

Angela M. Smilanich

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University of Nevada, Reno
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Professional Appointments

2019-present: Associate Professor, Biology Department, University of Nevada, Reno
2013-2018: Assistant Professor Tenure-Track, Biology Department, University of Nevada, Reno
2011-2013: Research Assistant Professor, Biology Department, University of Nevada, Reno
2010-2011: Affiliate Assistant Research Professor, Desert Research Institute, Reno, Nevada
2010-2011: Adjunct Faculty, Biology Department, University of Nevada, Reno
2008-2010: Postdoctoral Scholar, Biology Department, Wesleyan University, Middletown, CT

Professional Preparation

2002-2008: Ph.D Dissertation Research, Department of Ecology and Evolutionary Biology, Tulane University, New Orleans, LA.
1998-2002: B.S. Biology Department, Colorado Mesa University, Grand Junction, CO.

Teaching Experience

2011-present: Instructor for Field Ecology (BIOL 394) and Non-majors Biology (BIOL 100), Biology Department, University of Nevada, Reno
2002-2008: Teaching Assistant for Majors Biology Lab, Ecology Lab, and Entomology Lab, Tulane University, New Orleans, LA

Awards

1. **Collaborative Research:** “Novel trophic interactions determined by phytochemistry, pathogen infection, and parasitoids”, National Science Foundation 2019-2022. Lead PI, **Angela Smilanich**. Co-PIs, Matt Forister, Lee Dyer, Michael Teglas, Paul Hurtado. \$496,000.

2. Outstanding Undergraduate Research Mentor, University of Nevada, Reno. 2019, \$2,000.
3. **Collaborative Research:** “Understanding the evolution of diet breadth through ecoimmunology”, National Science Foundation 2015-2018. Lead PI, **Angela Smilanich**. Co-PI, M. Deane Bowers. \$314,000.
4. **Collaborative Research:** “Dimensions US-Biota Sao Paulo: Chemically mediated multi-trophic interaction diversity across tropical gradients”, National Science Foundation, 2014-2019. Lead PI, Lee Dyer. Co-PIs, **Angela Smilanich**, Tom Parchman, Lora Richards, Chris Jeffrey, Craig Dodson, \$1,502,447.
5. **Collaborative Research:** “Phylogenetic and phytochemical cascades in the evolution of tropical biodiversity”, National Science Foundation 2012-2015. Lead PI, **Angela Smilanich**. Co-PIs, Matt Forister, Lee Dyer, Chris Jeffrey. \$383,048.
6. Research Coordination Network in Ecoimmunology Research Exchange Award, 2013 -\$2,177

Publications

* denotes UNR graduate student; ^ denotes undergraduate

2020

^ Resnik, J.L. and **Smilanich, A.M.** 2020. The effect of phenoloxidase activity on survival is host plant dependent in virus-infected caterpillars. *Journal of Insect Science*. 20(5): 26; 1–4 doi: 10.1093/jisesa/ieaa116.

Decker L.E., Jeffrey C.S., Ochsnerider K.M., Potts A.S., de Roode J.C., **Smilanich A.M.**, and Hunter, M.D. 2020. Elevated atmospheric concentrations of CO₂ increase endogenous immune function in a specialist herbivore. *Journal of Animal Ecology*. <https://doi.org/10.1111/1365-2656.13395>

2019

Smilanich, A.M. and Nuss, A. 2019. Unlocking the genetic basis of monarch butterflies’ use of medicinal plants. Invited Review. *Molecular Ecology* 28:4839-4841.

*Yoon S.A., *Harrison J.G., *Philbin C.S., Dodson C.D., ^Jones D., Wallace I., Forister M.L., **Smilanich A.M.** 2019. The insect immune response during a recent host expansion is shaped by dietary protein, phytochemistry, and the gut microbiome. *Oecologia* 191:141-152.

2018

*Slinn H.L., Richards L.A., Dyer L.A., Hurtado P., **Smilanich A.M.** 2018. Across multiple species, phytochemical diversity and herbivore diet breadth have cascading effects on herbivore immunity and parasitism in a tropical model system. *Frontiers in Plant Science* 9:656 doi: 10.3389/fpls.2018.00656.

Smilanich A.M., *Langus T.C., ^Doan L., Dyer L.A., *Harrison J.G., Hsueh J., Teglas M.B. 2018. Host plant associated enhancement of immunity and survival in virus infected caterpillars. *Journal of Invertebrate Pathology* 151:102-112.

Dyer L.A., * Philbin C., *Ochsenrider K., Richards L.A., Massad T.J., **Smilanich A.M.**, Forister M.L., Parchman T.L., *Galland L., Hurtado P., *Espeset A.E., *Glassmire A.E., *Harrison J.G., *Mo C., *Yoon S.A., *Pardikes N.A., *Muchoney N.D., Jahner J.P., *Slinn H.L., Shelef O., Jeffrey C.S. Modern chemical ecology theory for plant-insect interactions. Invited review: *Nature Reviews Chemistry* 2 (50-64).

2017

*Glassmire A.E., *Jahner J.P., Badik K.J., Forister M.L., **Smilanich A.M.**, Dyer L.A., Wilson J.S. 2017. The soil mosaic hypothesis: a synthesis of multi-trophic diversification via soil heterogeneity. *Ideas in Ecology and Evolution* 10:20-26.

*Jahner J.P., Forister M.L., Parchman T.L., **Smilanich A.M.**, Miller J.S., Wilson J.S., Walla T.R., Tepe E.J., Richards L.A., Quijano-Abril M.A., *Glassmire A.E., Dyer L.A. 2017. Host conservatism, geography, and elevation in the evolution of a Neotropical moth radiation. *Evolution* 71:2885-2900.

^Hansen A.C., Glassmire A.E., Dyer L.A., and **Smilanich A.M.** 2017. Patterns in parasitism frequency explained by diet and immunity. *Ecography* 40:803-805.

2016

Richards L.A., *Glassmire A.E., *Ochsenrider K.M., **Smilanich A.M.**, Dodson C.D., Jeffrey C.S., and Dyer L.A. 2016. Phytochemical diversity and synergistic effects on herbivores. *Phytochemistry Reviews* 15:1153-1166.

*Glassmire A.E., Jeffrey C.S., Forister M.L., Parchman T.L., Nice C.C., *Jahner J.P., Wilson J.S., Walla T.R., Richards L.A., **Smilanich A.M.**, *Leonard M.D., ^Morrison C.R., Simbana W., Salagaje L.A., Dodson C.D., Miller J.S., Tepe E.J., Villamarin-Cortez S., and Dyer L.A. 2016. Intraspecific phytochemical variation shapes community and population structure for specialist caterpillars. *New Phytologist* 212:208-219.

Smilanich A.M., Fincher R.M., and Dyer L.A. 2016. Does plant-apparency matter? 30 years of data provide limited support but reveal clear patterns of the effects of plant chemistry on herbivores. *New Phytologist* 210: 1044-1057

2015

Richards L. A., Dyer L. A., Forister M. L., **Smilanich A. M.**, Dodson C. D., *Leonard M. D., and Jeffrey C. S. 2015. Phytochemical diversity drives diversity of tropical plant-insect communities. *Proceedings of the National Academy of Sciences*. 112: 10973-10978

Forister M. L., Novotny V., Panorska A. K., Baje L., Basset Y., Butterill P. T., Cizek L., Coley P. D., Dem F., Diniz I. R., Drozd P., Fox M., *Glassmire A., Hazen R., Hrcek J., *Jahner J. P., Kama O., Kozubowski T. J., Kursar T. A., Lewis O. T., Lill J., Marquis R. J., Miller S. E., Morais H. C., Murakami M., Nickel H., *Pardikes N., Ricklefs R. E., Singer M. S., **Smilanich A. M.**, Stireman J. O., Villamarín-Cortez S., Vodka S., Volf M., Wagner D. L., Walla T., Weiblen G. D., and L. A. Dyer. 2015. The global distribution of diet breadth in insect herbivores. *Proceedings of the National Academy of Sciences* 112:442-447

2014

Singer, M.S., Mason, P.A., and **Smilanich A.M.** 2014. Ecological immunology mediated by diet in herbivorous insects. *Integrative and Comparative Biology* 54:913-921.

Mason P.A., **Smilanich A.M.**, and Singer M.S. 2014. Reduced consumption of protein-rich foods follows immune challenge in a polyphagous caterpillar. *Journal of Experimental Biology* 217:2250-2260.

2012

Richards L.A., Lampert E.C., Bowers M.D., Dodson C.D., **Smilanich A.M.** and Dyer L.A. 2012. Synergistic effects of iridoid glycosides on the survival, development, and immune response of a specialist caterpillar (*Junonia coenia* Nymphalidae). *Journal of Chemical Ecology* 38:1276-1284.

Smilanich A.M. and Dyer L.A. 2012. Effects of banana plantation pesticides on the immune response of lepidopteran larvae and their parasitoid natural enemies. *Insects* 3:616-628.

Shlichta J.G., and **Smilanich A.M.** 2012. Immune responses and their potential role in insect outbreaks. *In Insect Outbreaks Revisited*, pgs. 47-70, editors Pedro Barbosa, Deborah Letourneau and Anurag Agrawal 2nd. Ed. Wiley-Blackwell.

Dyer, L.A., Wagner, D.L., Greeney, H.F., **Smilanich, A.M.**, Massad, T.M., Robinson, M. Fox, M., Hazen, R., Glassmire, A., Pardikes, N., Fredrickson, K., Pearson, C., Gentry, G.L., and J.O. Stireman III. 2012. Novel insights into tritrophic interaction diversity and chemical ecology using 16 years of volunteer supported research. *American Entomologist* 58:15-19.

Greeney H.F., Dyer L.A., and **Smilanich A.M.** 2012. Feeding by lepidopteran larvae is dangerous: A review of caterpillars' chemical, physiological, morphological, and behavioral defenses against natural enemies. *Invertebrate survival journal* 9:7-34.

2011

Massad T.J., Fincher R.M., **Smilanich A.M.**, and Dyer L.A. 2011. A quantitative evaluation of major plant defense hypotheses, nature versus nurture, and chemistry versus ants. *Arthropod-Plant Interactions* 5: 125-139.

Smilanich A.M., Vargas J., Dyer L.A., and Bowers M.D. 2011. Effects of ingested secondary metabolites on the immune response of a polyphagous caterpillar (*Grammia incorrupta*). *Journal of Chemical Ecology* 37:239-245.

Smilanich A.M., Mason P.A., Sprung L., Chase T.R., and Singer M.S. 2011. Complex effects of parasitoids on pharmacophagy and diet choice of a polyphagous caterpillar. *Oecologia* 165: 995-1005.

2010

Richards L.A., Dyer, L.A., **Smilanich A.M.** and Dodson C.D. 2010. Synergistic effects of amides from two *Piper* species on generalist and specialist herbivores. *Journal of Chemical Ecology* 36:1105-1113

2009

Smilanich A.M., Dyer L.A., Chambers J.Q. and Bowers M.D. 2009. Immunological cost of chemical defence and the evolution of herbivore diet breadth. *Ecology Letters* 12: 612-621

Smilanich A.M., Dyer L.A., and Gentry G.L. 2009. The insect immune response and other putative defenses as effective predictors of parasitism. *Ecology* 90:1434-1440.

Smilanich A.M., Dyer L.A., and Gentry G.L. 2009. Caterpillar immune response and parasitism. *ESA Bulletin: Photo Gallery* 90:247-253.

2003

Dyer L.A., Dodson C.D., Stireman J.O., Tobler M.A., **Smilanich A.M.**, Fincher R.M., and Letourneau D.K. 2003. Synergistic effects of three *Piper* amides on generalist and specialist herbivores. *Journal of Chemical Ecology* 29:2499-2514.

Committees and Service

Dissertation Committee Chair.

1. Su'ad Yoon, Ph.D. EECB, August 2014-
2. Nadya Muchoney, Ph.D. EECB, August 2015-
3. Kelli McKeegan Ph.D. EECB , August 2018
4. Alexander Selvey, Ph.D. EECB , August 2018-

Master's Thesis Committee Chair.

1. Tara Langus, August 2013 – May 2016
2. Carmen Mo, August 2015 – May 2018
3. Elena Larsen, January 2016 – December 2017

Committee Service.

- Personnel Committee, Biology Department (2019-present).
- Committee Member, Biology Curriculum Committee, (2015 - Present).
- Ecology, Evolution, and Conservation Biology Graduate Program Admissions Committee (2019 – Present).
- Committee Member, Search Committee for Physiological Ecologist (2019).
- Ecology, Evolution, and Conservation Biology Graduate Program Curriculum Committee (2015 – 2018).
- Judge for GSA proposals (2017)
- Judge for 3 minute thesis competition (2016)
- Judge for Graduate Student Poster Competition (2016)
- Committee Member, Search Committee for Disease Ecologist (2015).
- Committee Member, Search Committee for Biochemistry and Molecular Biology (2014 - 2015).
- Committee Member, Search Committee for College of Science Grants Specialist (2017-2018)
- Panelist for National Science Foundation, Integrative Organismal Systems Division, Integrative Ecological Physiology Program (November 2016).

Outreach

- Lead and coordinated three to five Earthwatch volunteer groups per year. Groups consist of high school students, K-12 teachers, HSBC banking employees, and volunteers from the general public. 2001-present.
- Coordinated Becoming Butterflies display at the UNR Museum of Natural History. 2018-Present.
- Board member for Nevada Bugs and Butterflies. 2018-2019.

- Served as faculty field mentor for the Organization for Tropical Studies field course in Costa Rica. 2015.
- Participated insect demonstration for Big Brothers Big Sisters science event. 2013-2014
- Insect demonstration for Reno Head Start preschool. 2012.