

Oregon IPM Center and Dept. of Horticulture
Oregon State University (OSU)
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A. EDUCATION AND EMPLOYMENT INFORMATION

Education

- 2012 Ph.D. Biology, University of New Mexico, Albuquerque
- 2003 B.S. Zoology (*Magna cum laude*), Oregon State University, Corvallis. Minor: Chemistry
- 2000 A.A. Biological Sciences, Central Oregon Community College, Bend

Extra-Education Trainings

- 2025 Search Advocate Program, OSU, Corvallis
- 2023 Designed for Impact, Effective Extension Series Workshop, OSU, Corvallis
- 2022 Introduction to Python I and II, OSU, Corvallis
- 2018 Bayesian Statistics for Ecologists Workshop, US Geological Survey, Boise, ID
- 2017 High Performance Computing in R Course, US Geological Survey, Denver, CO
- 2016 Diversity in the Classroom Workshop Series, University of Arizona, Tucson
- 2013 Pedagogy Workshop, National Institute of Health Postdoctoral Excellence in Research and Teaching (NIH PERT) program, University of Arizona, Tucson
- 2008 Species Distribution Modeling Workshop, American Museum of Natural History Center for Biodiversity and Conservation, Portal, AZ

Positions

- 2024–curr. Assistant Professor (Senior Research), Oregon IPM Center, OSU, Corvallis
- 2023–2024 Senior Research Associate I, Oregon IPM Center, OSU, Corvallis
- 2018–2023 Research Associate, Oregon IPM Center, OSU, Corvallis
- 2017–2018 Ecologist, USGS Forest and Rangeland Ecosystem Science Center, Boise, ID
- 2013–2016 Postdoctoral Fellow, NIH PERT program, Dept. of Ecology and Evolutionary Biology and Center for Insect Science, University of Arizona, Tucson
- 2015 Adjunct Faculty, Pima Community College, Tucson, AZ
- 2013 Adjunct Faculty, Dept. of Ecology and Evolutionary Biology, Univ. of Arizona, Tucson
- 2012–2013 Postdoctoral Research Associate, Dept. of Ecology and Evolutionary Biology, University of Arizona, Tucson

- 2012 Project Assistant, Office for Support of Effective Teaching, University of New Mexico, Albuquerque
- 2009–2011 Teaching Assistant, Dept. of Biology, University of New Mexico, Albuquerque
- 2007–2009 National Science Foundation (NSF) GK-12 Fellow, Univ. of New Mexico, Albuquerque
- 2005–2012 Research Assistant, Dept. of Biology, University of New Mexico, Albuquerque
- 2004–2005 Lab Manager, Dept. of Ecology and Evolutionary Biology, University of California, Los Angeles

B. TEACHING, ADVISING AND OTHER ASSIGNMENTS

1. Instructional Summary

Course	Title	Credits	Enrollment	Term	Year
HORT 599	Ecological Systems Modeling	3	13	Winter	2025
HORT 499/599	Ecological Systems Modeling	3	13	Winter	2024
HORT 499/599	Ecological Systems Modeling	3	3	Winter	2023

I was the primary instructor for this course, which was co-developed with Dr. Len Coop. Students gained computational skills and hands-on experience with applying models and systems/management concepts to support decision-making in agricultural and natural resources programs. Topics included systems theory, modeling and mapping the timing of life cycle events, species distributions, risk of biological invasions and outbreaks, population dynamics, and dispersal.

2. Student and Participant/Client Evaluation

			Instructor rating (mean)			Course rating (mean)		
Course	Term	Responses	Ind.	HORT	Univ.	Ind.	HORT	Univ.
HORT 499/599	W 2025	7	6.0	5.5	5.2	5.9	5.4	5.1
HORT 499/599	W 2024	8	5.4	5.4	5.2	4.8	5.4	5.0

3. Advising

Undergraduate students advised (mentored research)

- Mike Kelley 2026–pres. Horticulture; recipient of Undergraduate Research Support Award (URSA) (\$1000)
- Emilie Taylor 2026–pres. Botany & Plant Pathology; recipient of URSA Award (\$1000)
- Charlie Ricci 2025–pres. Ecological Engineering; recipient of OSU Beginning Research Support Program (BRSP) Award (\$1,000)
- Abigail Johnson 2025–pres. Botany & Plant Pathology; recipient of URSA Award (\$1000) and Continuing Researcher Support Program (CRSP) Award (\$1,700)

Isabella Meibauer	2025–2026	Environmental Sciences
Megan Beck	2025	Crop and Soil Sciences; recipient of BRSP Award (\$1,000)
Jules Beyer	2023–2025	Climate Science; recipient of CRSP Award (\$700)

Postdoctoral trainees

Judith Herreid	2025–2024	Postdoctoral Scholar, Oregon IPM Center
Carrie Preston	2024–2025	Research Associate, Oregon IPM Center

Graduate students (committee member)

Maxine Cruz	2026–pres	M.S. student, Dept. of Statistics
Chris Schwartz	2026–pres	M.S. student, Environmental Sciences
Kalli Schoenig	2025–pres	M.S. student, Dept. of Crop and Soil Sciences
Nina Miller	2024–2026	M.S. student, Dept. of Horticulture
Natalie Lareau	2023–2025	M.S. student, Dept. of Horticulture

4. Other Assignments

Phenology, climate suitability, and infection risk models and tools

Situation. Agricultural decision-makers need science-based, ecologically informed models to effectively monitor and manage pests, their crop hosts, and associated natural enemies. For invasive species in particular, it is critical to understand where they are likely to establish and when key developmental stages will occur, as this information supports both strategic planning and day-to-day pest management decisions. Likewise, biological control programs can be improved by anticipating where and when natural enemies will establish and exert sufficient pressure on target pests or weeds. Climate change is expected to further complicate these dynamics by enhancing overwinter survival and accelerating development in many invasive species, enabling range expansion, earlier emergence, and higher population densities over longer growing seasons. Nevertheless, there remains a lack of decision-support tools that capture long-term trends in pest phenology and establishment risk—insights that are essential for guiding effective management and surveillance strategies.

Approach. I have co-developed a spatial modeling platform, DDRP (Degree-Day, Establishment Risk, and Phenological event mapping), designed to predict both real-time and forecasted phenology (the timing of seasonal development) and climate suitability (establishment risk) for pest species. This work has included building models for 18 high-risk invasive pests and enhancing platform capabilities, including the incorporation of photoperiod-driven diapause to improve predictions of phenology for photoperiod-sensitive insects. I am also leading the development of an interactive web application that delivers predictions of the potential impacts of contemporary climate change (last 45 years) on pest phenology and establishment risk.

In addition, I have extended DDRP to predict infection risk in economically important plants, with a focus on the invasive pathogen responsible for boxwood blight, and I am currently adding moisture-processing functionality to improve modeling of other moisture-sensitive species, such as weeds. More recently, I have been developing coupled models for the rosette weevil (*Ceratapion*

basicorne) and its host plant, yellow starthistle, to support improved management of starthistle invasions in the western United States.

Outcomes and impact. Regularly updated (every 1–2 days) forecasts for 18 invasive pest species are publicly available through USPest.org (<http://uspest.org/CAPS>), providing free, near real-time decision support for pest surveillance and management. These forecasts are also integrated into the USA National Phenology Network (<https://www.usanpn.org/data/maps/forecasts>), where users can access interpretive materials, receive automated alerts, and contribute field observations. To promote transparency and reproducibility, all DDRP source code, models, and supporting documentation—including technical reports and a comprehensive user manual—are openly available via USPest.org, GitHub (https://github.com/bbarker505/ddrp_v3), and long-term data repositories. These resources have been downloaded more than 1,000 times, demonstrating strong uptake by the research and applied management communities.

The modeling tools are actively used by federal and state agencies, including USDA APHIS Plant Protection and Quarantine (PPQ), to inform and enhance their own decision-support systems. Ongoing collaboration with agency partners focuses on increasing the accessibility and visibility of DDRP forecasts while incorporating user feedback to better align outputs with management needs. Adoption and demand for these tools have grown substantially, with usage of invasive pest models on USPest.org increasing from approximately 8,000 runs in 2020 to more than 12,000 runs in 2025.

Importantly, these models are informing real-world management decisions. For example, since 2023, the Oregon Department of Forestry has used DDRP forecasts for emerald ash borer to optimize trap deployment timing, achieving predictions accurate to within less than one week. This level of precision improves early detection efforts and enhances the efficiency of surveillance programs, ultimately supporting more timely and effective pest management responses.

Scholarship. Original research that used DDRP has resulted in 11 technical reports, three peer-reviewed journal articles (all as first author), and two book chapters (both as co-author). I have been a co-PI or PI on seven federal awards that incorporated aspects of this work, four of which were funded by the NIFA AFRI Tactical Sciences in Biosecurity program (2022–2025), NIFA CPPM Extensional Implementation Program (2024–2027), U.S. Department of Defense (DoD) Strategic Environmental Research and Development Program (SERDP, 2023–2028), and the APHIS-PPQ Plant Protection Act Section (PPA) 7721 Program (2025–2026). I was PI on two state agency grants (ODA Nursery Research Grant) that supported the development of web apps that deliver interactive forecasts produced by DDRP for the Pacific Northwest.

Collaborative Programs

Program and Funding	Participants	Recent Activities	Meetings at Which I Participated
APHIS PPQ PPA award, “Assessing the potential impacts of weather changes	PI and key personnel from the PPQ Plant Pest Risk Analysis	Two meetings to discuss a web app that will deliver predictions of pest responses to long-term weather	4 conference calls with PPRA partners since 2026 (Aug 28, Oct 6, Dec 11, Feb 3)

on pest activities and establishment”	(PPRA) group	changes	
DoD SERDP grant, “Advanced Understanding and Methods of Invasive Species Control”	Co-PIs and key collaborators from USDA ARS and CA Dept. of Food and Agriculture	Monthly meetings to discuss logistics and timelines for a project that is studying <i>C. basicorne</i> , a new biocontrol agent for yellow starthistle	Hosted approx. 20 conference calls with co-PIs since Oct 2023
USDA-NIFA-AFRI grant, “Tactical Sciences in Biosecurity” program	Co-PIs and key personnel from OSU and USA National Phenology Network	Monthly meetings to discuss logistics and timelines for developing and operationalizing models at the USA National Phenology Network website	Hosted approx. 40 conference calls since Fall 2018
Pest alert / dashboard system for Oregon	Seth Dorman (USDA ARS) and OIPMC members	Online meetings to discuss a proposal to the USDA NIFA AFRI grant program to fund additional work. Submitted proposal in Nov 2025.	Meetings in 2021 (Nov 17, Nov 22), 2022 (Jan 14, Feb 4, Oct 13, Nov 4), 2023 (Feb 7, Mar 1), several in 2024, and 2025 (Aug 11)
Boxwood Blight Epidemiology Group	Chuan Hong and other researchers working on boxwood blight	Quarterly online meetings with research presentations and discussion of infection risk factors	Meetings in 2021 (Aug 10, Oct 25) and 2022 (Feb 7)
Ecological Forecasting Initiative	Faculty and students in the “Methods and Cyberinfrastructure Working Group”	Discussed a workflow that forecasts wildfire recovery and potential funding opportunities	Attended approx. 15 monthly meetings since 2022 and delivered a coding demo (Nov 2025)
Portland R User Group and Cascadia R Conference	Professionals and students who use the R programming language	Co-organizing Cascadia R Conference for 2026, which includes bi-weekly meetings between approx. Nov to Jun	Bi-weekly meetings in 2024 (<i>ca.</i> 10 total) and 2025 (<i>ca.</i> 10 total)
Integrative Economics, LLC	Economist / remote sensing specialists / modelers	Meetings to discuss grant opportunities to continue collaborative work	Informal meetings (<i>ca.</i> 6 months) since 2019, weekly calls between Oct

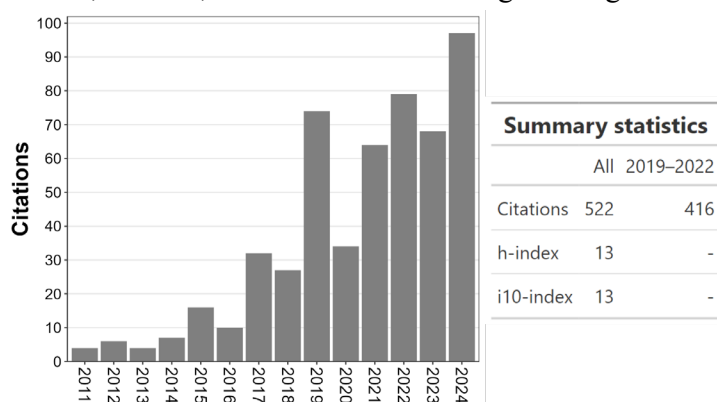
			2021 and Feb 2022
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C. SCHOLARSHIP AND CREATIVE ACTIVITY

Summary of peer-reviewed publications

Time frame	Refereed papers	Book chapters	Extension publications	TOTAL
2018–present (with OSU)	8	3	1	12
Prior to 2018	12	0	0	12
TOTAL	20	3	1	24

Plot of citation counts for peer-reviewed publications from 2011 to 2024, and a summary of citations counts, h-index, and i10-index according to Google Scholar (accessed on 7 Jan 2025).



1. Publications

a) Peer-reviewed

My role in publications is designated by the following codes:

C = Conceptualization–Ideas; formulation or evolution of overarching research goals and aims.

D = Data curation–Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later re-use.

\$ = Funding acquisition–Acquisition of the financial support for the project leading to this publication.

FA = Formal analysis–Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data.

I = Investigation–Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection.

M = Methodology–Development or design of methodology; creation of models.

A = Project administration–Management and coordination responsibility for research activity

planning and execution.

R = Resources—Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools.

S = Software—Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components.

G = Visualization—Preparation, creation and/or presentation of the published work, specifically visualization/data presentation.

W1 = Writing—original draft—Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation).

W2 = Writing—review & editing—Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision—including pre- or post-publication stages.

* = Undergraduate Student.

i. Refereed Publications

Barker, B. S., J. Beyer*, and L. Coop. 2025. Real-time integrative mapping of the phenology and climatic suitability for the spotted lanternfly, *Lycorma delicatula*. *Insects* 16:790.

<https://doi.org/10.3390/insects16080790>. C, D, \$, FA, I, M, A, S, G, WI

Press: [Morning AgClips](#) (America's #1 Ag News Source; Sep 19, 2025), [NIFA Update](#) (USDA NIFA Bulletin; Nov. 9, 2025), [OSU Impact Stories](#) (Sep 2025)

Barker, B. S. 2025. Climate matching models for *Ceratopion basicorne* (Coleoptera: Apionidae), a biocontrol agent of yellow starthistle. *Journal of Economic Entomology* 118:465–470.

<https://doi.org/10.1093/jee/toae299>. C, D, \$, FA, I, M, A, S, G, WI

Sambaraju, K. R., V. Srivastava, **B. S. Barker**, M. A. Keena, M. D. Ormsby, and A. L. Carroll. 2024. Editorial: Forest insect invasions – risk mapping approaches and applications. *Frontiers in Insect Science* 4:1378061. <https://doi.org/10.3389/finsc.2024.1378061>. W1, W2

Barker, B. S., and L. Coop. 2024. Phenological mapping of invasive insects: decision support for surveillance and management. *Insects* 15:6. *Insects*. <https://doi.org/10.3390/insects15010006>. C, D, \$, FA, I, M, A, G, WI

Barker, B. S., L. Coop, J. J. Duan, and T. R. Petrice. 2023. An integrative phenology and climatic suitability model for emerald ash borer. *Frontiers in Insect Science* 3:1239173.

<https://doi.org/10.3389/finsc.2023.1239173>. C, D, \$, FA, I, M, A, S, G, WI

Barker, B. S., L. Coop, and C. X. Hong. 2022. Potential distribution of invasive boxwood blight pathogen (*Calonectria pseudonaviculata*) as predicted by process-based and correlative models. *Biology* 11:849. <https://doi.org/10.3390/biology11060849>. C, D, FA, I, M, A, S, G, WI

Grevstad, F. G., T. Wepprich, **B. S. Barker**, L. B. Coop, R. Shaw, and R. S. Bouchier. 2022. Combining photoperiod and thermal responses to predict phenological mismatch for introduced insects. *Ecological Applications* 32:e2557. <https://doi.org/10.1002/eap.2557>. M, S, W2

Barker, B. S., L. Coop, T. Wepprich, F. Grevstad, and G. Cook. 2020. DDRP: real-time phenology and climatic suitability modeling of invasive insects. *PLoS ONE* 15:e0244005. <https://doi.org/10.1371/journal.pone.0244005>. C, D, FA, I, M, A, S, G, W1

Barker, B. S., D. S. Pilliod, M. Rigge, and C. G. Homer. 2019. Pre-fire vegetation drives post-fire outcomes in sagebrush ecosystems: evidence from field and remote sensing data. *Ecosphere* 10:e02929. <https://doi.org/10.1002/ecs2.2929>. C, D, FA, I, M, A, S, G, W1

Braasch, J. E, **B. S. Barker,** and K. M. Dlugosch. 2019. Effective population size variation during invasion of *Centaurea solstitialis*. *Molecular Ecology* 28:2546–2558. <https://doi.org/10.1111/mec.15104>. D, FA, I, W2

Barker, B. S., D. S. Pilliod, J. Welty, R. S. Arkle, M. G. Karl, and G. R. Toevs. 2018. An introduction and practical guide to use of the Soil-Vegetation Inventory Method (SVIM) data. *Rangeland Ecology & Management* 71:671–680. <https://doi.org/10.1016/j.rama.2018.06.003>. C, D, FA, I, M, A, G, W1

Barker, B. S., J. E. Cocio*, S. R. Anderson, J. E. Braasch, F. E. Cang, H. D. Gillette*, and K. M. Dlugosch. 2018. Potential limits to the benefits of admixture during biological invasion. *Molecular Ecology* 28:100–113. <https://doi.org/10.1111/mec.14958>. C, D, FA, I, G, W1

Barker, B. S., and J. A. Rodríguez-Robles. 2017. Origins of introduced populations of the Puerto Rican Coquí, *Eleutherodactylus antillensis*, in Saint Croix and Panamá. *Copeia* 105:220–228. <https://doi.org/10.1643/CG-16-501>. C, D, FA, \$, I, M, A, G, W1

Barker, B. S., K. Andonian, S. M. Swope, D. Luster, and K. M. Dlugosch. 2017. Population genomic analyses reveal a history of range expansion and trait evolution across the native and invaded range of yellow starthistle (*Centaurea solstitialis*). *Molecular Ecology* 26:1131–1147. <https://doi.org/10.1111/mec.13998>. C, D, FA, I, M, A, G, W1

Dlugosch, K. M., F. E. Cang, **B. S. Barker,** K. Andonian, S. M. Swope, and L. H. Rieseberg. 2015. Evolution of invasiveness through increased resource use in a vacant niche. *Nature Plants* 1:15066. <https://doi.org/10.1038/nplants.2015.66>. FA, I, M, G, W1

Press: phys.org (Online science, research, and technology news; Jun 3, 2015)

Barker, B. S., J. A. Rodríguez-Robles, and J. A. Cook. 2015. Climate as a driver of tropical insular diversity: comparative phylogeography of two ecologically distinctive frogs in Puerto Rico. *Ecography* 38:769–781. <https://doi.org/10.1111/ecog.01327>. C, D, FA, \$, I, M, A, G, W1

Press: *FrogLog* (Newsletter of the Declining Amphibian Survival Alliance). 123:15.

Barker, B. S., and A. Ríos-Franceschi. 2014. Population declines of Mountain Coquí (*Eleutherodactylus portoricensis*) in the Cordillera Central of Puerto Rico. *Herpetological Conservation Biology* 9:578–589. http://www.herpconbio.org/Volume_9/Issue_3/Barker_Rios-Franceschi_2014.pdf. C, D, FA, \$, I, M, A, G, W

Press: *FrogLog* (Newsletter of the Declining Amphibian Survival Alliance). 123:43.

Barker, B. S., J. A. Rodríguez-Robles, V. S. Aran*, A. Montoya*, R. B. Waide, and J. A. Cook.

2012. The role of sea-level fluctuations and topography in generating island diversity: phylogeography of the Puerto Rican Red-eyed Coquí, *Eleutherodactylus antillensis*. *Molecular Ecology* 21:6033–6052. <https://doi.org/10.1111/mec.12020>. C, D, FA, \$, I, M, A, G, W1

Barker, B. S., R. B. Waide, and J. A. Cook. 2011. Deep intra-island divergence of a montane forest endemic in the Caribbean: phylogeography of the Puerto Rican frog *Eleutherodactylus portoricensis* (Anura: Eleutherodactylidae). *Journal of Biogeography* 38:2311–2325.

<https://doi.org/10.1111/j.1365-2699.2011.02578.x>. C, D, FA, \$, I, M, A, G, W1

Press: FrogLog (Newsletter of the Declining Amphibian Survival Alliance). 100:61.

Barker, B. S., and Y. E. Sawyer. 2011. *Aspidoscelis tessalatus* (Common Checkered Whiptail) and *Salvadora hexalepis deserticola* (Big Bend Patch-nosed Snake). *Herpetological Review* 42:304. WI

Barker, B. S., P. C. Phillips, and S. J. Arnold. 2010. A test of the conjecture that G-matrices are more stable than B-matrices. *Evolution* 64:2601–2613. <https://doi.org/10.1111/j.1558-5646.2010.01023.x>. D, FA, I, G, W1

Barker, B. S., R. W. Henderson, and R. Powell. 2009. Geographic distribution. *Epicrates monensis granti*. *Herpetological Review* 40:455–456. W1

ii. Book Chapters

Crimmins, T. M., **B. S. Barker**, D. D. Bergl, S. Brewer, K. M. de Beurs, S. Jones, T. Long, E. Mohl, E. Oschrein, A. D. Richardson, T. A. Schriever, J. Walker, T. M. Williams. 2025. Phenology in Higher Education. Pages 609–635 in Schwartz, M. D., editor. *Phenology: An Integrative Environmental Science* (3rd ed.). Springer, Netherlands. https://doi.org/10.1007/978-3-031-75027-4_27. G, WI, W2

Bowers, J. H., J. R. Malayer, B. Martínez-López, J. LaForest, C. T. Barger, A. D. Neeley, L. B. Coop, **B. S. Barker**, A. J. Mastin, S. R. Parnell, A. A. Cosse, B. J. McCluskey, S. C. Isard, and J. M. Russo. 2022. Surveillance for early detection of high-consequence pests and pathogens. Pages 120–177 in K. F. Cardwell and K. L. Bailey, editors. *Tactical Sciences for Biosecurity of Animal and Plant Systems*. IGI Global, Hershey, Pennsylvania, USA. <https://doi.org/10.4018/978-1-7998-7935-0.ch005>. C, I, G, V, W1

Coop, L., and **B. S. Barker**. 2020. Advances in understanding species ecology: phenological and life cycle modeling of insect pests. Pages 43–96 in M. Kogan and L. Higley, editors. *Integrated Management of Insect Pests: Current and Future Developments*. Burleigh Dodds Science Publishing, Sawston, England. <https://doi.org/10.19103/AS.2019.0047.02>. I, G, W1

iii. Extension Publications

Coop, L., **B. S. Barker**, and M. Ragozzino. 2025. Integrated Pest Management: Biological Control. Pages N2–N7 in N. Kaur, editor. *2025 Pacific Northwest Insect Management Handbook*. Oregon State University Extension and Experiment Station Communications. Updated Annually. <https://pnwhandbooks.org/insect/ipm/biological-control> (Updated annually). I, W1

b) Other Publications

Summary of other publications (not peer-reviewed)

Time frame	Newsletters	Trade/Industry journal articles	Websites	Technical white papers	Software and manuals	Encyclopedia entries	TOTAL
2018–present (with OSU)	1	4	1	12	5	1	24
Prior to 2018	0	0	0	0	0	0	0
TOTAL	1	4	1	12	5	1	24

i. Newsletters

Barker, B. S., and C. Park. 2022. Tools for forecasting pests extends to annual weeds and biocontrol agents. *Newsletter for the Western Society of Weed Science*. Winter 2022, pp. 5–6. Online at: <https://wsweedsocietyscience.org/wp-content/uploads/WSWS-Newsletter-2022-Winter.pdf>. G, W1

ii. Trade/Industry Journal Articles

Posthumus, E. E., **B. S. Barker**, T. Crimmins, and L. Coop. 2025. Forewarned is Forearmed: Research-backed ‘Pheno Forecasts’ Help Growers Know When to Expect Pest Activity. *Digger*, June 2025, pp. 41–44. Online at: <https://diggermagazine.com/new-tool-helps-nursery-growers-fight-pests>

Posthumus, E. E., T. Crimmins, J. Switzer, **B. S. Barker**, L. Coop, and T. Trotter. 2024. Enhanced Forecasts of Spotted Lanternfly and Asian Longhorned Beetle Activity. *City Trees*, July/Aug 2024, pp. 14–17. Online at: <https://read.dmtmag.com/i/1523030-july-august-2024/13?>

Barker, B. S., and L. Coop. 2024. Boxwood Blight: New Tools to Forecast Infection Risk in Pacific Northwest Nurseries. *Digger*. June 2024, pp. 41–45. Online at: <https://diggermagazine.com/new-tools-to-forecast-boxwood-blight-infection-risk-in-pacific-northwest-nurseries/>

Crimmins, T., E. E. Posthumus, A. Rosemartin, **B. S. Barker**, and L. Coop. 2023. Enhanced Forecasts of Emerald Ash Borer Activity. *City Trees*, July/Aug 2023, pp. 12–13. Online at: <https://read.dmtmag.com/i/1502619-july-august-2023/11?>

iii. Videos

N/A

iv. Websites

Barker, B. S., and L. Coop. 2023. Boxwood blight risk mapping tool for western OR and WA. A web application (R Shiny) that forecasts of the short-term risk of boxwood being infected by

boxwood blight in western Oregon and Washington. Online at:
<https://riskmaps.oregonstate.edu/boxb/>. D, S, M, A, G, W1

v. Technical White Papers

Barker, B. S., and L. Coop. 2024. Japanese beetle, *Popillia japonica*. Phenology/degree-day and climate suitability model analysis for USPEST.ORG. Prepared for USDA NIFA AFRI Tactical Sciences for Biosecurity. Vs. 1.0 (11/22/24).
https://uspest.org/CAPS/Popillia_japonica_white_paper.pdf. FA, I, M, G, W1

Barker, B. S., and L. Coop. 2024. Spotted lanternfly, *Lycorma delicatula*. Phenology/degree-day and climate suitability model analysis for USPEST.ORG. Prepared for USDA NIFA AFRI Tactical Sciences for Biosecurity. Vs. 1.0 (4/30/24).
https://uspest.org/CAPS/Lycorma_delicatula_white_paper.pdf. FA, I, M, G, W1

Barker, B. S., and L. Coop. 2021. Egyptian cottonworm, *Spodoptera littoralis*. Phenology/degree-day and climate suitability model analysis for USPEST.ORG. Prepared for USDA APHIS PPQ. Vs. 1.0 (1/8/21). https://uspest.org/CAPS/Spodoptera_littoralis_white_paper.pdf. FA, I, M, G, W1

Barker, B. S., and L. Coop. 2020. Sunn pest, *Eurygaster integriceps*. Phenology/degree-day and climate suitability model analysis for USPEST.ORG. Prepared for USDA APHIS PPQ. Vs. 1.0 (8/11/20). http://uspest.org/CAPS/Eurygaster_integriceps_white_paper.pdf. FA, I, M, G, W1

Barker, B. S., and L. Coop. 2020. Silver Y moth, *Autographa gamma*. Phenology/degree-day and climate suitability model analysis for USPEST.ORG. Prepared for USDA APHIS PPQ. Vs. 1.0 (7/15/20). http://uspest.org/CAPS/Autographa_gamma_white_paper.pdf. FA, I, M, G, W1

Barker, B. S., and L. Coop. 2020. Pine tree lappet moth, *Dendrolimus pini*. Phenology/degree-day and climate suitability model analysis for USPEST.ORG. Prepared for USDA APHIS PPQ. Vs. 1.0 (6/11/20). http://uspest.org/CAPS/Dendrolimus_pini_white_paper.pdf. FA, I, M, G, W1

Barker, B. S., and L. Coop. 2020. Small tomato borer, *Neoleucinodes elegantalis*. Phenology/degree-day and climate suitability model analysis for USPEST.ORG. Prepared for USDA APHIS PPQ. Vs. 2.0 (4/26/20). http://uspest.org/CAPS/Neoleucinodes_elegantalis_STB_model.pdf. FA, I, M, G, W1

Barker, B. S., and L. Coop. 2020. Oak ambrosia beetle, *Platypus quercivorus*. Phenology/degree-day and climate suitability model analysis for USPEST.ORG. Prepared for USDA APHIS PPQ. Vs. 1.0 (3/27/20). http://uspest.org/CAPS/Platypus_quercivorus_white_paper.pdf. FA, I, M, G, W1

Barker, B. S., and L. Coop. 2020. Japanese pine sawyer beetle, *Monochamis alternatus*. Phenology/degree-day and climate suitability model analysis for USPEST.ORG. Prepared for USDA APHIS PPQ. Vs. 1.0 (2/26/20). http://uspest.org/CAPS/Monochamis_alternatus_white_paper.pdf. FA, I, M, G, W1

Barker, B. S., and L. Coop. 2020. Tomato leafminer, *Tuta absoluta*. Phenology/degree-day and climate suitability model analysis for USPEST.ORG. Prepared for USDA APHIS PPQ. Vs. 1.0

(1/23/20). http://uspest.org/CAPS/Tuta_absoluta_white_paper.pdf. FA, I, M, G, W1

Barker, B. S., and L. Coop. 2019. Honeydew moth, *Cryptoblabes gnidiella*. Phenology/degree-day and climate suitability model analysis for USPEST.ORG. Prepared for USDA APHIS PPQ. Vs. 1.0 (12/9/19). http://uspest.org/CAPS/Cryptoblabes_gnidiella_white_paper.pdf. FA, I, M, G, W1

Barker, B. S., and L. Coop. 2019. False codling moth, *Thaumatotibia leucotreta*. Phenology/degree-day and climate suitability model analysis for USPEST.ORG. Prepared for USDA APHIS PPQ. Vs. 1.0 (12/2/19). http://uspest.org/CAPS/Thaumatotibia_leucotreta_white_paper.pdf. FA, I, M, G, W1

vi. Software and Software Manuals

Barker, B. S., L. Coop, T. Wepprich, G. Cook, and D. Upper. 2025. Degree-Day, establishment Risk, and Phenological event mapping (DDRP) system, version 3. Source code and species parameter files online at: https://github.com/bbarker505/ddrp_v3. D, M, A, S

Barker, B. S., and L. Coop. 2023. Boxwood blight risk mapping tool for western OR and WA. Source code online at: <https://github.com/bbarker505/boxb>. D, S, M, A, S

Wepprich, T., L. Coop, **B. Barker**, and F. Grevstad. 2020. Biological control voltinism mismatch maps using DDRP. Model interface for three weed biological control insect species. Online at: <https://uspest.org/dd/dodmaps>. S

Coop, L., and **B. S. Barker**. 2020. Computing infrastructure requirements and user guide for hosting DDRP models. Prepared for APHIS PPQ and other collaborators. Online at: <https://uspest.org/CAPS/> and at https://github.com/bbarker505/ddrp_v2. G, W2

Barker, B. S., L. Coop, T. Wepprich, G. Cook, and D. Upper. 2020. Degree-Day, establishment Risk, and Phenological event mapping (DDRP) system, version 2. Source code and species parameter files online at: https://github.com/bbarker505/ddrp_v2. D, M, A, S

vii. Encyclopedia Entries

Barker, B. S., and L. Coop. 2023. Phenological Mapping of Invasive Insects. *Encyclopedia*. December 2023. <https://encyclopedia.pub/entry/53191>

2. Presentations to Peers (*Undergraduate Researcher)

Summary table of presentations to peers at professional meetings in the last 10 years

Year	Within Region	National	International	TOTAL	No. invited
2018–present (with OSU)	36	25	7	67	29
2012–2018 (prior to OSU)	5	7	4	16	3
TOTAL	41	32	11	83	32

i. Within-region Presentations

41. **Barker, B.S.**, and M. Cruz. 2026. Modeling the potential impacts of contemporary climate change on pest activities and establishment. Oral presentation at the Annual Pacific Northwest Insect Management Conference, Jan. 12, 2026. Portland, OR. 40 attendees.
40. **Barker, B. S.** 2026. Using phenology models in pest management. Presentation for the Pesticide Safety Education Program (PSEP) Course, “Chemical Applicator Short Course,” College of Agricultural Sciences, OSU, Jan. 6, 2026. Wilsonville, OR. 100 attendees. **Invited.**
39. **Barker, B. S.** 2025. Using phenology models in pest management. Presentation for the PSEP Course Webinar, “Vegetable IPM” session, College of Agricultural Sciences, OSU, Nov. 4, 2025. Online. 35 attendees. **Invited.**
38. Beck, M.*, C. Preston, and **B. S. Barker.** 2025. Investigating the phenology of yellow starthistle and its new biological agent, *Ceratapion basicorne*. Undergraduate Spring Poster Symposium, Oregon State University, May 20, 2025. Corvallis, OR.
37. Beyer, J.*, **B. S. Barker,** and L. Coop. 2025. Real-time mapping of phenology and climate suitability: spotted lanternfly. Undergraduate Spring Poster Symposium, Oregon State University, May 20, 2025. Corvallis, OR.
36. Johnson, A.*, C. Preston, and **B. S. Barker.** 2025. Managing yellow starthistle using a new biocontrol agent: an integrative experimental and geo-climatic modeling approach. Undergraduate Spring Poster Symposium, Oregon State University, May 20, 2025. Corvallis, OR.
35. **Barker, B. S.** 2025. USPest.org: forecasting pest risk under future climate change. Oral presentation at the CAS Strategic Advantage Ignite Session, Oregon State University, Apr. 23, 2025. Corvallis, OR. 60 attendees.
34. **Barker, B. S.** 2025. Real-time mapping of phenology and climate suitability for invasive pests. Seminar for the Department of Entomology, Washington State University, Apr. 7, 2025. Pullman, WA. **Invited.**
33. **Barker, B. S.,** L. Coop, and J. Beyer. 2025. Phenological mapping of spotted lanternfly under current and future climates. Oral presentation at the Pacific Northwest Insect Management Conference, Jan. 13, 2025. Portland, OR.
32. **Barker, B. S.,** and C. Preston. 2024. Yellow starthistle management using *Ceratapion basicorne*: an integrative experimental and modeling approach. W5185 Western Biological Control Group annual meeting, Oct. 28, 2024. Hood River, OR.
31. **Barker, B. S.** 2024. Using phenology models in pest management. Presentation for the PSEP Course Webinar, “Orchard IPM” session, College of Agricultural Sciences, OSU, Oct. 23, 2024. Online. 51 attendees. **Invited.**
30. **Barker, B. S.** 2024. Using phenology models in pest management. Presentation for the PSEP Agricultural Core Course Webinar, “Agriculture Core” session, College of Agricultural Sciences, OSU, Oct. 23, 2024. Online. 82 attendees. **Invited.**
29. **Barker, B. S.** 2024. Forecasting phenology and establishment risk of invasive species to support early detection. Seminar for the Department of Biology, Portland State University, Oct. 7, 2024.

- 35 attendees. **Invited.**
28. Posthumus, E., T. Crimmins, J. Switzer, J. Prev y, **B. S. Barker**, and L. Coop. 2024. Timing is everything: phenology forecasts aid managers in knowing when to treat invasive plants. Oral presentation at the annual Society for Ecological Restoration – Southwest Conference. Sep. 13, 2024. Tucson, AZ.
 27. **Barker, B. S.** 2024. Phenology models for nursery pest management. Oral presentation at the annual FARWEST (Oregon Association of Nurseries) trade show. Aug. 22, 2024. Portland, OR. *ca.* 40 attendees. **Invited.**
 26. **Barker, B. S.** 2024. Forecasting phenology and establishment risk of invasive species to support early detection. Invasive Pest Mini-Conference, College of Tropical Agriculture and Human Resources, University of Hawaii, Apr. 24, 2024. Online. 66 attendees. **Invited.** Available at: <https://youtu.be/pLI3zAk-xW8>
 25. **Barker, B. S.** 2024. Forecasting species distributions and phenology to safeguard U.S. agriculture. Seminar for the Biology and Environmental Sciences Program, Washington State University, Apr. 3, 2024. Vancouver, WA. *ca.* 20 attendees. **Invited.**
 24. **Barker, B. S.** 2024. Forecasting pest distributions and phenology to safeguard agriculture and first foods. Oral presentation at the INVASIVES 2024 Conference (Invasive Species Council of British Columbia), Feb. 27, 2024. Vancouver, B.C. ~90 attendees. **Invited.**
 23. **Barker, B. S.** 2024. Modeling emerald ash borer phenology under climate change. Oral presentation at the monthly IPM Happy Hour seminar series, Western Region IPM Center, Feb. 2, 2024. Online. 11 attendees. **Invited.** Available at: https://youtu.be/1Fzp1CH7D_U?feature=shared
 22. **Barker, B. S.** 2023. Modeling tools for vegetable pest surveillance and monitoring. Oral presentation at the annual Pacific Northwest Vegetable Association Conference, Nov. 15, 2023. 50 attendees. **Invited.**
 21. **Barker, B. S.** 2023. Real-time forecasts of phenology and establishment risk for invasive species in the PNW. Oral presentation at the Northwest Climate Adaptation Center’s Regional Invasive Species & Climate Change Network Symposium, Sep. 7, 2023. Online. 170 attendees.
 20. **Barker, B. S.,** L. Coop, A. Rosemartin, and T. Crimmins. 2023. Spatial forecast of phenology and climate suitability for emerald ash borer, *Agrilus planipennis*. Oral presentation at the annual Entomological Society of America Pacific Branch Meeting, Apr. 3, 2023. Seattle, WA. *ca.* 30 attendees.
 19. Coop, L., and **B. S. Barker.** 2023. Phenological mapping approaches for IPM decision support. Oral presentation at the annual Entomological Society of America Pacific Branch Meeting, Apr. 3, 2023. Seattle, WA. *ca.* 30 attendees.
 18. **Barker, B. S.,** and L. Coop. 2023. Boxwood blight model and impact for PNW nurseries. Webinar for PSEP re-certification program, College of Agricultural Sciences, OSU, Jan. 18, 2023. Online. 135 attendees. **Invited.**
 17. **Barker, B. S.,** L. Coop, A. Rosemartin, and T. Crimmins. 2023. Updates and implementation of a spatialized phenology model for emerald ash borer. Oral presentation at the Pacific Northwest

Insect Management Conference, Jan. 9, 2023. Portland, OR. *ca.* 40 attendees.

16. **Barker, B. S.**, and L. Coop. 2022. DDRP: real-time mapping of pest phenology and climate suitability. Oral presentation for the USDA APHIS PPQ Plant Pest Risk Analysis group, Nov. 18, 2022. Raleigh, NC. 10 attendees. **Invited.**
15. **Barker, B. S.** 2022. Spatial modeling in R to help detect emerald ash borer, a new invader in the Pacific Northwest. Lightning talk at the 6th annual Cascadia R Conference, Sep. 17, 2022. Online event. *ca.* 75 attendees.
14. Rivedal, H., **Barker, B. S.**, and I. Sandlin. 2022. Barriers for exports and predictive tools for invasive pests. Oral presentation at the 4th annual Oregon IPM Summit, Mar. 14, 2022. Corvallis, OR. *ca.* 8 attendees.
13. **Barker, B. S.**, and L. Coop. 2022. DDRP: phenology and climate suitability modeling to predict when and where invasive and IPM pests can arise. Oregon State Agency IPM Coordinating Committee Semiannual Meeting, Feb. 2, 2022. Online event. 13 attendees.
12. **Barker, B. S.**, L. Coop, and T. Crimmins. 2022. Expanding a spatial modeling platform with emphasis on invasive insects, plant diseases, and weeds. Oral presentation at the Pacific Northwest Insect Management Conference, Jan. 10, 2022. Online. 95 attendees.
11. **Barker, B. S.** 2021. Modeling pest distributions, phenology, and population dynamics to safeguard US agricultural lands. Seminar for the Dept. of Crop and Soil Science, OSU, Oct. 25, 2021. Corvallis, OR. *ca.* 20 attendees.
10. **Barker, B. S.**, L. Coop, T. Wepprich, and F. Grevstad. 2020. DDRP: a new platform to model phenology and risk of establishment. Oral presentation at the Pacific Northwest Insect Management Conference, Jan. 6, 2020. Portland, OR.
9. Coop, L., and **B. S. Barker**. 2020. A new phenology model for bronze birch borer. Oral presentation at the Pacific Northwest Insect Management Conference, Jan. 6, 2020. Portland, OR.
8. **Barker, B. S.** 2019. Modelling climate suitability and phenology to safeguard U.S. agricultural and natural resources from invasive pests. Seminar for the Dept. of Horticulture, OSU, Nov. 12, 2019. Corvallis, OR. Online at: <https://horticulture.oregonstate.edu/horticulture/2019-horticulture-seminar-series>
7. **Barker, B. S.** 2019. Modelling climate suitability and phenology to safeguard U.S. agricultural and natural resources from invasive pests. Lightning talk at the 3rd Cascadia R Conference, Jun. 8, 2019. Bellevue, WA. Online at: https://cascadiarconf.com/img/presentations_2019/BBarker_Rcascadia_talk.pdf
6. Coop, L. B., **B. S. Barker**, T. Wepprich, and F. Grevstad. 2019. DDRP: Modeling degree-days, risk of establishment, and phenological event maps. Poster presentation at the Pacific Branch of the Entomological Society of America Conference, Apr. 2, 2019. San Diego, CA. Online at: http://uspest.org/ipm/Coop_etal_DDRP_platform_ESA_Pacific_March_2019.pdf
5. **Barker, B. S.** 2017. Ecological genomics of native and invasive yellow starthistle and its biocontrol insect. Seminar for the USGS Forest Rangeland and Ecosystem Science Center, Oct. 26, 2017. Boise, ID.
4. **Barker, B. S.** 2015. Population genomics of native and introduced yellow starthistle and its

biocontrol insect. Seminar for the Dept. of Entomology, University of Arizona, Nov. 13, 2015. Tucson, AZ. **Invited.**

3. Alexandre, N., A. Gloss, **B. S. Barker**, and N. K. Whiteman. 2015. Population genomics of antagonistic evolution in a specialist herbivore and its toxic plant host. Poster presentation at the 5th annual Undergraduate Research Day Poster Session of the Dept. of Ecology and Evolutionary Biology, University of Arizona. Apr. 19, 2015. Tucson, AZ.
2. Welchert, J., **B. S. Barker**, and K. M. Dlugosch. 2015. Testing congruency of geographic and genetic population structure for a biocontrol insect and its invasive plant. Poster presentation at the 5th annual Undergraduate Research Day Poster Session for the Dept. of Ecology and Evolutionary Biology, University of Arizona, Apr. 19, 2015. Tucson, AZ.
1. **Barker, B. S.** 2012. Phylogeography of a widespread Puerto Rican frog: the role of climate change, topography, and human-mediated introductions. Brown Bag Seminar for the Dept. of Ecology and Evolutionary Biology, University of Arizona, Sept. 11, 2012. Tucson, AZ.

ii. National Presentations

32. **Barker, B. S.**, Grevstad, F., Bean, D., Preston, C., Mercer, N., and A. Mendenhall. 2026. Investigating the synchrony of yellow starthistle and rosette weevil development to improve weed management on DoD lands. Poster presentation at the U.S. DoD SERDP Symposium, Mar. 3, 2026. Washington, DC.
31. Grevstad, F., D. Bean, C. Preston, and **B. S. Barker**. 2025. A model of winter and spring phenology in the yellow starthistle rosette weevil (*Ceratapion basicorne*), applied in California and beyond. Oral presentation at the annual Entomological Society of America meeting, Nov. 9, 2025. *ca.* 30 attendees.
30. Schoening, K., K. Rabe, **B. Barker**, J. Green, and S. Rondon. 2025. Modeling the potential distribution of *Diabrotica virgifera virgifera* (Coleoptera: Chrysomelidae) in western Oregon. Oral presentation at the annual Entomological Society of America meeting, Nov. 10, 2025. *ca.* 30 attendees. Portland, OR.
29. **Barker, B. S.**, L. Coop, E. Posthumus, and T. Crimmins. 2025. Real-time Pheno Forecasts to support the areawide management of major invasive pests in U.S. agroecosystems. Oral presentation at the “Advances in Areawide Pest Management of Invasive and Endemic Pests in Agroecosystems” symposium, annual Entomological Society of America meeting, Nov. 11, 2025. 50 attendees. Portland, OR. **Invited.**
28. **Barker, B. S.**, J. Pelosi, and K. M. Dlugosch. 2025. Climate-associated genetic variation in *Eustenopus villosus*, a biological control agent for yellow starthistle. Poster presentation at the annual Entomological Society of America meeting, Nov. 11, 2025.
27. Grevstad, F., C. Preston, and **B. S. Barker**. 2025. Effect of rosette size on larval development and survival in *Ceratapion basicorne*, a new biological control agent for yellow starthistle. Poster presentation at the annual Entomological Society of America meeting, Nov. 10, 2025.
26. **Barker, B. S.** 2025. Phenological mapping of invasive insects: decision support for surveillance and management. Webinar for the Southeast RISCC (Regional Invasive Species and Climate Change) Network, Sep 16, 2025. Online. 26 attendees. **Invited.** Online at:

<https://youtu.be/0IVDliGgnJM>

25. **Barker, B. S.**, and E. Posthumus. 2025. Real-time forecasts of phenology and climate suitability for emerald ash borer in the United States. Webinar for the EAB University, May 13, 2025. Online. *ca.* 15 attendees. **Invited.** Online at: <https://youtu.be/adRinInwsi0>
24. **Barker, B. S.**, and L. Coop. 2024. DDRP: process-based tools for assessing climate change impacts on invasive species. Pests and Climate Change Workshop, Dec. 2, 2024. Washington, DC. **Invited.**
23. **Barker, B. S.**, Grevstad, F., Bean, D., and Preston, C. 2024. Managing yellow starthistle using a new biocontrol agent: an integrative and geo-climatic modeling approach. Poster presentation at the U.S. DoD SERDP Symposium, Dec. 3, 2024. Washington, DC.
22. **Barker, B. S.**, L. Coop, S. Rondon, and M. Baur. 2024. Real-time forecasts of phenology and climate-based establishment risk for invasive insects. Oral presentation at the “Forecasting Invasive Insect Species: Integrating Climate Change Dynamics of Today and Tomorrow” symposium, annual Entomological Society of America meeting, Nov. 10, 2024. *ca.* 60 attendees. Phoenix, AZ. **Invited.**
21. **Barker, B. S.**, and L. Coop. 2024. Real-time mapping of phenology and climate suitability for spotted lanternfly. Oral presentation for the USDA Spotted Lanternfly Research & Technology Development Meeting, Ohio State University, Oct. 16, 2024. *ca.* 50 attendees. **Invited.**
20. **Barker, B. S.**, L. Coop, T. Crimmins, and A. Rosemartin. 2023. Real-time mapping of phenology and establishment risk for emerald ash borer. Oral presentation at the annual Ecological Society of America meeting, Aug. 10, 2023. Portland, OR. *ca.* 25 attendees.
19. **Barker, B. S.** 2023. Real-time forecasts of phenology and climate suitability for emerald ash borer. Webinar for the EAB University, Apr. 13, 2023. Online. 17 attendees. Online at: <https://youtu.be/GSAird76myM>
18. **Barker, B. S.** 2023. An introduction to using R for horticultural data analysis. Webinar for the American Society for Horticultural Science, Jan. 30, 2023. Online. 149 attendees. **Invited.**
17. **Barker, B. S.**, F. Grevstad, L. Coop, and D. Bean. 2022. Managing yellow starthistle using a new biocontrol agent: an integrative and geo-climatic modeling approach. Oral presentation to the Technical Review Board for the U.S. DoD SERDP program, Sep. 13, 2022. Online. *ca.* 10 attendees. **Invited.**
16. Coop, L., and **B. S. Barker**. 2022. Boxwood blight modeling: how weather and climate influence disease. Annual Western Horticultural Inspection Society (WHIS) Meeting, Oct. 6, 2022. Online event. 106 participants. **Invited.**
15. Coop, L., and **B. S. Barker**. 2022. How do weather and climate impact boxwood blight? A modeling approach to aiding in boxwood disease management. Webinar for the tHRIve web series, Horticulture Research Institute, AmericanHort Foundation. Sep. 7, 2022. Online event. **Invited.**
14. Coop, L., and **B. S. Barker**. 2022. Boxwood blight management: A decision support tool for both infection and establishment risk. Oral presentation at Plant Health 2022, the annual conference for the American Phytopathological Society. Aug. 8, 2022. Pittsburgh, PA. **Invited.**

13. **Barker, B. S.**, L. Coop, and T. Crimmins. 2022. DDRP: a modeling tool to forecast insect phenology and risk of establishment. Oral presentation at the Ecological Forecasting Initiative conference, May 23, 2022. Online event. Online at: https://uspest.org/ipm/Barker_EFI_talk.mp4
12. **Barker, B. S.**, L. Coop, and T. Wepprich. 2021. Modeling phenology and climate suitability of invasive insects in real-time to improve surveillance and management. Oral presentation at the Entomological Society of America Conference (given remotely), Oct. 13, 2021. Denver, CO. **Invited.**
11. Coop, L., and **B. S. Barker.** 2021. Forecast systems for boxwood blight – when and where to be on alert. Oral presentation at Cultivate 21 – AmericanHort, Jul. 11, 2021. Columbus, OH. **Invited.** Online at: <https://www.boxwoodhealth.org/knowledge-center> and https://uspest.org/ipm/Len_Coop_Boxwood_Blight_Columbus_OH_July_2021.mp4
10. **Barker, B. S.** 2020. Modeling real-time climate suitability and phenology of invasive pests to safeguard U.S. agricultural resources. Seminar for the Dept. of Biological Sciences, Northern Arizona State University (given remotely), Oct. 23, 2020. Flagstaff, AZ. **Invited.**
9. **Barker, B. S.** 2020. Modeling populations of invasive species to protect U.S. agricultural and natural resources. Seminar for the Biology, Chemistry and Environmental Science Department, Northern New Mexico College, Mar. 6, 2020. Española, NM. **Invited.**
8. Grevstad, F., T. Wepprich, **B. S. Barker**, L. Coop, and D. Bean. 2019. Incorporating photoperiodism in insect phenology models. Poster presentation at the U.S. DoD SERDP Symposium, Dec. 3, 2019. Washington, DC.
7. **Barker, B. S.**, D. S. Pilliod, and C. Homer. 2018. Drivers of vegetation change in Herd Management Areas in the Great Basin. Oral presentation at the “Wild Horse and Burro Symposium,” Society for Range Management Conference, Jan. 13, 2018. Sparks, NV.
6. Pilliod, D. S., **B. S. Barker**, and C. Homer. 2018. Assessing vegetation change through time: Bridging SVIM and AIM through Landsat. Oral presentation at the “Science of Working Lands” Symposium, Society for Range Management Conference, Jan. 13, 2018. Sparks, NV.
5. **Barker, B. S.** 2017. Evolution in changing environments: lessons from introduced and endemic species. Seminar for the Dept. of Biological Sciences, California State Polytechnic University, Pomona, Feb. 21, 2017. Pomona, CA. **Invited.**
4. **Barker, B. S.** 2016. Evolution in changing environments: lessons from introduced and endemic species. Seminar for the Dept. of Biology, California State University San Marcos, Feb. 15, 2016. San Marcos, CA. **Invited.**
3. **Barker, B. S.**, O. Sert, J. Welchert, L. Gomez, and K. M. Dlugosch. 2015. Genomic analysis of native and introduced populations of a biocontrol insect and its invasive host plant. Poster presentation at the NIH Institutional Research and Academic Career Development (IRACDA) Annual Conference, Jun. 15, 2015. San Diego, CA.
2. **Barker, B. S.** 2015. Multiple origins of introduced populations of the Puerto Rican Red-eyed Coqui (*Eleutherodactylus antillensis*). Lightning talk at the Evolution Conference, Jun. 24, 2015. Snowbird, UT.
1. **Barker, B. S.**, and K. M. Dlugosch. 2015. Population genomic analysis of the origin and

adaptive evolution of invading yellow starthistle. Poster presentation at the Evolution Conference, Jun. 22, 2015. Snowbird, UT.

iii. International Presentations

11. Beyer, J.*, **B. S. Barker**, and L. Coop. 2025. Real-time mapping of phenology and climate suitability for spotted lanternfly (*Lycorma delicatula*). Poster presentation at the 11th International IPM Symposium, Mar. 7, 2025. San Diego, CA.
10. **Barker, B S.**, and L. Coop. 2025. A platform for predicting climate change effects on invasive pests I. Climate suitability focus. Oral presentation at the 11th International IPM Symposium, Mar. 7, 2025. 35 attendees. San Diego, CA.
9. Coop, L., and **B. S. Barker**. 2025. A platform for predicting climate change effects on invasive pests I. Climate suitability focus. Oral presentation at the 11th International IPM Symposium, Mar. 7, 2025. San Diego, CA. 35 attendees.
8. Waide, R. B., J. Thompson, and **B. S. Barker**. 2022. Patterns of resistance and resilience in forest bird populations subjected to hurricanes and droughts. Oral presentation at the Association for Tropical Biology and Conservation Conference, July 14, 2022. Cartagena, Colombia.
7. Coop, L., **B. S. Barker**, and C. Hong. 2022. Integrating short and long term risk models for boxwood blight. Poster presentation at the 10th International IPM Symposium, Mar. 2, 2022. Denver, CO. 300 attendees. Online at: <https://ipmsymposium.org/2021/posters.html>.
6. **Barker, B. S.**, L. B Coop, and T. Crimmins. 2022. DDRP: a modeling tool to guide decision making for pest surveillance and management. Poster presentation at the 10th International IPM Summit, Mar. 2, 2022. Denver, CO. 300 attendees. Online at: <https://ipmsymposium.org/2021/posters.html>.
5. Coop, L., and **B. S. Barker**. 2021. Predicting boxwood blight infection and establishment risk using CLIMEX, correlative, and DDRP modeling platforms. Online presentation at the 2nd Boxwood Blight Epidemiologist's Meeting (given over Zoom), Oct. 25, 2021. International group, *ca.* 20 attendees. **Invited.**
4. **Barker, B. S.**, O. Sert, S. J. Keller, and K. M. Dlugosch. 2017. Landscape genomic analyses reveal adaptation to climate in introduced biocontrol weevils. Oral presentation at the International Biogeography Society Conference, Jan. 10, 2017. Tucson, AZ.
3. **Barker, B. S.**, O. Sert, and K. M. Dlugosch. 2017. Landscape genomic analyses reveal adaptation to climate in introduced biocontrol weevils. Oral presentation at the "Population and Conservation Genomics" symposium, International Plant and Animal Genome Conference, Jan. 17, 2017. San Diego, CA.
2. **Barker, B. S.**, and K. M. Dlugosch. 2015. Ecological genomics of native and invading yellow starthistle. Oral presentation at the "Population and Conservation Genomics" symposium, International Plant and Animal Genome Conference, Jan. 10, 2015. San Diego, CA.
1. **Barker, B. S.**, and K. M. Dlugosch. 2014. Population genomic analysis of the origin and adaptive evolution of invading yellow starthistle. Poster presentation at the International Plant and Animal Genome Conference, Jan. 13, 2014. San Diego, CA.

3. Grant and Contract Support

Total grant and contract support towards my program is \$1,554,306 (includes \$417,336 for my salary and \$1,733,249 for other direct costs).

Year(s)	PD(s)	Agency	Title	Total \$	\$ my program
Mar 2026 – Dec 2026	Barker, B. S.	Oregon Dept. of Agriculture/Nursery Research Grant	Validating and promoting a phenology model for the Japanese beetle, a major threat to Oregon’s nursery industry	\$34,662	\$34,662
Feb 2026 – Mar 2028	Barker, B. S.	OSU Agricultural Research Fund	Forecasting the phenology and establishment risk of the Mediterranean Oak Borer	\$15,000	\$15,000
Aug 2025 – Jul 2026	Barker, B. S.	USDA/APHIS/ Plant Pest and Disease Management and Disaster Prevention Program	Assessing the potential impacts of weather changes on pest activities and establishment	\$93,298	\$93,298
Apr 2025 – Mar 2027	Barker, B. S.	OSU Agricultural Research Fund	Modeling the impacts of contemporary climate change on invasive pest activities and establishment risk	\$15,000	\$15,000
Sep 2024 – Aug 2027	Rondon S., Barker, B. S., Buhl, K., Coop, L., and Ohkura, M.	USDA/NIFA/CPPM /Extension Implementation Program Area	Oregon Integrated Pest Management Center: understanding, reconnecting, delivering, and supporting state and regional IPM programs	\$819,000	\$7,663
Oct 2023 – Sep 2028	Barker, B. S., F. Grevstad, D. Bean, and L. Coop	DoD/Strategic Environmental Research and Development Program	Managing yellow starthistle using a new biocontrol agent: an integrative experimental and geo-climatic modeling approach	\$1,556,466	\$1,154,716

Jan 2022 – Dec 2022	Barker, B. S.	Oregon Dept. of Agriculture/Nursery Research Grant	Implementing and validating a boxwood blight infection risk model for the Oregon nursery industry	\$18,000	\$18,000
Apr 2022 – Jul 2025	Coop, L., B. S. Barker, and T. Crimmins	USDA/NIFA/AFRI/ Tactical Sciences in Biosecurity	Enhancing U.S. biosecurity with improved pest forecasts and public engagement	\$993,810	\$156,625
Sep 2021 – Aug 2024	Rondon, S., Coop, L., Barker, B. S. (co-wrote grant, key personnel)	USDA/NIFA/CPPM /Extension Implementation Program Area	Oregon Extension IPM: Meeting critical needs through adoption, education, decision support, and pest impact assessment	\$536,875	\$87,918
Oct 2021 – Feb 2022	Barker, B. S. (role – research support)	Integrative Economics, LLC.	Movement modeling of codling moth	\$4,424	\$4,424

D. SERVICE

Service activities conducted since joining OSU in 2018 are summarized below.

1. University Service

i. Department/unit

- Hiring Committee Member, Oregon IPM Center
 - Assistant Professor of Practice (Climatologist/Ecologist) position (2025)
 - IPM Educator position (2023)
 - Communications Director position (2019)

ii. College

- Member, Culture, Equity, Diversity and Inclusion (CEDI) committee (2025–present)
- Member, CEDI subcommittee on bias and inclusive excellence in P&T (2025–present)
- Reviewer, OSU Extension Educational Content article (2025)
- Reviewer, Faculty & Staff Awards, College of Agricultural Sciences, OSU (2024)

iii. University

- Undergraduate Research Faculty Advisory Board, OSU (2025–current)
- United Academics of OSU (UAOSU)
 - Representative Assembly Member, College of Agricultural Sciences, OSU (2021–2024)
 - Co-chair, Political Education Committee (2022–2023)
 - Delegate, American Federation of Teachers – Oregon (2023)

2. Service to the Profession

i. Journal Editor

- Subject Editor
 - *Journal of Economic Entomology*: Climate Change (2025–present), handled nine papers since 2025
 - *Journal of Insect Biodiversity*: Ecology, Biosecurity and Invasion (2023–present)
- Guest Editor
 - *Frontiers in Insect Science*: Ecological Modelling, Geographic Information System and Remote Sensing Approaches for Improved Pest Risk Assessment (2022–2023)

ii. Journal Peer Reviewer [impact factor (IF), year and no. of manuscripts reviewed]

- *Agricultural and Forest Entomology* (IF = 1.6): 2023–1
- *Biology* (IF = 5.17): 2022–1
- *Diversity and Distributions* (IF = 4.09): 2022–1
- *Ecosphere* (IF = 2.7): 2024–1
- *Evolutionary Applications* (IF = 5.18): 2025–1, 2023–1, 2022–1, 2019–2
- *Frontiers in Insect Science* (IF = unknown): 2023–1
- *Global Ecology and Conservation* (IF = 3.38): 2020–1
- *Insects* (IF = 2.14): 2021–1
- *International Journal of Pest Management* (IF = 1.1): 2025–1
- *Journal of Animal Ecology* (IF = 3.5): 2025–1
- *Journal of Economic Entomology* (IF = 2.4): 2026–1
- *Journal of Environmental Science and Health, Part B* (IF = 1.8): 2025–1
- *Microbial Ecology* (IF = 3.6): 2024–1
- *Molecular Ecology* (IF = 6.19): 2019–1, 2020–2, 2021–1, 2022–1, 2024–1, 2025–1
- *Neobiota* (IF = 3.8): 2024–1
- *Pest Management Science* (IF = 3.8): 2025–1

iii. Grant Panelist

- Czech Science Foundation, Czech Republic (2025)
- Catalyzer Research Grant, Puerto Rico Science, Technology & Research Trust (2024)

iv. Service to Professional Societies

- Judge, Student Competition, Entomological Society of America conference (Nov. 10, 2025)
- Co-organizer and Session Moderator, annual Cascadia R conference (2021–current)
- Organizer, “Tools and Approaches for Controlling Invasive Pests in Changing Environments” session, International IPM Symposium (Mar. 2025)
- Co-organizer, “Spatial risk modeling and decision support systems for IPM” symposium, Entomological Society of America Pacific Branch conference (Apr. 2023)

v. Member, Ecological Forecasting Initiative

Joined the Ecological Forecasting Initiative’s “Methods and Cyberinfrastructure” working group in 2022, which is working to identify and fill gaps in computing resources, cyberinfrastructure, and methods used by scientists to produce ecological forecasts (attended *ca.* 15 meetings since 2022).

3. Service to the Public (Professionally Related)

i. Cascadia R Conference

Co-organize the annual Cascadia R Conference, a two day conference that serves students and professionals from the Pacific Northwest who use the R programming language (2021–current).

ii. Portland R User Group

Participate and co-organize monthly events (“Aggregate” meetups) where users of the R programming language can learn new skills and knowledge and troubleshoot issues (2019–current).

iii. Presenter, R Programming Demonstrations and Workshops

- “Intro to parallel processing in R,” Demo for the Ecological Forecasting Initiative’s Methods and Cyberinfrastructure working group (Nov. 2025)
- “Intro. to GIS and mapping in R,” Workshop at the Cascadia R Conf. (Jun. 2025 and 2024)
- “Introduction to GIS and mapping in R,” Workshop at Oregon IPM Center, OSU (Jul. 2024)
- “Some basics of mapping in R,” Demo for Portland R User Group (Nov. 2023)
- “An introduction to the tidyverse,” Demo for Portland R User Group (Mar. 2023)
- “Brief demo of tidy evaluation,” Demo for Portland R User Group (Mar. 2022)
- “An introduction to the *purrr* package,” Demo for Portland R User Group (May 2021)
- “Intro to parallel processing in R,” Demo for R Ladies Seattle Group (Feb. 2021)
- “Intro to parallel processing in R,” Demo for Portland R User Group (Aug. 2020)

iv. K-12 Outreach

Participated in an outreach event that introduced high school students to career options (2019).

E. AWARDS

- Professional Faculty/Instructor Development Award, OSU (2025)
- James and Mildred Oldfield / E.R. Jackman Team Award, College of Agricultural Sciences, OSU (2023)

F. DIVERSITY, EQUITY, AND INCLUSION

Increasing participation in science education and research by members of groups that have traditionally been underrepresented in STEM disciplines is critical for innovation and the advancement of science. Since I began my career in science, I have engaged in multiple activities to help address the challenge of recruiting and retaining students and professionals from underrepresented groups. To date, I have involved 17 undergraduates with my research program, 11 of whom were Hispanic and several of whom were first-generation college attendees. Most of these students leveraged their research experience to complete their degrees, pursue advanced degrees in Biology, or build careers in K-12 science education, public health, and biotechnology.

I employ a variety of instructional strategies and teaching modalities to increase the accessibility of my courses. For example, I often replace traditional lectures with problem-solving based lessons centered on data analysis and interpretation, because students are typically more successful in classes that use stimulating, active learning methods. At OSU, this included developing weekly lab exercises for an “Ecological Systems Modeling” course (HORT 499/599) that allowed students to students

build models, interpret model predictions, and synthesize results to draw conclusions about a particular ecological system (e.g., the phenology of an invasive species). Students expressed enthusiasm for labs because they could apply their knowledge, gain computer programming skills, and learn new methods for use in their own research. In 2024 and 2025, I delivered this course entirely online, which increased its accessibility because students from around Oregon were able to participate.

My service at OSU reflects a sustained commitment to advancing diversity, equity, and inclusion across institutional initiatives. As a member of the Undergraduate Research Faculty Advisory Board (2025–present), I have contributed to the development of a website designed to support faculty in creating meaningful and accessible research experiences for undergraduate students. I have also been actively involved in the CAS Culture, Equity, Diversity, and Inclusion (CEDI) Committee, where I contribute to a resource guide on inclusive excellence for OSU employees navigating the promotion and tenure process. In addition, as a representative for CAS in the faculty union UAOSU (2021–2024), I worked to address equity-related issues at OSU, including efforts to correct faculty salary inequities, provide feedback on collective bargaining agreements, and serve on the Political Education Subcommittee, which disseminates information on higher education issues at the local, state, and federal levels.

My engagement with the R user community since 2019 has focused on making programming more accessible and inclusive. As a co-organizer of the Portland R User Group, I help coordinate bi-monthly meetups that provide participants with opportunities to build programming skills and troubleshoot coding challenges in a supportive environment. To maximize accessibility, these sessions are held on Zoom and broadly promoted through social media and email, regularly attracting 10–20 attendees from diverse professional and educational backgrounds. I have contributed six technical demonstrations and one hands-on workshop, designing interactive sessions that allow participants to engage directly with code and ask questions in real time. In addition, I have co-organized the annual Cascadia R Conference since 2021, which brings together R users across the Pacific Northwest for skill-building, knowledge exchange, and networking. In this role, I have led the coordination of workshop programming, recruiting eight experts to deliver more than ten workshops, and have taught a recurring workshop on GIS and mapping in R since 2022, which has reached over 60 participants.