

Matthew Erik Nielsen, PhD

Postdoc
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Education

University of Arizona, Tucson, AZ PhD, Ecology and Evolutionary Biology, Entomology and Insect Science Minor	Dec 2016
Grinnell College, Grinnell, IA B.A., Biology with Honors	May 2010

Postdoctoral Research Experience

Postdoc , Stockholm University, Sweden	2019-present
Postdoctoral Research Fellow , University of North Carolina-Chapel Hill, NC	2016-2019

Publications

Clusella-Trullas, S. and **Nielsen, M.** 2020. The evolution of insect body coloration under changing climates. *Current Opinion in Insect Science* 41: 25–32. (<https://doi.org/10.1016/j.cois.2020.05.007>)

Nielsen, M. and Mappes, J. 2020. Out in the open: behavior's effect on predation risk and thermoregulation by aposematic caterpillars. *Behavioral Ecology* 31: 1031–1039. (<https://doi.org/10.1093/beheco/araa048>)

Nielsen, M. and Kingsolver, J. 2020. Compensating for climate change–induced cue–environment mismatches: evidence for contemporary evolution of a photoperiodic reaction norm in *Colias* butterflies. *Ecology Letters*. (<https://doi.org/10.1111/ele.13515>)

MacLean, H., **Nielsen, M.**, Kingsolver, J., and Buckley, L. 2018. Using museum specimens to track morphological shifts through climate change. *Philosophical Transactions of the Royal Society B* 374: 20170404. (<https://doi.org/10.1098/rstb.2017.0404>)

Nielsen, M., Levin, E., Davidowitz, G., and Papaj, D. 2018. Colour plasticity alters thermoregulatory behaviour in *Battus philenor* caterpillars by modifying the cue received. *Animal Behaviour* 140: 93–98. (<https://doi.org/10.1016/j.anbehav.2018.04.009>)

Nielsen, M. 2017. No geographic variation in thermoregulatory colour plasticity and limited variation in heat-avoidance behaviour in *Battus philenor* caterpillars. *Journal of Evolutionary Biology* 30: 1919–1928. (<https://doi.org/10.1111/jeb.13168>)

Nielsen, M. and Papaj, D. 2017. Why have multiple plastic responses? Interactions between color

change and heat avoidance behavior in *Battus philenor* larvae. *American Naturalist* 189: 657-666. (<https://doi.org/10.1086/691536>)

Dunlap, A., **Nielsen, M.**, A. Dornhaus, and Papaj, D. 2016. Foraging bumble bees weigh the reliability of personal and social information. *Current Biology* 26: 1195-1199. (<https://doi.org/10.1016/j.cub.2016.03.009>)

Nielsen, M. and Papaj, D. 2015. Effects of developmental change in body size on ectotherm body temperature and behavioral thermoregulation: caterpillars in a heat-stressed environment. *Oecologia* 177: 171-179. (<https://doi.org/10.1007/s00442-014-3123-3>)

Nielsen, M. and Buffington, M. 2011. Redescription of *Stentorceps* Quinlan, 1984 (Hymenoptera, Figitidae), with a description of five new species. *African Entomology* 19: 597-613. (<https://doi.org/10.4001/003.019.0305>)

Fellowships

- National Science Foundation Postdoctoral Research Fellowship in Biology, \$138,000, 2016
- Benton White Graduate Fellowship, University of Arizona, graduate salary, 2012, 2014
- National Science Foundation Graduate Research Fellowship Program, \$96,000, 2012
- National Science Foundation Graduate Research Fellowship Program, Honorable Mention, 2011
- Smithsonian Natural History Research Experience, National Museum of Natural History, \$7000, 2010
- National Science Foundation Research Experience for Undergraduates, Kansas State University, \$5300, 2009
- National Science Foundation Research Experience for Undergraduates, Institute for Tropical Ecosystem Studies, \$4800, 2008

Grants

- National Science Foundation and Academy of Finland GROW Research Award for International Research in Finland, \$16,000, 2015
- University of Arizona Graduate and Professional Student Council Project Grant, \$1350, 2015
- University of Arizona Center for Insect Science Travel Grant, \$500-\$600, 2012, 2013, 2014, 2015, 2016
- University of Arizona Graduate and Professional Student Council Travel Grant, \$500-\$750, 2011, 2012, 2014, 2015, 2016

Awards and Honors

- Animal Behavior Society Allee Award for Best Graduate Student Presentation Runner Up, \$200, 2017
- University of Arizona Galileo Circle Scholar, \$1000, 2015, 2016
- Society for Integrative and Comparative Biology Huey Award Finalist for Best Student Presentation in Ecology and Evolution, 2016
- R.F. Chapman Graduate Student Prize for Research in Insect Science, \$600, 2014
- Research Insights in Semiarid Ecosystems Runner Up Graduate Student Poster, \$200, 2013

Invited Presentations

Nielsen, M., January 2018, Misinformation in a new climate: the role of information in the evolution of phenotypic plasticity. American Society of Naturalists Meeting, 150th Anniversary Symposium. Asilomar, CA

Nielsen, M., June 2017, Consequences of color plasticity for thermoregulatory behavior. Animal Behavior 2017 Conference, Allee Competition Session, Toronto, Canada.

Nielsen, M., March 2017, Color-behavior interactions in caterpillar thermoregulation. University of California-Davis, Davis, CA.

Nielsen, M., February 2017, Interactions among multiple plastic traits in caterpillar thermoregulation. McGuire Center for Lepidoptera & Biodiversity, Florida Museum of Natural History, Gainesville, FL.

Nielsen, M., February 2017, Interactions among multiple plastic traits in caterpillar thermoregulation. Population Biology Seminar, Duke University, Raleigh, NC.

Conference Presentations

Nielsen, M., January 2020, Misinformation in a New Climate: Evolution of seasonal polyphenism under climate change. Evolution in Sweden, Tjärnö, Sweden.

Nielsen, M., June 2019, Misinformation in a New Climate: Evolution of seasonal polyphenism under climate change. Evolution 2019 Conference, Providence, RI.

Nielsen, M., June 2018, Misinformation in a new climate: photoperiod-induced seasonal polyphenism under climate change. Biology of Butterflies, Bengaluru, India.

Nielsen, M., June 2017, Life is Complicated: Predation and temperature, color and behavior in *Arctia plantaginis* caterpillars. Evolution 2017 Conference, Portland, OR.

Nielsen, M., January 2017, Interactions between color and behavior for aposematic and thermoregulatory functions in a caterpillar. Society for Integrative and Comparative Biology 2017 Conference, New Orleans, LA.

Nielsen, M., September 2016, Interactions among multiple plastic traits: how caterpillars stay cool. International Congress of Entomology, Orlando, FL.

Nielsen, M., August 2016, Interactions among multiple plastic traits: how caterpillars stay cool. Animal Behavior 2016 Conference, Columbia, MO.

Nielsen, M., June 2016, Maintenance of unused plasticity of *Battus philenor* caterpillars. Evolution 2016 Conference, Austin, TX.

Nielsen, M., February 2016, Why have multiple plastic responses? How caterpillars stay cool. Oikos 2016 Conference, Turku, Finland. Poster.

Nielsen, M., January 2016, Color alters thermoregulatory behavior in *Battus philenor* caterpillars by changing the behavior's cue. Society for Integrative and Comparative Biology 2016 Conference, Portland, OR.

Nielsen, M., June 2015, Interactions among multiple plastic traits: how caterpillars stay cool. Evolution 2015 Conference, Guarujá, Brazil.

Nielsen, M., August 2014, Interactions between Behavioral Thermoregulation and Color Change in Pipevine Swallowtail Caterpillars (*Battus philenor*). International Society for Behavioral Ecology 2014 Conference, New York, NY. Poster.

Nielsen M., June 2014, Interactions among different forms of phenotypic plasticity: how caterpillars stay cool. Evolution 2014 Conference, Raleigh, NC.

Nielsen, M., April 2014, Interactions between Behavioral Thermoregulation and Color Change in Pipevine Swallowtail Caterpillars (*Battus philenor*). Entomological Society of America-Pacific Branch PBESA 2014 Conference, Tucson, AZ. Poster.

Nielsen, M., January 2014, Behavioral Thermoregulation and Color Change in Pipevine Swallowtail Caterpillars (*Battus philenor*). Society for Integrative and Comparative Biology 2014 Conference, Austin, TX. Poster

Nielsen, M., October 2013, Interactions between behavioral thermoregulation and color change in pipevine swallowtail caterpillars (*Battus philenor*). Research Insights in Semiarid Ecosystems 2013 Conference, University of Arizona, Tucson, AZ. Poster.

Nielsen, M., June 2013, Interaction between size and behavioral plasticity in *Battus philenor*: how caterpillars stay cool. Evolution 2013 Conference, Snowbird, UT.

Nielsen, M., June 2012, Size and thermal refuge seeking behavior in *Battus philenor* caterpillars. Behavior 2012 Conference, University of New Mexico, Albuquerque, NM.

Nielsen, M., January 2012, Change in thermal refuge seeking behavior during development of *Battus philenor* larvae. Society for Integrative and Comparative Biology 2012 Conference, Charlotte, SC. Poster.

Nielsen, M., June 2011, Adaptive dynamics in variable environments: evolutionary branching or evolution of plasticity? Evolution 2011 Conference, University of Oklahoma, Norman, OK. Poster.

Additional Research Experience

National Science Foundation Graduate Research Opportunities Worldwide and Academy of Finland, research in collaboration with Prof. J. Mappes - thermoregulation and aposematism in *Arctia plantaginis* caterpillars, University of Jyväskylä 2015 - 2016.

Benton White Graduate Fellowship, Curatorial assistant in University of Arizona Natural History collection – worked with ichthyology and invertebrate collections in particular, University of Arizona, 2012 and 2014.

Teaching and Mentoring

Master's student supervision, Stockholm University, 2020-Present

Signe Hagglund; Project: "Thermoregulatory behaviour of different life stages in *Lasiommata megera*", Co-supervisor with Karl Gotthard

Undergraduate research supervision, University of Arizona and University of North Carolina, 2014-2018

17 students trained in insect rearing, behavioral experiments, and data processing and analysis

Teaching Courses and Workshops, University of North Carolina, 2019

- Course Design Workshop, UNC Center for Faculty Excellence
- Diversity in the College Classroom, Online Course, Center for Integration of Research, Teaching and Learning

- Advanced Learning Through Evidence-Based STEM Teaching, Online Course, Center for Integration of Research, Teaching and Learning

Teaching Assistant, Department of Ecology and Evolutionary Biology, University of Arizona, 2010-2011, 2015

- *Animal Behavior*: Advanced undergraduate course - taught lab, offered feedback on essays
- *Evolution*: Undergraduate course - led discussion sections, graded papers
- *Ichthyology*: Advanced undergraduate/graduate course - assisted with lecture, lab, and field trips

Guest Lecturer, Department of Ecology and Evolutionary Biology, University of Arizona, 2015

- *Behavioral Ecology*: Graduate course - lectured and led discussion on niche construction

Course Mentor, Department of Biology, Grinnell College, 2009 – 2010

- *Introduction to Biological Inquiry: Prairie Restoration*
- *Organisms, Evolution, and Ecology*: Senior undergraduate assistant for courses, led review sections, assisted with lab and student projects

Professional Service

- Views Controlled Vocabularies Task Group Core Member, 2019-present
- American Society of Naturalists Graduate Advisory Committee Member, 2014 – 2017
- GPSC Travel Grant Judge, 2011 - 2016
- Undergraduate Assistant Mentoring, 2013 - 2015
- Center for Prairie Studies Advisory Board Member, Grinnell College, 2009 - 2010
- Paper reviewer for *Current Zoology*, *Animal Behaviour*, *Ecology and Evolution*, *Ecological Entomology*, *Biological Journal of the Linnean Society*, *Behavioral Ecology and Sociobiology*, *Ecology*, *Journal of Insect Physiology*, *Integrative Zoology*, *Behavioral Ecology*, *Journal of Insect Behavior*, *Oecologia*, *Quarterly Review of Biology*
- Co-reviewer with D. Papaj for *Animal Behaviour*, with J. Kingsolver for *Phil. Trans. Royal Soc.* and *American Naturalist*

Outreach

- Carolina Butterfly Society meeting invited lecture, 2018
- Work with Notes from Nature citizen science project, 2017-2018
- UNC Science Expo Volunteer, 2017, 2018
- Discovery Saturday Talk, Santa Rita Experimental Range, 2014
- Arizona Insect Festival Volunteer, 2011 – 2014, 2016

Professional Affiliations

- American Society of Naturalists: 2012-Present
- Animal Behavior Society: 2011-2013, 2016-Present
- Society for Integrative and Comparative Biology: 2011-2013, 2015-Present