

# John M. Mola

RESEARCH ECOLOGIST, U.S. GEOLOGICAL SURVEY MENDENHALL FELLOW

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## Education

### University of California Davis

PH.D. IN ECOLOGY

Davis, CA

2019

### Humboldt State University

M.S. IN BIOLOGY

Arcata, CA

2014

### Florida State University

B.S. IN ENVIRONMENTAL STUDIES

Tallahassee, FL

2011

## Publications

**J.M. Mola**, C. Stuligross, M.L. Page, D. Rutkowski, & N.M. Williams. 2021. Impact of "non-lethal" tarsal clipping on bumble bees (*Bombus vosnesenskii*) may depend on queen stage and worker size. *Journal of Insect Conservation*. In Press

**J.M. Mola**, M.R. Miller, S. O'Rourke & N.M. Williams. 2020. Wildfire reveals transient changes to individual traits and population responses of a native bumble bee (*Bombus vosnesenskii*). *Journal of Animal Ecology* DOI: 10.1111/1365-2656.13244

**J.M. Mola**, M.R. Miller, S. O'Rourke & N.M. Williams. 2020. Forests do not limit bumble bee foraging movements in a montane meadow complex. *Early View at Ecological Entomology* DOI: 10.1111/een.12868

LoPresti, E.F., J. Goidell, **J.M. Mola**, M.L. Page, C.D. Specht, C. Stuligross, M.G. Weber, N.M. Williams, & R. Karban. 2020. A lever action hypothesis for pendulous hummingbird flowers: experimental evidence from a columbine. *Annals of Botany* 125(1):59-65

N.M. Williams, **J.M. Mola**, Stuligross, C., Harrison, T., Page, M., Brennan, R., Rosenberger, N., & Rundlöf, M. 2019. Fantastic bees and where to find them: locating the cryptic overwintering queens of a western bumble bee. *Ecosphere* 10(11):e02949

**J.M. Mola** & N.M. Williams. 2019. A review of methods for the study of bumble bee movement. *Apidologie* 50:497

LoPresti, E.F., J. VanWyk, **J. M. Mola**, K. Toll, T.E. Miller, & N.M. Williams. 2018. Effects of wildfire on floral display size and pollinator community reduce outcrossing rate in a plant with a mixed mating system. *American Journal of Botany* 105(7):1154-1164

**Mola, J.M.** & N.M. Williams. 2018. Fire-induced change in floral abundance, density, and phenology benefits bumble bee foragers. *Ecosphere*. 9(1):e02056

**Mola, J.M.**, J.M. Varner, E.S. Jules, & T. Spector. 2014. Altered community flammability in Florida's Apalachicola ravines and implications for the persistence of the endangered conifer *Torreya taxifolia*. *PLoS ONE* 9(8): e103933.

Kreye, J.K., J.M. Varner, J.K. Hiers, & **J.M. Mola**. 2013. Toward a mechanism for eastern North American forest mesophication: differential litter drying across 17 species. *Ecological Applications* 23:1976-1986.

### TECHNICAL REPORTS AND NON-PEER REVIEWED PUBLICATIONS

Smith, T.A., J.P.Strange, E.C.Evans, B.M.Sadd, J.C.Steiner, **J.M.Mola** & K. Traylor-Holzer.(Eds.). 2020. Rusty Patched Bumble Bee, *Bombus affinis*, Ex Situ Assessment and Planning Workshop: Final Report. IUCN SSC Conservation Planning Specialist Group, Apple Valley, MN, USA

**Mola, J.M.** 2019. Bumble bee movement ecology and response to wildfire with an emphasis on genetic mark-recapture techniques. Doctoral Dissertation. University of California Davis. [Link available at [JohnMola.com/pubs](http://JohnMola.com/pubs)]

**Mola, J.M.** 2014. The role of native bees on organic farms in Humboldt County, California. Master's Thesis. Humboldt

## Presentations

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### CONTRIBUTED

- 2020 Long term declines in forest plants critical to bumble bees. *Entomological Society of America Annual Conference*, Virtual.
- 2020 Current research on bumble bees with a focus on the endangered rusty patched bumble bee. *Fort Collins Science Center Seminar Series*, Virtual.
- 2019 The response of bumble bees to grassland wildfire revealed via genetic mark-recapture. *Pacific Branch of the Entomological Society of America*, San Diego, California, USA.
- 2018 Foraging range and habitat use of bumble bees in a Sierra Nevada meadow complex. *Entomological Society of America Annual Conference*, Vancouver, Canada.
- 2018 The effect of fire on bumble bees revealed via genetic mark-recapture. *Bay Area Society for Conservation Biology Symposium*, Davis, California, USA.
- 2017 SNPs v. MSATs - a comparison of costs, utility, and error in sibship reconstructions. *BOMBUSS Conference*, Logan, Utah, USA. **Awarded a student travel scholarship.**
- 2017 Bees benefit from fire due to a lengthened post-fire flowering season. *Ecological Society of America Annual Conference*, Portland, Oregon, USA.
- 2017 Bees benefit from fire due to a lengthened post-fire flowering season. *Graduate Student Symposium in Ecology*, Davis, California, USA. **Runner-up "best talk" at conference.**
- 2017 Motivational differences and co-foraging behaviors of bumble bee queens and workers. *Student Seminar Series*, Davis, California, USA.
- 2014 The role of native bees on organic farms in Humboldt County, California. *Master's Thesis Defense*, Humboldt State University, Arcata, California, USA.

### INVITED

- 2021 Appreciating the role of forests in bumble bee conservation. *Colorado State University Natural Resource Ecology Laboratory Soup and Science Seminar Series*, Virtual.
- 2020 Exploring the role of forests in bumble bee conservation. *Meeting of the Pan Pacific Entomological Society*, Virtual.
- 2019 Bumble bee tracking methods. Co-Organized with Dr. Jamie Strange. *BOMBUSS 2.0 Conference*, York, Ontario, Canada.
- 2013 Diverse crops and diverse pollinators. *Humboldt State University Sponsored Programs Foundation PI Celebration*, Arcata, California, USA. **First-ever student invited to talk at this annual event.**
- 2013 The ecology and management of wild bees on Humboldt County organic orchards. *Alistair and Judith McCrone Awards Ceremony*. Humboldt State University, Arcata, California, USA.

### POSTERS

- 2020 Postfire environment reveals floral limitation of bumble bee body size, colony abundance, and reproductive output. *Colorado Pollinator Summit*, Virtual.
- 2019 Postfire environment reveals floral limitation of bumble bee body size, colony abundance, and reproductive output. *International Pollinator Conference*, Davis, California, USA.
- 2018 Response of bumble bees to fire revealed via genetic mark-recapture. *Entomological Society of America Annual Conference*, Vancouver, Canada.
- 2018 Bumble bee movement and landscape genetics revealed via high-throughput sequencing. *Keeping Bees Healthy Symposium*, Davis, California, USA. **First place in poster contest.**
- 2017 Fire-induced change in flowering phenology benefits bumble bees. *Keeping Bees Healthy Symposium*, Davis, California, USA. **Third place in poster contest.**
- 2016 Fine-scale population genetic structure and movement ecology of the yellow-faced bumblebee (*Bombus vosnesenskii*). *Keeping Bees Healthy Symposium*, Davis, California, USA. **Awarded cash prize in poster contest.**
- 2015 Constructing a dynamic map of bumblebee colony density and foraging movements. *Keeping Bees Healthy Symposium*, Davis, California, USA.
- 2011 Contrasting flammability of adjacent plant communities: Florida's Apalachicola Bluffs and Ravines. *Ecological Society of America Annual Conference*, Austin, Texas, USA.

## Funding

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## FELLOWSHIPS

- 2019-  
Present **U.S. Geological Survey, Mendenhall Postdoctoral Fellowship**
- 2018-2019 **University of California Davis, Professors for the Future Fellow** \$3,000  
*Year-long professional development and pedagogical training fellowship*
- 2013-2018 **National Science Foundation, Graduate Research Fellowship** \$133,500
- 2014-2016 **University of California Davis, Graduate Group in Ecology Fellowship** \$43,000
- 2013 **Humboldt State University, Allistair and Judith McCrone Graduate Fellowship** \$3,000  
*Awarded to one student campus-wide annually*

## GRANTS AND AWARDS

- 2020 **Fort Collins Science Center Internal Grant**
- 2015,'16,'18 **University of California Davis, Henry A. Jastro Graduate Research Award**
- 2017 **BOMBUSS Conference, Logan, Utah. Student Scholarship**
- 2015,'17 **American Museum of Natural History, Theodore Roosevelt Memorial Grant**
- 2015,'16 **University of California Davis, Natural Reserve System Grant**
- 2016 **Northern California Botanists Graduate Research Scholarship**
- 2016 **California Native Plant Society, Helen Sharsmith Award**
- 2016 **University of California, Mathias Graduate Student Grant**
- 2014 **California Native Plant Society, Callahan Scholarship**
- 2013 **Humboldt State University, Master's Student Grant**
- 2013 **Humboldt State University, Brusca Invertebrate Zoology Scholarship**
- 2010 **National Science Foundation, Research Experience for Undergraduates**
- 2010 **Florida State University, Student Star Award**

## Research Assistantships

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### **CaliBombus Bumble Bee Monitoring Program**

*Graduate Student Researcher*

CO-ADVISED BY DRs. HOLLIS WOODARD (UCR) AND NEAL WILLIAMS (UCD)

*Winter 2019 - Summer 2019*

- Responsible for development of surveys, website, data organization, and general input on program establishment. Helped to organize and assist in training workshops for stakeholders and citizen scientists.

### **Bumble bee responses to floral resource pulses**

*Graduate Student Researcher*

CO-ADVISED BY DRs. ROSEMARY MALFI AND NEAL WILLIAMS (UCD)

*Winter 2015 - Spring 2016*

- Responsible for collection of foundress queens, bumble bee rearing protocols, and general maintenance of facilities and data.

### **Long-term phenology research of Rocky Mountain wildflowers**

*Research Assistant*

CO-ADVISED BY DRs. AMY ILER AND DAVID INOUE (RMBL)

*Summer 2011*

- Daily collection of flower phenology data, processing of samples, and data management.

### **Phenology of Rocky Mountain native bee species and RMBL's bee collection**

*Research Assistant*

ADVISED BY DR. REBECCA IRWIN (RMBL)

*Summer 2011*

- Daily collection of native bee specimens. Storing, pinning, and processing samples. Reorganization of the RMBL bee specimen library for easier identification.

### **Florida Natural Areas Inventory plant monitoring**

*Internship*

ADVISED BY AMY JENKINS, M.S.

*2011*

- Rare plant monitoring and mapping in Appalachian National Forest

### **Vegetation censusing on Gulf of Mexico barrier islands**

*Research Assistant*

CO-ADVISED BY DRs. TOM MILLER AND ELISE GORNISH (FSU)

*2010*

- Identification and data collection of barrier island grasses and forbs.

### **Lab technician and field assistant**

*Research Assistant*

ADVISED BY DR. TOM MILLER (FSU)

*2008-2010*

- General lab and field responsibilities.

# Teaching

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## PEDAGOGICAL TRAINING

### Seminar on College Teaching

Fall 2018

UNIVERSITY OF CALIFORNIA DAVIS

- Course offered through the Center for Educational Effectiveness designed to teach pedagogical principles, assessments and assignments, active learning, lesson and course design, teaching to diverse students, and preparation through practice.

## LEAD OR CO-INSTRUCTOR

### Urban Bees: Conserving pollinators in human dominated lands

Spring 2018

UNIVERSITY OF CALIFORNIA DAVIS

Co-instructor with Neal Williams

- I conceptualized, designed, and taught this First-Year Seminar. Gave lectures, guided discussion, and facilitated students through group projects. For many students, this was their first small-group class and first hands-on research experience.

### Fire and Forbs Weekly Seminar

Winter 2018

UNIVERSITY OF CALIFORNIA DAVIS

Co-organizer with Eric LoPresti

- Developed the scope of the seminar and the schedule of readings.

## GUEST LECTURES

### Conservation Biology

Fall 2020

AMERICAN RIVER COLLEGE

- Provided remote guest lecture on bumble bee conservation via Zoom

### Ecology

Winter 2019

AMERICAN RIVER COLLEGE

- Provided guest lecture on insect diversity, movement ecology, and plant-pollinator conservation

### Plant Ecology

Fall 2015

HUMBOLDT STATE UNIVERSITY

- Led unit on plant-insect interactions.

### General Botany

Spring 2014

HUMBOLDT STATE UNIVERSITY

- Led unit on floral morphology and pollination.

## TEACHING ASSISTANT

### ABI50A - Learning Science by Doing

Fall 2018

UNIVERSITY OF CALIFORNIA DAVIS

- Guided students through designing ecological experiments and provided feedback on study design.

### General Botany

Fall 2012 - Spring 2013

HUMBOLDT STATE UNIVERSITY

- Wrote lab quizzes and practicals. Lectures to introduce lab unit.

# Mentoring & Advising

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### Jade Kochanski

U.S. Geological Survey

RESEARCH ASSISTANT

Summer 2020

- Bumble bee queen surveys within rusty patched bumble bee hot spots

### Maya Argaman

University of California Davis

FIELD RESEARCH ASSISTANT

Spring 2016

- Worked on plant quality following wildfire at UC McLaughlin Reserve.

### Jared Borba

University of California Davis

FIELD RESEARCH ASSISTANT

Summer 2015

- Worked on plant use by bumble bees in Sierra Meadows.

### Grace Blacker

Humboldt State University

FIELD AND LAB ASSISTANT

2013

- Assisted with field collections and pollen identification.

- Worked on pollinator visitation to crops in Humboldt County. *Currently MS student studying bees at Utah State University.*

## Professional and Academic Service

### MANUSCRIPT REVIEWER

- Ecology and Evolution, Journal of Animal Ecology, Journal of Applied Ecology (x2), Journal of*
- 2020 *Pollination Ecology, Illinois Natural History Survey, Journal of Insect Conservation, Ecological*
- Entomology, Scientific Reports*
- 2019 *Oecologia, Applied Biology*
- 2018 *Arthropod-Plant Interactions, Journal of Applied Ecology, Ecology and Evolution*
- 2017 *Ecological Entomology, Explorations*
- 2016 *California Agriculture*

### COLLEGE, PROGRAM, AND DEPARTMENTAL SERVICE

#### The Aggie Brickyard

<https://aggiebrickyard.github.io>

CREATOR, CO-FOUNDER, & EDITOR

2016 - 2019

- A quarterly student/faculty publication on ecology with an emphasis on the GGE community. In print and online.

#### UC Davis Graduate Group in Ecology Open Lab Meetings

Davis, CA

ORGANIZER, CO-FOUNDER

2015 - 2019

- Co-founded and hosted informal series where students could present new ideas, develop a talk, or practice for qualifying exams in a supportive environment.

#### College of Agriculture and Environmental Science Education Committee

Davis, CA

STUDENT REPRESENTATIVE

2017

#### UC Davis Graduate Student Association

Davis, CA

REPRESENTATIVE

2014 - Spring 2017

#### UC Davis Graduate Group in Ecology Admissions Committee

Davis, CA

APPLICATION REVIEWER

2015, 2016

#### UC Davis Graduate Student Symposium in Ecology

Davis, CA

ORGANIZER

2016-2017

#### UC Davis Ecology Graduate Student Association

Davis, CA

CO-CHAIR

2015-2016

#### UC Davis Graduate Group in Ecology

Davis, CA

ORIENTATION LEADER

2015, 2016

## Scientific Outreach & Communication

### WRITING AND INTERVIEWS

- 2016, 2017 Several articles in *The Aggie Brickyard* available in print and online – <https://aggiebrickyard.github.io>
- 2017 Interview with The California Aggie “Better Bee-lieve it” – about the listing of *Bombus affinus*.  
<https://theaggie.org/2017/02/02/better-bee-lieve-it-uc-davis-entomologist-helped-list-bee-as-endangered/>
- 2013 The importance of native bees for agriculture – Presentation to Klamath-Trinity Resource Conservation District.  
*Hoopa Valley Tribal Reservation*. Featured on KIDE radio.
- 2012 Ecology and management of *Osmia lignaria* on Diverse Humboldt County orchards. *Interview with KRFH Humboldt State's Campus Radio*

### EVENTS

- 2020 Bee Colorful Drawing Activity *Bay Area Science Festival* Virtual event originally located in San Francisco, California.

- 2018 Where do bees go and how do we know? *2nd Annual California Honey Festival* Woodland, California. **Invited Speaker**
- 2017 Tour Guide for Pollinator-friendly plantings. *Western Apicultural Society Meeting* Davis, California.
- 2015 Pollinator-friendly farming presentation. *Hoes Down Festival* Capay Valley, California
- 2014 Cavity nesting bee workshop (Open to general public. Self-designed and taught.) *Center for Appropriate Technology* Arcata, California
- 2011 Kid's Camp Instructor, Pollination Week and Seed Dispersal and Plant Reproduction *Rocky Mountain Biological Laboratory* Gothic, Colorado