

Jonathan A. Knott, Ph.D.

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Dept. of Integrative Biology

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RESEARCH INTERESTS

- Responses of ecological communities to global change
 - Cross-scale analyses of forest ecosystem dynamics
 - Novel modeling approaches to investigate ecological patterns and processes at landscape- to macro-scales
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EDUCATION

2015-2020. **Purdue University**, West Lafayette, IN

Degree: PhD in Forestry and Natural Resources (FNR)

Program: Ecological Sciences and Engineering Interdisciplinary Graduate Program (ESE)

Dissertation title: *Species to community level responses to climate change in eastern U.S. forests*

Advisor: Dr. Songlin Fei

Advisory committee: Drs. Robert Swihart, Michael Jenkins, Jeffrey Dukes, Liang Liang

Defended: March 31, 2020

Deposited: May 5, 2020

2011-2015. **Calvin College**, Grand Rapids, MI (currently Calvin University)

Degree: BS in Biology

Research advisors: Drs. David Koetje and Randy VanDragt

Completed: May 2015

PEER-REVIEWED PUBLICATIONS

Published and accepted

* indicates co-first authorship; ** indicates undergraduate co-author

Machine learning to understand big data in ecology

LaRue, E., Rohr, J., **Knott, J.**, Dodds, W., Dahlin, K., Thorp, J., Johnson, J., Rodriguez-Gonzalez, M., Hardiman, B., Keller, M., Fahey, R., SanClements, M., Atkins, J., Tromboni, F., Chandra, S., Parker, G., Rose, K., Liu, J., & Fei, S. The evolution of macrosystems biology. *Frontiers in Ecology and the Environment*. (In press).

Knott, J., LaRue, E., Ward, S., McCallen, E., Ordonez, K., Wagner, F., Jo, I., Elliott, J.**, & Fei, S. (2019). A roadmap for exploring the thematic content of ecology journals. *Ecosphere* 10(8):e02801.

McCallen, E.*, **Knott, J.***, Nunez-Mir, G., Taylor, B., Jo, I., & Fei, S. (2019). Trends in ecology: shifts in ecological research themes over the past four decades. *Frontiers in Ecology and the Environment* 17(2):109-116.

Responses of biodiversity to global change

Knott, J., Jenkins, M., Oswald, C., & Fei, S. (2020). Community-level responses to climate change in forests of the eastern United States. *Global Ecology and Biogeography*.

Knott, J.*, Desprez, J. M.*, Fei, S., & Oswald, C. M. (2019). Shifts in forest composition in the eastern United States. *Forest Ecology and Management* 433:176-183.

Guo, Q., Fei, S., Shen, Z., Iannone, B. V., **Knott, J.**, & Chown, S. L. (2018). A global analysis of elevational distribution of nonnative versus native plants. *Journal of Biogeography* 45:793-803.

Fei, S., Desprez, J. M., Potter, K. M., Jo, I., **Knott, J.**, & Oswald, C. M. (2017). Divergence of species responses to climate change. *Science Advances*, 3(5), e1603055.

Teaching ecology and evolution

Buteyn, N., Oh, Y.I., **Knott, J.**, Stephens, P., Konyndyk, J., Tenney, J., Wilstermann, A., Fynewever, H., & Koetje, D. (2019). Exploring neutraceuticals to enhance scientific literacy: aligning with *Vision and Change*. *American Biology Teacher* 81(3):176-185.

Under review and in preparation

Knott, J., Ford, T., Pathiravasan, C., & Fei, S. Identifying forest communities using machine learning techniques. (In prep, target submission July 2020).

Knott, J., Liang, L., Dukes, J., & Fei, S. Climate change impacts on red oak phenology. (In prep, target submission May 2020).

Paudel, I., **Knott, J.**, Ota, A., Gang, Y., & Dukes, J. Variability in spring temperature with changing climate increases vegetation damage, but earth system models are not ready for future projections. (In prep, target submission July 2020).

PRESENTATIONS

(All presentations are sole presenter unless noted otherwise)

Invited presentations

2020. **Center for Science of Information virtual seminar series**, Purdue University. Invited online presentation, "Using big data to address forest responses to climate change."

2018. **Biology Department Seminar**, Calvin College, Grand Rapids, MI. Invited Oral Presentation, "Species and community responses to climate change in eastern US forests."

Oral presentations

2019. **Forest Inventory and Analysis Stakeholders Science Meeting**, Knoxville, TN. Oral Presentation, "Distributional shifts of regional forest communities in the eastern U.S."

2019. **Purdue GIS Day**, Purdue University. Lightning Talk, "Distributional shifts of regional forest communities of the eastern United States."

2019. **Symposium on Data Science and Statistics**, Bellevue, WA. Oral Presentation, "Are forest communities impacted by climate change?"

2019. **Quantitative Ecology Group Meeting**, Purdue University. Oral Presentation, "Trends in ecology: Exploring four decades of ecological literature."
2019. **U.S. Chapter of the International Association for Landscape Ecology (US-IALE) Annual Meeting**, Ft. Collins, CO. Oral Presentation, "Is climate change driving distributional shifts of forest tree communities?"
2018. **Central Hardwood Forest Conference**, Bloomington, IN. Oral Presentation, "Assessing impacts of climate change on phenology in a common garden."
2018. **US-IALE Annual Meeting**, Chicago, IL. Oral Presentation, "Red oak phenology in a common garden."
2018. **Quantitative Ecology Group Meeting**, Purdue University. Oral Presentation, "Decomposing forest communities using a topic modeling approach."
2017. **Ecological Sciences and Engineering Symposium**, Purdue University (People's Choice Award). Three Minute Thesis Competition, "Assessing impacts of climate change on forest communities."
2017. **North America Colleges and Teachers of Agriculture meeting**, Purdue University. Oral presentation, "Climate change impacts on red oak phenology in a common garden study." Co-presenter: Ben Taylor.
2017. **Quantitative Ecology Group Meeting**, Purdue University. Oral Presentation, "Introduction to automated content analysis with Leximancer." Co-presenter: Gabriela Nunez-Mir.
2016. **Ecological Sciences and Engineering Symposium**, Purdue University (1st Place). Three Minute Thesis Competition, "Assessing the impacts of climate change on red oak phenology."
2015. **Michigan Academy of Science, Arts, and Letters**, Andrews University, Berrien Springs, MI. Oral Presentation, "Forty years of forest change in the Calvin College Ecosystem Preserve."

Poster presentations

2019. **Ecological Society of America Annual Meeting**, Louisville, KY. Poster Presentation, "Is your research blooming or wilting? An exploration of four decades of ecological literature."
2019. **Symposium on Data Science and Statistics**, Bellevue, WA. E-poster Presentation, "Identifying forest communities using machine learning techniques." Co-presenters: Trenton Ford and Chathurangi Pathiravasan.
2018. **Purdue GIS Day**, Purdue University (3rd place). Poster Presentation, "Shifts in forest composition in the eastern United States."
2018. **Purdue Forestry and Natural Resources Research Symposium**, Purdue University (Honorable Mention). Poster Presentation, "Assessing impacts of climate change on phenology using a common garden study."
2017. **Purdue GIS Day**, Purdue University (1st Place). Poster Presentation, "Assessing impacts of climate change on phenology using a common garden study."
2017. **Office of Interdisciplinary Graduate Programs Spring Reception**, Purdue University. Poster Presentation, "What's trending in ecology? An automated content analysis of the top concepts in ecology."
2017. **International Biogeography Society Biennial Meeting**, Tucson, AZ. Poster Presentation, "Assessing impacts of climate change on phenology using a common garden study."

2016. **Ecological Society of America Annual Meeting**, Ft. Lauderdale, FL. Poster Presentation, "Assessing impacts of climate change on phenology using a common garden study."
2016. **Office of Interdisciplinary Graduate Programs Spring Reception**, Purdue University. Poster Presentation, "Assessing human health in Rio De Janeiro, Brazil using the World Urban Database (WUDAPT) framework." Co-presenters: Rachel Scarlett, Leah Sandler, Renee Obringer, and Janelle Cronin.
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AWARDS AND SCHOLARSHIPS

Awards

2020. **Outstanding Graduate Teaching Assistant for the College of Agriculture, Purdue University.**
2019. **Ecological Society of America W.S. Cooper Award**
2019. **Purdue College of Agriculture Graduate Student Spotlight**
2018. **Purdue GIS Poster Competition**, Third place.
2018. **Purdue Forestry and Natural Resources Poster Competition**, Honorable mention.
2017. **Purdue GIS Day Poster Competition**, First place.
2017. **Purdue Ecological Sciences and Engineering Symposium Three Minute Thesis Competition**, People's choice award.
2016. **Purdue Ecological Sciences and Engineering Symposium Three Minute Thesis Competition**, First place.

Scholarships and funding

2019. **Purdue Climate Change Research Center Travel Award**, \$500.
- 2019-2020. **Charles H. Michler Scholarship**, \$5000 for outstanding graduate student researcher in forest biology.
2019. **American Statistical Association Student Travel Award**, \$265.
2019. **NASA-MSU Professional Enhancement Award**, \$700.
- 2018-Present. **Center for Science of Information interdisciplinary research fund**, \$6000. Project: Identifying forest communities using machine learning techniques. Co-PIs: Trenton Ford (University of Notre Dame) and Chathurangi Pathiravasan (Southern Illinois University).
- 2018-2019. **Fischer Forestry Fund Graduate Scholarship**, \$3500.
2018. **US-IALE Student Travel Award**, \$700.
- 2017-2018. **Charles H. Michler Scholarship**, \$3700 for outstanding graduate student researcher in forest biology.
2016. **Purdue Climate Change Research Center Travel Award**, \$1500.
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PROFESSIONAL EXPERIENCE

- 2020-Present. **Postdoctoral Research Associate**, Department of Integrative Biology, Michigan State University. Advisor: Phoebe Zarnetske
- 2018-2020. **Research assistant**, Department of Forestry and Natural Resources, Purdue University. Advisor: Songlin Fei
- 2015-2018. **USDA NIFA National Needs Fellow**, Department of Forestry and Natural Resources, Purdue University. Advisor: Songlin Fei
2014. **Summer research fellow**, Calvin College. Forty years of forest development in the Calvin College ecosystem preserve. Advisor: Dr. Randy VanDragt.

2013. **Summer research fellow**, Calvin College. Teaching ecology and evolution through the lens of *Vision and Change*. Advisor: Dr. David Koetje.

TEACHING

2020. **Outstanding Graduate Teaching Assistant for the College of Agriculture**, Purdue University.
- 2019 (Fall). **Teaching assistant** for FNR 64700 Quantitative Methods for Ecologists. Provided help sessions and office hours for graduate students; created and graded homework assignments. Instructor: Robert Swihart.
- 2018 and 2019 (Spring). **Teaching assistant and guest lecturer** for FNR 38400 Statistical Methods for Natural Resources. Instructed and aided during lab; presented guest lectures on regression analysis; provided office hours for students. Instructor: Robert Swihart.
- 2018 (Fall). **Certificate of Foundations in College Teaching awardee**, Purdue University.
- 2017 and 2018 (Fall). **Instructor** for FNR 59800-18 Introduction to R Programming. Created and delivered hands-on lectures; provided help during co-instructor lectures; created and graded assignments and individual projects. Co-instructors: (2017) Gabriela Nunez-Mir, Insu Jo, and Emily McCallen; (2018) Samuel Ward, Elizabeth LaRue, and Insu Jo.
- 2017 (Fall). **Instructor** for FNR 59800-19 Introduction to Automated Content Analysis. Created and delivered hands-on lectures; provided help during co-instructor lectures; aided students with individual ACA projects. Co-instructors: Gabriela Nunez-Mir, Emily McCallen, and Benjamin Taylor.
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MENTORING, SERVICE, AND PROFESSIONAL MEMBERSHIP

- 2017-Present. **Undergraduate student mentor** for five Forestry/Wildlife/Natural Resources and Environmental Science undergraduate students (Ali Gilchrist, Amy Hanners, Avery Cook, Rachel Brummet, and Erica Mueller) and one Statistics Living-Learning Community undergraduate student (Jessica Gilbert).
- 2016-Present. **Graduate student peer mentor** for four Ecological Sciences and Engineering and three Forestry and Natural Resources graduate students (Leonardo Bertasello, Patricia Nease, Songhao Wu, Zackary Delisle, Akane Ota, Kyle Richardville, and Joshua Tellier).
2016. **Speakers Committee Chair**, Ecological Sciences and Engineering Symposium. Coordinated keynote speaker, group discussion leaders, and panelists.
- Reviewer** for *Global Ecology and Conservation* and *The Landscape Journal*.
- Member** of the Ecological Society of America (ESA), the International Biogeography Society (IBS), and the International Association for Landscape Ecology-North America (IALE-NA, formerly US-IALE).
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