

Shayla Salzman

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I study the effects of species interactions on evolutionary trajectories utilizing the coevolved brood site pollination mutualism between endangered *Zamia* cycads and their *Rhopalotria* weevil pollinators. My research integrates across scientific disciplines to answer fundamental questions about the evolution of biodiversity and conservation biology.



Education

Harvard University

2019

Ph.D. in Organismic and Evolutionary Biology

Ecology and evolution of cycads and their symbionts

Advisors: Prof. Naomi Pierce and Prof. Robin Hopkins

Funding: National Science Foundation Graduate Research Fellowship

University of California, Berkeley

2012

B.S. in Genetics and Plant Biology

Alternative oxidase gene expression during Macrozamia lucida thermogenesis

Advisor: Prof. Chelsea Specht

Honors, High Distinction, Major Citation Award

Professional Experience

National Science Foundation Postdoctoral Research Fellow in Biology Specht and Raguso Labs, School for Integrative Plant Sciences and the Department of Neurobiology and Behavior, Cornell, 2019-present

Laboratory Technician Pierce Lab, Department of Organismic and Evolutionary Biology, Harvard, 2013

Staff Research Associate & Lab Manager Specht Lab, Department of Plant and Microbial Biology, University of California, Berkeley, 2012-2013

Undergraduate Laboratory Assistant Specht Lab under Dr. Tanya Renner, Department of Plant and Microbial Biology, University of California, Berkeley, 2011

Undergraduate Study Manager Altieri Lab under Dr. Albie Miles, Department of Environmental Science, Policy, and Management, University of California, Berkeley, 2010-2011

Senior Agriculture Research Assistant under Dr. Lucia Varella, Sonoma County University of California Cooperative Extension, 2006-2008

Honors and Awards

Schmidt Science Fellowship Finalist 2018

Distinction in Teaching Award, Derek Bok Center for Teaching at Harvard University 2018

Arthur K. Bell Award, Brain Chemistry Labs at the Institute for EthnoMedicine 2017

Grady L. Webster Plant Systematics Publication Award, American Society of Plant Taxonomist 2016

Major Citation Award, University of California Berkeley Genetics and Plant Biology 2012

Udall Scholar Honorable Mention, Udall Foundation 2011

Publications

Whitaker MRL, **Salzman S**, Gratacos X, Tucker Lima J. Localized overabundance of an otherwise rare butterfly threatens endangered cycads. *Florida Entomologist*. In press.

- Liénard MA, Bernard, GD, Allen, AA, Lassance JM, Song S, Childers RR, Yu N, Ye D, Stephenson A, Valencia-Montoya WA, **Salzman S**, Whitaker MRL, Calonje M, Zhang F, Pierce NE. The evolution of red color vision is linked to coordinated rhodopsin tuning in lycaenid butterflies. *PNAS*. In press.
- Whitaker MRL*, **Salzman S***. 2020. Ecology and Evolution of cycad-feeding Lepidoptera. *Ecology Letters* Doi: 10.1111/ele.13581 *Authors contributed equally to this work.
- Salzman S**, Crook D, Crall J, Hopkins R, Pierce NE. 2020. An ancient push-pull pollination mechanism in cycads. *Science Advances* 6: eay6169
- Whitaker MRL, Baker CCM, **Salzman S**, Martins DJ, Pierce NE. 2019. Combining stable isotope analysis with DNA metabarcoding improves inferences of trophic ecology. *PloS one* 14: e0219070
- Hua C, **Salzman S**, Pierce NE. 2018. A first record of *Anatrachyntis badia* (Hodges1962) (Lepidoptera: Cosmopterigidae) on *Zamia integrifolia* (Zamiaceae). *Florida Entomologist* 101: 335-338
- Salzman S**, Whitaker MRL, Pierce NE. 2018. Cycad-feeding insects share a core gut microbiome. *Biological Journal of the Linnean Society* 123: 728-738
- Bruenn R, Lavenburg V, **Salzman S**. 2017. Don't judge a plant by its flowers. *Frontiers for Young Minds* 5:31 Doi: 10.3389/frym.2017.00031
- Whitaker MRL, **Salzman S**, Sanders J, Kaltenpoth M, Pierce N. 2016. Microbial communities of Lycaenid butterflies do not correlate with larval diet. *Frontiers in Microbiology* 7:1920. Doi: 10.3389/fmicb.2016.01920
- André T, **Salzman S**, Wendt T, Specht CD. 2016. Speciation dynamics and biogeography of Neotropical spiral ginger (Costaceae). *Molecular Phylogenetics and Evolution* 103: 55-63
- Andre T, Specht CD, **Salzman S**, Palma-Silva C, Wendt T. 2015. Evolution of species diversity in the genus *Chamaecostus* (Costaceae): molecular phylogenetics and morphometric approaches *Phytotaxa* 204: 265-276
- Salzman S**, Driscoll HE, Renner T, André T, Shen S, Specht CD. 2015. Spiraling into History: a molecular phylogeny and investigation of biogeographic origins and floral evolution for the genus *Costus*. *Systematic Botany* 40:104-115
*Winner Grady L. Webster Award for best plant systematics publication for 2014-2015
- Espeland M, Hall JPW, DeVries PJ, Lees DC, Cornwall M, Hsu YF, Wu LW, Campbell DL, Talavera G, Vila R, **Salzman S**, Ruehr S, Lohman DJ, Pierce NE. 2015. Ancient Neotropical origin and recent recolonization: Phylogeny, biogeography and diversification of the *Riodinidae* (Lepidoptera: Papilionoidea). *Molecular Phylogenetics and Evolution* 93: 296-306

Grants, Fellowships and Scholarships

National Science Foundation Postdoctoral Research Fellowship in Biology	\$207,000
Harvard Museum of Comparative Zoology Barbour Fund 2015	\$2,500
Society for the Study of Evolution 2015	\$500
Cycad Society 2015	\$500
National Science Foundation Graduate Research Fellowship 2014	\$96,000
Berkeley Scholarship 2012	\$14,212
Harry L. Wollenberg scholarship 2010	\$7072
Federal Smart Grant 2010	\$4000
Esta M. Rodkey Scholarship 2010	\$500
Rotary Club of Santa Rosa Foundation Scholarship 2010	\$1,500
American Association of University Women Scholarship 2010	\$2,500
Cal Alumni Club of Oakmont Scholarship 2010	\$1,500
SRJC Alumni and Friends Honoring Dr. Roy G. Mikalson Scholarship 2010	\$1,500
Paul Mancini Memorial Agriculture Scholarship 2010	\$600
Luther Burbank Botany Scholarship 2010	\$800
Clark Nattkemper Science Education Scholarship 2010	\$500
American Business Women's Association 2009	\$750
Luther Burbank Botany Scholarship 2009	\$450

Doyle Scholarship 2008	\$1,600
Dr. Pearl Konttas Continuing Student Scholarship 2008	\$500
Luther Burbank Botany Scholarship 2008	\$600
Doyle Scholarship 2007	\$1,600
Dr. Pearl Konttas Continuing Student Scholarship 2007	\$450
Doyle Scholarship 2006	\$1,600
	\$348,734

Extracurricular Certifications

- Teaching & Learning in the Diverse Classroom certificate** Cornell Center for Teaching Innovation 2020
- Building Mentoring Skills for an Academic Career certificate** Cornell Center for the Integration of Research, Teaching, and Learning 2020
- Mentor Training certificate** Harvard University Science Education 2019
- Teaching certificate** Derek Bok Center for Teaching at Harvard University 2019

Teaching Experience

- Plant-animal interactions** *Guest Lecturer* Colorado Mesa University, 2020
- Model-based phylogenetics** *Guest Lecturer* Cornell University, 2020
- Evolution** *Teaching Fellow* Harvard, 2017
*Harvard Distinction in Teaching Award
- Math, Science** *Teaching Assistant* Connelly Detention Center, Juvenile Justice, Department of Youth Services Boston, 2014–2015
- Science and shaping policy** *Course Instructor* Harvard, 2015
- Writing fellowship and grant proposals for the biological sciences** *Teaching Fellow* Harvard, 2014
- Chemistry, Biology** *Teaching Assistant* California College Preparatory Academy, 2010

Mentoring Experience

- Undergraduate laboratory mentoring*** Rosy Glos, Cornell University 2019-2020
 - Undergraduate laboratory mentoring*** Catherine Hua, Harvard, 2015-2019
 - High school student laboratory mentoring*** Sophie Reuhr, Harvard, 2013-2014
 - Undergraduate laboratory mentoring** Rose Radford, Anabel Rivas, and Camila Torres, University of California, Berkeley, 2010-2011
 - Undergraduate laboratory mentoring** Olivia Cope, Colin Hill, University of California, Berkeley, 2011-2013
- *Resulted in publication for mentee

Service and Outreach

- The Cycad Society** Board of Directors 2014-present
- Cambridge Entomological Club** Elected Vice-president 2014–2015, President 2015–2016, Executive Board 2016–2017, Treasurer 2017–2019
- Harvard Science Policy Group** Executive Board 2014–2016
- The Cycad Society** 2018 Article *Interview with Dennis Stevenson*
- Cambridge Entomological Club** 2016 Presentation *The President's Address: Mechanisms of a Neotropical Coevolution: Plant-Insect Communication in a Cycad-Weevil Symbiosis*
- Frontiers for Young Minds** 2016 Live Review Presentation *Don't Judge a Plant by its Flowers*
- The Cycad Society** 2014 Article *Our New Board Member, Shayla Salzman Describes her Research*
- Hobby Farms Magazine Online Edition** 2009 Article *Soil Contamination: A Farm Buyer's Primer*
- Redwood Empire Nursery Growers Association** 2008 Presentation *Light Brown Apple Moth*

Invited Seminars

- Biology Department Seminar, Stonehill College** 2020. *Ecology and evolution of a cycad-weepil pollination mutualism*
- Plant Biology Department Seminar, Cornell University** 2019 *Ecology and evolution of a cycad-weepil pollination mutualism*
- Organismic and Evolutionary Biology Symposium, Harvard University** 2017 *Mechanisms of a gymnosperm pollinator coevolution: plant-insect communication in a cycad-weepil symbiosis*
- Herbarium Seminar, National Institute of Amazonian Research (INPA) Brazil** 2015 *Mechanisms of a Neotropical coevolution: plant-insect communication and specificity of *Zamia* pollination symbiosis*
- Evolution Seminar, Federal University of Pará State Santarém (UFOPA) Brazil** 2015 *Mechanisms of a gymnosperm pollinator coevolution: plant-insect communication in a cycad-weepil*
- Honor's Symposium, University of California** 2012 *Gene Expression during *Macrozamia lucida* Thermogenesis* College of Natural Resources

Conference Presentations

- Glos R, **Salzman S**, Calonje M, Vovides A, Specht CD. 2020. *A phylogenetic and geographic analysis of leaflet anatomy in *Zamia* (Cycadales: Zamiaceae)* International Botany Conference (poster)
- Salzman S**, Whitaker M, Pierce NE. 2018. *Cycad-feeding insects share a core gut microbiome* Plant Biology Initiative at Harvard University 9th Annual Plant Biology Symposium (poster)
- Salzman S**, Whitaker M, Pierce NE. 2017. *Assessing the potential for bacterial degradation of BMAA in the guts of cycad feeding insects* International BMAA Conference (poster)
*Winner Arthur K. Bell Award
- Hua C, **Salzman S**, Pierce NE. 2017. Is *Anatrachyntis* another insect radiation onto cycads? Harvard College's Undergraduate Research Spotlight (poster)
- Salzman S**. 2015. *Mechanisms of a Neotropical coevolution: plant-insect communication and specificity of *Zamia* pollination* Cycad X: 10th International Conference on Cycad Biology
- Salzman S**. 2015. *Plant-insect communication and *Rhopalotria-Zamia* mutualism* International Evolution Conference
- Salzman S**, Yockteng R, Terry I, Specht CD. 2014 *Varying alternative oxidase gene expression during *Macrozamia lucida* thermogenesis suggests transcriptional regulation* Plant Biology Initiative at Harvard University 9th Annual Plant Biology Symposium (poster)
- Salzman S**, André T, Specht CD. 2013. *Spiraling into History: A Molecular phylogeny, biogeography, and ancestral character state reconstruction of distribution and pollination syndrome for *Costus* (Costaceae)* Monocots V: 5th International Conference on Comparative Biology of Monocotyledons (poster)
- Salzman S**. 2009. *Bioremediation of Nitrate in Wastewater* MESA (Math, Engineering, and Science Achievement) poster session Santa Rosa Junior College (poster)

Cycad-Related Collaborators

Thiago André, Federal University of Pará, Brazil
 Francisco Barona-Gomez, National Laboratory of Genomics for Biodiversity, Mexico
 Michael Calonje, Montgomery Botanical Center, Florida
 Angélica Cibrián-Jaramillo, National Laboratory of Genomics for Biodiversity, Mexico
 Paul Cox, Brain Chemistry Labs at the Institute for EthnoMedicine
 Damon Crook, United States Department of Agriculture
 Dennis Stevenson, New York Botanical Garden
 William Tang, United States Department of Agriculture
 Alberto Taylor, University of Panama
 Irene Terry, University of Utah
 Melissa Whitaker, Swiss Federal Institute of Technology, Zurich

Cycad-Related Field Work

Florida, USA
Mexico
Panama
Colombia
Brazil

Biannually 2014-2018
2017
2015
2015
2015