Katherine (Kate) Elizabeth Borchardt

251 Bessey Hall • 2200 Osborne Dr. • Ames, IA 50011-4009
kateborc@iastate.edu

CAREER OBJECTIVE: To pursue a career in research studying how to integrate conservation with beneficial ecosystem services into agricultural environments, with a focus on plant-pollinator interactions.

Education

2019-Pres.	**PhD**	**Iowa State University,** Ames, IA 50011 GPA: 3.89; Department of Ecology, Evolution, and Organismal Biology (PhD)
2014-2018	**BS**	**University of California, Davis,** Davis, CA 95616 GPA: 3.514; Major: Evolution, Ecology, and Biodiversity (BS); Minor: German
2010-2014		**Clovis High School,** 1055 Fowler Avenue, Clovis, CA 93611 UC GPA: 4.63; Class Rank: 1 of 613

Funding and Awards ($36,425)

Fellowships, Grants, & Scholarships ($36,285)

2020	Tiffany Award, Iowa State University	**$1,000**
2020	J. E. Weaver Grant, The Nature Conservancy	**$1,000**
2020	AAAS Science Program for Excellence in Science	*n/a*
2019	Finch Fund Award, Iowa State University	**$2,885**
2019	Graduate College Scholar Award, Iowa State University	**$12,000**
2019*	Ecology and Evolutionary Biology First Year Fellowship, Iowa State University ** Awarded to 1 first-year graduate student in the EEOB department at ISU*	**$18,900**
2018*	Chancellor's Award for Excellence in Undergraduate Research & Dean Simonton Prize ** Awarded to 3 out of about 8,000 graduating seniors at University of California Davis*	**$500**
2018	Citation for Outstanding Performance, College of Biological Sciences, UCD	*n/a*

Conference Presentation Awards ($90)

2020	1st Place President's Prize, Grad. 10-Min Paper, Ent. Soc. of Am. Conference, virtual	**$75**
2020	Best Graduate Talk Award, Midwest Ecology and Evolution Conference, WIU	*n/a*
2019	People's Choice Award, EEOB Three Minute Thesis Competition, ISU	**$15**

Scientific Art Contest Awards ($50) **Details at end of CV*

2021	1st Place, Creative Category, EEB Spring Symposium Art Contest, ISU	**$25**
2017	1st Place, Creative Category, Ecology Graduate Symposium, UCD	**$25**

Conference Presentations

Oral Presentations

2021 **Kate Borchardt** & Amy Toth. Restored Native Plant Communities Alter Plant-Bee Interaction Function and Improve Bee Health. 2020 Ecology and Evolutionary Biology Spring Symposium, Iowa State University in Ames, IA.

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2021* **Kate Borchardt** & Amy Toth. Prairie Plant Communities Improve Plant-Bee Ecosystem Functions & Bee Health in Crop Fields. 2020-21 Iowa State 3 Minute Thesis Competition, Virtual.
***** *Ranked #1 in preliminary heat, One of 7 Finalists*

2020* **Kate E. Borchardt** & Amy Toth. Restoring Native Plant Communities in Crop Fields: Plant-Bee Interaction Function and Bee Health. 2020 Entomology Society of America, 10-Minute Paper Graduate Competition, Virtual Conference.
** Awarded 1st Place President's Prize*

2020 Paola Soto-Mendez & **Kate Borchardt**. Comparison of Body Pollen Carriage between *Polistes* wasps and Native Bees. 2020 Entomology Society of America, Virtual Conference.

2020* **Kate E. Borchardt** & Amy Toth. Effect of Plant Community Restoration on Plant-Bee Networks and Native Bee Health. 2020 Midwest Ecology and Evolution Conference, Western Illinois University in Macomb, IL.
** Awarded the Best Graduate Talk Award*

2019* **Kate E. Borchardt.** Overview of Planned Studies on Native Bee Community in Prairie Strips. 2019 EEOB Three Minute Thesis Competition, Iowa State University in Ames, IA.
***** *Awarded the People's Choice Award*

2019 **Kate E. Borchardt** & N. M. Williams. Neighboring Plants Influence Native Bee Foraging: Implications for Restoration. 2019 Bay Area Conservation Biology Symposium, University of California Berkeley in Berkeley, CA.

Poster Presentations

2020 **Kate E. Borchardt** & Amy Toth. Prairie Strips Increase Ecological Function of Plant-Bee Networks in Agricultural Landscapes. Graduate and Professional Student Research Conference, Iowa State University in Ames, IA.

2020 **Kate E. Borchardt** & Amy Toth. Do Prairie Strips Improve Plant-Bee Interactions? 2020 Ecology & Evolutionary Biology Spring Symposium, Iowa State University in Ames, IA.

2019 **Kate Borchardt**, Brokaw, Julia, Schreiber, Julia, Bruninga-Socolar, Bethanne, Vohs, Michelle, Ward, Kimiora, Cariveau, Daniel, & Williams, Neal. Maximizing the potential and minimizing the cost of prairie seed mix design for wild bees. 2019 International Pollinator Conference, University of California Davis in Davis, CA.

2018 **Kate E. Borchardt**, Neal M. Williams, & Kimiora L. Ward. Neighboring Plants Can Affect Native Bee Visitation. Bay Area Conservation Biology Symposium and Undergraduate Research Conference, University of California Davis in Davis, CA.

Professional and Academic Service

College, Program, and Departmental Service

2020-2021 *Vice President.* Graduate Research in Evolutionary Biology and Ecology organization, Iowa State University. Assisted the President with the organization of the EEB Spring Symposium, including organizing keynote speakers and student presenters. Symposium was virtual in 2020 due to the COVID-19 pandemic.

2020-2021 *Creator, Organizer.* EEB Spring Symposium Art Contest, Iowa State University. Encouraging the integration of art and science by hosting an art contest with the EEB Department's annual symposium. It has been held in two separate years.

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Professional Memberships

2020-2021 AAAS Science Program
2020-2021 Entomological Society of America
2020-2021 Society for Mathematical Biology

Teaching and Undergraduate Mentoring

Guest Lecturer

2020 "Bee and Plant Ecology and Networks" October 29, 2020. ENT 358X / BIOL358X: Bee Biology, Management, and Beekeeping. Iowa State University, Fall Semester 2020. Main Instructors Amy Toth and Randall Cass.

2020 "Overview of Plant and Pollinator Research Methodologies". October 1, 2020. ENT 358X / BIOL358X: Bee Biology, Management, and Beekeeping. Iowa State University, Fall Semester 2020. Main Instructors Amy Toth and Randall Cass.

Undergraduate Mentoring

2019-2020 **Kavita Jain,** Iowa State University. *Current Position:* Finishing undergraduate degree.
- ***Independent Project****:* testing Social Buffering hypothesis and effect of stress on solitary and social native bees in crop fields with and without natural habitat features.
- ***Scholarships:*** Spring 2020 Dean's High Impact Award ($1,200), 2020 New Leopold Center for Sustainability Scholarship ($1,000)

2019-2021 **Paola Soto-Mendez,** Iowa State University. *Graduation:* Winter 2020. *Current Position:* Americorps VISTA.
- ***Independent Project****:* the potential for paper wasps (*Polistes sp*) to be pollinators, specifically looking at goldenrod (*Solidago sp.*)**.** Presented at two national conferences.
- ***Assisted With:*** analyzing stress in native bees in crop fields with and without natural habitat features.
- ***Scholarships:*** Summer 2020 Unpaid Internship Scholarship ($1,000)

Scientific Outreach and Communication

Writing and Interviews

2018 Greg Waltry. "College of Biological Sciences Students, Faculty Honored with Chancellor's Award for Excellence" 19 June 2018, College of Biological Science News, University of California Davis.

Public Outreach

2019* **Pollinator Fest:** Led an activity on the honey bee caste system for boy- and girl-scouts earning their insect badge in Ames, IA.
***** Cancelled in 2020 due to COVID-19 pandemic.

2019 **Tour Presentation:** Spoke to tours about pollinator research at Hedgerow Farms in Winters, CA.

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Work Experience

2019 **Field Technician**
5/20/2019 - 8/25/2019 full time
Amy Toth's Lab, Department of Entomology, Iowa State University

Responsibilities: Conducted a preliminary experiment to investigate how plant community composition affects native bee-plant networks in restored prairie strips in agricultural fields and unrestored field margins. Wasps were also collected to study their abundance and diversity as well as their potential as pollinators. This was a part of a larger STRIPS project also investigating if prairie strips improve honey bee colony health and overwintering success. I was the sole collector for the native bee and wasp portion of the study. Networks will be built from observational and pollen carriage data. Health indicators such as wing wear, wing vein asymmetry, and fat body content will also be measured.

- Assisted in inspecting and managing honey bee colonies
- Gained experience in methods I plan to use for my dissertation research.

2018-2019 **Laboratory Assistant I**
6/18/2018-5/10/2019 full time
Neal Williams' Lab, Department of Entomology and Nematology, University of California Davis

Neonicotinoid Pesticide Study: Project leader on a study investigating the presence of four neonicotinoid pesticides in the pollen and nectar of ornamental plants over time. Was in charge of planning chemical treatments, scheduling workers, developing sampling protocols, and overseeing sample collection for 6 plant species with 2 treatment groups.

- Trained, scheduled, and oversaw a group of 5 undergraduate laboratory assistants during summer break, with 3 continuing during the school year.

Pollinator Seed Mix Study: Project leader and sole collector of data for a project observing pollinator and vegetation data on single plant species plots of native plants from March to December. This data will be used to create seed mixes that attract a desired group of pollinators throughout the growing season. Also led seed mixing for a project involving 120 unique mixes of differing plant species richness and density. Floral data will be collected about every three weeks from March to December.

- Developed the protocol, trained and oversaw a group of 7 undergraduate interns conducting floral data collection and plant identification in the seed mix project.
- Conducted preliminary analysis of the data and created visuals for poster presentation.

Pollen Identification: Independently trained in pollen identification using a reference collection to collect relative abundance of pollen sources by honeybee colonies during almond bloom.

- Learned to identify approximately 100 plant species or pollen morpho-groups. Created a pollen identification guide for Graduate Students.

2015-2018 **Undergraduate Laboratory Assistant**
5/1/2015-6/15/2018; 10 hours/week, full time summer
Neal Williams' Lab, Department of Entomology and Nematology, University of California Davis

Research Focus: Pollination Ecology. Knowledgeable about ecological research methods and controls.
Lab Experience: Field experience with insect biology emphasizing native bees; Insect curation (pinning, labeling) of netting, vacuum, and pan trap specimens; basic fly, butterfly, and wasp identification; native bee identification to species; stigma/pollen staining; nectar and pollen collection; data entry; managing data with checks; and basic analysis. Also experienced in overseeing and training new lab members. Trained to work with cyanide and basic fuchsin.

- Led the sampling, scheduling, training, site management, and preparation of data, with weekly project reports to the lab group.

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- Field work experience includes netting, emergence traps, plant sample collection, and site management. Experienced with field work in extreme temperatures for extended periods of time standing, sitting, stooping, and bending. Have worked in agricultural and rural settings.

2016-Pres. **Independent Research Project** *
12/01/2016-2019; 10 hour/week
Advised by Neal Williams and Kimiora Ward, University of California Davis
**Awarded Chancellor's Award for Excellence in Undergraduate Research and Dean Simonton Prize*

Studied the effect of neighboring plants (neighborhood context) on bee visitation to a focal plant, concerning focal plant traits, neighboring plant traits, bee species life history (generalist/specialist), and relatedness of neighboring plants to the focal plant. Using collaborative data I assisted on as an undergrad. Developed R code for data organization, statistical analysis, and graphing.

- Presented a talk at the 2019 Bay Area Conservation Biology Symposium.
- Prepared a poster for the 2018 UCD Undergraduate Research Symposium and the 2018 Bay Area Conservation Biology Symposium.
- Preparing a paper for publication.

Award-Winning Science Art

2021 **"Pieces of the Network" – Specimens in Epoxy**
First Place, Creative Category, Iowa State University EEB Symposium Art Contest

2017 **"Melissodes" – Acrylic on Canvas**
First Place, Creative Category, University of California Davis Ecology Graduate Symposium