

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, L.L. Richardson, G. Spyreas, D.N. Zaya, I.S. Pearse. 2021. Long-term surveys support declines in early-season forest plants used by bumble bees. *Journal of Applied Ecology*. DOI: <https://doi.org/10.1111/1365-2664.13886>

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*, 25, 195–201 (2021). <https://doi.org/10.1007/s10841-021-00297-9>.

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

Colla, S., R. Hatfield, S. Jepsen, J.B. Koch, **J.M. Mola**, & L. Richardson in Williams, P. & S. Jepsen. (Eds.). 2020. North America Region. IUCN Bumble Bee Specialist Group Report 2020

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]

Mola, J.M. 2014. The role of native bees on organic farms in Humboldt County, California. Master's Thesis. Humboldt State University. <http://hdl.handle.net/2148/1956>

Presentations

INVITED

- 2021 The response of bumble bees and their floral food sources to wildfire in California. *Point Blue Conservation Science Seminar Series*.
- 2021 Understanding the roles of fires and forests in bumble bee conservation. *Florida State University Ecology and Evolution Departmental Seminar*.
- 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.

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.

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

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

- 2021 **Great Lakes Restoration Initiative Grant**
- 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

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

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

Wildlife Conservation and Management

Winter 2021

AMERICAN RIVER COLLEGE

- Provided remote guest lecture history of insects in Endangered Species Act and bumble bee conservation via Zoom

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

Jade Kochanski

RESEARCH ASSISTANT

U.S. Geological Survey

Summer 2020

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

Maya Argaman

FIELD RESEARCH ASSISTANT

University of California Davis

Spring 2016

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

Jared Borba

FIELD RESEARCH ASSISTANT

University of California Davis

Summer 2015

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

Grace Blacker

FIELD AND LAB ASSISTANT

Humboldt State University

2013

- Assisted with field collections and pollen identification.

Corey Andrikoplous

FIELD RESEARCH ASSISTANT

Humboldt State University

2013

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

Professional and Academic Service

MANUSCRIPT REVIEWER

- 2021 *Basic and Applied Ecology, Conservation Physiology, International Journal of Wildland Fire, Forest Ecology and Management, Biodiversity and Conservation 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*

SCIENTIFIC LEADERSHIP

Western bumble bee species status assessment expert group

2021-Present

PARTICIPANT

BOMBUSS: Building Our Methods By Using Sound Science

2020-Present

ORGANIZING MEMBER

Queen Quest: A community project to find overwintering bumble bees

2019-Present

LEAD ORGANIZER

Conservation Planning Specialist Group meeting on the management of *Bombus affinis*

2020

INVITED PARTICIPANT

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

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| 2021 | Buzzes, Drones, Wasps: Disc Golf Courses as Pollinator Paradise on Parked: A Disc Golf Blog – https://parkeddiscgolf.org/2021/06/07/buzzes-drones-wasps-disc-golf-courses-as-pollinator-paradise/ |
| 2016, 2017 | Several articles in <i>The Aggie Brickyard</i> available in print and online – https://aggiebrickyard.github.io |
| 2017 | Interview with The California Aggie “Better Bee-lieve it” – about the listing of <i>Bombus affinus</i> . 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. <i>Hoopa Valley Tribal Reservation</i> . Featured on KIDE radio. |
| 2012 | Ecology and management of <i>Osmia lignaria</i> on Diverse Humboldt County orchards. <i>Interview with KRFH Humboldt State's Campus Radio</i> |

EVENTS

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| 2020 | Bee Colorful Drawing Activity <i>Bay Area Science Festival</i> Virtual event originally located in San Francisco, California. |
| 2018 | Where do bees go and how do we know? <i>2nd Annual California Honey Festival</i> Woodland, California. Invited Speaker |
| 2017 | Tour Guide for Pollinator-friendly plantings. <i>Western Apicultural Society Meeting</i> Davis, California. |
| 2015 | Pollinator-friendly farming presentation. <i>Hoes Down Festival</i> Capay Valley, California |
| 2014 | Cavity nesting bee workshop (Open to general public. Self-designed and taught.) <i>Center for Appropriate Technology</i> Arcata, California |
| 2011 | Kid's Camp Instructor, Pollination Week and Seed Dispersal and Plant Reproduction <i>Rocky Mountain Biological Laboratory</i> Gothic, Colorado |