

Christopher T. Cosma, Ph.D.

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Dr. Chris Cosma is a conservation ecologist with over eight years of experience spearheading innovative research initiatives and leading interdisciplinary teams. His work focuses on the ecology and conservation of plant-pollinator interactions in the face of climate change and other anthropogenic stressors, particularly within urban and agricultural landscapes. Chris combines expertise in pollination ecology, biodiversity monitoring, spatial ecology, ecological network science, and quantitative ecology to develop data-driven, user-friendly tools that guide effective, participatory conservation. He has led the creation of widely used web applications for insect conservation, and built nationally recognized collaborations including an interdisciplinary working group through the National Center for Ecological Analysis and Synthesis. Known for strategic, inclusive, and impact-oriented approaches, Chris is passionate about making science accessible and empowering diverse communities to achieve transformative ecological and social outcomes.

EDUCATION

- 2024 Ph.D. Evolution, Ecology, and Organismal Biology, University of California, Riverside
- 2017 B.S. Ecology and Evolutionary Biology, University of California, Santa Barbara

RECENT AWARDS AND CERTIFICATIONS

- 2022 Forrest Shreve Award, Ecological Society of America
- 2022 Joan Mosenthal DeWind Award, The Xerces Society
- 2021 Science to Policy Graduate Certificate, University of California, Riverside

EMPLOYMENT HISTORY

2024-present Ecologist, Conservation Biology Institute, Corvallis OR

2018 Field Technician, Smithsonian Conservation Biology Institute, Front Royal VA

PROFESSIONAL SKILLS

Statistical data analysis and visualization in R including multivariate methods for community ecology and ecological interaction network analysis; The application of artificial intelligence for biodiversity science; Data management; Species distribution modeling and spatial ecology; Molecular biology techniques, microscopy, and bioinformatics; Pollination biology techniques including nectar and pollen analysis and pollinator exclusion experiments; Plant and insect identification; Biodiversity surveys including bat acoustic surveys, moth light trap surveys, flowering phenology, and native and invasive species assessments; Written, audio and visual scientific communication; Project development, management and leadership including grant writing, forming multi-disciplinary partnerships, budgeting and resource allocation, strategic planning, and stakeholder engagement.

PROJECT EXPERIENCE

Improving national pollinator conservation through the USDA Farm Service Agency Conservation Reserve Program (in process) – Serving as an ecological data analyst and conservation planner; Leveraging large ecological datasets and applying spatial ecological network analysis to optimize plant species selection for the Conservation Reserve Program and Crptool.org; Employing a data-driven approach to balance multiple goals including pollinator recovery and improved crop yields; Capitalizing on resources and expertise from multidisciplinary collaborations to increase conservation impact; Working with user groups and web developers to ensure evidence-based guidance is accessible and realistic.

The effects of agroecological land use on Washington's bats (in process) – Serving as the principial investigator in a Washington Department of Fish and Wildlife-funded study to monitor bats and their nocturnal insect prey across agroecosystems of eastern Washington state; Employing automated monitoring approaches including acoustic monitors and camera traps; Analyzing biodiversity and land use data in order to inform conservation strategies for state candidate species.

Plant Prioritizer: A data-driven native plant prioritization tool for insect conservation (in process) – Co-leading an international, transdisciplinary working group through the National Center for Ecological Analysis and Synthesis to create data-driven and user-friendly plant selection tools for participatory insect conservation; Collaborating with leading ecologists, social scientists, and restoration experts; Synthesizing and analyzing large datasets to inform biodiversity-oriented planting decisions; Conducting social survey research to assess motivations and barriers to native plant gardening; Integrating outputs into widely-used tools like Calscape.org.

SELECTED PUBLICATIONS

- Cosma, C.T. 2025, April 21. The secret lives of moths. *Nautilus*. https://nautil.us/the-secret-lives-of-moths-1202648/
- Rafferty, NE, and **C.T. Cosma** (contributed equally). 2024. Sustainable nature-based solutions require establishment and maintenance of keystone plant-pollinator interactions. *Journal of Ecology 112*(11), 2432-2441. https://doi.org/10.1111/1365-2745.14353
- **Cosma, C.T.** 2022. The Butterfly Net: Lepidoptera Conservation Tool. *R Shiny Web Application*. https://ctcosma.shinyapps.io/the_butterfly_net/
- Anderson-Teixeira, K.J., V. Herrmann, W.B. Cass, A.B. Williams, S.J. Paull, E.B. Gonzalez-Akre, R. Helcoski, A.J. Tepley, N.A. Bourg, C.T. Cosma, A.E. Ferson, C. Kittle, V. Meakem, I.R. McGregor, M.N. Prestipino, M.K. Scott, A.R. Terrell, A. Alonso, F. Dallmeier, and W.J. McShea. 2020. Long-Term Impacts of Invasive Insects and Pathogens on Composition, Biomass, and Diversity of Forests in Virginia's Blue Ridge Mountains. *Ecosystems 24*:89-105. https://doi.org/10.1007/s10021-020-00503-w