



What's going on in that herbarium?

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The Herbarium

Valdosta State University [VSC]

Documenting biodiversity in the coastal plain region of Georgia



Mission Statement

The Valdosta State University Herbarium [VSC] provides a repository for the preservation of voucher specimens that document the flora of the Coastal Plain region of Georgia and specimens from a broader geographical area that might be useful in the study of the flora of this region and that enable specialized research on particular groups of plants carried out by faculty and students in residence at Valdosta State University and by taxonomic specialists at other institutions. VSC also provides specimens used in teaching, and its staff responds to requests from the general public, natural resource managers, agricultural scientists, and others by providing information about plants and service determinations of unknown plants and, where appropriate, preserving vouchers relating to such.

The Valdosta State University Herbarium [VSC]



What is an herbarium?

- An herbarium is a collection of dried plant specimens, a repository of physical specimens as well as data on their labels.

To many the herbarium is merely a room in a building, which is about as logical as equating wine with its bottle or a library with the physical space housing it. Just as the library is a collection of books comprising a vast body of knowledge, the herbarium is a collection of voucher specimens comprising much useful information about plants.



How are herbarium vouchers used?

- The herbarium provides reference material essential for the accurate identification of plants and the consistent application of plant names.



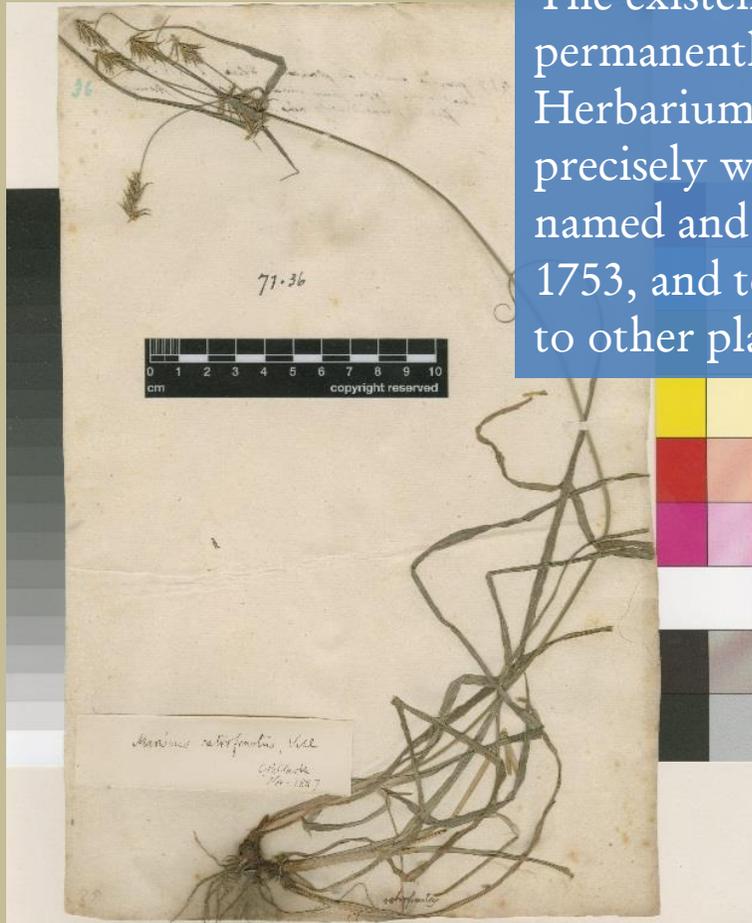
Critical examination and comparison reveals all of these plants are of the same species – *Cyperus croceus*.



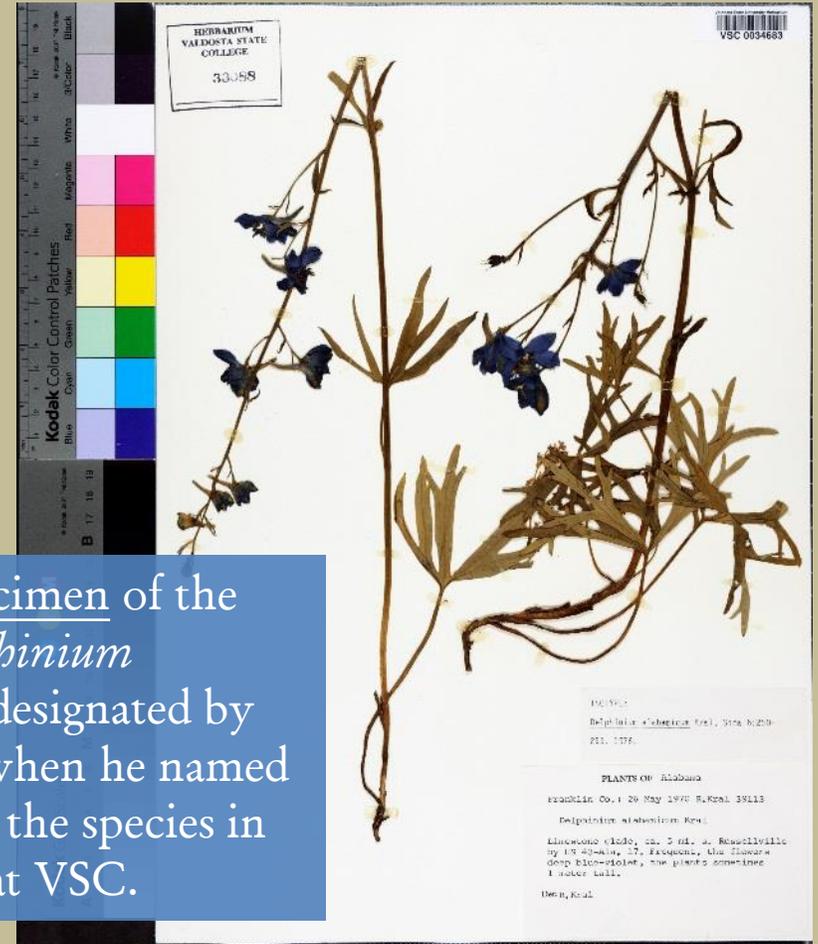
How are herbarium vouchers used?

- Type specimens permanently preserved in herbaria are standards that fix the application of names by enabling the association of a name with a physical specimen.

The existence of this type specimen, permanently preserved in the Linnaean Herbarium of London, enables us to know precisely what Linnaeus meant when he named and described *Scirpus retrofractus* in 1753, and to apply this name consistently to other plants of this species.

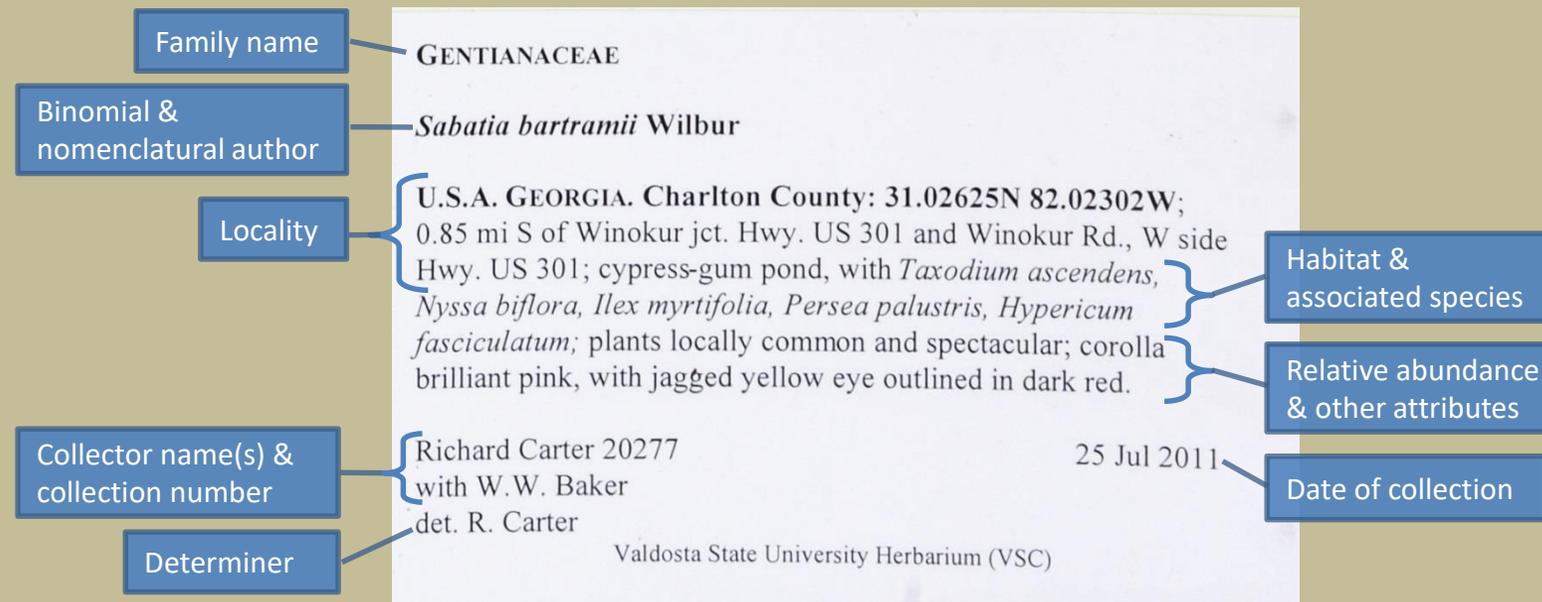


This type specimen of the larkspur *Delphinium alabamicum*, designated by Robert Kral when he named and described the species in 1976, resides at VSC.



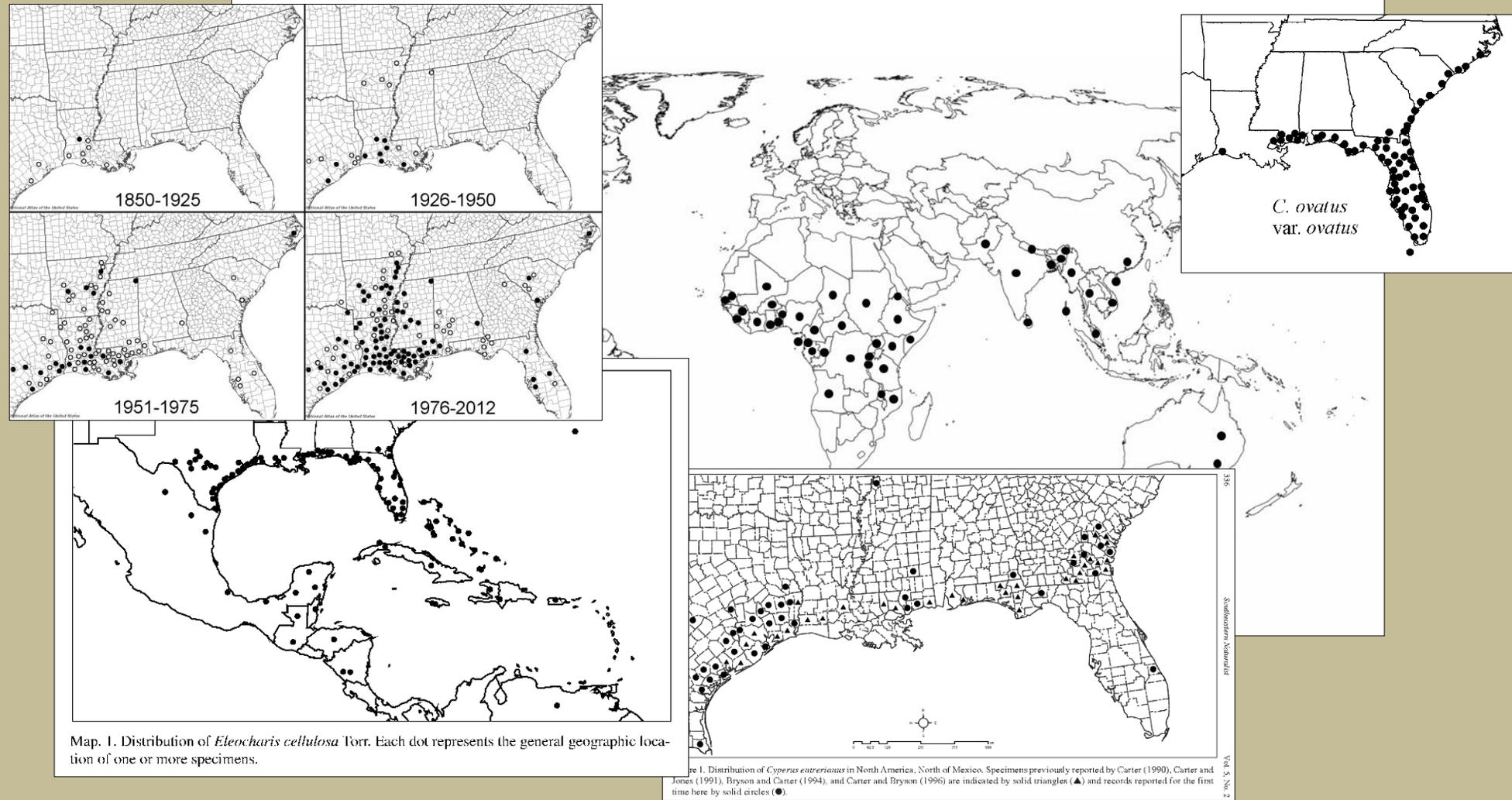
How are herbarium vouchers used?

- Label data provide essential information on habitat, location, date of collection, and other attributes of the plant.



How are herbarium vouchers used?

- Locality data on voucher specimen labels are the basis for mapping species occurrences to determine range and distribution and related trends.

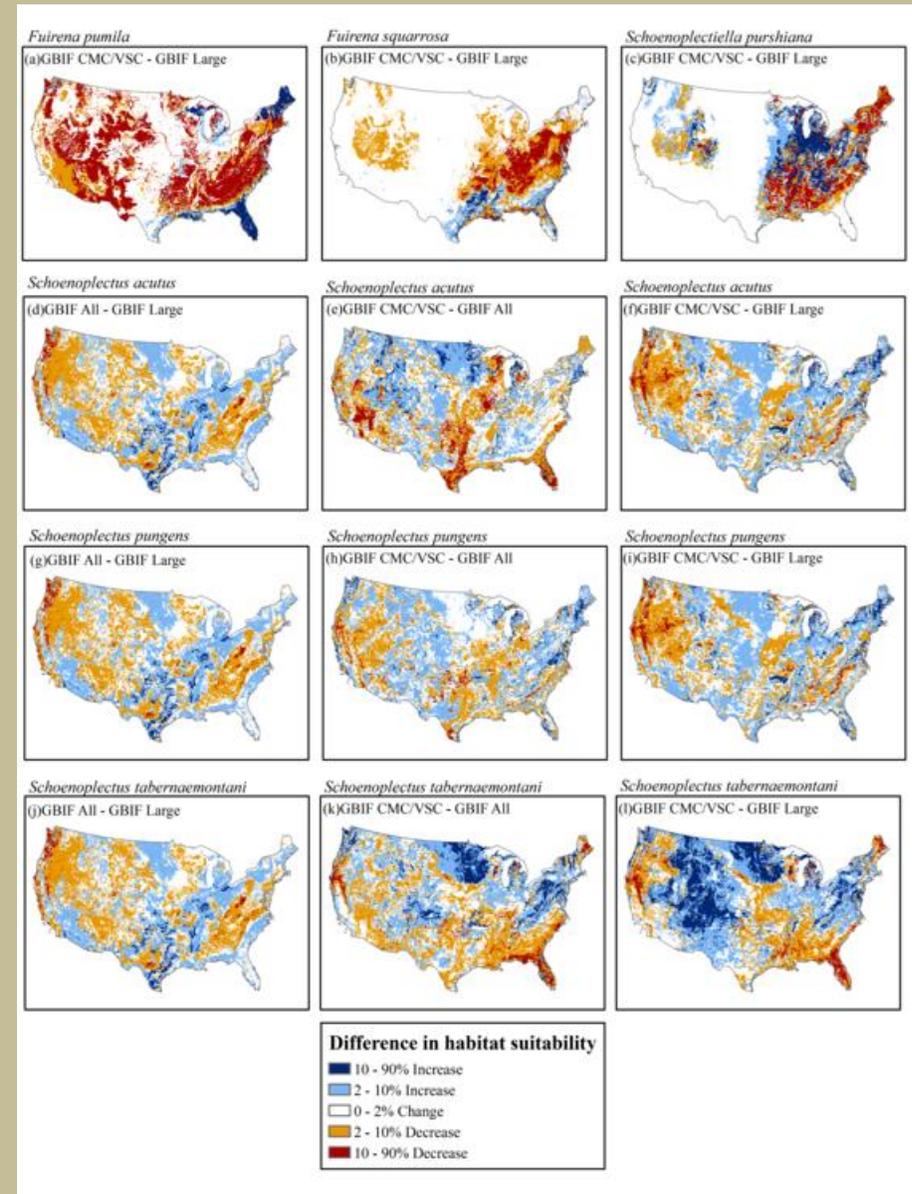


How are herbarium vouchers used?

- Through GIS technology, precisely mapped locality data are associated with various kinds of ecological data (e.g., soils, climate) to increase our understanding of the factors limiting the distributions of plants.

From Heather E. Glon, Benjamin W. Heumann, J. Richard Carter, Jessica M. Bartek, and Anna K. Monfils. 2017. The contribution of small collections to species distribution modelling: A case study from Fuireneae (Cyperaceae), *Ecological Informatics* 42: 67–78.

Co-author Jessica Bartek was a VSU undergraduate Biology major and herbarium assistant.



How are herbarium vouchers used?

- Specimens are used in teaching, to show examples of different kinds of plants and their characteristics.



Why do botanists press and dry plants and mount them on stiff sheets of paper?

- Plants are fundamentally different from animals.
- Unlike the animal cell, the plant cell is surrounded by a cell wall composed primarily of cellulose.
- Cellulose is remarkably stable and durable, if kept dry and free from pests.
- Leaves are naturally flattened, laminar structures.
- Preparation by pressing and drying is an effective and economical means of preserving most plant specimens.
- Mounting dried plants on stiff archival paper sheets protects the specimens and enables handling without damage.

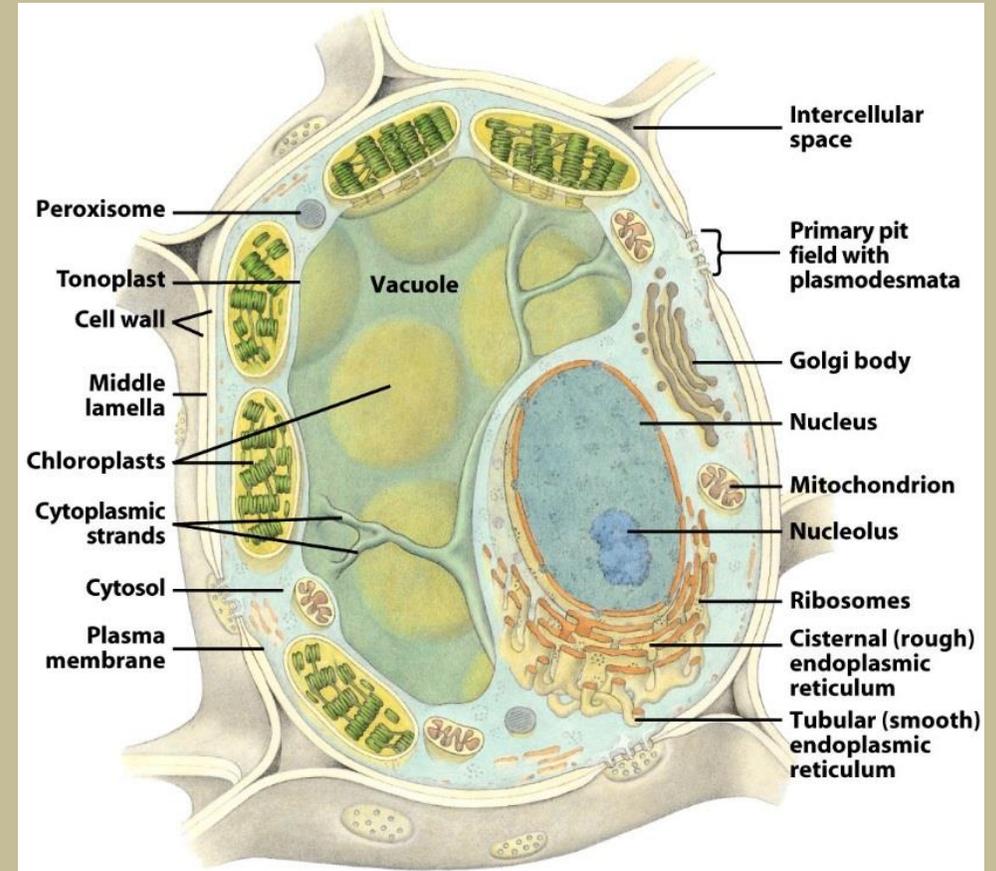
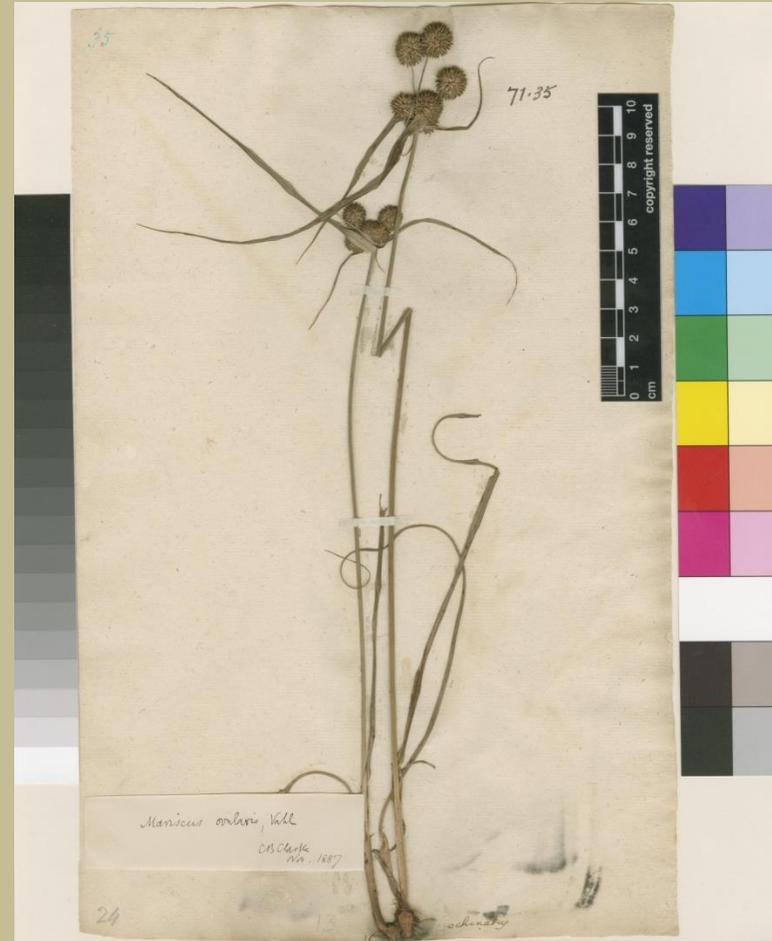


Figure 3-7
Biology of Plants, Seventh Edition
© 2005 W. H. Freeman and Company

How long will herbarium specimens last?

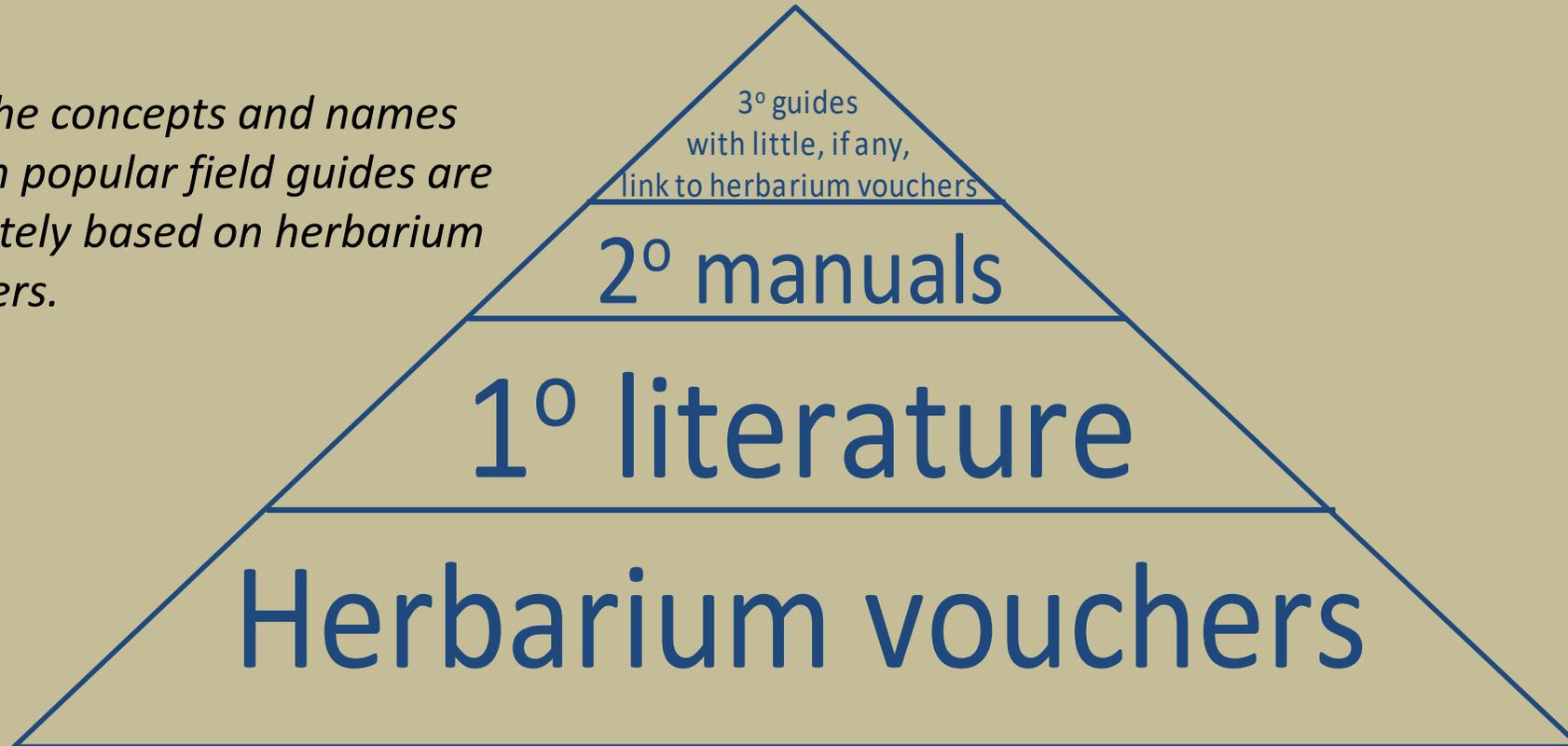
- If properly cared for herbarium specimens will last indefinitely.
 - Dry
 - Free of pests
 - Insects
 - Fungi
- Oldest herbarium >450 years old
 - Kassel, Germany
 - Founded 1569
- VSC has a few specimens dating to the mid-1800s that were obtained via specimen exchange.



Specimen in the Linnean Herbarium probably collected ca. 1730 in Virginia by Colonial botanist John Clayton

This pyramid emphasizes the importance of herbaria by showing the relationship of herbarium vouchers to the primary literature, and both primary literature and vouchers to secondary manuals and tertiary guides.

Even the concepts and names used in popular field guides are ultimately based on herbarium vouchers.



How many herbaria and herbarium specimens are there?

According to data compiled in *Index Herbariorum*, the directory of the world's herbaria, as of 31 December 2021

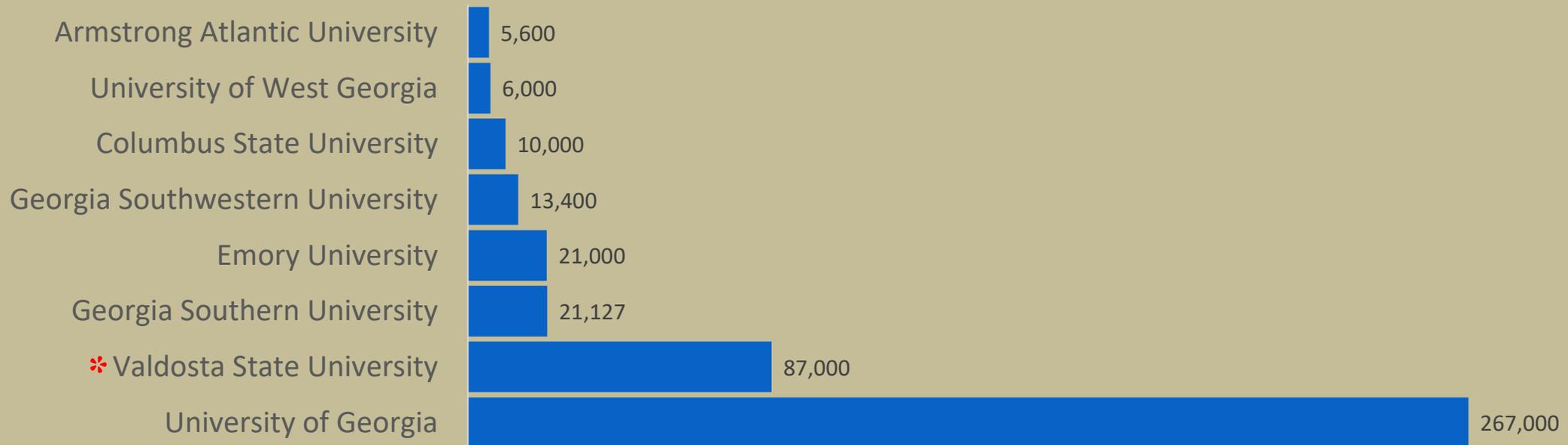
- There were 3,522 active herbaria in the world.
- The world's herbaria contained a total of 397,598,253 specimens.
- There were 183 countries with at least one herbarium.
- There were 12,771 staff members and other associates of the world's herbaria.

Source:

Thiers, B. [continuously updated]. *Index Herbariorum: A global directory of public herbaria and associated staff*. New York Botanical Garden's Virtual Herbarium. <http://sweetgum.nybg.org/ih/>.

Georgia's herbaria

Numbers of accessioned specimens



Source:

Thiers, B. [continuously updated]. *Index Herbariorum: A global directory of public herbaria and associated staff*. New York Botanical Garden's Virtual Herbarium. <http://sweetgum.nybg.org/ih/> [17 September 2019].

The Foundation and History of the VSU Herbarium

Valdosta State University Herbarium
VSC 0041210



HERBARIUM
VALDOSTA STATE
COLLEGE
00778

Name *Peltandra sagittifolia* No. _____
Locality { Region Waycross Highway
Habitat Near a stream
Date May 12, 1942
Collector B. Nevins

Dr. Beatrice I. Nevins, Professor of Biology, joined the faculty in 1937, accumulating a teaching collection of about 1,000 specimens.



Dr. Beatrice I. Nevins

Name *Peltandra sagittifolia* No. _____
Locality { Region Waycross Highway
Habitat Near a stream
Date May 12, 1942
Collector B. Nevins



Elliottia racemosa Muhlenberg ex Elliott
Examined for Status Report, 15 Sept. 1980 by
John R. Bozeman & George A. Rogers

HERBARIUM
VALDOSTA STATE
COLLEGE
05367

Herbarium of Valdosta State College
TURNER COUNTY
FLORA OF GEORGIA
Elliottia racemosa Muhl.
Silicious limestone outcrop alongside U.S-75,
4.5 mi NE of Ashburn. Alongside West Fork
Creek.
COASTAL PLAIN PROVINCE
Wayne R. Faircloth 928 7 May 1964
Collected for "Flora of Central South Georgia"

Dr. Wayne R. Faircloth, Professor of Biology, joined the faculty in 1961 and by 1967 had increased the depth and stature of the herbarium sufficiently to be recognized among the world's research herbaria in *Index Herbariorum*.



Dr. Wayne R. Faircloth (left)

Herbarium of Valdosta State College
TURNER COUNTY
FLORA OF GEORGIA
Elliottia racemosa Muhl.
Silicious limestone outcrop alongside U.S-75,
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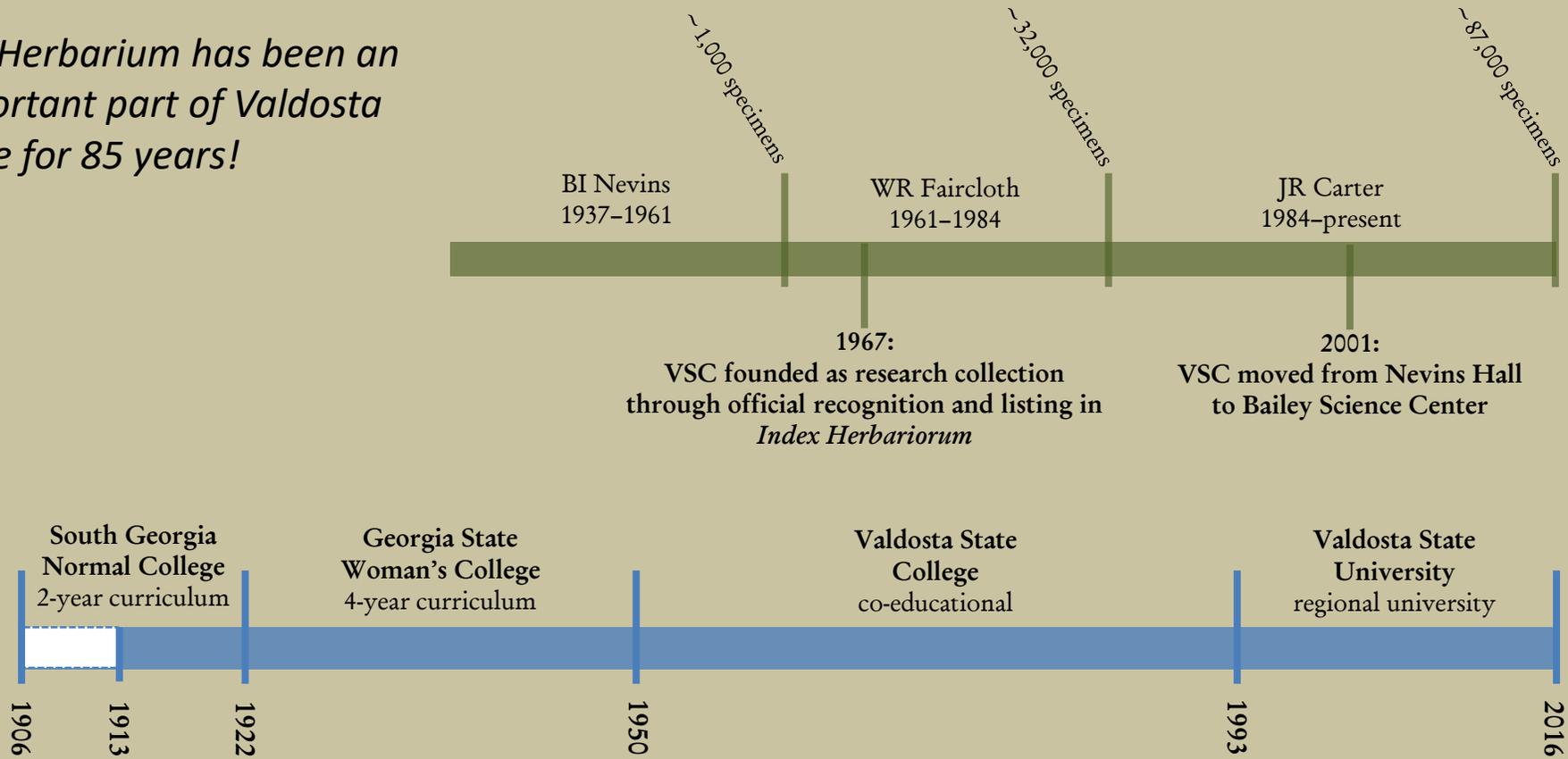
Carter, R. 2008. Obituary – Wayne R. Faircloth (1932–2008). *Southeastern Biology* 55: 501–504.

Timeline:

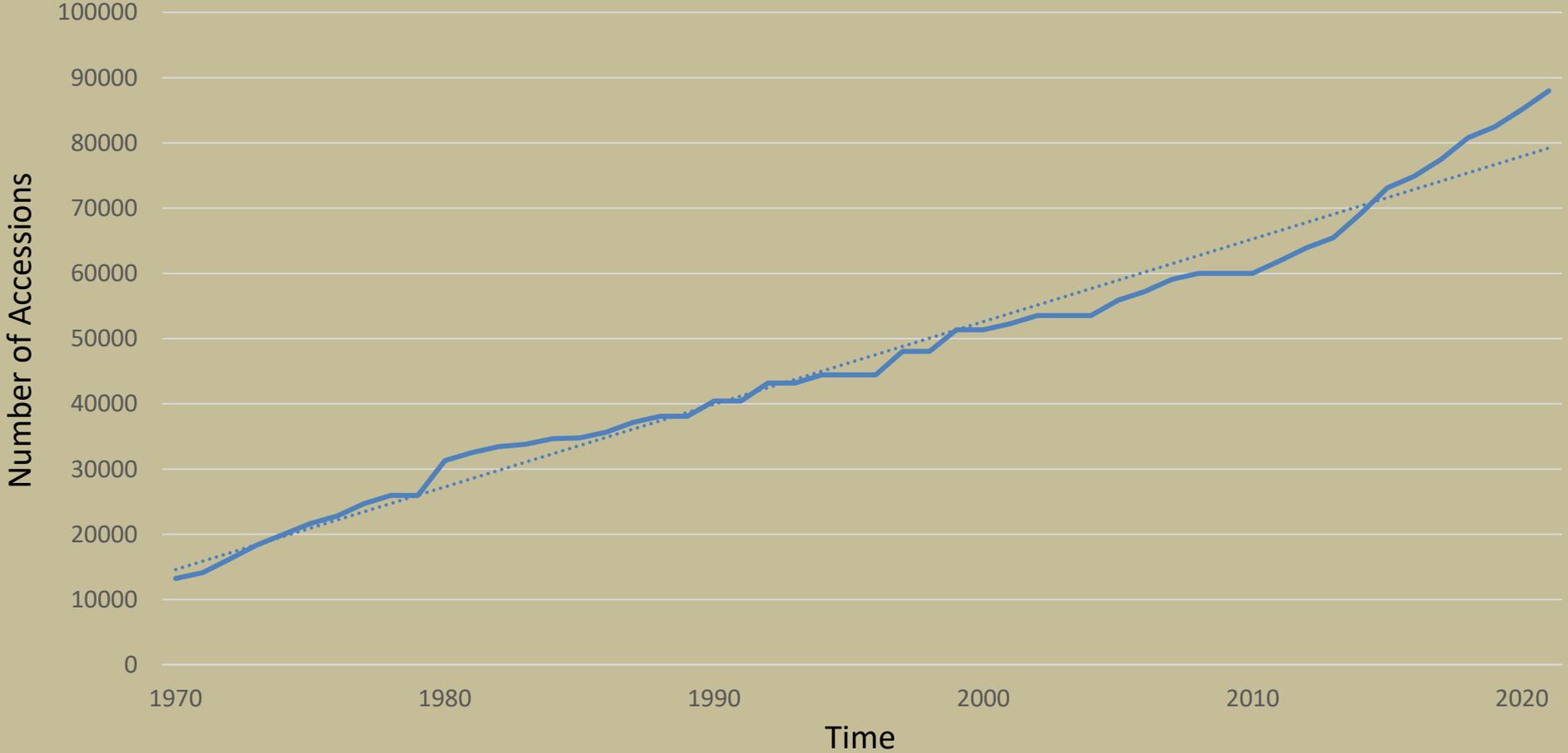
Valdosta State University ■

Valdosta State University Herbarium [VSC] ■

The Herbarium has been an important part of Valdosta State for 85 years!



Growth of the Valdosta State University Herbarium [VSC] 1970–2022



Size & Scope of Collection

- Regional collection of > 87,000 accessioned specimens
 - Excellent quality!
 - Number of accessioned specimens has increased nearly three-fold since 1984.
 - Particularly rich in plants of Georgia coastal plain
 - Extensive collections of graminoids, ferns, bryophytes
- Significant collectors
 - C. T. Bryson
 - R. Carter
 - W. R. Faircloth
 - R. K. Godfrey
 - R. Kral
 - R. K. Lampton
 - S. T. McDaniel

Exchange of duplicate vouchers:
Sorting of voucher specimen sets –
Other than with rare plants, normally voucher specimens are collected in sets, and the unmounted duplicate specimens with labels are exchanged with other herbaria.

This standard practice promotes sharing not only of physical vouchers and data but also – very importantly – sharing of taxonomic concepts with other scientists.



Although VSC comprises mostly vascular plant vouchers, it also includes the state's largest non-vascular plant collection of about 4,000 specimen packets – the **RK Lampton Bryological and Lichenological Herbarium**.

VASCULAR PLANTS

83,000 vouchers

BRYOPHYTES AND LICHENS

4,000 vouchers



Activity at VSC

2010–2014

Accessions:

1,824 specimen sheets / year

Loans:

101 specimen sheets / year

Exchange:

1,005 specimens / year

Visitors:

154 / year

* Determinations of unknown plants:

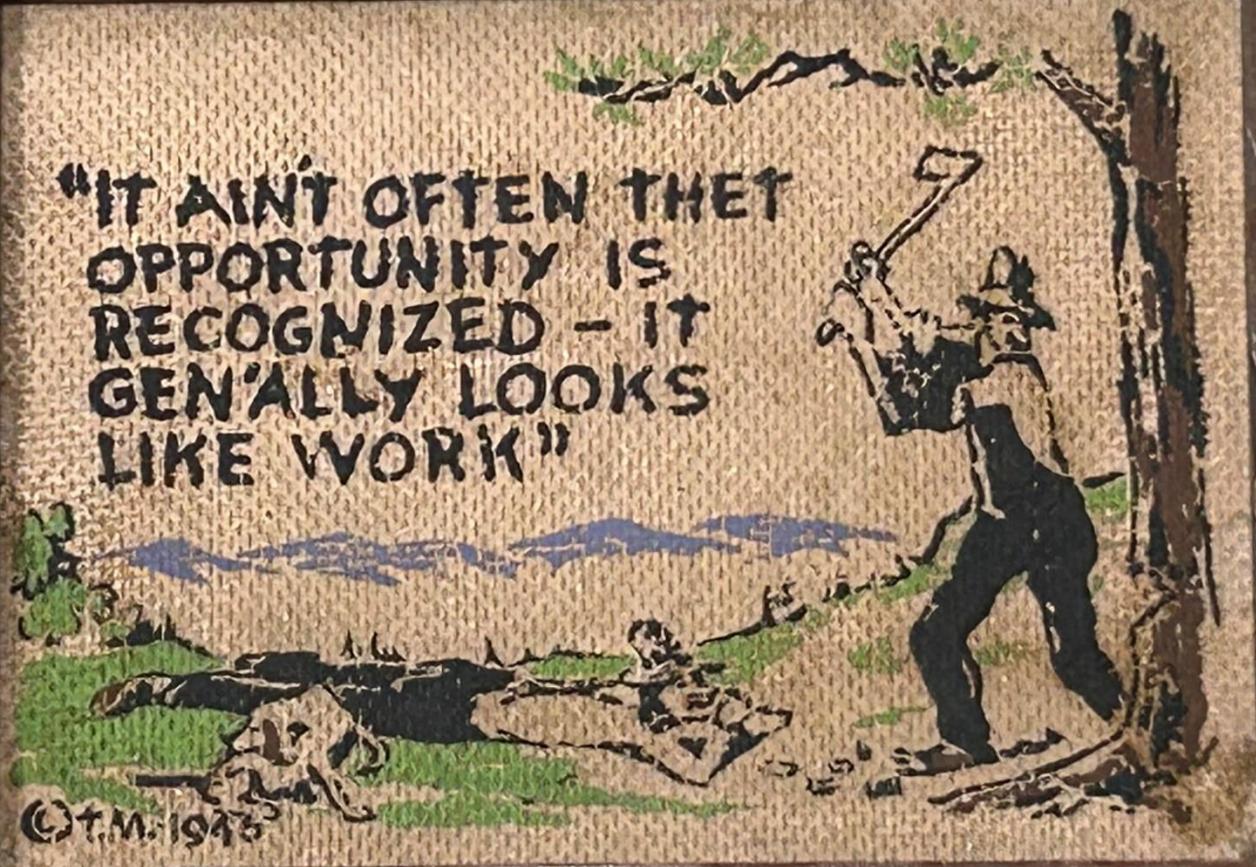
60 / year – mostly for agricultural scientists at UGA Tifton and Griffin campuses

Data requests:

11 / year

Where do the herbarium
specimens come from?

"IT AINT OFTEN THET
OPPORTUNITY IS
RECOGNIZED - IT
GEN'ALLY LOOKS
LIKE WORK"



©T.M. 1946

Funding for the Herbarium and Herbarium-centered Research: 1984 – Present

- >20 grants and contracts, many involving students
 - Total: >\$800,000
 - Range: \$500 to \$200,000
 - Median: \$6,800
 - Mean: \$41,000

Funding Sources

Grants and contracts secured by curator used to support field research program, purchase materials, and hire student assistants

- **Department of Defense (DoD)**
- Georgia Botanical Society
- **Georgia Department of Natural Resources (Georgia DNR)**
- Louisiana Department of Wildlife & Fisheries
- **National Science Foundation (NSF)**
- **Nature Conservancy**
- **Tall Timbers Research Station**
- US Department of Agriculture (USDA)
- **US Fish & Wildlife Service (USFWS)**
- University of Georgia Foundation
- US Army Medical Research Acquisition Activity (USAMRAA)
- **Valdosta State University Faculty Research Fund**
- **Valdosta State University Foundation**

Selected Externally Funded Projects Supporting Field Work

- Fort Stewart Military Reservation [DoD through The Nature Conservancy, 1992]
- Status survey: *Cyperus cephalanthus* [USFWS through Louisiana Department of Wildlife and Fisheries, 1992 – 1993]
- Status survey: *Cyperus louisianensis* [USFWS, 1993]
- Moody Air Force Base and Grand Bay WMA [DoD through The Nature Conservancy, 1993 – 1994]
- Kings Bay Submarine Base [DoD through Georgia DNR, 1996 – 1997]
- Status survey: *Schwalbea americana* [USFWS through Georgia DNR, 2007 – 2008]
- Status surveys: *Lindera melissifolia* and *Litsea aestivalis* [USFWS through Georgia DNR, 2008 – 2009]
- Status survey: *Schwalbea americana* [USFWS through Georgia DNR, 2013 – 2014]

This is one example of such projects.

Survey of known and potential populations of *Lindera melissifolia* and *Litsea aestivalis* in Georgia

- 2008–2009
- Funded by Georgia DNR from USFWS flow-through funds
- Both species inhabit margins of cypress ponds, sandhill depression ponds, and hardwood swamps.

Survey of known and potential populations of *Lindera melissifolia* and *Litsea aestivalis* in Georgia

Lindera melissifolia [LINDMELI]

pondberry

- Coastal plain: NC southward to s GA, westward into LA, ne AR and adjacent se MO
- Federal status: Endangered (LE)
- Global rank: G2
- Georgia status: Endangered
- Georgia rank: S1

Litsea aestivalis [LITSAEST]

pondspice

- Coastal plain: MD and VA southward into n Florida and sw Georgia
- Global rank: G3?
- Georgia listing: Rare
- Georgia rank: S2

Methods

- Reviewed existing records in DNR database and herbarium vouchers
- Spent 63 days in the field, surveying known sites and searching for new populations, mostly during summers
- Data on field observations recorded and vouchers collected for LINDMELI and LITSAEST and other taxa of special interest
- GPS data taken to map locations and limits of populations of LINDMELI and LITSAEST
- Data recorded for areas searched with negative results



Lindera melissifolia (background on right) in shallow karst pond, Wheeler County, Georgia

Lindera melissifolia
along edge of karst
pond in Wheeler
County, Georgia

with undergraduate
student assistant,
Bobby Sanderson





Litsea aestivalis
edge of karst pond, Wheeler County, Georgia



Litsea aestivalis in karst pond, Irwin County, Georgia, with undergraduate student assistants, Bobby Sanderson and Melanie and Stephanie Nichols (l to r)



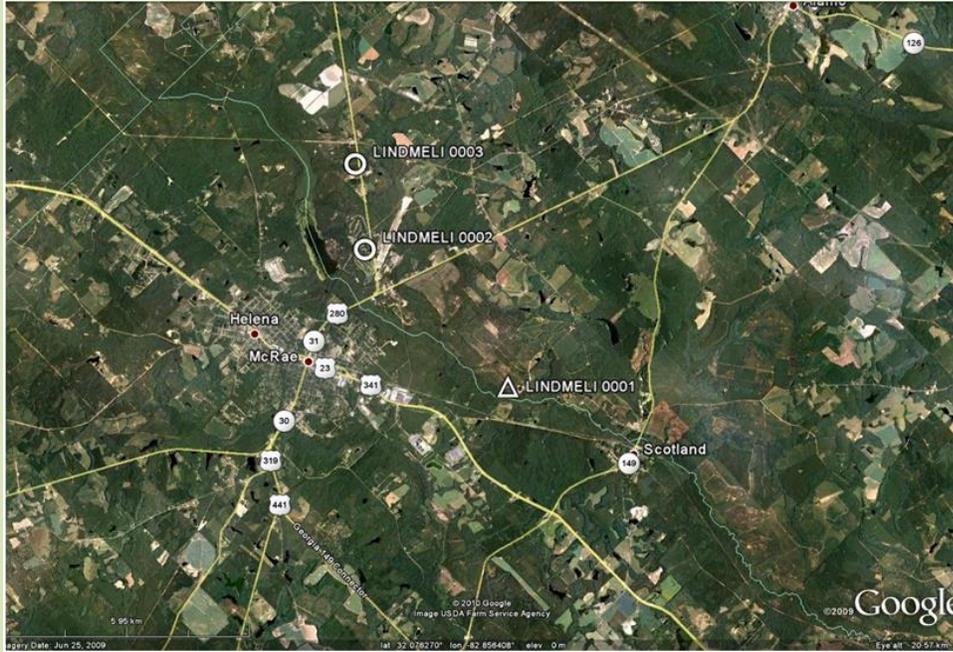
Litsea aestivalis with symptoms of laurel wilt disease
karst pond, Turner County, Georgia

Summary of *Lindera melissifolia* element occurrences (EO) showing population area, numbers of individuals, and ranking. Previously undocumented EOs are highlighted in white.

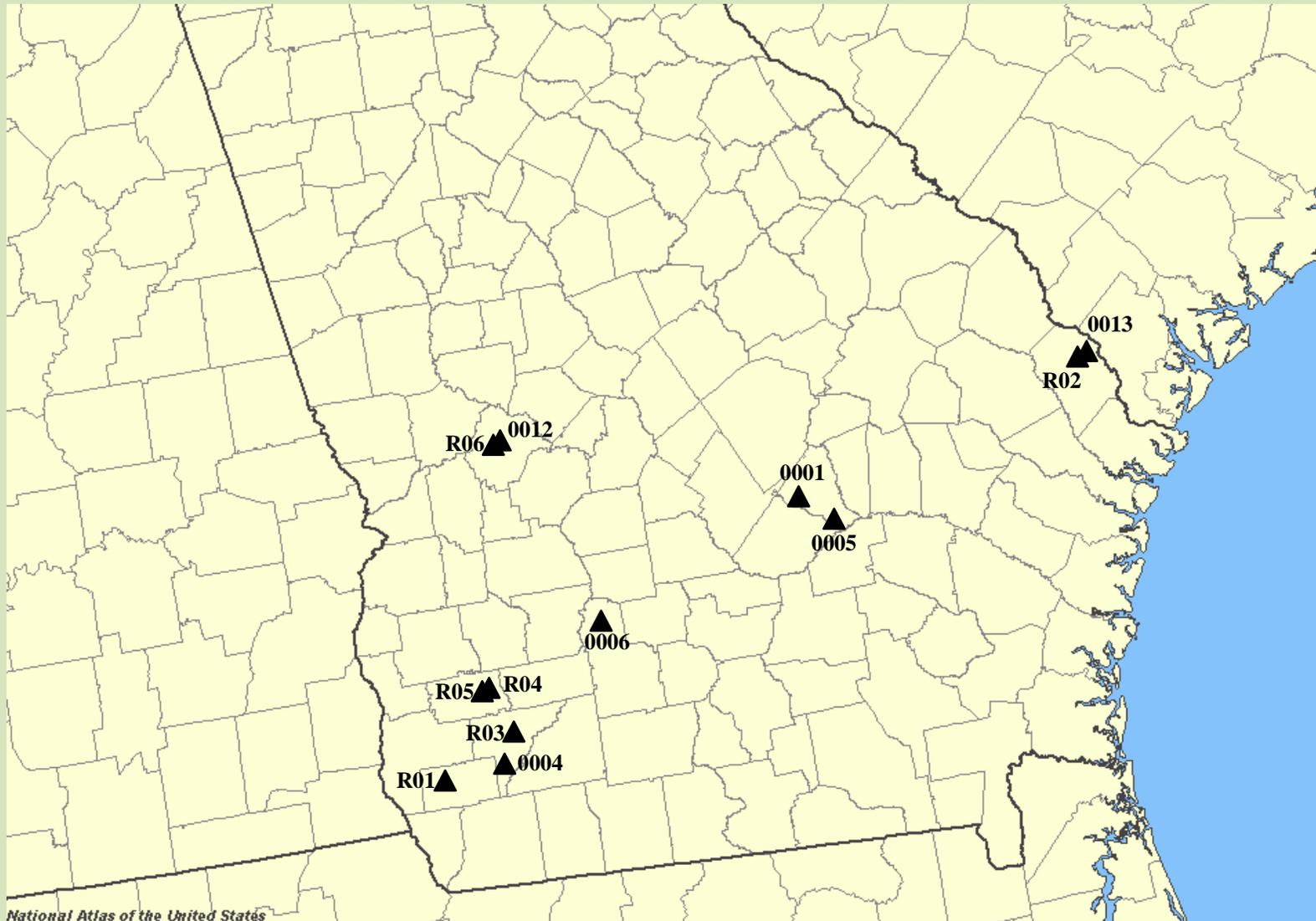
EO Site Number and Name	Area (m ²)	Number of Genets	Ranking
0001 – Scotland	7500	9	A (4.00)
0004 – Ichauway	600	2	C (2.00)
0005 – Lumber City	250	2	C (2.25)
0006 – Warwick 01	1000	2	D- (0.50)
0010 – Warwick 02	60	1	C-
0012 – Sandhills NA	2500	8	A (3.75)
0013 – Old Augusta Rd	15000	6	C- (1.75)
R01 – Mayhaw WMA	7500	18	B+ (3.50)
R02 – Stillwell Clyo Rd	7500	7	C (2.00)
R03 – Elmodel	5000	14	B+ (3.50)
R04 – Aztec Rd 01	4	1	C (2.25)
R05 – Aztec Rd 02	50	1	C (2.25)
R06 – Sandhills NA 02	50	2	B+ (3.50)

13 EOs documented: 6 not previously recorded in the GA DNR db

LINDMELI 0001



The distribution of known extant *Lindera melissifolia* element occurrences in Georgia, U.S.A.



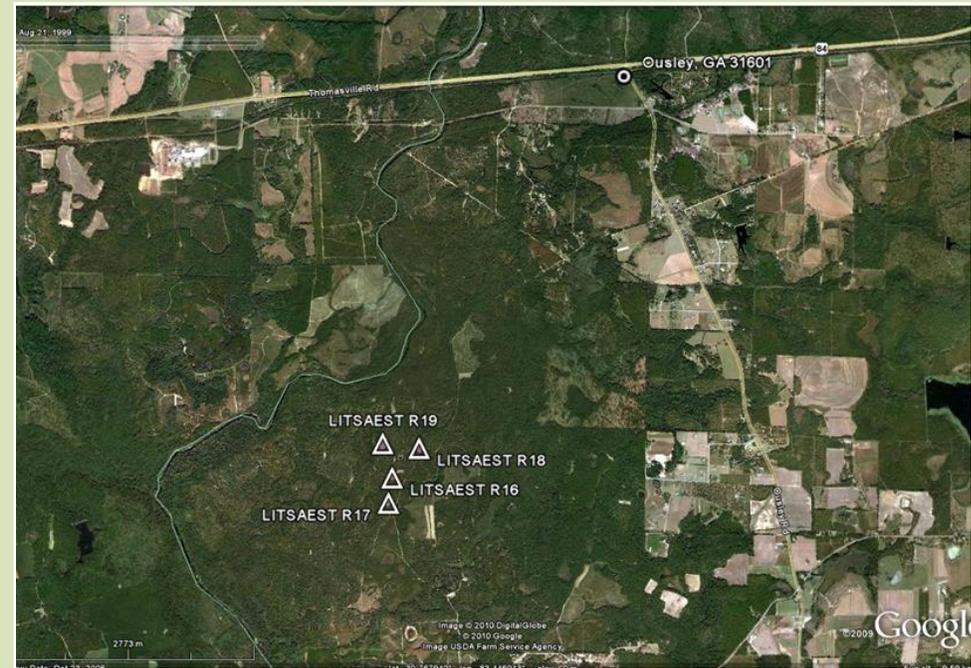
EO Site Number and Name	Area (m ²)	Number of Plants	Ranking
0001 - Scotland	25	1	B (3.25)
0002 - Lumber City	17500	1173	A (4.00)
0005 - Newington E	500	44	D (1.00)
0008 - Old Ft Barrington Rd	25000	1000+	A (4.00)
0010 - Brinson	20000	34	C (2.00)
0033 - Kings Bay Subase	8000	2	D- (0.00)
0034 - Kings Bay Subase	10000	9	D- (0.00)

36 EOs documented:
20 not previously recorded
in the GA DNR db

0044 - Moody Bridge Rd		R01 - Ross Lake 01	13000	189	A- (3.75)
0046 - Bells Ferry Rd		R02 - Ross Lake 02	1600	80	B+ (3.50)
0049 - Townsend (North) WMA		R03 - Ross Lake 03	1000	4	B (3.25)
0051 - Phillipsburg Rd		R04 - Ross Lake 04	9	1	B (3.25)
0702 - Ft Stewart C-2		R05 - Ross Lake 05	30	1800	A- (3.75)
0703 - Ft Stewart F-18		R06 - Townsend (North) WMA 01	1250	29	D (1.00)
0705 - Ft Stewart C-18		R07 - Townsend (North) WMA 02	1000	7	D (1.00)
0706 - Ft Stewart F-14		R08 - Lentile Tract 01	18600	1818	A- (3.75)
0724 - Old Augusta Rd		R09 - Lentile Tract 02	13600	85	B+ (3.50)
		R10 - Lentile Tract 03	3400	8	C+ (2.50)
		R11 - Maddox Tract 01	10000	330	A (4.00)
		R12 - Maddox Tract 02	10000	485	A (4.00)
		R13 - Stillwell Cloy Rd	10000	32	C (2.00)
		R14 - Townsend (South) WMA 01	25000	1094	C (2.00)
		R15 - Townsend (South) WMA 02	12000	29	D+ (1.50)
		R16 - Spain Ferry 01	2500	98	B (3.00)
		R17 - Spain Ferry 02	2500	23	B (3.00)
		R18 - Spain Ferry 03	5000	64	B (3.00)
		R19 - Spain Ferry 04	10000	4	D (1.00)
		R20 - Lumber City 02	12500	20	C+ (2.50)

Summary of *Litsea aestivalis* EOs with population area, numbers of individuals, and ranking. Previously undocumented EOs are highlighted in white.

LITSAEST R16-R19

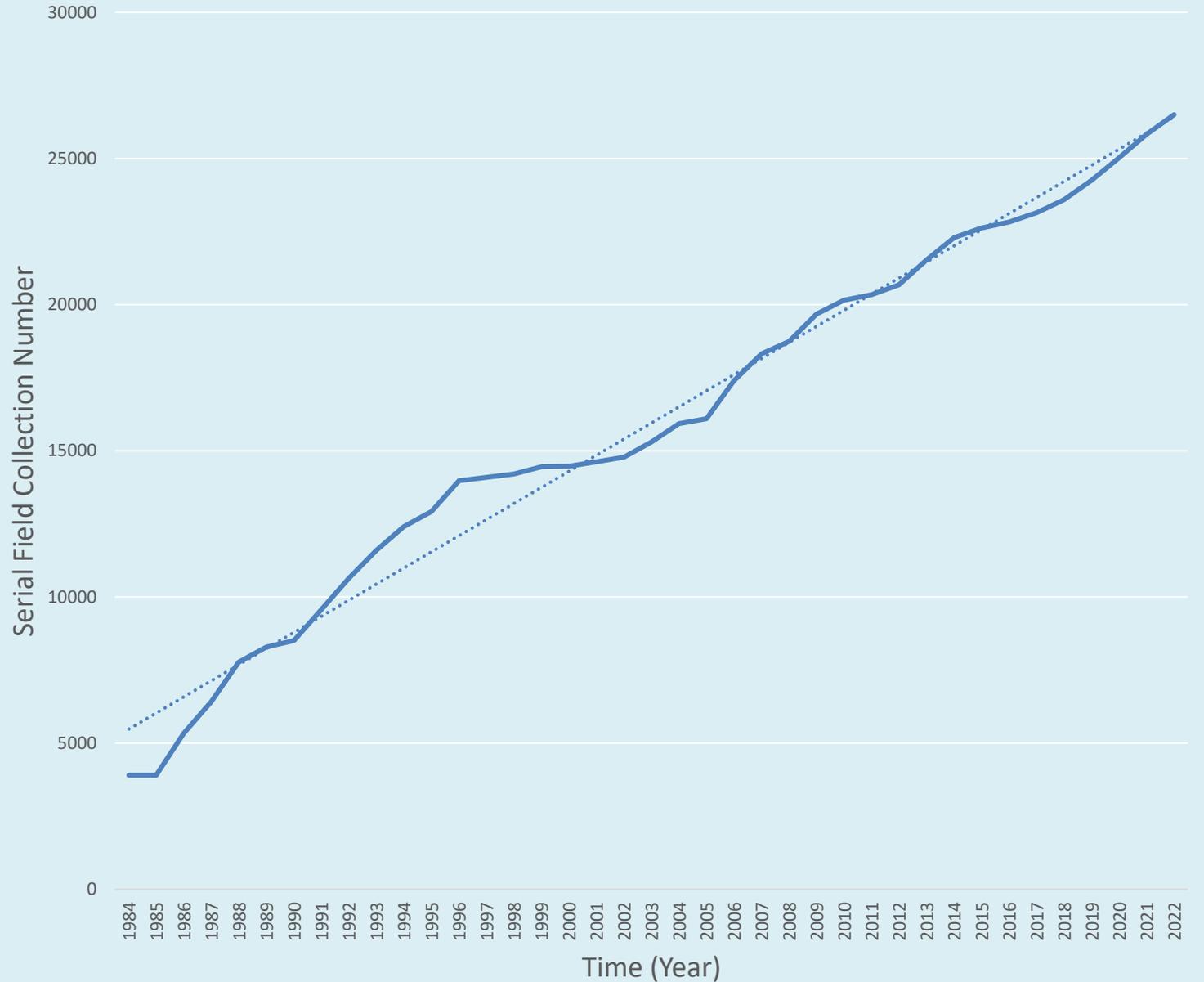


In addition to the two primary target species, populations of 59 additional plant species tracked by Georgia DNR – or otherwise noteworthy – were documented with voucher collections and reported.

Agalinis georgiana (Boynt.) Pennell (Orobanchaceae) – G1, S1
Amphicarpum muehlenbergianum (Schult.) Hitchc. (Poaceae) – S3?
Asclepias connivens Baldwin (Apocynaceae, incl. Asclepiadaceae) – S3?
Asclepias viridis Walter (Apocynaceae, incl. Asclepiadaceae) – S3
Baccharis glomeruliflora Pers. (Asteraceae)
Brintonia discoidea (Ell.) Greene (Asteraceae) – S1S3
Carex collinsii Nuttall (Cyperaceae) – S2
Chamaecrista deeringiana Small & Pennell (Fabaceae) – S1?
Chloris canterae Arehav. var. *canterae* (Poaceae) – State Record
Coreopsis integrifolia Poirlet (Plantaginaceae) – S1S2/T
Croton elliotii Chapman (Euphorbiaceae) – S2S3
Cyperus diminutus sp. nov. (Cyperaceae)
Dalea feayi (Chapman) Barneby (Fabaceae) – S1?
Echinodorus tenellus (Mart. ex Schult. f.) Buchenau (Alismataceae) – S2?
Eleocharis atropurpurea (Cyperaceae) – S1S3
Eleocharis melanocarpa Torrey (Cyperaceae) – S3
Eleocharis robbinsii Oakes (Cyperaceae) – S3?
Epidendrum magnoliae Muhl. (Orchidaceae) – S3
Forestiera godfreyi L.C. Anderson (Oleaceae) – S1/E
Glyceria septentrionalis Hitchc. (Poaceae) – S1?
Helianthus atrorubens L. (Asteraceae)
Hibiscus coccineus Walter (Malvaceae) – SNR
Hypericum harperi R. Keller (Clusiaceae)
Hypericum microsepalum (Torr. & A. Gray) A. Gray ex S. Watson (Clusiaceae) – S3?
?Isoetes flaccida Shuttlw. ex A. Braun (Isoetaceae) – SNR
Justicia angusta (Small) Chapman (Acanthaceae) – SH
Krameria lanceolata Torrey (Krameriaceae) – S3?
Leitneria floridana Chapman (Simaroubaceae, incl. Leitneriaceae) – S1/T
Ludwigia arcuata Walter (Onagraceae)
?Lythrum curtissii Fernald (Lythraceae) – S1/T

Macbridea caroliniana (Walter) S.F. Blake (Lamiaceae) – S1/R
Matelea pubiflora (Decne.) Woodson (Asclepiadaceae) – S2/R
Orobanche uniflora L. (Orobanchaceae)
Palafoxia integrifolia (Nutt.) Torr. & A. Gray (Asteraceae) – S2?
Pellaea sp. (Pteridaceae)
Pieris phillyreifolia (Hooker) DC. (Ericaceae) – S3
Pityopsis oligantha (Chapm. ex Torr. & A. Gray) Small (Asteraceae) – S1S2
Plantago sparsiflora Michaux (Plantaginaceae) – S2
Pteroglossaspis ecristata (Fern.) Rolfe (Orchidaceae) – S1/T
Rhaphidophyllum hystrix (Pursh) H. Wendl. & Drude ex Drude (Aracaceae)
Rhexia aristosa Britton (Melastomataceae) – S2
Rhexia nuttallii C.W. James (Melastomataceae) – S1?
Rhynchospora careyana Fernald (Cyperaceae)
Rhynchospora leptocarpa (Chapman ex Britton) Small (Cyperaceae)
Rhynchospora tracyi Britton (Cyperaceae)
Ruellia nudiflora (Engelm. & A. Gray) Urb. (Acanthaceae) – State Record!
Sagittaria chapmania (J.G. Smith) C. Mohr (Alismataceae) – S3?
Sagittaria isoetiformis J.G. Sm. (Alismataceae) – SU
Sagittaria weatherbiana Fernald (Alismataceae) – SU
Sarracenia flava L. (Sarraceniaceae) – S3S4/U
Schoenoplectus californicus (C.A. Mey.) Palla (Cyperaceae)
Schoenoplectus erectus (Poir.) Palla ex Rayn. subsp. *raynalianii* (Schuytl.) Lye (Cyperaceae) – S1?
Sideroxylon thornei (Cronquist) T.D. Penn. (Sapotaceae) – S2/R
Spermacoce assurgens Ruiz & Pavón (Rubiaceae)
Stachys hyssopifolia Michx. var. *lythroides* (Small) J.B. Nelson (Lamiaceae) – S1
Stewartia malacodendron L. (Theaceae) – S2/R
Stylisma aquatica (Walter) Raf. (Convolvulaceae) – S3?
Verbesina aristata (Ell.) Heller (Asteraceae) – S3?
Vernonia pulchella Small (Asteraceae) – S3

As a result of these field-based projects, I accumulated thousands of voucher specimens documenting the flora of Georgia's Coastal Plain Region.



Curator's Serial Collection Number: 1984 – 2022

Funding Explicitly Supporting the Herbarium



Collaborative Research: The GA-VSC Herbaria Collaborative: Phase I of a Statewide Consortium.

National Science Foundation
(DBI-1054366, 2011—2014, J.R. Carter, PI)





Collaborative Research: The GA-VSC Herbaria Collaborative: Phase I of a Statewide Consortium.

National Science Foundation, DBI-1054366,
JR Carter, PI; \$199,336; 2011–2014

- April 2011 the Valdosta State University Herbarium (VSC) received funding from the National Science Foundation.
- Collaborative project with University of Georgia Herbarium: Total amount funded for both herbaria = \$398K
- Major outcomes
 - Digitization of VSC and collaborate with UGA to produce on-line atlas of Georgia's flora
 - General enhancement of the VSC collection
 - Process backlog specimens
 - Georeference specimens
 - Outreach

Digitization:

Imaging



OPHIOGLOSSACEAE
Botrychium lunariaoides (Michx.) Sw.
U.S.A. GEORGIA. Lowndes County: N30.74464 W83.37199; 0.6 mi E jct. Rocky Ford Rd. (CR 778) and Mt. Zion Rd. (CR 55), Mt. Zion Cemetery, along south side Mt. Zion Rd., across road from Mt. Zion Methodist Church; plants rare and local, six plants observed.
Richard Carter 19676
with W.W. Baker
det. R. Carter
29 Mar 2010
Valdosta State University Herbarium (VSC)

Valdosta State University Herbarium
VSC 0050556

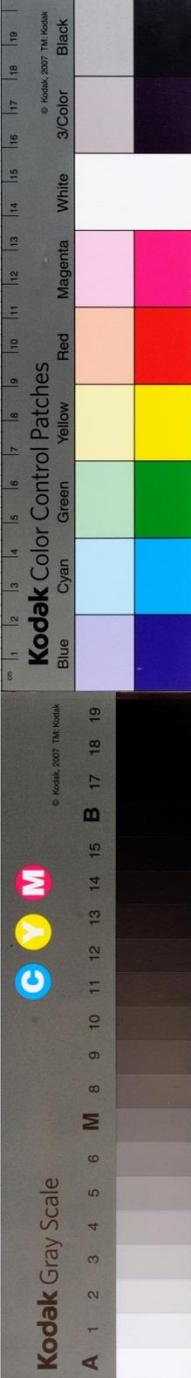


70,781 specimens
imaged

66,712 vascular plants
4,069 non-vascular plants



Herbarium assistant
Christopher Louis



Digitization: Database



The screenshot shows the Specify 6.5.03 database interface. The main window displays details for specimen VSC0052623. The 'Collection Object' section includes fields for Catalog Number (VSC0052623), Cataloger (Bartek, Jessica), and Cataloged Date (04/05/2012). The 'Determinations' section shows the taxon Hypoxis leptocarpa, with a preferred taxon of Hypoxis curtissii and a determiner of Kral, R. The 'Collecting Information' section shows a collector number of 47346 and a collection date of 06/06/1972, with a locality of Pike County, Alabama, United States. The 'Collectors' section lists the collector as Kral. The 'Attributes' section includes fields for Phenology, Specimen Description, and Attachments. The 'Modified By Agent' is listed as Carter, Richard.

70,491 voucher specimens databased

66,422 vascular plants
4,069 non-vascular plants

Herbarium assistant
Jessica Bartek

The Specify logo, featuring the word 'Specify' in green with a blue circular graphic element around the 'S', set against a white background with a faint world map.



New herbarium cabinets

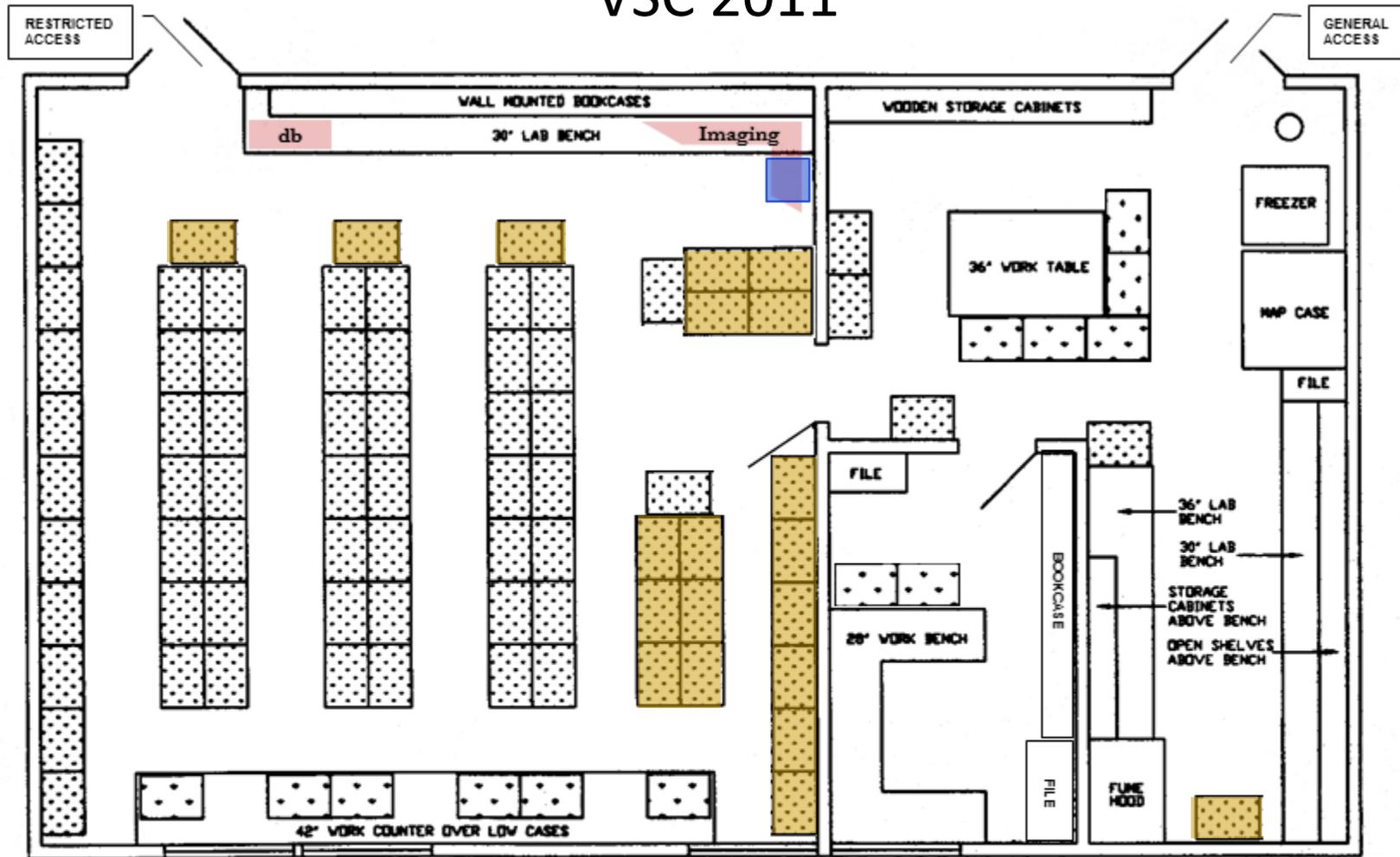
20 new cabinets installed

enabling secure storage of backlog specimens and space for growth.

- 10 purchased with NSF funds
- 10 purchased with funds provided by the VSU administration



VSC 2011



VALDOSTA STATE UNIVERSITY HERBARIUM [VSC]

SCALE: 1/4" = 1'-00"



NEW HERBARIUM CASE



HERBARIUM CASE



SAFETY SHOWER



HALF-HEIGHT HERB CASE



Repair of old cabinets

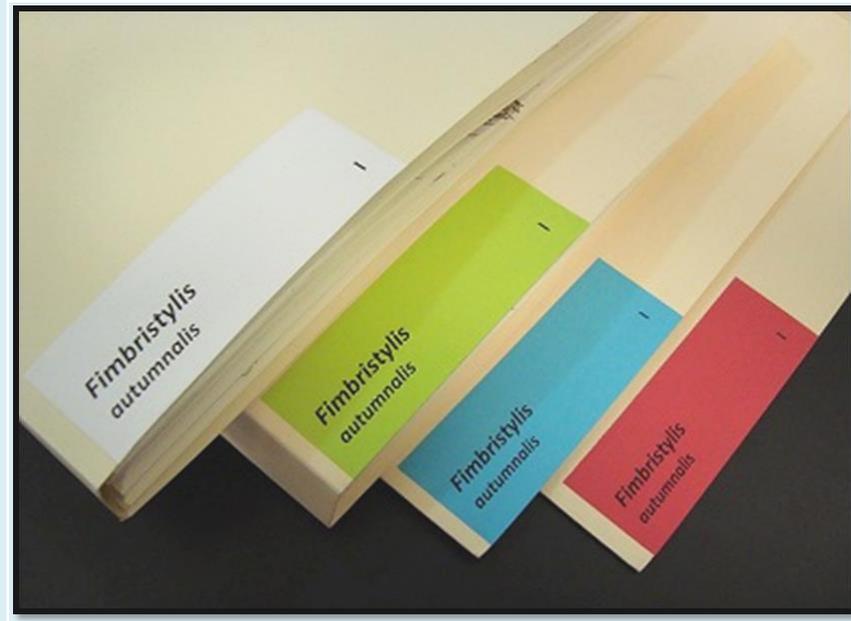
Worn out door gaskets replaced with rubber foam weather-seals





Replacement of genus folders

Old genus folders replaced with geographically color-coded archival folders





Processing backlog specimens

9,300 backlog specimens mounted, digitized, and accessioned

Specimen mounting rates: Average = 7.8 specimens/hr [range 4.8--11.4 specimens/hr, s.d. 2.11]. Statistics based on work of eight student mounters mounting 5,573 specimens during the period 9/2013–3/2015.

8,115 backlog specimens processed for exchange with other herbaria



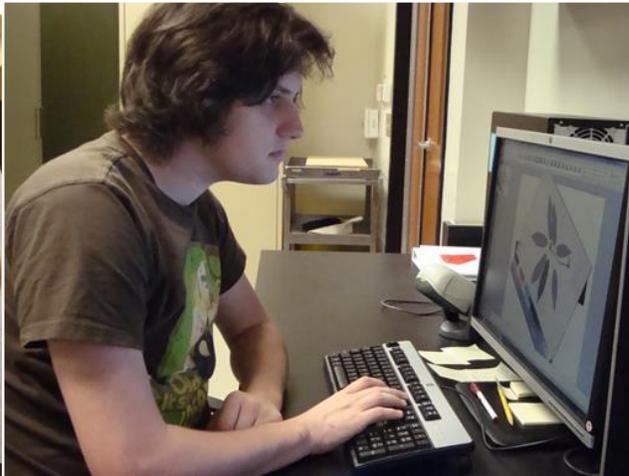
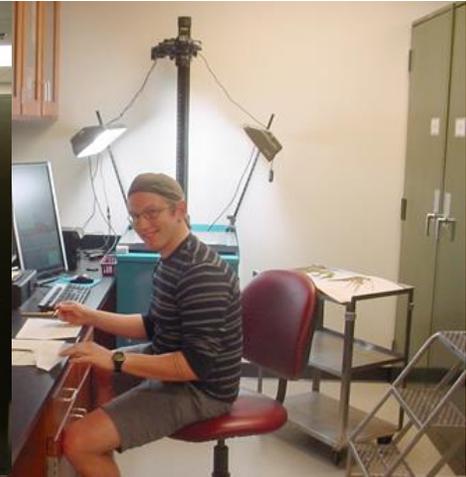
Herbarium assistant Amy Vardaman



Georeferencing

- 3,900 specimen records in the database have georeference data uploaded through VSC's customized integrated system that generates specimen labels from field data in an MS Excel spreadsheet through MS Word and Mail Merge and enables data upload directly into the Specify database through the Specify Workbench.
- This system was developed by undergraduate student assistant Phillip Lowe.





15 undergraduate students
trained in herbarium and
digitization techniques





Educational outreach

- 15 undergraduate students trained in herbarium curation
- Installation of digital signage in atrium of science building promotes biodiversity collections and botany
- Herbarium tours for local garden clubs, VSU classes, Georgia Governor's Honors Program, Georgia Academy of Science, etc.
- Hosted digitization workshop sponsored by iDigBio 2012; national audience of 30 participants
- Hosted Georgia Herbarium Consortium meeting 2013



Student Presentations

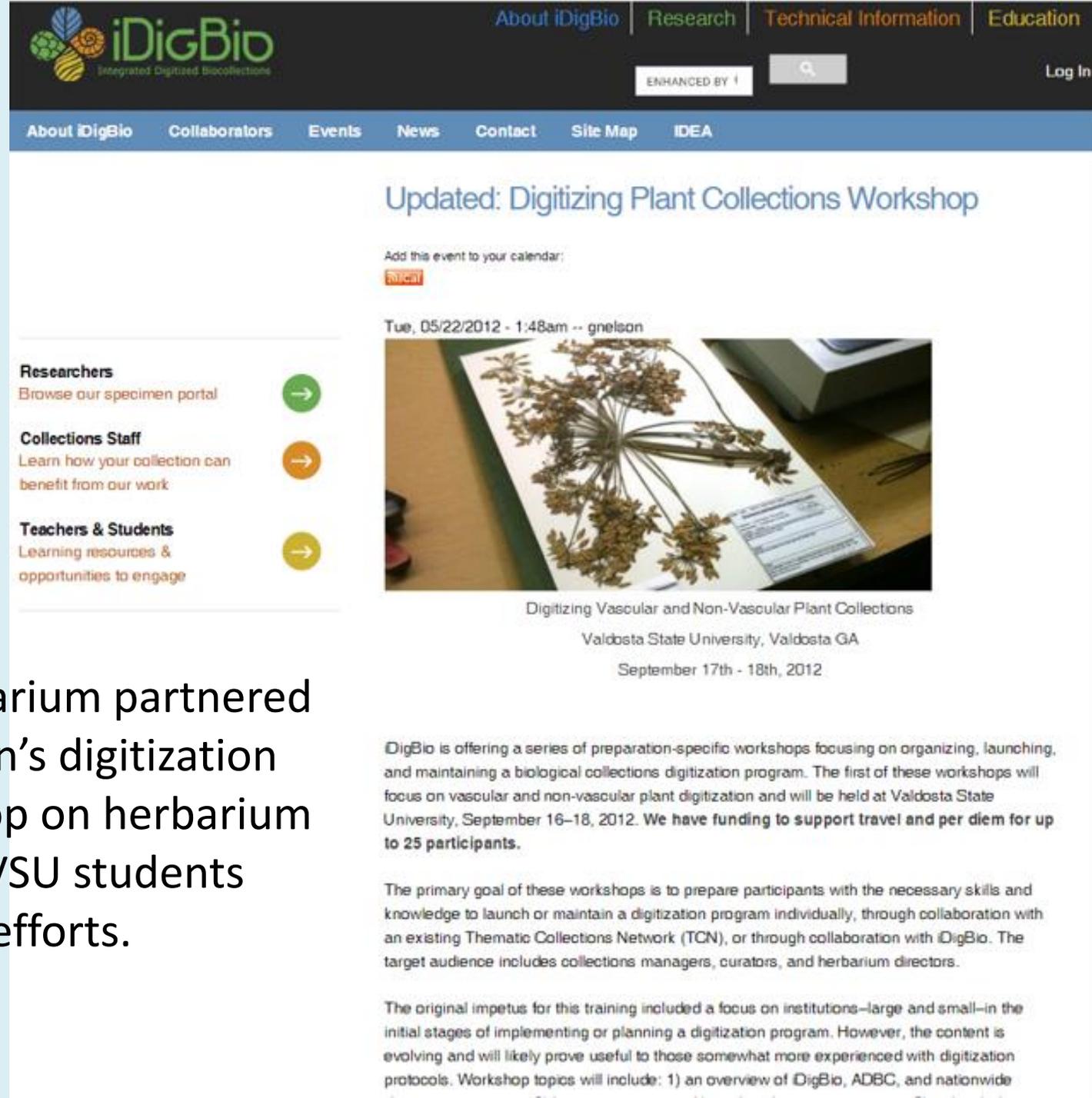
Student assistants Jessica Bartek and Phillip Lowe made presentations at the 2014 Annual Meeting of the Association of Southeastern Biologists [ASB] in Spartanburg, South Carolina.



VSU undergraduate Biology major and herbarium assistant Jessica Bartek received the SABS award for the best student poster.

Other outcomes

In 2012, the VSU Herbarium partnered with iDigBio, the Nation's digitization hub, to hold a workshop on herbarium digitization, featuring VSU students and student-centered efforts.



The screenshot shows the iDigBio website interface. At the top, there is a navigation bar with links for "About iDigBio", "Research", "Technical Information", and "Education". Below this is a secondary navigation bar with "About iDigBio", "Collaborators", "Events", "News", "Contact", "Site Map", and "IDEA". The main content area features a header for "Updated: Digitizing Plant Collections Workshop". Below the header, there is a section for "Add this event to your calendar:" with a "Print" button. The event details are: "Tue, 05/22/2012 - 1:48am -- gnelson". A photograph shows a dried plant specimen on a white sheet of paper next to a computer monitor. Below the photo, the text reads: "Digitizing Vascular and Non-Vascular Plant Collections", "Valdosta State University, Valdosta GA", and "September 17th - 18th, 2012". To the left of the main content, there is a sidebar with three sections: "Researchers" (Browse our specimen portal), "Collections Staff" (Learn how your collection can benefit from our work), and "Teachers & Students" (Learning resources & opportunities to engage). Each section has a right-pointing arrow icon.

Researchers
Browse our specimen portal

Collections Staff
Learn how your collection can benefit from our work

Teachers & Students
Learning resources & opportunities to engage

Updated: Digitizing Plant Collections Workshop

Add this event to your calendar:
[Print](#)

Tue, 05/22/2012 - 1:48am -- gnelson



Digitizing Vascular and Non-Vascular Plant Collections
Valdosta State University, Valdosta GA
September 17th - 18th, 2012

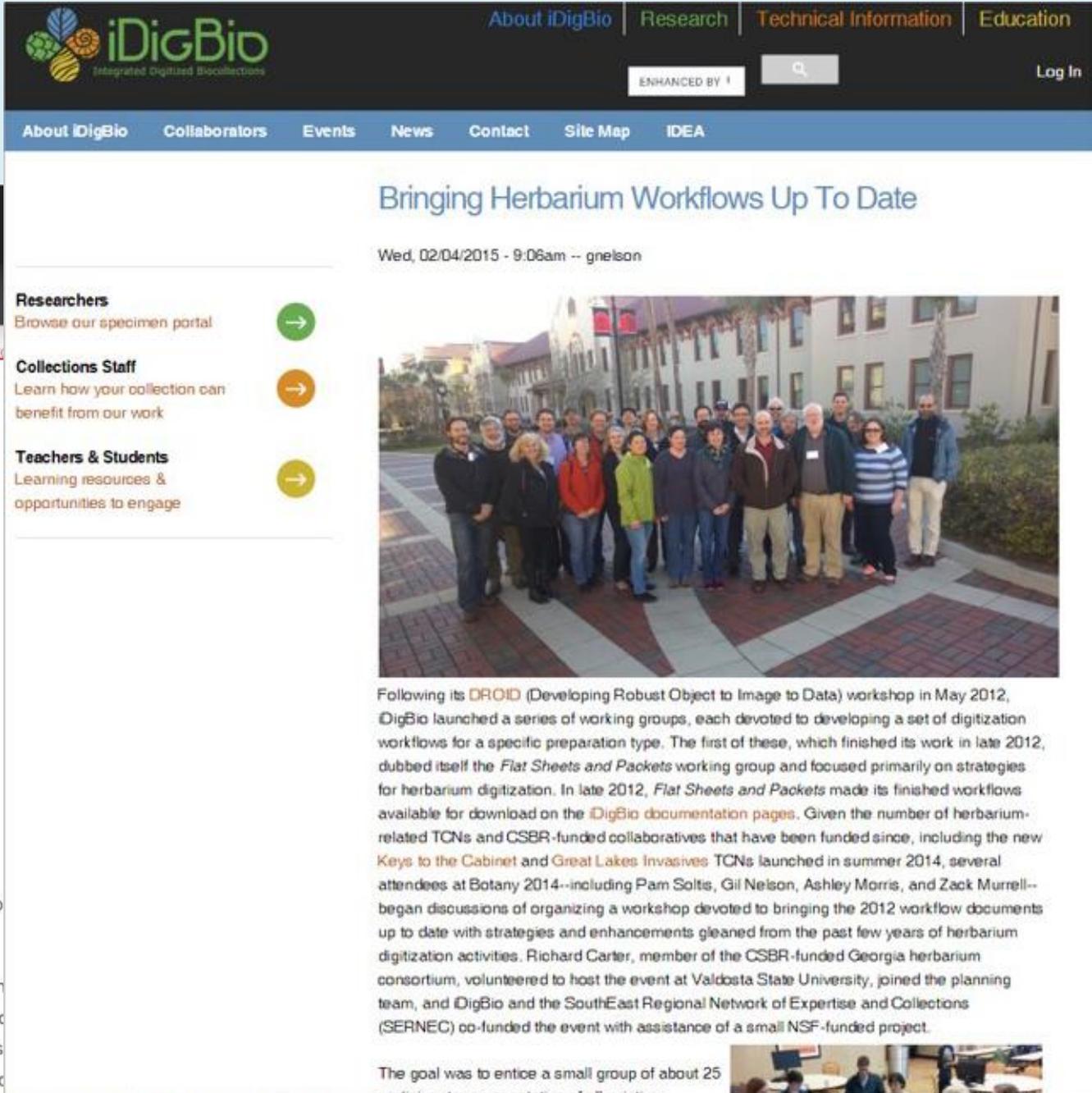
iDigBio is offering a series of preparation-specific workshops focusing on organizing, launching, and maintaining a biological collections digitization program. The first of these workshops will focus on vascular and non-vascular plant digitization and will be held at Valdosta State University, September 16–18, 2012. We have funding to support travel and per diem for up to 25 participants.

The primary goal of these workshops is to prepare participants with the necessary skills and knowledge to launch or maintain a digitization program individually, through collaboration with an existing Thematic Collections Network (TCN), or through collaboration with iDigBio. The target audience includes collections managers, curators, and herbarium directors.

The original impetus for this training included a focus on institutions—large and small—in the initial stages of implementing or planning a digitization program. However, the content is evolving and will likely prove useful to those somewhat more experienced with digitization protocols. Workshop topics will include: 1) an overview of iDigBio, ADBC, and nationwide



In 2015, a second iDigBio workshop was held at VSU to develop digitization protocols for herbaria.



The screenshot shows the iDigBio website interface. At the top, there is a navigation bar with links for 'About iDigBio', 'Collaborators', 'Events', 'News', 'Contact', 'Site Map', and 'IDEA'. A search bar and a 'Log In' button are also visible. The main content area features a news article titled 'Bringing Herbarium Workflows Up To Date' dated 'Wed, 02/04/2015 - 9:06am -- gnelson'. To the left of the article is a sidebar with three sections: 'Researchers' (Browse our specimen portal), 'Collections Staff' (Learn how your collection can benefit from our work), and 'Teachers & Students' (Learning resources & opportunities to engage). The article text describes the development of digitization workflows for herbaria, mentioning the 'Flat Sheets and Packets' working group and the 'OROID' workshop. A large group photo of workshop attendees is shown on the right side of the article.



NEWSROOM

VALDOSTA STATE UNIVERSITY / ABOUT VSU / NEWSROOM / NEWS ARCHIVES / 2015 / [VSU HOSTS IDIGBIO WORKSHOP](#)

January 29, 2015
15-35

Jessica Pope
Communications and Media Relations Coordinator

VSU HOSTS IDIGBIO WORKSHOP



The Department of Biology at Valdosta State University hosted a workshop on digitizing herbarium collections Jan. 27-29.

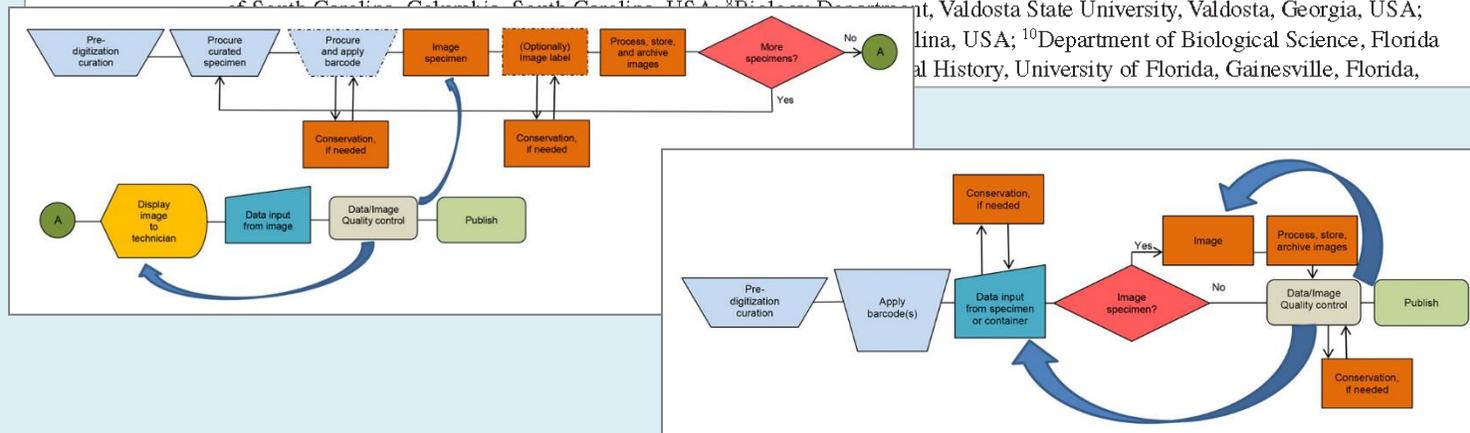
Herbarium digitization specialists from across the country gathered on campus to produce a document on best practices in herbarium digitization. The workshop was co-organized by iDigBio and the Southeastern Regional Network of Expertise and Collections (SERNEC) at the university's herbarium to see local digitization efforts demonstrated by students through National Science Foundation (NSF) funding.

An organization involving biologists and computer scientists at the University of Florida and Florida State

DIGITIZATION WORKFLOWS FOR FLAT SHEETS AND PACKETS OF PLANTS, ALGAE, AND FUNGI¹

GIL NELSON^{2,27}, PATRICK SWEENEY³, LISA E. WALLACE⁴, RICHARD K. RABELER⁵, DOROTHY ALLARD⁶, HERRICK BROWN⁷, J. RICHARD CARTER⁸, MICHAEL W. DENSLOW⁹, ELIZABETH R. ELLWOOD¹⁰, CHARLOTTE C. GERMAIN-AUBREY¹¹, ED GILBERT¹², EMILY GILLESPIE¹³, LESLIE R. GOERTZEN¹⁴, BEN LEGLER¹⁵, D. BLAINE MARCHANT^{11,16}, TRAVIS D. MARSICO¹⁷, ASHLEY B. MORRIS¹⁸, ZACK MURRELL⁹, MARE NAZAIRE¹⁹, CHRIS NEEFUS²⁰, SHANNA OBERREITER²¹, DEBORAH PAUL², BRAD R. RUHFEL²², THOMAS SASEK²³, JOEY SHAW²⁴, PAMELA S. SOLTIS¹¹, KIMBERLY WATSON²⁵, ANDREA WEEKS²⁶, AND AUSTIN R. MAST¹⁰

²Integrated Digitized Biocollections (iDigBio), Florida State University, Tallahassee, Florida 32306-2100 USA; ³Peabody Museum of Natural History, Yale University, New Haven, Connecticut, USA; ⁴Department of Biological Sciences, Mississippi State University, Mississippi State, Mississippi, USA; ⁵University of Michigan Herbarium–EEB, Ann Arbor, Michigan, USA; ⁶Department of Plant Biology, University of Vermont, Burlington, Vermont, USA; ⁷Department of Biological Sciences, University of South Carolina, Columbia, South Carolina, USA; ⁸Department of Biology, Valdosta State University, Valdosta, Georgia, USA; ⁹Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ¹⁰Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ¹¹Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ¹²Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ¹³Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ¹⁴Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ¹⁵Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ¹⁶Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ¹⁷Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ¹⁸Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ¹⁹Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ²⁰Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ²¹Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ²²Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ²³Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ²⁴Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ²⁵Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ²⁶Department of Biological Science, Florida State University, Tallahassee, Florida, USA; ²⁷Department of Biological Science, Florida State University, Tallahassee, Florida, USA



VSC vascular plant specimen images and data are shared on-line through the portal of the *Southeastern Regional Network of Expertise and Collections [SERNEC]*.



SERNEC

Southeast Regional Network of Expertise and Collections

Home Specimen Search Images Inventories Dynamic Tools [Log In](#) [New Account](#) [Sitemap](#)

Home >> Collection Search Page >> **Collection Profile**

Valdosta State University Herbarium (VSC)

The Valdosta State University Herbarium (VSC) provides a repository for the preservation of voucher specimens that document the flora of the Coastal Plain region of Georgia and specimens from a broader geographical area that might be useful in the study of the flora of this region and that enable specialized research on particular groups of plants carried out by faculty and students in residence at Valdosta State University and by taxonomic specialists at other institutions. VSC also provides specimens for use in teaching, and its staff responds to requests from the general public, natural resource managers, agricultural scientists, and others by providing information about plants and service determinations of unknown plants and, where appropriate, preserving vouchers relating to such.

Contacts: Richard Carter, Curator, rcarter@valdosta.edu

Homepage: <http://ww2.valdosta.edu/~rcarter/herbintro.htm>

Collection Type: Preserved Specimens

Management: Data snapshot of local collection database

Last Update: 9 June 2016

DwC-Archive Access Point: https://serneportal.org/portal/content/dwca/VSC_DwC-A.zip

Digital Metadata: EML File

Usage Rights: <http://creativecommons.org/licenses/by-nc/3.0/>

Address: Valdosta State University Herbarium
Valdosta State University
Biology Department
1500 N Patterson Street
Valdosta, GA 31698-0015
USA
229-333-5338
<http://ww2.valdosta.edu/~rcarter/herbintro.htm>

Collection Statistics

<https://serneportal.org/portal/index.php>

VSC bryophyte data are shared on-line through the portal of the *Consortium of Bryophyte Herbaria*.



CONSORTIUM OF BRYOPHYTE HERBARIA

- building a Consortium of Bryophytes and Lichens as keystones of cryptobiotic communities -



Home Search Images Species Checklists Crowdsourcing Associated Projects More Information Sitemap Help Welcome Richard! [My Profile](#) [Logout](#) English ▼

[Home](#) >> [Collection Search Page](#) >> Collection Profile

Valdosta State University (VSC)

The Valdosta State University Herbarium (VSC) provides a repository for the preservation of voucher specimens that document the flora of the Coastal Plain region of Georgia and specimens from a broader geographical area that might be useful in the study of the flora of this region and that enable specialized research on particular groups of plants carried out by faculty and students in residence at Valdosta State University and by taxonomic specialists at other institutions. VSC also provides specimens for use in teaching, and its staff responds to requests from the general public, natural resource managers, agricultural scientists, and others by providing information about plants and service determinations of unknown plants and, where appropriate, preserving vouchers relating to such.

Contacts: J. Richard Carter, Jr. Curator, rcarter@valdosta.edu

Homepage: <http://www.valdosta.edu/~rcarter/herbintro.htm>

Collection Type: Preserved Specimens

Management: Data snapshot of local collection database

Last Update:

Digital Metadata: EML File

Usage Rights: <http://creativecommons.org/licenses/by-nc/3.0/>

Collection Statistics

- 4,069 specimen records
- 24 (0.59%) georeferenced
- 4,069 (100%) with images (4,069 total images)
- 3,726 (92%) identified to species
- 98 families
- 276 genera
- 832 species
- 897 total taxa (including subsp. and var.)

Extra Statistics

Show Geographic Distribution
Show Family Distribution

<https://bryophyteportal.org/portal/collections/misc/collprofiles.php?collid=13>



This project made possible by National Science Foundation Awards: [#1115116](#), [#2001500](#), [#2001394](#)

Powered by [Symbiota](#).



THE VALDOSTA STATE UNIVERSITY VIRTUAL HERBARIUM

Virtual Herbarium Home
Page

About

People

Contact Information

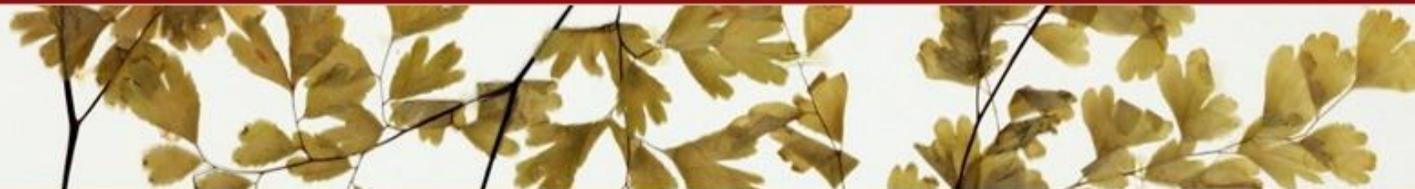
Loans and Exchanges

Visits

Links

Database

Login



Specimen Database Search

Please cite!

Search Criteria

Show: Hide:

Family: ?

Genus:

Species: The binomial scientific name (e.g., *Pinus palustris*)

Subspecies: The binomial plus subspecific name (e.g., *Marshallia graminifolia* ssp. *graminifolia*)

Variety: The binomial plus varietal name (e.g., *Ilex decidua* var. *decidua*)

Common Name:

Collection Date: [= ▼] (YYYY-MM-DD or MM-DD)

Collection Date: [= ▼]

Collector Name:

Collection Number:

Barcode:

Location:

Habitat:

More Options: Show: Hide:

Sort By:

Output Type:

Collaborative effort between VSU Herbarium and Michael Holt,
VSU Odum Library, enabled by VSU Faculty Research Seed Grant

<https://einherjar.valdosta.edu/>

Building on success and momentum
from the Collaborative NSF project,
during summer 2014, I wrote and
submitted a grant proposal requesting
additional funding for the Valdosta
State University Herbarium from the
National Science Foundation.



Advances in Wiregrass Georgia: Infrastructural Improvements to Sustain another Half-Century of Herbarium-Based Research and Teaching

National Science Foundation
(DBI-1458264, 2015–2018, J.R. Carter, PI)





In spring 2015, the **Valdosta State University Herbarium** received funding from the National Science Foundation

Major goals of this three-year project:

- Installation of a high-density storage system
- Processing backlog voucher specimens
- Georeferencing localities for legacy specimens
- Acquisition of the Vanderbilt University botanical teaching collection
- Outreach

Installation of high-density storage system



The “compactor” system was installed over a two month period, beginning in August 2015.



After the floor was cleared, tracks were cemented in place to allow mobility of the carriages.



Next, an elevated platform was built along the tracks, and steel carriages installed.



Installation of high-density storage system

The “compactor” system was installed over a two month period, beginning in August 2015.



The new cabinets were stored temporarily in the atrium of Bailey Science Center.



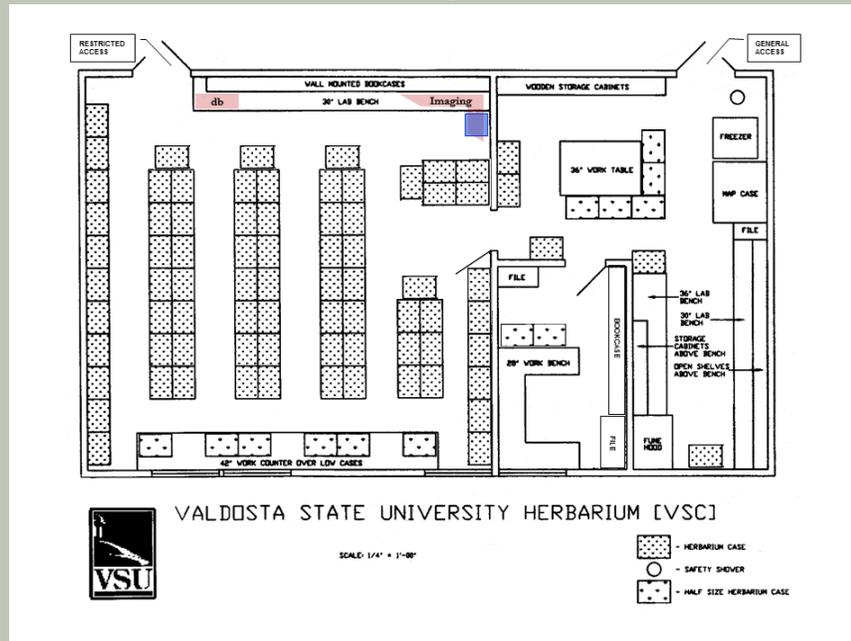
Finally, old and new cabinets were mounted on the carriages, and the end panels installed.

Installation of high-density storage system

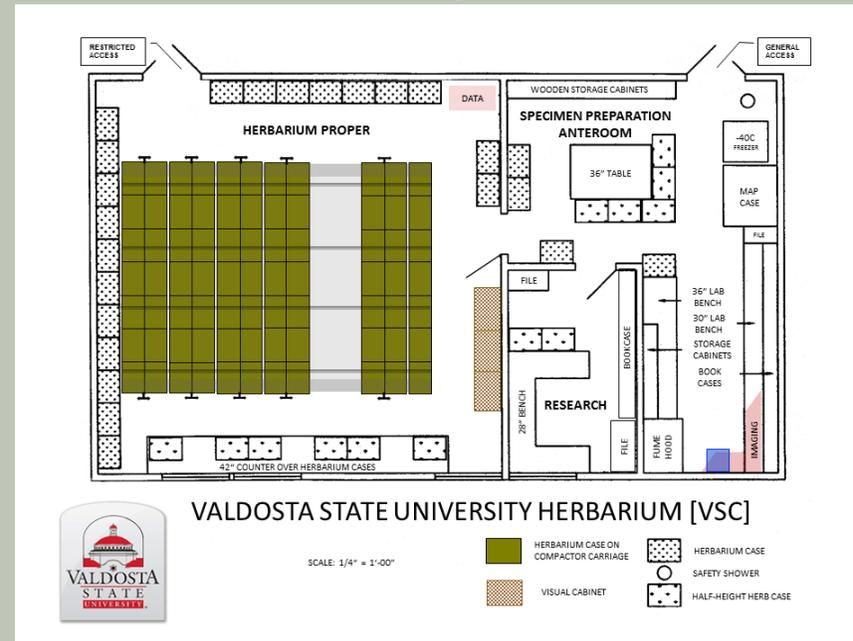
The “compactor” system was installed over a two month period, beginning in August 2015.



January 2014



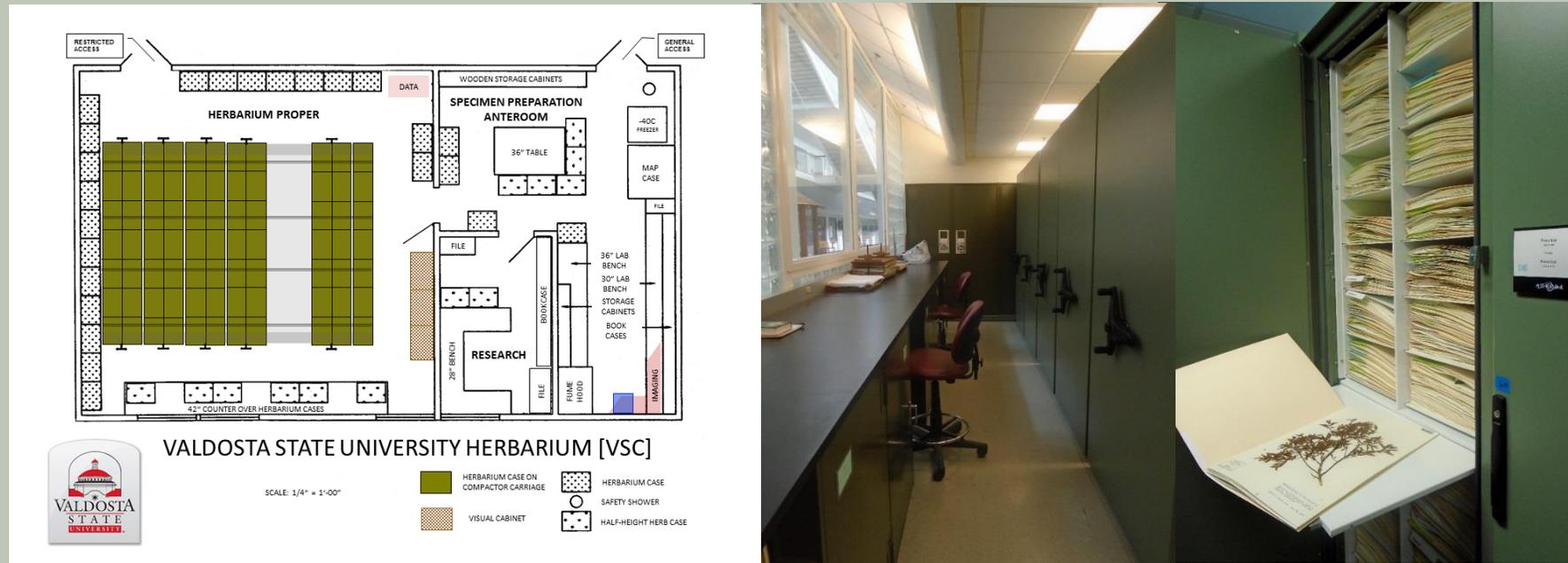
January 2016



Layout of the Valdosta State University Herbarium before and after installation of compactor system and new cabinets.

Installation of high-density storage system

The “compactor” system was installed over a two month period, beginning in August 2015.



Installation of compactor system and 41 new cabinets has increased specimen storage capacity by 35%, providing safe and secure storage of this valuable research collection for many years to come.

Processing backlog specimens



6,445 backlog voucher specimens were processed: 3,323 mounted, digitized, and added to VSC + 3,122 sent out as exchange.



Unmounted backlog specimens



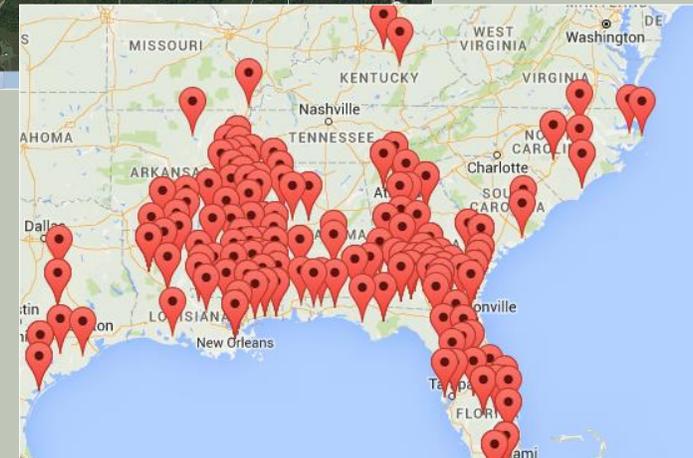
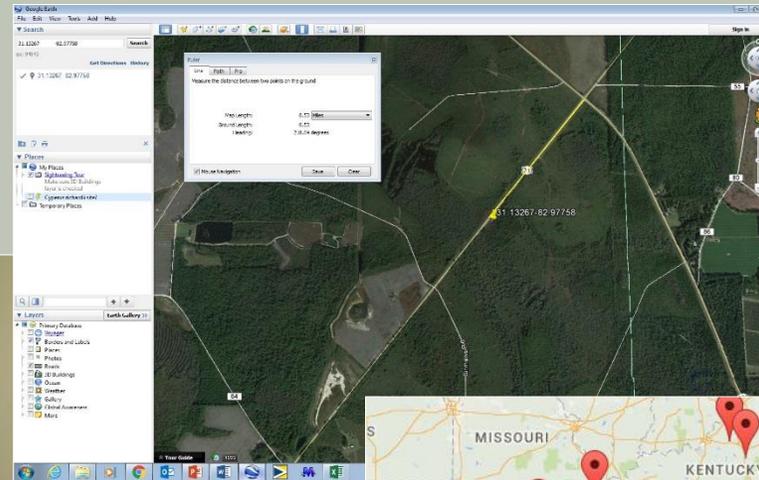
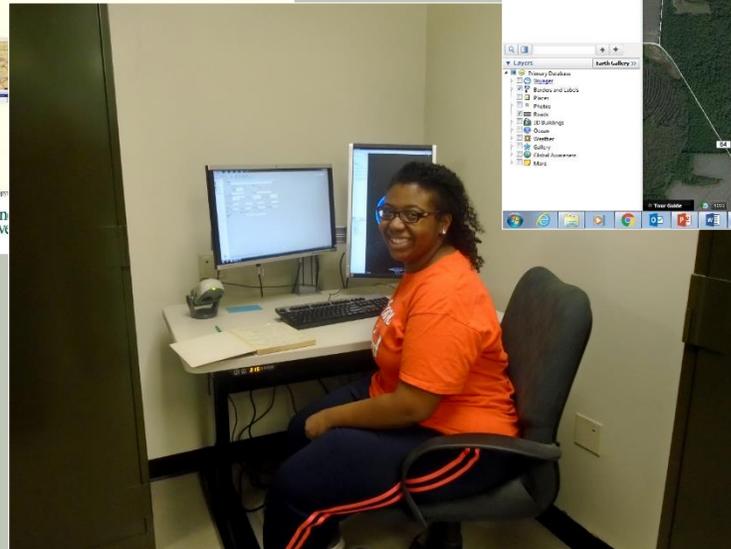
Student assistants mount and digitize valuable backlog specimens.

Label data and images are made publicly available through VSU Virtual Herbarium and SERNEC portals.



Georeferencing

1,798 collection records were georeferenced, increasing their value for research.



Standardized methods are employed to determine geographical coordinates for specimen localities from data in legacy maps and field notebooks, thereby enabling accurate mapping of plant record occurrences.

Acquisition of teaching materials

130 boxes of Vanderbilt University teaching specimens were transferred for use in teaching at VSU.



Outreach

A variety of activities educated herbarium assistants and other students, teachers, and the general public about biodiversity collections and their importance in research.



Student assistants work and learn in the herbarium.



Students in formal courses learn about the importance of plants and biodiversity collections.

Open-house 2016

Spring 2016, the curator presented a public lecture on the VSU Herbarium followed by an open-house with tours featuring student-centered activities in the newly renovated herbarium.



VSU HERBARIUM

The Valdosta State University Herbarium has recently undergone renovation through support from the National Science Foundation. Please join us Thursday, April 14, 2016, for a public lecture highlighting the herbarium, followed by an open-house celebration and tour of the herbarium.

The public lecture will be presented at 4:00PM in Powell Hall Auditorium, and the open-house will follow immediately. Please gather at the east end of the atrium of Bailey Science Center at 5:00PM for the open-house and tour.

For more information, please contact
Dr. Richard Carter
Biology Department
229.333.5338
rcarter@valdosta.edu



Science Saturday 2016



VSU students promote the herbarium and plant science to the general public.

Botany 2016 – Annual Conference sponsored by the Botanical Society of America



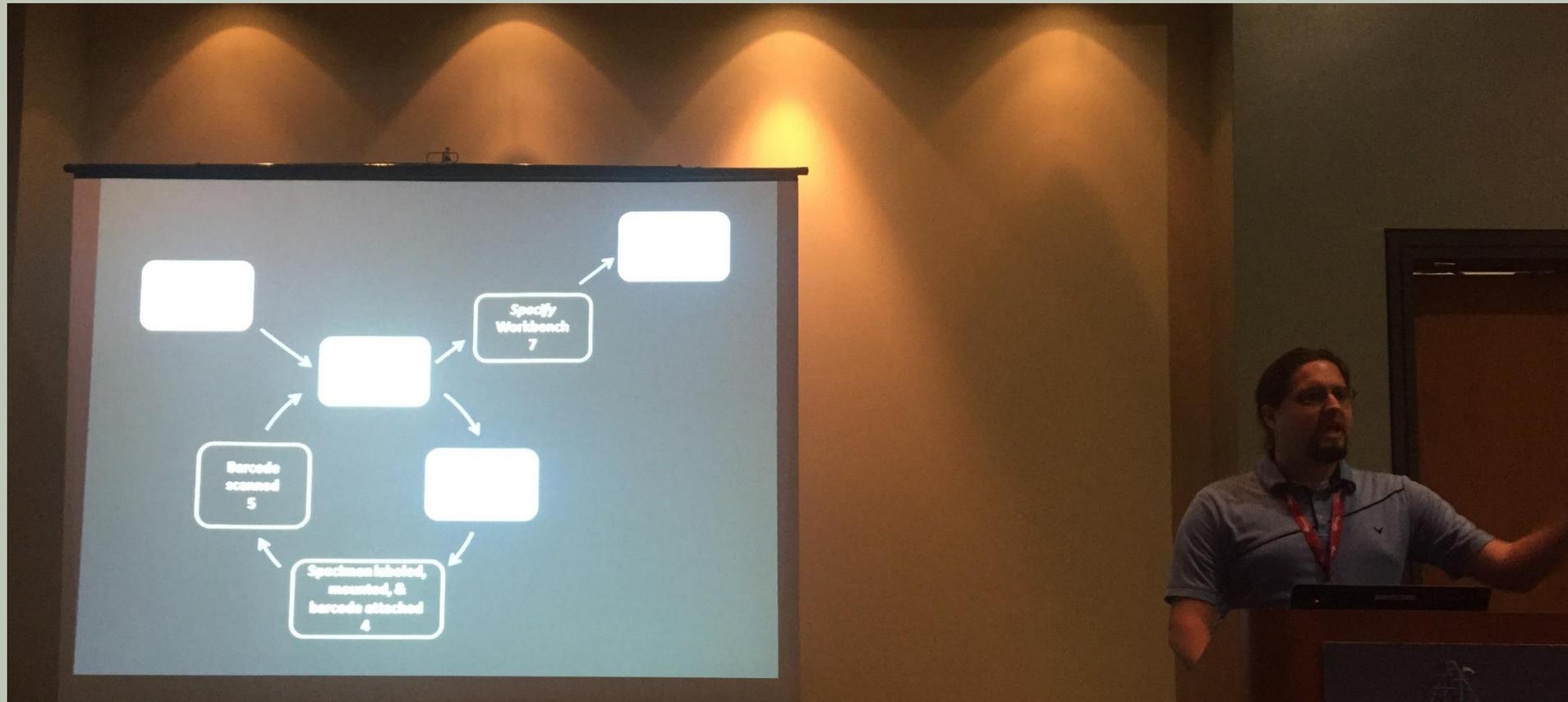
Poster presentation by VSU undergraduate herbarium assistants
Ashlee Robinson, Rechelle Woods, and Phillip Lowe



Botany 2016 – Annual Conference sponsored by the Botanical Society of America



Oral presentation by Phillip Lowe, VSU undergraduate herbarium assistant, on LabelMerge



Other outcomes

This paper is the outcome of a 2016 iDigBio workshop at UC-Berkeley, involving 37 scientists from the United States, Scotland, England, Sweden, Canada, Germany, and Australia.



INVITED SPECIAL ARTICLE

For the Special Issue: Green Digitization: Online Botanical Collections Data Answering Real-World Questions

Digitization protocol for scoring reproductive phenology from herbarium specimens of seed plants

Jennifer M. Yost^{1,24}, Patrick W. Sweeney², Ed Gilbert³, Gil Nelson⁴, Robert Guralnick⁵, Amanda S. Gallinat⁶, Elizabeth R. Ellwood⁷, Natalie Rossington⁸, Charles G. Willis^{9,10}, Stanley D. Blum¹¹, Ramona L. Walls¹², Elspeth M. Haston¹³, Michael W. Denslow¹⁴, Constantin M. Zohner¹⁵, Ashley B. Morris¹⁶, Brian J. Stucky¹⁷, J. Richard Carter¹⁷, David G. Baxter¹⁸, Kjell Bolmgren¹⁹, Ellen G. Denny²⁰, Ellen Dean²¹, Katelin D. Pearson²², Charles C. Davis²³, Brent D. Mishler^{18,22}, Pamela S. Soltis², and Susan J. Mazer⁸

Manuscript received 6 September 2017; revision accepted 2 January 2018.

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³ Arizona State University, School of Life Sciences, P.O. Box 874501, Tempe, Arizona 85287-4501, USA

⁴ iDigBio, College of Communication and Information, Florida State University, Tallahassee, Florida 32306, USA

⁵ Florida Museum of Natural History and Biodiversity Institute, University of Florida, Gainesville, Florida 32611, USA

⁶ Boston University, Department of Biology, 5 Cummings Mall, Boston, Massachusetts 02215, USA

⁷ La Brea Tar Pits and Museum, 5801 Wilshire Boulevard, Los Angeles, California 90036, USA

⁸ Department of Ecology, Evolution and Marine Biology, University of California, Santa Barbara, California 93106-9620, USA

⁹ Department of Organismic and Evolutionary Biology, Harvard University Herbaria, 22 Divinity Avenue, Cambridge, Massachusetts 02138, USA

¹⁰ University of Minnesota, Department of Biology Teaching and Learning, 515 Delaware Street SE, Minneapolis, Minnesota 55455, USA

¹¹ Biodiversity Information Standards (TDWG), 1342 34th Avenue, San Francisco, California 94122, USA

¹² CyVerse, University of Arizona, 1657 East Helen Street, Tucson, Arizona 85721, USA

¹³ Royal Botanic Garden Edinburgh, 20a Inverleith Row, Edinburgh, EH3 5LR, United Kingdom

¹⁴ Department of Biology, Appalachian State University, Boone, North Carolina 28608, USA

¹⁵ Systematic Botany and Mycology, Department of Biology, Munich University (LMU), 80638, Munich, Germany

¹⁶ Department of Biology, Middle Tennessee State University, Murfreesboro, Tennessee 37138, USA

¹⁷ Biology Department, Valdosta State University, Valdosta, Georgia 31698, USA

¹⁸ University and Jepson Herbaria, University of California Berkeley, 1001 Valley Life Sciences Building, Berkeley, California 94720, USA

¹⁹ Swedish University of Agricultural Sciences, Unit for Field-based Forest Research, 360 30, Lammhult, Sweden

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²¹ UC Davis Center for Plant Diversity, Plant Sciences M.S. 7, One Shields Avenue, Davis, California 95616, USA

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Citation: Yost, J. M., P. W. Sweeney, E. Gilbert, G. Nelson, R. Guralnick, A. S. Gallinat, E. R. Ellwood, et al. 2018. Digitization protocol for scoring reproductive phenology from herbarium specimens of seed plants. *Applications in Plant Sciences* 6(2): e1022.

doi:10.1002/aps3.1022

Applications in Plant Sciences 2018 6(2): e1022; <http://www.wileyonlinelibrary.com/journal/AppsPlantSci> © 2018 Yost et al. *Applications in Plant Sciences* is published by Wiley Periodicals, Inc. on behalf of the Botanical Society of America. This is an open access article under the terms of the Creative Commons Attribution-NonCommercial License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

Worldwide Engagement for Digitizing Biocollections (WeDigBio): The Biocollections Community's Citizen-Science Space on the Calendar

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The digitization of biocollections is a critical task with direct implications for the global community who use the data for research and education. Recent innovations to involve citizen scientists in digitization increase awareness of the value of biodiversity specimens, advance science, technology, engineering, and math literacy; and build sustainability for digitization. In support of these activities, we launched the first global citizen-science event focused on the digitization of biodiversity specimens: Worldwide Engagement for Digitizing Biocollections (WeDigBio). During the inaugural 2015 event, 21 sites hosted events where citizen scientists transcribed specimen labels via online platforms (DigiVol, Les Herbonautes, Notes from Nature, the Smithsonian Institution's Transcription Center, and Symbiota). Many citizen scientists also contributed off-site. In total, thousands of citizen scientists around the world completed over 50,000 transcription tasks. Here, we present the process of organizing an international citizen-science event, an analysis of the event's effectiveness, and future directions—content now foundational to the growing WeDigBio event.

Keywords: biodiversity informatics, biodiversity research collections, citizen science, crowdsourcing, natural history collections

Biodiversity collections ("biocollections") are invaluable to society. They provide the data crucial to investigating climate and other environmental changes (e.g., Labay et al. 2011, Robbirt et al. 2011, Lavoie 2013), conservation biology (e.g., Gaubert et al. 2006, Swenson et al. 2012, Scheper et al. 2014), population genetics and genomics (e.g., Wandeler et al. 2007, Bi et al. 2013, Holmes et al. 2016), and even public health and safety (Suarez and Tsutsui 2004, Pinto et al. 2010). However, the majority of biocollection specimen data remain difficult to access, locked in the cabinets of museum and university collections in analog format, presenting the biocollections community with many years of digitization work (Page et al. 2015). Digitization typically involves curation, imaging, image processing, the electronic capture of label and ledger data,

and georeferencing (Nelson et al. 2012), all of which require people power and other resources. Recent funding at local, national, and international scales has provided institutions the ability to hire digitization technicians (AIBS 2013), but the workload is greater than what can be readily accomplished with current funding and technologies. Public participation has the potential to advance digitization and has the additional benefits of improving science literacy among contributors, community support for biocollections, and the sustainability of digitization activities (Ellwood et al. 2015). In October 2015, we piloted the Worldwide Engagement for Digitizing Biocollections event (WeDigBio 2015) to mobilize citizen scientists for biocollection digitization and provide the biocollections community with a large-scale education and outreach opportunity. In October of the following years,

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This *BioScience* article documents the process of organizing WeDigBio's international citizen-science annual digitization events in 2016 and 2017 and the success of these events. VSU undergraduate students and other volunteers participated in these events.

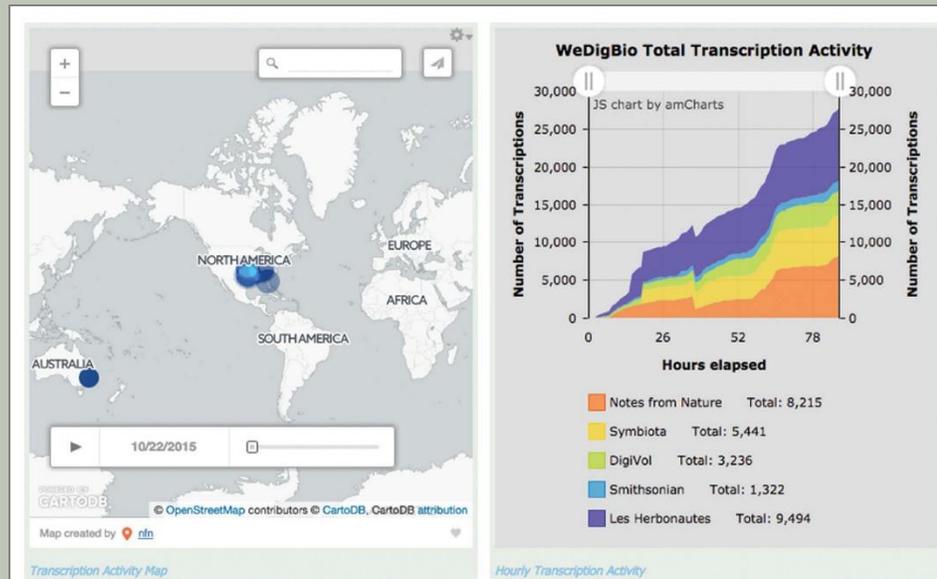
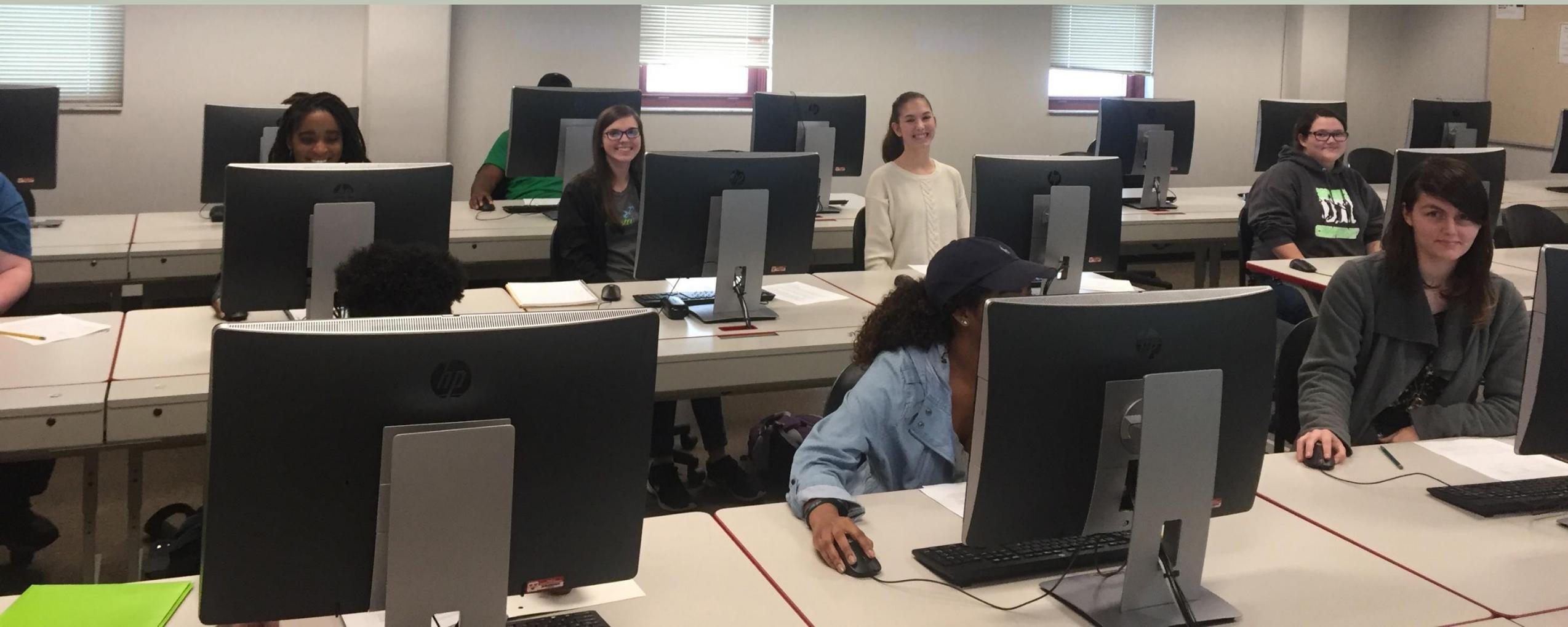


Figure 2. A screenshot of the www.wedigbio.org dashboard during WeDigBio 2015. The image on the left shows the approximate location of the transcriber, as was determined by IP address. The image on the right shows the tally of transcriptions, by platform, as time elapsed during the event. This screenshot was taken before the end of the event and as such does not reflect the final transcription tallies. Furthermore, the approximate counts and errors in the display of these preliminary results were addressed in later aggregation of the data for analysis in the present research. For example, the number of transcriptions shown for the Smithsonian is completed transcriptions (i.e., those that have been transcribed by one or more of the participants and also reviewed). The comparable SITC data in figure 3 include transcriptions that were still in process.



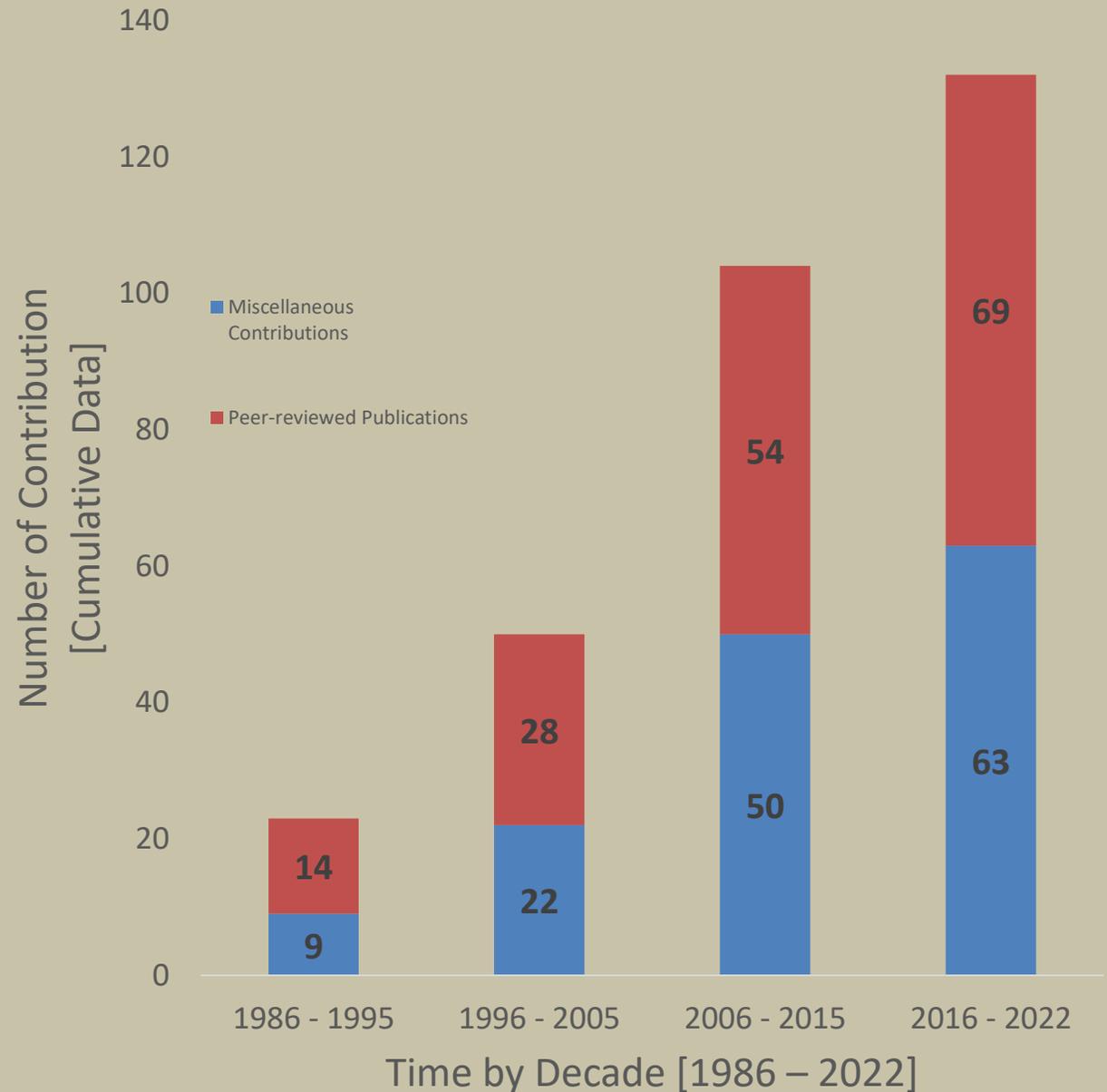
Spring 2018

WeDigBio Citizen Science Label Transcription Event, VSU



Research at VSU supported by the VSU Herbarium 1986 – 2022

- 69 peer-reviewed journal articles published in more than 20 journals
- 63 misc. publications, abstracts, and reports
- Nearly all of this research is related to our region.
- Much of this research has involved students.



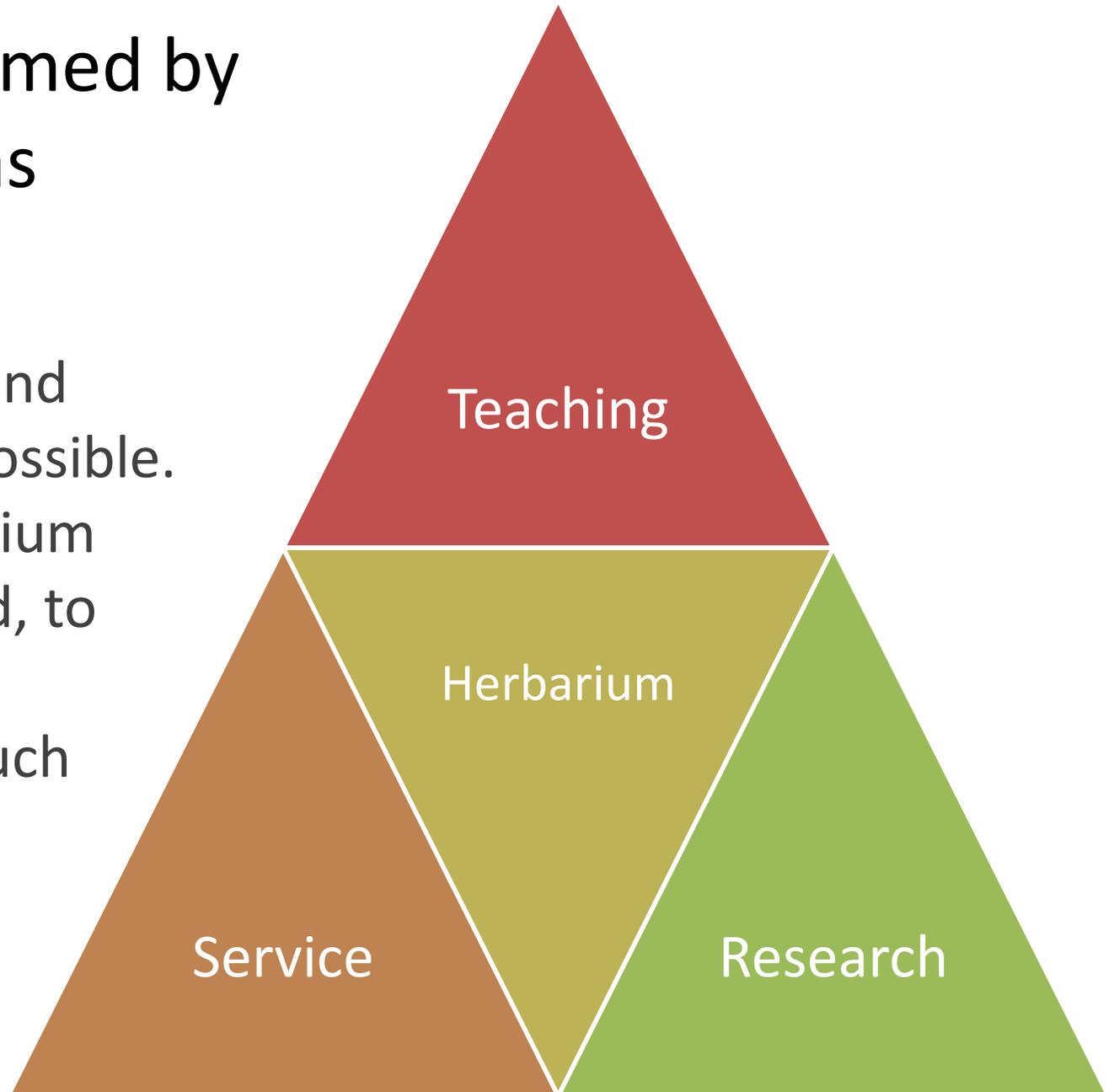
1986–2022: Additionally, 58 presentations, public lectures, workshops, and short courses that involve the herbarium have been made by the curator.

Recent examples

- *Wonderful World of Trees*. Learning in Retirement, Continuing Education, VSU, 12, 19 & 26 April 2023
- *Biodiversity*. Learning in Retirement, Continuing Education, VSU, October 26, November 2 & 9, 2022
- *Native Grasses Workshop*. Sponsored by Coastal Plain Chapter of Georgia Native Plant Society and the Georgia Botanical Society at Gaskins Forest Education Center, Alapaha, Georgia, 7 August 2022
- *Native Ferns Workshop*. Sponsored by Coastal Plain Chapter of Georgia Native Plant Society at Gaskins Forest Education Center, Alapaha, Georgia, 7 August 2021
- *Introduction to the Grasses*. Red Hills Natural History Alliance Short Course, sponsored by Tall Timbers Research Station and Birdsong Nature Center, 20–22 September 2019
- *Native Medicinal Plants*. Short course for State Botanical Garden of Georgia Certificate in Native Plants Program, Valdosta State University, 16 February 2019
- *Some Basics of Plant Identification and the Essential Role of the Herbarium in Accurate and Consistent Identification and Naming of Plants*. Workshop. South Georgia Native Plant and Wildflower Symposium, sponsored by University of Georgia College of Agriculture & Environmental Sciences and Garden Club of Georgia, Inc., Tifton, Georgia, 22 March 2017

My teaching is greatly informed by my research and my work as herbarium curator.

In teaching, I draw upon research and curatorial experiences whenever possible. I seek to integrate teaching, herbarium curation, service, and research, and, to the extent that my career has been successful, I would attribute it to such integration.



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