Matthew Erik Nielsen, PhD

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Education

University of Arizona, Tucson, AZ **Dec 2016**
PhD, Ecology and Evolutionary Biology, Entomology and Insect Science Minor
Advisor: Dr. Daniel Papaj

Grinnell College, Grinnell, IA **May 2010**
B.A., Biology with Honors

Postdoctoral Research Experience

Postdoc, Stockholm University, Sweden **2019-present**
Advisor: Dr. Karl Gotthard

Postdoctoral Research Fellow, University of North Carolina-Chapel Hill, NC **2016-2019**
Advisor: Dr. Joel Kingsolver

Publications

Merckx, T.*, **Nielsen, M.*,** Heliölä, J., Kuussaari, M., Pettersson, L., Pöyry, J., Tiainen, J., Gotthard, K., Kivelä, S. 2021. Urbanization extends flight phenology and leads to local adaptation of seasonal plasticity in Lepidoptera. *Proceedings of the National Academy of Sciences* 118: ee2106006118. (https://doi.org/10.1073/pnas.2106006118)
*Co-first authors
Media coverage (in Swedish): Sveriges Radio Vetenskapradion (interview), Aftonbladet, TT Nyhetsbyrån, Norran
Media coverage (in Finnish): Maaseudun Tulevaisuus, Aamuset

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* 23: 1129–1136. (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.**, Dornhaus, A., 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)

Publications in Review

Nielsen, M., Lehmann, P., and Gotthard, K. Longer and warmer prewinter periods reduce post-winter fitness in a diapausing insect. *In Review at Functional Ecology*

Nielsen, M., and Papaj, D. Why study plasticity in multiple traits? New hypotheses for how phenotypically plastic traits interact during development and selection. *In Review at Evolution*

Fellowships

- 2016: National Science Foundation Postdoctoral Research Fellowship in Biology, $138,000
- 2012: National Science Foundation Graduate Research Fellowship Program, $96,000

Grants

- 2021: Bolin Centre Biodiversity and Climate Seed Grant (with M. Ittonen), $4,700
- 2015: 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
- 2012, 2013, 2014, 2015, 2016: University of Arizona Center for Insect Science Travel Grant, $500-$600
- 2011, 2012, 2014, 2015, 2016: University of Arizona Graduate and Professional Student Council Travel Grant, $500-$750

Awards and Honors

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

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

2021: Evolution, Online.
2021: Society for Integrative and Comparative Biology, Online.
2021: American Society of Naturalists, Online.
2020: Evolution in Sweden, Tjärnö, Sweden.
2019: Evolution, Providence, RI.
2018: Biology of Butterflies, Bengaluru, India.
2017: Evolution, Portland, OR.
2017: Society for Integrative and Comparative Biology, New Orleans, LA.
2016: International Congress of Entomology, Orlando, FL.
2016: Animal Behavior, Columbia, MO.
2016: Evolution, Austin, TX.
2016: Oikos, Turku, Finland. Poster.
2016: Society for Integrative and Comparative Biology, Portland, OR.
2015: Evolution, Guarujá, Brazil.
2014: International Society for Behavioral Ecology, New York, NY. Poster.
2014: Evolution, Raleigh, NC.
2014: Entomological Society of America-Pacific Branch, Tucson, AZ. Poster.
2014: Society for Integrative and Comparative Biology, Austin, TX. Poster
2013: Research Insights in Semiarid Ecosystems, University of Arizona, Tucson, AZ. Poster.
2013: Evolution, Snowbird, UT.
2012: Animal Behavior, Albuquerque, NM.
2012: Society for Integrative and Comparative Biology, Charlotte, SC. Poster.
2011: Evolution, 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, 2020-2021

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

Guest Lecturer and Workshop Design, Department of Zoology, Stockholm University, 2020

- *Evolutionary Ecology:* Masters course - lectured on phenotypic plasticity; designed and led related workshop on experimental design

Undergraduate research supervision, University of Arizona and University of North Carolina, 2014-2019

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

Professional development, 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 – taught paper discussion sections, graded exams and writing
- *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

- Organizer (with FL Kraft) of Stockholm University Department of Zoology postdoc seminar series 2020-2021
- 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
- Center for Prairie Studies Advisory Board Member, Grinnell College, 2009 - 2010
- Paper reviewer for *American Naturalist, Ecology, Evolution, Journal of Insect Conservation, Ecography*, *Current Zoology, PeerJ, Animal Behaviour, Ecology and Evolution, Ecological Entomology, Biological Journal of the Linnean Society, Behavioral Ecology and Sociobiology, Journal of Insect Physiology, Integrative Zoology*, *Behavioral Ecology*, *Journal of Insect Behavior, Oecologia*, *Quarterly Review of Biology*

Outreach

- "Color and Climate", invited lecture for annual meeting of the Carolina Butterfly Society (an amateur naturalist organization), 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, Society for the Study of Evolution, Society for Integrative and Comparative Biology, Animal Behavior Society