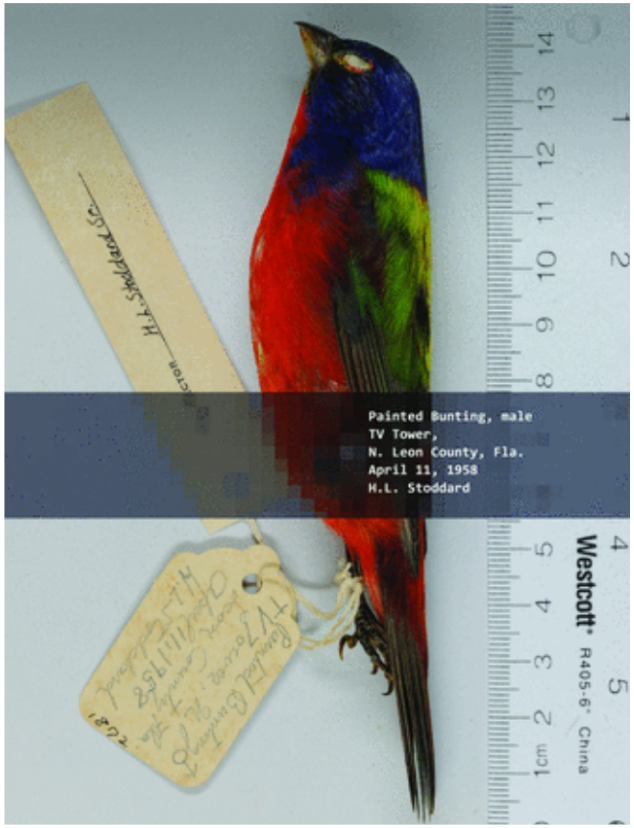
iDigBio
Integrated Digitized Biocollections



BioScience 2015

Accelerating Digitization of Biodiversity Research Specimens through Online Public Participation

Elizabeth Ellwood
Florida State University

Henry Bart, Michael Doosey, Betty Dunckel, Paul Flemons, Robert Guralnick, Dean Jue, Justin Mann, Gil Nelson, Greg Newman, Sarah Newman, Deborah Paul, Greg Riccardi, Nelson Rios, Katja Seltmann, Austin Mast

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.

3 billion biodiversity specimens

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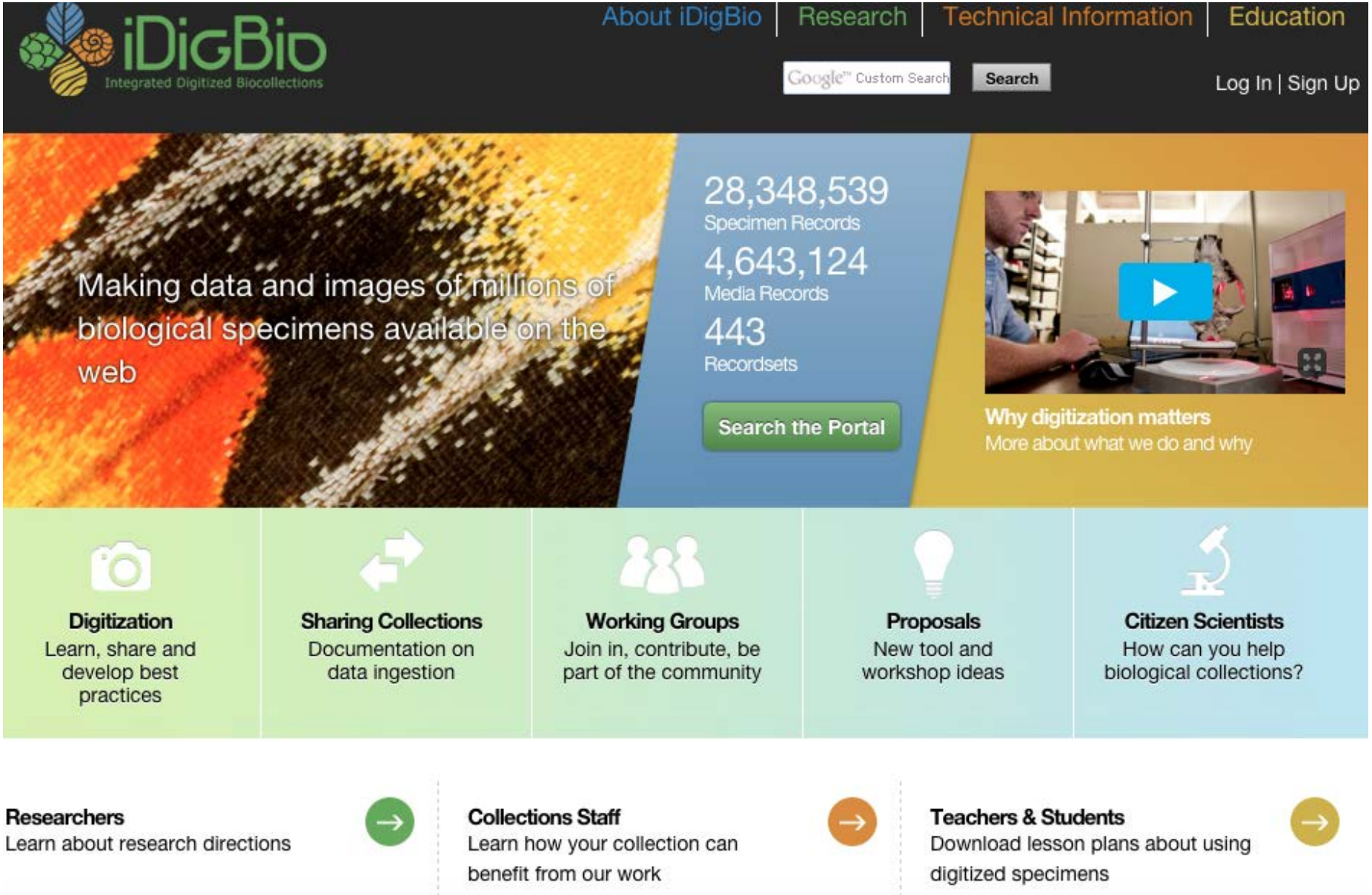
3 billion biodiversity specimens

blogs.notesfromnature.org

blogs.notesfromnature.org

10% of US specimens are digitized



www.idigbio.org

Five discrete task clusters of digitization

- pre-digitization curation and staging
- specimen image capture
- specimen image processing
- electronic data capture
- georeferencing locality descriptions

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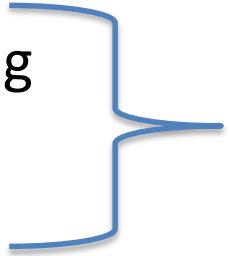

Onsite participation

Five discrete task clusters of digitization

- pre-digitization curation and staging
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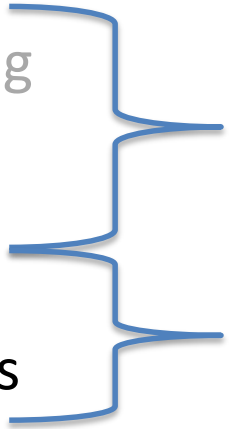

Onsite participation

Online participation

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Onsite participation

Online participation

Five discrete task clusters of digitization

- pre-digitization curation and staging
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- **georeferencing locality descriptions**

Onsite participation

Online participation

24 tasks in these categories:

Transcribing
Cataloging
Translating
Georeferencing
Recording and Creating Content
Mapping

Tagging
Categorizing
Linking
Contextualization
Correcting/Modifying Content

Nelson et al. 2012, Dunn & Hedges 2013

Digitizing Biodiversity Specimens:

Citizen Science as a Tool for Bringing Specimens Full Circle

- Transcribing Specimen Label and Ledger Text
- Georeferencing
- Annotating

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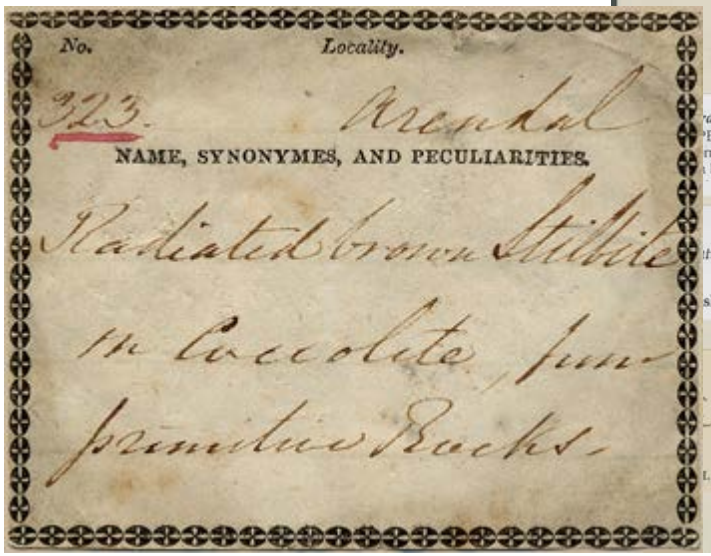
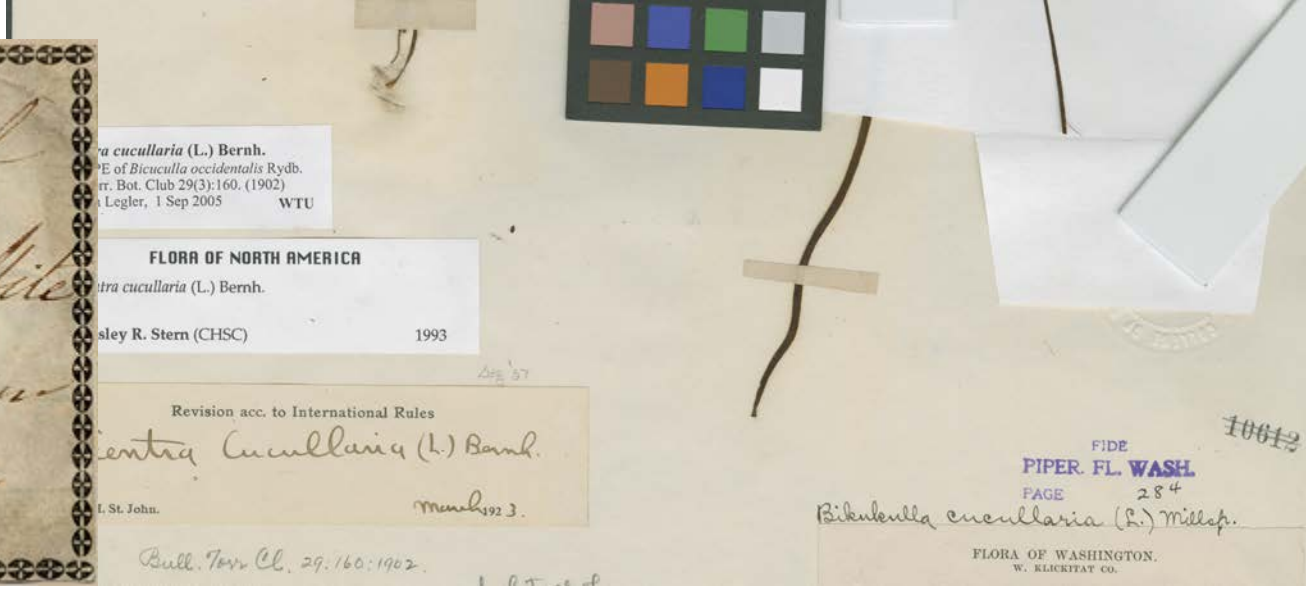




PLANTS OF OKLAHOMA
ROBERT BEBB HERBARIUM
The University of Oklahoma

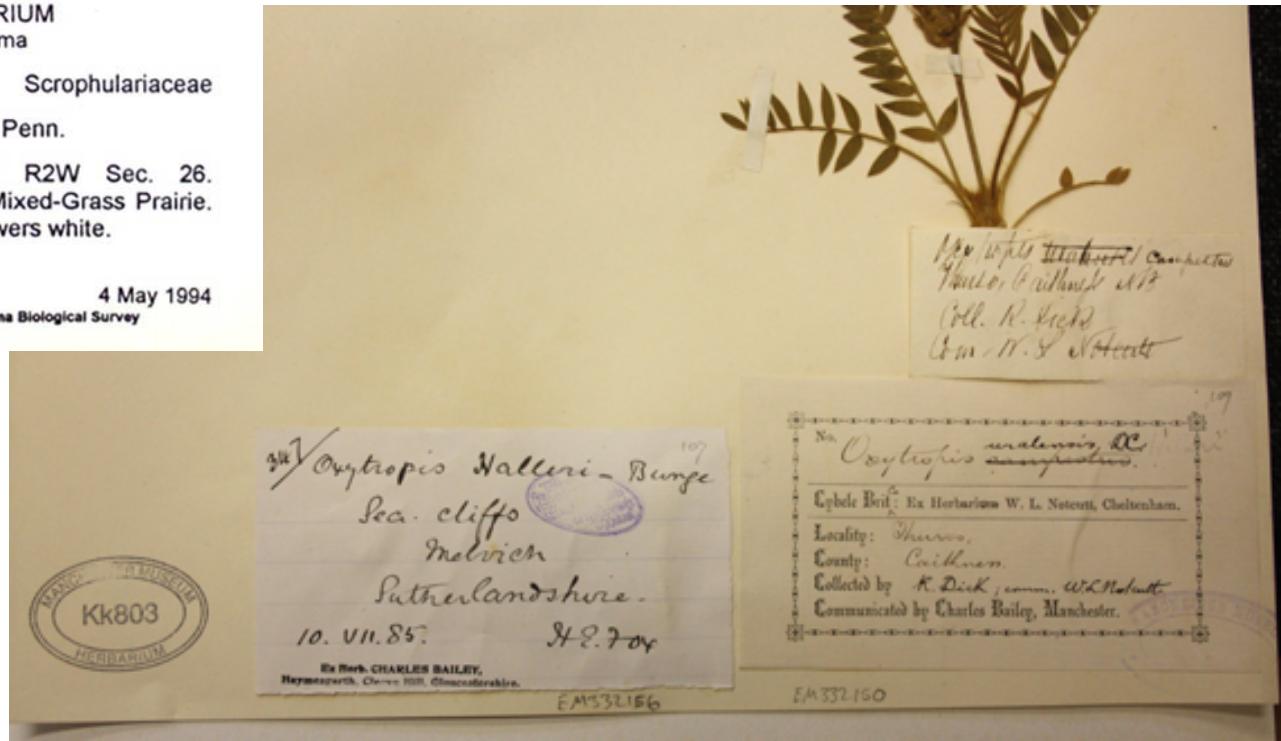
Oklahoma County — Scrophulariaceae

Penstemon oklahomensis Penn.

SE corner of Tinker AFB. T11N R2W Sec. 26. Topography: rolling upland. Habitat: Mixed-Grass Prairie. Herbaceous perennial. 2-3 dm tall. Flowers white.

F. L. Johnson
TNK017 — 4 May 1994

Plant Inventory of Tinker Air Force Base by Oklahoma Biological Survey



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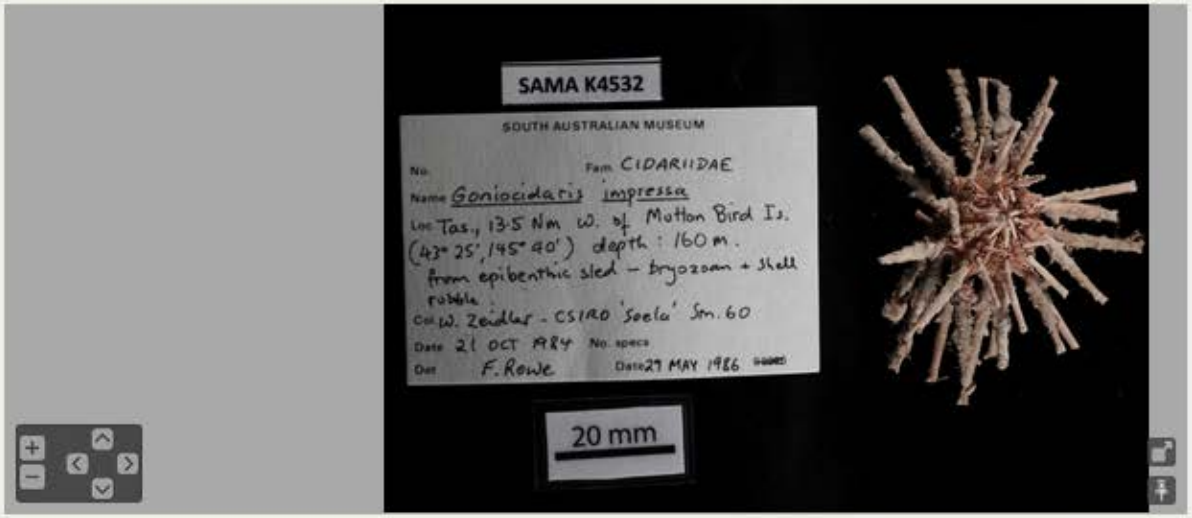
DigiVol » Expeditions » South Australian Museum Sea Urchin Expedition 1 » Transcribe Task SAMA_K4532_Goniocidaris_impressa.jpg

View Details



Specimen Information
Institution: SAMA
Project: South Australian Museum Sea Urchin Expedition 1
Catalogue No.: K4532
Taxa: Goniocidaris impressa

Copy values from a previous task

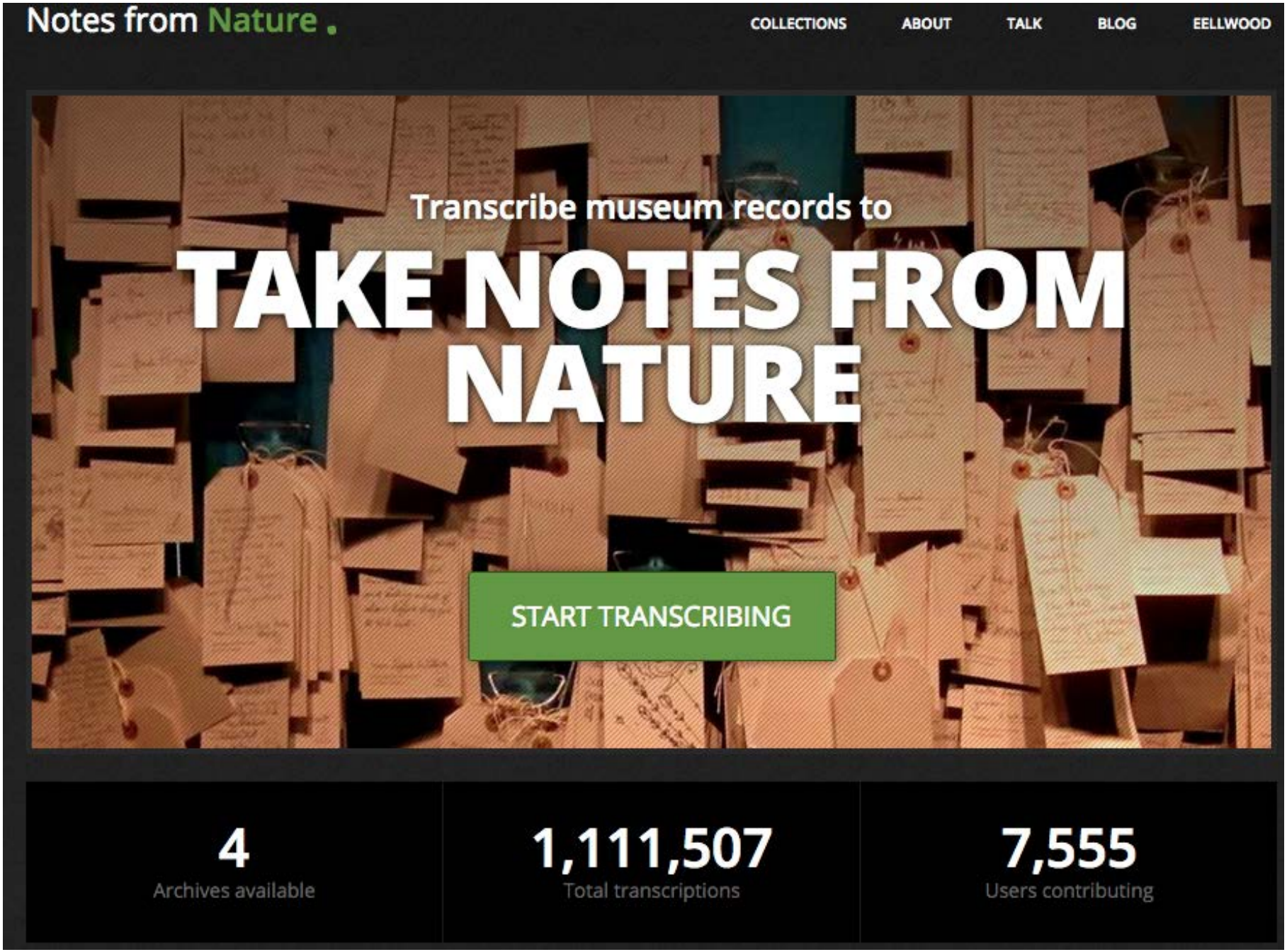
1. Verbatim Text – Record exactly what appears in the labels so we have a searchable reference for them

2. Collection Event – a collecting event is a unique combination of who (collector), when (date) and where (locality) a specimen was collected

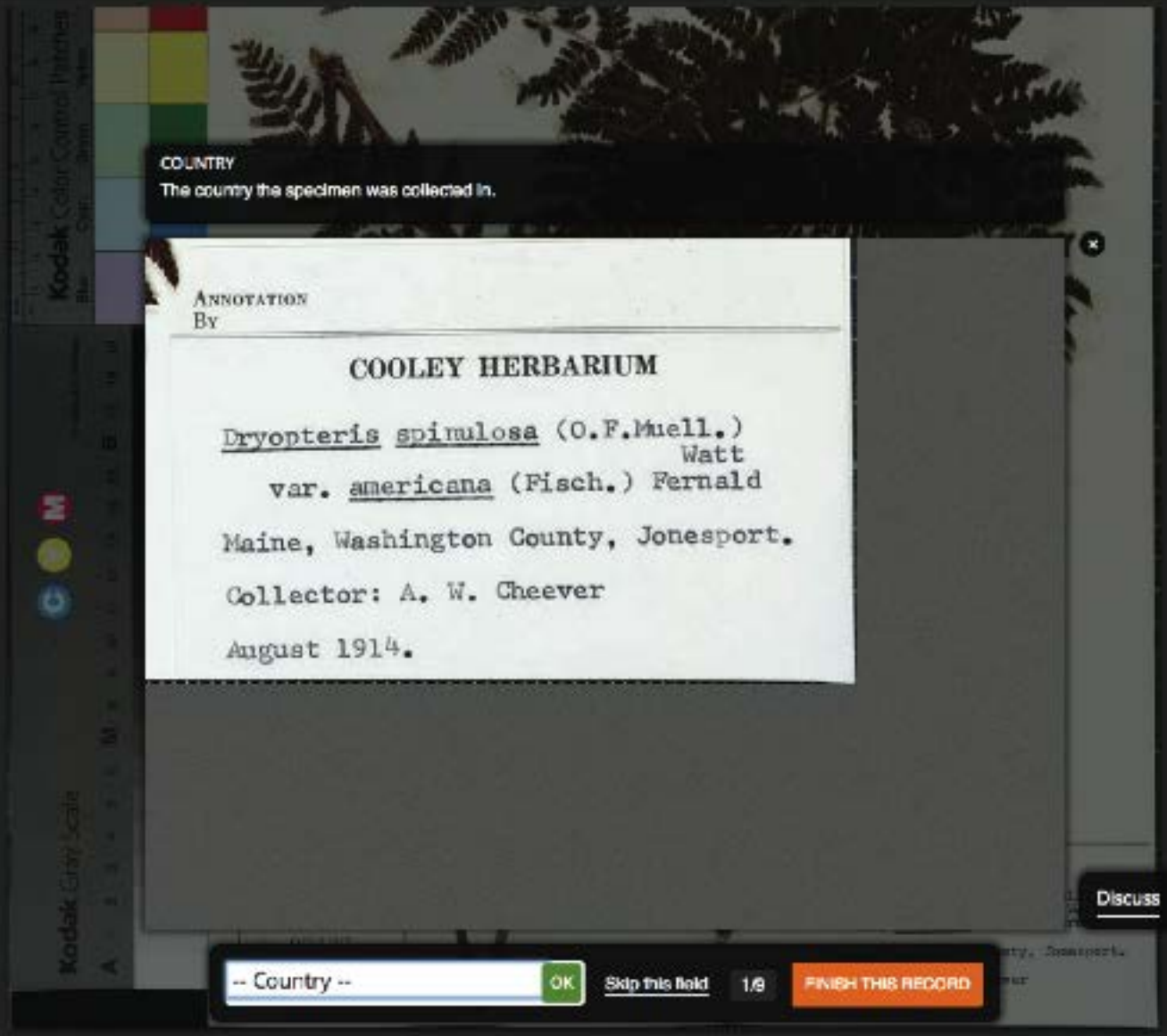
Shrink

Verbatim Locality		State Province	
		Country	
Collector			
Donor			
Date collected		Event Time	
Verbatim Latitude	symbols:	Verbatim Longitude	symbols:
Depth (from)		Depth (to)	
Measurement Unit			

http://volunteer.ala.org.au/



www.notesfromnature.org


COUNTRY
The country the specimen was collected in.
ANNOTATION
BY
COOLEY HERBARIUM
Dryopteris spinulosa (O.F.Muell.) Watt
var. americana (Fisch.) Fernald
Maine, Washington County, Jonesport.
Collector: A. W. Cheever
August 1914.
Discuss
-- Country --
OK
Skip this field
1/9
FINISH THIS RECORD

ATLAS OF LIVING AUSTRALIA
sharing biodiversity knowledge

Les herbonautes
L'herbier numérique collaboratif citoyen

Smithsonian

SMITHSONIAN DIGITAL VOLUNTEERS: TRANSCRIPTION CENTER

ZOONIVERSE
REAL SCIENCE ONLINE

BSBI Botanical Society of the British Isles

herbaria@home
recording historical biodiversity

log in | register

DISCOVER LIFE

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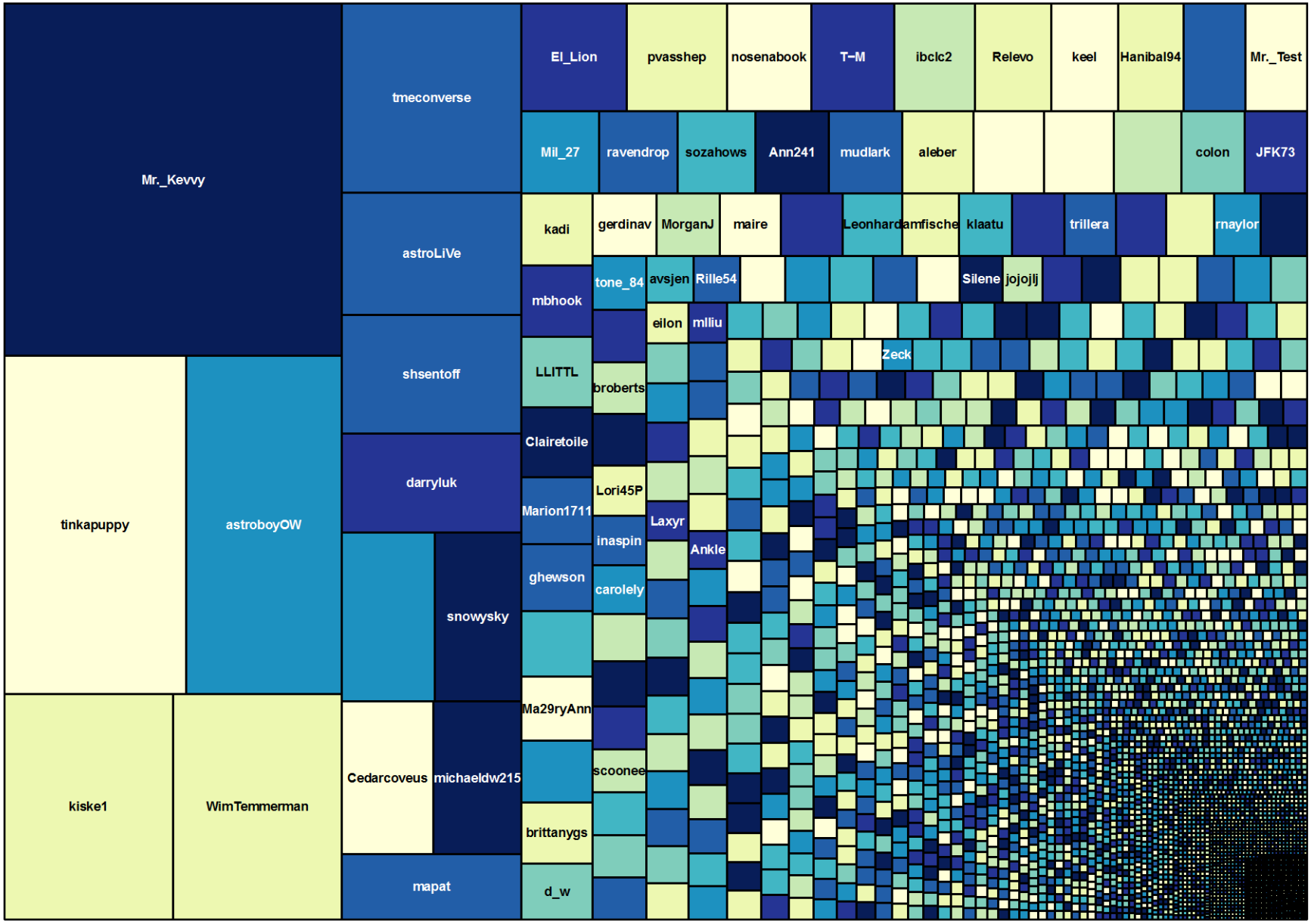
Contributions of Notes from Nature volunteers



Total transcriptions: 188,184; Number of volunteers: 3,805; Mr. Kevvy's transcriptions: 18,782 (10%)

Digitizing Biodiversity Specimens:

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- Transcribing Specimen Label and Ledger Text
- **Georeferencing**
- Annotating

UNIVERSITY of FLORIDA

HERBARIUM

AGRICULTURAL EXPERIMENT STATION

Garberia fructicosa(Nutt) A.Gray

Hab. High pine land

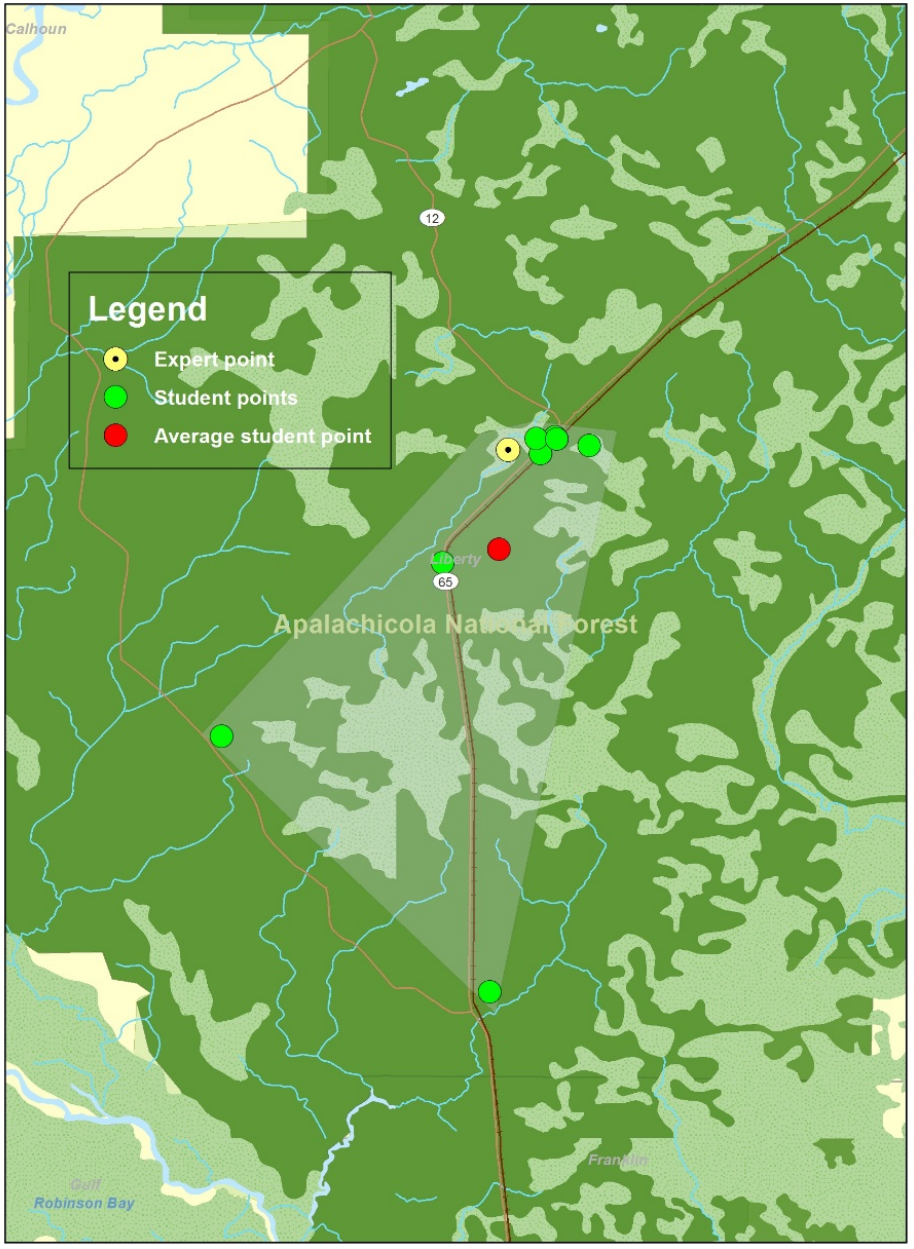
Loc. Lake Stearns, Fla.

Coll. Burger & West Date 11-4-27

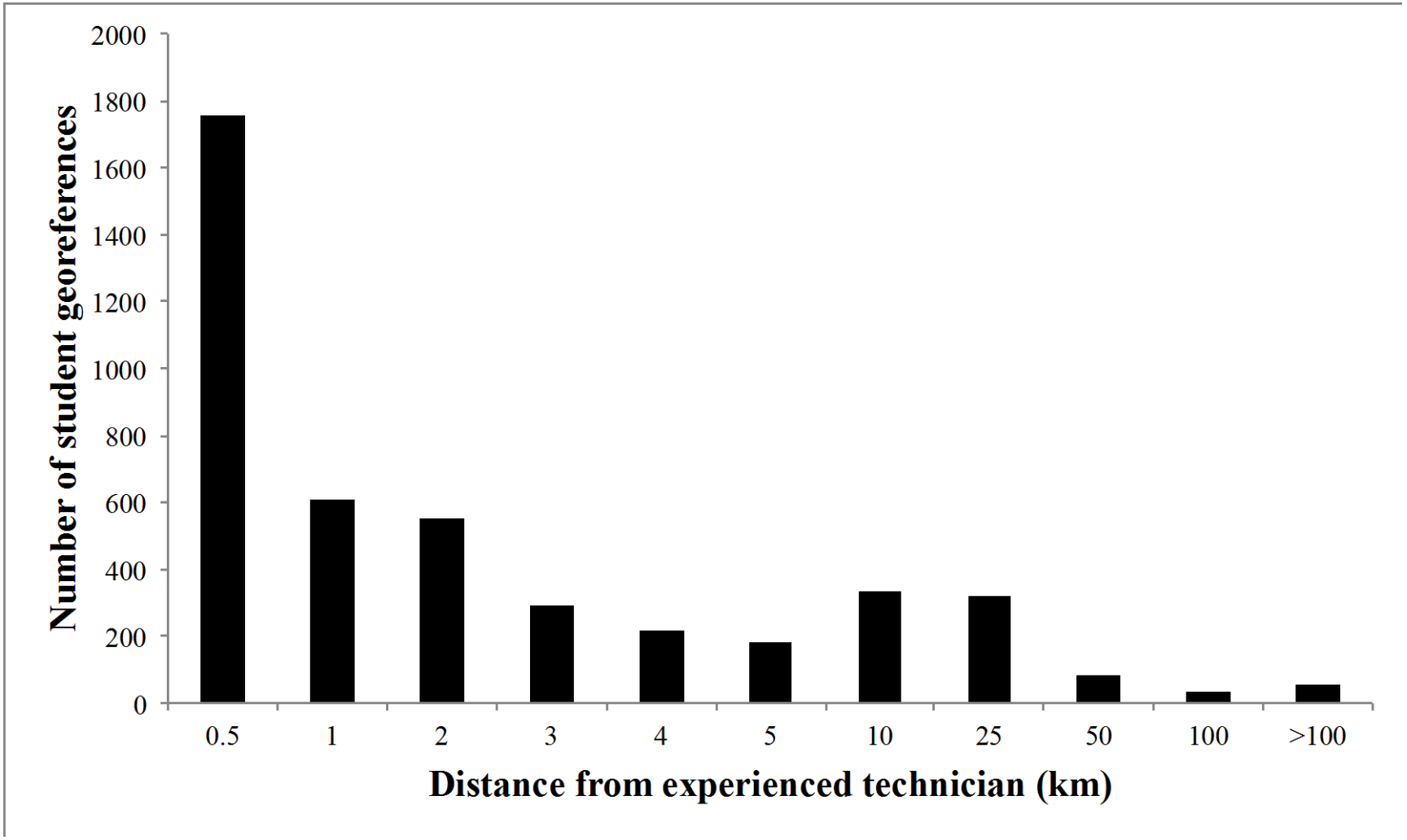
Det. Erdman West No. B-970

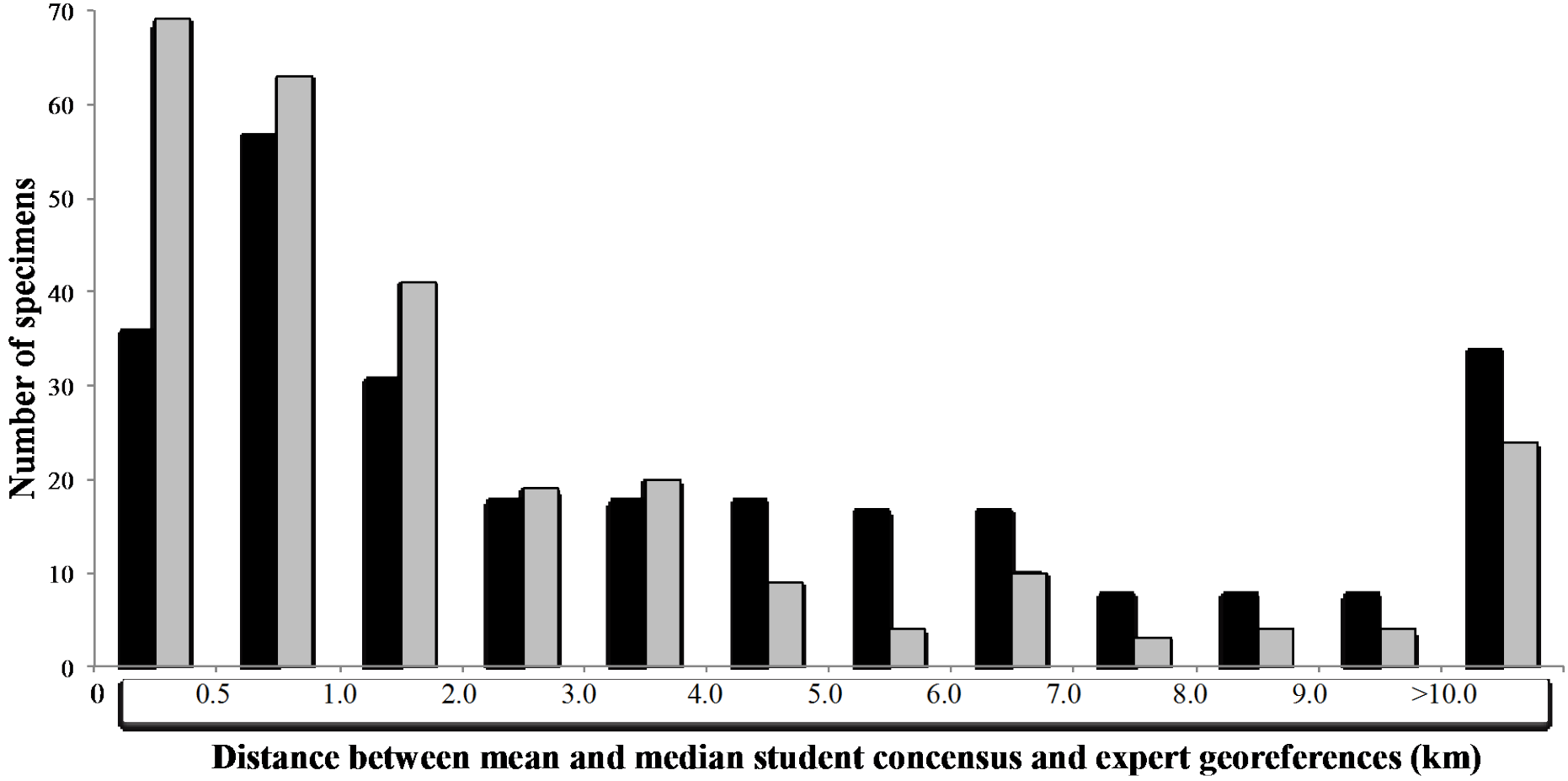
J.K. SMALL: P. 1336 MANUAL OF THE SOUTHEAST 1933

Apalachicola National Forest.
Verbatim Locality: titi bog, Apalachicola National Forest, near Wilma.
Habitat: in a sphagnous area, presently dry, titi bog



http://www.museum.tulane.edu/geolocate


Number of student georeferences
2000
1800
1600
1400
1200
1000
800
600
400
200
0
0.5
1
2
3
4
5
10
25
50
100
>100
Distance from experienced technician (km)


Number of specimens
70
60
50
40
30
20
10
0
0
0.5
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
>10.0
Distance between mean and median student concensus and expert georeferences (km)

Digitizing Biodiversity Specimens:

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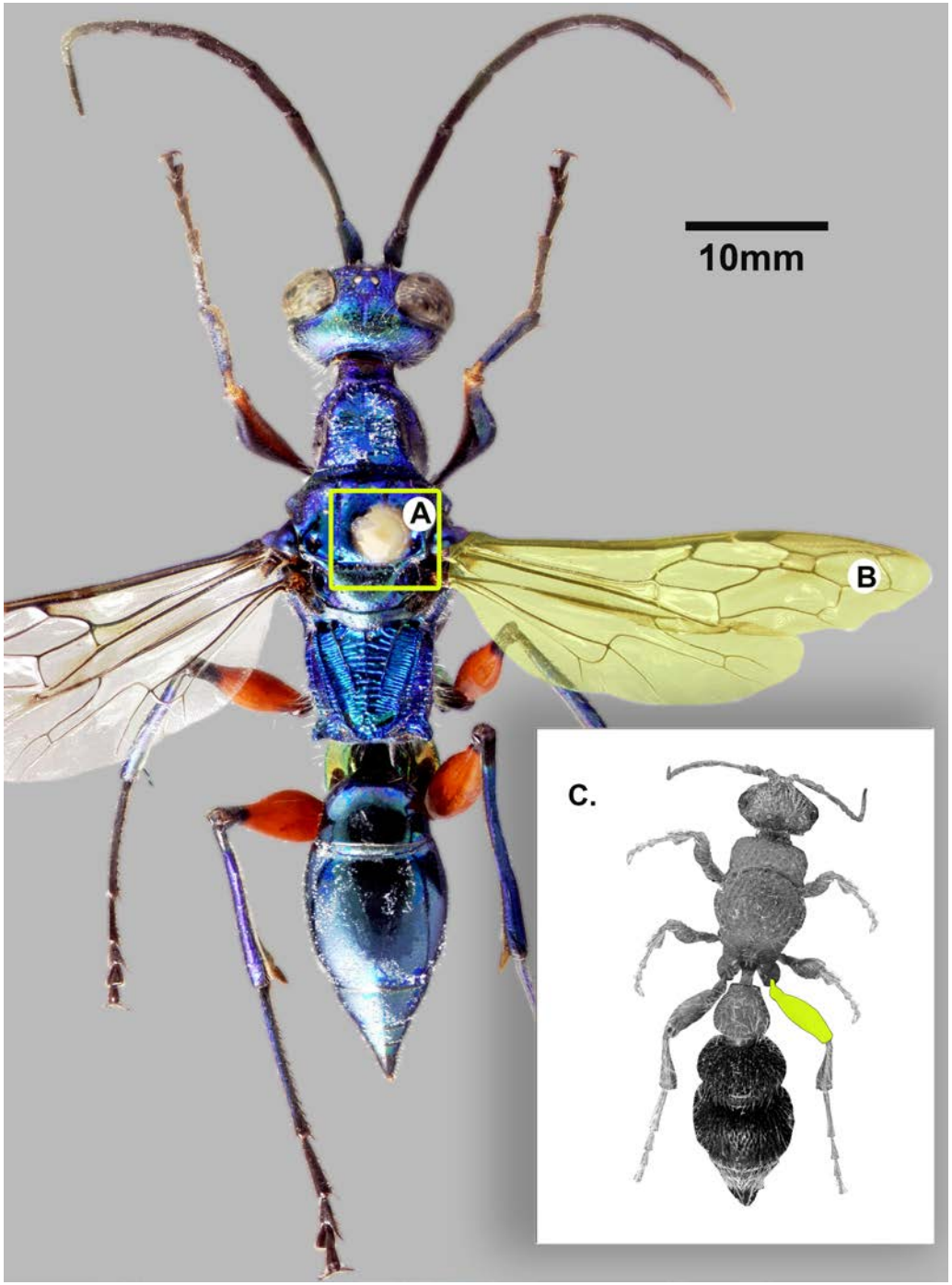
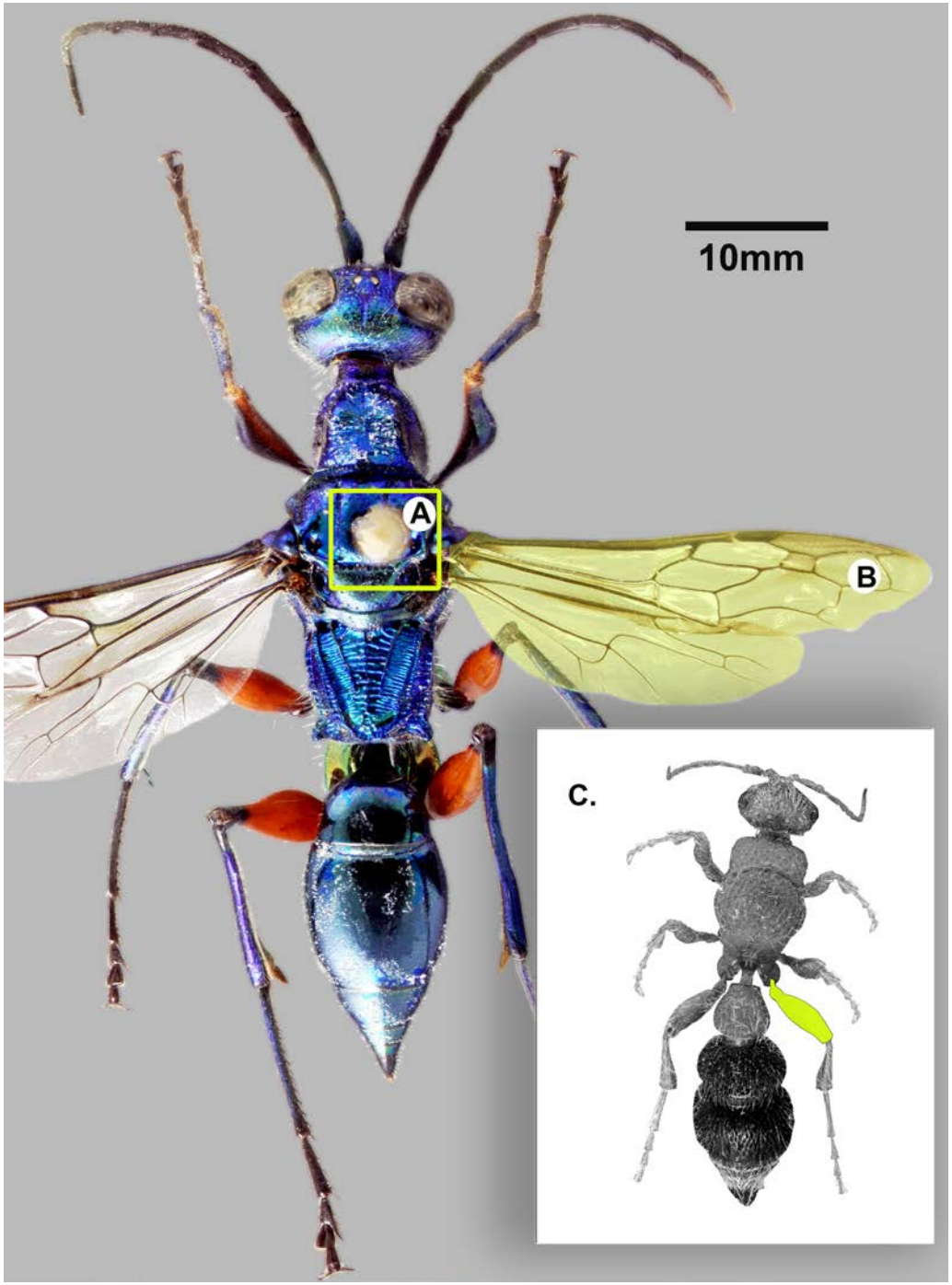
A: “Draw a box around any damage to the specimen”



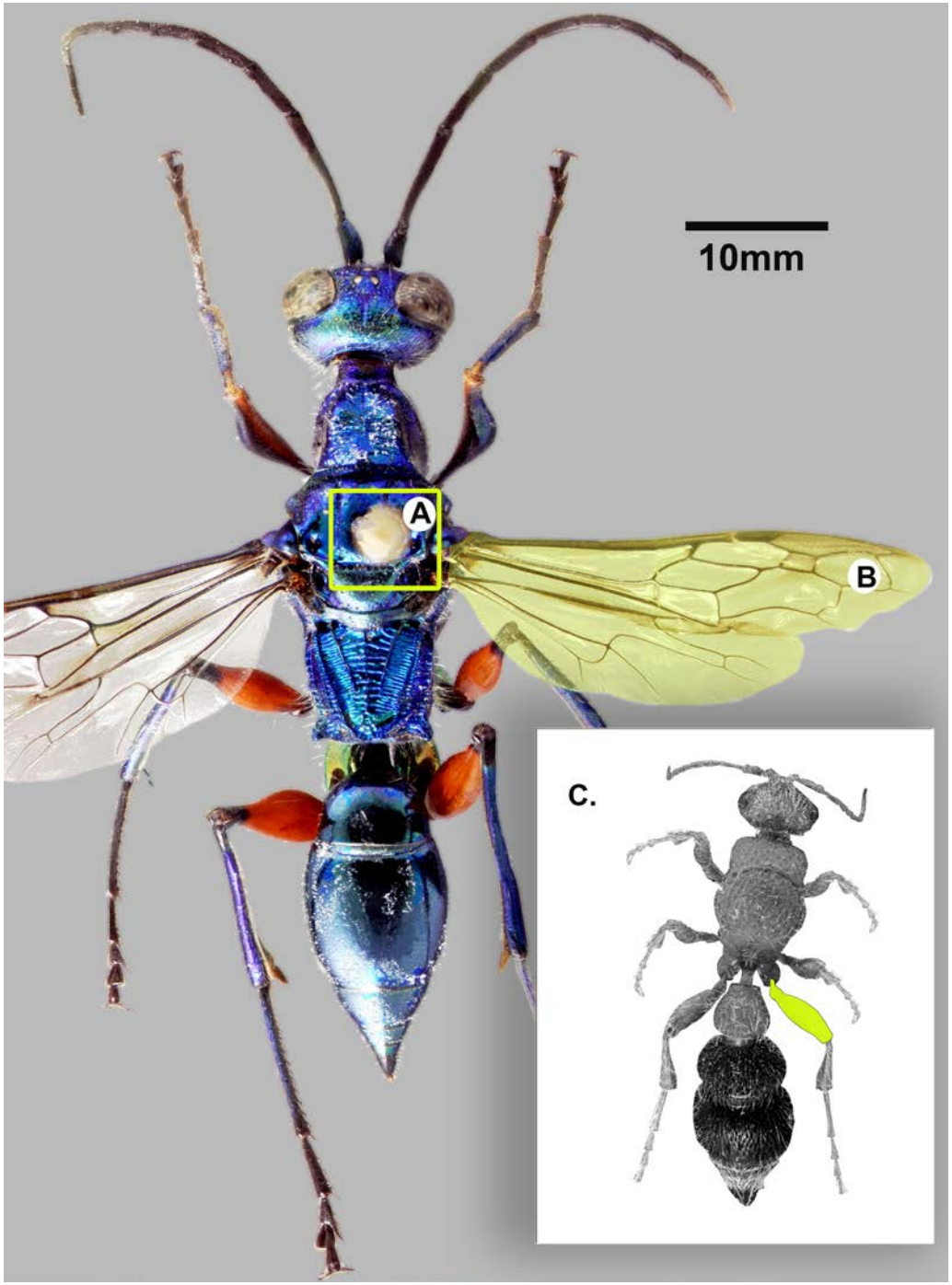
Ampulex compressa (F.) from the Museum für Naturkunde Berlin (morphbank.net/?id=102143)

B: “Outline the wings of the specimen”



Ampulex compressa (F.) from the Museum für Naturkunde Berlin (morphbank.net/?id=102143)

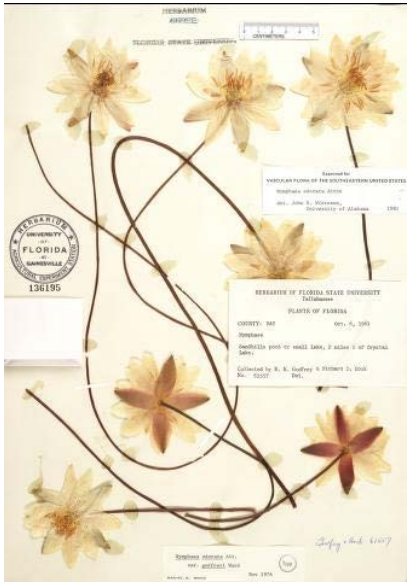
C: “What color is this part of the body?”



Ampulex compressa (F.) from the Museum für Naturkunde Berlin (morphbank.net/?id=102143)

These tools and others have supported substantial progress of digitization.

Looking ahead, we recommend:



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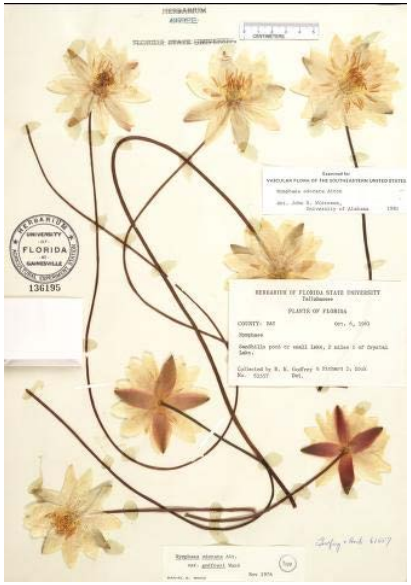

1. gathering experimental data on optimal user interface configurations

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Looking ahead, we recommend:

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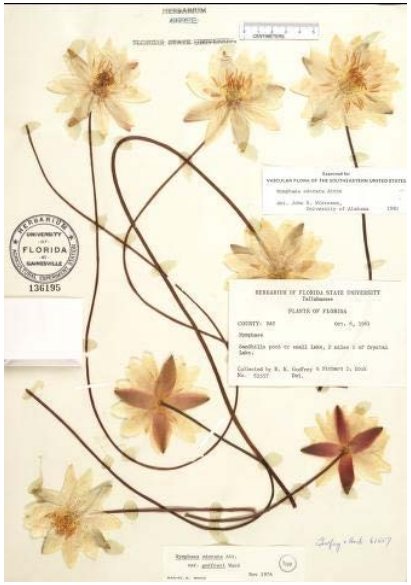
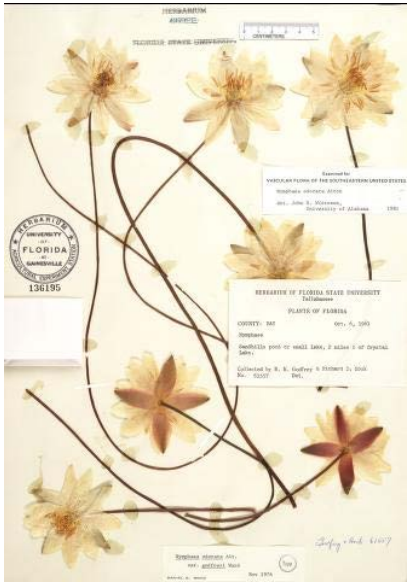
2. experimentation for quality control



These tools and others have supported substantial progress of digitization.

Looking ahead, we recommend:

1. gathering experimental data on optimal user interface configurations
2. experimentation for quality control
3. georeferencing developments



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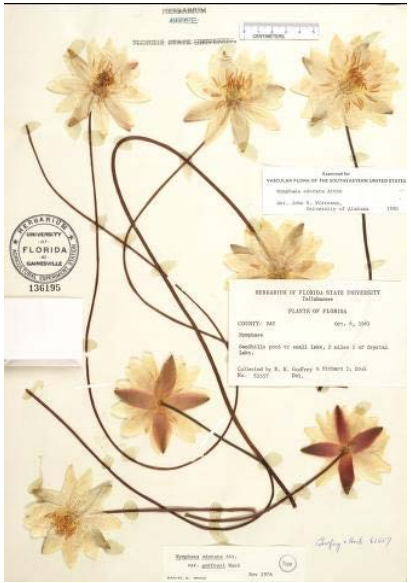
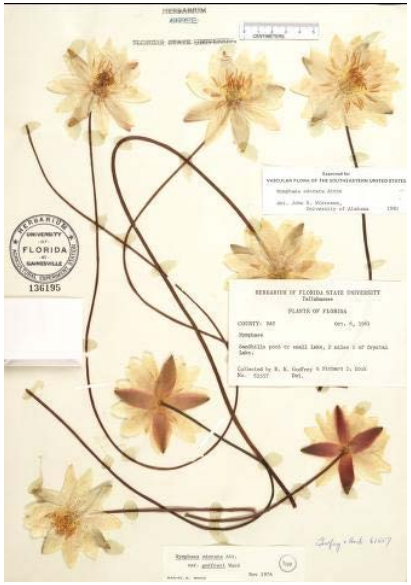


1. gathering experimental data on optimal user interface configurations
2. experimentation for quality control
3. georeferencing developments
4. understanding motivation for user engagement

These tools and others have supported substantial progress of digitization.

Looking ahead, we recommend:

1. gathering experimental data on optimal user interface configurations
2. experimentation for quality control
3. georeferencing developments
4. understanding motivation for user engagement
5. development of education and outreach materials



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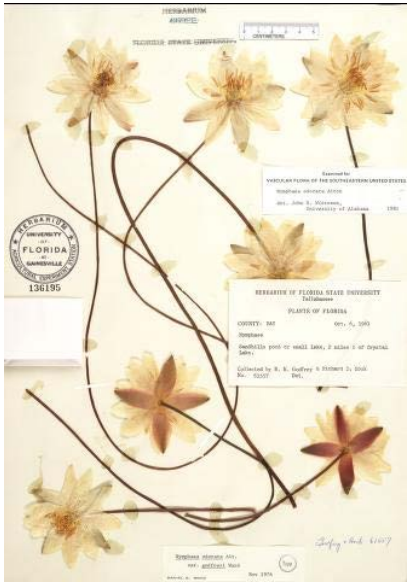

1. gathering experimental data on optimal user interface configurations
2. experimentation for quality control
3. georeferencing developments
4. understanding motivation for user engagement
5. development of education and outreach materials
6. creation of best practice and standards documents

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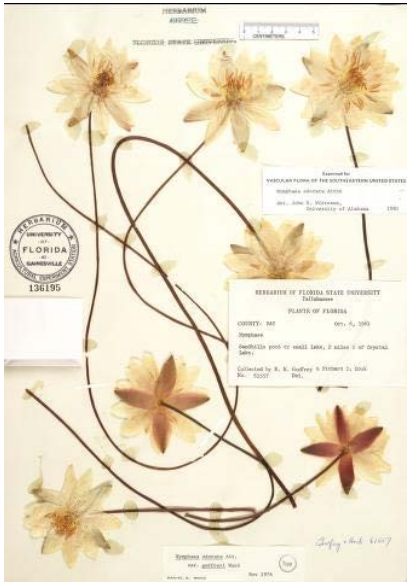

1. gathering experimental data on optimal user interface configurations
2. experimentation for quality control
3. georeferencing developments
4. understanding motivation for user engagement
5. development of education and outreach materials
6. creation of best practice and standards documents
7. improved interoperability among tools

Citizen science and digitization on a global scale

WeDigBio Special Interest Group Meeting

eDigBio

Thursday
1:30-3:10
Hawthorne

http://tinyurl.com/kgzmelv

wedigbio.org

Thank you!

o.fsu.edu