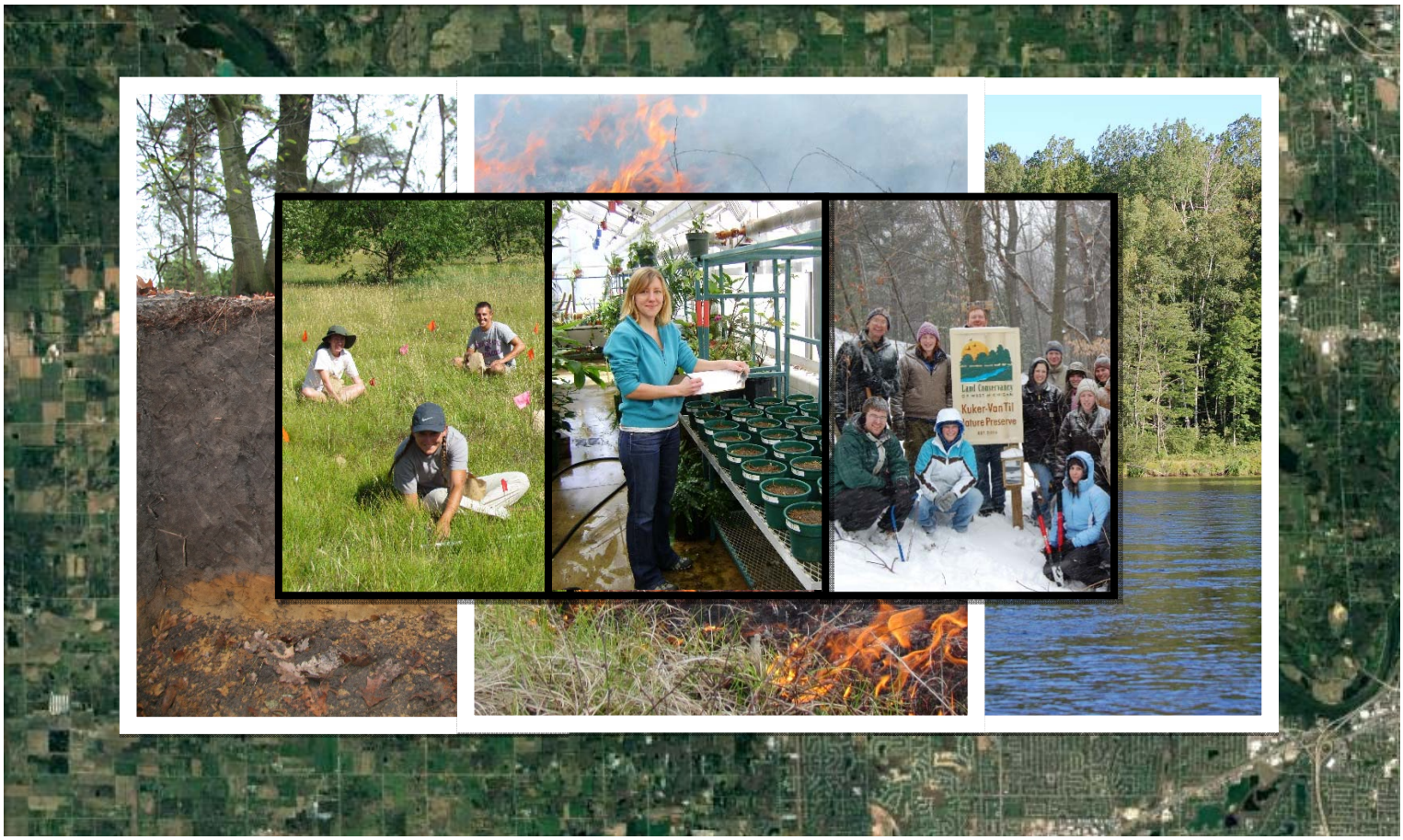
# ASSEMBLING THE RESTORATION COMMUNITY



# MEETING PROGRAM

## NINTH SER MIDWEST GREAT LAKES CHAPTER MEETING

**March 24 to 26, 2017**

**Grand Valley State University, Grand Rapids, Michigan**

SER MIDWEST GREAT LAKES SOCIETY FOR ECOLOGICAL RESTORATION

GRAND VALLEY STATE UNIVERSITY BIOLOGY DEPARTMENT www.gvsu.edu/biology

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# WELCOME

Welcome to Grand Rapids and the Ninth Annual Meeting of the Society for Ecological Restoration's Midwest-Great Lakes Chapter. Our goal for this meeting is to explore how restoration as a human guided community assembly process assists with the recovery of degraded ecosystems and to highlight the importance of promoting the involvement of a diversity of individuals and organizations within restoration efforts in the Midwest. Our scientific agenda for this three day meeting features two plenary sessions, a keynote address, two symposia, two workshops, 20 contributed poster presentations, 42 contributed oral presentations, and three offsite field trips on a range of topics that reflect our meeting theme. This year represents the second year we are able to offer meeting attendees continuing education credits. Our Meeting Hosts (The Grand Valley State University Biology Department) will offer a special plenary session as part of the meeting. This plenary session will provide an overview of the research, teaching, and community outreach related to ecological restoration underway at Grand Valley State University. We hope you will enjoy another outstanding chapter meeting.

# 2017 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 Ninth Annual Chapter Meeting: *Rocky Smiley (Chairperson), Todd Aschenbach, Erin De Vries, Mathew Dornbush, Steve Glass, Martha Holzheuer, Daniel Larkin, and Jessica Miller.*

# 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 *(Todd Aschenbach (Chairperson), Neil MacDonald, and Priscilla Nyamai)* 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 thank Jennifer Lyndall for her help with setting up the online registration page. We also thank Island Press for their book donation in support of our student award program. We are also thankful for the participation of the meeting presenters, moderators, tour leaders, field trip leaders, volunteers, and attendees at our Ninth Annual Meeting.

# SPONSORSHIP RECEPTION

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

# MEETING HOSTS

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# 2017 MEETING SCHEDULE OVERVIEW

## Friday March 24

| | |
|---|---|
| **9:30 am – 6:30 pm** | Registration (Hager-Lubbers Exhibition Hall) |
| **10:00 am – 7:30 pm** | Posters and Sponsorship Exhibits (Hager-Lubbers Exhibition Hall) |
| **10:00 am – 12:00 pm** | Professional Development Workshop (Room 136E) and DNA Barcoding Workshop (Room 3376 Kindschi Hall, Allendale campus) |
| **12:00 pm – 1:00 pm** | Lunch on your own |
| **1:00 pm – 3:15 pm** | Opening Plenary Session (Loosemore Auditorium) |
| **3:15 pm – 3:30 pm** | Break |
| **3:30 pm – 5:30 pm** | Symposia (Room 136E, Room 138E) |
| **5:30 pm – 7:30 pm** | Poster Session & Sponsorship Reception (Hager-Lubbers Exhibition Hall) |

## Saturday March 25

| | |
|---|---|
| **7:00 am – 11:00 am** | Registration (Hager-Lubbers Exhibition Hall) |
| **7:30 am – 8:20 am** | Continental Breakfast (Hager-Lubbers Exhibition Hall) |
| **8:20 am – 12:20 pm** | Posters (Room 119E) and Sponsorship Exhibits (Hager-Lubbers Exhibition Hall) |
| **8:20 am – 10:00 am** | Concurrent Oral Presentation Sessions (Rooms 111D, 201D, 203D, 205D) |
| **10:00 am – 10:20 am** | Break |
| **10:20 am – 12:20 pm** | Concurrent Oral Presentation Sessions (Rooms 111D, 201D, 203D, 205D) |
| **12:20 pm – 1:35 pm** | Lunch (Hager-Lubbers Exhibition Hall) and Business Meeting & Awards Ceremony (Loosemore Auditorium) |
| **1:35 pm - 1:45 pm** | Break |
| **1:45 pm – 2:45 pm** | Keynote Presentation (Loosemore Auditorium) |
| **2:45 pm – 3:00 pm** | Break |
| **3:00 pm – 5:55 pm** | Meeting Host Plenary Session (Loosemore Auditorium) |

## Sunday March 26 Offsite Field Trips

| | **Lowell, Michigan** | **Muskegon, Michigan** | **Grand Haven, Michigan** |
|---|---|---|---|
| **9:00 am – 12:30 pm** | Western Michigan Oak Savanna Field Trip | | |
| **9:00 am – 3:00 pm** | | Coastal Wetland & Dune Restoration Field Trip | Ottawa County Parks Dune & Riparian Restoration Field Trip |

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

# WORKSHOPS - FRIDAY MARCH 24, 2017

## Preparing for Professional Success in Ecological Restoration (Room 136E)

**Instructors:** Aschenbach, Todd[1], Paul Charland[2], Justin Heslinga[3], Brian Majka[4], Melanie Manion[5], Paul Rogers[6]. [1]Grand Valley State University, Allendale, Michigan. [2]U.S. Fish and Wildlife Service, East Lansing, Michigan. [3]Land Conservancy of West Michigan, Grand Rapids, Michigan. [4]GEI Consultants, Allendale, Michigan. [5]Ottawa County Parks, West Olive, Michigan. [6]Michigan Department of Natural Resources, Plainwell, Michigan. TA Email: aschenbt@gvsu.edu; PC Email: paul_charland@fws.gov; JH Email: justin@naturenearby.org; BM Email: bmajka@geiconsultants.com; MM Email: mmanion@miottawa.org; PR Email: RogersP5@michigan.gov

This workshop will provide job seekers with information and advice on how to best prepare for a rewarding career in ecological restoration. Topics include acquiring appropriate skills and knowledge, professional communication, and gaining pertinent field experience. Handouts on preparing résumés and cover letters will be provided. This workshop will also include a panel of professionals from private, public, local, state, and federal organizations that will provide unique insight on how to find employment in the field of ecological restoration.

## DNA Barcoding: Employing DNA Sequences to Aid in Plant Identification (Room 3376 Kindschi Hall of Science, Allendale Campus)

**Instructor:** Evans, Timothy. Grand Valley State University, Allendale, Michigan.
Email: evanstim@gvsu.edu

DNA barcodes are sequences of particular genes that allow unambiguous identification of organisms, in a manner similar to the function of Universal Product Codes (UPCs). DNA barcodes are being developed for all types of organisms, and they can be effective on any stage of an organism's life cycle and from fragmentary tissue. A database for the barcodes has been active since 2007 (Barcode of Life Database, or BOLD). This database links each DNA barcode with a particular species, and it provides links to numerous data repositories for each species. DNA barcodes have been used for a wide range of applications, including taxon identification, finding cryptic species, forensic studies, and community structure, just to name a few. In this workshop we will discuss uses and limitations of DNA barcodes, methods for obtaining them from field-collected organisms, and their specific utility to various aspects of conservation. We will implement some of the lab procedures required to obtain a DNA barcode (i.e. extraction of DNA from fresh or preserved tissue) and we will explore some of the online resources using DNA barcodes that have been collected from local organisms.

# OPENING PLENARY SESSION – FRIDAY MARCH 24, 2017

## *DESIGNING ECOLOGICAL RESTORATION PROJECTS FOR PROMOTING PUBLIC ENGAGEMENT*

Representatives from the Environmental Consulting & Technology, U.S. Forest Service, University of Michigan, and University of Wisconsin-Madison will share their perspectives on the importance of the design of ecological restoration projects for engaging the public and improving ecosystem integrity in the Midwestern United States.

*1:00 – 1:05 pm*: Glass, Steve. ***Introduction***. President – SER Midwest Great Lakes Chapter, Madison, Wisconsin. Email: sbglass1@mac.com

*1:05 – 1:30 pm*: Harrington, John A. ***The Historical Role of Landscape Architecture in the Promotion of Conservation and Ecological Restoration in the Upper Midwest.*** University of Wisconsin-Madison, Madison, Wisconsin. Email: jaharrin@wisc.edu

In 1915, a University of Illinois Agricultural Experimental Station Circular, The Prairie Style of Landscape Gardening, written by Extension Horticulturalist Wilhelm Miller, was published. This manuscript described a new approach to landscape design and emphasized an aesthetic based on the conservation of native scenery and the restoration of local vegetation. The document highlighted the work of two Chicago area landscape designers, O.C. Simonds and Jens Jensen, both advocates and practitioners of a relatively new approach to design that took its cues from the biological and physical materials and forms of the regional landscape. This approach to design moved away from the formal trends in landscape architecture to one based on current understanding of ecological concepts, human ties to nature, and a regional aesthetic. During this same time, the field of ecology as a specific research focus and discipline was emerging. As the two disciplines of ecology and landscape architecture matured, the science of restoration ecology and the practice of ecological restoration and design were also further defined. Collaborations arose between landscape architects and ecologists, including Jensen and Henry Cowles, G. William Longenecker and Aldo Leopold, and Edith Roberts and Elsa Rehmann and continue to be created today. These proponents of conservation and native landscape design sought to provide opportunities for public engagement with the native environment. The philosophies and activities of these pioneering individuals contributed to the practice of ecological restoration and the science of restoration ecology and are visible today at universities, in government, and in private practice across the country.

*1:30 – 1:55 pm*: Judd, Patrick J. ***How Landscape Architects can Engage People to Influence the Design of Restoration and Naturalized Projects to Connect Them to the Land.*** Environmental Consulting & Technology, Inc., Ann Arbor, Michigan. Email: pjudd@ectinc.com

For created landscape projects to be successful they must inspire people and in order to do this, it is first and foremost, the site have a purpose to connect people to the land and people to people. By engaging the client, the community, and stakeholders early in the design process, landscape architects can interpret both their input and a site's influences for a desired outcome of a restoration or naturalized landscape project on private and public lands. Through this early participation and contribution, the project success continues to inspire beyond the last seed sown or tree planted because the users take ownership – where people and everything in it are precious. It is important the site "speaks" to people, a user's passion is shared as a vehicle to promote environmental education, and the project helps to create emotional connections to these types of landscapes. A created and/or restored landscape needs to make that place of work, living, or recreation special and unique, to encourage exploration through an interactive process. This interaction could be the visual quality created through controlled viewsheds, a trail through

the landscape allowing touch and experiencing the scents of wildflowers and seeing the wildlife. Three landscape project sites will be discussed: 1) Pfizer Global Research and Development Campus in Ann Arbor, Michigan; 2) Herman Miller's "GreenHouse" in Zeeland, Michigan; and 3) the River Terrace Trail segment of Washtenaw County's Border-to-Border Trail from Dexter Michigan to Dexter-Huron Metropark.

*1:55 – 2:20 pm*: Grese, Robert E. ***Restoration in Cities.*** University of Michigan, Ann Arbor, Michigan. Email: bgrese@umich.edu

Restoring landscapes in urban areas presents a number of challenges. These challenges include varying levels of historical modification and change, typically a very fragmented context with a variety of adjacent land uses, and stakeholders who may not value wilder aesthetics or ecological processes such as flooding or fire. On the other hand, restoration in the urban context may provide opportunities such as readily available volunteers, the ability to weed and care for restoration sites much more intensively than in other contexts, and opportunities to educate and build relationships with large numbers of people. Restoration in urban contexts may require relaxing narrow definitions of what constitutes ecological restoration to embrace a continuum from rooftops to backyard gardens to more traditional restorations in urban parks and nature preserves. While such approaches may not be able to restore a full range of ecosystem services, they may collectively reduce the overall ecological footprint of our cities, make them much more livable, and help retain some unique natural qualities of the region.

*2:20 – 2:45 pm*: Gobster, Paul H. ***Restoring Urban Natural areas with People in Mind: Perception, Support, and Engagement.*** U.S. Forest Service, Evanston, Illinois. Email: pgobster@fs.fed.us

Urban natural areas are often looked upon to provide a diverse range of ecosystem services, but their location within the urban matrix can also pose unique challenges to the success of ecological restoration programs. In many cities of the Midwest-Great Lakes region, public and private natural areas are surrounded by a fragmented landscape of residential properties, the owners of which can affect and be affected by how natural areas are managed. A case study in Chicago examined the perceptions and uses of among residents who lived near eleven different natural areas, their support for eight common management practices used to restore oak ecosystems, and how engagement with their own residential landscape might contribute to or conflict with natural areas management goals. Nearby residents strongly agreed about the values of urban nature and the benefits of its restoration, but expressed varied support for management practices with herbicide use and lethal deer control receiving relatively low support compared to controlled burning and other activities. An analysis of residents' own home landscape practices identified three different styles of management, with "natural gardeners" expressing stronger preferences and support for restoration compared to "conventional gardeners" and "non-gardeners" as well as stronger engagement in activities that support restoration goals. Suggestions will be offered for how restoration and landscape professionals can use this information in their practice to build mutually supportive environments for people and nature.

*2:45 – 3:15 pm*: ***Panel Discussion.*** All speakers will take questions from the audience and further discuss their views related to the importance of the design of ecological restoration projects for engaging the public and improving ecosystem integrity.

# SYMPOSIA FRIDAY MARCH 24, 2017

## Symposium #1 (Room 136E): Restoration Practices for Eastern Massasauga Rattlesnake

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

**Presenters:** Bird, Brittany. Oakland County Parks and Recreation, Waterford, Michigan. Lee, Yu Man. Michigan Natural Features Inventory, Lansing, Michigan. Mifsud, David. Herpetological Resource Management, Grass Lake, Michigan. Tansy, Carrie. U.S. Fish and Wildlife Service, East Lansing, Michigan.

Depending on when, where, and how they are implemented, ecological restoration practices involving wetlands and adjacent upland habitats may affect, for better or worse, the declining eastern massasauga rattlesnake (*Sistrurus catenatus,* EMR). Recently listed as threatened by the U.S. Fish and Wildlife Service under the Endangered Species Act, this cryptic snake is widely distributed across Michigan—its last real stronghold—and occupies a wide range of habitat types including fens, prairies, wet meadows, marshes, swamps, scrub-shrub wetlands, and forests. So what does this mean for our ecological restoration projects? How do we know if EMR is a concern for our site? What steps can we take to make our restoration efforts beneficial to EMR and reduce the chance of adverse impacts? How do we educate our field crews and volunteers? Please join our herpetology, regulatory, and restoration experts to discuss: 1) the life history, ecology, and status of EMR across the Midwest; 2) recommended survey and monitoring methods pre- and post-restoration; 3) habitat restoration needs and specific actions at the landscape and site scales; 4) best management practices (BMPs) for enhancing habitat while minimizing adverse impacts; 5) permitting options and procedures; and 6) community education and outreach.

| Time | Presenters | Title |
|---|---|---|
| 3:30 – 3:35 pm | **Holzheuer, Martha** | Introduction |
| 3:35 – 4:00 pm | **Lee, Yu Man** | Eastern massasauga rattlesnake status, distribution, and ecology |
| 4:00 – 4:25 pm | **Mifsud, David** | Eastern massasauga rattlesnake: threats, conservation, management, and monitoring needs of an imperiled reptile |
| 4:25 – 4:50 pm | **Tansy, Carrie** | Eastern massasauga rattlesnake restoration conflicts, recommended best management practices, and permitting |
| 4:50 – 5:15 pm | **Bird, Brittany** | Eastern massasauga rattlesnake BMP implementation and community education in the Oakland County Parks system |
| 5:15 – 5:30 pm | | Panel Discussion |

# Symposium #2 (Room 138E): Ecological Restoration on Farmland

**Organizer:** Damm, Mary C.[1,2] [1]Indiana University, Bloomington, Indiana. [2]Prairie Quest Farm, McGregor, Iowa. Email: mdamm@indiana.edu

**Presenters:** Lenhart, Chris. University of Minnesota, St. Paul, Minnesota. May, Christopher A. The Nature Conservancy, Lansing, Michigan. Zay, Daniel. Natural Resources Conservation Service, East Lansing, Michigan.

With increased nutrient loading creating hypoxic zones in the Great Lakes and Gulf of Mexico, major flood events in the upper Mississippi River watershed, and continued decline in grassland bird and insect populations throughout the region, the need for repairing degraded habitat on some of the 550,373 $km^2$ of farmland in the Midwestern United States is greater than ever. Federal Farm Bill programs provide financial support to farmers for conservation and restoration practices on farmland. The programs are the main way most farmers think and make decisions about incorporating ecological restoration practices on their land. For example, the Conservation Stewardship Program (CSP) and the Conservation Reserve Program (CRP) support ecological restoration on farms. The Natural Resources Conservation Service (NRCS) and non-profit farmer advocate organizations (Practical Farmers of Iowa, Land Stewardship Project) work directly with farmers and have successfully communicated the need for ecological restoration through the broader objectives of improving soil health, improving water quality, and creating wildlife and insect habitat. Conservation organizations incorporate restoration practices on farmland by encouraging Federal Farm Bill conservation practices on currently farmed lands and restoring native plant communities on former croplands. In this symposium, an NRCS biologist, a farm owner, a restoration practitioner, and a restoration researcher will describe their work involving ecological restoration on current farmland and former croplands. The overall goal of the symposium is to facilitate better collaboration between the restoration and agricultural communities to implement more effective restoration efforts on farmland and highlight opportunities for restoration on Midwestern farms.

| Time | Presenters | Title |
|---|---|---|
| 3:30 – 3:35 pm | **Damm, Mary C.** | Introduction |
| 3:35 – 4:00 pm | **Zay, Daniel** | Ecological restoration opportunities in the agricultural landscape |
| 4:00 – 4:20 pm | **Damm, Mary C.** | Prairie Quest Farm: working land conservation and restoration |
| 4:20 – 4:45 pm | **May, Christopher A.** | Agricultural spectrum: ecological restoration of old fields, sustainable practices on existing fields |
| 4:45 – 5:10 pm | **Lenhart, Chris** | Tradeoffs between water storage, nutrient removal and plant community diversity in restored wetlands within agricultural watersheds |
| 5:10 – 5:30 pm | | Panel Discussion |

# POSTER SESSION - FRIDAY MARCH 24, 2017

## Hager-Lubbers Exhibition Hall 5:30 pm – 7:30 pm

| Poster# | Presenters | Title |
|---|---|---|
| 1 | **Bryant, Allison G.*** & D.P. Benson | Does the removal of dead turf or the use of seed blankets improve vegetation coverage in a steep slope prairie restoration in central Indiana? |
| 2 | **Wylie, Sean P.*** & T.A. Aschenbach | Response of Pennsylvania sedge (*Carex pensylvanica*) to fire and herbicide treatments in a degraded sand prairie |
| 3 | **Johnson, Yari,** C. Maier, & T. Bragg | Fire frequency and burn season—opportunities for coordinating research across the Tallgrass Prairie region |
| 4 | **Mandi, Alex*, Zachary Moss***, E. Kammeyer, **Katelyn Miner***, D. Salow, & R. Benedict | Plant bullies: assessing the aggressiveness of species used in prairie reconstructions |
| 5 | **Pavisich, Hailee B.*** & C.G. Partridge | Development and characterization of microsatellite markers for invasive baby's breath (*Gypsophila paniculata*) |
| 6 | **Rice, Emma K.*** & J.N. McNair | Phenology of seed maturation and the effect of glyphosate on *Gypsophila paniculata* (baby's breath) seed maturation |
| 7 | Miller, J.A., R.K. Goad, **Lauren Umek*,** & B.Y. Tsang | Plants of Concern's development of a rapid floristic quality assessment for the Chicago Park District |
| 8 | **Munson, Steven W.*** & N.W. MacDonald | Initial alteration of soil nitrogen influences competition between spotted knapweed and Indian grass |
| 9 | **George, Isabelle G.*** & M.E. Dornbush | Effects of diversity, nitrogen fertilization methods, and harvest schedule on phosphorus removal in a native perennial biofuel grassland |
| 10 | Pham, S. & **Hua Chen** | Soil organic carbon and total nitrogen storage in two restored tallgrass prairies at Emiquon in Illinois: the potential for carbon sequestration |
| 11 | **Lyndall, Jen** & B. Walder | SER Certification program for ecological restoration practitioners |

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

## Poster Session Continued

| Poster # | Presenters | Title |
|---|---|---|
| 12 | **Goggin, Patrick** | Developing and sustaining a lakeshore habitat restoration training for professionals in Wisconsin, USA |
| 13 | **Lemke, Michael J.,** K. Dungey, & L.F.M. Vehlo | Comparing restoration ecology and conservation of the Illinois River and the Rio Parana: a course exploring two rivers of international importance |
| 14 | **Slater, Julie M.***, G. M. Davies, V.I. Rich, G. Bohrer, Y. Hao, & A. Camilo Ray-Sanchez | Proposed research: a comparison of plant communities in intact and damaged Ohio peat bogs |
| 15 | **Vujanovic, Michael*** & J. Slate | Diatom algae and sediment organic content reveal long-term presence of Sphagnum mat in Volo Bog Nature Preserve |
| 16 | **Berke, Kelsey D.***, B.D. Carson, A.M. Monks, S.C. Lishawa, & N.C. Tuchman | Nutrient removal in Great Lakes wetlands through harvesting of the invasive cattail (*Typha* x *glauca*) |
| 17 | **Gordon, Brad*** & C. Lenhart | Comparing nitrate reductions in a reed canary grass monoculture, switchgrass monoculture, and wet prairie community in wetland mesocosms |
| 18 | **Murphy, Shane***, J. Buckho, E. Melton, B. Chancellor, K. Brandon, & Y.D. Choi. | Effects of emerald ash borer (*Agrilus planipennis*) infestation on benthic macroinvertebrate communities in Coffee Creek watershed, Chesterton, Indiana |
| 19 | **Smiley Jr., Peter C.** and K.W. King | A decade of evaluating the ecological effects of grass filter strips on channelized agricultural headwater streams |
| 20 | **Troy, Jennifer*** & R. Gillespie | Comparisons of aquatic communities in traditional and two-stage ditch segments of streams in Northeast Indiana |

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

# CONCURRENT ORAL PRESENTATIONS - SATURDAY MARCH 25, 2017 (ROOM 111D)

| **Urban Restoration. 8:20 am – 10:00 am<br>Moderator: Jessica Miller** | | |
|---|---|---|
| 8:20 – 8:40 | **Nelson, Scott B.*** & J.C. Marlin | Restoring native vegetation in city landscapes to increase urban biodiversity and connect residents with local nature |
| 8:40 – 9:00 | **Evans, Nicole M.*,** W.P. Stewart, & C.A. Miller | The meaning of naturalness in the context of urban ecological restoration: a case study from the Cook County Forest Preserves |
| 9:00 – 9:20 | **DeLisle, John** & S. McRobb. | Private site-scale ecological design - lessons learned |
| 9:20 – 9:40 | **Warners, Dave, Deanna Geelhoed,** & P. Jonker | Assessing native plant survivorship and performance in curbcut rain gardens |
| 9:40 – 10:00 | **Umek, Lauren*** & B. Tsang | Integrating recreation and restoration in a post-industrial landscape on Chicago's south side |

| **Community Engagement and Education. 10:20 am – 12:00 pm<br>Moderator: Lara Roketenetz** | | |
|---|---|---|
| 10:20 – 10:40 | **Brown, Kelly H. & Amber J. Rollings*** | Hidden assets: addressing Indianapolis' poorly perceived waterway landscape |
| 10:40 – 11:00 | **Overbeck, Will,** K. Dreisilker, M. Dunning, A. Burke, & C. Dougherty | Online learning for volunteer stewards: strengthening resources for ecological restoration |
| 11:00 – 11:20 | **Grieser, Jennifer M.** | Activating watershed stewardship for community results |
| 11:20 - 11:40 | **Cortes, Forrest & Karen Tharp** | Restoring nature, building community |
| 11:40 – 12:00 | **Grieser, Jennifer M.** | Benefits of dedicating a center to watershed stewardship |

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

# CONCURRENT ORAL PRESENTATIONS – SATURDAY MARCH 25, 2017 (ROOM 201D)

| **Species Traits and Evolutionary History in Restoration. 8:20 am – 10:00 am**<br>**Moderator: Chris May** | | |
|---|---|---|
| 8:20 – 8:40 | **Zettlemoyer, Meredith A.*** & J.A. Lau | Do functional groups predict local species loss? |
| 8:40 – 9:00 | **Bauer, Jonathan T.,** L. Koziol, & J.D. Bever | Ecology of floristic quality analysis: testing for correlations between coefficients of conservatism, species traits, and mycorrhizal responsiveness |
| 9:00 – 9:20 | **Williams, Evelyn W.,** R. Barak, & D.J. Larkin | Competing to keep out invasive species in prairie restorations |
| 9:20 – 9:40 | **Hausman, Constance E.** | Early detection and rapid response: a new forest pathogen affecting beech trees |
| 9:40 – 10:00 | **Barak, Rebecca S.*,** E.W. Williams, & D.J. Larkin | Tallgrass prairie restoration from seeds to communities |

| **Landscapes, Rivers, & Lakes: Large Scale Influences on Restoration. 10:20 am – 12:20 pm**<br>**Moderator: Neil MacDonald** | | |
|---|---|---|
| 10:20 – 10:40 | **Palus, James D.*,** E. E. Andrew, P.C. Goebel, D.M. Hix, & S.N. Matthews | Factors driving forest succession in oak–hickory forests of the Wayne National Forest, southeastern Ohio |
| 10:40 – 11:00 | **Behrens, Eric G.*** & T.L. Dickson | An experimental survey of edge effects in tallgrass prairie reconstructions adjacent to remnants |
| 11:00 – 11:20 | **Catchpole, Floyd B.** | Analyzing original public land survey data to better determine natural community changes |
| 11:20 - 11:40 | **Grieser, Kevin A.,** S. Hoehne, & T. Denbow | A failing dam owner's dilemma: a unique approach to transitioning a pond to a stream. |
| 11:40 – 12:00 | **Rice, Kelly N.** & K. Evans | Hydrologic reconnection and habitat restoration of former celery fields in the Bear Creek watershed, Muskegon Lake Area of Concern |
| 12:00 - 12:20 | **Olson, Eric & Patrick Goggin** | Wisconsin's new Healthy Lakes Initiative: technical assistance and funding for lakeshore best practices |

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

# CONCURRENT ORAL PRESENTATIONS – SATURDAY MARCH 25, 2017 (ROOM 203D)

| **Restoration of Semi-Natural & Heavily Degraded Ecosystems. 8:20 am – 10:00 am<br>Moderator: Steven Munson** | | |
|---|---|---|
| 8:20 – 8:40 | **Boleman, Patrick J.** & R.M. Swab | Tree seedling survival after planting under varying treatments on reclaimed mine land |
| 8:40 – 9:00 | **Davies, G. Matt** & P.C. Goebel | Novel disturbances for novel ecosystems: restoring conifer plantations to provide multiple ecosystem services |
| 9:00 – 9:20 | **Duke, Shawn T.** & R.A. Norris | Implementation of successful restoration practices in *Phragmites* invaded wetlands. |
| 9:20 – 9:40 | **Glover, Rachael*,** G.M. Davies, & R. Swab | Restoration and management of prairie on a reclaimed strip mine in southeastern Ohio |
| 9:40 – 10:00 | **Swab, Rebecca M**., N. Lorenz, S. Byrd, & R. Dick | Native vegetation in reclamation: improving habitat and ecosystem function through using prairie species in mine land reclamation |

| **Beyond Producers: Restoration of Higher Trophic Levels. 10:20 am – 12:20 pm<br>Moderator: Rebecca Tonietto** | | |
|---|---|---|
| 10:20 – 10:40 | **Hallberg, Karen I.** | Interagency collaboration to establish site selection and restoration criteria and appropriate land management strategies for Indiana bat (*Myotis sodalis*) conservation in Ohio |
| 10:40 – 11:00 | **Gibson, Dan R.*,** L. Rowe, R. Isaacs, & D.A. Landis | Integrating agriculture and prairie restoration: native wildflowers can support natural pest suppression |
| 11:00 – 11:20 | **Salas, Dan** & J. Sievewright | Identifying landscape-level pollinator restoration opportunities within electric transmission rights-of-way |
| 11:20 - 11:40 | **Kingsbury, Jo*,** G.M. Davies, R. Macleod, & C.M. Tonra | Tropical grassland restoration for biodiversity in Beni, Bolivia |
| 11:40 - 12:00 | **Tonietto, Rebecca K.** & D.J. Larkin | Habitat restoration benefits wild bee communities: a meta-analysis |
| 12:00 – 12:20 | **Kelleher, Eric*,** J. Kelleher, & Y.D. Choi. | Arthropod diversity and trophic levels between restored prairie, canary reed grass stand and old-field at Taltree Arboretum |

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

# CONCURRENT ORAL PRESENTATIONS - SATURDAY MARCH 25, 2017 (ROOM 205D)

| **Establishment as a Filter for Community Restoration. 8:20 am – 9:40 am**<br>**Moderator: Priscilla Nyamai** | | |
|---|---|---|
| 8:20 – 8:40 | **Allison, Ryan W.** & A. St. Aubin<br>. | Practical applications of wetland planting practices on large scale projects in the Great Lakes region |
| 8:40 – 9:00 | **Bassett, Tyler*,** L. Brudvig, E. Grman, & C. Zirbel | Determinants of restored prairie plant communities |
| 9:00 – 9:20 | **Bowman, Reena P.*** & M.E. Dornbush. | The influence of multiple ecosystem stressors on the restoration of upper Midwest forest understory communities |
| 9:20 – 9:40 | **Koziol, Liz,** J.T. Bauer, K. Hickman, J. Hopkins, G. House, P. Schultz, G. Wilson, K. Zaiger, & J.D. Bever | Whole prairie soils and prairie mycorrhizae have similar positive effects on the growth and survival of transplanted prairie seedlings across five Midwest restorations |

| **Large-Scale Restoration Planning and Management. 10:20 am – 12:20 pm**<br>**Moderator: Zachary Pitman** | | |
|---|---|---|
| 10:20 – 10:40 | Bowen, T.J., B.R. Majka, & **Connor C. Wojtowicz** | Assessment to application: restoration efforts on a multiple-use site in Southern Michigan |
| 10:40 – 11:00 | **Hunter, Tonya** & A. Bailey | Protecting your investment: maintaining your restoration projects |
| 11:00 – 11:20 | **May, Christopher A.,** F. Mingmin, & Z. Yaxing | Designing a restoration and management plan for Xicaohai Wetland, Yunnan Province, China |
| 11:20 - 11:40 | **Lincoln, Jesse M.** | The sweet spot: ecosystem restoration and the protection of rare species in a landscape managed for game species |
| 11:40 - 12:00 | **Roos, Robb,** N. Staskowski, & A. Barrette | Remnant prairie within Wisconsin DOT rights-of-way: using historic and present-day survey data to identify weighted restoration priorities along state highways |
| 12:00 – 12:20 | **Thomforde, Stephen L.** | What are the benefits of grazing grassland communities? |

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

**LUNCH, BUSINESS MEETING, & AWARDS CEREMONY (12:20 – 1:35 PM)**

# KEYNOTE PRESENTATION – SATURDAY MARCH 25, 2017

**Evan Weiher**
University of Wisconsin-Eau Claire
Eau Claire, Wisconsin

# *COMMUNITY ASSEMBLY THEORY MAY HELP INFORM BOTH ECOLOGICAL RESTORATION AND ASSEMBLING THE RESTORATION COMMUNITY*

Abstract: A unified science that joins community ecology with ecological restoration has been a long sought goal of theoretical ecologists, empirical ecologists, restoration practitioners, and land managers. Even though such unification has not occurred, there has been significant progress over the last 10 years. There is some consensus that basic theory in community ecology should be and actually is the core science of ecological restoration. What is this core theory? Community assembly theory is based on three fundamental processes: dispersal, selection, and drift and their influence on functional trait distributions especially in terms of functional similarities and differences, and their proxy, phylogenetic distributions. It is also about recognizing simple linear-gradient variation versus non-linear hysteresis. Ecological restoration is reliant on manipulating these same fundamental processes with a keen eye on critical aspects of community structure and/or ecosystem function within an adaptive, iterative outcome-oriented management. Ecological restoration of basic ecosystem structure and function is sometimes a simple matter that can be easily achieved because the solutions are well-established. Restoration of highly detailed structure, such as populations of endangered species, requires specific biological knowledge and there may be no general theory for guidance. Application of assembly theory may help in the middle ground, and there are some fine published examples. Community assembly theory can be applied to the practice of ecological restoration and to the development of teams involved in ecological restoration. The challenge is essentially to understand how dispersal, selection, and drift processes influence the functional community structure of teams. Comparing the assembly of ecological communities and restoration teams may lead to insights that can facilitate the application of community theory to ecological restoration.

Biography**:** Dr. Evan Weiher (http://evanweiher.weebly.com/) is a Professor in the Department of Biology at University of Wisconsin-Eau Claire. He has a Ph.D. in Biology from Rensselaer Polytechnic Institute, an M.S. in Civil and Environmental Engineering from the University of Washington, and a B.A. in Biology from the University of Chicago. Dr. Weiher has more than 30 publications (peer review journal articles, book chapters, and books) that have been cited over 6000 times. His research interests focus on scaling issues in community assembly and functional diversity and his past research experiences have involved grassland, oak savanna, lake, and wetland ecosystems. Notably, he is an authority in assembly rules and community ecology. Additionally, Dr. Weiher's teaching contributions at the University of Wisconsin-Eau Claire include introductory biology, ecology, and biostatistics.

## MEETING HOST PLENARY SESSION– SATURDAY MARCH 25, 2017

# *RESTORATION RESEARCH, TEACHING, AND COMMUNITY OUTREACH AT GRAND VALLEY STATE UNIVERSITY*

This plenary session will explore research, teaching, and community outreach related to ecological restoration at Grand Valley State University. Presenters include faculty, past and present graduate students, and community partners. The plenary session will consist of seven presentations that will summarize restoration education, use of service learning projects to meet educational and restoration goals, and research findings related to the effects of site preparation, invasive species removal methods, prescribed fire, and seeding methods on plant community structure, plant recruitment patterns, and invasive species within grassland, oak barrens, and sand prairie ecosystems.

| Time | Presenter | Title |
|---|---|---|
| 3:00 – 3:05 pm | Menon, Shaily | Introduction |
| 3:05 – 3:25 pm | Aschenbach, Todd A. | Assembling the Community Assemblers: Restoration Education at GVSU |
| 3:25 – 3:45 pm | MacDonald, Neil W. | Restoration of Native-Dominated Plant Communities on a Spotted Knapweed-Infested Site |
| 3:45 – 4:05 pm | Manion, Melanie | Utilizing Service-based Learning Projects to Accomplish Meaningful Restoration Work |
| 4:05 – 4:25 pm | Munson, Steven W. | Competitive Interactions Between Spotted Knapweed and Native Grasses and Forbs in Restored Plant Communities in the Bass River Recreation Area |
| 4:25 – 4:45 pm | Nyamai, Priscilla A. | Habitat Restoration for the Karner Blue Butterfly (*Lycaeides melissa samuelis*): Examining Plant Recruitment Patterns and Productivity in an Oak Barrens Ecosystem |
| 4:45 – 5:05 pm | Pitman, Zachery | Effects of Fire Season and Temperature on Spotted Knapweed (*Centaurea stoebe*) infested Grasslands |
| 5:05 – 5:25 pm | Roos, Robb | Mediation of Plant Community Dynamics Using Variable Seeding Densities in a Michigan Sand Prairie Restoration |
| 5:25 – 5:55 pm | | Question and answer session |



# MEETING HOST PLENARY SESSION PRESENTATION ABSTRACTS

Aschenbach, Todd A*. ***Assembling the Community Assemblers: Restoration Education at GVSU***. Grand Valley State University, Allendale, Michigan. Email: aschenbt@gvsu.edu

The Natural Resources Management Program at Grand Valley State University provides students with the scientific knowledge and practical skills necessary to become critical thinkers, engaged citizens, and creative and competent resource professionals. Our program prepares students for careers in ecological restoration and related fields through coursework, research, and internship experiences. Graduates of our program are employed in variety of local, state, and federal government agencies, non-governmental organizations, and the private sector. This presentation will showcase the diversity of courses and experiences that contribute to student success.

MacDonald, Neil W.*[1], Laurelin M. Martin[2], and Kaitlyn M. Emelander[1]. ***Restoration of Native-Dominated Plant Communities on a Spotted Knapweed-Infested Site***. [1]Grand Valley State University, Allendale, Michigan. [2]Michigan Department of Environmental Quality, Kalamazoo, Michigan. Email: macdonan@gvsu.edu

Restoration of native-dominated plant communities on degraded, invasive species-infested sites requires the use of multiple management practices. We studied the effects of native seed addition, site preparation (mowing alone, clopyralid, glyphosate), hand pulling of spotted knapweed (*Centaurea stoebe* L.), and burning on native plant community restoration on a knapweed-infested site in Michigan. We used a factorial arrangement of treatments in a randomized complete block design, and quantified the development of the treated plant communities over eight years (2009 to 2016). Clopyralid treatment helped control knapweed for six years, but reduced native species richness. Glyphosate treatment provided only short-term knapweed control, but favored the establishment and persistence of seeded native species. Native-dominated plant communities also developed on seeded plots that were mowed only once, achieving similar native species richness and cover as the herbicide treatments. Annual hand pulling effectively controlled knapweed, burning increased relative cover of native graminoids, and the combination of hand pulling and burning increased relative cover of native forbs. The relative cover of non-native grasses, non-native forbs, and knapweed steadily decreased through time in the treated plant communities, while that of native graminoids and forbs steadily increased. After eight years, relative cover of native graminoids and forbs was only 12.7 ± 3.7% on untreated plots, but ranged from 59.1 ± 3.8% on seeded plots that received only site preparation to 89.9 ± 2.4% on seeded plots that received both hand pulling and burning. Burning non-hand-pulled plots tended to reduce the density of knapweed, and did not increase knapweed cover, further demonstrating that burning can be a useful restoration practice for knapweed-infested sites. The treated plant communities also had substantially greater numbers of native species and greater mean Coefficient of Conservatism, Floristic Quality Index, and Shannon's Diversity Index values than adjacent untreated areas, all indicators of a successful restoration trajectory.

Manion, Melanie*. ***Utilizing Service-based Learning Projects to Accomplish Meaningful Restoration Work***. Ottawa County Parks, West Olive, Michigan. Email: mmanion@miottawa.org

Resource limitation, human and financial, is a challenge for any land manager. Meanwhile, educators are faced with finding methods to teach students complex concepts in a manner that relates to future employment. Successful service-based learning projects increase an organization's capacity to conduct restoration work by leveraging the prolific human capital within educational institutions, while accomplishing the educational goals of the instructor. This presentation will discuss a wide-spectrum of service-based learning projects from early elementary to more advanced restoration work with Grand Valley State University Natural Resource Management students.

Munson, Steven W.* and Neil W. MacDonald. ***Competitive Interactions between Spotted Knapweed and Native Grasses and Forbs in Restored Plant Communities in the Bass River Recreation Area***. Grand Valley State University, Allendale, Michigan. Email: munsons@mail.gvsu.edu

Spotted knapweed (*Centaurea stoebe*) is an invasive forb introduced to North America in the late 1800's and has since spread across a large portion of the United States and Canada. The success of spotted knapweed has been attributed to high seed production and allelopathy. Some research has suggested soil nitrogen may also play a role in spotted knapweed's dominance. Effective methods for controlling spotted knapweed are of importance for restoration of the grassland ecosystems it has infested. Our research was conducted to determine if treatments resulting in higher biomass of native grasses have less available nitrogen in the soil compared to treatments resulting in higher spotted knapweed biomass. This experiment was conducted on previously established experimental plots located at the Bass River Recreation Area, located in Allendale Township, Michigan. These experimental plots were established in July 2008 using a randomized complete block design with a factorial arrangement of treatments for control of spotted knapweed. Plots in each block were initially mowed and treated with clopyralid, glyphosate, or left untreated. Following the initial preparation, a subset of plots was annually hand-pulled of spotted knapweed, burned, both, or neither. To answer our research question, biomass was sampled based on plant groups (native grasses, native forbs, introduced grasses, introduced forbs, and spotted knapweed). During the same time frame, soil samples from each plot were taken and analyzed for available nitrogen. Preliminary analysis of the biomass data indicate the importance of prescribed burning for maintaining native grassland communities and the effectiveness of hand-pulling for reducing spotted knapweed populations. The results also indicate use of herbicides lack long term effectiveness in the control of spotted knapweed, with little difference between any of the initial site preparations. Results of the nitrogen data and its relationship with spotted knapweed are still pending at this time.

Nyamai, Priscilla A.* Todd A. Aschenbach, and Matthew J. Schuman. ***Habitat Restoration for the Karner Blue Butterfly (Lycaeides melissa samuelis): Examining Plant Recruitment Patterns and Productivity in an Oak Barrens Ecosystem***. Grand Valley State University, Allendale, Michigan. Email: nyamaip@gvsu.edu

Oak barrens are fire-dependent savanna-type ecosystems characterized by sparse tree canopies, with a diverse forb and grass understory. These ecosystems, when healthy, provide habitat for the federally endangered Karner blue butterfly (*Lycaeides melissa samuelis*) among other species. The herbaceous native perennial plant, wild lupine (*Lupinus perennis* L.), found in these ecosystems, is the obligate host plant for the Karner blue butterfly, being the only plant that the larvae of this butterfly can feed on. Despite their critical functions, oak barrens ecosystems have declined significantly from their historic range, with remnants fragmented and existing in isolated patches that are characterized by a greater woody species component and little to no lupine recruitment. This study examines vegetation recruitment patterns, relationships, and productivity in a 0.16 $km^2$ oak barrens ecosystem where prescribed burns were implemented at various times between 2007 and 2011, but where no post-treatment studies have been conducted since the last burn.

Pitman, Zachery* and Todd A. Aschenbach. ***Effects of Fire Season and Temperature on Spotted Knapweed (Centaurea stoebe) Infested Grasslands***. Grand Valley State University, Allendale, Michigan. Email: pitmanz@mail.gvsu.edu

Grassland ecosystems face imminent threat from a variety of sources, including invasive species. Chief among these invasive species is spotted knapweed (*Centaurea stoebe*), the success of which is due in part to a novel allelopathic weapon. Considering the major threat that spotted knapweed poses to imperiled grassland ecosystems, we devised a study to examine the effectiveness of fire as a control agent of spotted knapweed and the allelopathic chemical [(±)-catechin] it produces. We conducted our experiment in part of a restored prairie ecosystem at Pierce Cedar Creek Institute in

Barry County, Michigan between May and August 2016. Our experiment consisted of burning established 1m² plots at high and low temperatures across spring and summer seasons, then planting six native prairie plant species as a bioassay for the presence of (±)-catechin. We found spring burns to be effective at spotted knapweed removal only at high temperatures. Overall, spotted knapweed removal was more effective with summer burns than with spring burns. Planted native species established slightly better in burned plots than unburned plots, suggesting that burning can reduce soil (±)-catechin levels. Our results suggest that prescribed burning may be an effective tool for removing spotted knapweed and may aid native species establishment through (±)-catechin removal. Further research will focus on longer-term monitoring of the site, as well as direct measurements of soil catechin using High Performance Liquid Chromatography.

Roos, Robb[1]* and Todd A. Aschenbach[2]. ***Mediation of Plant Community Dynamics Using Variable Seeding Densities in a Michigan Sand Prairie Restoration***. [1]Cardno, Madison, Wisconsin. [2]Grand Valley State University, Allendale, Michigan. Email: robb.roos@cardno.com

Sand prairie was once an important component of Michigan's historic oak savanna-pine barrens ecosystem, but has largely has been eliminated in the state. Established in 2009, a research project in the Manistee National Forest examines how different seeding treatments affect certain community dynamics during the initial five years of a sand prairie restoration project. Seeding treatments were varied with respect to seeding concentrations (1,000 seeds/$m^2$ and 10,000 seeds/$m^2$); and the inclusion of grasses and/or forbs with diverse ecological characteristics, such as early flowering, late flowering, and nitrogen fixers (i.e., legumes). In general, results indicate that a high seeding concentration of early flowering species, and those including either low or high seeding concentrations of warm season grasses, have a positive impact on plant community development by increasing native species cover, richness, and diversity while also decreasing non-native species cover, richness, and diversity. High grass seed densities can also suppress other planted and resident native species. The inclusion of early season forbs and warm season grasses into seeding efforts may play a critical role in initial species establishment of a sand prairie restoration due to the facilitative and competitive advantages they may provide in these harsh, arid environments. However, it remains to be seen if these initially successful communities will have continued success over longer periods of time. Results from this study can be used to elucidate ecologically successful and economically efficient seeding approaches in plant community restoration.



# OFFSITE FIELD TRIPS - SUNDAY MARCH 26, 2017

9:00 am to 12:30 pm: ***West Michigan Oak Savannas: Protection, Restoration, and Research***. Justin Heslinga[1], Jesse Lincoln[2], and Priscilla Nyamai[3]. [1]Land Conservancy of West Michigan, Grand Rapids, Michigan. [2]Michigan Natural Features Inventory, Lansing, Michigan. [3]Grand Valley State University, Allendale, Michigan. JH Email: justin@naturenearby.org

***Field trip participants are responsible for their own transportation and maps will be provided***. This field trip will depart from Grand Valley State University's DeVos Center at 9:00 am and the on-site field trip begins at Huckleberry Hill at 9:30 am. Oak savannas were once prevalent in West Michigan, but now are one of the most imperiled natural communities in the state, with less than 1 percent of the original habitat remaining. The area around Lowell, Michigan, contains several oak savanna remnants that are in various stages of restoration. This field trip will give participants an in-depth look at two such remnants: Huckleberry Hill owned by Lowell Township and Bradford Dickinson White Nature Preserve owned by the Land Conservancy of West Michigan. At Huckleberry Hill, we will walk through a relatively intact and high-quality remnant that has responded readily to recent shrub and tree clearing. At the Bradford Dickinson White Nature Preserve, we will explore a more severely degraded remnant in the beginning stages of restoration, and discuss a long-term study on the site to identify plant community changes in response to thinning and burning. The trip will conclude with an optional stop at Gravel Bottom Brewery in Ada, where we will have an open discussion to share experiences and ideas regarding oak savanna protection, restoration, and research. This field trip will be outdoors, so dress accordingly for the weather and anticipated conditions.

9:00 am to 3:00 pm: ***Lake Michigan Coastal Wetlands and Dune Restoration***. Brian Majka[1] and Rick Rediske[2]. [1]GEI Consultants, Allendale, Michigan. [2]Grand Valley State University, Allendale, Michigan. BM Email: bmajka@geiconsultants.com

***Transportation will be provided for the first 14 participants. Additional participants are invited to drive separately and maps will be provided.*** Transportation for departs Grand Valley State University's DeVos Center at 9:00 a.m. The field trip will begin with a brief tour of Grand Valley State University's brand new Kindschi Hall of Science, followed by visits to two restoration sites. The Muskegon Lake Area of Concern (AOC) was designated by the EPA as an AOC for various reasons, including the loss of fish and wildlife habitat. To work toward the goal of restoring fish and wildlife habitat and eventual de-listing of the AOC, AOC stakeholders have combined resources and talent to implement over 20 restoration projects. The first site visited on this field trip will be the recently constructed Bear Lake hydrologic reconnection and wetland restoration. At this site, 0.15 $km^2$ of former celery fields adjacent to Bear Creek were disconnected from the creek, Muskegon Lake, and Lake Michigan by levees that were constructed to facilitate farming operations. To restore the wetlands, the site was dewatered and excavated in a manner that will maximize wildlife habitat. The levees

were scheduled for removal in December, 2016, but the onset of winter has delayed removal and final reconnection until Spring 2017. The second site will be the Kitchel-Lindquist Dunes Preserve, owned by the City of Ferrysburg. This site, with views overlooking Lake Michigan, is managed as a public preserve and is a prime example of a dune that exists with a semi-urban interface. While the dune has been structurally intact, invasive plants species have begun to inhabit the site in recent years. Restoration efforts have involved primarily invasive species removal, although future efforts may include trail reconfiguration to minimize public impacts on the dune. The trip will conclude with an optional stop at Trail Point Brewery in Allendale for further discussion. This field trip will be outdoors, so dress accordingly for the weather and anticipated conditions.

**9:00 am to 3:00 pm**: ***Ottawa County Parks Dune and Riparian Restoration Field Trip***. Melanie Manion. Ottawa County Parks and Recreation Commission, West Olive, Michigan. Email: mmanion@miottawa.org

***Transportation will be provided for the first 14 participants. Additional participants are invited to drive separately and maps will be provided.*** This field trip will depart from Grand Valley State University's DeVos Center at 9:00 a.m. Ottawa County Parks manages nearly 26 $km^2$ of natural land. This field trip will compare the management strategies used by Ottawa County Parks in a highly intact ecosystem (Rosy Mound Natural Area) to those used on a lower quality property (Eastmanville Bayou) that requires extensive restoration efforts. The field trip will begin with a visit to the brand new Kindschi Hall of Science on Grand Valley State University's Allendale Campus. Following the campus tour, participants will travel 48 km to a Great Lakes Dune System at Rosy Mound Natural Area to observe a high quality site that has required minimal restoration efforts. This stop will include a strenuous 1.1 km hike to the Lake Michigan lakeshore. Our second site visit will be Eastmanville Bayou. This site contains 2.8 km of Grand River frontage, wetlands, bayou, and floodplain forest. Although Eastmanville Bayou exhibits high quality components, including a state endangered species, it is primarily a highly disturbed site that requires extensive restoration efforts. Restoration and management efforts include the use goats and student volunteers for invasive species control. The field trip will conclude with an optional stop at Trail Point Brewery in Allendale for further discussion. This field trip will be outdoors, so dress accordingly for the weather and anticipated conditions.

# Ecological Restoration at Grand Valley State University

The Biology Department at Grand Valley State University offers undergraduate degrees in Biology or Natural Resources Management. A Master of Science in Biology is also available.

Students can pursue coursework, research, and internships related to ecological restoration.

**Coursework**

We offer extensive hands-on and project-based learning supported by our student-focused, state-of-the-art teaching, laboratory, and field facilities. Courses include:

- Ecological Restoration
- Restoration Ecology
- Introduction to Wildland Fire Management
- Intermediate Wildland Fire Management
- Fire Ecology and Management
- Watershed and Wetland Management
- Principles of Soil Science
- Systematic Botany

**Research**

Faculty conduct research in a variety of areas of natural resources and conservation biology in diverse ecosystems in the region and beyond. The diverse areas of research activity by faculty offers students opportunities to participate in faculty-guided research projects, gain field skills and hands-on experience, and connect concepts learned in class to their application in the field.

**Internships**

Our students gain practical work experience through internships with environmental and natural resources agencies, nonprofit organizations, and industry.

**"The biology department has excellent opportunities available outside of the classroom with faculty members in a wide range of specialties. This can provide very valuable knowledge and experience not normally obtained prior to graduate-level studies."**

Corey Kapolka
**Biology Alumnus**

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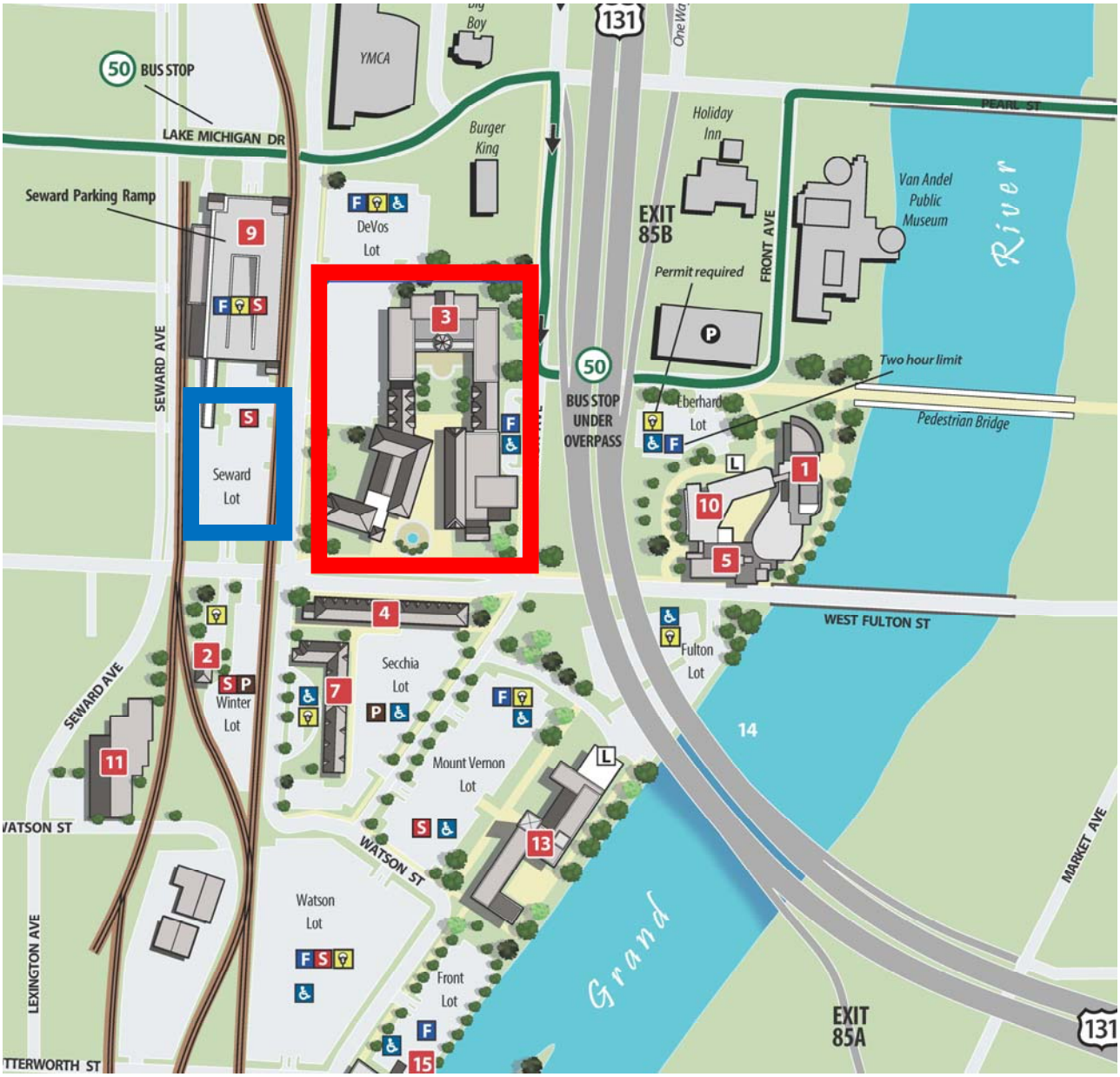
## ABOUT THE SER MIDWEST-GREAT LAKES CHAPTER

- 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/](http://chapter.ser.org/midwestgreatlakes/)*

# Map of Grand Valley State University Campus




- The physical address of the Richard M. DeVos Center is: 401 West Fulton Street, Grand Rapids, Michigan 49504-6431

- The red square on the map indicates the location of the Richard M. DeVos Center on the Grand Valley State University campus in Grand Rapids, Michigan.

- All meeting events will be held within the Richard M. DeVos Center, except for the Saturday morning DNA Barcoding Workshop that will be held in Kindschi Hall of Science on the GVSU Allendale campus.

- Visitor parking in the Seward lot is free for meeting attendees. The Seward Lot is indicated by the blue square on the map.

# SER 2017 Iguassu Brazil

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SER2017 is a joint conference of the Society for Ecological Restoration (SER), the Sociedade Brasileira de Restauração Ecológica (SOBRE), and the Sociedad Ibero-Americana y del Caribe de Restauración Ecológica (SIACRE).

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