Nadya D. Muchoney

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PROFESSIONAL PREPARATION

Postdoctoral Scholar *2022 – Present*
Department of Biology, University of Nevada, Reno

Ph.D. Ecology, Evolution, and Conservation Biology *2022*
Department of Biology, University of Nevada, Reno

B.S. Biology, Minor: Environmental Studies *2013*
College of Arts & Sciences, Honors Program, Boston College

RESEARCH INTERESTS

Community ecology; plant-insect-pathogen interactions; viruses of wild Lepidoptera; evolution of host range and specialization; eco-immunology; chemical ecology; anthropogenic change

AWARDS & FELLOWSHIPS

Scholarships: $311,000 | **Research Grants:** $13,300 | **Travel:** $2,400 | **Awards:** $1,050

Graduate Research Fellowship, National Science Foundation ($138,000) *2017–2021*

Travel Grants, Graduate Student Association, University of Nevada, Reno ($2400) *2016–2021*

Graduate Research Opportunities Worldwide, National Science Foundation ($5,000)* *2019*

Bioinformatics Service Award, Nevada INBRE Scientific Core ($1,800) *2019*

Research Grant, Graduate Student Association, University of Nevada, Reno ($2,000) *2019*

Genomics Service Award, Nevada INBRE Scientific Core ($2,000) *2019*

EECB Director's Award for Outreach Committee service, University of Nevada, Reno *2019*

Research Grant, E.N. Huyck Preserve and Biological Research Station ($1,000) *2019*

First Place, Graduate Student Poster Competition, University of Nevada, Reno ($500) *2018*

First Place, Paper Competition: Biocontrol, Entomological Society of America ($75) *2018*

Research Grant, International Activities, University of Nevada, Reno ($1,000) *2018*

Third Place, Paper Competition, Entomological Soc. of America: Pacific Branch ($50) *2018*

Research Grant, Ron Leuschner Memorial Fund for Research on the Lepidoptera ($500) *2018*

Second Place, Paper Competition: General Ecology, Entomological Society of America *2017*

First Place, College of Science Poster Competition, University of Nevada, Reno ($350) *2016*

First Place, Poster Competition: Insect Immunology, Intl. Congress of Entomology ($75) *2016*

Dean's Graduate Scholarship, College of Science, University of Nevada, Reno ($8,000) *2015*

Gabelli Distinguished Presidential Scholarship, Boston College ($165,000). *2009–2013*

* *Unable to complete funded research project in Montpellier, France due to the Covid-19 pandemic.*

PUBLICATIONS

Smilanich, A.M. & **Muchoney, N.D**. 2022. Host plant effects on the caterpillar immune response. Chapter in: *Caterpillars in the Middle: Tritrophic Interactions in a Changing World.* Eds. R.J. Marquis & S. Koptur. Springer, New York, pp. 449–484.

Muchoney, N.D., Bowers, M.D., Carper, A.L., Mason, P.A., Teglas, M.B. & Smilanich, A.M. 2022. Use of an exotic host plant shifts immunity, chemical defense, and viral burden in wild populations of a specialist insect herbivore. *Ecology and Evolution,* 12:e8723.

Dyer, L.A., Philbin, C.S., Ochsenrider, K.M., Richards, L.A., Massad, T., Smilanich, A.M., Forister, M.L., Parchman, T.L., Galland, L.M., Hurtado, P.J., 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., Dodson, C.D., Kato, M.J., Yamaguchi, L.F. & Jeffrey, C.S. 2018. Modern approaches to study plant-insect interactions in chemical ecology. *Nature Reviews Chemistry,* 2:50-64.

FORTHCOMING PUBLICATIONS

Muchoney, N.D., Bowers, M.D., Carper, A.L., Teglas, M.B. & Smilanich, A.M. Use of an exotic host plant reduces viral burden in a native insect herbivore. *In revision.*

Muchoney, N.D., Carper, A.L., Bowers, M.D., Lowder, D.G., Teglas, M.B. & Smilanich, A.M. Host plant and developmental stage impact prevalence and load of a viral entomopathogen, Junonia coenia densovirus, in wild butterflies. *In prep.*

Muchoney, N.D., Watanabe, A., Teglas, M.B. & Smilanich, A.M. Dose-dependent dynamics of densovirus infection in two butterfly species utilizing native or exotic host plants. *In prep.*

Muchoney, N.D., McKeegan, K.J., Teglas, M.B. & Smilanich, A.M. Genetic diversity of wild isolates of a lepidopteran pathogen, Junonia coenia densovirus, across host species and geographic regions. *In prep.*

Weitzman, C.L., Salcido, D.M., **Muchoney, N.D.**, Yoon, S.A., Espeset, A.E., Larsen, E., Lindauer, A.L., Slinn, H.L., Voyles, J. & Smilanich, A.M. Testing the metabolic pace-of-life hypothesis among vertebrate immune responses using meta-analysis. *In prep.*

TEACHING & MENTORSHIP

Research Mentor, Smilanich Lab, University of Nevada, Reno *2016–2022*
As a doctoral student, mentored and supervised 16 undergraduate students over 6 years. Provided specialized training on pathogen screening and insect immune assays to 5 addl. undergraduates, 6 UNR graduate students, and 6 visiting scholars from other universities.

Teaching Assistant, Mammalogy (BIOL 434) *2021*
University of Nevada, Reno. Instructed two laboratory sections (~60 students) on morphology, global diversity, and natural history of mammals. Lectured, developed learning activities, and created/graded practical exams using museum specimens.

Field Team Leader, Earthwatch Institute Expedition (Arivaca, AZ) *2019*
Led a team of high-school students from Los Angeles in two weeks of ecological field research in AZ for the citizen science expedition "Caterpillars and climate change."

Teaching Assistant, Principles of Biological Investigation (BIOL 192) *2015–2016*
University of Nevada, Reno. Instructed two laboratory sections (~40 students) on experimental design, laboratory techniques, statistical analyses, and scientific writing. Lectured, facilitated learning activities, and graded written and oral assignments.

Senior Health Educator, Peer Health Exchange (Boston, MA) *2009–2011*
Taught weekly health workshops in Boston public high schools; topics included Decision Making & Communication, Sexual Decision Making, and Abusive Relationships.

INVITED PRESENTATIONS

Guest Lecture, Louisiana State University (Baton Rouge, LA) *2022*
Muchoney, N.D. & Smilanich, A.M. Host plant effects on the caterpillar immune response. Presented to graduate-level course on multitrophic ecological interactions.

Invited Oral Presentation, Entomological Society of America (St. Louis, MO) *2019*
Muchoney, N.D., Bowers, M.D., Mason, P.A., Carper, A.L. & Smilanich, A.M. Phytochemical and immunological mediation of interactions between a densovirus and its lepidopteran hosts. Symposium organized by Intl. Organization for Biological Control.

PROFESSIONAL PRESENTATIONS

[*] *Denotes presenting author.* [†]*Denotes undergraduate student author.*

Muchoney, N.D.[*], Carper, A.L., Bowers, M.D., Lowder, D.G.[†], Teglas, M.B. & Smilanich, A.M. July 2022. Host plant and developmental stage impact prevalence and load of a viral pathogen in wild butterflies. Oral presentation: 26th International Congress of Entomology. Helsinki, Finland.

Muchoney, N.D.[*], Bowers, M.D., Carper, A.L., Teglas, M.B., Ogliastro, M., Walla, T.R., Dyer, L.A., Lowder, D.G. [†], & Smilanich, A.M. Nov. 2021. Interactions between a densovirus and wild lepidopteran hosts: Roles of host plant use, chemical defense, and viral diversity. Oral presentation: 69th Meeting of the Entomological Society of America. Virtual.

Lowder, D.G. [*†], Smilanich, A.M., McVicar, M.[†], Teglas, M.B., **Muchoney, N.D.**, & McKeegan, K.J. Nov. 2021. Mortality of virus-infected *Vanessa cardui* caterpillars is dependent on diet and larval developmental stage. Poster: 69th Meeting of the Entomological Society of America. Denver, CO.

Muchoney, N.D.[*], Bowers, M.D., Carper, A.L. & Smilanich, A.M. June 2021. Use of an exotic host plant enhances resistance against viral infection in a native insect herbivore. Poster: 18th Ecology and Evolution of Infectious Diseases Meeting. Virtual.

Smilanich, A.M.[*], Bowers, M.D., **Muchoney, N.D.,** Slinn, H.L., Dyer, L.A., Carper, A.L. & Resnick, J.L.[†] Nov. 2020. When and how much does the immune response matter? Invited oral presentation: 68th Meeting of the Entomological Society of America. Virtual.

Smilanich, A.M.[*], Bowers, M.D., **Muchoney, N.D.** & Slinn, H.L. Nov. 2019. The gravity of top-down forces: Effects of parasitoids and viruses on the ecology of caterpillars. Invited oral presentation: 67th Meeting of the Entomological Society of America. St. Louis, MO.

Muchoney, N.D.[*], Bowers, M.D., Mason, P.A., Carper, A.L., Teglas, M.B. & Smilanich, A.M. June 2019. Disease dynamics of wild butterfly populations utilizing native and novel host plants. Poster: 17th Ecology and Evolution of Infectious Diseases Meeting. Princeton, NJ.

Muchoney, N.D.[*], Bowers, M.D., Carper, A.L. & Smilanich, A.M. Nov. 2018. Use of an introduced host plant provides protection against viral infection in a native insect herbivore, *Anartia jatrophae*. Oral presentation: Joint Meeting of the Entomological Societies of America, Canada, and British Columbia. Vancouver, Canada.

Smilanich, A.M.[*], Watanabe, A.[†], **Muchoney, N.D.,** Chung, C.[†], Carper, A.L. & Bowers, M.D. Nov. 2018. Host-plant dependent variation in survival against a lepidopteran densovirus. Oral presentation: Joint Meeting of the Entomological Societies of America, Canada, and British Columbia. Vancouver, Canada.

Muchoney, N.D.[*], Bowers, M.D., Mason, P.A., Carper, A.L., Teglas, M.B. & Smilanich, A.M. Aug. 2018. Variation in immune performance and interactions with a viral pathogen in a North American herbivore using native and novel host plants. Poster: II Joint Congress on Evolutionary Biology. Montpellier, France.

Muchoney, N.D.[*]**,** Bowers, M.D., Carper, A.L., Teglas, M.B. & Smilanich, A.M. May 2018. Variation in immunity and viral infection in *Euphydryas phaeton* populations using native and novel host plants. Oral presentation: 102nd Meeting of the Pacific Branch of the Entomological Society of America. Reno, NV.

Muchoney, N.D.[*], Bowers, M.D., Mason, P.A., Carper, A.L., Teglas, M.B. & Smilanich, A.M. Nov. 2017. Novel host plant use *in Euphydryas phaeton*: Influences on caterpillar immunity, chemical defense, and interactions with natural enemies. Oral presentation: 65th Meeting of the Entomological Society of America. Denver, CO.

Muchoney, N.D.[*], Bowers, M.D., Mason, P.A., Carper, A.L., Teglas, M.B. & Smilanich, A.M. Aug. 2017. Consequences of novel host plant utilization for pathogen exposure, immunocompetence, and chemical defense in wild populations of *Euphydryas phaeton.* Poster: 102nd Meeting of the Ecological Society of America. Portland, OR.

Bowers, M.D.[*], **Muchoney, N.D.**, Mason, P.A. & Smilanich, A.M. Aug. 2017. Consequences of novel host plants for native insect herbivores: Chemical defense and higher trophic levels. Oral presentation: 102nd Meeting of the Ecological Society of America. Portland, OR.

Muchoney, N.D.[*], Mason, P.A., Teglas, M.B., Hsueh, J., Bowers, M.D. & Smilanich, A.M. Sept. 2016. Utilization of a novel host plant impairs immunity and increases pathogen prevalence in wild populations of *Euphydryas phaeton*. Poster: 25th International Congress of Entomology. Orlando, FL.

Smilanich, A.M.[*], Mason, P.A., Mo, C., **Muchoney, N.D.,** Langus, T.C., Yoon, S.A. & Bowers, M.D. Sept. 2016. Host range expansion and the insect immune response. Invited oral presentation: 25th International Congress of Entomology. Orlando, FL.

PROFESSIONAL SERVICE

Outreach Coordinator, EECB Program, University of Nevada, Reno *2016–2022*

Representative to Faculty, EECB Program, University of Nevada, Reno *2018–2022*

Symposium Co-organizer, 69th Meeting of the Entomological Society of America *2021*
"Dispatches from the field: Documenting insect-virus interactions in natural populations"

President, EECB Outreach Club, University of Nevada, Reno *2017–2021*

Manuscript Reviewer, *Functional Ecology* *2020*

Grant Proposal Reviewer, *The Lepidopterists' Society* *2019*

COMMUNITY OUTREACH

Board of Directors, Nevada Bugs and Butterflies *2019–Present*
Organize science education initiatives for a local nonprofit organization, including an at-home activity packet for families and virtual "Summer Nature Blitzes" using iNaturalist.

Museum Guide, Museum of Natural History, University of Nevada, Reno *2018–Present*
Lead classes of K-6 students in hands-on natural history lessons during museum visits.

Event Coordinator, Big Brothers Big Sisters Science Day at UNR *2017–2021*
Developed hands-on activities, organized logistics, and recruited volunteers for an annual event hosted for BBBS matches. Coordinated a remote program in 2021.

Event Coordinator, Valentine's Day at the Museum of Natural History *2019*
Coordinated logistics and developed an activity on butterfly reproduction for an event focused on introducing undergraduates to the UNR Museum of Natural History.

Volunteer, Girl's Day of STEM, Desert Research Institute (Reno, NV) *2019*
Discussed career paths and opportunities for women in STEM fields during an interactive lunch session attended by ~75 Girl Scouts from the Reno-Sparks area.

Guest Article, *Myosotis Messenger,* E.N. Huyck Preserve & Research Station *2019*
Contributed a guest article, entitled "Becoming a caterpillar detective: How to locate and appreciate larval butterflies in the wild," for a research station newsletter.

Outreach Volunteer, Nevada Bugs and Butterflies *2016–2019*
Led hands-on activities focused on native arthropods at community events, including "Native Insect Petting Zoos" at local libraries and visits to elementary school classes.

Panelist, GradFIT Program, Desert Research Institute (Reno, NV) *2019*
Participated in a speed-mentoring session on pursuing graduate degrees for an event attended by ~50 undergraduates from underrepresented groups in graduate school.

Event Coordinator, Museum of Natural Horrors Event at UNR *2017*
Coordinated logistics and presented a live insect display for a Halloween open-house event focused on introducing undergraduates to the UNR Museum of Natural History.

Judge/Interviewer, Western Nevada Science & Engineering Fair *2016–2017*
Conducted one-on-one interviews with students and evaluated science fair projects.

PUBLIC & K-12 PRESENTATIONS

Guest Lessons, South Valleys Library STEAM Program (Reno, NV) *2018–2022*
Led interactive lessons and art activities focused on insect ecology for local students.

Guest Lesson, Driscoll Elementary School (Brookline, MA) *2021*
Led an interactive virtual lesson on caterpillar defense strategies for a 4th grade class.

Guest Lesson, Bucknell Elementary School (Alexandria, VA) *2019–2020*
Led interactive virtual lessons on caterpillar diversity to two 2nd grade classes per year.

Guest Lessons, South County Middle School (Lorton, VA) *2017–2019*
Presented virtual lectures on pursuing careers in field biology to ~100 7th grade students per year as part of a project-based learning module on becoming a naturalist.

Guest Lesson, VSA Benavente Middle School (Dededo, Guam) *2013*
Led a lesson on the ecological impacts of bird loss on Guam for middle-school classes.