

JACOB WITTMAN

I have made visualizations viewed by hundreds of thousands of people¹, sped up query times for 25 terabytes of data by an average of 4,800 times², and built packages for R³ that let you do magic⁴.

Currently searching for a position that allows me to build tools leveraging a combination of visualization, machine learning, and software engineering to help people explore and understand their data in new and useful ways.

View this CV online with links at github.com/wittja01/cv2

💻 PROJECTS

2021
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2018

- **Estimating the range of attraction of a sex-pheromone used in traps to detect emerald ash borer**
University of Minnesota 📍 Saint Paul, MN
 - Applied a novel trapping arrangement in conjunction with a non-linear Bayesian regression to elucidate the range of attraction of a sex-pheromone used to trap emerald ash borer
 - Determined that the sex-pheromone is likely attractive at a range of 90 feet
 - The range of attraction is used by managers internationally to develop efficient early-detection trap networks
- **Evaluating anisotropy in the spread of emerald ash borer**
University of Minnesota 📍 Saint Paul, MN
 - Used generalized additive models to model the spread of emerald ash borer across North America and simultaneous autoregressive models to evaluate how environmental variables, such as minimum winter temperature, altered the rate of spread of this insect
 - Model predictions will be used by managers in North America to assess when emerald ash borer will spread to their communities and plan management tactics accordingly
- **Forecasting overwintering mortality of a biological control agent in North America**
University of Minnesota 📍 Saint Paul, MN
 - Designed experiments to assess the cold tolerance of a parasitic wasp, *Spathius galinae*, used to control populations of emerald ash borer, an invasive wood-boring beetle
 - Forecast overwintering survival of this parasitic wasp across the USA and Canada using generalized estimating equations

2021
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2019

2020
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2018

CONTACT

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🐦 [wittja01](#)
🔗 [github.com/wittja01](#)
🔗 [linkedin.com/in/wittja01](#)

LANGUAGE SKILLS

Made with the R package [pagedown](#).

The source code is available on github.com/hstrayer/cv.

Last updated on 2021-11-10.

EDUCATION

Current
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2018

- **PhD., Entomology (graduate minor Biostatistics)**
University of Minnesota  Saint Paul, MN
 - Dissertation: Title
 - Developed models intended to support invasive species managers in deciding when and where to target detection efforts and releases of biological control agents to manage the invasive beetle emerald ash borer
 - Relevant coursework: Biostatistical Inference, Statistical Methods for Correlated Data, Biostatistical Modeling and Methods, Statistical Learning and Data Mining, Data Management for Biologists, Introduction to Bayesian Analysis, Spatial Biostatistics

2018
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2016

- **M.S., Entomology**
University of Minnesota  Saint Paul, MN
 - Dissertation: Effects of host type and food deprivation on the movement behavior of late-instar larvae of gypsy moth *Lymantria dispar* (Lepidoptera: Erebidae)
 - Designed and analyzed experiments intended to evaluate and improve current regulatory practices targeting the invasive caterpillar *Lymantria dispar*
 - Relevant coursework: R for Natural Resource Sciences, Advanced R Programming, Statistics for Ecologists, Spatial and Temporal Analyses

2012
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2008

- **B.S., Biology, Environmental Studies (minor Secondary Education)**
Luther College  Decorah, IA

PUBLICATIONS

2021

- **Forecasting overwintering mortality of *Spathius galinae* in North America**
Biological Control
J. Wittman, B. Aukema, J. Duan, and R. Venette

2021

- **Optimizing early detection strategies: defining the effective attraction radius of attractants for emerald ash borer *Agrilus planipennis* Fairmaire**
Agricultural and Forest Entomology
J. Wittman, P. Silk, K. Parker, and B. Aukema

2020

- **A guide and toolbox to replicability and open science in entomology.**
Journal of Insect Science
J. Wittman and B. Aukema

2020

- **Rail transport as a vector of emerald ash borer**
Agricultural and Forest Entomology
M. Short, K. Chase, T. Feely, A. Kees, J. Wittman, and B. Aukema

- 2020
- Factors associated with diversity and distribution of buprestid prey captured by foraging *Cerceris fumipennis* (Hymenoptera: Crabronidae)
Environmental Entomology
M. Hallinen, J. Wittman, and B. Aukema
- 2019
- Foliage type and deprivation alters the movement behavior of late instar European gypsy moth *Lymantria dispar* (Lepidoptera: Erebidae)
Journal of Insect Behavior
J. Wittman and B. Aukema
- 2019
- A comparison of adult butterfly communities on remnant and planted prairies in northeast Iowa
Journal of the Lepidopterists' Society
E. Stivers, J. Wittman, and K. Larsen
- 2019
- Characterizing and simulating the movement of late-instar gypsy moth (Lepidoptera: Erebidae) to evaluate the effectiveness of regulatory practices
Environmental Entomology
J. Wittman, R. Nicoll, S. Myers, P. Chaloux, and B. Aukema
- 2017
- Butterfly surveys are impacted by time of day
Journal of the Lepidopterists' Society
J. Wittman, E. Stivers, and K. Larsen
- 2013
- Evaluation of land use and water quality in an agricultural watershed in the USA indicates multiple sources of bacterial impairment
Environmental Monitoring and Assessment
J. Wittman, A. Weckwerth, C. Weiss, S. Heyer, J. Seibert, B. Kuennen, C. Ingels, L. Seigley, K. Larsen, J. Enos-Berlage

INVITED PRESENTATIONS

- 2019
- What You Eat Affects How You Move: Links Between Caterpillar Behavior and Gypsy Moth Management.
Annual Gypsy Moth Review
 - J. Wittman, R. Nicoll, S. Myers, P. Chaloux, and B. Aukema
 - Seattle, WA, USA
- 2016
- Evaluating the effectiveness of buffer zone practices in preventing the spread of gypsy moth (*Lymantria dispar*)
Gypsy Moth Program Advisory Committee Meeting
 - J. Wittman, P. Chaloux, D. Lance, and B. Aukema
 - Saint Paul, MN, USA

- 2016
- **I Would Walk 500 Miles: Orientation and Movement Potential of Gypsy Moth Larvae in a Simulated Lumber Yard**
Annual Gypsy Moth Review
 - J. Wittman, P. Chaloux, D. Lance, and B. Aukema
 - Cleveland, OH, USA

CONTRIBUTED PRESENTATIONS

- 2021
- **Forecasting overwintering mortality of *Spathius galinae* in North America**
North American Forest Insect Working Conference
 - J. Wittman, B. Aukema, J. Duan, and R. Venette
 - Virtual
- 2020
- **Cold tolerance and overwintering mortality of *Spathius galinae* in Minnesota**
Upper Midwest Invasive Species Conference
 - J. Wittman, R. Venette, J. Duan, and B. Aukema
 - Virtual
 - **Estimating the effective attraction radius of a short-range sex pheromone of emerald ash borer (*Agrilus planipennis*) in baited traps**
Entomological Society of America National Meeting
 - J. Wittman, K. Parker, P. Silk, and B. Aukema
 - Virtual
- 2019
- **Using Bayesian statistical methods to estimate the effective attraction radius of a short-range sex pheromone of emerald ash borer in baited traps**
Entomological Society of America National Meeting
 - J. Wittman, K. Parker, K. Ryall, P. Silk, and B. Aukema
 - St. Louis, MO, USA
 - **Replicability and open science in entomology**
Department of Entomology Seminar, University of Minnesota
 - J. Wittman
 - Saint Paul, MN, USA
 - **Effect of cooling rate on survival of *Spathius galinae* when exposed to sub-zero temperatures**
North Central Forest Pest Workshop
 - J. Wittman, J. Duan, R. Venette, and B. Aukema
 - Lisle, IL

- 2018
- Effects of host foliage on the movement behavior of larvae of gypsy moth (*Lymantria dispar*)
Entomological Society of America National Meeting
 - J. Wittman, P. Chaloux, S. Myers, and B. Aukema
 - Vancouver, BC, Canada
- 2018
- Keeping gypsy moth where they are: Investigating how far gypsy moth larvae can move
Western Forest Insect Work Conference
 - J. Wittman, P. Chaloux, S. Myers, and B. Aukema
 - Denver, CO, USA
- 2017
- Evaluating gypsy moth (*Lymantria dispar*) larval movement potential and effective barriers limiting their movement
Entomological Society of America National Meeting
 - J. Wittman, S. Myers, P. Chaloux, and B. Aukema
 - Denver, CO, USA
- 2017
- Supporting policy with science: Are buffer zones around wood products effective at preventing the spread of gypsy moth (*Lymantria dispar*)
International Union of Forest Research Organizations - Forest Insects and Pathogens in a Changing Environment
 - J. Wittman, S. Myers, P. Chaloux, and B. Aukema
 - Thessaloniki, Greece
- 2016
- Do buffer zones prevent the spread of gypsy moth (*Lymantria dispar*)
Upper Midwest Invasive Species Conference
 - R. Nicoll, J. Wittman, S. Myers, D. Lance, and B. Aukema
 - La Crosse, WI, USA
- 2016
- Bees, butterflies, and beetles: a comparison of remnant and planted prairies in Northeast Iowa
Day of Insects - Iowa State University
 - J. Wittman, E. Stivers, and K. Larsen
 - Ames, IA, USA

POSTER PRESENTATIONS

2019

- Prey diversity of foraging *Cerceris fumipennis* Say (Hymenoptera: Crabronidae) and factors influencing buprestid diversity and species distributions in Minnesota

Entomological Society of America National Meeting

- M. Hallinen, J. Wittman, and B. Aukema
- St. Louis, MO, USA

2018

- Developing science to support practice: Determining distances required to protect log decks from wandering gypsy moth larvae

United States Department of Agriculture Interagency Forum on Invasive Species

- J. Wittman, P. Chaloux, S. Myers, and B. Aukema
- Annapolis, MD, USA

2015

- A comparison of adult butterfly communities on remnant and planted prairies in northeast Iowa

Entomological Society of America National Meeting

- E. Stivers, J. Wittman, and K. Larsen
- Minneapolis, MN, USA

2012

- Exploring the Dry Run Creek watershed: molecules, microbes, and macroinvertebrates

Iowa Water Conference

- J. Wittman, A. Weckwerth, J. Enos- Berlage
- Ames, IA, USA

TEACHING EXPERIENCE

Current
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2019

- Private R and Statistics Tutor

Online

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- Provide individualized R and/or statistics tutoring sessions to students ranging from high school to graduate school.

- Guest Lecturer

- R Programming for Technology Applications (DIGA 645A), Saint Mary's University of Minnesota, 2021
- Forest Entomology (ENT 4251), University of Minnesota, 2019

I am passionate about education. I believe that no topic is too complex if the teacher is empathetic and willing to think about new methods of approaching task.

2020
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2019

- **Certificate: Preparing Future Faculty**
University of Minnesota 📍 Saint Paul, MN
 - Completed a certificate program provided by the University of Minnesota to graduate students to prepare them for teaching in higher education.
 - Used best practices in pedagogy to design instructional activities for a graduate level statistics course in which I guest taught.

2020

- **Spatial and Temporal Analyses (ENT 5126)**
University of Minnesota 📍 Saint Paul, MN
 - Developed and delivered lectures on linear regression to graduate students. Assessed learning with brief formative and summative assessments. Assisted students with lab activities including writing R code and interpreting statistical analyses.
 - Course covered appropriate ways to analyse data with temporal or spatial structure in R.

2018

- **Insect Biology (ENT 1005)**
University of Minnesota 📍 Saint Paul, MN
 - Led one lab section of undergraduate students. Delivered lectures on topics in insect biology. Co-developed lab activities and assessments to meet course learning objectives.
 - Graduate level class

2016
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2014

- **Science Teacher (7 - 12 grade)**
DREAM Technical Academy 📍 Willmar, MN
 - Developed project-based learning curriculum. Helped align student projects and interests with state learning targets and outcomes.
 - Participated in faculty-led administrative structure. Served as chair of Technology Committee (2014 - 2016). Served on Personnel Committee (2014) and Facilities Committee (2015).
 - Held position as 'Convener Teacher' in 2015 - 2016 school year where I led all-staff meetings, attended district and state level meetings, and monitored and reported on school progress toward state goals.

GRANTS, HONORS, AND AWARDS

2021
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2020

- **Doctoral Dissertation Fellowship (\$25000)**
University of Minnesota 📍 Saint Paul, MN
 - Competitive university wide fellowship awarded to students in the final year of their doctoral program.

2020

- **Marion Brooks Wallace Award (\$2000)**
Department of Entomology, University of Minnesota 📍 Saint Paul, MN
 - Competitive award for a PhD student conducting basic research in entomology.

2020

- **President's Prize (\$100)**
Entomological Society of America
 - Award for placing first in the graduate student presentation competition.

2019

- **Council of Graduate Student Travel Grants (\$205)**
Council of Graduate Students, University of Minnesota  Saint Paul, MN
 - Competitive travel grant available to graduate students at the University of Minnesota.

2017
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2016

- **McLaughlin Gormley King Fellowship (\$20000)**
Department of Entomology, University of Minnesota  Saint Paul, MN
 - Competitive department fellowship to support outstanding students carrying out research in the area of integrated pest management.

2013
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2012

- **Howard Hughes Medical Institute Teacher Scientist Fellowship**
Luther College  Decorah, IA
 - Competitive fellowship to fund a fifth year of post-undergraduate education to complete coursework and practicum experience required for a teaching license.