

Genevieve M. Kozak

Academic Positions

Assistant Professor, Biology, University of Massachusetts Dartmouth, 2018-present

Postdoctoral Fellow, Biology, Tufts University, 2013-2018

Supervisor: Erik Dopman

Postdoctoral Fellow, Animal Biology, University of Illinois, 2010-2013

Supervisor: Rebecca Fuller

Education

Ph.D. in Zoology, University of Wisconsin-Madison, 2004-2010

Supervisor: Janette Boughman

B.S. in Biological Sciences, Cornell University, 2000-2004

Summa cum Laude with Distinction in Research

Teaching Experience

UMass Dartmouth Courses

BIO443/BIO553, Conservation Genetics (Fall 2020-2023)

Lecture course (3 contact hours per week, 39 classroom hours instruction)

BIO 430/BIO530 Biostatistics (Spring 2020-2024)

Lecture course (3 contact hours per week, 39 classroom hours instruction)

BIO430/BIO530-L1 Biostatistics Lab (Spring 2019-2024)

Laboratory course (3 contact hours per week, 36 laboratory hours instruction)

BIO430/BIO530-L2 Biostatistics Lab (Spring 2021-2024)

Laboratory course (3 contact hours per week, 36 laboratory hours instruction)

BIO131 Introductory Biology Lab (Fall 2018-2019)

Laboratory course (3 contact hours per week, 36 laboratory hours instruction)

CAS101 Introduction to College of Arts and Sciences (Fall 2019, 2023)

Lecture course (1 contact hour per week, 13 classroom hours instruction)

Other Teaching

Co-Instructor, Seminar in Molecular Evolution, Tufts University, MA, 2014

Marsico Visiting Lecturer, “Animal Behavior”, University of Denver, 2015

Teaching Assistant, “Introductory Biology” University of Wisconsin-Madison, 2009

Teaching Assistant, “Introductory Biology” University of Wisconsin-Madison, 2007

Teaching Assistant, “Evolution of Behavior” University of Wisconsin-Madison, 2006

Academic and Professional Activities

Publications

26. Enos, Arielle**, Velikaneye, Brittany*, **Kozak, Genevieve M.** 2023. Temperature impacts how sugar resources alter reproductive investment in the European corn borer moth. *Environmental Entomology* 52:853-862.
** undergraduate student in the Kozak lab at UMass Dartmouth
* graduate student in the Kozak lab at UMass Dartmouth
25. Berdan, Emma L., Flatt, Thomas, **Kozak, Genevieve M.**, Lotterhos, Katie E., Wielstra, Benjamin. 2022. Genomic architecture of supergenes: Connecting form and function. *Philosophical Transactions of the Royal Society B: Biological Sciences* 377:20210192. *Special Issue (co-editor): "Genomic architecture of supergenes: causes and evolutionary consequences."*
24. Kunerth, Henry D., Bogdanowicz, Steve M., Searle, Jeremy B., Harrison, Richard G., Coates, Brad S., **Kozak, Genevieve M.**, Dopman, Erik B. 2022. Consequences of coupled barriers to gene flow for the buildup of genomic differentiation. *Evolution* 76:985-1002.
23. Enos, Arielle N.**, **Kozak, Genevieve M.** 2021. Elevated temperature increases reproductive investment in less preferred mates in the invasive European corn borer moth. *Ecology and Evolution* 11:12064-12074.
** undergraduate student in the Kozak lab at UMass Dartmouth
22. Unbehend, Melanie†, **Kozak, Genevieve M.**†, Koutroumpa, Fotini†, Coates, Brad S., Dekker, Tuen, Groot, Astrid, Heckel, David G., Dopman, Erik B. 2021. *Bric à brac* controls sex pheromone choice by male European corn borer moths. *Nature Communications* 12:1-11.
† these authors contributed equally
21. Berdan, Emma L., Fuller, Rebecca C., **Kozak, Genevieve M.** 2021. Genomic landscape of reproductive isolation in *Lucania* killifish: The role of sex loci and salinity. *Journal of Evolutionary Biology* 34:157-174.
Special issue on "Speciation in Marine Environments." Editor's Choice for the issue.
20. **Kozak, Genevieve M.**, Wadsworth, Crista B., Kahne, Shoshanna C., Bogdanowicz, Stephen M., Harrison, Richard G., Coates, Brad S., Dopman, Erik B. 2019. Genomic basis of circannual rhythm in the European corn borer moth. *Current Biology* 29:3501-3509.
19. Coates, Brad S., **Kozak, Genevieve M.**, Kim, Kyung Seok, Sun, Jing, Wang, Yangzhou, Fleischer, Shelby J., Dopman, Erik B., Sappington, Thomas W. 2019. Influence of host plant, geography, and pheromone strain on genomic differentiation in sympatric populations of *Ostrinia nubilalis*. *Molecular Ecology* 28:4439-4452.

18. Levy, Rebecca C.†, **Kozak, Genevieve M.**†, Dopman, Erik B. 2018. Non-pleiotropic coupling of daily and seasonal temporal isolation in the European corn borer. *Genes* 9:180. *Special Issue: Evolutionary Genetics of Reproductive Isolation*.
† these authors contributed equally
17. **Kozak, Genevieve M.**, Wadsworth, Crista B., Kahne, Shoshanna C., Bogdanowicz, Stephen M., Harrison, Richard G., Coates, Brad S., Dopman, Erik B. 2017. A combination of sexual and ecological divergence contributes to rearrangement spread during initial stages of speciation. *Molecular Ecology* 26:2331-2347.
16. Gilman, R.Tucker, **Kozak, Genevieve M.** 2015. Learning to speciate: the biased learning of mate preferences promotes adaptive radiation. *Evolution* 69:3004-3012.
15. **Kozak, Genevieve M.**, Roland, Genevieve, Rankhorn, Claire, Falater, Amy C., Berdan, Emma L., Fuller, Rebecca C. 2015. Behavioral isolation due to cascade reinforcement in *Lucania* killifish. *American Naturalist* 185:491-506.
14. **Kozak, Genevieve M.**, Boughman, Janette W. 2015. Predator experience overrides learned aversion to heterospecifics in stickleback species pairs. *Proceedings of the Royal Society B: Biological Sciences* 282:20143066.
13. Levy, Rebecca C.†, **Kozak, Genevieve M.**†, Wadsworth, Crista B., Coates, Brad S., Dopman, Erik B. 2015. Explaining the sawtooth: latitudinal periodicity in a circadian gene correlates with shifts in generation number. *Journal of Evolutionary Biology* 28:40-53.
† these authors contributed equally
12. **Kozak, Genevieve M.**, Brennan, Reid S., Berdan, Emma L., Fuller, Rebecca C., Whitehead, Andrew D. 2014. Functional and population genomic divergence within and between two species of killifish adapted to different osmotic niches. *Evolution* 68:63-80, 2014. *Special Section: Adaptation to environmental stress and change*.
11. Berdan, Emma L.†, **Kozak, Genevieve M.**†, Ming Ray, Rayburn, A. Lane, Kiehart, Ryan, Fuller, Rebecca C. 2014. Insight into genomic changes accompanying divergence: genetic linkage maps and synteny of *Lucania goodei* and *L. parva* reveal a Robertsonian fusion. *G3: Genes, Genomes, Genetics* 4:1363-1372.
† these authors contributed equally
10. **Kozak, Genevieve M.**, Head, Megan L., Lackey, Alycia C. R., Boughman, Janette W. 2013. Sequential mate choice and sexual isolation in threespine stickleback species. *Journal of Evolutionary Biology* 26:130-140.
9. Head, Megan L., **Kozak, Genevieve M.**, Boughman, Janette W. 2013. Female mate preferences for male body size and shape promote sexual isolation in threespine sticklebacks. *Ecology and Evolution* 3:2183-2196.

8. **Kozak, Genevieve M.**, Boughman, Janette W. 2012. Plastic responses to parents and predators lead to divergent shoaling behavior in sticklebacks. *Journal of Evolutionary Biology* 25:759-769.
7. Verzijden, Machteld N., ten Cate, Carel, Servedio, Maria R., **Kozak, Genevieve M.**, Boughman Janette W., Svensson, Erik I. 2012. The impact of learning on sexual selection and speciation. *Trends in Ecology & Evolution* 27:511-519.
6. **Kozak, Genevieve M.**, Rudolph, Arthur, B., Colon Beatrice L., Fuller, Rebecca C. 2012. Postzygotic isolation evolves before prezygotic isolation between fresh and saltwater populations of the rainwater killifish, *Lucania parva*. *International Journal of Evolutionary Biology Mechanisms of Speciation*.
5. Gregorio, Olivia, Berdan, Emma L., **Kozak, Genevieve M.**, Fuller, Rebecca C. 2012. Reinforcement of male mate preferences in sympatric killifish species *Lucania goodei* and *L. parva*. *Behavioral Ecology & Sociobiology* 66:1429-1436.
4. **Kozak, Genevieve M.**, Head, Megan L., Boughman, Janette W. 2011. Sexual imprinting on ecologically divergent traits leads to sexual isolation in sticklebacks. *Proceedings of the Royal Society B: Biological Sciences* 278:2604-2610.
3. **Kozak, Genevieve M.**, Reiland, Melissa A., Boughman, Janette W. 2009. Sex differences in mate recognition and conspecific preference in species with mutual mate choice. *Evolution* 63:353-365.
2. **Kozak, Genevieve M.**, Boughman, Janette W. 2009. Learned conspecific mate preference in a species pair of sticklebacks. *Behavioral Ecology* 20:1282-1288.
1. **Kozak, Genevieve M.**, Boughman, Janette W. 2008. Experience influences preference for shoal members in a species pair of sticklebacks. *Behavioral Ecology* 19:667-676.

Submitted

Velikaneye, Brittany A.*, **Kozak, Genevieve M.** *Submitted*. Timing-dependent effects of elevated temperature on reproductive traits in the European corn borer moth. *Journal of Evolutionary Biology*.

Works in progress

Velikaneye, Brittany A.*, **Kozak, Genevieve M.** *In preparation*. Epigenomic changes in *Ostrinia* moths under elevated pupal and adult temperature.

Trowbridge, Edward*, Morelli, Toni Lyn, **Kozak, Genevieve M.** *In preparation*. Genetic differences associated with geography and not host plants in frosted elfin butterfly, *Callophrys irus*.

* graduate student in the Kozak lab at UMass Dartmouth

Grants awarded

- US Fish and Wildlife Service/USGS Scientific Support Partnership Grant (SSP-21-IR1-03) “*Investigating the relationship of habitat, genetic diversity, and occupancy in the locally rare frosted elfin butterfly, *Callophrys irus**”
 - Role: Scientific Personnel
 - PI: Toni Lyn Morelli (USGS, UMass Amherst), Rebecca Longenecker (USFWS)
 - Amount: **\$7,200 sequencing, \$3,000 travel (Total: \$90,944)**
 - Status: Completed (2021-2023)
- National Science Foundation, Division of Integrative Organismal Biology, Animal Behavior (0807469) “*Doctoral Dissertation Improvement Grant: Learned Social and Mate Recognition in Species Pairs of Sticklebacks*”
 - Role: Co-PI
 - Amount: **\$12,000**
 - Status: Completed (2008-2010)

Grants awarded to mentored graduate students

- Graduate Research Excellence Grant (GREG) Rosemary Grant Advanced Award from the Society for the Study of Evolution (SSE). “*Regulatory role of DNA methylation in temperature-induced plasticity*”
 - Awarded to: Brittany Velikaneye (PhD Student, UMass Dartmouth)
 - Amount: **\$3,380**
 - Status: Ongoing
 - Grant period: 2024-2025
- Lepidopterists’ Society Leuschner Memorial Fund for Research on the Lepidoptera Student Research Award “*Investigating genetic variation in *Callophrys niphon* associated with flight period*”
 - Awarded to: Uma Knaven (PhD Student, UMass Dartmouth)
 - Amount: **\$1,000**
 - Status: Ongoing
 - Grant period: 2024-2025

Mentored Graduate Students

Rebecca Bachtel (co-advised: J. Koop), UMass Dartmouth Biology MS, 2019-2020
Edward “Hunter” Trowbridge, UMass Dartmouth Biology MS, 2020-2024
Uma Knaven, UMass Dartmouth Integrative Biology PhD, 2021-present
Brittany Velikaneye, UMass Dartmouth Integrative Biology PhD, 2020-present

Presentations

Invited talks (Past 10 years)

Kozak, GM. 2024. “Epigenetic responses to reproducing in warming environments.” Department of Biology. University of Massachusetts Lowell, MA.

Kozak, GM. 2023. “Reproductive plasticity and its consequences in a warming world.” Department of Biology. University of Massachusetts Boston, MA.

Kozak, GM. 2021. “Population divergence and speciation in a changing world.” Department of Biology, Rochester Institute of Technology, NY. [Virtual]

Kozak, GM. 2021. “Mechanisms and stability of assortative mating.” Department of Biology, Union College, NY. [Virtual]

Kozak, GM. 2018. “Hybridization from genes to genomes.” Department of Biology, University of Massachusetts Dartmouth, MA.

Dopman, EB, **Kozak, GM.** 2017. “The strength and genomic distribution of barriers to gene flow between hybridizing moths.” Boston Evolutionary Genomics Supergroup, Harvard University, MA.

Kozak, GM. 2017. “How do you make a species? Genetics of mating trait divergence.” Annual retreat, Department of Biology, Tufts University, MA.

Kozak, GM. 2017. “Dynamic hybridization: causes and consequences.” Department of Biology, University of Denver, CO.

Kozak, GM. 2016. “How changes in mate preference prevent hybridization” BioSciences, Rice University, TX.

Kozak, GM. 2016. “Mechanisms of mate preference: preventing hybridization & species collapse.” School of Biological Sciences, Washington State University, WA.

Kozak, GM. 2016. “The evolutionary puzzle of assortative mating.” Department of Biological Sciences, University of Pittsburgh, PA.

Kozak, GM. 2016. “The evolutionary puzzle of assortative mating.” Department of Biology, Wake Forest University, NC.

Kozak, GM. 2015. “The evolutionary puzzle of premating isolation. Department of Biology, Tufts University, MA.

Kozak, GM. 2015. “Evolving premating barriers during ecological speciation.” Marsico Short Term Visiting Faculty. Department of Biology, University of Denver, CO.

Kozak, GM. 2013. “The evolution of reproductive isolation in freshwater and saltwater fish.” Department of Biology, Roehampton University, London, UK.

Conference presentations (past 10 years)

Kozak, GM, Velikaneye, BA*. 2023. “Epigenomic response of males to elevated pupal and adult temperature in *Ostrinia* moths.” Evolution 2023, Albuquerque, NM.

Kozak, GM, Velikaneye, BA*. 2022. “High larval temperature alters synchrony of adult eclosion in the European corn borer moth” Evolution 2022, Cleveland OH.

Kozak, GM, Enos, AN**. 2021. “Resource availability interacts with elevated temperature to alter reproductive investment in the European corn borer moth.” Evolution 2021, virtual meeting.

Kozak, GM, Enos, AN**. 2020. “Effects of elevated temperature on sexual selection in the European corn borer moth.” Animal Behavior, virtual meeting.

Kozak, GM. 2019. “Genomic studies of seasonal timing and barrier accumulation in *Ostrinia*.” Flash presentation, Society for Molecular Biology and Evolution Satellite meeting, Speciation Genomics, Tjarno, SE.

Kozak, GM, Wadsworth CB, Coates BS, Dopman EB. 2017. “Genome-wide association mapping of seasonal mating time.” Society for the Study of Evolution annual meeting, Portland, OR.

Kozak, GM, Coates BS, Dopman EB. 2016. “Speciation supergenes? Segregating Z chromosome recombination suppressors in European corn borer moths.” Society for the Study of Evolution, Austin, TX.

Kozak, GM, Levy, RC, Coates BS, Dopman EB. 2014. “Divergence in life-cycle associated with variation in circadian genes in the European corn borer” Society for the Study of Evolution, Raleigh, NC.

Kozak, GM. 2013. “Sexual imprinting and learning during courtship determines mate preference within and between stickleback species.” Learning and speciation symposium. Behaviour, meeting of the International Ethological Society, Newcastle, UK.

Kozak, GM, Roland, G, Rankhorn, C, Falater, A, Berdan, EL, Fuller, RC. 2013. Reinforcement generates behavioral isolation between and within species of *Lucania* killifish. Society for the Study of Evolution, Snowbird, UT.

Conference posters (past 10 years)

Kozak, GM, Velikaneye BA*. 2022. Maladaptive reproductive responses to developmental temperatures in the European corn borer moth. European Society for Evolutionary Biology Congress 2022, Prague, Czech Republic.

Kozak, GM, Coates BS, Dopman EB. 2019. Genomic studies of seasonal isolation in the European corn borer moth. Society for the Study of Evolution annual meeting, Providence, RI.

Kozak, GM, Crista B. Wadsworth, Shoshanna C. Kahne, Steven M. Bogdanowicz, Gabriel Golczer, Brad S. Coates, Richard G. Harrison, and Erik B. Dopman. 2016. “Evidence for balancing selection and chromosomal rearrangements during ecological speciation in *Ostrinia* moths.” Tufts Postdoctoral Research Symposium, Medford, MA

Kozak, GM, Crista B. Wadsworth, Shoshanna C. Kahne**, Steven M. Bogdanowicz, Gabriel Golczer*, Brad S. Coates, Richard G. Harrison, and Erik B. Dopman. “Evidence for balancing selection and chromosomal rearrangements during ecological speciation in *Ostrinia* moths.” 2015. American Genetic Symposium on Chromosomal Evolution, Seattle, WA

Kozak, GM, Roland, G, Rankhorn, C, Falater, A, Berdan, EL*, Fuller, RC. 2014. Reinforcement generates behavioral isolation between and within species of *Lucania* killifish. International Society for Behavioral Ecology, New York, NY

Kozak, GM, Berdan, EL, Fuller, RC. 2013. “Salinity and hybrid inviability in *Lucania* killifish.” American Genetic Symposium on Speciation, Ithaca, NY

Kozak, GM, Boughman JW. 2008. Learned conspecific mate recognition in sticklebacks. International Society for Behavioral Ecology, Ithaca, NY.

Kozak, GM, Boughman JW. Learned conspecific mate recognition in sticklebacks. 2008. Society for the Study of Evolution, Minneapolis, MN

Kozak, GM, Boughman JW 2006 Learned species recognition in a species pair of sticklebacks. Animal Behavior Society, Snowbird, UT.

Graduate student presentations from the Kozak lab

Velikaneye, BA*, **Kozak, GM**. 2023. “Epigenomic response of female European corn borer moths (*Ostrinia nubilalis*) elevated pupal and adult temperature” Evolution 2023, Albuquerque, NM. Talk.

Trowbridge E*, **Kozak GM**. 2023. “Habitat occupancy models and conservation genetics for the frosted elfin butterfly, *Callophrys irus*” Northeast Fish & Wildlife Conference. Hersey, PA. Poster.

Trowbridge E*, Kozak GM. 2022. “Habitat occupancy models for the frosted elfin butterfly, *Callophrys irus*.” Entomology. Vancouver, BC. Virtual Poster.

Velikaneye BA*, **Kozak GM**. 2022. “Timing and duration of temperature elevation alters reproduction of the European corn borer moth.” Evolution 2022, Cleveland OH. Talk.

Undergraduate student presentations from the Kozak lab

Perry, E** 2023. “Determining frosted elfin population structure using the EF1-alpha gene.” UMass Dartmouth Honors College. Poster.

Pickard, A** 2022. “Patterns of protandry and protogyny in Lepidoptera.” Massachusetts Undergraduate Research Conference. Virtual Poster.

Enos, AN** 2021. “Resource availability alters the effects of elevated temperature on assortative mating patterns in the European Corn borer moth (*Ostrinia nubilalis*).” Massachusetts Undergraduate Research Conference. Virtual Poster.

* graduate student, **undergraduate student from Kozak lab at UMass Dartmouth

Professional Activities

Associate Editor, *Evolutionary Ecology* (October 2019-present)

Guest Associate Editor, *Philosophical Transactions of the Royal Society B* (2021-2022)

Symposium organizer: *ESEB Congress 2022 “Combinatorial Speciation- the role of hybridization and ancient genetic variants.”*

Manuscript reviewer for: *American Naturalist, Animal Behaviour, Axios Reviews, Behavioral Ecology, Behavioral Ecology and Sociobiology, Behaviour, Biology Letters, BMC Evolution, Current Zoology, Genetics, Ecology and Evolution, Evolution, Evolutionary Applications, Journal of Evolutionary Biology, Journal of Heredity, Journal of Insect Physiology, Molecular Ecology, Nature Ecology and Evolution, Oecologia, PLoS Genetics, PLoS One, Proceedings of the Royal Society B*

Research grant reviewer for: *National Science Foundation, Lepidopterists’ Society, Graduate Women in Science*

University Service

Service to the Department

- Biology Graduate Committee (2022-2024)
- Integrative Biologist Search Committee (2022-2023)
- Biology Department Honors and Awards Committee (2018-2024)
- Biology Department Seminar Coordinator (2019-Fall 2022)
- Conservation Biology Option Working Group (2018)

Service to the University

- Sigma Xi Research Exhibit Event Organizer (2024)
- Office of Undergraduate Research Board Member (2022-2024)
- Outstanding Student Awards for Research Work Award Reviewer (Office of Research and Innovation) (2023-2024)
- Faculty Senate Admissions Committee (2023-2024)
- Office of Faculty Development, New Faculty Orientation Panel (Fall 2023)
- Sigma Xi Research Exhibit Event Assistant Organizer (2023)
- Sigma Xi Research Exhibit Volunteer (Spring 2019, 2022).
- STEM4Girls presenter (Kaput Center for Research and Innovation in STEM Education) (2019, 2022-23)

Membership Professional Societies

Society for the Study of Evolution (2014-2024), European Society for Evolutionary Biology (2022-2024), Sigma Xi Scientific Research Honor Society (2018-2024), Entomological Society of America (2023), Lepidopterists’ Society (2020-2022, 2024), Animal Behavior Society (2020-2021), Society for Molecular Biology (2020-2021)