

John M. Mola

RESEARCH ECOLOGIST, U.S. GEOLOGICAL SURVEY MENDENHALL FELLOW

Fort Collins Science Center, Fort Collins, Colorado 80521

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Appointments

Assistant Professor

COLORADO STATE UNIVERSITY; DEPARTMENT OF FOREST AND RANGELAND STEWARDSHIP

Fort Collins, CO

Beginning fall 2022

Mendenhall Postdoctoral Fellow

U.S. GEOLOGICAL SURVEY

Fort Collins, CO

2019-Present

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

See my Google Scholar for most current list

Kendall, L.K., **Mola, J.M.**, Portman, Z.M., Cariveau, D., Smith, H.G., Bartomeus, I. 2022. The potential and realized foraging movements of bees are differentially determined by body size and sociality. *Ecology*. Accepted, DOI not yet available.

Montero-Castaño, A., J. B. U. Koch, T.-T. T. Lindsay, B. Love, **J. M. Mola**, K. Newman, and J. K. Sharkey. 2022. Pursuing best practices for minimizing wild bee captures to support biological research. *Conservation Science and Practice*. <https://doi.org/10.1111/csp2.12734>

Rundlöf, M., C. Stuligross, A. Lindh, R. L. Malfi, K. Burns, **J.M. Mola**, S. Cibotti, and N. M. Williams. 2022. Flower plantings support wild bee reproduction and may also mitigate pesticide exposure effects. *Journal of Applied Ecology*. <https://doi.org/10.1111/1365-2664.14223>

J.M. Mola, J. Hemberger, J. Kochanski, L.L. Richardson, I.S. Pearse. 2021. The importance of forests in bumble bee biology and conservation. *BioScience*. DOI: <https://doi.org/10.1093/biosci/biab121>

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

- 2022 The response of bumble bees and their floral food sources to wildfire in California. *Sonoma State University*.
- 2022 Endangered bumble bees: Science on the threats and recovery. *USGS Friday Findings Webinar Series*.
- 2022 The importance of forests in bumble bee ecology and conservation. *California State Polytechnic Humboldt*.
- 2021 The impact of western fires on bumble bees. *Natural Areas Conference*.
- 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 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 Awarded to one student campus-wide annually	\$3,000

RESEARCH FUNDING (\$839,448 CUMULATIVE)

2021	U.S. Fish and Wildlife Service Region 3 Support	Population genetics studies of <i>B. affinis</i>	\$48,000
2021	Great Lakes Restoration Initiative Grant	Indirect efforts of restoration techniques on endangered Rusty Patched Bumble Bee and co-occurring species	\$100,000
2020	Great Lakes Restoration Initiative Grant	Bumble bee genetic diversity and pathogen presence in the Great Lakes Watershed: Are <i>Bombus affinis</i> hotspots good habitats for other bumble bees?	\$161,000
2020	Fort Collins Science Center Internal Grant	Continued support for bumble bee population genetics	\$6,000
2019	Great Lakes Restoration Initiative Grant	Long-term trends in floral resource and habitat quality for <i>Bombus</i> in Illinois and a comparison of habitats in high priority sites	\$500,000
2015,'16,'18	University of California Davis, Henry A. Jastro Graduate Research Award		\$9,000+
2015,'17	American Museum of Natural History, Theodore Roosevelt Memorial Grant		\$3,160
2015,'16	University of California Davis, Natural Reserve System Grant		\$5,000+
2016	Northern California Botanists Graduate Research Scholarship		\$1,600
2016	University of California, Mathias Graduate Student Grant		\$3,000
2014	California Native Plant Society, Callahan Scholarship		\$1,388
2013	Humboldt State University, Master's Student Grant		\$300
2013	Humboldt State University, Brusca Invertebrate Zoology Scholarship		\$1,000
2010	National Science Foundation, Research Experience for Undergraduates		

PERFORMANCE AWARDS

2021	USGS Star Award
2020	USGS Performance Award
2018	Best Poster, Keeping Bees Healthy Symposium
2017	BOMBUSS Student Travel Award
2016	California Native Plant Society, Helen Sharsmith Award
2010	Florida State University, Student Star Award

Service and Leadership

EXPERT GROUPS AND COMMITTEES

Western Bumble Bee Species Status Assessment Expert Group	2021-Present
INVITED EXPERT	<i>U.S. Fish and Wildlife Service</i>
Native Bee Monitoring Research Coordination Network	2021-Present
INVITED PARTICIPANT	
BOMBUSS: Building Our Methods By Using Sound Science	2020-Present
ORGANIZING MEMBER	
Conservation Planning Specialist Group meeting on management of <i>Bombus affinis</i>	2020
INVITED EXPERT	<i>Minnesota Zoo</i>

SPECIAL PROGRAMS

Database of Early-Career Pollinat* Ecologists	2020-Present
FOUNDER AND HOST	<i>shorturl.at/irP15</i>
"Young Pistils" Support Group for Early-Career Pollination Ecologists	2020-Present
FOUNDER AND MODERATOR	<i>Slack Workspace</i>
Social Justice in Ecology Reading Group	2020
Co-Host	<i>Virtual</i>
Queen Quest Bumble Bee Community Science Project	2019-Present
LEAD ORGANIZER	<i>QueenQuest.org</i>

EDITORIAL POSITIONS

Guest editor for a Special Issue of *Prairie Naturalist*

MANUSCRIPT REVIEWER

Apidologie, Ecography, 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, Journal of Pollination Ecology, Illinois Natural History Survey, Journal of Insect Conservation, Ecological Entomology, Scientific Reports, Oecologia, Anthropod-Plant Interactions, Journal of Applied Ecology, Ecology and Evolution, Ecological Entomology, California Agriculture

30+ reviews conducted.

ORGANIZED CONFERENCE SESSIONS

Conserving Insects in a Vertebrate-minded World

2021

CO-ORGANIZER

Entomological Society of America

COLLEGE, PROGRAM, AND DEPARTMENTAL SERVICE

The Aggie Brickyard

2016-2019

CO-FOUNDER & EDITOR

<https://aggiebrickyard.github.io>

UC Davis Graduate Group in Ecology Open Lab Meetings

2015-2019

CO-FOUNDER

Davis, CA

College of Agricultural and Environmental Science Education Committee

2017

STUDENT REPRESENTATIVE

Davis, CA

UC Davis Graduate Student Association

2014-2017

REPRESENTATIVE

Davis, CA

UC Davis Graduate Group in Ecology Admissions Committee

2015, 2016

APPLICATION REVIEWER

Davis, CA

UC Davis Graduate Student Symposium in Ecology

2016-2017

ORGANIZER

Davis, CA

UC Davis Ecology Graduate Student Association

2015-2016

CO-CHAIR

Davis, CA

UC Davis Graduate Group in Ecology

2015, 2016, 2018

ORIENTATION LEADER

Davis, CA

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

Conservation Biology

Fall 2021

AMERICAN RIVER COLLEGE

Virtual

Wildlife Conservation and Management

Spring 2021

AMERICAN RIVER COLLEGE

Virtual

Conservation Biology

Fall 2020

AMERICAN RIVER COLLEGE

Virtual

Ecology

Winter 2019

AMERICAN RIVER COLLEGE

Sacramento, CA

Plant Ecology
HUMBOLDT STATE UNIVERSITY
General Botany
HUMBOLDT STATE UNIVERSITY

Fall 2015
Arcata, CA
Spring 2014
Arcata, CA

TEACHING ASSISTANT

ABI50A - Learning Science By Doing
UNIVERSITY OF CALIFORNIA DAVIS
General Botany
HUMBOLDT STATE UNIVERSITY

Fall 2018
Davis, CA
2012-2013
Arcata, CA

Mentoring & Advising

Jade Kochanski
RESEARCH ASSISTANT (MIDWESTERN BUMBLE BEES)
Annabelle H. Louderback-Valenzuela
RESEARCH ASSISTANT (BUMBLE BEE MEASUREMENTS)
Maya Argaman
FIELD ASSISTANT (POSTFIRE PLANT QUALITY)
Jared Borba
FIELD ASSISTANT (BUMBLE BEE PLANT USE)
Grace Blacker
RESEARCH ASSISTANT (POLLEN IDENTIFICATION)
Corey Andrikopoulos
FIELD ASSISTANT (POLLINATOR CROP VISITATION)

2020
U.S. Geological Survey
2018
UC Davis
2016
UC Davis
2015
UC Davis
2013
Humboldt State University
2013
Humboldt State University

Research Assistantships

CaliBombus Bumble Bee Monitoring Program
CO-ADVISED BY DRs. HOLLIS WOODARD (UCR) AND NEAL WILLIAMS (UCD)
Bumble bee responses to floral resource pulses
CO-ADVISED BY DRs. ROSEMARY MALFI (UCD) AND NEAL WILLIAMS (UCD)
Long-term phenology research of Rocky Mountain wildflowers
CO-ADVISED BY DRs. AMY ILER (RMBL) AND DAVID INOUE (RMBL)
Phenology of Rocky Mountain native bees
ADVISED BY DR. REBECCA IRWIN (RMBL)
Florida Natural Areas Inventory plant monitoring
ADVISED BY AMY JENKINS, M.S.
Vegetation censusing on Gulf of Mexico barrier islands
CO-ADVISED BY DRs. TOM MILLER (FSU) AND ELISE GORNISH (UA)
Ecological interactions within pitcher plants
ADVISED BY DR. TOM MILLER (FSU)

Graduate Student Researcher
2019
Graduate Student Researcher
2015-2016
Research Assistant
2011
Research Assistant
2011
Intern
2011
Research Assistant
2010
Field and lab assistant
2008-2010

Scientific Outreach & Communication

WRITING AND INTERVIEWS

- 2021 Buzzzes, Drones, Wasps: Disc Golf Courses as Pollinator Paradise on Parked: A Disc Golf Blog – <https://parkeddiscgolf.org/2021/06/07/buzzzes-drones-wasps-disc-golf-courses-as-pollinator-paradise/>
- 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

RANDOM

- 2021 Worked with a manufacturer to create a "Save the Rusty Patched Bumble Bee" golf disc as outreach to hundreds of disc golfers – <https://otbdiscs.com/product/rusty-patched-bumble-bee-buzzz-ss-glo-z/>

Skills and Technical Expertise

Computer Languages

R, Markdown, BASH, LaTeX, HTML

Software & Tools

QGIS, Microsoft Office Suite, Google Docs, Git, Cluster computing, COLONY