ANNIKA S. NELSON

Curriculum vitae, updated May 17, 2022

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ACADEMIC APPOINTMENTS

2020-present **Postdoctoral Associate, Virginia Polytechnic Institute and State University**
Research: Trade-offs and chemical mediation of seed dispersal and fruit defense
Faculty mentor: Dr. Susan Whitehead

EDUCATION

2015-2019 **Ph.D. Ecology & Evolutionary Biology, University of California, Irvine**
Dissertation: Effects of climate change and biodiversity loss on mutualisms
Advisor: Dr. Kailen Mooney

2015-2018 **M.S. Ecology & Evolutionary Biology, UC Irvine**
Oral examination; Advisor: Dr. Kailen Mooney

2011-2015 **B.A. Biology, Oberlin College, Oberlin, Ohio**

Additional studies:

2017 Organization for Tropical Studies, Costa Rica
2014 Rocky Mountain Biological Laboratory, Gothic, Colorado
2013 Texas A&M University, College Station, Texas
2009-2011 Texas Woman's University, Denton, Texas

PUBLICATIONS (total = 12; first author = 8)

* *Undergraduate mentee*

Published:

(12) **Nelson, A.S.** and K.A. Mooney. *In press.* The ecology and evolution of interactions between ants and honeydew-producing hemipteran insects. *Annual Review of Ecology, Evolution, and Systematics*

(11) Whitehead, S.W., Schneider, J., Dybzinski, R., **Nelson, A.S.**, Gelambi, M., Jos, E., and N. Beckman. 2022. Fruits, frugivores, and the evolution of phytochemical diversity. *Oikos* 2022. DOI: 10.1111/oik.08332

(10) **Nelson, A.S.** and S.W. Whitehead. 2021. Secondary metabolites shape seed dispersal effectiveness. *Trends in Ecology and Evolution* 36:1113-1123. DOI: 10.1016/j.tree.2021.08.005

In the media: https://vtx.vt.edu/articles/2021/09/fralinlifesci-plant-seed-dispersal.html

(9) **Nelson, A.S.** and K.A. Mooney. 2021. Comparing the individual and combined effects of ant attendance and wing formation on aphid body size and reproduction. *Annals of the Entomological Society of America* 114:70-78. DOI: 10.1093/aesa/saaa035

(8) Sheard, J.K., **A.S. Nelson**, J.D. Berggreen, R. Boulay, R.R. Dunn, and N.J. Sanders. 2020. Testing trade-offs and the dominance-impoverishment rule among ant communities. *Journal of Biogeography* 47:1899-1909. DOI: 10.1111/jbi.13911

(7) **Nelson, A.S.**, G. Zapata*, K. Sentner*, and K.A. Mooney. 2020. Are ants botanists? Ant associative learning

of plant chemicals mediates foraging for carbohydrates. *Ecological Entomology* 45:251-258. DOI: 10.1111/een.12794

(6) **Nelson, A.S.**, C.T. Symanski, M.J. Hecking*, and K.A. Mooney. 2019. Elevational cline in herbivore abundance driven by a monotonic increase in trophic-level sensitivity to aridity. *Journal of Animal Ecology* 88:1406-1416. DOI: 10.1111/1365-2656.13034

Shortlisted for the *Journal of Animal Ecology* Elton Prize for the best paper by an early career researcher

(5) **Nelson, A.S.**, R.T. Pratt, J.D. Pratt, R.A. Smith, C.T. Symanski, C. Prenot, and K.A. Mooney. 2019. Progressive sensitivity of trophic levels to warming underlies an elevational gradient in ant-aphid mutualism strength. *Oikos* 128:540-550. DOI: 10.1111/oik.05650

(4) **Nelson, A.S.**, N. Carvajal Acosta, and K.A. Mooney. 2019. Plant chemical mediation of ant foraging. *Current Opinion in Insect Science* 32:98-103. DOI: 10.1016/j.cois.2018.12.003

(3) Nell, C.S., M.M. Meza-Lopez, J.R. Croy, **A.S. Nelson**, X. Moreira, J.D. Pratt, and K.A. Mooney. 2018. Relative effects of genetic variation sensu lato and sexual dimorphism on plant traits and associated arthropod communities. *Oecologia* 187:389-400. DOI: 10.1007/s00442-018-4065-y

(2) **Nelson, A.S.**, T. Scott, M. Barczyk, T.P. McGlynn, A. Avalos, E. Clifton, A. Das, A. Figueiredo, L. Figueroa, M. Janowiecki, S. Pahlke, J.D. Rana, and S. O'Donnell. 2018. Day/night upper thermal limits differ within *Ectatomma ruidum* ant colonies. *Insectes Sociaux* 65:183-189. DOI: 10.1007/s00040-017-0585-4

(1) Mooney, E.H., J.S. Phillips, C.V. Tillberg, C. Sandrow, **A.S. Nelson**, and K.A. Mooney. 2016. Abiotic mediation of a mutualism drives herbivore abundance. *Ecology Letters* 19:37-44. DOI: 10.1111/ele.12540

In Preparation:

Nelson, A.S., M. Gelambi, E. Morales, and S.R. Whitehead. *In prep.* Secondary metabolites alter the quantity and quality of secondary seed dispersal of a neotropical shrub.

FELLOWSHIPS & GRANTS

Fellowships: *8 in total, $229,420*

2016-19	$138,000	**Graduate Research Fellowship Program (GRFP)**, National Science Foundation
2019	$11,795	**Graduate Dean's Dissertation Fellowship**, UC Irvine
2018-20	$10,000	**Achievement Rewards for College Scientists (ARCS) Foundation Scholar Award** – for UC Irvine's most academically superior doctoral students exhibiting outstanding promise as scientists, researchers, and public leaders
2015	$15,000	**Graduate Fellowship**, School of Biological Sciences, UC Irvine – for UC Irvine's most academically superior beginning doctoral students exhibiting outstanding promise as scientists, researchers, and public leaders
2015	$325	**Leo S. Millar Memorial Prize**, Dept. of Biology, Oberlin College – for academic excellence and future promise in the field of biological sciences
2013	$5,800	**Research Experience for Undergraduates (REU)**, National Science Foundation – Dept. of Entomology, Texas A&M University
2011-15	$48,000	**John F. Oberlin Scholarship**
2011	$500	**Erik Anthony Shelton Scholarship**

Competitive research and travel grants: *14 in total, $11,285*

2016-19	$2,960	**Graduate Student Research Grants (x4)**, Rocky Mountain Biological Laboratory (RMBL)

2017-19	$1,500	**Travel Grants (x3)**, Dept. of Ecology & Evolutionary Biology, UC Irvine
2019-22	$1,175	**Travel Grants (x2)**, Ecological Society of America
2018	$400	**Travel Grant**, Associated Graduate Students, UC Irvine
2017	$800	**Graduate Student Research Grant**, Colorado Mountain Club Foundation
2017	$700	**Scholarship to attend the Biology of Neotropical Social Insects Course**, Organization for Tropical Studies (OTS)
2015	$1,600	**Krakauer Returning Student Research Grant**, RMBL
2014	$2,500	**Scholarship in Zoology**, Dept. of Biology, Oberlin College – for research at a field station
2014	$250	**Scholarship for Undergraduate Research**, RMBL

ACADEMIC AWARDS

2019 Shortlisted for the *Journal of Animal Ecology* Elton Prize for the best paper by an early career researcher

2019 Best Talk Award, Winter Ecology and Evolutionary Biology Graduate Student Symposium, UC Irvine

2015 Election to Phi Beta Kappa, Oberlin College

PROFESSIONAL EXPERIENCE

2016-19 **Graduate Student Researcher**, Rocky Mountain Biological Laboratory (RMBL). Research: Effects of climate change and biodiversity loss on mutualisms. Advisor: Dr. Kailen Mooney.

2015 **Research Assistant**, RMBL. Research: Elevational cline in multi-trophic interaction strength. Advisor: Dr. Kailen Mooney.

2014 **Undergraduate Researcher**, Summer Education Program, RMBL. Research: Effects of light intensity on ant-aphid mutualisms. Advisor: Dr. Kailen Mooney.

2014-15 **Research Assistant**, Dept. of Biology, Oberlin College. Research: West Nile virus ecology. Advisor: Dr. Mary Garvin.

2013 **Research Assistant**, Dept. of Biology, Oberlin College. Research: Damselfly evolutionary biology and disease ecology. Advisor: Dr. Christopher Anderson.

2013 **Undergraduate Researcher**, NSF REU-EXCITE, Dept. of Entomology, Texas A&M University. Research: Ant-plant protection mutualisms. Advisor: Dr. Micky Eubanks.

2013 **Herbarium Intern**, B.B. Harris Botanical Collection, Elm Fork Natural Heritage Museum, University of North Texas. Work: Cataloged herbarium specimens. Advisor: Dr. James Kennedy.

2010 **Research Assistant**, Dept. of Biology, University of North Texas. Research: Stream ecology. Advisor: Dr. James Kennedy.

PRESENTATIONS

** Presenter*

Invited talks:

Nelson, A.S.* 2022. Defense trade-offs mediate the outcomes of mutualisms. Biology Department, Occidental College, Los Angeles, CA, USA.

Nelson, A.S.* 2022. Biodiversity effects and trade-offs in mutualisms. Ecology and Evolutionary Biology Seminar Series, Department of Biological Sciences, Virginia Tech, Blacksburg, VA, USA.

Nelson, A.S.*, C.T. Symanski, M.J. Hecking, and K.A. Mooney. 2018. Elevational cline in herbivore abundance

driven by altered protection mutualism with ants. Research Sampler Symposium, Rocky Mountain Biological Laboratory, Gothic, Colorado, USA.

Contributed talks:

Nelson, A.S.*, M.A. Burt, and S.R. Whitehead. 2021. How does temporal variation in fruit defense mediate seed dispersal by ants? Ecological Society of America, Virtual Conference.

Nelson, A.S.* and K.A. Mooney. 2019. The effects of mutualist ant species diversity on aphid demography. Ecological Society of America, Louisville, KY, USA.

Nelson, A.S.* and K.A. Mooney. 2019. The effects of mutualist ant species diversity on aphid demography. Graduate Student Seminar Series, Rocky Mountain Biological Laboratory, Gothic, CO, USA.

[*Best talk award*] **Nelson, A.S.*** and K.A. Mooney. 2019. The effects of competition among mutualists on herbivore populations. Winter Ecology and Evolutionary Biology Graduate Student Symposium, UC Irvine, Irvine, CA, USA.

Nelson, A.S.* and K.A. Mooney. 2018. The effects of ant competition on mutualist aphid demography. Ecological Society of America, New Orleans, LA, USA.

Nelson, A.S.* and K.A. Mooney. 2018. The effects of ant competition on mutualist aphid demography. Graduate Student Seminar Series, Rocky Mountain Biological Laboratory, Gothic, CO, USA.

Nelson, A.S.*, C.T. Symanski, M.J. Hecking, and K.A. Mooney. 2017. Elevational cline in herbivore abundance driven by altered protection mutualism with ants. Ecological Society of America, Portland, OR, USA.

C.S. Nell, Meza-Lopez*, M.M., J.R. Croy, **A.S. Nelson**, A. Katsanis, J.D. Pratt, and K.A. Mooney. 2017. Plant genotypic variation and sex influence *Baccharis salicifolia* trait variation and plastic response to precipitation. Ecological Society of America, Portland, OR, USA.

Nelson, A.S.*, C.T. Symanski, M.J. Hecking, and K.A. Mooney. 2017. Elevational cline in herbivore abundance driven by altered protection mutualism with ants. Graduate Student Seminar Series, Rocky Mountain Biological Laboratory, Gothic, CO, USA.

Nelson, A.S.*, C.T. Symanski, M.J. Hecking, and K.A. Mooney. 2017. Elevational cline in herbivore abundance driven by altered protection mutualism with ants. Biology of Neotropical Social Insects Course, Organization for Tropical Studies, Costa Rica.

Nelson, A.S.* and K.A. Mooney. 2015. The effects of light on ant-aphid mutualisms. Senior Symposium, Oberlin College, Oberlin, OH, USA.

E.H. Mooney, J.S. Phillips, C.V. Tillberg, C. Sandrow, **A.S. Nelson**, and K.A. Mooney*. 2014. Abiotic and multitrophic determinants of geographic distribution in an herbivorous insect. Ecological Society of America, Sacramento, CA, USA.

Nelson, A.S.* and K.A. Mooney. 2014. The effects of light intensity on ant-aphid mutualisms on osha (*Ligusticum porteri*). Symposium for Undergraduate Research, Rocky Mountain Biological Laboratory, Gothic, CO, USA.

Nelson, A.S.* and M.D. Eubanks. 2013. The effects of *Chamaecrista fasciculata* extrafloral nectar production on the distribution of ants, spiders, and herbivores. Entomology REU-EXCITE Research Symposium, Texas A&M University, College Station, TX, USA.

Contributed Posters:

Nelson, A.S.* and K.A. Mooney. 2019. Mechanisms of global change effects on herbivores. Achievement Rewards for College Scientists Scholar Awards Dinner, Irvine, CA, USA.

Nelson, A.S.* and K.A. Mooney. 2019. Mechanisms of global change effects on herbivores. Plant-Herbivore Interaction Gordon Research Seminar and Conference, Ventura, CA, USA.

Nelson, A.S.*, G. Radulski*, C. Hoffman*. 2013. 45-acre forest sequesters carbon at an increasing rate, offsetting a small percentage of annual campus carbon emissions. Systems Ecology Poster Symposium, Oberlin College, Oberlin, OH, USA.

Nelson, A.S.* and M.D. Eubanks. 2013. The effects of *Chamaecrista fasciculata* extrafloral nectar production on the distribution of ants, spiders, and herbivores. Summer Undergraduate Research Poster Symposium, Texas A&M University, College Station, TX, USA.

TEACHING

Independent teaching & curriculum development:

2019 **Workshop Presenter**, "Introduction to Integral Projection Models," Ecology Group, UC Irvine three lectures and exercises in R for graduate students and faculty

2018-19 **Workshop Presenter**, "Hiking at RMBL: Safety, Tips, and Fun Routes," Summer Education Program for Undergraduates, RMBL

2015 **Instructor of Record**, "Feces: A Cultural and Scientific Excursion," Oberlin Experimental College – semester-long course examining the profound ways in which human excrement impacts our environment and society by altering climates, spreading diseases, and shaping cultural norms

Invited guest lectures:

2020 **Ecology**, University of San Diego, Instructor: Dr. Wilnelia Recart. Presented a lecture about research in ecology for an upper-division undergraduate course.

2019 **Quantitative Methods in Ecology and Evolution**, UC Irvine, Instructor: Dr. Diane Campbell. Designed and led a workshop on data visualization using ggplot2 in R.

2018 **Ecology**, UC Irvine, Instructor: Dr. Jennifer Martiny. Led a discussion on biodiversity and ecosystem functioning for a graduate course.

2018 **Alpine Field Ecology**, University of Ottawa and the Rocky Mountain Biological Laboratory (RMBL), Instructor: Dr. Jessica Forrest. Designed and led a field workshop on ant responses to plant chemicals for an undergraduate course.

2017 **Summer Education Program for Undergraduates**, RMBL. Designed and led a "Making Observations" field workshop.

Teaching assistantships:

2016 **Global Sustainability**, Department of Ecology and Evolutionary Biology, UC Irvine

2016 **Organisms to Ecosystems**, Department of Ecology and Evolutionary Biology, UC Irvine

2015 **Field Biology**, Department of Ecology and Evolutionary Biology, UC Irvine

2013-15 **Organismal Biology Laboratory**, Biology Department, Oberlin College

2012 **Genetics, Evolution, and Ecology Laboratory**, Biology Department, Oberlin College

Pedagogical training:

2016,18 **Education Seminar in Ecology and Evolutionary Biology**, UC Irvine

2018 **Certificate in Course Design**, DTEI, UC Irvine – learned to incorporate backwards design and active learning techniques into my courses

2016 **Mentoring Excellence Certificate**, Graduate Professional Success Program, UC Irvine

STUDENT MENTORING & OUTREACH

Student mentoring:

2022 Logan Peters (undergraduate research assistant, Virginia Tech)
2022 Lee Matthew (undergraduate research assistant, Virginia Tech)
2021 Katherine Quiring (undergraduate research assistant, Virginia Tech)
2021 Daniel Rojas (graduate school applicant, Ecology and Evolutionary Biology Mentor Match Program; accepted into and planning to attend a master's program at Kansas University)
2019 Nhan Nguyen (NSF-REU fellow, 10-week independent project, RMBL)
2018 Guillermo Zapata (NSF-REU fellow, 10-week independent project, RMBL)
2018 Parker Hawk (high school student researcher, 5-week project, RMBL)
2017 Keegan Sentner (undergraduate researcher, 10-week independent project, RMBL)

Tutoring:

2020 **Writing Tutor**, NSF GRFP Proposal Writing Workshop, Biology Department, Virginia Tech – graduate students

2016-18 **Writing Tutor**, NSF GRFP Proposal Writing Workshop, School of Biological Sciences, UC Irvine – graduate students

2014-15 **Quantitative Skills Tutor**, Drop-In Center for Learning, Education, and Research in the Sciences, Oberlin College – undergraduate science students

2014 **Science and Math Tutor**, Guyer High School, Denton, Texas – 9 high school students

2013 **Biology Tutor**, Oberlin College – 3 undergraduate students

2013 **Chemistry Tutor**, Oberlin College – 2 undergraduate students

2012 **Discrete Math Tutor**, Oberlin College – 1 undergraduate student

K-12 education:

2020 **Presenter**, LAB Chat Program, Science Museum of Western Virginia, Roanoke, VA – discussed ant-aphid ecology research with fifth grade students

2020 **Presenter**, Skype A Scientist Program, Juanita Elementary School, Kirkland, WA – discussed ant-aphid ecology research with fifth grade students

2016-17 **Exam Writer and Event Supervisor**, Science Olympiad regional academic competition – "Ecology" and "Dynamic Planet" oceanography categories, middle and high school levels

2016 **Volunteer Scientist**, "Ask-A-Scientist Night," Rancho San Joaquin Middle School – advised students on science fair projects

2016 **Presenter**, Climate, Literacy, Empowerment, and Inquiry (CLEAN) Education Organization, UC Irvine – taught local middle school students about renewable energy

2013 **Presenter**, NSF REU-EXCITE program, Texas A&M University – discussed entomology research with eighth grade students

2006-10 **Junior Teaching Assistant**, Elm Fork Environmental Education Center, University of North Texas – environmental education camps for children (ages 7-13)

2009 **Volunteer**, Kids Nature Camp, Rocky Mountain Biological Laboratory

ACADEMIC, SCIENTIFIC, & COMMUNITY SERVICE

Peer review:

Arctic, Antarctic, and Alpine Research; *Biological Invasions*; *Biotropica*; *Ecology*; *Ecology and Evolution* (x3); *Entomologia Experimentalis et Applicata*; *Environmental Entomology*; *Insectes Sociaux*; *New Phytologist*; *Oikos* (x3); *Proceedings of the Royal Society B*; *Scientific Reports* (x2); *Trends in Ecology and Evolution* (x2)

University of California, Irvine:

2017-18 **Member**, Ecology Assistant Professor Search Committee, Department of Ecology and Evolutionary Biology; resulted in the hiring of Dr. Celia Symons and Dr. Joleah Lamb

2017-18 **Member**, "What can I do with my PhD?" Jobs Symposium Planning Committee, Department of Ecology and Evolutionary Biology

2017 **Volunteer Scientist**, "Ask-An-Ecologist" event, Department of Ecology and Evolutionary Biology – advised undergraduates on independent research projects

2016-17 **Member**, Graduate Student Recruitment Planning Committee, Department of Ecology and Evolutionary Biology, 2016-17

2016 **Panelist**, "Tacos with TAs" event – provided information to undergraduates about applying to graduate school

2015 **Panelist**, REU Information Session – provided information to undergraduates about applying to and participating in NSF-REU programs

Rocky Mountain Biological Laboratory:

2022 **Member**, RMBL Graduate Student Fellowship Committee

2018-19 **Chair**, RMBL Diversity and Inclusion Committee

2019 **Host**, Graduate Student Invited Seminar Speaker, RMBL Tuesday Seminars

2019 **Scientist**, "Dinner with Scientists" Event – discussed research with the general public

2018-19 **Workshop Leader**, "Introduction to Research at RMBL"

2017-18 **Seminar Assistant**, Summer Seminar Series

2017-18 **Hike Leader**, Student Orientation Hikes

2016-17 **Panel Member**, "Graduate School in Ecology"

2016 **Volunteer**, "Open House" Event – discussed research with the general public

2014 **Scientist**, "Meet the Scientists" Event – discussed research with the general public

Community service:

2021 **Judge**, Buell/Braun Student Awards, Ecological Society of America Annual Meeting

2016-18 **Certified Trail Guide**, Irvine Ranch Conservancy – led hikes and participated in citizen science monthly butterfly surveys

2013 **Site Leader**, Oberlin College Day of Service

2012 **Volunteer**, Cloud Forest School, Monteverde, Costa Rica – gardened and maintained buildings

ADVANCED COURSEWORK & TRAINING

2021	NextProf Science Workshop, University of Michigan
2017	Integral Projection Models: Demography in a Continuous World Course, Transmitting Science, Barcelona, Spain
2017	Biology of Neotropical Social Insects Course, Organization for Tropical Studies, La Selva and Las Cruces Biological Stations, Costa Rica
2016	Introduction to R and Advanced Topics in R, Data Science Initiative Workshops, UC Irvine
2016	Public Speaking: Activate to Captivate Graduate Certificate, UC Irvine
2015	Quantitative Methods in Ecology & Evolutionary Biology, UC Irvine – ten-week graduate course
2014	Methods in Field Ecology, RMBL – undergraduate course
2013	Systems Ecology, Oberlin College – undergraduate course, independent research project quantifying carbon sequestration in a college-owned forest, laid the groundwork for further research projects and carbon offset policy decisions at Oberlin College

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

Ecological Society of America (2015-present), Evolutionary Demography Society (2017-present), American Association for the Advancement of Science (2017-18), American Alpine Club (2016-18)