

BUTLER

UNIVERSITY

FRIESNER HERBARIUM



2017 Annual Report

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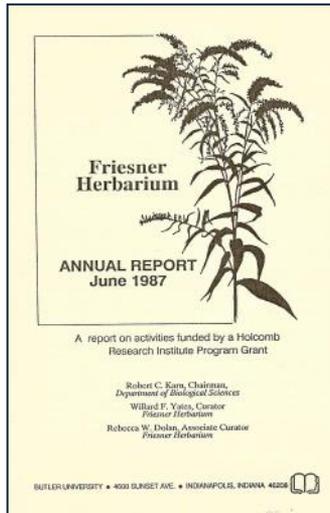
Rebecca W. Dolan, Director, Friesner Herbarium

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Layout and Photographs (unless otherwise noted)

Front Cover Photo:

Silene virginica (Fire pink) by Peter Grube

Herbarium Highlight



Scanned cover of the 1st Annual Report in 1987. Consisting of a whopping 3 pages, one of the noted accomplishments was an Open House and rededication ceremony, held June 12, 1987. Over 50 guests attended and heard a lecture by distinguished plant ecologist and Butler alumnus W. Dwight Billings who recalled the spirit of the botany program at Butler during the 1930s and '40s, along with Friesner's contributions and activities.

Much has changed over the past 31 years, but our mission to increase access to, awareness of, and use by all Indiana citizens of the valuable historical botanical information contained within the Friesner Herbarium remains constant. Here's to continued success in the years ahead!

Annual Report
FRIESNER HERBARIUM
January 1, 2017 - December 31, 2017

Accomplishments

- 1) 2017 was the first full year the general public could access the Indiana Plant Atlas. The Atlas contains label information from ca. 43,000 specimens, 20,000 specimen images, and 8,600 photographs of living plants. All data is simultaneously uploaded to national and international biodiversity databases, serving Butler's significant natural history collection to the world. More details are presented later in this report.
- 2) The 30th annual Friesner Herbarium Special Lecture and Open House was held on March 31st. Allyssa Nyberg of The Nature Conservancy spoke about Kankakee Sands, the giant prairie restoration the organization is conducting in northwest Indiana. We hosted over 40 guests for lunch and over 75 attended the lecture.
- 3) Student Grant Ksenak submitted material to the Arbor Day Foundation to support Butler's recertification as a Tree Campus USA for 2017. This would be Butler's 6th year of recognition.
- 4) Department of Biological Sciences students Devon Roese and Abby Baker, recent BU grads Haley Coffman and Claire Butkus, and education graduate student Jacqueline Juett, worked on a variety of Herbarium projects and assisted with taking digital images for a National Science Foundation (NSF) Thematic Collections Network imaging project, completed in May. In addition, they began in-house imaging of Indiana specimen sheets for the Friesner Herbarium Digital Collection (FHDC) and the Indiana Plant Atlas (IPA).
- 5) We hosted American University student Alison Taylor for the summer. She had previous experience interning at the US National Herbarium at the Smithsonian. Alison mounted and helped accession specimens, including plants from Tamarack Bog Nature Preserve, donated last year by Lee Casebere.

- 6) Rebecca taught BI 309, Local Flora, to a class of 19 students, which was the biggest enrollment ever. The class collaborated with IndyParks to fulfill the university's Indianapolis Community Requirement. Along with visiting other local parks to learn about spring ephemerals and trees *in situ*, the class worked on a floral inventory and other projects focused on Juan Solomon Park.

Loans, Inquiries, Gifts and Visitors

Loans made:

All bryophyte (ca. 600) and lichen (ca. 200) specimens were sent to the University of Wisconsin where they will be databased and added to the Consortium of North American Bryophyte Herbarium portal (<http://bryophyteportal.org/portal>).

Loans returned:

- University of Michigan (285 ferns studied by Mike Homoya, IDNR Nature Preserves)
- North Carolina State University (2 specimens of *Rhynchospora*) and University of Illinois (3 specimens of *Rhynchospora*), both studied by Roger Hedge, IDNR Nature Preserves)

Inquiries, surveys, & requests for database information:

Thirty-seven inquiries for information from specimen labels, from our Indiana specimen label database, or for collection of local plant material or information on local flora and natural areas were answered in 2017. Agencies and institutions looking to the Herbarium for plant related resources included Franklin College and Purdue University.

Most interesting inquiry:



Documentary producers from the History Channel called the Herbarium for expert plant identification. They were in Indianapolis investigating items believed to belong to serial killer, H.H. Holmes (1861-96), who once lived in the city. He was a doctor and was suspected to have drugged or poisoned some victims. When they examined long-lost papers belonging to Holmes, they found a pressed plant and wondered if it was poisonous. If so, they wanted to

come to the Herbarium to tape a segment. It turned out to be a clover, probably red clover. Not poisonous, but intriguing.

Visitors:

- Roger Hedge, IDNR Division of Nature Preserves
- Biology majors in the new BI111 course toured the Herbarium
- Dr. Phil Villani's Botany class toured the Herbarium each semester
- Botanists working with Cardno Ecological Consultants
- School group tours: Carpe Diem, 5 4th graders, Jamie Felling teacher. Herbarium and greenhouse. 4/28.

Gifts:

Scott Namesnik, senior botanist with Orbis Environmental Consulting deposited approximately 100 specimens, many collected from Goose Pond Fish and Wildlife Area in Greene County, Indiana.

One specimen (at right) of *Corydalis solida* collected by Nick Harby, April 4, 2017, Clegg Garden, Tippecanoe County, Indiana. It is the first record of this plant growing outside of cultivation in Indiana.



Endowment and Gift Funds

The Friesner Herbarium Endowment, established by Ray's widow, Gladys, paid the wages for student assistants working in the Herbarium.

Gifts were received from alumna Doris Saliwanchik and Molly Redding, Professor Emeritus Willard Yates, Jo Ellen Myers Sharp, and Thomas and Rebecca Dolan. A donation was made by Laura Stickney in memory of her mother, Carol Kirkwood Fall. Carol was a Butler student in 1944 and 1945, studying art and botany. She worked a couple of summers as a naturalist at McCormick's Creek Park in the 1940s.

Publications



This lovely image of downtown Indianapolis as seen through a leafy canopy, was the August cover image which highlighted Rebecca's featured article (see below) in the *American Journal of Botany*, the official publication of the Botanical Society of America. (photo courtesy of Brent Smith, Butler University)

Dolan, R.W. 2017. Featured Herbarium: BUT – The Friesner Herbarium of Butler University. *The Vasculum* 12:8-11.

Dolan, R.W., M. F. J. Aronson and A. L. Hipp. 2017. Floristic response to urbanization: Filtering of the bioregional flora in Indianapolis, Indiana, USA. *American Journal of Botany* 104:1179-1187.

Dolan, R. W. and M. E. Moore. Floristic inventory of Woollen's Gardens Nature Preserve, Indianapolis, Marion County, Indiana, USA, with quantitative vegetation sampling of permanent plots in 2003 and 2016. Accepted pending revision. *Proceedings of the Indiana Academy of Science*.

Holland, J.D., R.W. Dolan, M.S. Finkler, B.E. Fisher, R.L. Hedge, N. Harby, R.P. Jean, M.K. Martin, B. McKnight, M. Milne, K. Roth, P. Rothrock, J.J. Sheets, C. Strang, and T. Swinford. *In Press*. Results of the 2016 Indianapolis biodiversity survey, Marion County, Indiana. *Proceedings of the Indiana Academy of Science*.

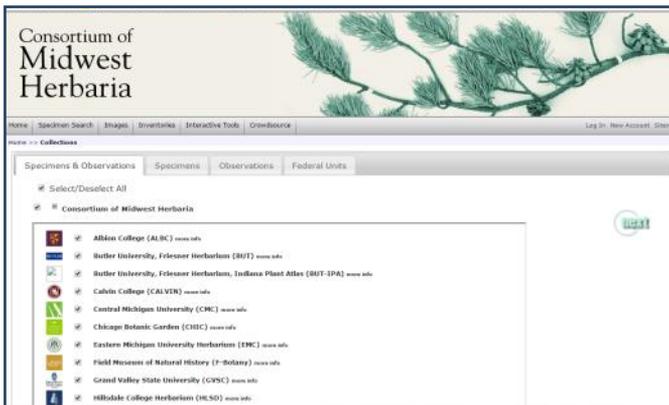
Major Herbarium Projects

NSF sponsored Thematic Collections Network Projects:

Documenting the Occurrence Through Space and Time of Aquatic Non-indigenous Fish, Mollusks, Algae and Plants Threatening North America's Great Lakes, led by the University of Wisconsin Madison.

For this project, a mobile imaging set-up was brought to Butler on loan from the University of Wisconsin Madison. Students imaged and captured skeletal data for selected genera of aquatic plants collected in Canada, the United States, and Mexico. This was the first databasing and imaging of non-Indiana specimens in the Friesner Herbarium. Our specimen data has been loaded to the Aquatic Invasive portal (<http://greatlakesinvasives.org/portal/index.php>) and to the Consortium of Midwestern Herbarium site (<http://www.midwestherbaria.org/portal/>).

We successfully completed this project in late May and returned the equipment to the University of Wisconsin. Over 10,000 specimen sheets were imaged. For Indiana genera of interest, these images will also be added to the Friesner Herbarium Digital Collection (FHDC) and will ultimately be linked to the Indiana Plant Atlas.



Indiana Plant Atlas (IPA):

The Indiana Plant Atlas (IPA, <http://www.indiana.plantatlas.usf.edu>) had its first full year of availability in 2017. Rebecca received a three year Butler University Innovation Fund Grant in March of 2013 to create an online Indiana Plants Atlas. Additional funding for this project was secured from the Indiana Native Plant and Wildflower Society and the Indiana Academy of Science. Marcia Moore is digital curator for the site.

Data posted to the IPA are also published to the iDigBio website (<https://www.idigbio.org/>), an initiative of NSF that contains digitalized biodiversity data on organisms of all types and from there to the Global Biodiversity Information Facility, (<https://www.gbif.org/>) an international site that compiles and serves specimen data from across the globe.

Updates are continually made to the Atlas when new information becomes available or when new specimens have been added to our collection. In 2017, a new feature was added to the IPA whereby a user can now search the collection of photos on the site by photographer. Many people had asked for this functionality and we are pleased to now be able to provide it.

Rebecca gave a talk on the IPA to the West Central Chapter of INPAWS in Lafayette in April. She also presented a program on the IPA to the Central Chapter of the Indianapolis Native Plant and Wildflower Society in November. Over 60 people attended and also toured the Herbarium. Janice Gustaferra gave a talk on the Plant Atlas to Happy Hollow Garden Club in Lafayette in December.

As part of the back-to-school Biological Sciences faculty and student research poster session, we put up a display of photos of plants and data from the IPA in the lower level atrium of Gallahue Hall. Due to popular demand, we left the display up.

Google Analytics for IPA 2017:

4,154 sessions—an increase of 20% over last year

2,885 unique visitors

Users are from about 12 different countries

72% new viewers

Featured photos from the Indiana Plant Atlas:



Anemone acutiloba
(Sharp-lobed hepatica)
by Vern Wilkins

Chamaedaphne
calyculata
(Leatherleaf)
by Michael Huft



Aquilegia canadensis
(Wild columbine)
by Ed Zschiedrich

The above photographers, as well as others, have generously contributed hundreds of photographs for use in our online Indiana Plant Atlas.

Friesner Herbarium Digital Collection (FHDC):

In 2017 we made a big step toward completing the Friesner Herbarium Digital Collection of Indiana specimens by cost-sharing with Butler University Libraries to buy an imaging station. After experience with in-house imaging using equipment on loan from the University of Wisconsin through a National Science Foundation Grant, we determined we could complete imaging of the approximately 23,000 Indiana sheets for which we have databased label information, but have not yet imaged. Marcia Moore is leading this project, working with student assistants. We began our in-house imaging in June and by the end of November had imaged approx. 2,000 sheets from 14 different plant families. In December, an additional 3,000 sheets from 12 families were in the process of being imaged and metadata prepared to send to Janice Gustafarro, metadata librarian at Irwin Library.



Above, graduate student Jacqueline Juett, capturing images using our new imaging system.

As of the end of 2017, the collection contains 21,584 images, representing 1290 species from 38 plant families.
(<http://palni.contentdm.oclc.org/cdm/landingpage/collection/herbarium4>).

2017 Google Analytics for FHDC:

1,684 users

4,999 page views

78.7% new viewers

At right, an image from our digital image collection:
Viola pedata (Birdfoot violet), collected by L.M. Umbach near the Dunes in northern Indiana. Collection date is May 9, 1914. This image is one that was taken on our new imaging system this past summer.



Website – www.butler.edu/herbarium

Migration of our website to Butler’s new platform was delayed by IT staff but is expected in early March 2018.

We continue to receive a lot of interest in the one-page key to native Indiana trees (found in the “Trees” section of the website). An instructor teaching classes for Master Naturalists contacted us most recently to praise the key. It was adapted from the brochure “50 Trees of Indiana”, now out of print, produced by Purdue University.

Google Analytics :

Total visits (Sessions): 6,212

Page views: 13,215 (19% increase over last year)

89.30% of the visits/sessions were NEW.

Unique visitors (Users): 5,994 from 83 different countries

Top 10 Countries:

USA (5659)

Australia (92)

Canada (58)

India (57)

UK (42)

Philippines (30)

Nigeria (18)

China (13)

Russia (13)

Germany (12)

Top 10 States:

Indiana (3177)

Illinois (488)

Kentucky (248)

Michigan (162)

California (116)

Ohio (112)

New York (97)

Oregon (96)

Georgia (88)

Texas (86)

Butler Prairie

Weather did not cooperate for a prairie prescribed burn in 2017. However, maintenance required on the radio tower anchored in the prairie created the opportunity to have the prairie bush hogged in early May. Late spring mowing is a recommended management practice for setting back Canada goldenrod (*Solidago canadensis*), a species that has become dominant over recent years. The mowing seemed to have some positive effect. Rebecca and students hand-pulled and herbicided to control non-native thistle and teasel.

Natural World classes (NW 200, Biology and Society) non-majors biology students used the prairie as an outdoor lab to learn about habitats, diversity, and invasive species.

Classes within the Biology major use the prairie for soil collections, soil respiration studies, and mammal tracking. Dr. Andrew Stoehr utilizes the prairie regularly for both teaching and research purposes.



In addition, to the previously listed studies, Dr. Stoehr brings his ornithology students to the prairie where there are feeders set up enabling them to observe foraging behavior, and they also conduct projects looking at diversity. At left, a yellow throated warbler (photo courtesy of Dr. Andrew Stoehr).

Dr. Stoehr's research includes sampling cabbage white butterflies (at right; photo courtesy of Dr. Andrew Stoehr) from in and around (the surrounding path, plus the farm) the prairie all season long. He has collected over 1,000 specimens since 2012. These are being used to look at variation in wing pattern as a function of both season and short-term weather fluctuations.



The Butler Prairie was featured in a paper published in the *Proceedings of the Indiana Academy of Science* in 2016, released in 2017, by Paul E. Rothrock, Victoria B. Pruitt and Robert T. Reber. They found Butler's prairie, established in 1987, is the oldest documented prairie restoration in the state.

Herbarium Sponsored Activities

Many phone and e-mail questions from Butler staff, students, and the public were answered and plants were identified on request.

After a long break, starting in September, Rebecca again lead monthly nature walks open to the campus community.

We again helped organize the annual ecological restoration work day in the Butler Woods, removing invasive garlic mustard and small bush honeysuckles. Students from Marva Meadow's non-majors introductory biology classes, Phil Villani and Kathy Schmid's botany classes, and students in Local Flora participated in the event.

Community Service

Rebecca and student Devon Roesse conducted follow-up surveys of vegetation along Fall Creek for a longitudinal study of the success of native plantings and invasive species removal. The research was funded by a \$5000 grant from Keep Indianapolis Beautiful, in cooperation with ROW, a community-based Collective Impact working toward the goal of reclaiming the benefits of Indianapolis' waterways. Rebecca serves as a member of the Ecology Element Committee of ROW. Butler student Elissa Peck, working with Rebecca and Kelly Brown of ROW, developed an annotated bibliography and review of impacts of invasive Amur honeysuckle (*Lonicera maackii*). Rebecca also directed the production of a nature guide and journal featuring the ROW waterways.

Rebecca led a spring wildflower walk for seniors at Robin Run Village, and served as a native plant expert scientist for Keep Indianapolis Beautiful's Monarch Garden planting on the IUPUI campus in early November. She also helped confirm tree identifications for a planned tree walk at Robin Run.

Rebecca made a presentation to the Fall Creek Garden Club on restoration projects along Fall Creek and gave a wildflower walk at Daubenspeck Nature Park.

Media Exposure

An article on flora in a nature park that appeared in the *Greenfield Daily Reporter* newspaper cited the Indiana Plant Atlas as an information source.

Other News

The biggest news: Rebecca Dolan announced her retirement after serving as Director for over 30 years. Her staff position is being converted to a faculty position, to better facilitate the connection between the Herbarium and the teaching mission of the Department of Biological Sciences. A search was held in the fall and the successful candidate for the new position is Dr. Emily Gillespie, who comes to Butler from West Virginia where she was Assistant Professor and Curator of the Marshall University Herbarium (MUHW). Marcia Moore assisted with the search.

The Macroalgae Herbarium Portal now hosts almost 5,000 specimens from Butler. 93% were georeferenced in the last year by staff at the University of New Hampshire, lead institution for the portal.

Marcia continues as Webmaster for the Indiana Academy of Science. She spent much of 2017 working on a complete redesign of the site that went live in the summer.

Rebecca serves on the Communications Committee of the American Institute of Biological Sciences (AIBS) Biodiversity Collections Network. She participated in a workshop in Washington DC in January that focused on developing better outreach and communications tools for natural history collections. She was back to DC in February to attend an AIBS workshop on science communication and took an online course in using Instagram for communicating science offered by SciFund Challenge.

Rebecca provided peer review for seven professional journals and for a book about medicinal plants being considered for publication by Indiana University Press. She also attended the inaugural Digital Data in Biodiversity Research symposium organized by iDigBio in Ann Arbor, Michigan, in June.

New and Continuing Activities for 2018

- 1) To complete imaging our remaining Indiana specimens and to load the images to the Friesner Herbarium Digital Collection and to the IPA.
- 2) To add specimen data from additional herbaria to the Indiana Plant Atlas by uploading information on any Indiana specimens held by other herbaria that are available via Symbiota Software portals and to add a synonymy feature to the site.
- 3) To work with Information Technology and Marketing at Butler on a redesigned website for the Herbarium that matches Butler's new look.
- 4) To work with others in the Biology Department to develop programs and activities for the Center for Urban Ecology.
- 5) To continue to explore additional ways to use Herbarium resources to enhance classes offered throughout the University.

Butler University's Friesner Herbarium — exploring and documenting Indiana's flora

