

# Courtenay A. Ray

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## Education

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- 2017-**      **University of California, Berkeley** - Ph.D. Candidate, Environmental Science, Policy, and Management; **Advisor:** Dr. Benjamin Blonder; Transferred from Arizona State University with my advisor in January 2020
- 2016**      **University of California, Santa Cruz** - M.A. Ecology and Evolutionary Biology  
**Thesis:** Invading coastal California's forests: Impacts and best management practices for the perennial grass, *Ehrharta erecta*; **Advisor:** Dr. Ingrid Parker
- 2011**      **University of Washington**- Double major B.S. in Biology: Evolution & Ecology and Earth & Space Sciences with emphasis in Biology
- 2006**      **Everett Community College**- Associate Degree in Arts and Sciences

## Publications

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- Blonder, B.W., Brodrick, P., Chadwick, K.D., Carroll, E., Cruz-de Hoyos, R., Exposito Alonso, M., Hateley, S., Moon, M., **Ray, C.A.**, Trang, H., and Walton, J. 2023. Climate legacies interact with cytotype and sex to determine phenology in quaking aspen (*Populus tremuloides*). *New Phytologist*. 10.1111/nph.18850.
- Blonder, B.W., Gaüzère, P., Iversen, L., Ke, P.J., Petry, W., **Ray, C.A.**, Salguero-Gómez, R., Sharpless, W., and Violle, C. 2023. Predicting and controlling ecological communities via trait-mediated parameterizations of dynamical models. *Oikos*. 10.1111/oik.09415.
- Ray, C.A.**, Kapás, R.E., Opedal, Ø.H., and Blonder, B.W. 2022. Linking microenvironment modification to species interactions and demography in an alpine plant community. *Oikos*. 10.1111/oik.09235.
- Blonder, B., Brodrick, P.G., Walton, J.A., Chadwick, K.D., Breckheimer, I.K., Marchetti, S., **Ray, C.A.**, and Mock, K. 2022. Remote sensing of cytotype and its consequences for canopy damage in quaking aspen. *Global Change Biology*. 10.1111/gcb.16064.
- Franzman, J., Brush, M., Umemura, K., **Ray, C.**, Blonder, B., and Harte, J. 2021. Shifting macroecological patterns and static theory failure in a stressed alpine plant community. *Ecosphere*. 12:e03548.
- Blonder, B., **Ray, C.A.**, Walton, J., Castaneda, M., Chadwick, K., Clyne, M., Gaüzère, P., Iversen, L., Lusk, M., Strimbeck, R., Troy, S., and Mock, K. 2021. Cytotype and genotype predict mortality and recruitment in Colorado quaking aspen (*Populus tremuloides*). *Ecological Applications*. 10.1002/eap.2438.

- Gaüzère, P., Morin, X., Violle, C., Capesta, I., **Ray, C.A.**, and Blonder, B. 2020. Vacant yet invisible niches in forest community assembly. *Functional Ecology*. 10.1111/1365-2435.13614.
- Gallagher, R.V.,..., **Ray, C.A.**, *et al.* 2020. The Open Traits Network: Using Open Science principles to accelerate trait-based science across the Tree of Life. *Nature Ecology & Evolution*. 10.1038/s41559-020-1109-6.
- Kattge, J.,..., **Ray, C.A.**, *et al.* 2020. TRY plant trait database – enhanced coverage and open access. *Global Change Biology*. 10.1111/gcb.14904.
- Weiss, K.C.B. and **Ray C.A.\*** 2019. A framework of functional traits for ecological communities: Synthesizing taxonomic divides. *Ecography*. 10.1111/ecog.04387. \*Shared first authorship. E4 award paper.
- Ray, C.A.**, Sherman, J.J., Godinho, A.L., Hanson, N., and Parker, I.M. 2018. Impacts and Best Management Practices for Erect Veldtgrass (*Ehrharta erecta*). *Invasive Plant Science and Management*. 10.1017/inp.2018.2.
- Thompson, M.E., **Ray, C.A.**, and Donnelly, M.A. 2015. Microhabitat use of recently metamorphosed Mexican Treefrogs in Palo Verde National Park, Guanacaste Province, Costa Rica. *Herpetological Review*. 46:168-170.
- Chambers, M., David, G., **Ray, C.**, Leitner, B., and Pyle, P. 2011. Habitats and conservation of molt-migrant birds in southeastern Arizona. *Southwestern Naturalist*. 56:204-211.
- Book Review*: CenTREAD Working Group (Cesar, R.G., Cohen, H., Crandall, S.G., Holl, K.D., **Ray, C.A.**, Reid, J.L.). 2013. Restoring Tropical Forests: A Practical Guide by Elliott, S.D., Blakesley, D., and Hardwick, K. *International Forestry Review*. 15:270.

## Pre-print

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- Rogers, H., Cavazos, B., Gawel, A.M., Karnish, A., **Ray, C.A.**, Rose, E., Thierry, H., and Fricke, E. Frugivore gut passage increases seed germination: an updated meta-analysis. *bioRxiv*. 462022.

## Fellowships and Awards

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| <b>2022</b> | UC Berkeley Environmental Science Policy and Management: <b>William and Mary Liu Fellowship</b> : \$17,000    |
| <b>2022</b> | Rocky Mountain Biological Laboratory: <b>RMBL Graduate Fellowship</b> : \$500                                 |
| <b>2021</b> | Environmental Policy, Science, and Management, UC Berkeley: <b>Bryan Wilson Fellowship</b> : \$3,100          |
| <b>2021</b> | Environmental Policy, Science, and Management, UC Berkeley: <b>William Carroll Smith Fellowship</b> : \$2,000 |
| <b>2021</b> | Rausser College, UC Berkeley: <b>Dr. E. Ralph de Ong Student Support</b> : \$1,300                            |
| <b>2021</b> | Sigma Xi, Berkeley Chapter: <b>Grants in Aid of Research</b> : \$500  |

- 2021** Rocky Mountain Biological Laboratory: **Jean Langenheim Award:** \$3,000
- 2020** Rocky Mountain Biological Laboratory: **Jean Langenheim Award:** \$3,000
- 2020** Colorado Native Plant Society: **John Marr Grant:** \$850
- 2019** Arizona State University: **RTI Graduate Student Support:** \$1,928
- 2019** Colorado Mountain Club: **Kurt Gerstle Fellowship:** \$2,000
- 2019** Rocky Mountain Biological Laboratory: **Snyder Endowment Graduate Fellowship:** \$645
- 2019** Arizona State University: **College Graduate Excellence Award**
- 2019** Arizona State University: **Graduate College Travel Award:** \$500
- 2019** Arizona State University: **Graduate College Travel Award:** \$500
- 2019** Arizona State University: **Graduate Student Travel Award:** \$400
- 2018** Arizona State University: **Individual Travel Grant:** \$446
- 2018** Arizona State University: **Graduate Student Travel Award:** \$400
- 2018** Arizona State University: **Graduate College Fellowship:** \$10,000
- 2017** Arizona State University: **Doctoral Recruitment Award:** \$5,000
- 2013** Organization for Tropical Studies: **Post Course Award:** \$500
- 2013** University of California, Santa Cruz: **Chancellor's Graduate Intern**
- 2012-2017** National Science Foundation: **Graduate Research Fellowship:** \$90,000
- 2007-2010** University of Washington: **Husky Promise Student:** Guaranteed full academic support and stipend
- 2006** Association of Women in Science: **E. Robert Winter Memorial Scholarship:** \$1,000

## Professional Service

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**Reviewer for:** Ecology and Evolution, Perspectives in Plant Ecology, Evolution and Systematics, IUCN (International Union for Conservation of Nature)

## Teaching and Outreach

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- 2022** Guest biology instructor for two days at Richmond High School, Richmond, CA
- 2021** Weekly 7<sup>th</sup> grade science mentor at middle schools in the Berkeley Unified School District through the "Be a Scientist" program
- 2021** Graduate Student Instructor-Climate Change and the Future of CA, UC Berkeley
- 2018-2019** Instructor at Sky School, an inquiry-based science program that predominantly serves low-income public schools, Tucson, AZ
- 2018** Teaching Assistant- Animal Behavior, Arizona State University
- 2017** Teaching Assistant- Introductory Biology Laboratory, Arizona State University
- 2016** STEM Day volunteer at Bradley Elementary, Watsonville, CA
- 2015** Designed biology lessons for Santa Cruz Children's Museum of Discovery
- 2015** Organized a weed pulling workshop on UC Santa Cruz campus

- 2014** Guest Lecturer in Plant Ecology, UC Santa Cruz
- 2014** Designed and led two workshops for middle school girls on seed dispersal, Expanding your Horizons Conference
- 2014** Lead demonstration on properties of liquid nitrogen-Cesar Chavez MS
- 2014** Teacher Assistant-Intro Biology and Plant Systematics, UC Santa Cruz
- 2013** Westlake Elementary Science Fair Judge, Santa Cruz, CA
- 2013** Santa Cruz County Science Fair Judge
- 2013** Teacher Assistant-Behavioral Ecology, UC Santa Cruz

## **Presentations**

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- 2023** ESPM Distinguished Lecture, UC Berkeley, Berkeley, CA, Talk
- 2022** Jepson Herbarium Botany Lunch, UC Berkeley, Berkeley, CA, Talk
- 2019** British Ecological Society Meeting, Belfast, United Kingdom, Poster
- 2018** Ecological Society of America Meeting, New Orleans, LA, Talk
- 2017** Ecological Society of America Meeting, Portland, OR, Talk
- 2016** Missouri Botanical Garden Seminar, “Factors influencing pampas grass distributions in the Colombian páramos”, November 3<sup>rd</sup>, Invited talk
- 2016** Ecological Society of America Meeting, Ft. Lauderdale, FL, Talk
- 2016** UCSC Ecology and Evolution Graduate Symposium, Talk
- 2016** Graduate Student Symposium, UCSC, Talk
- 2015** Ecological Society of America Meeting, Baltimore, MD, Poster
- 2014** Graduate Student Symposium, UCSC, Poster
- 2013** University of California, Santa Cruz Plant Symposium, Talk
- 2013** California Botanical Society Centennial Celebration, Berkeley, CA, Talk
- 2013** UCSC Ecology and Evolution Graduate Symposium, Talk
- 2013** CA Invasive Plant Council Symposium, Lake Arrowhead, CA, Poster

## **Mentorship**

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### **Bachelor’s thesis students**

- Emily Xie (UC Berkeley), Winner of Melis Medal - 2020-2021
- Annika Rose-Person (UC Santa Cruz) - 2015-2016
- Anna Godinho (UC Santa Cruz), Winner of Chancellor’s Award - 2012-2013
- Emilie Winfield (UC Santa Cruz) - 2012-2013
- Nicole Hanson (UC Santa Cruz) - 2013-2014

### **Summer undergraduates**

- Michael Hensley (University of Wisconsin), Co-supervisor – 2021
- Bella Banka (Tallahassee Community College), Co-supervisor – 2021
- Nicole Smith (University of Michigan), Co-supervisor - 2020

Gavin Belfry (University of Tennessee), Co-supervisor - 2019-2020  
Thomas Jenkins (University of Oxford), Main supervisor - 2019  
Connie Webb (Western Washington University), Co-supervisor - 2019

### **Research/ lab project students**

Britney Wu (UC Berkeley) - 2021  
Monica Antonio (UC Berkeley) - 2021  
Brigitte Jaramillo (UC Berkeley) - 2020  
Crystal Suazo (Arizona State University) - 2018-2019  
Deidra Johnson (Arizona State University) - 2018-2019  
Dustin Lord (Arizona State University) - 2019  
Madison Lusk (Arizona State University) - 2019  
Sydney Myers (Arizona State University) - 2019  
Noah Weakly (Arizona State University) - 2018-2019  
Otis Clyne (Arizona State University) - 2018

### **High School students**

Liam Atkins (Summer field assistant) - 2021  
Aidan Wells (Summer field assistant) - 2019-2020  
One-on-one weekly science fair mentor (Watsonville High School, CA) - 2012-2013

## **Previous Research**

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### **August 2016-2017**

Research Associate, Rogers Lab, **Iowa State University**  
Iowa and Mariana Islands

**Supervisor:** Dr. Haldre Rogers

**Responsibilities:** helped train and manage field crews in the Mariana Islands; oversaw data entry and organization; cleaned and assembled tidy datasets from long-term data

### **January-May 2012**

Seedling Census Volunteer, **Institute for Tropical Ecosystem Studies**

Luquillo Forest Dynamics Plot, Puerto Rico

**Supervisor:** Chris Nytech

**Research objectives:** examine the effects of land-use history and hurricanes on seedling germination, recruitment, and growth in tropical forests

### **June-October 2011**

Independent Research Project, **University of Washington**

**Advisor:** Dr. Janneke Hille Ris Lambers

**Topic:** Differences in pollinator regimes along an elevation gradient in subalpine meadows in Mt. Rainier National Park

**October-December 2011**

Intern, **Stanford University**

Robinson Crusoe Island, Chile

**Supervisor:** Dr. Lis Nelis

**Research objectives:** measure synergistic interactions in invasive species across trophic levels

**June-October 2011**

Intern, **University of Washington**

Mount Rainier National Park, Washington

**Supervisor:** Dr. Janneke Hille Ris Lambers

**Research objectives:** determine how tree growth, tree mortality, seed production, and recruitment vary across large environmental gradients

**March-June 2011**

Intern, **Smithsonian Migratory Bird Center**

Island Scrub Jay Project, Santa Cruz Island, California

**Supervisors:** Dr. Scott Sillett, Michelle Desrosiers

**Research objectives:** monitor the stability of Island Scrub Jay populations and determine the frequency of extra-pair mating, the sex ratio and clutch size of nests, nest vegetation preferences, and sources of nest failure

**April 2009-April 2010**

Intern, **University of Washington**, Ecology of Bird Loss Project, Mariana Islands

**Supervisors:** Dr. Haldre Rogers, Dr. Joshua Tewksbury, Dr. Janneke Hille Ris Lambers

**Research objectives:** measure the effects birds have on seed dispersal, seedling recruitment, tree species diversity, insect control, and herbivory

**July-September 2007**

Intern, **Institute for Bird Populations**, Molt Migration and Stopover Project, SE Arizona

**Supervisor:** Peter Pyle

**Research objectives:** determine which migratory bird species stopover in the monsoon regions of Arizona and Mexico during fall migration to molt

**May-July 2007**

Intern, **Institute for Bird Populations**, Willow Flycatcher Project, Yosemite National Park

**Supervisor:** Bob Wilkerson

**Research objectives:** determine whether there are resident populations of Willow Flycatchers in Yosemite National Park

**March-May 2007**

Intern, **Point Reyes Bird Observatory**, Off-road Vehicles and Bird Populations, Mojave Desert

**Supervisor:** Christopher McCreedy

**Research objectives:** examine the effects of off-road vehicle usage in desert washes on avian species diversity, abundance, and breeding success

**September-December 2006**

Student Research Assistant, **University of Washington**, Song Sparrow Research, Seattle, WA

**Supervisor:** Dr. Michael Beecher

**Research Objectives:** determine if hatch-year song sparrows enhance their song repertoire by visiting the territories of older birds during their first winter.

**March-June 2006**

Intern, **Dartmouth College**, Trophic Cascades in Fragmented Coastal Sage Scrub Habitat, Southwest California

**Supervisor:** Dr. Eric Walters

**Research Objectives:** measure the effects of habitat fragmentation on avian nest success, natal dispersal in California towhees, and arthropod abundance

**Specialty Courses and Workshops**

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| <b>2022</b> | Plant Functional Traits Course 6, Aurland, Norway  |
| <b>2019</b> | Using data provenance to create reproducible, transparent, and well-documented code-British Ecological Society, Belfast, United Kingdom                |
| <b>2019</b> | Stage-based demographic models in ecology, evolution and conservation-Natural Environmental Research Council, Oxford, United Kingdom                   |
| <b>2017</b> | A Hands-On Short Course on Species Distribution Modeling in Conservation Using R: From Start to Finish-Ecological Society of America, Portland, Oregon |
| <b>2014</b> | Curso de Actualización en Taxonomía y Sistemática de Cyperaceae (Course on Taxonomic and Systematic Updates in Cyperaceae)-Bogota, Colombia            |
| <b>2013</b> | OTS Tropical Biology: An Ecological Approach, Costa Rica   |
| <b>2010</b> | University of Washington: Field Geology, Australian Outback  |
| <b>2010</b> | University of Washington: Field Geology, Western Montana   |

**Society Membership**

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British Ecological Society