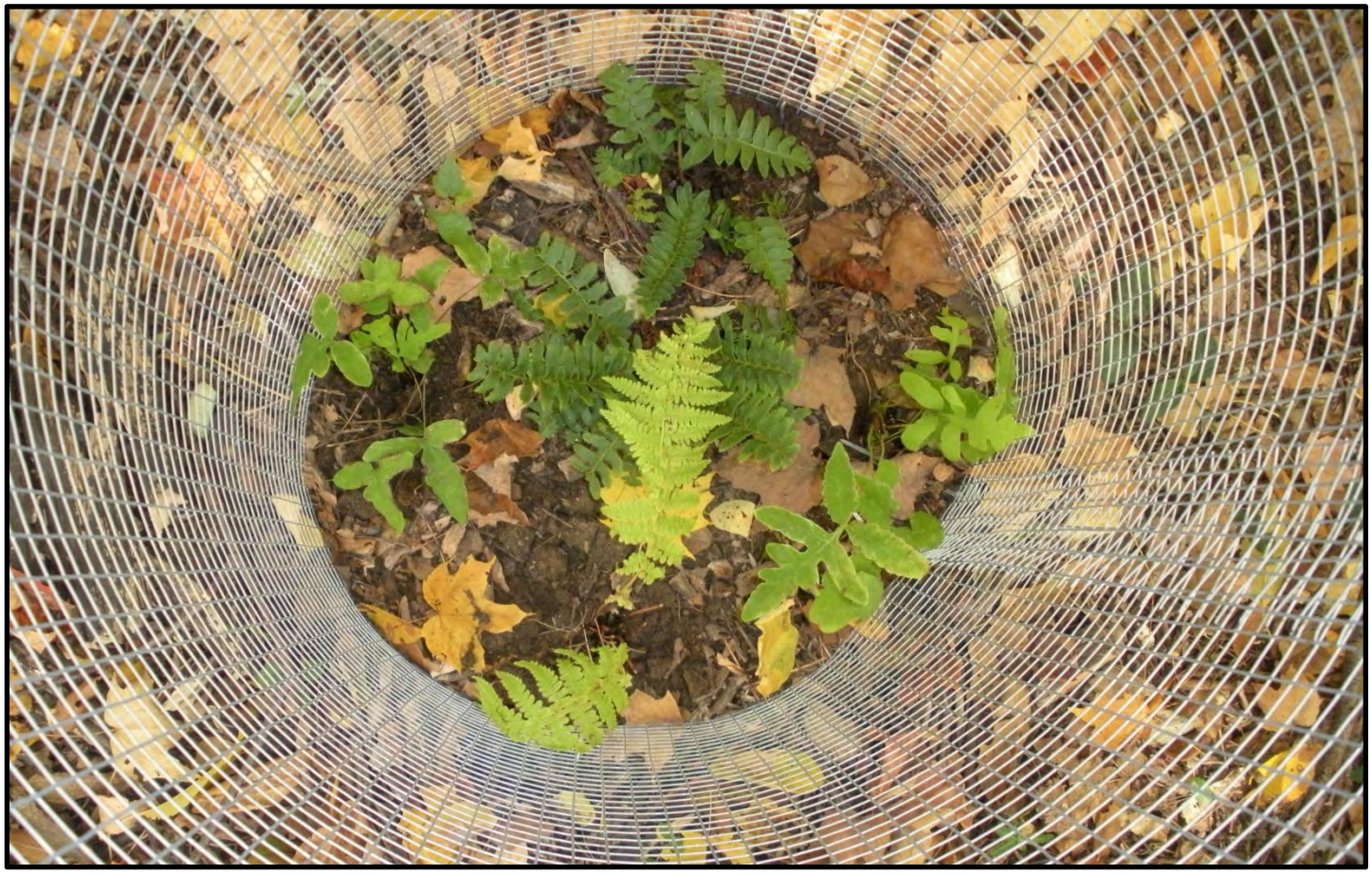
OVERCOMING CHALLENGES TO ECOLOGICAL RESTORATION IN THE 21ST CENTURY



MEETING PROGRAM

EIGHTH MIDWEST-GREAT LAKES SER CHAPTER MEETING

April 1 to 3, 2016

Indiana University, Bloomington, Indiana

SER MIDWEST GREAT LAKES SOCIETY FOR ECOLOGICAL RESTORATION

Eco Logic ECOLOGICAL RESTORATION

INDIANA UNIVERSITY

CITY OF BLOOMINGTON parks and recreation

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WELCOME

Welcome to the Gateway to Scenic Southern Indiana and the Eighth Annual Meeting of the Midwest-Great Lakes Chapter of the Society for Ecological Restoration. Our goal for this meeting is to explore the linkages among climate change, invasive species, herbivory, civic engagement, monitoring, and other anticipated challenges to ecological restoration and their impact on ecosystem health. Our scientific agenda for this three day meeting features two plenary sessions, a keynote address, three symposia, two workshops, 24 contributed poster presentations, 42 contributed oral presentations, and two offsite field trips on a range of topics that reflect our meeting theme. This year represents the first time we are able to offer meeting attendees continuing education credits. Our Meeting Hosts (Eco Logic, Indiana University, and City of Bloomington Parks and Recreation) will offer a special joint plenary session and tour as part of the meeting. This joint session will provide an overview of the challenges and successes of campus restoration projects and the associated research, teaching, and outreach activities underway on the Indiana University campus. We hope you will enjoy another outstanding chapter meeting.

2016 ANNUAL MEETING COMMITTEE

The Chapter extends its sincere appreciation to the members of the Annual Meeting Committee for their time and effort in coordinating and developing the Eighth Annual Chapter Meeting: *Rocky Smiley (Chairperson), Mary Damm, Rebecca Dolan, Spencer Goehl, Daniel Larkin, and Jennifer Lyndall*

ACKNOWLEDGEMENTS

We are very grateful for the generous support provided by our meeting hosts and sponsors that enabled us to hold a sponsorship reception, support student participation, defray food costs, and make our Annual Meeting as environmentally friendly as possible. We greatly appreciate the contributions of the members of the Local Planning Committee *(Spencer Goehl (Chairperson), Steve Cotter, Mary Damm, Phil Oser, Heather Reynolds, Paul Rothrock)* who assisted with planning the meeting and provided onsite help. We thank Rebecca Dolan and Martha Holzheuer for their work in enabling us to offer continuing education credits through International Society of Arboriculture and the Society of American Foresters. We are also thankful for the participation of the meeting presenters, moderators, tour leaders, field trip leaders, volunteers, and attendees at our Eighth Annual Meeting.

SPONSORSHIP RECEPTION

Enjoy drinks and snacks while examining poster presentations, viewing sponsorship exhibits, and socializing with colleagues.

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2016 MEETING SCHEDULE OVERVIEW

Friday April 1

9:30 am – 6:30 pm	Registration (East Lounge)
10:00 am – 7:30 pm	Posters and Sponsorship Exhibits (Georgian Room)
10:00 am – 12:00 pm	Data Quality Workshop (Oak) and Sedge Identification Workshop (Jordan Hall Room 122)
12:00 pm – 1:00 pm	Lunch on your own
1:00 pm – 3:15 pm	Opening Plenary Session (Frangipani Room)
3:15 pm – 3:30 pm	Break
3:30 pm – 5:30 pm	Symposia (Frangipani Room, Oak, Walnut)
5:30 pm – 7:30 pm	Poster Session & Sponsorship Reception (Georgian Room)

Saturday April 2

7:00 am – 11:00 am	Registration (East Lounge)
7:30 am – 8:20 am	Continental Breakfast (Georgian Room)
8:20 am – 12:20 pm	Posters and Sponsorship Exhibits (Georgian Room)
8:20 am – 10:00 am	Concurrent Oral Presentation Sessions (Frangipani Room, Oak, Walnut, Maple)
10:00 am – 10:20 am	Break
10:20 am – 12:20 pm	Concurrent Oral Presentation Sessions (Frangipani Room, Oak, Walnut, Maple)
12:20 pm – 1:30 pm	Lunch, Business Meeting, Awards Ceremony (Frangipani Room)
1:30 pm - 1:45 pm	Break
1:45 pm – 2:45 pm	Keynote Presentation (Frangipani Room)
2:45 pm – 3:00 pm	Break
3:00 pm – 6:00 pm	Joint Plenary Session (Frangipani Room) and Tour (Indiana University Campus and Research & Teaching Preserve)

Sunday April 3 Offsite Field Trips

	Greene County, Indiana	**Brown County, Indiana**
9:00 am – 1:00 pm	Large-scale Shallow Water Wetland and Native Grass Prairie Restoration Field Trip	Increasing Ecological Resilience in Southern Indiana Forests Field Trip

**** All times are eastern daylight times***

WORKSHOPS - FRIDAY APRIL 1, 2016

Sedge (*Carex* spp.) Identification (Jordan Hall - Room 122)

Instructor: Rothrock, Paul E. Indiana University, Bloomington, Indiana.
Email: perothro@indiana.edu

This workshop will consist of 3 parts: 1) an introduction to the morphology of the genus *Carex*; 2) an introduction to common species of *Carex* using a free public domain pictorial guide; and 3) an opportunity to "test drive" the new *Carex* key. The genus *Carex*, with over 110 species in Indiana, is an important ecological component of wetlands and forests in the Midwestern United States. It also has a reputation for being a taxonomically difficult group. The pictorial guide, centered on the Chicago Region, illustrates 36 common species of sedge. The "Keys to Nature" online tool for the genus *Carex* provides a format for combining traditional dichotomous keys with rich pictorial content to explicate diagnostic characters. Recently a meta-version for *Carex* in the western Great Lakes region has been completed. Participants will need to bring a wireless-capable computer so that they can access the online key.

Employing Effective Quality Assurance Strategies in the 21st Century – a Workshop on Best Practices in Conducting Data Quality Control Checks in Ecological Restoration Projects (Indiana Memorial Union Oak Room)

Instructors: Blume, Louis[1], Brick M. Fevold[2], Adam Bucher[2], and Judy Schofield[2]. [1]U.S. Environmental Protection Agency, Chicago, Illinois. [2]CSC Government Solutions, LLC, Alexandria, Virginia. LB Email: blume.louis@epa.gov; BF Email: brick.fevold@csra.com; AB Email: Adam.Bucher@csra.com; JS Email: judith.schofield@csra.com

Have you ever questioned the reliability of your monitoring data? (Be honest!) In ecological restoration projects, reliable data are needed to accurately assess ecosystem conditions, track progress toward stated restoration goals, determine the effectiveness of restoration practices, and provide evidence of restoration success. However, restoration projects often lack sufficient quality control assessment necessary to estimate uncertainty and facilitate the collection of data of acceptable quality to support sound decision making. In this workshop, we will share approaches and lessons learned for assessing, improving and documenting the quality of ecological data. Participants will be invited to engage with the speakers, and each other, in practical exercises demonstrating the concepts and applications of quality control (QC) check procedures, including: 1) hot-check; 2) cold-check; 3) blind-check; 4) precision-checks; and 5) calibration-checks. QC checks are an essential component to any monitoring program and can provide the empirical data necessary to estimate uncertainty and evaluate conformance with stated data quality acceptance criteria used to assess compliance and effectiveness in restoration projects. Participants will gain an understanding of quality control best practices, example strategies relevant to their restoration project needs, and a compendium of the presentations, exercises, and recommended resources for enhancing and evaluating the quality of data collected as part of their ecological restoration project.

OPENING PLENARY SESSION – FRIDAY APRIL 1, 2016

OVERCOMING FUTURE CHALLENGES FOR ECOLOGICAL RESTORATION

Representatives from Michigan State University, The Nature Conservancy, and The Restoration Ecology Lab will share their perspectives on future challenges for ecological restoration and potential strategies for overcoming these challenges to ensure the success of future restoration efforts in the Midwestern United States.

1:00 – 1:05 pm: Jennifer Lyndall. ***Introduction***. Environmental Resources Management, Corporation, Beachwood, Ohio. Email: jen.lyndall@erm.com

1:05 – 1:30 pm: Brudvig, Lars A. ***The Importance, Challenge, and Prospect of Landscape-Scale Restoration***. Michigan State University, East Lansing, Michigan. Email: brudvig@msu.edu

Ecological restoration holds great promise for recovering and promoting native biodiversity, functioning ecosystems, and ecosystem services to humans. Importantly, in many cases, achieving this promise will require landscape-scale considerations during restoration. Such processes as animal foraging, persistence of patchy populations, ecosystem service spillover, and climate-induced species range migrations all take place at large, landscape-scales that may encompass multiple ecosystems. Moreover, landscape context - the makeup of the landscape that surrounds a particular restoration site - may have strong bearing on the outcome of restoration efforts within a particular site due to the influx of species or other reasons. Because of this, understanding the influences of landscape context may assist with interpreting variation in restoration outcomes. Yet, in spite of the importance of considering landscape-scale considerations in restoration, most restoration ecology research and many ecological restoration activities take place at the scale of sites or smaller. How do we better develop the science and practice of landscape-scale restoration? Drawing on my research and the work of others, I consider this question in context of the challenges and potential strategies for interpreting, guiding, and conducting landscape-scale restoration in the Midwestern United States. These considerations span approaches to monitoring current restoration efforts and the design of new restoration research and projects. I argue that engaging in these and other approaches will be important for interpreting and guiding successful restoration efforts into the future.

1:30 – 1:55 pm: Jacquart, Ellen M. ***Strategies for Addressing the Challenge of Invasive Plant Species in Restoration***. The Nature Conservancy of Indiana, Indianapolis, Indiana. Email: ejacquart@tnc.org

Invasive plant species are one of the greatest challenges to restoration practitioners, and perhaps the most common reason for prairie, forest, and wetland restoration failures. From the moment the restoration begins, invasive plant species threaten to take advantage of any disturbance involved and out compete the native plants that are being managed for or introduced. Even if careful attention and management keep them from becoming a problem in the initial restoration, invasive plant species still pose a threat as time passes, especially in ecosystems that undergo periodic disturbances like fire, wind throw, or ice storms. In my presentation I will provide a review of the challenges posed by invasive species in restoration projects and I will discuss specific strategies used in Conservancy and other restorations in Indiana to reduce the impact of invasive species on ecological restoration projects.

1:55 – 2:20 pm: Shuey, John A. ***Restoration as a Strategy for Increasing Ecological Resilience and Adaptation for Future Climate Change Regimes***. The Nature Conservancy, Indianapolis, Indiana. Email: Jshuey@tnc.org

Ecological restoration can be viewed as an attempt to return an ecosystem to its historic trajectory that occurred prior to degradation or destruction. Climate change turns this perspective on its head. If we expect our restorations to perform into the foreseeable future, we have to envision alternant trajectories. In states like Indiana, restoration plays a huge role within the conservation community. Thanks to land-use decisions made over the last century, we have broken or at least significantly damaged virtually all of our ecosystems across the state. Instead of lamenting our past ecological blunders, we should embrace a restoration-centric future that allows us to anticipate impending change. We can use ecological restoration as at least partial solutions to increase ecological resilience and better enable ecosystems to respond to change. In my presentation I will discuss how The Nature Conservancy in Indiana has "placed our bets" in light of the anticipated climatic regimes in the future, and how we are using restoration to specifically address some of the ecological stressors that are likely to drive ecological change over the next several decades.

2:20 – 2:45 pm: Glass, Steve. ***Challenges for Ecological Restoration Presented by the Novel Ecosystems Concept.*** The Restoration Ecology Lab. Madison, Wisconsin. Email: sbglass1@mac.com

In recent years new challenges for ecological restoration have emerged in the form of the novel ecosystems concept. Proponents of this theory contend that because of the impacts of human activities, ecosystems are increasingly shifting into irreversible ecological states from which they cannot be rescued by ecological restoration practices. Thus, their argument continues, ecological restoration faces technical constraints--impossibilities even—to achieving desired outcomes of ecological restoration projects and because of this, "ecological restoration is creating false expectations and wasting limited resources." The contentions of the novel ecosystem proponents have not been subjected to rigorous scientific scrutiny. Further, they ignore that restoration ecologists are trained and long-experienced in dealing with the technical challenges presented by human impacted ecosystems. These ecological challenges are often less of a problem than the socio-cultural and policy constraints already encountered by many ecological restoration projects. The stubborn challenge that the novel ecosystems concept presents to ecological restoration is its troubling policy implications, which may, among other things encourage some to ignore or give up on ecological restoration. The novel ecosystems concept also challenges the fundamental assumptions on which ecological restoration is based and brings into sharp focus some of the discipline's operational tendencies and practices, which may in fact exacerbate the policy challenge. I will explore how policy develops and impacts restoration projects. I will also present a framework for examining and understanding the complicated and dynamic nature of policy making, present real-life examples to illustrate these points, and make recommendations for turning these challenges into opportunities for strengthening and advancing ecological restoration.

2:45 – 3:15 pm: ***Panel Discussion.*** All speakers will take questions from the audience and further discuss their views related to future challenges for ecological restoration and potential strategies for overcoming these challenges.

SYMPOSIA FRIDAY APRIL 1, 2016

Symposium #1 (Frangipani Room): Restoration in Rights-of-Way – A Discussion About Improving Habitat and Creating Connectivity in 21st Century Landscapes

Organizer: Holzheuer, Martha. Environmental Consulting & Technology, Inc., Bay City, Michigan. Email: mholzheuer@ectinc.com

Presenters: Barnas, Sara. Wildlife Habitat Council, Silver Spring, Maryland. Caldwell, Iris. University of Illinois-Chicago, Chicago, Illinois. Murray, Amy N. ITC Holdings Corp., Novi, Michigan. Roman, Robert B. Linn County Engineering and Secondary Road Department, Marion, Iowa.

Ecological restoration and ongoing land stewardship efforts tend to target high quality natural areas, but what is being done with the millions of acres consisting of transportation and utility rights-of-way? These corridors are ubiquitous across our 21st century landscape and often represent the only land not currently in use for agriculture or urban development. As such, they provide important ecological restoration and wildlife habitat improvement opportunities. In 2015, the Wildlife Habitat Council released new project guidance on Integrated Vegetation Management (IVM) for infrastructure corridors. The newly formed Rights-of-Way as Habitat Working Group provides relevant information about habitat development within rights-of-way and facilitates networking opportunities among diverse Midwest organizations. Private entities like ITC Holdings Corp. have successfully implemented IVM programs to maintain their utility corridors as functional ecosystems while ensuring electric system reliability. Iowa's progressive Integrated Roadside Vegetation Management Program combines an array of management techniques with sound ecological principles to establish and maintain safe, healthy, functional, and ecologically integrated roadsides. Please join our rights-of-way management and restoration experts to discuss the unique opportunities, challenges, success stories, and lessons learned while making rights-of-way resilient and ecologically significant features in our 21st century landscape.

Time	Presenters	Title
3:30 – 3:55 pm	**Barnas, Sara**	Rights-of-way as opportunities for conservation education, habitat enhancement, and sustainability
3:55 – 4:20 pm	**Caldwell, Iris**	Promoting conservation through industry collaboration and coordination
4:20 – 4:45 pm	**Murray, Amy N.**	Integrated vegetation management: maintaining electric transmission corridors as ecosystem components
4:45 – 5:10 pm	**Roman, Robert B.**	Integrated roadside vegetation management in Iowa
5:10 – 5:30 pm		Panel Discussion

Symposium #2 (Oak): Soil Microbes in Ecological Restoration

Organizers: Bach, Elizabeth M. Illinois Natural History Survey, Champaign, Illinois. Bauer, Jonathan T. Indiana University, Bloomington, Indiana. Koziol, Liz. Indiana University, Bloomington, Indiana. EMB Email: ebach@illinois.edu; JTB Email: jonbauer@indiana.edu; LK Email: ekoziol@indiana.edu

Presenters: Baer, Sara G. Southern Illinois University, Illinois. Docherty, Kathryn M. Western Michigan University, Kalamazoo, Michigan

Soil microorganisms play a central role in ecosystem function and maintaining the diversity of plant communities. However, soil microbial communities are susceptible to anthropogenic impacts and management of the soil community may be required to meet restoration goals, including restoration of soil structure and function and the re-establishment of diverse plant communities. Exciting progress has been made in this research area within the tallgrass prairies of the Midwest and Great Lakes region of the United States, with scientists advancing our foundational knowledge of soil ecology, gaining insights into how soil microbial communities respond to ecological management, and developing techniques for the reintroduction of soil microbial communities to restoration sites. This symposium will explore how soil communities change over time, both within a season and with succession. Specifically, the symposium will highlight advances in how re-establishment of diverse native plant communities may shape soil communities over decades and within phenological cycles, how soil microbial communities respond to management including prescribed fire, and how inclusion of soil microbes in restoration efforts can improve the establishment of late-successional plant communities. Presenters will share new insights into how soil microbial communities and the functions they provide may shape the composition of restored plant communities. We will conclude the symposium with a panel discussion, exploring how we might use new knowledge of plant-microbial interactions to develop innovations in restoration practice.

Time	Presenters	Title
3:30 – 3:35 pm		Introduction
3:35 – 3:55 pm	**Docherty, Kathryn M.**	Toward belowground restoration: understanding the effects of land management on soil microbial communities in a tallgrass prairie
3:55 – 4:15 pm	**Baer, Sara G.**	Physical and biological factors underlying recovery patterns of soil microbial biomass during grassland restoration on decadal time scales
4:15 – 4:35 pm	**Bach, Elizabeth M.**	Linking above- and belowground phenology: Temporal shifts in microbial communities and activity in restored and remnant prairies
4:35 – 4:55 pm	**Bauer, Jonathan T.**	Utilizing plant-microbial interactions to restore late-successional plant communities
4:55 – 5:15 pm	**Koziol, Liz**	Inoculation with native AM fungi improves establishment, growth, richness and diversity of late successional plant species in a prairie restoration
5:15 – 5:30 pm		Panel Discussion

Symposium #3 (Walnut): Restoration and Management in Ravines and Steep Forestland

Organizer: Lenhart, Christian. University of Minnesota, St. Paul, Minnesota. Email: lenh0010@umn.edu

Presenters: Gordon, Brad. University of Minnesota, St. Paul, Minnesota. Hammer-Lester, Rebecca. University of Minnesota, St. Paul, Minnesota. Lechner, Matthew. US Forest Service, Harrisburg, Illinois.

Restoration and management in forested ravines and steep lands within the Midwestern United States is important because these areas are erosion hotspots and they support unique and valuable natural features. Ravines commonly border larger river valleys or other drainage ways where intermittent streams flow over topographic breaks. Examples include the Minnesota River valley and parts of the steep forestland in southern Indiana and Illinois. Soil erosion processes include gully erosion at the heads of the drainage ways with mass wasting and soil creep in the more incised wooded ravines. Many of these areas have undergone natural reforestation since the 1930s as a result of abandonment of agriculture and conversion to public ownership. Typically the ravines contain mesic forest in the shadier portions and more open oak woodland in drier and/or managed areas. Research in ravines of the Minnesota River basin has shed light on the interactions of hydrologic, vegetative and erosion process in Seven-Mile Creek watershed. Plant community composition, ground coverage, root traits, and floristic quality are being examined in relation to erosion processes using Revised Universal Soil Loss Equation (version 2) and the Bank Stability and Toe Erosion Model. Findings from the research will help with improved targeting of sub-watersheds for sediment management and better strategies for vegetation management on ravine side-slopes and on stream banks.

Time	Presenters	Title
3:30 – 3:55 pm	**Lenhart, Christian**	Restoration and management issues in Midwestern ravines and steep forestland
3:55 – 4:20 pm	**Hammer-Lester, Rebecca**	Estimating sediment erosion and delivery in a ravine system in south-central Minnesota
4:20 – 4:45 pm	**Gordon, Brad**	Floristic quality assessment and the role of vegetation in ravine erosion in southern Minnesota
4:45 – 5:10 pm	**Lechner, Matthew**	Abatement and restoration on the Shawnee National Forest
5:10 – 5:30 pm		Panel Discussion

POSTER SESSION - FRIDAY APRIL 1, 2016

Georgian Room 5:30 pm – 7:30 pm

Poster#	Presenters	Title
1	**Wilson, Gabrielle***, J. Drake, A. Oblander, J. Riebkes, S. Robbins, A. Saladino, & R. Benedict	Impact of season of planting on prairie reconstruction in drought conditions
2	**Oblander, Ashley***, J. Drake, J. Riebkes, S. Robbins, A. Saladino, G. Wilson, & R. Benedict	Winners and losers: plant establishment during prairie reconstruction in drought conditions
3	**Kelleher, Eric***, J. Kelleher & Y.D. Choi.	Arthropod diversity and trophic levels between restored prairie and fallow agriculture fields at Taltree Arboretum
4	**Gurholt, Carli R.***, T.E. Cheeke, & J.D. Bever	Mycorrizal responsiveness differs among non-native, late-, and early-successional prairie species
5	**Chavez, Samantha J.***, A. Yannarell, & J. Taft	Plant-microbe linkages in encroached hill prairie communities
6	**Oschrin, Emma*** & H.L. Reynolds	Co-occurring invasive plant species: how multiple invasions affect plant community dynamics
7	**DiGiovanni, Jane P.***, W. P. Wysocki, S.V. Burke, M.R. Duvall, & N.A. Barber	The role of hemiparasitic plants: influencing tallgrass prairie quality, diversity and structure
8	**Damm, Mary C.**, M. Bogonovich, & J.D. Bever	Prairie microgeography
9	**Mattwig, Melissa A.***, L. Umek, & B. Tsang	Urban parks of the future: soil analysis of the Chicago Park District natural areas
10	**Colin, Sara***, E.C. Anderson, & E.S. Minor	Native seed species preference among native avian foragers in Chicago, Illinois
11	**Hileman, Jonathon T*, Erika M. Holum***, **Elle M. LeClaire**, M. Bargy, J. Foster, J. Golan, B. Hibbard, S. Koll, D. McClanahan, A. Slater, S. Vance, S. Zuniga, & R. Mullen	Getting to the root of the problem: botany students turn activist to formulate policy in favor of native plants
12	**Grieser, Jennifer M.**	Improving urban watershed health through creation of stormwater treatment wetland

Student presentations are denoted with an * following the name of the presenter

Poster Session Continued

Poster #	Presenters	Title
13	**Duke, Shawn T.**, S.N. Francoeur, & K.E. Judd	Effects of *Phragmites australis* invasion on carbon dynamics in a freshwater marsh
14	**Bennett, Daniell***, A. Johnson, K. Dungey, & M. Lemke	The effect of flooding on water quality in restored and unrestored Illinois River floodplain lakes
15	**Hussey, Juliana*** & S.M. Byrd.	Evaluating tree species survival and vegetative competition following release of saplings at The Dawes Arboretum Bottomland Reforestation Project
16	**Struckhoff, Matthew A.,** K.W. Grabner, J. Albers, M. Hooper, & S. Fetters	Relationships between vegetation sampling intensity and information content for bottomland hardwood restoration monitoring
17	Lauer, M.A., **P.C. Smiley Jr.,** K.M. Stillman, & W.C. Fleece	Associations between freshwater mussels (Family Unionidae) and their host fishes within an agricultural watershed in central Ohio
18	Blume, L., **Brick M. Fevold,** C. Palmer, M.M. Amos, A. Bucher, & J. Schofield	Effective quality assurance strategies in the 21st Century – Guidelines in data quality assurance and quality control in ecorestoration projects
19	**Sturdevant, Angela**	Don't speculate, calculate! A simple new tool to calculate long-term stewardship costs and save future headaches
20	**Woeste, Keith**, K. Knight, C. Marks, C. Pinchot, P. Schaberg, & J. Slavicek	A way forward for American elm
21	**Lesko, Jennifer*** & D. Jacobs	Reintroduction of American chestnut (*Castanea dentata*) underplanted in a gradient of light intensity and weeding treatments applied to non-native *Pinus strobus* plantations
22	**Manning, Jacob D.***, D.P. Althoff, A.L. Balter, & G.J. Dietsch	First year survival of broadcast-planted oak and hickory seeds in a reverted agricultural field
23	**Moore, Jesse** & F. Becker	Not your typical mitigation project, forest restoration and enhancement at Chelsea Flatwoods
24	**Kelleher, Julie***, E. Kelleher, & Y.D. Choi	Vegetation survey in gaps created by emerald ash borer (*Agrilus planipennis*) infestation in Coffee Creek watershed, Chesterton, Indiana

Student presentations are denoted with an * following the name of the presenter

CONCURRENT ORAL PRESENTATIONS - SATURDAY APRIL 2, 2016 (FRANGIPANI ROOM)

Large-Scale Wetland and River Restoration. 8:20 am – 10:00 am **Moderator: Joe DiMisa**		
8:20 – 8:40	**Wodrich, Carl J.**, B.C. Baldwin, & D.D. Carr	Development of the Indiana Stream and Wetland Mitigation Program: an in-lieu fee mitigation program
8:40 – 9:00	**Wodrich, Carl J.**, E.J. Stork, A. Remek-Kominowski, A. Snyder, D. Sparks, W. Tucker, & P. Labus	Restoration of the Grand Calumet River Area of Concern: achievable through partnerships
9:00 – 9:20	**Lemke, Michael J.**, H. Hagy, A. Casper, H. Chen, & K. Dungey	Aquatic habitat restoration in the LaGrange reach of the Illinois River floodplain
9:20 – 9:40	**Sterrenburg, Lee W.**	Revisiting the large Goose Pond Indiana wetland and prairie restoration - sixteen years after the conservation easement (2000) and seven years after completion (2009)
9:40 – 10:00	**Yankowiak, Betsy**	Four major challenges managing wetland restoration after federal invasive species control project in large urban wetland restoration site

Lotic Ecosystem Restoration Theory and Practice. 10:20 am – 12:20 pm **Moderator: Chris Lenhart**		
10:20 – 10:40	**Chen, Hua**	Advances in restoration ecology: from reference sites to novel ecosystems
10:40 – 11:00	**Grieser, Jennifer M.** & **Sierra C. Wick**	Utilizing the stream functions pyramid to determine the functionality of Mirror Valley Creek, Hinckley, Ohio
11:00 – 11:20	**Hausman, Constance E.**	Mirror mirror on the wall, who has the coldest habitat of them all? Primary headwater stream and habitat restoration of Mirror Valley in northeast Ohio
11:20 - 11:40	**Athanasakes, J. George** & W.C. Fleece	Hatchery Creek Stream Restoration Project - a unique opportunity to maximize trout habitat, create recreational opportunities, and provide mitigation credits
11:40 – 12:00	**Straub, Craig A.** & B.J. Kwiatkowski	Woody debris management: an approach to mimic natural recovery processes in riverine systems
12:00 - 12:20	**Gray, Colby C.**	White River and Mississinewa River Water quality and what it means for the proposed Mounds Lake Reservoir

CONCURRENT ORAL PRESENTATIONS – SATURDAY APRIL 2, 2016 (OAK)

Forest and Prairie Restoration. 8:20 am – 10:00 am Moderator: Rebecca Dolan		
8:20 – 8:40	**Fox, Matt** & P. Oser	Challenges and best management practices used on a large scale oak barren restoration at Prairie Borders Nature Preserve
8:40 – 9:00	**Catchpole, Floyd B**.	Management and resulting changes of steep, morainal woodland in the Grand Prairie of Illinois
9:00 – 9:20	**Palus, James D.*,** E.E. Andrew, P.C. Goebel, & D.M. Hix.	Environmental influences on canopy disturbance histories in mature oak–hickory forests in southeastern Ohio
9:20 – 9:40	**Bollinger, Paul**	Evaluating vegetation responses to the CICN Dolomite Prairie Enhancement Project, Will County, Illinois
9:40 – 10:00	**Dolan, Rebecca W.**	Managing a campus prairie demonstration: learning from the Butler University Prairie

Invasive Species and Forest Restoration. 10:20 am – 12:20 pm Moderators: Steve Glass		
10:20 – 10:40	**Maier, Craig M.**	Prescribed fire and invasive plant species In the Upper Midwest: ongoing efforts to organize current knowledge from research and management
10:40 – 11:00	**Warrix, Adam R.*** and J.M. Marshall.	Callery pear (*Pyrus calleryana*) response to fire in a managed prairie ecosystem
11:00 – 11:20	**Oser, Phil**, D. Miller, & B. Howard	Indianapolis Parks Land Stewardship's Early Detection and Rapid Response Program for Marion County
11:20 - 11:40	**Clay, Keith**, D. Johnson, A. Shelton, L. Flory, & C. Huebner	Effects of overabundant deer in the lower Midwest on native biodiversity and interactions with invasive species
11:40 – 12:00	**Anderson, Roger C**, M.R. Anderson, J.T. Bauer, & C. Loebach	Does extreme stochastic climate events affect the density of the invasive garlic mustard (*Alliaria petiolata*) and disrupt the years of alternating abundance of first and second year plants?
12:00 - 12:20	**Mason, Mary E.**, D.W. Carey, M.D. Miller, R.J. Matko, T.M. Poland, K.S. Knight, & J.L. Koch	A restoration strategy for green ash threatened by emerald ash borer

Student presentations are denoted with an * following the name of the presenter

CONCURRENT ORAL PRESENTATIONS – SATURDAY APRIL 2, 2016 (WALNUT)

Restoration and People: Opportunities and Impact. 8:20 am – 10:00 am Moderator: Todd Aschenbach		
8:20 – 8:40	**Grieser, Kevin A**., S. Hoehne, & S. Fortriede	A river runs through it – redeveloping the waterfront from an ecological perspective
8:40 – 9:00	**Grieser, Jennifer M.**	Rough around the edges: lessons learned from restoration activities along the Cuyahoga River in downtown Cleveland
9:00 – 9:20	**Heffner, Gail** & **David P. Warners**	Community engagement for urban watershed restoration
9:20 – 9:40	Bohorquez, D.Y., **Maria Jose Calderon**, & G. Camargo	Key aspects of the ecological restoration participative methodology in the Magdalena Medio
9:40 – 10:00	Agudelo, L., **Maria Jose Calderon**, & G. Camargo	Development and extension of a glen vertical ecological corridor model for the tropical dry forest in Xeridas plateau, Santander

Modern and Historic Urban Restoration. 10:20 am – 12:00 pm Moderator: David Benson		
10:20 – 10:40	**Marek, Mike** & Z. Kron	Protecting habitat in the face of development: a story of Monarch habitat preservation and restoration
10:40 – 11:00	**Anderson, Elsa C.*** & E.S. Minor	Evaluating low-input techniques for increasing plant diversity in highly degraded sites
11:00 – 11:20	**Benson, David P.**	Jens Jensen history and the restoration of an historic restoration at the Marian University Nina Mason Pulliam EcoLab
11:20 - 11:40	**McEuen, Amy** & M. Styles	Gardening as a metaphor for modern restoration: Lincoln Memorial Garden as a case study
11:40 – 12:00	**Umek, Lauren**, P. O'Donnell, R. Sliwinski, M. Lange, & J. Bachrach	Connecting ecology and design in Jackson Park: an ecological restoration in the Olmsted style

Student presentations are denoted with an * following the name of the presenter

CONCURRENT ORAL PRESENTATIONS - SATURDAY APRIL 2, 2016 (MAPLE)

Prairie and Wetland Community Restoration and Monitoring. 8:20 am – 10:00 am Moderator: Julia Bohnen		
8:20 – 8:40	**Groves, Anna M.*** & L.A. Brudvig.	A "good" restoration year relies on more than just rainfall: inter-annual variation affects initial dynamics of sown prairie
8:40 – 9:00	**Zirbel, Chad R.***, E. Grman, T. Bassett, & L.A. Brudvig	Do functional traits predict plant assemblages and ecosystem functioning of restored prairies?
9:00 – 9:20	**Benedict, Russ**, J. Drake, A. Oblander, J. Riebkes, S. Robbins, A. Saladino, & G. Wilson	Impact of early mowing on prairie reconstruction in drought conditions
9:20 – 9:40	**Bohnen, Julia L.** & S.M. Galatowitsch.	Selecting restoration projects for public funding in Minnesota
9:40 – 10:00	**Price, Edward P.F*.**, G. Spyreas, & J.W. Matthews	Taxonomic homogeneity and differentiation in compensatory mitigation wetlands in Illinois

Animal Ecology and Restoration. 10:20 am – 12:00 pm Moderator: Mary Damm		
10:20 – 10:40	**Millbrand, Zachery E.*** & R. Grese.	Habitat suitability model for grey wolf populations in Michigan using hiking, snowmobile, and forest trails
10:40 – 11:00	Clarkston, V.J., and **Patrick. A. Zollner**	Small mammal response to oak savannah restoration in northwestern Indiana
11:00 – 11:20	**Green, Nicholas S.**, J.L. Albers, M.J. Hooper, C.M. Mackey, M.L. Wildhaber, & T.W. Pettit	Effort allocation for efficient mammal fauna assessment in restored landscapes
11:20 - 11:40	**Smiley Jr., Peter C.**, K.M. Stillman, M.A. Lauer, & W.C. Fleece	Spatial and temporal trends in freshwater mussels within an agricultural watershed in central Ohio
11:40 – 12:00	**Fleece, W. Cody**	Demolition of West Milton Dam: a case study of the role of a federally endangered species in a river restoration project

Student presentations are denoted with an * following the name of the presenter

LUNCH, BUSINESS MEETING, & AWARDS CEREMONY (12:20 – 1:30 PM)

KEYNOTE PRESENTATION – SATURDAY APRIL 2, 2016

Douglas Ladd
The Nature Conservancy
St. Louis, Missouri

DOES ECOLOGICAL RESTORATION NEED A RETHINK?

Abstract: Ecological restoration as a discipline has matured and developed into a respected field that is an essential component of modern conservation practice. Simultaneously, the world's biological systems have continued to degrade, and today face stresses and changes unprecedented in the post-Pleistocene era. A growing chorus, including some conservationists, is advocating novel approaches to conservation and restoration theory, including some that would previously have been considered heretical. Are these relevant – and how should contemporary practitioners approach ecological restoration?

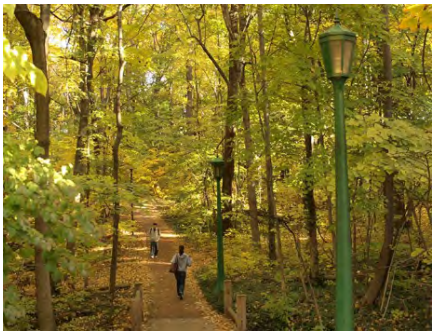
Biography: Douglas Ladd is Director of Conservation for The Nature Conservancy's Missouri program, where he manages science, land management, and conservation real estate activities. He has been involved with fire management and fire ecology, conservation planning, natural area assessment, and ecological management, restoration, and research for more than thirty years, with particular emphasis on vegetation, ecological restoration and fire ecology. Recent work has concentrated on vegetation and fire ecology of Midwestern prairies and woodlands, developing assessment and ecological monitoring protocols for terrestrial vegetation, and ecoregional conservation planning. He is a certified prescribed fire leader and has instructed fire training courses in the United States and Central America. He has also worked on lichens in the Midwest for over two decades, and is currently collaborating with Richard Harris of the New York Botanical Garden on a study of Ozark lichens, which has resulted in the discovery of several species and genera new to science. Doug serves on the board of the Conservation Research Institute in Chicago, as well as the advisory boards of the Harris World Ecology Center and Shaw Nature Reserve, and as an adjunct faculty member at Washington University in St. Louis. He has undergraduate degrees in botany and chemistry, and a master's degree in botany from Southern Illinois University, where his thesis research was conducted under Dr. Robert Mohlenbrock on the flora and vegetation of north-central Vermont. In addition to numerous articles and reports, he is the author of two field guides, North Woods Wildflowers and Tallgrass Prairie Wildflowers, and coauthor of Discover Natural Missouri and Distribution of Illinois Vascular Plants. A research associate at the Missouri Botanical Garden in St. Louis and the Morton Arboretum in Chicago, Ladd resides in Webster Groves with his wife Deborah.

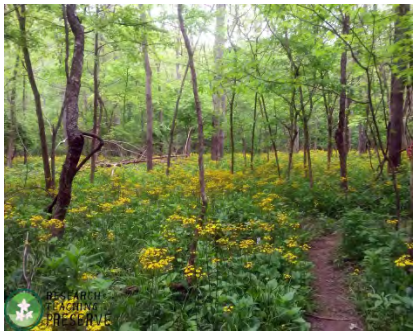
JOINT PLENARY SESSION & TOUR – SATURDAY APRIL 2, 2016

CAMPUS-COMMUNITY PARTNERSHIPS FOR RESTORATION, RESEARCH, AND EDUCATION

This joint plenary session and tour will provide an overview of the challenges and successes of campus restoration projects and associated research, teaching, and outreach activities. The plenary session will consist of three presentations that will summarize the restoration, research, and educational activities underway on the Indiana University campus within Dunn's Woods, Wright Wetland, and the Indiana University Research & Teaching Preserve. Dunn's Woods is a 0.04 km^2 wooded area at the heart of Indiana University's Bloomington campus. This site was originally lightly wooded pastureland and it has experienced relatively little disturbance except for the construction of concrete and brick pathways and initial plantings of mostly native trees obtained from local forests. Over twenty non-native plant species have invaded the site and threaten its diverse spring ephemeral flora. The Bloomington Urban Woodlands Project is a campus community group that is conducting research to increase the understanding of the ecological dynamics within the site, working to restore native diversity, and fostering a sense of connection to the site within the Indiana University and Bloomington communities. Wright Wetland is located adjacent to the Jordan River and was created in 2009 as part of mitigation requirements due to impacts on the Jordan River upstream. Originally, the site contained a degraded concrete levee that altered the hydrological regime of the Jordan River. Wright Wetland was designed to support 0.003 km^2 of emergent wetland and sedge meadow communities and 0.005 km^2 of riparian forest. More than 100 native plant species were planted at this site. This restoration site has provided the opportunity to evaluate the effectiveness of native prairie arbuscular mycorrhizal fungi on plant survival, growth, and diversity. The Indiana University Research & Teaching Preserve totals over 6.07 km^2 of diverse habitats, including the 0.75 km^2 Griffy Woods, that consists mostly of ridges and ravines with mature oak-hickory, beech-maple or black walnut-sycamore-black cherry forests. Deer overpopulation is concern and 15 paired deer exclosure and control plots being monitored to evaluate the effects of deer on forest ecosystems. After the plenary session attendees will have the choice of participating in one of three guided tours of these Indiana University restoration and research projects.

Time	Presenters	Title
3:00 – 3:15	Reynolds, Heather	Fruits of the forest: restoring urban woodlands for wildlife and people
3:15 – 3:30	Goehl, Spencer	Integration of wetland and stream mitigation on the Indiana University campus
3:30 – 3:45	Shelton, Angie	Effects of deer in a suburban forest preserve
3:45 – 6:00	Tours of Dunn's Woods, Wright Wetlland, and Indiana University Research & Teaching Preserve	





OFFSITE FIELD TRIPS - SUNDAY APRIL 3, 2016

9:00 am to 1:00 pm: ***Large-Scale shallow water wetland and native grass prairie restoration***. Lee Sterrenburg, Indiana University, Bloomington, Indiana. Email: sterren@indiana.edu

Field trip participants are responsible for their own transportation. The location of this field trip is the Indiana Department of Natural Resources Goose Pond Fish and Wildlife Area in Green County, Indiana. Directions to the site can be found at the Goose Pond website (http://www.in.gov/dnr/fishwild/3094.htm) The field trip will begin with an overview of the historical land use of the area and the Goose Pond restoration project. The Goose Pond restoration project was the biggest USDA NRCS Wetland Reserve Project in the United States in 2000. The project serves as showcase for some of the accomplishments and challenges of large-scale restoration projects. Participants will have the opportunity to view the restoration infrastructure and to learn about the unanticipated challenges presented by invasive plants, invasive animals, excessive algae growth and other issues related to restored wetlands that cannot be drained and are exposed to periodic flooding and how these challenges were addressed. Participants will also have the opportunity to learn about the major successes of the project, especially for the birds as 275 bird species have been documented onsite. Current research projects involve monitoring of avian population trends. Only two portable toilets are available onsite. Participants may want to use restroom facilities in nearby Linton, Indiana prior to arrival. Participants are encouraged to bring binoculars for viewing wildlife.

9:00 am – 1:00 pm: ***Increasing ecological resilience in southern Indiana forests as adaptation for future climate change regimes***. John Shuey and Chad Bladow. The Nature Conservancy, Indianapolis, Indiana. Email: jshuey@tnc.org

Transportation will be provided for this field trip. The location for this field trip is the Hitz-Rhodehamel Nature Preserve in Brown County, which is approximately 45 minutes east of Bloomington, Indiana. This field trip will look at aggressive adaptation strategies in dry forest communities to increase ecosystem resilience to the predicted future climate. Future climates are expected to have very significant effects on forest habitats in Indiana. Prolonged late summer drought-stress, when precipitation is expected to be at its minimum and temperatures at their highest, will likely have the greatest effect on mesic tree species currently dominating the regeneration of dry/mesic forests. Ironically, on-going management of ecological processes (fire suppression) over several decades has increased the mesic nature of southern Indiana forests, further increasing their vulnerability to future climatic regimes. Current pilot-projects at the Hitz-Rhodehamel Nature Preserve have resulted in a positive response of dry/mesic forests to thinning and burning. This field trip will inspect the results of several prescribed fires and forest thinning treatments. Please wear clothes and shoes suitable for hiking off trail in moderately rugged terrain.

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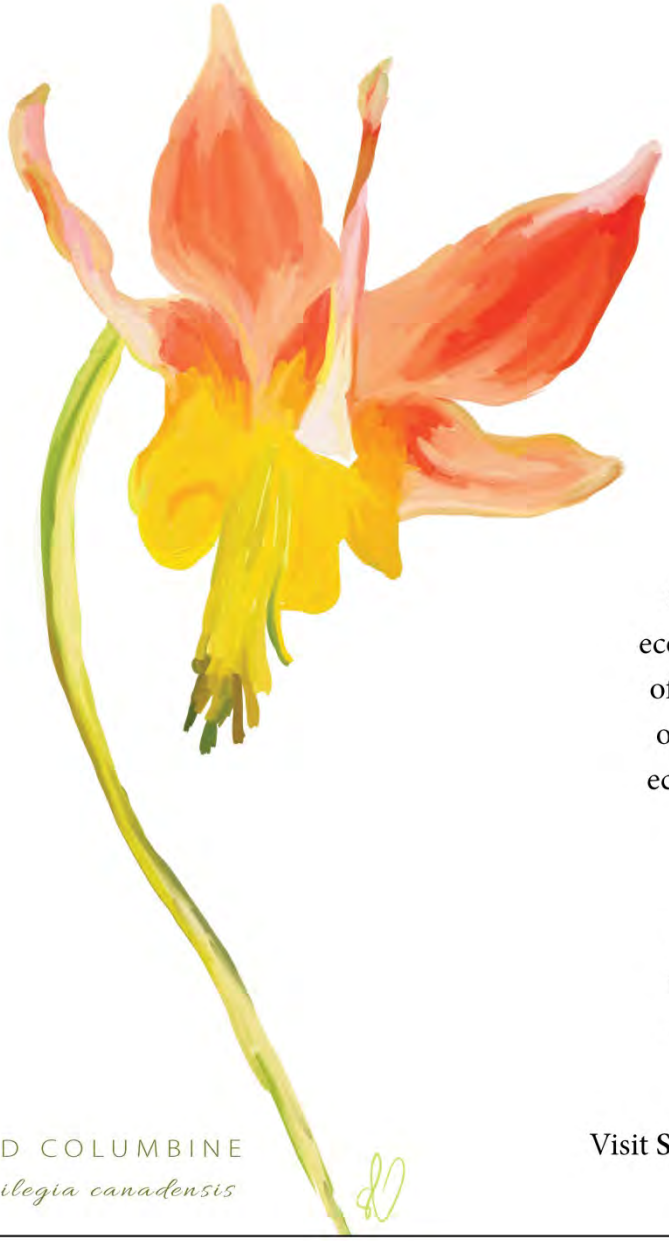
Ecological restoration for a healthy relationship between nature & culture.



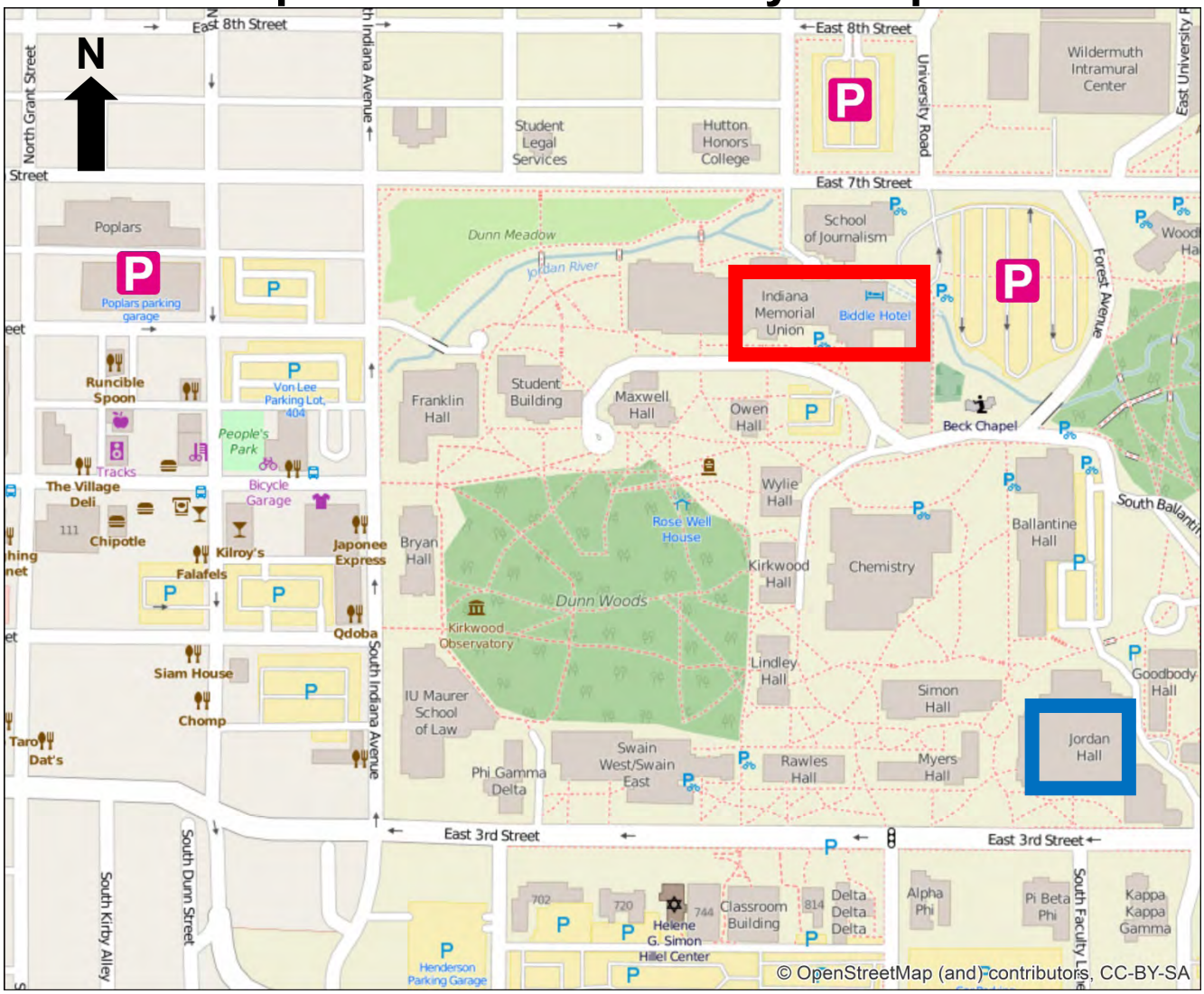
WILD COLUMBINE
Aquilegia canadensis

SER is dedicated to promoting ecological restoration as a means of sustaining the diversity of life on Earth and re-establishing an ecologically healthy relationship between nature and culture.

The Society provides great opportunities for its members to network and to advance the science, practice and policy of ecological restoration.

Visit **SER.org** or email **info@ser.org.**

Map of Indiana University Campus



- The physical address of the Indiana Memorial Union Biddle Hotel & Conference Center (IMU) is 900 East 7th St, Bloomington, Indiana 47405

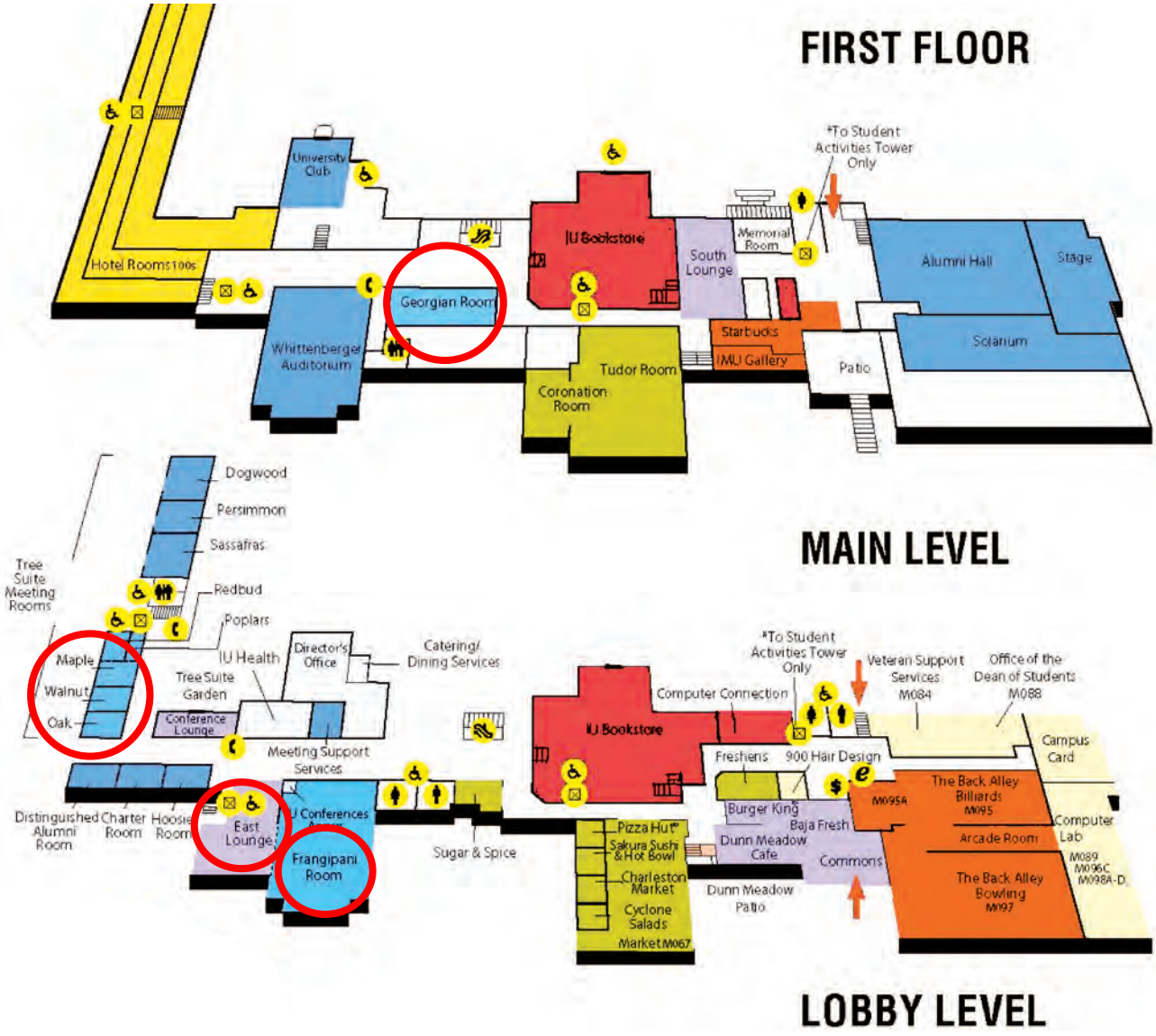
- The red square on the map indicates the location of the IMU on the Indiana University campus in Bloomington, Indiana.

- All meeting events will be held within the IMU, except for the Saturday morning Sedge Identification Workshop that will be held in Jordan Hall. Jordan Hall is indicated by the blue square on the map.

- Visitor parking is located in the pay lots immediately north and immediately east of IMU. Those attendees staying in the Biddle Hotel will receive free parking. Those attendees not staying at the Biddle Hotel will receive 50% off on parking (i.e., $12 per day) in these two pay lots.

- Additional undiscounted parking is available in the Poplar Parking Garage located west of Indiana Memorial Union and at meter parking on the Bloomington city streets.

Locations of Meeting Rooms within Indiana Memorial Union



The red circles in the figure above indicate the five rooms on the lobby level and one room on the main level of the Indiana Memorial Union where events for the Chapter Meeting will be held.

ABOUT THE SER MIDWEST-GREAT LAKES CHAPTER

- We are a non-profit organization that was recognized by SER as a regional chapter in March 2008. The Chapter serves a seven state region of Ohio, Indiana, Michigan, Illinois, Wisconsin, Minnesota, and Iowa.
- **Mission***:* To promote the science and practice of ecological restoration to assist with the recovery and management of degraded ecosystems within the Midwestern and Great Lakes regions.
- **Membership Benefits**
    - *Opportunity to network with colleagues and showcase your work at annual chapter meetings and state level events held throughout the year*
    - *Reduced chapter meeting registration rates*
    - *Chapter communications consist of the Restoration News Midwest blog and other social media streams that highlight regional ecological restoration issues, news, projects, and practitioners*
    - *Opportunities to promote ecological restoration-related events and discuss ecological restoration-related issues though the chapter social media*
    - *Webinars on relevant restoration topics in the region*
    - *Student members eligible to apply for research and practice grants through our Student Grant Program*
    - *Membership within our international parent society*
- ***Interested in becoming a member?*** *See http://chapter.ser.org/midwestgreatlakes/*