



WSU Woods Symposium 2018

Friday, November 16, 2018

2:00-5:00 PM

101 Fawcett Hall

Poster Presentations

Fawcett Lobby 2:00-2:25 PM and 3:50-4:10 PM

“A collection of things that might be of interest,” Keith Roeth (See table for display)

“WSU woods: expanded history and characteristics”, Jim Runkle

“Rhabditid nematodes from rotting walnuts in the WSU Woods”, Scott Baird

“Selection of sample sites for water quality investigation in the Wright State Woods”, Baxter Foskuhl, Ankita Gurav, Clark Jarnagin, Douglas Marshal, Lee Raska, Audrey McGowin*

“Water Quality in the woods based on total suspended solids”, Ankita Gurav, Clark Jarnagin, Douglas Marshall, Lee Raska, Baxter Foskuhl, Audrey McGowin*

“*E. coli* levels in the WSU Woods streams Autumn 2018”, Clark Jarnagin, Ankita Gurav, Douglas Marshall, Lee Raska, Baxter Foskuhl, Audrey McGowin*

“Anion concentrations in the surface water through the Woods of Wright State University”, Douglas Marshall, Ankita Gurav, Clark Jarnagin, Lee Raska, Baxter Foskuhl, Audrey McGowin*

“Wright State University Woods: Streams’ dissolved oxygen, specific conductance, ammonia, and ammonium data”, Lee Raska, Ankita Gurav, Clark Jarnagin, Douglas Marshall, Baxter Foskuhl, Audrey McGowin*

* Denotes presentations by students in Advanced Environmental Chemistry (CHM-SRVI 4020/6020), a course by Audrey McGowin

Exhibition of Artwork and Poems by WSU CoLA students and faculty Fawcett Lobby 2:00-2:25 PM and 3:50-4:10 PM

Since the late 1960's, faculty and students have been drawn to the Wright State University Woods as inspiration for artwork, poetry, and other creative endeavors.

In the display cases by 101 Fawcett, is an exhibition of artwork by students from the Department of Art & Art History. Also featured, are several pieces by Emeritus Professor David Leach, along with corresponding poems by Emeriti faculty, David Garrison and David Petreman from Modern Languages, and James Hughes and Gary Pacernick from English.

Students

Autumn Bellin

Julie Colston

Jeremy Evans

Sydney Guido

Kristin Markling

Adam Redding

Rosa Tweed

Aaron Wilson

Matthew Chamberlain

Elizabeth Dunlap

Emily Gastineau

Matthew Helton

Evelyn Mahrt

Nick Stalter

Ben Wetzel

Micah Zavacky

Elaine Cloern

Sarah Epperson

Leah Grommin

Emily Lockard

Adam Mercer

Kara Terry

Debi Whistler

Faculty

David Leach, Professor Emeritus, Art & Art History

Poets

David Garrison, Professor Emeritus, Modern Languages

James Hughes, Professor Emeritus, English

Gary Pacernick, Professor Emeritus, English

David Petreman, Professor Emeritus, Modern Languages

Schedule of Presentations – 101 Fawcett Hall

2:00-2:25	Art and Poster viewing, refreshments
2:25-2:30	Welcome, Audrey McGowin, Chemistry
2:30-2:50	"Forty years of vegetation change and continuity in the WSU Woods", Jim Runkle
2:50-3:10	"The Story of Colly Creek, Wright State University Campus, Spring and Summer of 1973", Keith Roeth, (MS Biology 1974)
3:10-3:20	"Wood decay in the Wright State Woods", Michaela Woods
3:20-3:30	"Preventing littering and pollution in the Wright State Woods", Elyse Angle, Kyle Briggs, Taylor Lambert, and Ashley Northern*
3:30-3:40	"Managing invasive species in the Wright State Woods", Taylor Cox, Ciarra Davis, Tai Laine, Adam Reed, and Melissa Warnimont*
3:40-3:50	"Degradation of Old Growth Forests and its impact on avian communities", Hosanna Loreaux
3:50-4:10	Art and Poster viewing, refreshments
4:10-4:20	"Maintaining biodiversity of high value areas of the Wright State Woods", Alicia Goffe, Kaitlyn Herbst, Jacob Schulze, and Casey Sharp*
4:20-4:30	"Pollinator gardens in the Wright State Woods", Hannah Guilkey, Lexie Knick, Aditya Phadke, and Riley Shaffernick*
4:30-4:40	"Managing the Wright State Woods for Aesthetics", Brittany Hansen, Jaclyn Manker, Darrin White, and Tim Williamson*
4:40-4:50	"Impacts of Amur Honeysuckle and Emerald Ash Borer on fungal driven decomposition in Midwestern Forests", Adam Reed
4:50-5:00	"Foraging habitat selection of bats at a forest-urban interface in Dayton, OH", Molly Simonis
5:00	"If a Tree Falls", a poem by David Dominic Adjourn

* Denotes presentations by students in Conservation Biology (BIO 4040/6040), a course by Volker Bahn

Abstracts for Oral Presentations

"Forty years of vegetation change and continuity in the WSU Woods"

Emeritus Professor Jim Runkle, "walks" us through his 40-years of observations made on his regular hikes while he was a professor of Biology and still continues to this today.

"The Story of Colly Creek, Wright State University Campus, Spring and Summer of 1973."

Keith Roeth describes his thesis work involving the stream that flowed through the woods and the story of how that stream recovered from a fuel oil spill in the spring and summer of 1973. Keith received his MS in Biology in 1974. He was an instructor of Biology in 1975. He began at 30-year career teaching Biology at Edison State Community College in Piqua, OH in 1976

"Wood decay in the Wright State woods"

Michaela J. Woods, Megan A. Rúa, Department of Biological Sciences

Global climate change induced by anthropogenic carbon dioxide emissions is a leading concern for current and future stability of ecosystem processes. A small portion of non-anthropogenic atmospheric carbon dioxide is released by insects and soil microorganisms through decomposition, which releases stored organic carbon via the breakdown of plant material. Fungi within the soil break down plant material by releasing extracellular enzymes. The chemistry of decaying leaf litter or wood within forested ecosystems can alter fungal functionality, as can the living plant and animal communities within the environment. In the Wright State woods, there is a dense invasion of *Lonicera maackii* (Amur honeysuckle), which can greatly alter nutrient dynamics in the soil and understory. We monitored decomposition of angiosperm wood, *Quercus rubra* (red oak), in comparison to a gymnosperm wood, *Pinus radiata* (Monterrey pine), in the Wright State woods to determine drivers of decay for coarse woody debris in a temperate Midwestern forest. I conducted a standard litter bag experiment and let wood decay for one year while monitoring canopy coverage. Wooden blocks were placed along two transects, one with larger and more abundant honeysuckle than the other. After one year, I measured mass loss, moisture, and enzyme activities of beta glucosidase and leucine aminopeptidase activities. Moisture and wood species were the strongest drivers of decay. Oak wood had a faster decay rate than pine wood and both species had increased decay rates with increased moisture. Decay rates were not directly influenced by honeysuckle size or abundance, insect presence, or canopy coverage. Pine wood had greater enzymatic activity than oak, but oak wood decayed at a faster rate. Taken together, decomposition, and therefore carbon emission, was largely driven by wood species and moisture and can be predicted by enzymatic activities. Therefore, we can use these enzymes to estimate carbon emissions from oak wood within the Wright State woods to continue monitoring carbon loss from decay.

"Degradation of Old Growth Forests and Its Impact on Avian Communities"

Hosanna Loreaux, Thomas Rooney, Department of Biological Sciences

Primary forests are essential to maintaining high biodiversity of avian species. However, secondary forests currently make up a large proportion of forest habitat around the U.S as a result of logging and urban development. In particular, Wright State University Woods contains approximately 100 ha of semi-continuous forest. It consists of primary old growth, 85-year-old secondary growth, 65-year-old secondary growth, and 40-year-old secondary growth forest. The Wright State Woods was surveyed for avian fauna to analyze species diversity and community composition between old growth and new growth forest stands to determine relative habitat importance. I did not find differences in avian abundance, species richness, or diversity between old growth and new growth stands. However, the old growth forest contained a higher community composition, providing habitat for specialist species such as the Brown Creeper and Golden-crowned Kinglet. These results demonstrate the importance of old growth forest stands for avifauna and provoke further investigation into the role of secondary forests in avian recovery from habitat loss.

“Foraging habitat selection of bats at a forest-urban interface in Dayton, OH”

Molly Simonis and Volker Bahn, Department of Biological Sciences

North America’s temperate bats provide ecosystem services such as insect control. With imminent threats to these ecologically important mammals (e.g. habitat loss, wind turbines, disease, etc.), proper conservation management requires detailed knowledge of their habitat use. In 2000, two female *Myotis sodalis* were radio-tagged to a maternal roost in Wright State University’s (WSU) urban campus woods post-capture. Emergent surveys were also performed in Summer 2015 on a small portion of the property, and until recently, additional monitoring was not implemented. Each bat species in Ohio is state and/or federally listed; thus, surveying all bat activity is critical for determining baseline habitat use and establishing conservation management strategies. We hypothesized 1) bats selection of primary forests over secondary forest for foraging 2) stronger selection for riparian areas than interior or edge habitats, and 3) greater bat activity in areas with artificial lighting since bats were recorded emerging and foraging in a highly lit area in 2015. We implemented walking bat acoustic routes throughout the study site in Summer 2017. We then created generalized linear models and determined resource selection probabilities from the model best fit for foraging habitat selection. Artificial lighting did not influence foraging selection. *Eptesicus fuscus* selected foraging habitats in secondary forest overall, with the strongest selection along secondary edge habitats ($w_{se}=0.64$, $SE=0.09$). *Lasiurus borealis* selected foraging habitats in secondary forests, with the strongest selection in secondary riparian habitats ($w_{sr}=1.00$, $SE=0.00$). *Lasiurus cinereus* selected comparable foraging habitats in primary and secondary forests along edges and interiors ($w_{pe}=0.50$, $SE=0.07$; $w_{se}=0.58$, $SE=0.18$; $w_{pi}=0.21$, $SE=0.11$; $w_{si}=0.18$, $SE=0.08$), but preferred riparian habitats in secondary forest ($w_{sr}=0.31$, $SE=1121.81$). *Lasionycteris noctivagans* showed stronger selection for edges and interiors in primary forests ($w_{pe}=0.46$, $SE=0.03$; $w_{pi}=0.42$, $SE=0.06$), but selected riparian habitats in secondary forest ($w_{sr}=1.00$, $SE=0.00$). Similarly, *Myotis spp.* selected edges and interiors in primary forests ($w_{pe}=0.42$, $SE=0.17$; $w_{pi}=0.51$, $SE=0.16$), and had strongest foraging selection in secondary riparian habitats ($w_{sr}=1.00$, $SE=0.00$). Overall, only the selection of edge habitats in primary and secondary forests was somewhat consistent among species, while variation was large among interior and riparian habitats. Our best fit model does not support any posed hypothesis, but our presence data will be useful as a baseline and for continued acoustic research and management strategies.

“Impacts of Amur Honeysuckle and Emerald Ash Borer on Fungal Driven Decomposition in Midwestern Forests”

Adam Reed, Megan Rúa, Don Cipollini, and Laura Rouhana, Department of Biological Sciences

Midwestern forests have recently undergone two major structural changes: the loss of a pivotal overstory species (ash trees), due to emerald ash borer, coupled with the gain of a prominent understory invasive species (amur honeysuckle). Such changes to the vegetative structure of the forest are likely to have important implications for nutrient cycling and thus microbial decomposition. Research examining how microbial decomposition will be altered due to this change in vegetative structure is lacking. Much of decomposition is facilitated by fungi, so to elucidate how changes in plant composition will change microbial decomposition; we will utilize a culture-based approach factorially manipulating fungal function via fungal guild and plant species. We will use three different fungal guilds: white rot, brown rot and ectomycorrhizal and leaf litter from eight plant species: white ash, black ash, green ash, blue ash, maple, oak, spicebush and honeysuckle to measure decay rates and fungal growth. Oak is expected to decay the slowest and honeysuckle with decay quickest. White and brown rot fungi are expected to grow faster than ectomycorrhizal fungi. Data generated from this study will provide insight into how the presence of honeysuckle will influence the overall decomposition rates in invaded ecosystems.

The science presentations were organized by Audrey McGowin, Associate Professor of Chemistry,
and Volker Bahn, Associate Professor of Biological Sciences

The art display was curated by Penny Park, Associate Professor, Department of Art & Art History

Refreshments were supplied by Jim and Dottie Bair, Penny Park, and Audrey McGowin

Thank you Kelly Burcham and Kirby Underwood for assistance with organizing

Back cover photo from the 1975-1976 WSU Undergraduate Course Catalog

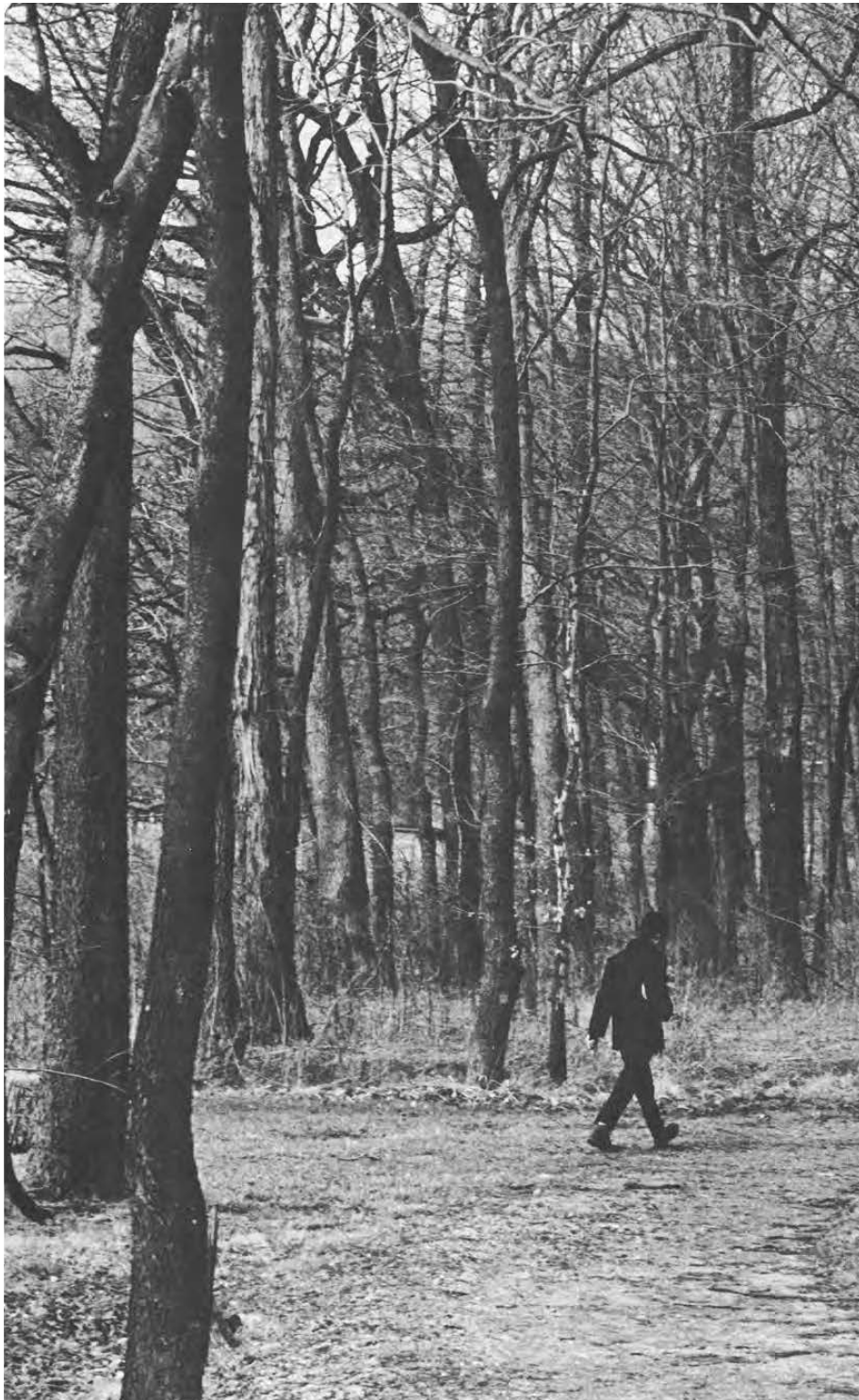
Thank you to Chris Wyatt for your kind assistance

Thank you to the Department of Chemistry

Front cover photo by Audrey McGowin

Thank you for participating!

Notes



See you NEXT YEAR!