Acer VanWallendael

Assistant Professor
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Appointments

North Carolina State University, Assistant Professor 2024-pres.
Weed Science Program

Education

Michigan State University, Postdoctoral Research Associate 2018-2023.
Advisor - David B. Lowry

Fordham University, Ph.D. Biology: Ecology track 2012-18
Advisor - Steven J. Franks

Juniata College, B.S. Biology 2007-11

Publications

Journal Articles

1. **VanWallendael A**, Benucci GMN, da Costa PB, Fraser L, Sreedasyam A, Fritschi F, Juenger TE, Lovell JT, Bonito G, Lowry DB. Host genetic control of succession in the switchgrass leaf fungal microbiome. *PLOS Biology*. 20 (8) e3001681. https://doi.org/10.1371/journal.pbio.3001681.

2. Napier JD, Grabowski P, Lovell JT, Bonnette J, Mamidi S, Gomez-Hughes MJ, **VanWallendael A**, Boe AR, Fay PA, Fritschi FB, Harrison M, Lloyd-Reilley J, Lowry DB, Mitchell RB, Rouquette FM, Wu Y, Barry K, Grimwood J, Schmutz J, Juenger TE. (2022) A generalist–specialist trade-off between switchgrass cytotypes impacts climate adaptation and geographic range. *PNAS*, 119 (15) e2118879119 https://doi.org/10.1073/pnas.2118879119.

3. Santangelo JS, The Global Urban Evolution Project (288 authors), Johnson MTJ. (2022) Global urban environmental change drives adapation in white clover. *Science*, 375(6586), 1275-1281 https://doi.org/10.1126/science.abk0989.

4. **VanWallendael A**, Lowry DB, Hamilton J. (2022) One hundred years into the study of ecotypes, new advances are being made through large-scale field experiments in perennial plant systems. *Current Opinion in Plant Biology*, 66, 102152 https://doi.org/10.1016/j.pbi.2021.102152.

5. **VanWallendael A** & Alvarez M. (2021) Alignment-free methods for polyploid genomes: quick and reliable genetic distance estimation. *Molecular Ecology Resources*, 22(2), 612-622. https://doi.org/10.1111/1755-0998.13499.

6. **VanWallendael A**, Alvarez M, & Franks SJ. (2021) Patterns of population genomic diversity in the invasive Japanese knotweed species complex. *American Journal of Botany*, 108(5), 857-868 https://doi.org/10.1002/ajb2.1653.

7. **VanWallendael A.**, Bonnette J, Juenger TE, Fritschi FB, Fay PA, Mitchell RB, Reilley J, Rouquette FM Jr., Bergstrom GC, Lowry DB. (2020) Geographic variation in the genetic basis of resistance to leaf rust in locally adapted ecotypes of the biofuel crop switchgrass (*Panicum virgatum*). *New Phytologist*. 227(6):1696-1708 https://doi.org/10.1111/nph.16555.

8. **VanWallendael A**, Soltani A, Emery NC, Peixoto MM, Olsen J, Lowry DB. (2019) A Molecular View of Plant Local Adaptation: Incorporating Stress-Response Networks. *Annual Review of Plant Biology*. 70: 559-583. https://doi.org/10.1146/annurev-arplant-050718-100114

9. **VanWallendael, A**. (2019) Digest: Species collapse from disturbance occurs quickly, and recovery is slow. *Evolution*. 73(8): 1679-1680. https://doi.org/10.1111/evo.13794

10. **VanWallendael A**, Hamann E, Franks SJ. (2018) Evidence for plasticity, but not local adaptation, in invasive Japanese knotweed (*Reynoutria japonica*) in North America. *Evolutionary Ecology*. 2018:1-6. https://doi.org/10.1007/s10682-018-9942-7

11. Kenaley SC, Bergstrom GC, Montes Ortiz ZK, **Van Wallendael A**, Lowry DB, Bonnette JE, Juenger TE. (2018) First Report of the Head Smut Fungus *Tilletia maclaganii* Affecting Switchgrass in Texas. *Plant Disease*. 103(3): 578. https://doi.org/10.1094/PDIS-06-18-0979-PDN

12. Kottler EJ, **VanWallendael A**, Franks SJ. (2018) Experimental Treatment with a Hypomethylating Agent Alters Life History Traits and Fitness in *Brassica rapa*. *Journal of Botany*. vol. 2018, Article ID 7836845. https://doi.org/10.1155/2018/7836845

Grants and Awards

MSU Plant Biology Outstanding Postdoc Award. 2023

Plant Resilience Institute Collaborative Research Grant. "Genetic diversity and stress tolerance in weedy proso millet (*Panicum miliaceum*). $208,401 to lead investigator VanWallendael. 2021-23

Society for the Study of Evolution (SSE) grant to American Institute of Biological Sciences (AIBS) congressional visits day 2019

Travel award to Evolution 2018 ($500) SSE 2018

Student Support Grant ($1200) Fordham University 2018

Research Support Grant ($600) Fordham University 2016

Professional Development Grant (four awards totalling $3550), Fordham University 2015-16

Calder Graduate Research Grant ($1,000), The Lewis Calder Center 2013-15

McCloskey Summer Research Grant ($1,782), Fordham University 2014

Andrew Mutch Scholarship for study in Scotland ($17,000 and full tuition remission), St. Andrew's Society of Philadelphia 2009-10

Teaching

Note - number of students is given for a typical classroom each semester

Michigan State University

Evolutionary Biology (Plant Biology/IBIO 849) · 20 Students · PhD level · Instructor 2021
Stat. Methods in Ecology & Evol. (IBIO 830) · 45 Students · PhD level · Instructor 2020
Evolution (IBIO 445) · 70 Students · BSc level · Guest Lecturer 2018

New York Botanical Garden

Plant Structure (174BOT315) · 10 Students · Public education · Instructor 2017
Introduction to Plant Science (202HRT300) · 15 Students · Public education · Instructor 2016

Fordham University

Genetics Lab (BISC 2549) · 20 Students · BSc level · Instructor 2017
Biology I and II Lab (BISC 1413 & 1414) · 150 Students · BSc level ·
Lab Preparation Coordinator 2014-17
—- *TA & TF supervision, exam curation, lab material preparation coordination*
Biology I and II Lab · 20 Students · BSc level · Teaching Fellow (TF) 2013-16
—- *TA mentoring, lecturing, exam & project grading*
Biology I and II Lab · 20 students · BSc level · Teaching Assistant (TA) 2012-13
—- *Lab material preparation, homework grading*
Foundations of Biology Lab (BISC 1010) · 20 students · BSc level · Teaching Assistant 2012
—- *Lecturing, exam & project grading*

Supervision & Mentoring

Note - number of students denotes total students mentored

Michigan State University

Research Mentor · 2 BSc Students · Main Supervisor 2022
Research Technician · Main Supervisor 2021-22
NSF REU program · 3 BSc students · Main Supervisor 2018-2021

Wildlife Conservation Society & Fordham University

Project TRUE · 15 BSc Students & 60 Secondary School Students· Co-supervisor. 2015-16
—- *A 10-week NSF-funded summer program to educate New York City teens about Urban Ecology*

Fordham University

NSF REU Program · 1 BSc Student · Co-Supervisor 2015

Research Mentor · 7 BSc Students · Daily Supervisor 2013-2016

Service and Outreach

NSF proposal reviewer, Division of Environmental Biology. 2023

GLBRC Mentorship Steering Committee. 2022-2023

Evolutionary Genetics Journal Club Chair. 2022

Michigan State Center for Integrated Plant Sciences Data Analysis Working Group. 2022

Spearheaded a team writing an educational comic book, The Mystery of the Monkey Flower (NSF-IOS-1855927 to David B. Lowry). Paired with outreach in Flint, MI public schools, introducing seventh-grade classrooms to a learning module using coastal and inland adapted plants and the comic hioh.education/monkeyflowers-graphic-novel. 2018-2021

NSF CAREER proposal reviewer, Division of Environmental Biology. 2020

Founder and leader of the Virtual REU program, providing 19 students and 10 mentors at 8 institutions with learning, professional development, and networking opportunities during the COVID-19 pandemic. 2020

Organizer, Plant-Microbe-Metabolite Interactions Session, Great Lakes Bioenergy Research Center Sustainability Meeting. 2020

Panelist, Great Lakes Bioenergy Research Center Clean Energy Week Webinar. 2020

Committee Member, Michigan State University Plant Biology Chair Review. 2020

Society for the Study of Evolution representative to the American Institute of Biological Studies Congressional visits day. Meetings with members of Congress to discuss and advocate for federal scientific support. 2019

Biology representative to the Fordham Graduate Student Association. 2016-17

Coordinated a CRISPR workshop at Fordham University 2016

REU mentor for five students, all resulting in public presentations and one peer-reviewed paper (Kottler et al. 2018). 2015-20

Project TRUE, including presentation to the public of ecology research in 2016. 2015-16

Judge at Westchester Science and Engineering Fair (high school students). 2015

Presentation to public, "Positive Feedbacks on Climate Change", Teatown Lake Reservation. 2015

Nevada Conservation Corps, 12-month Americorps member. 2011-12

Scientific Presentations

Invited Seminars

The genetics of pathogen and microbiome control in the switchgrass leaf

Mycology conference symposium: Fungal Community Network Analysis. Flagstaff, OR. 2023

Symposium: Microbiome-mediated genetic resistance to plant biotic and abiotic stresses . Corvallis, OR. 2022

Great Lakes Bioenergy Research Center Annual Science Meeting. Lake Geneva, WI. 2022

The garden in a leaf: plant genetic control of fungal ecology in the phyllosphere

Idaho State University Biological Sciences Seminar. 2021

Environmental dependence of quantitative genetic resistance to leaf rust in locally adapted ecotypes of the biofuel crop switchgrass.

Plant and Animal Genomes. San Diego, CA 2020
Duke University Population Biology Seminar. Durham, NC. 2019
Michigan State University Plant Resilience Institute. East Lansing, MI. 2019
Michigan State University Department of Plant Biology. East Lansing, MI. 2019

Genotyping by sequencing reveals hybridization and clonal spread in invasive polyploid Japanese knotweed (Reynoutria japonica) in North America.

Columbia University Seminar on Population Biology. New York, NY. 2017

Conference Oral Presentations

Barriers to gene flow under secondary contact in invasive and domesticated populations of proso millet

Evolution. Albuquerque, NM. 2023

Host genetic control of microbial succession in the switchgrass leaf fungal community.

ESA. Online. 2020
Great Lakes Bioenergy Research Center Sustainability Meeting. Online. 2020

Environmental dependence of quantitative genetic resistance to leaf rust in locally adapted ecotypes of the biofuel crop switchgrass.

Evolution. Providence, RI. 2019

The genetics of switchgrass latitudinal adaptation across North America.

Switchgrass V. Champaign-Urbana, IL. 2019

Genotypes, environments, phenotypes: Predicting switchgrass traits across space and time.

Great Lakes Bioenergy Research Center Annual Science Meeting. Lake Geneva, WI. 2019

Invasive Japanese knotweed (Fallopia japonica) shows tolerance, not resistance, to the herbicide glyphosate.

Lightning talk. Evolution. Raleigh, NC. 2014

Posters

Limited hybridization with domesticated varieties in drought-tolerant invasive wild proso millet (Panicum miliaceum)

International Weed Genomics Consortium. Washington, DC. 2022

The genetics of pathogen and microbiome control in the switchgrass leaf

Department of Energy Genomic Science Program PI Meeting. Washington, DC. 2023

Population, Evolutionary, and Quantitative Genetics. Asilomar, CA. 2022

Environmental dependence of quantitative genetic resistance to leaf rust in locally adapted ecotypes of the biofuel crop switchgrass.

Switchgrass V. Champaign-Urbana, IL. 2019
International Society of Plant-Microbe Interactions. Glasgow, Scotland. 2019
Great Lakes Bioenergy Research Center Annual Science Meeting. Lake Geneva, WI. 2019
DOE Genomic Sciences meeting. Tysons Corner, VA. 2019

Evidence for plasticity, but not local adaptation, in invasive Japanese knotweed (Reynoutria japonica) in North America.

Evolution. Montpellier, France. 2018

Population genetics of Japanese knotweed (Reynoutria japonica) in North America.

Evolution. Portland, OR. 2017
Evolution in Philadelphia Conference. Philadelphia, PA. 2017
Pennsylvania Botany Symposium. Huntingdon, PA. 2017
Bronx Science Consortium. Bronx, NY. 2016

Invasive Japanese knotweed (Fallopia japonica) shows tolerance, not resistance, to the herbicide glyphosate.

ESA. Baltimore, MD. 2015

Characterization of the glyphosate-sensitive element of the EPSPS gene by DNA sequence analysis.

Bronx Science Consortium. Bronx, NY. 2014

Affiliations

Genetics Society of America (GSA)
Society for the Study of Evolution (SSE)
Great Lakes Bioenergy Research Center (GLBRC)
Plant Resilience Institute at Michigan State University

Bioinformatic Skills

Programming

R (expert)
Rmarkdown (proficient)
UNIX (proficient)
python (novice)

References

Postdoc Advisor
Dr. David B. Lowry, Michigan State University
Email: dlowry@msu.edu
Phone: 908-723-3534

Graduate Advisor
Dr. Steven J. Franks, Fordham University
Email: franks@fordham.edu
Phone: 949-302-9804

Collaborator
Dr. Gregory Bonito, Michigan State University
Email: bonito@msu.edu
Phone: 517-884-6958