

NAYELI CARVAJAL ACOSTA

Michigan State University | Department of Entomology | 578 Wilson Rd., East Lansing, MI 48824
carvaj14@msu.edu | (949) 923-7793 | <https://nayelicarvajal.weebly.com>

EDUCATION

- 2016-2021 **Ph.D. Ecology & Evolutionary Biology**, University of California Irvine, (UC Irvine); Advisor: Kailen Mooney
Dissertation: “Bottom-up and top-down cascading effects of climate change on herbivorous insects.”
- 2010-2011 **M.S. Environmental Sciences and Applied Ecology**, School of Environmental & Public Affairs, University of Nevada, Las Vegas (UNLV); Advisor: Scott Abella
Research topic: “Evaluating habitat restoration success in high-elevation butterfly habitat.”
- 2001-2006 **B.A. International Business**. Centro de Estudios Superiores del Estado de Sonora, Mexico.

Additional studies:

- Summer 2017 **Organization for Tropical Studies (OTS)**. Tropical Biology: An Ecological Approach. Graduate course. Costa Rica.
- Fall 2015 **Instituto de Ecología (INECOL)**. Graduate courses in Ecology. México.

ACADEMIC & TEACHING APPOINTMENTS

Academic appointments:

- 2022-present. Postdoctoral Researcher, Michigan State University and Montana State University (dual appointment), E. Lansing, MI.
Independently plan and execute experiments under a USDA-NIFA grant to study the effects of heat wave events on the ecology and pest management of the potato agricultural system. Disseminate findings in peer-review journals and scientific conferences. Responsible for the training and mentoring of six undergraduate field and laboratory research assistants. P.I.: Dr. William Wetzel.
- Winter 2018. Research Assistant, University of Neuchâtel. Santiago, Chile.
Conducted field work and insect bioassays under an NSF research grant to investigate the role of floral volatiles in shaping mutualistic-antagonistic interactions in the *Haplopappus* system along an ecological gradient of the Chilean Andes. P.I.: Dr. Sergio Rasmann.
- Summer 2016. Researcher, “Competitive Edge” program at UC, Irvine. Irvine, CA, USA.
Analyzed data and disseminated findings on the latitudinal adaptations in California sagebrush and associated herbivores communities (*Artemisia californica*). P.I.: Dr. Kailen Mooney.
- Fall 2015. Research Assistant, Instituto de Ecología, A.C. Xalapa, México.
Collected field data and assisted on insect bioassays aiming at delimiting the thermal limits and geographical range of role leaf beetles in Los Tuxtlas Biological Station. P.I.: Dr. Carlos Garcia-Robledo.

2011-2012. Research Assistant, University of Nevada, Las Vegas. Las Vegas, NV, USA.
 Performed experiments, collected and analyze data to investigate the effects of fuel-beds on Mt. Charleston blue butterfly habitat and factors influencing germination of the butterfly hostplant *Astragalus calycosus*. P.I.: Dr. Scott Abella.

Teaching appointments:

9-12/2021 Global Sustainability, Teaching Assistant, UC-Irvine. Irvine, CA.
 2/2019 Entomology, Guest Lecturer, UC-Irvine. Irvine, CA.
 9-12/2018 Field Biology, Teaching Assistant, UC-Irvine. Irvine, CA.
 1-4/2018 Horticulture, Teaching Assistant, UC-Irvine. Irvine, CA.
 9-12/2017 Global Sustainability, Teaching Assistant, UC-Irvine. Irvine, CA.
 9-12/2016 Human Physiology, Teaching Assistant, UC-Irvine. Irvine, CA.
 2013-2015 Substitute Teacher, Clark County School District, Las Vegas, NV

RELEVANT WORK EXPERIENCE

Field technician positions:

2014-2016. Biology Field Technician, Bureau of Land Management. Buffalo, WY
 Independently performed environmental compliance inspections in restored oil and gas sites and issued legal notices to ensure lands were appropriately restored.

2014. Ecology Field Technician, Colorado State University. Las Vegas, NV
 Conducted field vegetation surveys for accuracy assessment of a remote sensing vegetation map at the Lake Mead National Recreation Area.

2013. Research Assistant, San Diego Zoo/ Desert Tortoise Conservation Center. Las Vegas, NV
 Assisted in various lab and field operations for the conservation of the endangered Mojave desert tortoise (*Gopherus agassizii*).

2013. Botanist, Transcon Environmental. Nevada-Utah
 Monitored revegetation success along a 400-mile petroleum pipeline installed from Salt Lake City, UT to Las Vegas, NV.

2012. Restoration Monitoring Technician, Rocky Mountain Bird Observatory. Arizona-New Mexico
 Conducted vegetation surveys in restored bird wintering grasslands throughout Southern Arizona and New Mexico.

2012. Botany Field Technician, The Great Basin Institute. Las Vegas, NV
 Performed rare, endemic, and butterflies' host-plant surveys in the Spring Mountains National Recreation Area (SMNRA). Collected and prepared plant specimens for herbarium. Created a vegetation and butterfly habitat maps. Prepared technical reports.

PUBLICATIONS

Peer-reviewed publications

Published or in review

- (7) **Carvajal Acosta A.N.**, Zehr, L.N., Snook, J.S., Szendrei, Z., Kalwajtys, M., Wetzal, W. C. *In review*. Heat wave impacts on crop-pest interactions depend on insect ontogeny and plant resistance. *Ecological Applications*.
- (6) **Carvajal Acosta, A. N.**, Formenti, L., Godschlax, A., Katsanis, A., Mooney K., Villagra, C. Rasmann, S. 2023. Ecological convergence in phytochemistry and flower–insect visitor interactions along an Andean elevation gradient. *Ecology & Evolution*, 13 (8) e10418.
- (5) **Carvajal Acosta, A. N.**, Agrawal, A. A., and Mooney, K. A. 2022. Plant drought-adaptation traits as mediators of herbivore’s drought response: phylogeny, plant physiology, and functional traits. *Journal of Ecology*, 111(3), 687-700
- (4) **Carvajal Acosta, A. N.**, and Mooney K.A. 2021. Effects of geographic variation in hostplant resources for the distribution and climate change response of a dietary specialist. *Ecosphere*, 12(11), e03822.
- (3) Nelson, A. S., **Carvajal Acosta, A.N**, and Mooney, K. A. 2019. Plant chemical mediation of ant behavior. *Current Opinion in Insect Science*, 32, 98-103.
- (2) Garcia-Robledo, C., Horvitz, C. C., Kress, W. J., **Carvajal Acosta, A. N.**, Erwin, T. L., & Staines, C. L. 2017. Experimental assemblage of novel plant–herbivore interactions: ecological host shifts after 40 million years of isolation. *Biotropica*, 49(6), 803-810.
- (1) **Carvajal Acosta, A. N.**, Abella, S. R., and Thompson, D. B. 2015. Initial vegetation response to fuel mastication treatments in rare butterfly habitat of the Spring Mountains, Nevada. *Arizona-Nevada Academy of Science*, 46(1), 6-17.

In preparation (manuscripts available upon request)

Carvajal Acosta, A. N., Gloss, A., Mooney, K. *In preparation*. Chemical ecology of plant-biotic interactions in a changing environment. *Frontiers in Ecology & Evolution*.

Carvajal Acosta, A.N. Zehr, L., Wetzal, W. *In preparation*. Regulation of plant responses to heat stress and multi-herbivore attack in the potato (*Solanum tuberosum*) agroecosystem.

Commentaries

- (1) Croy, J. **Carvajal-Acosta, A. N.**, Mooney, K. 2021. Regulating plant herbivore defense pathways in the face of attacker diversity. *New Phytologist*, 231(6), 2110-2112.

PROFESSIONAL PRESENTATIONS

Invited talks:

Carvajal-Acosta, A. N. "Climate change effects on tri-trophic interactions". Biology Seminar. Occidental College, February 1, 2022.

Carvajal-Acosta, A. N. "Climate change effects on tri-trophic interactions". Invited guest speaker, Dirzo lab, Stanford University. October 16, 2020.

Contributed talks:

* *Presenter*

Carvajal-Acosta, A.N.*. 2022. "Regulation of plant responses to heat stress and multi-herbivore attack in a tri-trophic agroecosystem." Brown Bag Series. Kellogg Biological Station, Hickory Corners, MI, May 13, 2022,

- Carvajal-Acosta, A.N.***. 2021. "Drought effects on plant direct and indirect chemical defenses and its consequences for tri-trophic interactions". Ecological Society of America Meeting, August 2-6, virtual meeting.
- Carvajal-Acosta, A. N.***, and Mooney K.A. 2020. "Accounting for hostplant availability and quality to predict the distribution of the western monarch under climate change". Ecological Society of America Meeting, August 6-10, virtual meeting.
- Carvajal-Acosta, A. N.***, and Mooney K.A. 2019. "Disentangling the direct and indirect effects of climate change on tri-trophic interactions". RMBL graduate research seminar, Gothic, Colorado, USA.
- Carvajal-Acosta, A. N.***, Agrawal, A., and Mooney K.A. 2018. "Indirect effects of drought on herbivores mediated by host-plants traits". Ecological Society of America Meeting, August 5-10, New Orleans, Louisiana, USA.
- Carvajal-Acosta, A. N.***, Agrawal, A., and Mooney K.A. 2018. "Indirect effects of drought on herbivores mediated by host-plants traits". UC-MEXUS Fellow Conference. March 13-16, Washington D.C.
- Carvajal-Acosta, A. N.***, Agrawal, A., and Mooney K.A. 2018. "Indirect effects of drought on herbivores mediated by host-plants traits". Winter Ecology & Evolutionary Biology Graduate Student Symposium. Irvine, CA, USA.
- Carvajal-Acosta, A. N.*** and Mooney K.A. 2018. "The Milkweed diet: keeping up with climate change". Associate of Graduate Studies (AGS) Graduate Research Symposium. Irvine, CA, USA.

Contributed posters:

- Carvajal-Acosta, A. N.**, Zehr, L., Szendrei, Z., Wetzel, W.* 2022. "Regulation of plant responses to heat stress and multi-herbivore attack in the potato (*Solanum tuberosum*) agroecosystem". Gordon Research Conference of Herbivore-Plant Interactions. Long Beach, CA, USA.
- Cotoras, D.*, Kulkarni S., **Carvajal-Acosta, A. N.**, Deshwal, A., Pardo, C., Powell, E., and Schumacher, E. 2019. "Spiders from the oak forest and Páramo of Costa Rica". OTS- REU (Research Experience for Undergraduates) program, Las Cruces, Costa Rica.
- Carvajal-Acosta, A. N.*** and Mooney K.A. 2016. "Latitudinal adaptations in California sagebrush and associated herbivores communities". Competitive Edge Research Symposium. Irvine, CA, USA.
- Godschalx A. L*, Formenti, L. Mooney, K., **Carvajal Acosta, A. N.**, Villagra, C. and Rasmann, S. 2019. "When herbivores pollinate: scent-fly dynamics across elevation habitats and species of *Haplopappus*". Gordon Research Conference of Herbivore-Plant Interactions.

FELLOWSHIPS & AWARDS

Fellowships

- | | |
|------|---|
| 2020 | Graduate Dean Dissertation Fellowship, UC Irvine Graduate Division. \$5,000. |
| 2019 | Graduate Student Research Award, Colorado Mountain Club Foundation (CMCF). \$1,000. |

- 2019 Snyder Endowment Fellowship, Rocky Mountain Biological Station (RMBL). \$500.
- 2018 Travel Awards, Ecology & Evolutionary Biology, UC Irvine. \$500.
- 2017 Graduate Fellowship to attend the course “Tropical Biology: An Ecological Approach”, Organization for Tropical Studies (OTS). \$700.
- 2016-2020 UC Mexus-CONACyT Doctoral Fellowship (Mexican Counsel for Science and Technology and UC-Mexus). \$96,000 + tuition + health benefits.
- 2016 Competitive Edge Fellowship, UC Irvine Graduate Division. \$5,000 + health benefits.
- 2016-2020 Provost Doctoral Fellowship, UC Irvine Graduate Division. \$20,000.
- 2016 Diversity Recruitment Fellowship, UC Irvine Graduate Division. \$5,000 + health benefits.
- 2016-2017 VOTH Foundation Fellowship. Ecology & Evolutionary Biology and Orange County Natural Communities Coalition collaborative research grant. Research: “Assessing coastal Sagebrush restoration success”. \$10,000.
- 2015 CONACyT Doctoral fellowship, CONACyT (Mexican Counsel for Science & Technology). Tuition + \$1,000 stipend. Declined.
- 2006 CONAHEC Fellowship, (Consortium for North American Higher Education Collaboration) Texas A&M University- Kingsville International Exchange program. \$5,000 + tuition.
- 2004 XIV Summer Research Program, Undergraduate Fellowship, Mexican Academy of Science to conduct research at Mexico College (COLMEX). \$1,000.

Awards

- 2018 Ford Foundation Predoctoral Fellowship, National Academy of Sciences, *Alternate to Honorable Mention*.
- 2018 Julie S. Denslow Prize Award, co-recipient, for outstanding paper in *Biotropica*: “Experimental assemblage of novel-plant-herbivore interactions: ecological shifts after 40 million years of isolation”.
- 2010 Golden Key International Honour Society member, University of Nevada-Las Vegas.

SYNERGISTIC ACTIVITIES

Peer-referee:

Annals of Botany Journal, Canadian Journal of Zoology, Oikos, J. of Ecology, South African Journal of Botany, Annals of Applied Biology, Ecology & Evolution, J. of Chemical Ecology

Professional service:

Instructor, R Studio & Professional Development Workshops, Michigan State University, 2022-2023

– led the following workshops for undergraduate assistants in the Wetzel lab:

- Introduction to R Studio (Summer 2022 and 2023)

- Data Visualization in base R and "ggplot" (Spring and Summer 2023)
- Academic and Industry Resume and CV
- Graduate application (Fall 2022)

Member, Graduate Student Recruitment Planning Committee, Department of Ecology & Evolutionary Biology, UC Irvine, 2018-2019

Member, “What can I do with my PhD?” Job Symposium Planning Committee, Department of Ecology and Evolutionary Biology, 2017-2018

Panelist, Graduate School Preparation Class, Sociology Department, UC Irvine, 2018
– discussed graduate application process and related topics to undergraduate class

Memberships in professional organizations:

Ecological Society of America (2018-present)

Diversity & Outreach:

Invited guest, Bug Talk podcast, Department of Entomology, Michigan State University, 2022
– shared with audience my experience as a first-generation scientist on my journey to becoming an ecologist and my generally my research interests.

Panelist, Diverse Educational Community and Doctoral Experience (DECADE) program “Competitive Edge”, UC Irvine, 2021

– discussed mentorship experience and strategies for the upcoming per-mentor cohort participating in the “Competitive Edge” summer research program.

Peer-mentor, Diverse Educational Community and Doctoral Experience (DECADE) program “Competitive Edge”, UC Irvine, 2020

– mentored incoming UCI PhD students participating in the “Competitive Edge” summer research program.

Mentor, Chicano Latino Staff Association (CLSA) mentorship program, UC Irvine, 2020

– mentored undergraduate minority students navigating academic and campus life.

Panelist, Minority groups in science, RMBL Diversity Committee, 2019

– discussed a variety of diversity-related topics related to academia

Co-organizer, “Reach Out Teach Out” Mooney Lab tour, UC Irvine, 2019

– hosted a high-school group of students from under representative minorities. Planned lab activities and a field tour for guest students.

Student Representative, DECADE Student Council, Ecology & Evolutionary Biology dept, UC Irvine, 2017-2018

Moderator, XXIV Congreso Anual de Mexicanistas Juan Bruce-Novoa, Spanish Department, UC Irvine, 2018

Panelist, DECADE Student Council Outreach event (x2), 2017

– advised undergraduates regarding the graduate application process.

Mentor, Diversity Recruitment Program, Ecology & Evolutionary Biology, UC Irvine, 2017

– mentored students from underrepresented minorities through the graduate application process.

Volunteer service:

Volunteer, Trail Watcher and Resource Steward programs, Lake Mead National Recreation Area (LMNRA), National Park Service, Las Vegas, NV (2012-2014)

– Explored wilderness areas and reported weed infestation or sensitive flora and fauna. Attended regular trainings on fauna and plant identification.

- Volunteer, Seed of Success (SOS) Lake Mead NRA, National Park Service, Las Vegas, NV (2013)
 – Performed cleaning, preparation, and storage of seeds for restoration projects.
- Volunteer, Sahara Mustard control program, Lake Mead NRA, National Park Service, Las Vegas, NV, (2012)
 – Participated in Sahara Mustard (*Brassica tournefortii*) removal events.
- Volunteer, Baird and Grasshopper sparrow survey. Rocky Mountain Bird Observatory (RMBO), “El Uno” Ranch, Chihuahua, Mexico (2012)
 – Assisted in locating and trapping sparrows using mist netting.

ADVANCED COURSEWORK & TRAINING

- 2020 “Mentoring Excellence Program” UC Irvine, Irvine CA
- 2018 “Science Communication”, UC Irvine, Irvine CA
- 2017 “Climate Modeling” Data Science Initiative Workshop, UC Irvine, Irvine, CA.
 Workshop for analyzing spatial-temporal datasets in R.
- 2016 “Advanced Topics in R” Data Science Initiative Workshop, UC Irvine, Irvine, CA
 Topics: ggplot2, dplyr, Shiny, and R Markdown.
- 2016 “Teaching Assistant Professional Development” UC-Irvine, Irvine, CA
 Workshop to improve teachings skills and classroom management techniques.
- 2015 Conservation and Land Management (CMLM) Workshop, Chicago Botanic Garden, Chicago IL.
 Topics: Crash course in identification of flora of the west, Vegetation monitoring and inventory techniques, conservation genetics, “Seeds of Success” (SOS) program, seminar: “Lessons learned from large-scale restoration projects”.
- 2014 “Geographic Information Systems and GPS” refresher training, Bureau of Land Management. Buffalo, WY.
 Topics: TerraSync for navigation, understanding geographic data, ArcMap interphase.
- 2014 “Defensive driving and 4-wheel drive training”. Bureau of Land Management, (online)
- 2014 “Substitute Teacher Certification” Clark County School District (CCSD).
 Topics: learning styles, classroom management techniques, technology in the classroom, among others.
- 2013 San Diego Zoo Employee Training (online)
 Topics: zoonic disease and Biosecurity, government regulations, fundamentals of animal training and working safety with dangerous animals.
- 2012 “Grass identification workshop” Audubon Research Ranch, Tucson, AZ. Rocky Mountain Bird Observatory.
- 2012 “ESRI training in ArcMap GIS”, The Great Basin Institute (online)
 Topics: Basics of Map Projections in ArcMap GIS 10; working with annotations; basics of geographic coordinate systems; referencing data to real world locations using; and finding geographic data in ArcGIS.