
Michelle L. Fearon

Department of Ecology and Evolutionary Biology • University of Michigan
3180 Biological Sciences Building • 1105 N. University • Ann Arbor, MI 48109
Email: mlfearon@umich.edu

EDUCATION

University of Michigan, Ann Arbor, MI Sep 2014 – Present

Ph.D. Candidate, Ecology and Evolutionary Biology

M.S. Ecology and Evolutionary Biology 2017

Advisor: Dr. Elizabeth A. Tibbetts

Thesis title: *Virus Prevalence in Pollinator Communities: The patterns and mechanisms of multi-host pathogen transmission in communities across changing landscapes*

University of California, Davis, CA 2013

B.S. Biological Sciences, Evolution and Ecology Emphasis, High Honors

Minor Wildlife, Fisheries, and Conservation

RESEARCH INTERESTS

Ecology of multi-host pathogens, community ecology, entomology and biodiversity, effects of environmental and landscape change on host-pathogen dynamics, pollinator interaction networks, co-infections

HONORS AND AWARDS

2019 **Teaching Excellence Award**, Program in Biology, University of Michigan

2015 **Honorable Mention**, National Science Foundation Graduate Research Fellowship

2013 **Departmental Citation for Academic Achievement**, University of California, Davis

2009 - 2013 **Dean's List**, University of California, Davis

GRANTS AND FELLOWSHIPS

Total = \$56,244

2019 **Rackham One-Term Fellowship**, University of Michigan, (\$10,200)

2019 **Dow Sustainability Doctoral Fellowship**, Graham Sustainability Institute, University of Michigan (\$15,000)

2019 **Dr. Nancy Williams Walls Award for Field Research**, University of Michigan (\$1,925)

2018 **Dr. Nancy Williams Walls Award for Field Research**, University of Michigan (\$2,201)

2017 **Barr-Bigelow Fund**, University of Michigan (\$2,699)

2017 **Centennial Pollinator Fellowship**, Garden Club of America (\$4,000)

2016 **Honey Bee Health Improvement Project Grant**, North American Pollinator Protection Campaign (NAPPC) (\$8,892)

2016 **Phi Kappa Phi Project Grant**, Chapter 39, University of Michigan (\$4,500)

2016 **Grants-in-Aid of Research**, Sigma Xi (\$1,000)

2016 **Ecology and Evolutionary Biology (EEB) Block Grant**, University of Michigan (\$2,980)

2015 **Ecology and Evolutionary Biology (EEB) Block Grant**, University of Michigan (\$1,347)

2015 **Rackham Graduate Student Research Grant**, University of Michigan (\$1,500)

2009 **Tracy and Ruth Storer Scholarship**, University of California, Davis (\$500)

PUBLICATIONS

Fearon, M.L. and E.A. Tibbetts. Biodiversity–disease relationships vary among different host species and pathogens in pollinator communities. *In prep.*

Tibbetts, E.A., **M.L. Fearon**, E. Wong, Z. Huang, R.M. Tinghitella. 2018. Rapid juvenile hormone downregulation in subordinate wasp queens facilitates stable cooperation. *Proc R Soc B.* **285**: 20172645.

Fearon, M.L. and P.S. Coates. 2014. Interspecific Nest Parasitism by Chukar on Greater Sage-Grouse. *Western Birds.* 45(3) 224 – 227.

TEACHING EXPERIENCE

University of Michigan, Department of Biology, Graduate Student Instructor

- Introduction to Animal Behavior (Biology 130), Fall 2014, Fall 2016
- General Biology Lab (Biology 173), Winter 2015, Winter 2016, Winter 2017
- Introduction to Research (Applied Liberal Arts 104), Fall 2018
- General Ecology (Biology/Environment 281), Winter 2018, Winter 2019

Guest Lectures

- **Ecology Underlying Pollinator Declines**, General Ecology (BIO 281), UM, Winter 2019
- **Ecology Underlying Pollinator Declines**, General Ecology (BIO 281), UM, Winter 2018
- **Skills Workshop: Excel**, Introduction to Research (ALA 104), UM, Fall 2018
- **Research Ethics**, Introduction to Research (ALA 104), UM, Fall 2018
- **How to Read Research Papers**, Introduction to Research (ALA 104), UM, Fall 2018

RESEARCH EXPERIENCE AND WORK HISTORY

University of Michigan, Tibbetts Laboratory

Graduate Researcher

Sep 2014 – Present

Studying the spread of multi-host pathogens in pollinator communities in agricultural ecosystems that rely on insect pollination. Focusing primarily on how pollinator communities mediate the effects of three RNA viruses, Deformed wing virus (DWV), Black queen cell virus (BQCV) and Sacbrood virus (SBV), in European Honey Bees (*Apis mellifera*) and native bee species. Experience identifying bees and wasps to genus and species level to determine pollinator community composition and molecular techniques to detect and quantify viral loads in different bee species.

Western Ecological Research Center, United States Geological Survey

Biological Science Technician (GG-0404-05)

Apr 2014 – Aug 2014

Wildlife Research Technician (Funded by Idaho State University, Pocatello)

Apr 2013 – Mar 2014

Research Intern (Funded by Univ. of California, Davis)

Feb 2012 – Mar 2013

Supervisor: Dr. Peter S. Coates

- Co-led fieldwork studying population dynamics and demography of Ring-Necked Pheasants, Snowy Egrets, and Black-Crowned Night-Herons. Responsibilities included training and managing interns,

nest and brood monitoring with radiotelemetry, habitat surveys, and invertebrate sampling and identification.

- Led a project on the biotic and abiotic factors affecting nesting and incubation behavior of Greater Sage-Grouse (*Centrocercus urophasianus*) hens. I developed the experimental design, recruited and trained ten UC Davis undergraduate interns, monitored the data collection, and compiled data for analysis.

University of California Davis, Stanton Laboratory

Laboratory Research Manager

Oct 2010 – Sep 2011

Advisors: Dr. Maureen Stanton, Dr. Ann Marie Panetta

Independently managed laboratory and common garden greenhouse experiments studying adaptation of *Androsace septentrionalis*, pygmy-flower rock-jasmine, to climate change. I trained and supervised four undergraduate interns to continue the project.

AgPollen LLC, Ceres CA

Laboratory Research Assistant

Jun 2009 – Aug 2009

Supervisor: Dr. Steve Peterson

Studied Blue Orchard bee (*Osmia lignaria*) population levels, sex ratios, developmental rates with the goal to propagate the Blue Orchard bees in order to pollinate almond orchards in replacement of the European honey bee (*Apis mellifera*).

INVITED PRESENTATIONS

2016 **16th Annual North American Pollinator Protection Campaign (NAPPC) International Conference**, Riverdale, MD. Oral Presentation: *Changing perspectives: How pollinator community context influences honey bee virus prevalence.*

CONTRIBUTED PRESENTATIONS

2019 **International Pollinator Conference**, Davis, CA. Poster presentation: Does habitat quality 'dilute' disease risk instead of biodiversity? 'Habitat health', an alternate explanation for reduced pathogen prevalence in species-rich communities

2019 **17th Annual Ecology and Evolution of Infectious Disease Conference**, Princeton, NJ. Poster presentation: Does habitat quality 'dilute' disease risk instead of biodiversity? 'Habitat health', an alternate explanation for reduced pathogen prevalence in species-rich communities

2018 **14th Annual Early Career Scientists Symposium**, Ann Arbor, MI. Poster presentation: *Pollinator community context influences virus prevalence in honey bees and native bees.*

2017 **Ecological Society of America Annual Meeting**, Portland, OR. Oral Presentation: *Dilution or Amplification? Community diversity influences virus prevalence in honey bees and native bees.*

2017 **15th Annual Ecology and Evolution of Infectious Disease Conference**, Santa Barbara, CA. Poster presentation: *Pollinator community context influences virus prevalence in honey bees and native bees.*

2016 **International Conference on Pollinator Biology, Health, and Policy**, State College, PA. Oral Presentation: *Pollinator community composition influences virus prevalence in honey bees and native bees.*

UNDERGRADUATE STUDENT MENTORING

Honors Thesis Students

- Apr 2017 – Apr 2019 **Maryellen C. Zbrozek** (Shared flowers, shared parasites? Honey bee floral visitation is most important community factor correlated with *Nosema ceranae* prevalence in bumblebees) – *Received **Highest Honors***
- Sept 2018 – Present **Chloe Weise** (Examining patterns of *Polistes fuscatus* facial recognition across an elevation gradient in Pennsylvania)

Michigan Research and Discovery Scholars, University of Michigan

- Oct 2017 – Aug 2018 **Gabrielle Flint** (Pollinator visitation rates to flowers influence virus prevalence in multiple bee species) – *Continued as a Summer Biomedical & Life Sciences Summer Fellow until Aug 2018*
- Oct 2017 – Apr 2018 **Madeleine Frank** (Are flowers bee disease hotspots? Examining the relationship between virus prevalence in pollinators and on flowers) – *Continuing as a Research for Credit student*

Undergraduate Research Opportunity Program (UROP), University of Michigan

- Oct 2018 – Apr 2019 **Justice Martin-Johnston** (Role of bee interaction networks on flowers and landscape on virus prevalence)
- Oct 2017 – Apr 2018 **Leah Davis** (Impacts of human land management on pollinator community composition and flower visitation rates)
- Oct 2016 – Apr 2017 **Maryellen Zbrozek** (Disease in honey bees and bumble bees: Effects of landscape composition on Black Queen Cell Virus prevalence) – *Continuing as an Honors Thesis Student.*
- Oct 2016 – Apr 2017 **Eva Collins-Carey** (Influences of pollinator visitation to crop flowers)
- Jun 2016 – Aug 2016 **Joshua Peters** (The effect of local landscape on pollinator communities in southeastern Michigan)
- Oct 2015 – Apr 2015 **Cara Fleming** (The impact of natural habitat on pollinator diversity in southeastern Michigan)

Doris Duke Conservation Scholar Program, University of Michigan

- Jun 2016 – Aug 2016 **Yorick Oden-Plants** (Proliferation of pathogens in pollinators: Using spatial analysis to map the trends in the health of bees in southeastern Michigan)
- Jun 2016 – Aug 2016 **Kelly Lam** (Effect of field management and surrounding landscapes of pumpkin and squash farms on the species richness of bees)

Research for Credit through EEB 200/300, University of Michigan

- Sept 2018 – May 2019 **Hannah Zonneville**
- Sept 2018 – Jul 2019 **Madeleine Frank**
- Sept 2018 – Apr 2019 **Natalie Gratsch**

Student Presentations

- **Zbrozek MC**, Fearon ML, Tibbetts EA. *Shared flowers, shared parasites? Honey bee floral visitation is most important community factor correlated with Nosema ceranae prevalence in bumblebees*. Poster presentation, 2019 International Pollinator Conference, Davis, CA.
- **Zbrozek MC**, Fearon ML, Tibbetts EA. *Shared flowers, shared parasites? Honey bee floral visitation is most important community factor correlated with Nosema ceranae prevalence in bumblebees*. Poster presentation, 2019 Neuroscience & Biological Sciences Undergraduate Poster Session, Ann Arbor, MI.
- **Martin-Johnston J**, Fearon ML, Tibbetts EA. *Role of bee interaction networks on flowers and landscape on virus prevalence*. Poster presentation, 2019 University of Michigan UROP Symposium, Ann Arbor, MI.
- **Flint G**, Fearon ML, Tibbetts EA. *Uncovering how viruses are transmitted among multiple bee species on flowers*. Poster presentation, 2018 University of Michigan UROP Summer Symposium, Ann Arbor, MI.
- **Flint G**, Fearon ML, Tibbetts EA. *Pollinator visitation rates to flowers influence virus prevalence in multiple bee species*. Poster presentation, 2018 Michigan Research and Discovery Scholars Research Symposium, Ann Arbor, MI.
- **Frank M**, Fearon ML, Tibbetts EA. *Are flowers bee disease hotspots? Examining the relationship between virus prevalence in pollinators and on flowers*. Poster presentation, 2018 Michigan Research and Discovery Scholars Research Symposium, Ann Arbor, MI.
- **Davis L**, Fearon ML, Tibbetts EA. *Impacts of human land management on pollinator community composition and flower visitation rates*. Poster presentation, 2018 University of Michigan UROP Symposium, Ann Arbor, MI.
- **Zbrozek M**, Fearon ML, Tibbetts EA. *Disease in Honey Bees and Bumble Bees: Effect of landscape composition on Black Queen Cell Virus prevalence*. Poster presentation, 2017 University of Michigan UROP Symposium, Ann Arbor, MI.
- **Collins-Carey E**, Fearon ML, Tibbetts EA. *Influences on pollinator visitation to squash flowers*. Poster presentation, 2017 University of Michigan UROP Symposium, Ann Arbor, MI.
- **Oden-Plants Y**, and Fearon ML. *Proliferation of pathogens in pollinators: Using spatial analysis to map the trends in the health of bees in southeastern Michigan*. Poster presentation, 2016 Diversity in Environmental Organizations Symposium, Ann Arbor, MI.
- **Lam K**, and Fearon ML. *Effect of field management and surrounding landscapes of pumpkin and squash farms on the species richness of bees*. Poster presentation, 2016 Diversity in Environmental Organizations Symposium, Ann Arbor, MI.
- **Peters J**, and Fearon ML. *The effect of local landscape on pollinator communities in southeastern Michigan*. Poster presentation, 2016 University of Michigan UROP Summer Symposium, Ann Arbor, MI.
- **Fleming C**, and Fearon ML. *The impact of natural habitat on pollinator diversity in southeastern Michigan*. Poster presentation, 2016 University of Michigan UROP Symposium, Ann Arbor, MI.

Mentored Student Grants, Fellowships, and Awards

- **Maryellen Zbrozek**, 2019, Received Highest Honors on her Honor's Thesis

- **Maryellen Zbrozek**, 2018 EEB Summer Research and Travel Award (\$1,000)
- **Gabrielle Flint**, 2018 EEB Summer Research and Travel Award (\$1,000)
- **Gabrielle Flint**, 2018 Summer Biomedical & Life Sciences Summer Fellowship (\$4,000)
- **Leah Davis**, 2018 University of Michigan UROP Symposium Best Poster Award

PROFESSIONAL AND HONOR SOCIETIES

- 2016 **The Honor Society of Phi Kappa Phi**, University of Michigan
- 2015 **Sigma Xi**
- 2015 **Ecological Society of America**
- 2015 **The Xerces Society**, Invertebrate Conservation
- 2010 **National Society of Collegiate Scholars**, University of California, Davis
- 2010 **Golden Key International Honour Society**, University of California, Davis
- 2010 **Chi Omega Fraternity**, University of California, Davis

SERVICE AND OUTREACH

Admissions Committee Member, EEB University of Michigan Sept 2016 – Aug 2018
 Student representative on department committee to select the incoming PhD students. Review applications and plan logistics of the recruitment weekend for highly qualified applicants.

Planning Committee Member, BioBlitz at D-Town Farm Feb 2016 – Jun 2019
Volunteer, BioBlitz at D-Town Farm May 2015
 An event with the Detroit Black Community Food Security Network and a children’s organization called Food Warriors to engage children in ecology and science on an urban farm in Detroit, MI. Brainstorming ideas for improvements and increasing the impact of this event, coordinating volunteers, obtaining funds and supplies for the event.

FEMMES Capstone Activity Leader, University of Michigan Nov 2016, Mar 2017
 An outreach event for 250 fourth- to sixth-grade girls from underserved communities across Michigan. Our science activity called “Survival of the Fittest,” taught the girls about how birds feed on different types of foods, and how that is influenced by natural selection and adaptation through active learning, class discussion, and graphing the results.

Honey Bee Health Task Force Member, NAPPC Oct 2016 – Sept 2017
 Collaborate with researchers, government officials, and beekeeping associations to brainstorm and complete actionable items to improve honey bee health and awareness. Provide recommendations to update the priority research areas in the 2017 NAPPC Honey Bee Health Grant Request for Proposals.

It’s Hot in Here Podcast, WCBN-FM Ann Arbor June 2016
 Participated in an hour-long podcast called “Buzzfeed: Wild Bees Meet Urban Farming” with two other pollinator researchers to discuss the diversity of wild bees, current impacts on their health, and their importance for agriculture and urban gardens. <http://www.hotinhere.us/2016/06/>

Student Vice President, Phi Kappa Phi Chapter 39

April 2016 – April 2017

Provide a student voice at the Phi Kappa Phi Board meetings and plan activities for the chapter. Aid with 2017 recruitment into UM Phi Kappa Phi chapter. All Project Grant winners serve a term as a student vice president in the following year.

Retreat Committee Member, EEB University of Michigan

Sept 2015 – Aug 2016

Student representative on department committee to plan the annual departmental retreat. Organize activities, transportation, and run programs during the retreat.