

The Vasculum

The Society of Herbarium Curators Newsletter Volume 12, Number 2 - July 2017

FROM THE EDITOR

Twelve years ago, 7 June 2005 to be exact, I received an email from Michael Woods, SHC's first President. He was writing to inquire whether I would be willing to serve SHC, either on the Membership Committee or as Editor of *The Vasculum* and Chair of the Newsletter Editorial Board. The following day, I contacted Michael via email, stating that I'd be happy to help out in whatever way was most beneficial. According to my daily journal, I followed up on the email with a brief prayer, asking that the Lord place me where He would have me serve. Providence acted swiftly, or Michael simply realized that one of the positions might be much more difficult to fill. Perhaps a bit of both. In any case, Michael wasted little time in appointing me to the position of Editor. Thanks, Michael, I'll start taking your calls again!

The first issue to appear was that of January 2006. Recent members may not realize that our newsletter, for a time was produced in hard copy, with the last print issue being that of January 2012. After putting together each newsletter, it would be hand-carried to a print shop in Harrisonburg, VA, where copies sufficient for our membership were produced. These would then be folded, addressed, stamped, and carried to the post office. I must take a moment to thank each SHC Secretary and Treasurer for providing me with the names and addresses of our members, and for promptly reimbursing me for the printing charges (Lucile McCook, C. Smoot Major, Brenda Wichmann, Dale A. Kruse, Mary Ann Feist, Mare Nazaire). Your role was/is so crucial to SHC!

In 2007, as part of a strategy to promote SHC and *The Vasculum* at our annual meeting, I painted and labelled a metal vasculum, and placed inside the first issue of the newsletter as well as a copy of the bylaws and the constitution. The intention was that it would be passed from president to president. Note to Presidents... should it ever be decided that it's too bulky to carry to each meeting, I'd love to bring it back home to be archived.

As with any newsletter, some sections prove more popular than others. Of course, our main focus was on news from herbaria throughout the world, initially focusing on those in the southeastern U.S. Over the past 12 years, 26 herbaria have been highlighted. Our first "featured herbarium" was MISS. Following, were AUA, BRIT, BUT,

CAS/DS, CDS, GA, DUKE, GMUF, HAW, HUH, INHS, LSU/LSUM, MEL, MICH, MTSU, MU, NCU, OKL, PH, RSA-POM, US, USCH, VPI, VSC, and WVA. All told, these represent three countries, 19 states, and the District of Columbia. Other herbaria that provided stories included ALNHS, BM, CAU, FSU, JMUH, LNCN, NBYC, OKLA, UARK, UC/JEPS, UNCC, USAM, WCUH, WTU, and WVV. Check *Index Herbariorum* if any of these codes are unfamiliar!

It's always a mistake to list names, as some may be inadvertently left out, but I feel that certain individuals deserve special recognition for making the newsletter a success. Eric Ribbens, for example, provided 23 articles, 20 of these representing "The Wired Herbarium". Other members who contributed five or more articles included John Herr, Wendy Zomlefer, and Maura Flannery. And, I must congratulate Donna Ford-Werntz for providing the most correct answers to "Name That Plant".

Appreciation is extended to the SHC Presidents, each of whom gave me full support and encouragement, as well as providing a "message" for each issue of our newsletter. These include Michael Woods, Zack Murrell, John Nelson, Michael Vincent, Alexander Krings, Andrea Weeks, and Austin Mast. And, I thank Charles Horn, Derick Poindexter, and Michael Thomas for serving on the Editorial Board during their terms as Webmaster.

The most regrettable aspect of stepping down as Editor is that it ends this particular working relationship with my Assistant Editors, Melinda Peters and Bryan Dutton. I owe them tremendously for their efforts over the past 12 years. Both possess great skill, integrity, and an indefatigable work ethic. More importantly, they are wonderful friends. Thank you both.

I have no doubt that our new Editor, John Schenk will take *The Vasculum* to new heights. If I would make one request upon my exit, it would be that each member seriously consider volunteering to write an article for use in our "Featured Herbarium" column. Typically, I had to select and "encourage" an individual to do so. However, on the plus side, I don't believe anyone turned me down. Perhaps once! ☺ It's been an honor and privilege.

- Conley K. McMullen, James Madison University,
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SHC NEWS

A Message from the President

I thank Conley McMullen (James Madison University Herbarium) for 12 years of service to the Society of Herbarium Curators as Newsletter Editor. Conley and his assistant editors did a great job building *The Vasculum* from scratch into a critical asset for our community. I welcome John Schenk (Georgia Southern University Herbarium) as the incoming Newsletter Editor. I know that John has plans to phase in some exciting new features for *The Vasculum* and look forward to those. I also welcome Patrick Sweeney (Yale University Peabody Museum of Natural History Herbarium) as the President-Elect and Richard Rabeler (University of Michigan Herbarium) in his second term as Member-at-Large.

If you are not already a member of the Society's current cohort of dynamic, creative executive board and committee members, please consider nominating yourself for an elected position by contacting Past-President Andrea Weeks (George Mason University's Ted R. Bradley Herbarium; aweeks3@gmu.edu), or for a committee role by contacting me (for appointment starting 2017–18; amast@bio.fsu.edu) or President-Elect Patrick Sweeney (for appointments 2018–20; patrick.sweeney@yale.edu). The Society values the participation of members from all regions of the world, all institutional contexts, and all career stages.

Revisions to our Constitution and Bylaws documents passed on June 15, 2017. Among other important things, the revisions clarify that Society chapters are "circumscribed based on the geographic location of the member and/or the herbarium with which the member is affiliated" and make possible the establishment of Society sections that are "circumscribed based on the mutual interest in a topic of relevance to the purpose of the Society." I understand that the Society's Membership Committee will soon send out a survey meant to build momentum for a section focused on the topic of empowering our early career members for success in herbarium settings. I encourage you to watch for that email, if you have not already received it at the time of this newsletter's publication. I also understand that the ad hoc Constitution and Bylaws Review Committee is planning to recommend a second set of revisions during the Spring 2018 voting.

For the record, other changes to the Constitution and Bylaws passed in 2017 included (1) generalizing the description of who may be a member, (2) expanding the time for annual meeting planning, (3) clarifying the role and expectations for the chapter and section chairs in Executive Board activities, including the annual meeting, (4) expanding the time ahead of the annual meeting that the newly elected Executive Board members have to prepare to participate, (5) giving the President the responsibility of appointing members of the Herbarium Assistance Committee, as is done for all other standing

committees except the Nominating Committee, (6) setting the term for the Herbarium Assistance Committee membership to three years, (7) recognizing the Past President as the Society's Program Director for the scientific program associated with the annual meeting, and (8) making the distinction between Secretary and Treasurer more precise and correcting some language that implied that the two were the same person. In addition to those changes, we made very minor changes that include standardizing our references to the Society, recognizing the availability of new technologies, correcting grammatical, punctuation, and spelling errors, and a few other things.

The Executive Board met at Botany 2017 (Fort Worth, Texas, USA) from 7–8 a.m. on Tuesday, July 27, then the membership met from noon–12:30 p.m. later that day. I highlight here that the Executive Board selected Botany 2018 (July 21–25 in Rochester, MN, USA) and Botany 2019 (July 27–31 in Tuscon, AZ, USA) as the Society's annual meeting locations for those years. This was partly based on the membership survey results that I presented in the last President's Column (*The Vasculum*, January 2017) in which more of our responding members stated that they would be participating in Botany 2018 than in other 2018 conferences. I encourage you to attend those Botany conferences, if you are able. The Society plans to continue to provide workshop content tailored to our community on the Thursday morning of those meeting weeks. If you have ideas for workshop topics, please email Past-President Andrea Weeks (for the 2018 workshop; aweeks3@gmu.edu) or me (for the 2019 workshop; amast@bio.fsu.edu). I was pleased that the Society's membership meeting was well attended this year with about the same number of participants as the membership meetings for the (much larger) Botanical Society of America and the American Society of Plant Taxonomists.

The Society engaged 35 herbaria in strategic planning this year, either in the context of the short course that we offered this past Spring or the Thursday workshop on the topic at Botany 2017. I thank David Jennings (Project Manager, iDigBio, the US National Science Foundation's National Resource for Advancing Digitization of Biodiversity Collections) and Past-President Andrea Weeks for helping me to organize these. The course participants worked with their internal planning teams over six weeks to produce a strategic plan with the sections Vision, Mission, Key Stakeholders, Goals & Objectives, Strategy, SWOT Analysis, Sustainability, and Evaluation. We introduced the workshop participants to these sections and began to build momentum for completing them with an internal planning team upon return to their respective herbarium. I found the activities to be inspiring - we are a smart, creative, pragmatic community. I gave a plenary talk at the 2017 Society for the Preservation of Natural History Collections Conference (Denver, CO, USA) on the importance of strategic planning for individual herbaria and our Society's leadership in this area. I would

like to see strategic planning become a regular activity for our herbaria, proactively inoculating our collections against resource cuts and closings. In the combined survey responses for the course and workshop, all but one (noncommittal) respondent agreed or strongly agreed that they would recommend the opportunity to others if offered in future. David and I are planning to offer the short course again in Spring 2018, and I encourage you to watch Society emails for further information, if you are interested.



Finally, I note that we now have Society stickers that interact with the Libraries of Life Augmented Reality Mobile App to produce a whitetop pitcher plant (*Sarracenia leucophylla*), a rare species from the southeastern US (see above photo). Thank you, Anne Basham (ExplorMor Labs), for helping to make this happen. The stickers and AR content were a big hit at the Society's table at the 2017 SPNHC and Botany 2017 conferences. Our community deserves a reputation for innovation.

Thank you all for your past and ongoing support of the Society. If you have any thoughts on how to make the Society even more successful, please don't hesitate to email me.

- Austin Mast, Florida State University,
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HERBARIUM NEWS

Featured Herbarium: GMUF - Ted R. Bradley Herbarium

George Mason University is located in Fairfax, Virginia approximately 20 miles west of Washington, DC. It is the Commonwealth's largest public university, with 33,952 students enrolled in 2016, and one of its youngest, having welcomed its first students in 1957 and achieved university status in 1972. The Ted R. Bradley Herbarium (GMUF; <https://biology.gmu.edu/herbarium/>) is housed within the Department of Biology, which serves over 1300 undergraduate majors. Its mission is to engage the next generation of botanists and champion the careful stewardship of Virginia's plant diversity through hands-on education, collections-based research, and public outreach.

History - The genesis of the university herbarium occurred in 1967 with the hire of Professor Ted R. Bradley (Fig. 1), who would become its first curator. Over the course of his career, Dr. Bradley added over 30,000 of his own specimens and approximately 20,000 others from external gifts and exchanges as well as projects conducted by Mason faculty and students. He was also a founding member of the Virginia Botanical Associates, Inc., the non-profit consortium of botanists that authors the Digital Atlas of the Virginia Flora (<http://vaplantatlas.org/index.php?do=start>). As a result, Dr. Bradley developed the herbarium intentionally as a synoptic collection of vascular plants at the county-level. When he retired in 2003, the university herbarium, which had grown to fill 54 cabinets in two rooms in the basement of Krug Hall, was renamed the Ted R. Bradley Herbarium in his honor. In 2005, I became the director of the herbarium as part of my duties as a newly hired professor of plant systematics.



Figure 1 - Dr. Ted Bradley collecting plants in the 1970s, image courtesy of the GMUF slide collection.

Focus of the Collection - A strength of the collection is its documentation of the flora of northern Virginia during this region's transition from being a predominantly rural area to a densely populated suburban and urban one. Land-use change accelerated during Dr. Bradley's tenure; many of his specimen localities are no longer intact. A census of the collection has estimated that 67% of the holdings are from Virginia and the remaining 33% are from elsewhere in the United States or another country. Digitization of all our Virginian vascular plant specimens has revealed that these tally 35,634 sheets (Fig. 2). From these results, I estimate that the research collection contains approximately 52,782 vascular plant specimens. The non-vascular specimens, the teaching collection and other specimens not integrated with the research collection comprise an additional ca. 2,500 sheets. Additional collections' strengths include a large number of Cyperaceae and a comprehensive representation of the flora of Andros Island, Bahamas, which were research foci of Dr. Bradley. Over the last decade, accessioning has expanded both the breadth and depth of the collection. Notable examples of new specimens include 275 sheets of New Jersey pine barrens taxa obtained via exchange with Brooklyn Botanical Garden, 150 vascular plant specimens collected by Tamsey Warner Ellis from the Norfolk, Virginia area in the mid-1970's, 312 sheets representing the complete vascular flora of a rare northern Virginian calcareous muck fen (Abrams Creek Watershed, Frederick Co.), and most recently, 272 specimens from an ongoing master's project that is documenting the vascular flora of Virginia's newest state park (Blue Ridge Center for Environmental Stewardship, Loudoun Co.). The herbarium also receives regular gifts of specimens made by Virginia Natural Heritage Program botanist, Gary Fleming, as well as other regional botanists. All Virginian specimens can be viewed online at www.sernecportal.org.



Figure 2 - Mason undergraduate student, Ushna Ahmad, digitizing Ted R. Bradley herbarium specimens. Credit: Evan Cantwell/Creative Services/George Mason University.

Description of the Facility - The Ted R. Bradley Herbarium moved to a custom-designed space in the new College of Science flagship building, Exploratory Hall in 2013. The facility includes a 980 ft² room for the herbarium collection, the reference library, and research desk space (Fig. 3). It also includes an adjoining 300 ft² prep room that contains collection equipment, a drying cabinet, a -80°C freezer and space for specimen processing. Since I began curating the collection, we have relied on non-chemical means of pest prevention, but prior use of paradichlorobenzene on the specimens may still provide protective effects for much of the collection. The herbarium is arranged by family according to the Engler system, and specimen folders are organized alphabetically by genus and species followed by geographical segregation at the species and sub-species level. Specimens from Virginia are located in beige folders, those from elsewhere in the United States in yellow folders, and those from outside the United States in orange folders.

Recent external visitors to the facility include natural resource professionals from the Virginia Natural Heritage Program, NatureServe, US Geological Service, Fairfax County and the City of Alexandria. Botanists from outside Virginia also access the collections through loans of specimens to their institutions. Our herbarium specimens are currently being used to support external projects including a revised Flora of the Bahamas and a pollen flora of the Potomac River Basin.



Figure 3 - The new facility of the Ted R. Bradley Herbarium in Exploratory Hall has a highly visible location at the center of campus. Karoline Oldham (left) and Andrea Weeks (right). Credit: Evan Cantwell/Creative Services/George Mason University.

Education and Outreach - Educating the next generation of botanists at George Mason University and beyond is an explicit part of the mission of the Ted R. Bradley Herbarium. The herbarium provides teaching resources for BIOL103 - Introductory Biology, BIOL140 - Plants and People, BIOL308 - General Ecology, BIOL330 - Biodiversity Laboratory, BIOL344 - Plant Diversity and

Evolution, BIOL345 - Plant Ecology, and EVPP350 - Freshwater Ecosystems. The herbarium supports undergraduate independent studies and co-sponsors an undergraduate student intern with Meadowlark Botanical Garden (<https://www.novaparks.com/parks/meadowlark-botanical-gardens>). Most recently, the herbarium has worked with undergraduate students to establish the George Mason University Arboretum. Graduate students who focus on plant systematics at Mason obtain their degrees through the MS in Biology evolutionary biology concentration or the environmental science and policy Ph.D. program. Since 2000, the herbarium has supported 16 M.S. and Ph.D. research projects. The herbarium hosts tours for members of the broader Mason community, children's groups such as Girl Scout troops, and civic organizations such as the Vienna Garden Club, the Virginia Native Plant Society and the American Chestnut Foundation. Community engagement activities have included sponsoring a native plant rescue at the site of a campus construction project, a workshop at the Sally Ride Science Festival, and plant identification classes for Virginia Master Naturalists.

Vision for the Future - The year 2017 marks the 50th anniversary of the Ted R. Bradley Herbarium, which is a significant milestone for a young university. This milestone also begs the question, "What will the next 50 years encompass for the herbarium?" The herbarium will continue to grow as a regional center for plant diversity education and locally-relevant research that advances our understanding of, and ability to preserve Virginia's flora. I recently completed a short course entitled, "Strategic Planning for Your Herbarium", which was offered by the Society of Herbarium Curators. It provided much needed structure to evaluate how the herbarium can better serve the mission and vision of George Mason University and prioritize resources to fulfill its own mission of research, education and outreach into the 21st century.

New avenues for the Ted R. Bradley Herbarium have opened up as a consequence of digitizing the collection. During the last three years, the herbarium has been funded by a National Science Foundation Advancing Digitization of Biological Collections grant entitled, "Digitization TCN: Collaborative Research: The Key to the Cabinets: Building and sustaining a research database for a global biodiversity hotspot" (NSF no.1410086). The project, which includes over 100 herbaria in the southeastern US, is enabling the digitization of 11 herbaria in Virginia via two mobile imaging stations. The Ted R. Bradley Herbarium is the state lead in managing this process. Last year, we began using crowd-sourcing to transcribe label information from the high-resolution images of the specimens, which is a key part of the digitization workflow. The online crowd-sourcing platform (<http://www.notesfromnature.org/>) hosts bundles of Virginian specimen images under the expedition name, "Plants of Virginia". To date, over 10,000 sheets have been fully transcribed through this site. An arguably equally important outcome has been educating the public

about the importance of herbaria in seminars and workshops that I have hosted to promote the Plants of Virginia project. Liberating these collections' data will certainly expand and accelerate research about Virginia's flora during the next 50 years.

Yet, another answer to the question, "What will the next 50 years encompass for the herbarium?" is that it will almost certainly include unprecedented ecological change due to anthropogenic global warming. How herbaria and institutions of higher education will act to mitigate this threat remains to be seen. One outcome of recent strategic planning was the realization on my part that I must do a more effective job of communicating the importance of herbaria - and plant diversity - to my increasingly urbanized university community. Part of my outreach message going forward will highlight how plants can combat the outsize threat of global warming. As a step toward meeting this objective and to celebrate the 50th anniversary of the Ted R. Bradley Herbarium, I have selected *Chrysogonum virginianum* L. (Fig. 4) to become part of the visual identity of the herbarium. The common name of this Virginian native is Green and Gold, which references the university colors, the golden anniversary of the herbarium and the green world that it will continue to champion.



Figure 4 - *Chrysogonum virginianum* L. (common name, Green and Gold) has been selected to become part of the visual identity of the Ted R. Bradley Herbarium to honor its 50th anniversary and the university colors of green and gold. Photo Credits: Andrea Weeks.

Acknowledgements - I would like to thank Dr. Ted Bradley, Betsy Collins and Elizabeth McMurchie for providing feedback on earlier drafts of this article.

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Featured Herbarium: NCU - The University of North Carolina Chapel Hill Herbarium

Central North Carolina is a mecca for herbarium enthusiasts as there are three large, very active facilities within 30 miles: North Carolina State University Herbarium (NCSC & NCSLG) in Raleigh, Duke University Herbarium (DUKE) in Durham, and the University of North Carolina Chapel Hill Herbarium (NCU) in Chapel Hill. Collaboration between the three herbaria is alive and well.

NCU's collections include vascular plants (ca. 700,000 specimens), red marine algae (ca. 60,000 specimens, curated by Drs. Max Hommersand and Paul Gabrielson), Devonian plant fossils (ca. 10,000 specimens curated by Dr. Patricia Gensel), fungi (ca. 31,000 specimens), lichens (ca. 6,000 specimens, curated by Gary Perlmutter), and bryophytes (ca. 3,500 specimens) (Fig. 1). NCU has a small permanent staff (Director Dr. Alan Weakley, Curator Carol Ann McCormick, and Loans Manager Shanna Oberreiter) and a large pool of undergraduate students, graduate students, volunteers, and Research Associates to form a lively research community.



Figure 1 - An aisle in the main room of NCU herbarium in Coker Hall on the University of North Carolina at Chapel Hill campus.

Since 2012, NCU has participated in several National Science Foundation grants to catalog our collections and make them available to researchers and the public via bryophyteportal.org, lichenportal.org, mycoportal.org,

macroalgae.org, and sernec.org (Fig. 2). All these portals can be reached via our homepage, herbarium.unc.edu.



Figure 2 - UNC-Chapel Hill undergraduates Will Ragland (L) and Kenza Araba (R) making digital images of vascular plant specimens for the Southeast Regional Network of Expertise & Collections (sernecportal.org).

NCU was founded in 1908 by mycologist Dr. William Chambers Coker, and it was first housed in Davie Hall adjacent to Coker Arboretum in the center of the UNC-Chapel Hill campus. In the early 1960s, the collection moved across campus to the fourth floor of Coker Hall. As the collections grew the herbarium has spilled into the hallways on the first, third, and fourth floors. NCU is the primary repository for specimens collected by the North Carolina Natural Heritage Program. In 2000, NCU was transferred administratively to the North Carolina Botanical Garden, and in the past year we have worked with Lake/Flato Architects to design a new Herbarium-Conservation Biology facility on the grounds of the Botanical Garden, about a mile southeast of the main campus. We are designing the new herbarium facility to accommodate ca. 3 million herbarium specimens – room for growth plus room for accepting collections that other colleges or universities may no longer want to keep.

If you look around your herbarium, you may find a little bit of NCU. Perhaps, you have *The Gasteromycetes of the Eastern United States and Canada* by William Chambers Coker and John Nathaniel Couch, or *The Boleti of North Carolina* by Coker and Alma Holland Beers on your reference shelf. Perhaps, you have some of the specimens collected and distributed for the “Flora of the Carolinas,” which culminated in the 1968 book by Rad-

ford, Ahles and Bell, *The Manual of the Vascular Flora of the Carolinas*. Perhaps, you have a copy of Alan Weakley's *Flora of the Southern & Mid-Atlantic States* on the bookshelf or FloraQuest on your iPhone. We hope that you will add *Wildflowers of the Atlantic Southeast*, due to be published in the spring of 2018, to your bookshelves!

One of the more interesting aspects of completely cataloging our collections has been discovering exactly what we have. NCU was known to have a wealth of mycological specimens, but as that collection has been without a curator since Dr. John Nathaniel Couch's death in 1986, the collection had become disorganized and dormant. In 2012, the NSF-funded Macrofungi Collections Consortium enabled NCU to re-organize the collection, and to re-discover what we curate. Dr. Van Cotter began volunteering in NCU's mycological herbarium in 2013, and has made it his personal mission to find, annotate, and record in mycoportal.org the fungal type specimens curated by NCU. Van's latest count of type specimens for NCU's mycological collection is a whopping 1,153 with more to come as we continue to catalog our micro-fungi. Taxonomic groups well represented among the types include boletes, clavarioid fungi, and *Septobasidium*, reflecting the research interests of Coker, Couch and Holland Beers (Fig. 3).

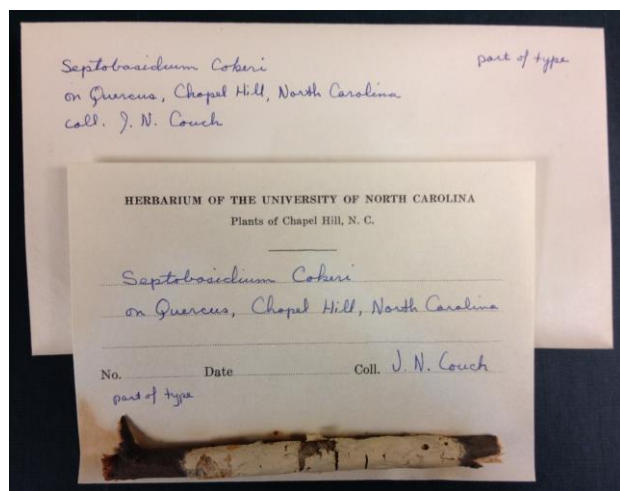


Figure 3 - Holotype of *Septobasidium cokeri* Couch.

While I knew that NCU phycologists Drs. Max Hommersand and Paul Gabrielson travelled widely to collect specimens, I did not realize just what globe-trotters they are until we began to catalog their collections in 2013, thanks to the NSF-funded Macroalgal Digitization Project. To date we have entered 43,488 (of their estimated 60,000) specimens, and have geolocated the specimens to more than 70 countries.

One of the "lessons learned" from our experience with cataloging NCU's fungal, algal, and vascular plant col-

lections is that knowing details of the collector's life - where she grew up, where she went to college, who her mentors were, whom she married - can greatly illuminate location and co-collector information on a specimen label. George Martin, M.D. (1827-1886) frequently wrote only "GCS" as a collecting locality on his fungal specimen labels. Delving into his life, I learned that though he lived in West Chester, Pennsylvania, he had a winter home in Green Cove Springs, Florida where he collected so frequently he just abbreviated the location "GCS." NCU curates specimens that have collectors "H, C & S" on the labels. As they are found in the A. B. Seymour micro-fungi collection, I assumed that Seymour accounted for the "S." After a dozen specimens with these cryptic collectors, I finally found one with "Hallowell, Cummings & Seymour" which broke the code. Susan Hallowell (1835-1911) and Clara Eaton Cummings (1855-1906) were botanists and faculty members at Wellesley College - and apparently botanizing buddies with Arthur Bliss Seymour (1859-1933) who was at Harvard just 15 miles down the road. In 2002, Dr. Haven Wiley, an ornithologist at UNC-CH gave NCU several dozen specimens of rare fern hybrids from the southeastern United States. I was puzzled that these specimens were dated 1956-1964, when Haven was a young teen. Were the collection dates incorrect? Was he truly the collector? "Oh, yes, the dates are correct and I did collect them," Haven said when I called to confirm the information. "My uncle was Herb Wagner [Warren H. Wagner, 1920-2000], the pteridologist. He and I would botanize together, but I found all these by myself. Uncle Herb confirmed the identifications, though." These and other informative tidbits can be found in the History section of NCU's website, <http://herbarium.unc.edu/history.htm>, which has short biographies of over 200 collectors whose specimens are curated by NCU.

In addition to plant specimens, NCU curates botanically themed (*sensu lato*) license plates (Fig. 4). Contact NCU Curator McCormick for details if you wish to add your expired plate to our collection!



Figure 4 - Botanically themed license plates curated by NCU.

NCU welcomes visitors and researchers. We are open weekdays 9am-5pm. Contact NCU Collections Manager Shanna Oberreiter (oberreit@email.unc.edu) to reserve a free, on-campus parking pass.

- Carol Ann McCormick, The University of North Carolina Chapel Hill, mccormick@unc.edu

Featured Herbarium: BUT - The Friesner Herbarium of Butler University

Butler University is a private, primarily undergraduate liberal arts school located in Indianapolis, Indiana, USA. Butler was founded in 1855 by attorney and abolitionist Ovid Butler. From the beginning, women and minority members were admitted on an equal basis with white males. Current enrollment is 4,800 students. Butler's 300-acre park-like campus is located five miles from downtown Indianapolis.

Butler's Friesner Herbarium (BUT) is housed in the Biology Department, a unit of the College of Liberal Arts and Sciences. Staff are a full-time salaried director (Rebecca Dolan, for 30 years) and a part-time technology assistant (Marcia Moore, for 21 years). Located in room 72 of Gallahue Science Hall, BUT occupies 900 ft² on the garden level (=basement). We have three rooms. One for staff, student, and visitor work space, one for cabinets, and a small adjacent room for miscellaneous collections, mounting, and imaging. Wireless and hard-wired internet connections are available, along with botany reference books with a focus on Indiana flora and a dissecting microscope on a boom arm to examine mounted specimens.

Accession books were lost decades ago before current staff started. We estimate BUT is comprised of over 100,000 primarily vascular plant specimens, about 40% collected in Indiana. BUT is largely a legacy collection. Donations of new specimens are accepted, primarily of new state records, including invasive non-native species, and vouchers of site-based plant inventories. We have accepted small orphan collections, including several thousand sheets from St. Meinrad College's Henrietta Herbarium, focused primarily on plants of southern Indiana. Some Indiana collections, including specimens collected in the 1880s by John Coulter, were repatriated at BUT after the herbaria of Wabash College (WAB) and DePauw University (DPU) were given to the New York Botanical Garden (NY) in the early 1990s.

Establishment and History - The Botany Department of Butler University started in 1919 with the hiring of Ray C. Friesner (1984-1952; B.A. Ohio Wesleyan University, Ph.D. University of Michigan) as Chair (Fig. 1). He was an avid collector and exchanger, recognized as an excellent teacher and mentor. Students enthusiastically signed up for his classes, which had Saturday morning labs and field trips (Fig. 2). His collection books detail over 50,000 specimens. He was a contemporary of Charles Deam, author of the last comprehensive manual of the flora of Indiana, published in 1940. Deam determined identifications for many specimens at BUT. Friesner died of a heart attack in his late 50s after taking on the job of Dean of the College (message = don't give up

field work). The former "Butler Herbarium" was rededicated and renamed to honor Friesner in 1987.



Figure 1 - Ray Friesner in the field with his vasculum. Undated.

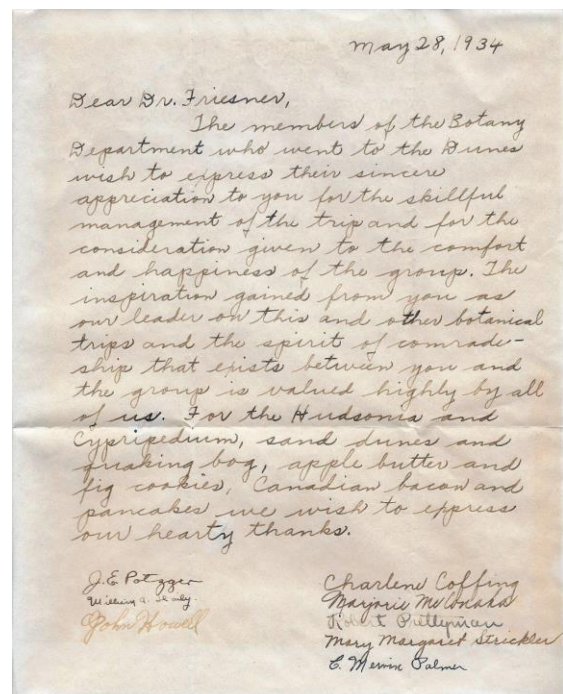


Figure 2 - Thank you letter to Friesner after field trip to the Indiana dunes on Lake Michigan.

From its earliest days, Butler botany was focused on community ecology, “phytosociology.” Researchers were mostly interested in species distributions and associations, focusing on flora of the state (Fig. 3). Butler had a very active master’s degree program in the 1930s-1950s. Prominent faculty and students included Stanley Cain, John Potzger, Willard Nelson Clute, Rex Daubenmire, and Dwight Billings. Details of early Butler botany have been published in *Brittonia* (Dolan 1991), including a list of botanists with whom Friesner exchanged specimens. John Pelton and Willard Yates served as BUT curators in the 1960s through mid-1980s.



Figure 3 - Butler University Plant Ecology class field trip to local natural area Bacon’s Swamp in 1928. Photo provided by Rex Daubenmire, second on the right.

Butler University Botanical Studies journal -

<http://digitalcommons.butler.edu/botanical/>.

The *Butler University Botanical Studies (BUBS)* journal was published by the Botany Department from 1929 to 1964. The scientific journal featured original papers primarily on plant ecology, taxonomy, and microbiology. The papers contain valuable historical studies, especially floristic surveys that document Indiana’s vegetation in past decades. Authors were Butler faculty, current and former master’s degree students and undergraduates, and other Indiana botanists. The journal was started by Cain, and edited through most of its years of production by Friesner. It was distributed to learned societies and libraries through exchange. Requests for use of materials, especially figures and tables for use in ecology text books, from *BUBS* continue to be granted. *BUBS* is available digitally at the above address and through JSTOR and the Biodiversity Heritage Library at Harvard. A complete index to the journal was compiled by Dolan (1992). Hardcopy original reprints of most articles are available by request.

Recent activities

Digitization and imaging - Starting about 20 years ago, herbarium assistant Marcia Moore created a Paradox database to hold label metadata and we began capturing information from our Indiana specimens. Ten years of hourly wage student data entry into controlled vocabu-

lary fields later, we had completed the effort. We mobilized our data to the web, with the help of the Dean of Libraries and a metadata librarian at Butler University Libraries, and the Friesner Herbarium Digital Collection was created (FHDC; palni.contentdm.oclc.org/cdm/landingpage/collection/herbarium4). We received funding totaling \$56,282 from 2009-12 from the Institute of Museum and Library Services, under the provisions of the Library Services and Technology Act, administered by the Indiana State Library. The collection can also be accessed through the [Indiana Memory](http://IndianaMemory.org) site of the Indiana State Library and the [Digital Public Library of America](http://DigitalPublicLibraryofAmerica.org). We began by imaging specimens from the largest plant families in Indiana, making them and the associated metadata of all our Indiana holdings searchable on the web as a special collection of the Butler University Libraries, using the internet content management system, CONTENTdm, as the management software. Imaging was outsourced to the IUPUI University Libraries because they had equipment and staff to handle to work.

BUT has recently been part of two NSF-funded TCNS. We contributed ca. 5,000 specimens to the macroalgae TCN. We recently completed imaging ca 14,000 specimens for the aquatic invasives TCN using an imaging station loaned from the University of Wisconsin (Fig. 4). Success using that equipment in-house gave us confidence to continue imaging with student assistants on our own. We purchased a customized imaging station based on a model developed by Deam Herbarium staff at Indiana University, sharing the cost with our library. They have 3-dimensional materials in their special collections that they wish to image. Using monies from our gift and endowment funds, we plan on completing our imaging of Indiana sheets by June of 2018 (Fig. 5).



Figure 4 - Student Rachel Terheide working at imaging station loaned by University of Wisconsin for Invasives TCN.



Figure 5 - Student Jacqueline Juett working at the new image station.

Herbarium Website - www.butler.edu/herbarium. The website for BUT is managed by Marcia Moore. Over the years, she worked to make the site an outreach tool for the University and an avenue for informal botany education. Photos of spring wildflowers, prairie plants, and trees of the Butler campus are featured, along with identification tips. In 2016, the site had over 4,400 unique visitors.

Indiana Plant Atlas (IPA) - <http://www.indiana.plantatlas.usf.edu/>.

In 2012, Dolan received an Innovation Fund grant of \$20,000 from Butler University to create an online atlas of the Indiana flora. This project was also supported financially by the Indiana Academy of Science and the Indiana Native Plant and Wildflower Society. Using a customized template designed by the staff of the University of South Florida already in use in Florida, New York and Alabama, we launched the Indiana Plant Atlas in 2016. The Atlas uses our plant images and metadata, displaying county-level distribution maps. It has links to specimen images from the FHDC and to *in situ* photos of live plants taken by Indiana photographers, most of whom are amateur botanists, along with additional information about each species. We plan to add Indiana records from other in-state herbaria as they become available digitally and hope to include records of Indiana plants in out-of-state herbaria from Symbiota in the future, to make the atlas as comprehensive as possible.

Endowment and Gift Funds - BUT has a small operating budget provided by the college. The Friesner Herbarium also has an endowment that generates about \$12,000 a year for general support of operations. The fund began with a \$100,000 estate gift from Ray Friesner's widow Gladys in the 1990s. Two alumnae subsequently made large estate gifts. All three lived to be 100 years old or more, reflecting the many benefits of a lifetime enjoyment of botany. The endowment funds

student assistants, technology improvements, and additional salary for staff. We also have a gift fund that receives smaller donations that supports special purchases like volumes of FNA.

Public Relations and Outreach - Every year we produce an annual report summarizing all activity in the Herbarium. This includes loans and inquiries, calls from the public, formal and informal presentations, publications citing BUT, student worker activities, materials used in Butler classes, etc. This has proved to be a great institutional memory resource. Copies are shared with administrators, donors, and members of the University Advancement Department staff.

We have hosted an Annual Open House and Special Lecture for 29 years. Speakers usually are local and talk on local botanical natural history, but have included Butler graduates speaking on their research. The lecture is attended by students and staff. For the lunch we invite members of the community, including local agency personnel, not-for-profit staff, academics, alumni, emeriti, and members of the Indiana Native Plant and Wildflower Society. Herbarium tours follow each year's talk.

We also organize an annual garlic mustard pull in the Butler Woods, a 5-acre older-growth beech-maple woods remnant on the campus. Students from botany classes, both majors and non-majors work for a few hours on a Sunday around Earth Day on hands-on environmental stewardship and then share a lunch. For many years BUT also had monthly informal interpretive natural walks open to faculty, students, staff and guests. Dolan led the walks. We visited all parts of the campus to see what was going on, botanically speaking, throughout the year. We maintain a campus tree walk, with accompanying brochure and web info. Dolan teaches an upper-division elective Local Flora class every-other spring.

The Director of BUT also manages the Butler Prairie, a 3-acre planted prairie demonstration on campus that is used as an outdoor lab. We produce and update a brochure on the prairie, thought to be the oldest prairie reconstruction in Indiana. Herbarium staff have led successful efforts to have the campus recognized as a Tree Campus USA and to be certified by the Indiana Wildlife Federation as a Sustainably Landscaped campus. Rebecca sits on the campus Greenspace Committee.

In recent years, the herbarium has partnered with Butler's Center for Urban Ecology on plant-related projects, including inventories of city parks, an urban BioBlitz in 2016, and quantitative vegetation analysis of ecological restoration projects. These projects have resulted in twelve recent peer-reviewed journal articles, including one comparing the historical flora of Indianapolis with its current flora based on herbarium specimens and recent inventories (Dolan, Moore and Stephens 2011). See https://works.bepress.com/rebecca_dolan/ for other papers.

Additional Current Projects - We have been working for many years with Kay Yatskievych on an Indiana Vascular Plant Catalogue, a comprehensive listing of all plants documented to occur in the state via an herbarium specimen. The Catalogue will include synonymy and direct reference to names used in Deam's flora and other historical manuals. Publication by Indiana University Press is anticipated in 2018.

Successful Grads - Former students who worked in or were associated with the herbarium, who pursued botanical careers include Matt Halfhill (Professor, St. Ambrose University), Troy Weldy (Director of Ecological Management, The Nature Conservancy in New York), Matt Julius (Professor, St. Cloud State University), Raelene Crandall (Assistant Professor, School of Forest Resources and Conservation, University of Florida), and Jess Stephens (Post-doc in Tia-Lynn Ashman's lab at the University of Pittsburgh). Apologies to anyone not mentioned here who should be - contact me! Many other former BUT student assistants are now pharmacists, doctors, stay-at-home parents, native seed nursery owners, environmental consultants, etc.

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Fifth Georgia Herbarium Alliance Meeting, February 2017

The fifth Georgia Herbarium Alliance meeting was held on 25 February 2017 in the Bailey Science Center at Valdosta State University and was hosted by VSC Curator Richard Carter (Fig. 1). The meeting was attended by 18 participants (all from Georgia), representing 10 institutions (nine herbaria) plus iDigBio (Fig. 2). Participant costs for this meeting were provided by an NSF Workshop Grant awarded to Wendy B. Zomlefer (DBI-1521928; GA Herbarium, University of Georgia).

We were welcomed by Assistant Dean Mark Smith and Biology Department Head Robert Gannon, who both lauded Richard's care and promotion of the VSC herbarium. Assisted by undergraduate herbarium workers, Ashlee and Emerald Robinson (Fig. 3) and Savannah Glenn, Richard then gave us the grand tour of the expanded VSC facility - including a new compactor system! We were all especially impressed with the glass-doored cabinets for archiving and displaying an extensive teaching collection originally assembled by Robert Kral, Professor Emeritus, Vanderbilt University. The recent VSC herbarium improvements were made possible through NSF-CSBR support (Carter 2015); for additional details about VSC see Carter (2016).



Figure 1 - Richard Carter showing new bottles and labels for elements of the VSC teaching collection. Photo credit: W. Zomlefer.

The informal presentations began with Wendy Zomlefer (GA) providing a review of the Alliance (*Georgia Herbarium Alliance: 2017 and Beyond!*), followed by Gil Nelson (iDigBio) describing the next phase of the iDigBio initiative that focuses on research questions and methodologies for analyzing natural history collections data gathered from so many institutions. Each of the remaining herbarium representatives then provided updates on their collections. Other exciting developments with Georgia herbaria include: REH (Reinhardt University), a new herbarium in Georgia with 500 specimens curated by Aliya Donnell Davenport; a new curator for AASU, Michele Guidone, who replaces Melanie Link-Peréz (now at OSC); facility renovations and new cabinets for WGC (David Morgan); GEO and GSW imaging progress and associated outreach activities (Thara Samarkoon and Stephanie Harvey, respectively); georeferencing specimens at GA (Ella Vardeman); a new Webpage (<https://sites.google.com/a/georgiasouthern.edu/schenk/herbarium>) and digitization updates for GAS (John Schenk and Alan Harvey, respectively); and DNA barcoding projects - national and international - by COLG personnel (Kevin Burgess and Lauren Whitehurst). New Alliance member Gretchen Ionta, Coordinator of the

Georgia College Natural History Museum, described her facility that opened in 2004 (<http://www.gcsu.edu/nhm>).



Figure 2 - “Silly photo” of the attendees at the fifth Georgia Herbaria Alliance meeting, posing in the atrium of the Bailey Science Center at Valdosta State University. Front row (left to right): Thara Samarkoon (GEO), Savannah Glenn (VSC), Michele Guidone (AASU), Alan Harvey (GAS); second row (left to right): Wendy Zomlefer (GA), Ashlee Robinson (VSC), Gretchen Ionta (Georgia College Natural History Museum); third row (left to right): Richard Carter (VSC), Lauren Whitehurst (COLG), Emerald Robinson (VSC), Stephanie Harvey (GSW); fourth row (left to right): David Morgan (WGC), Kevin Burgess (COLG), Aliya Donnell Davenport (REH), Yonnie Williams (GSW); back row (left to right): Gil Nelson (iDigBio), Ella Vardeman (GA), John Schenk (GAS). Photo credit: A. Harvey.



Figure 3 - VSC herbarium undergraduate workers Emerald Robinson (left) and Ashlee Robinson (right). Photo credit: W. Zomlefer.

We concluded the afternoon session with a late-afternoon trip to Grand Bay Wildlife Management Area, a magnificent cypress swamp encompassing 13,000 acres. After

the field trip, we shared a convivial dinner at a local Greek and Italian restaurant.

Our first Alliance meeting was held at GA Herbarium (6 March 2010; Zomlefer 2010a), the second, at VSC Herbarium (25 February 2012; Zomlefer & Carter 2012), and the third, at GAS Herbarium (1 March 2014; Zomlefer 2014). The fourth alliance meeting comprised a two-day workshop (20–21 May 2016; GA Herbarium) on herbarium best practices, which included curators from institutions throughout the Southeast (Zomlefer 2016). This fifth meeting, restricted to Alliance members, emphasized the progression and expansion of all Georgia herbaria programs since Wendy Zomlefer and David Giannasi first toured, surveyed, and assessed each herbarium in 2008–2009 (Zomlefer 2010b). Our state network, inspired by SERNEC over nine years ago, is now well established and has undergone several changes in membership, from meeting to meeting. The curators will keep in touch to support each other, and we all look forward very much to our next get-together.

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Rutgers University Collections Manager Megan King Wins Student Employee of the Year in New Jersey

Undergraduate ecology student Megan King (Figs. 1-4), was named the Rutgers Student Employee of the Year and also went on to win the state-wide competition for all of New Jersey's universities and colleges in April 2017. Megan is the Collections Manager in the [Chrysler Herbarium](#) at Rutgers School of Environmental and Biological Sciences, where she handles our 200,000 plant, algae, and fungal specimens, and manages undergraduate student interns and NSF-funded projects. Herbarium Director Dr. Lena Struwe explains that Megan leads the work in the Chrysler Herbarium with confidence, positive firmness, and by setting high, but fair expectations for her own work and supervised students. Megan has an engaging, enthusiastic way of working with the herbarium collections that is contagious to the students. The success of the student-driven Herbarium Army in Chrysler Herbarium in the last year is largely due to Megan King's steady hand, organizational mind, and loving heart for scientific collections. She is now the manager of day-to-day operations for the Mid-Atlantic Megalopolis Digitization grant from NSF, and is also finalizing the reorganization of all angiosperms into the APG system from the old Cronquist system.



Figure 1 - Megan photographing herbarium specimens.



Figure 2 - Award winner Megan King (right) and Amy Creteau, Associate Director at the Rutgers Student Employment Office (left).



Figure 3 - Megan and colleague working in Chrysler Herbarium.



Figure 4 - Megan busy at work with herbarium specimens.

- Lena Struwe, Chrysler Herbarium, Rutgers University,
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Symposium on “Advancing Herbaria in the Age of Digitization” at Association of Southeastern Biologists Meeting (March 2017)

Recognizing the need for professional development opportunities for new and experienced curators, the Society of Herbarium Curators, at the national level, has made great strides in ensuring that botanists have access to presentations about herbaria, especially on topics concerning proven strategies that can be replicated beyond one institution. The Society of Herbarium Curators Southeastern Chapter recently (30 March 2017) sponsored an herbarium-themed symposium for the Association of Southeastern Biologists (ASB) annual meeting in Montgomery, Alabama. This well-attended symposium was organized by Richard Carter (VSC) and Wendy Zomlefer (GA). The Southern Appalachian Botanical Society and the Society of Herbarium Curators Southeastern Chapter meet concurrently with ASB; conference participants included curators and other biologists, as well as students and early-career botanists.

Below is the list of speakers and titles for reference to other regional organizations that may be interested in sponsoring similar symposia. Several of these speakers had participated in the herbarium symposium organized by Rob Naczi (NY) and Andrea Weeks (GMUF), which followed the Botany 2016 meeting last summer.

Lena Struwe (CHRB, Rutgers University): *How to Create Opportunities in Research, Education, and Outreach through the Formation of an Undergraduate Herbarium Army*

Anna Monfils (CMC, Central Michigan University): *Lessons Learned in Building Educational Networks that Incorporate Natural History Collections*

Gil Nelson (iDigBio): *ADBC and iDigBio: Advances in Herbarium Digitization*

Richard Carter (VSC, Valdosta State University): *Survival at a Small Regional University*

Wendy Zomlefer (GA, University of Georgia): *The Dynamic Herbarium: Add some Zest to your Presentations about your Pressed Plant Collection!!*

Emily Gillespie (MUHW, Marshall University): *A Multi-year Project Demonstrates that Botany-naïve Undergraduates are Critical Partners in Herbarium Digitization Efforts*

Austin Mast (FSU, Florida State University): *The Worldwide Engagement for Digitizing Biocollections (WeDigBio) event—A Global Stage for Your Herbarium*

Brad Ruhfel (EKY, Eastern Kentucky University): *CollectionsEducation.org: Connecting Students to Citizen Science and Curated Collections*

Zack Murrell (BOON, Appalachian State University): *SERNEC: Current Efforts in a Large-scale Collaborative Biodiversity Project*

Roland Roberts (NSF): *National Science Foundation Funding Opportunities for Improved Collections Security and Digitization*

Our panel of invited speakers, from a range of institution types, shared their successes and advice for proactively managing herbaria in this era of difficult financial support. Attendees heard about several ways that natural history collections impact formal education, public outreach, and service to the biological sciences. The presentations provided new ideas for increasing the broader impact of herbaria, with focus on demonstrating the value of collections.

Promoting the value of biodiversity collections to administrators and other professionals, non-scientists, and the public at large will sustain preservation of collections into the future. Our hope is that these models have inspired others in the Southeast to expand their own leadership and opportunities, to share these insights locally, and to increase the use of biodiversity collections in their research and teaching.

Acknowledgments - The Southern Appalachian Botanical Society and the Association of Southeastern Biologists generously provided financial support for travel expenses of two special panelists, who otherwise would not have attended ASB. We also thank the Society of Herbarium Curators Southeastern Chapter for promoting this symposium, Gil Nelson and Shannon Oliphant Gordon for technical assistance, and Chris Brown and Riccardo Fiorillo for scheduling of the presentations.

- Wendy B. Zomlefer, University of Georgia, wenzdyz@uga.edu, and J. Richard Carter, Valdosta State University, rcarter@valdosta.edu

JMUH Has a New Name

On 6 June 2016, a ceremony was held in the Bioscience Building at James Madison University to name the Biology Department's herbarium for Norlyn L. Bodkin, the collection's first official director and curator. Readers are referred to the January 2013 and January 2015 issues of the newsletter for information on JMUH and Bodkin. Figures 1-4 were taken at the ceremony.



Figure 1 - Bodkin's eldest daughter thanks all involved for naming the herbarium in her father's honor.

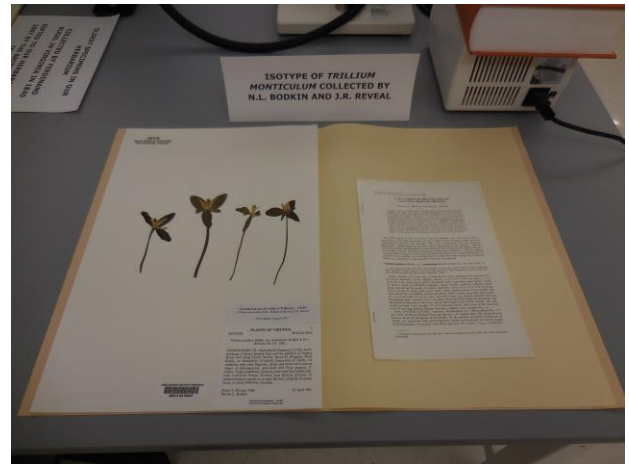


Figure 4 - Isotype of *Trillium monticulium* collected by Bodkin and James Reveal in 1981.



Figure 2 - View of the herbarium's outer workroom with specimens arranged for visitors' perusal.



Figure 3 - The Norlyn L. Bodkin Herbarium's two oldest specimens, collected by Ferdinand Rugel in 1840.

- Conley K. McMullen, James Madison University,
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THE LAST WORD!

Carol Ann McCormick's above article on NCU inspired me to share a few of my own botanically themed former license plates!



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