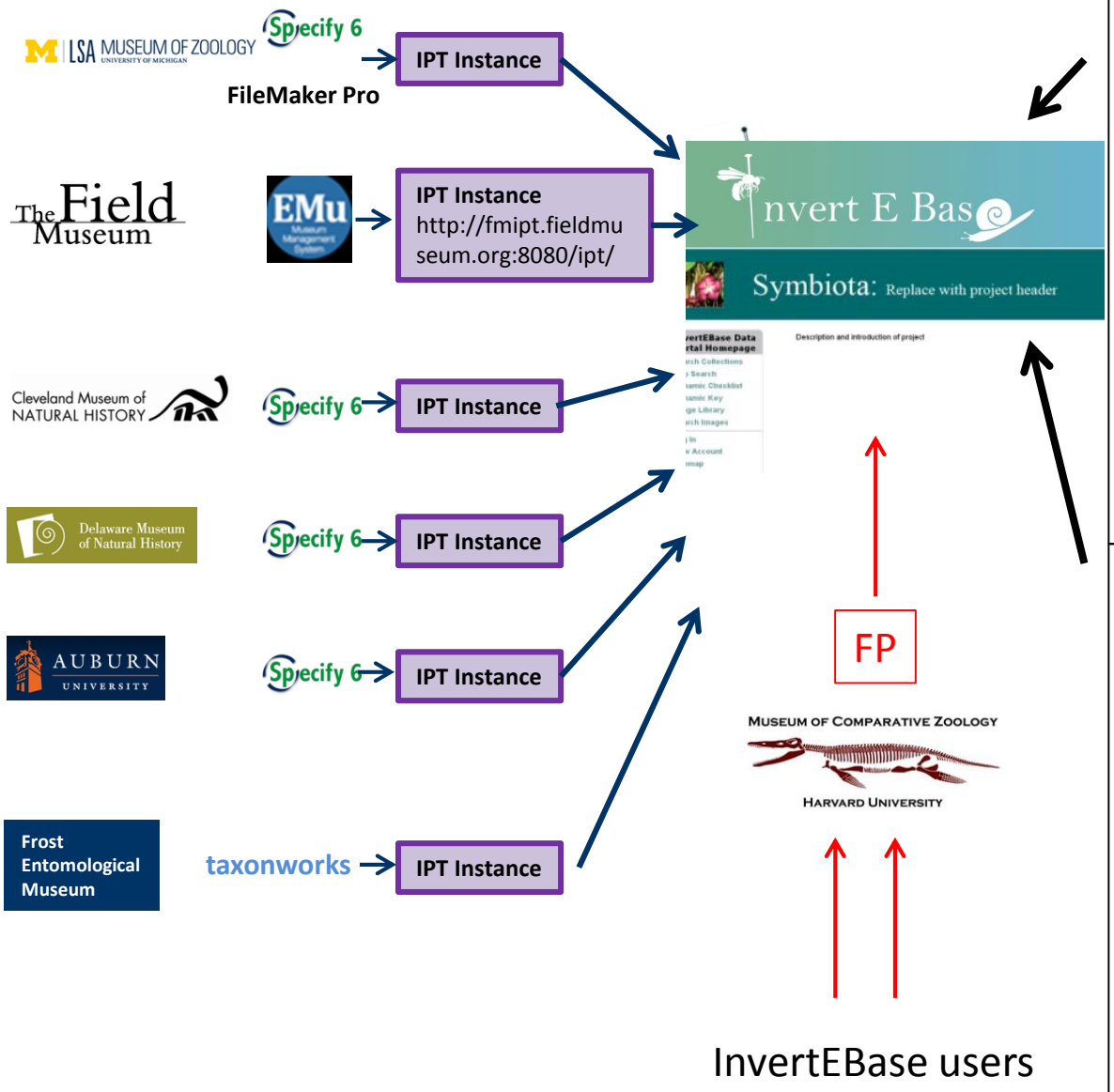
SCAN
Symbiota Collections of Arthropods Network

invertnet

2014 Digitization TCN:

Documenting the Occurrence through Space and Time of Aquatic Non-indigenous Fish, Mollusks, Algae, and Plants Threatening North America's Great Lakes

Collection Database IPT Invert E Base Taxonomy Files



Mollusk Taxonomy Coordinators:
FMNH: R. Bieler, J. Gerber, DMNH: E. Shea, MZUM: D. O'Foighil , T. Lee

Sources: US fisheries list Turgeon et al., 1998, Johnson et al., 2013

Museum Collection Databases:
FMNH: pulmonate names in EMu
MZUM: Burch aquatic mollusks
INHS: Unionidae (K. Cummings)
DMNH: taxonomy databased
Other museum databases

Online catalogs:
WoRMS World Register of Marine Species incl terr. and aquatic for mollusks, R. Bieler (MolluskBase)

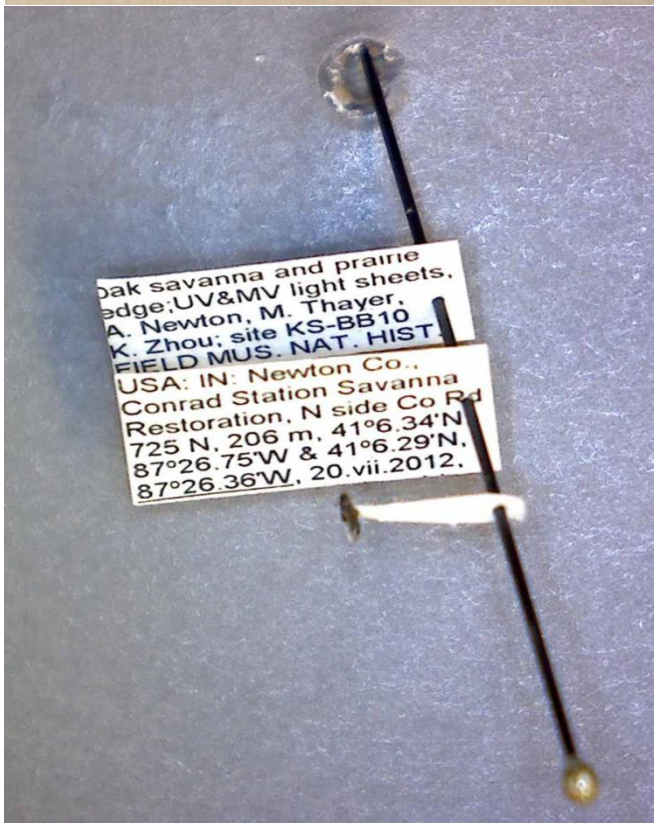
Arthopoda Taxonomy Coordinators:
FMNH: P. Sierwald, UMAU: J. Bond, CMNH: G. Svenson, Frost: A. Deans, MZUM: Michigan Insect curators/ collection manager

Source: Based on thesaurus in

SCAN Symbiota Collections of Arthropods Network

Museum Collection Databases:
FMNH several digitized units in EMu: **Numerous**
Online and electronic catalogs: Platnick spider catalog
Chilobase: CVS file (Sierwald)
Diplopoda: Sierwald, IT IS for NA millipedes
AntWeb and numerous others, to be determined in collaboration with other arthropod TCN's

Pinned Insects: automation of label imaging without removal of labels



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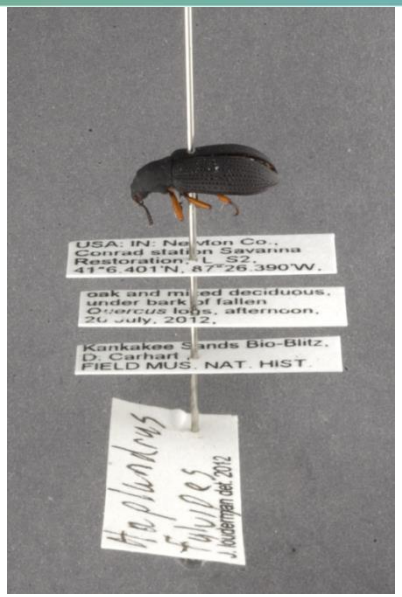
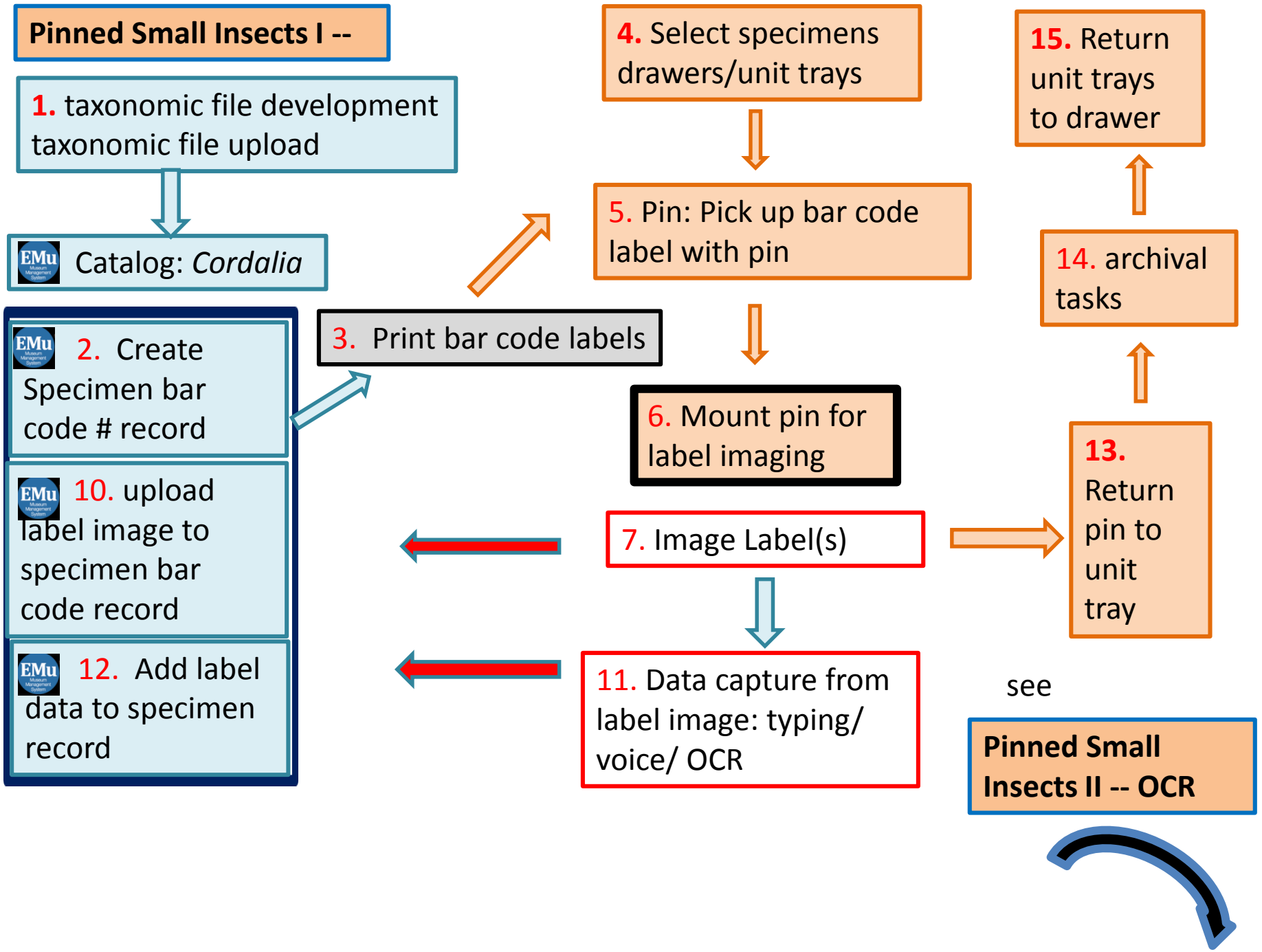
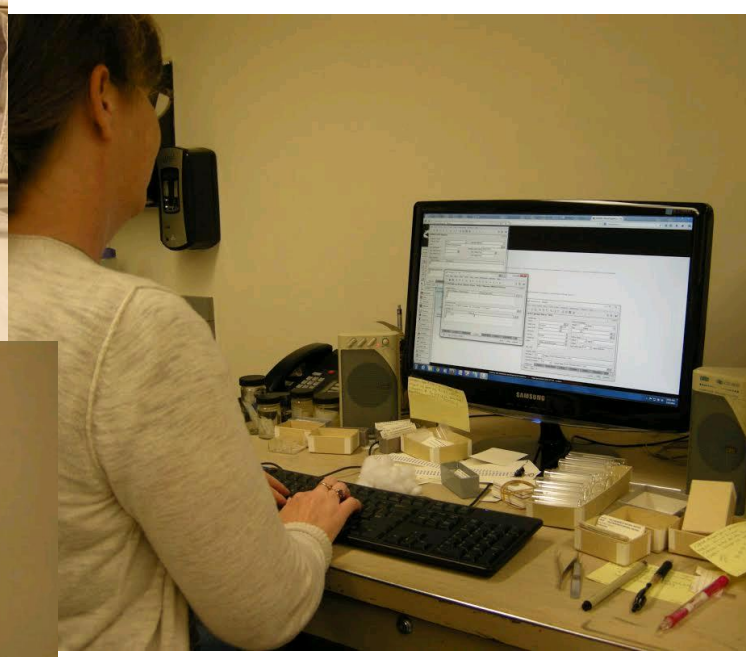


1. Pick-up a bar code label
2. Generate single image of multiple labels
3. clean image for OCR
   - OCR
   - Voice recognition
   - Typing


Pinned Small Insects I --
1. taxonomic file development taxonomic file upload
Catalog: Cordalia
2. Create Specimen bar code # record
10. upload label image to specimen bar code record
12. Add label data to specimen record
3. Print bar code labels
4. Select specimens drawers/unit trays
5. Pin: Pick up bar code label with pin
6. Mount pin for label imaging
7. Image Label(s)
11. Data capture from label image: typing/ voice/ OCR
13. Return pin to unit tray
14. archival tasks
15. Return unit trays to drawer
see
Pinned Small Insects II -- OCR

Dry shells in trays, boxes vials and micromounts



Workflow development: Dry shells in boxes

2. Pull specimen boxes from collection

3. Assemble shell boxes in units for data entry

1. taxonomic file development
taxonomic file upload

4. Label(s) in box? In Glasine envelope?

5. Label imaging? Skip label imaging?

9.Write # on shells

EMu Catalog:
Anodonta anatina

6. Data entry from label(s): typing/ voice/ OCR, barcoding?

10. archival box rehousing

Specimen Records

8. Batch up-load

7. Data entry Spread sheet

11. Return specimens to collection

15. adding/linking coordinates to record(s)

12. Aggregate Coll sites/TCN partner, other?

13. GEOLocate

14. Georeferencing coll sites

Skip: 16. print new labels

Skip: 17. Distribute new labels

Georeferencing: coordinator Rudiger Bieler

Textual Locality Data attached to specimen record in database

Aggregate textual Coll sites data /TCN partner, other?

Batch up-load from spread sheet

Specify 6

Symbiota

EMu

GEOLocate

Georeferencing algorithm

adding/linking coordinates to specimen record(s), add uncertainty level indicator

You can access GeoLocate on a record by record basis from within EMu by searching for a site and going to the Resources menu under Tools.

Visualize from various base maps: google, Bing ESRI and OpenStreetMaps

verify and adjust output coordinates

Uncertainty, radius or polygon method, polygons exist for many US towns/places?