

CARLA J. ESSENBERG

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EDUCATION

Ph.D., Evolution, Ecology and Organismal Biology, University of California-Riverside, 2012.

Advisor: John Rotenberry.

Thesis title: Understanding the effects of floral density on visitation rates and species composition of flower visitors.

B.A., Philosophy and Music, St. Olaf College, May 2001, *summa cum laude*.

PROFESSIONAL APPOINTMENTS

Assistant Professor, Department of Biology, Bates College, August 2015-present.

Postdoctoral Research Associate, Postdoctoral Excellence in Research and Teaching Program, Center for Insect Science, University of Arizona, July 2012-July 2015.

Advisor: Dan Papaj.

GRANTS AND FELLOWSHIPS

Internal grants:

<i>STEM Faculty-Student Summer Research Grant, 2021</i>	\$4,535
<i>STEM Scholars Faculty-Student Research Grant, 2021</i>	\$4,185
<i>Sherman Fairchild Summer Research Grant, 2018</i>	\$6,726
<i>Sherman Fairchild Summer Research Grant, 2017</i>	\$4,998
<i>Science Fellows Faculty-Student Research Grant, 2016</i>	\$5,646

Prior to joining Bates faculty:

<i>Postdoctoral Excellence in Research and Teaching Fellowship, University of Arizona, 2012-2015</i>	~\$140,000
<i>National Science Foundation Graduate Research Fellowship, 2007-2012</i>	\$120,000
Various internal grants and awards, University of California, 2009-2010	\$2,950
<i>Chancellor's Distinguished Fellowship Award, University of California-Riverside, 2006-2007</i>	\$47,727

PUBLICATIONS (* indicates Bates students or alumni)

Essenberg, C. J. 2021. Intraspecific relationships between floral signals and rewards with implications for plant fitness. *AoB PLANTS* 13(2): plab006.

- Essenberg, C. J.**, P. E. Guevarra*, H. M. Moreau*, and C. J. Jordan*, and T. Zisman*. 2019. A benefit to providing information? Flower size cues, plant attractiveness, and plant visit length. *Behavioral Ecology* 30(4): 1168-1175.
- Katz, E. J.*, and **C. J. Essenberg**. 2018. The effect of the dispersion of rewarding and rewardless flowers on visitation and constancy by bumblebees (*Bombus impatiens*). *Journal of Pollination Ecology* 23(13): 119-126.
- Essenberg, C. J.**, R. A. Easter, R. A. Simmons, and D. R. Papaj. 2015. The value of information in floral cues: bumblebee learning of floral size cues. *Behavioral Ecology* 26(5): 1335-1344.
- Essenberg, C. J.** 2015. Flobots: robotic flowers for bee behaviour experiments. *Journal of Pollination Ecology* 15(1): 1-5.
- Essenberg, C. J.** 2013. Explaining the effects of floral density on flower visitor species composition. *American Naturalist* 181(3): 344-356.
- Essenberg, C. J.** 2013. Scale-dependent shifts in the species composition of flower visitors with changing floral density. *Oecologia* 171(1): 187-196.
- Essenberg, C. J.** 2012. Explaining variation in the effect of floral density on pollinator visitation. *American Naturalist* 180(2): 153-166.
- Sachs, J. L., **C. J. Essenberg**, and M. M. Turcotte. 2011. New paradigms for the evolution of beneficial infections. *Trends in Ecology & Evolution* 26(4): 202-209.

PRESENTATIONS (* indicates Bates students or alumni)

Invited presentations:

- Essenberg, C. J.** Cooperation and conflict within pollination networks. *Biology Department Seminar Series, Bowdoin College, Brunswick, ME, Dec. 2015.*
- Essenberg, C. J.** Cooperation and conflict within pollination networks. *School of Biology and Ecology Seminar Series, University of Maine, Orono, ME, Nov. 2015.*
- Essenberg, C. J.** Cooperation and conflict within pollination networks. *Graduate Program in Organismic and Evolutionary Biology Seminar Series, University of Massachusetts-Amherst, Amherst, MA, Oct. 2015.*
- Essenberg, C. J.**, R. A. Easter, R. A. Simmons, and D. R. Papaj. Bumblebees learn the species context of flower size cues. *Pacific Branch of the Entomological Society of America, Coeur d'Alene, ID, Apr. 2015.*
- Essenberg, C. J.** and D. R. Papaj. Bumblebee patch departure decisions at two spatial scales. *Pacific Branch of the Entomological Society of America, Tucson, AZ, Apr. 2014.*
- Essenberg, C. J.** Scale-dependence of pollinator responses to floral resource density. *UC Natural Reserve System Mathias Symposium, Bodega Bay, CA, Feb. 2012.*

Contributed presentations:

- Essenberg, C. J.** Accurate advertisements for pollinators: the how and why. *American Society of Naturalists, Asilomar Conference Grounds, CA, Jan. 2020.*
- Essenberg, C. J.**, G. W. Benson*, and H. Logan*. Informative floral reward cues: patterns of correlation between flower size and floral reward production. *Botany: Thriving with Diversity* (annual meeting of the Botanical Society of America), Rochester, MN, July 2018. (Poster)
- Benson, G. W.*, **Essenberg, C. J.** Flower width provides information on nectar reward in maleberry. *Northeast Natural History Conference, Burlington, VT, April 2018.* (Poster)

- Duserick, J.*, **Essenberg, C. J.** Urban woodland gardening as a mechanism for sustainable landscaping and recommendations for the Bates College campus. *Northeast Natural History Conference*, Burlington, VT, April 2018. (Poster)
- Essenberg, C. J.**, P. E. Guevarra*, H. M. Moreau*, and C. J. Jordan*, and T. Zisman*. Are informative floral cues a solution to the plants' dilemma? *Ecological Society of America*, Portland, OR, August 2017.
- Essenberg, C. J.**, R. A. Easter, R. A. Simmons, K. R. Benzing, A. M. McKay, and D. R. Papaj. Do bees prefer flowers with informative cues indicating rewards? *Animal Behavior Society*, Princeton, NJ, Aug. 2014.
- Essenberg, C. J.** and D. R. Papaj. Do bumblebees match their foraging movements to the scale of resource patchiness? *2nd International Conference on Pollinator Biology, Health and Policy*, University Park, PA, Aug. 2013. (Poster)
- Essenberg, C. J.**, D. R. Papaj. 2013. Do bumblebees match their foraging movements to the scale of resource patchiness? *Animal Behavior Society*, Boulder, CO, July 2013. (Poster)
- Essenberg, C. J.** Predicting the effects of flower density on pollinator species composition. *Ecological Society of America*, Portland, OR, Aug. 2012.
- Essenberg, C. J.** Scale-dependence of pollinator responses to floral resource density. *Ecological Society of America*, Austin, TX, Aug. 2011.
- Essenberg, C. J.** Explaining variation in pollinator responses to flower density: nonlinear effects and scale-dependence. *ICPBR Pollination Symposium*, Cholula, Mexico, June 2011. (Poster)
- Essenberg, C. J.** Modeling pollinator responses to flower density. *Animal Behavior Society*, Williamsburg, VA, July 2010.

Outreach presentations:

- Essenberg, C. J.** What flowers say to bees and what bees notice without being told. *Cumberland County Beekeepers Association Monthly Meeting*, Cumberland Center, ME, Apr. 2019.
- Essenberg, C. J.** Cooperation and conflict between plants and their pollinators. *Androscoggin Beekeepers Club Monthly Meeting*, Auburn, ME, Nov. 2016.
- Essenberg, C. J.** Cooperation and conflict between plants and their pollinators. *Maine State Beekeepers Association Annual Meeting*, Rockland, ME, Oct. 2016.
- Essenberg, C. J.** Rich resources and the function of the waggle dance. *Androscoggin Beekeepers Club Monthly Meeting*, Auburn, ME, Dec. 2015.

TEACHING EXPERIENCE AND TRAINING

Teaching appointments and courses taught:

- Assistant Professor, Department of Biology, Bates College, August 2015-present.
- FYS 508: *The Rest of Nature through Human Eyes*, ModA 2020.
- BIO 133: *Biology of Cooperation*, Fall 2016, Fall 2019.
- BIO 190: *Organismal Biology*, Winter 2018.
- BIO 190 L: *Organismal Biology Lab*, Winter 2016, Winter 2017, Winter 2018.
- BIO S51: *Organismal Biology Redesign*, Short Term 2018.
- BIO 195G: *Lab-Based Biological Inquiry: Growing Wildflowers*, ModC and D 2021.
- BIO 204: *Biological Research Experience: Molecules to Ecosystems*, ModD 2021.
- BIO 244: *Biostatistics*, Winter 2016, Fall 2016, Fall 2017, Fall 2018, Winter 2020, ModB 2020.
- BI/ES 246: *Conservation Biology*, Fall 2017, Winter 2020.

BI/ES 303: *Restoration Ecology*, Fall 2018, Fall 2019.
BIO 332: *Ecology and Evolution of Mutualisms*, Winter 2017.
BIO 460: *Junior Seminar*, Winter 2017.
BIO 470: *Seminar and Research in Ecology*, Fall 2015.

Adjunct Instructor, Pima Community College, Spring 2014.
Environmental Biology, Spring 2014.

Teaching Assistant, University of California-Riverside, Winter –Spring 2009, Fall 2010 – Spring 2011.
Animal Behavior Discussion Sections, Spring 2011.
Introduction to Organismal Biology Laboratory, Winter 2009, Winter 2011.
Introductory Evolution and Ecology Laboratory, Spring 2009, Fall 2010.

Teaching Assistant, University of Minnesota, Fall 2004 - Spring 2006.
Zoology and Animal Diversity Laboratories, Fall 2004 - Spring 2006.

Mentored research:

Bates College:

2021-2022:

3 summer research students

2020-2021:

2 thesis students (2 semesters)

2019-2020:

2 thesis students (4 semesters + 1 summer project)

2018-2019:

2 thesis students (2 semesters + 1 summer project and 1 Short Term project)

2017-2018:

4 thesis students (8 semesters + 2 summer projects)

5 additional students doing research in summer or preceding Short Term

2016-2017:

4 thesis students (6 semesters + 2 summer projects + 1 Short Term advising manuscript preparation)

2 additional students doing summer research projects (1 of whom was a Science Fellow)

2015-2016:

4 students within BIO 470

1 thesis student (1 semester)

Prior to joining Bates faculty:

5 undergraduate students doing research for academic credit

13 undergraduate students and recent college graduates hired as research assistants

K-12 teaching and outreach:

98+ hours of K-12 outreach and mentoring activities, including classroom presentations, booths at science festivals, science fair judging, and advising students about science fair projects, January 2010 – Present.

Educational Assistant, Future Force AmeriCorps, St. Paul, MN, Fall 2001-Summer 2002.

Professional development in teaching, outreach, and supporting diversity in higher education:

Attended the *CBB Pedagogy Matters Conference*, May 2020.
Participated in *Create/Revise a Syllabus for Winter '20* workshop, Fall 2019.
Completed the Bates STEM Racial Justice Training, Fall 2018.
Attended *Fostering Academic Success in STEM* and the *STEM Pedagogy Institute*, a 2-day conference/workshop hosted by the Center for Excellence and Innovation in Teaching and Learning, University of New Hampshire, Durham, NH, April 2018.
Attended the *May Conference*, Bates College, May 2017.
Attended the *May Conference*, Bates College, May 2016.
Active Allies training, Bates College, Jan. 2016.
Green Dot training, Bates College, Jan. 2016.
Attended the *Creating Connections Consortium (C3) Summit*, Bates College, Nov. 2015.
Attended the Gordon Research Conference on *Undergraduate Biology Education Research*, Lewiston, ME, July 2015.
Organizer of a science teaching reading group, University of Arizona, Oct. 2013-May 2015.
An Introduction to Evidence-Based Undergraduate STEM Teaching, an NSF-funded MOOC offered through Coursera by the CIRTl network, Oct.-Nov. 2014.
Attended the annual meeting of the *Association for Biology Laboratory Education*, Eugene, OR, June 2014.
Attended National Institutes of Health *Institutional Research and Academic Career Development Award (IRACDA) Conferences*, which include numerous workshops on science pedagogy and outreach, June 2013 and June 2014.
Pedagogy workshops offered by the University of Arizona Center for Insect Science *PERT program*, Feb. 14-15, 2013 and Mar. 14, 2014.
Audited *Teaching in Plant-Microbe Interactions*, a graduate-level course, University of Arizona, Fall 2012.
Science Advocacy, a graduate-level course, University of California-Riverside, Spring 2012.
Philosophy and Pedagogy of Teaching Undergraduate Life Sciences, a graduate-level course, University of California-Riverside, Fall 2010.
Teaching assistant training offered by the *Teaching Assistant Development Program*, University of California-Riverside, Fall 2008.
August Teaching Enrichment Series, a set of teaching workshops offered by the Center for Teaching and Learning, University of Minnesota, Aug. 2005.

INSTITUTIONAL AND PROFESSIONAL SERVICE

Bates College service:

Interdisciplinary program committees:

Environmental Studies Program Committee, 2016-Present

Appointed committees:

Judicial Educator, 2020-Present

Student Conduct Board Pool, 2016-2020

Institutional Biosafety Committee, co-chair, 2019-2020

Ad hoc committees:

Classrooms Committee, Summer 2020-Present
COACHE Committee, Fall 2017-Fall 2018
Marine Ecologist VAP Search Subcommittee, Winter-Summer 2018
Neurobiologist Search Committee, Fall 2016
Functional Morphologist Search Committee, Fall 2015

Other service:

Site visit for the Center for Global Education: School for Field Studies Center in Bhutan, May 2019

Service to the greater community:

Member of the Board, Stanton Bird Club, May 2017 – Present.

Reviewer for:

Ecology (x2), New Phytologist, American Naturalist, Behavioral Ecology (x3), Annals of Botany, Journal of Ecology (x3), Ecoscience, Oecologia (x4), Environmental Entomology, Agricultural and Forest Entomology, Journal of Insect Behavior, Journal of Pollination Ecology (x2), Israel Science Foundation

Professional society memberships:

Ecological Society of America, Animal Behavior Society, Botanical Society of America, Society for Conservation Biology, American Society of Naturalists

Institutional service prior to joining Bates faculty:

PERT Advisory Board, University of Arizona, Jan. 2014-Aug. 2015.

PERT Selection Committee, University of Arizona, Dec. 2012-Feb. 2013.

UC-Riverside Graduate Student Council, Representative for the Evolution, Ecology and Organismal Biology graduate program, July 2010-June 2012.

President of the Evolution, Ecology and Organismal Biology Graduate Student Association, UC-Riverside, July 2009-June 2010.

UC-Riverside Community Engagement Strategic Planning Committee, October 2009-February 2010.

Co-organizer of graduate student seminar series for the Evolution, Ecology and Organismal Biology program, Spring Quarter 2009.