

Ethan F. Gyllenhaal

Department of Biology – Museum of Southwestern Biology

University of New Mexico

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EDUCATION

- Present **Ph.D candidate, Biology**
Department of Biology, University of New Mexico
Advisor: Michael J. Andersen
- 2017 **B.S., Ecology and Evolutionary Biology**; minor in Computer Science
Department of Biology, University of Rochester
Advisor: Christian Rabeling

PROFESSIONAL EXPERIENCE

- 2020, 2023 Graduate Curatorial Assistant, Bird Division, Museum of Southwestern Biology
- 2018–2023 NSF Graduate Research Fellow, University of New Mexico
- 2022 Research Assistant, Andersen Lab, Department of Biology and Museum of Southwestern Biology, University of New Mexico
- 2021 Teaching Assistant, Anatomy and Physiology, Department of Biology, University of New Mexico
- 2021 Graduate Assistant, Center for Advanced Research Computer, University of New Mexico
- 2013–2014 Research Assistant, Field Museum of Natural History (summers only)
- 2012–2018 Volunteer Bird Preparator, Field Museum of Natural History (intermittent)

PEER-REVIEWED PUBLICATIONS

*Co-first authors

11. **Gyllenhaal EF**, Klicka LB, Baumann MJ, Burns KJ, Witt CC, Johnson AB, Andersen MJ. History of a discontinuous contact zone of Bell's Vireos on the Rio Grande. (*In prep*; Target Journal: *Ornithology*, submission December 2023)
10. **Gyllenhaal EF**, Brady SS, DeCicco LH, Naikatini A, Hime PM, Manthey JD, Kelly J, Moyle RG, Andersen MJ. Repeated Waves of Colonization and Hybridization in a Great Speciator. (*In prep*; Target Journal: *Systematic Biology*, submission September 2023)

9. Williamson JL, **Gyllenhaal EF**, Bauernfeind SM, Bautista E, Baumann MJ, Gadek CR, Marra PP, Ricote N, Valqui T, Bozinovic F, Singh ND, Witt CC. Extreme elevational migration spurs cryptic speciation in giant hummingbirds. (*In review, Proceedings of the National Academy of Sciences*)
8. **Gyllenhaal EF**, Klicka LB, DeCicco LH, Weeks BC, Moyle RG, Andersen MJ. Phylogeographic inference can be biased by island-mediated gene flow. (*In revision, Systematic Biology*)
7. Skeen H, Willard DE, Jones AW, Winger BM, **Gyllenhaal EF**, Tsuru BR, Hackett SJ, Novembre J (2023). Intestinal microbiota of Nearctic-Neotropical migratory birds more variable over seasons and years than between host species. *Molecular Ecology*, 32, 3290–3307. ([Link](#))
6. Tan DJX, **Gyllenhaal EF**, Andersen MJ (2022). PleistoDist: A toolbox for visualising and quantifying the effects of Pleistocene sea-level change on island archipelagos. *Methods in Ecology and Evolution*, 14(2), 496-504. ([Link](#))
5. McCullough JM, **Gyllenhaal EF**, Mapel XM, Andersen MJ, & Joseph L (2021). Taxonomic implications of recent molecular analyses of Spectacled (*Symposiachrus trivirgatus*) and Spot-winged (*S. guttula*) Monarchs (Passeriformes: Monarchidae). *Emu*, 121(4), 365–371. ([Link](#))
4. Williamson JL*, **Gyllenhaal EF***, Oliver KD, Brady SS, Johnson AB, Michelsohn MJ, & Andersen MJ (2021). Predictable outcomes of warbler hybridization: Synthesis and an exceptional Yellow × Black-throated Blue Warbler (*Setophaga petechia* × *S. caerulea*) pairing. *The Wilson Journal of Ornithology*, 133(1), 82–102. ([Link](#))
3. Andersen MJ, McCullough JM, **Gyllenhaal EF**, Mapel XM, Haryoko T, Jønsson KA, & Joseph L (2021). Complex histories of gene flow and a mitochondrial capture event in a nonsister pair of birds. *Molecular Ecology*, 30(9), 2087–2103. ([Link](#))
2. Mapel XM*, **Gyllenhaal EF***, Modak TH, DeCicco LH, Naikatini A, Utzurrum RB, Seamon JO, Cibois A, Thibault J, Sorenson MD, Moyle RG, Barrow LN, Andersen MJ (2020). Inter- and intra-archipelago dynamics of population structure and gene flow in a Polynesian bird. *Molecular Phylogenetics and Evolution*, 156, 107034. ([Link](#))
1. **Gyllenhaal EF**, Mapel XM, Naikatini A, Moyle RG, & Andersen MJ (2020). A test of island biogeographic theory applied to estimates of gene flow in a Fijian bird is largely consistent with neutral expectations. *Molecular Ecology*, 29(21), 4059-4073. ([Link](#))

GRANTS AND FELLOWSHIPS

Research grants and fellowships (\$117,423)

- 2022-23 Melinda Bealmer Memorial Scholarship, University of New Mexico (X 2, \$1,500 total)
- 2021-23 Grove Research Scholarship, University of New Mexico (X 3, \$4,400 total)
- 2022 Dr. William Jones and Dr. Siu Wong Biology Scholarship, University of New Mexico (\$1,500)
- 2021 American Ornithological Society Research Award (\$2,500)
- 2021-22 Student Research Grant, University of New Mexico (X 2, \$1,000 total)
- 2020 Graduate Research Fellowship Additional Funding (\$686)
- 2019 Graduate Research Fellowship Additional Funding (\$1,234)
- 2019 New Mexico Ornithological Society Research Grant (\$1,000)
- 2019-21 Biology Graduate Research Grant, University of New Mexico (X 2, \$800 total)
- 2018 The National Science Foundation's Graduate Research Fellowship (\$102,000)
- 2013 Research and Innovation Grant, University of Rochester (\$3,000)

Co-written grants (\$47,213)

- 2023 Graduate Student Research Award, Society of Systematic Biologists (\$3,000; co-written with two other graduate students)
- 2022 New Mexico Research Grant, University of New Mexico (\$5,000; co-written with two other graduate students)
- 2022 National Science Foundation, COVID Relief Supplement (\$28,713; Michael Andersen lead PI)
- 2019 Share With Wildlife, New Mexico Department of Game and Fish (\$10,500; Christopher Witt and Andrew Johnson lead PIs)

Travel funding (\$3,600)

- 2019-22 University of New Mexico Doctoral Travel Award (X 3, \$3,600 total)

TEACHING EXPERIENCE

Teaching Assistant

- 2021 Anatomy and Physiology 2 (BIOL 2225), Graduate TA, University of New Mexico
- 2016 Animal Behavior (BIO 260), Undergraduate TA, University of Rochester

Guest Lecture

- 2023 Wings, Tails, Feet, and Bills; Ornithology, University of New Mexico
- 2022 Reduced Representation Genomics: Stacks on CARC, Biodiversity Informatics, University of New Mexico (3 workshop-style lectures; [Link](#))
- 2018 Processing & analyzing UCE data, Phylogenetics, University of New Mexico

Computational Training

- 2023 Personal training for other researchers (1 Undergraduate, 1 Masters, 4 PhD, 1 post-Masters) in assembling and analyzing RADseq datasets.
- 2020-2022 Personal training for other graduate students (1 Masters, 2 PhD) using a tutorial of a parallelized variant-calling pipeline I developed ([Link](#))
- 2021 Training users on how to use high performance computing resources at the

University of New Mexico during research assistantship (focus on Unix, Python, and common bioinformatic pipelines)

Workshop Leader

- 2019 R Population Genetics: Population Assignment and Tests for Admixture, University of New Mexico (Spring)
 R Population Genetics: Population Structure with sNMF and adegenet, University of New Mexico (Fall)

ADVISING AND MENTORING

UNM = University of New Mexico

- 2023- **Jason Kitting**, undergraduate researcher, UNM.
Museum preparation and data techniques; DNA extractions; preparing specimens for a specific project; presenting museum work to the public.
- 2022- **Brenda Ramos Villanueva**, undergraduate researcher/collaborator, UNM.
Co-planned field work; laboratory techniques; preparing specimens for a specific project; analyzing and presenting data; assisted with designing independent project.
- 2022- **Kate Romero**, undergraduate researcher, UNM.
Museum preparation and data techniques; trained in general specimen preparation; advised in data collection for specimen-based project.
- 2022- **Jacob Weinreich**, undergraduate researcher, UNM.
Museum preparation and data techniques; trained in general specimen preparation.
- 2022 **Jonathan Mullins**, undergraduate researcher, UNM.
Museum preparation and data techniques; trained in preparing and accessioning specimens for specific project; advised in the analysis of behavioral data; advised in application for a fellowship.
- 2022-23 **Hunter Peck**, undergraduate researchers, UNM.
Museum preparation and data techniques; trained in general specimen preparation.
- 2021-22 **Mia Dimmette-Schweigert**, undergraduate researcher, UNM.
Museum preparation and data techniques; trained in preparing specimens for both specific and general projects.
- 2021-22 **Ariana Magana-Ramirez, Tony Powell**, undergraduate researchers, UNM.
Museum preparation and data techniques; trained in preparing specimens for specific project.
- 2020-22 **Colin Peña**, undergraduate researcher, UNM.
Museum preparation and data techniques; trained in preparing specimens for specific project; helped find current position and ad hoc advisement about professional career.
- 2017-18 **Jeffrey Coleman**, post-bac researcher, Field Museum of Natural History.
Wet lab techniques; trained in performing 96-well DNA extractions and PCR.

PRESENTATIONS

- 2023 **Gyllenhaal EF**, Brady SS, DeCicco LH, Naikatini A, Hime PM, Manthey JD, Kelly J, Moyle RG, Andersen MJ. Waves of Colonization and Hybridization in a Classic Archipelago Species Complex. American Ornithological Society Meeting, London, Ontario, Canada.
- 2023 **Gyllenhaal EF**, Brady SS, Naikatini A, Hime PM, Manthey JD, Kelly J, Moyle RG, Andersen MJ. Waves of Colonization and Hybridization in a Classic Archipelago Species Complex. Evolution (Mayr Award Symposium), Albuquerque, NM.
- 2022 **Gyllenhaal EF**, Klicka LB, DeCicco LH, Weeks BC, Moyle RG, Andersen MJ. The Importance of Gene Flow in Archipelagos: Case study in a Pacific island flycatcher. International Ornithological Congress, Virtual.
- 2022 **Gyllenhaal EF**, Johnson AB, Baumann MJ, Klicka LB, Burns KJ, Witt CC, Andersen MJ. History of a Discontinuous Contact Zone of Bell's Vireos on the Rio Grande. American Ornithological Society Meeting, San Juan, PR.
- 2021 **Gyllenhaal EF**, Klicka LB, DeCicco LH, Moyle RG, Andersen MJ. The Importance of Gene Flow in Archipelagos: Case study in a Pacific island flycatcher. American Ornithological Society Meeting, Virtual.
- 2021 **Gyllenhaal EF**, Klicka LB, DeCicco LH, Moyle RG, Andersen MJ. The Importance of Gene Flow in Archipelagos: Case study in a Pacific island flycatcher. Evolution, Virtual.
- 2020 **Gyllenhaal EF**. Crossing the Ocean: Gene Flow Between Sedentary Island Bird Populations. Brown Bag Seminar, University of New Mexico, Albuquerque, NM.
- 2020 **Gyllenhaal EF**, Mapel XM, McCullough JM, Naitakini A, Moyle RG, Andersen MJ. Crossing the Ocean: Gene Flow Between Sedentary Island Bird Populations. North American Ornithological Congress, Virtual.
- 2019 **Gyllenhaal EF**, Mapel XM, Andersen MJ. Asymmetric Gene Flow in an Understory Fijian Bird. American Ornithological Society Meeting, Anchorage, AK.

PUBLIC LECTURES

- 2022 **Gyllenhaal EF**, Gyllenhaal AF, Gyllenhaal ED. Patch Chat: Douglass Park (Anna and Frederick). Chicago Ornithological Society, Virtual.
- 2022 **Gyllenhaal EF**, Goldberg NR. Birding with the Elements. Chicago Ornithological Society, Virtual.

PROGRAMMING EXPERIENCE

Bash/HPC: Experience writing shell scripts for processing genomic data and running simulations, in addition to extensive command line usage and HPC job submission (Torque and Slurm). Includes extensive experience parallelizing computation with GNU Parallel.

Python: Favored programming language, mostly used for scripts to manipulate genomic and ecological data. Includes extensive experience using Conda environments.

R: Used to perform population genomic, phylogenetic, and other statistical analyses.

Eidos: Used for programming population genetic simulations in SLiM.

Java: Not currently used, took introductory programming and data structures courses in it.

C: Not currently used, used in computation and formal systems course.

HTML/CSS: Rarely used, learned in web development course.

MATLAB: Not currently used, learned in engineering programming course.

PROFESSIONAL ACTIVITIES AND OUTREACH

Peer review

2023 Systematic Biology (1)
 2022 Ornithology (1, co-reviewer)
 2022 Zoological Journal of the Linnean Society (1)
 2021 Ecology and Evolution (1)
 2021 G3 Genes| Genomes| Genetics (1)
 2021–2022 Conservation Genetics (2)
 2020 Evolution (1, co-reviewer)
 2020 Western Birds (1)
 2019 Systematic Biology (1, co-reviewer)
 2017 North American Bird Bander (1)

Grant review

2018–2023 UNM Biology Graduate Student Association Grants Program (18)

Positions Held

2023 Museum of Southwestern Biology Open House Bird Division Lead
 2020– Museum of Southwestern Biology Open House Planning Committee
 2021– United Grad Workers of UNM Biology Department Steward
 2022–2023 UNM Biology Graduate Student Association Graduate Student Selection Committee Representative
 2021–2022 UNM Biology Graduate Student Association Secretary
 2021–2022 UNM Biology Graduate Student Association Website Coordinator
 2019–2020 UNM Biology Graduate Student Association Grants Chair
 2019–2021 Illinois Ornithological Society Grants Committee Member
 2018–2021 Illinois Ornithological Society Board Member

Outreach

2019–2023 Field trip leader, Ornithology class, University of New Mexico

- 2019– Presenter, Museum of Southwestern Biology Open House
- 2018– Volunteer outreach, Museum of Southwestern Biology
- 2022– Walk leader, Museum of Southwestern Biology Nature Walks
- 2023 Guest presenter, Jefferson Middle School STEAM Extravaganza
- 2022 Panelist, Graduate Panel for UNM's Biology Undergraduate Society
- 2022 Panelist, Graduate Panel for Sevilleta LTER Research Experience for Undergraduates
- 2018 Bird expert and mentor, Douglas 18 (youth outreach program)
- 2012–2018 Volunteer outreach, Field Museum of Natural History
- 2010–2018 Volunteer birding walk leader, Chicago Ornithological Society

HONORS AND AWARDS

- 2023 Society of Systematic Biologists Ernst Mayr Award Finalist
- 2023 UNM Biology Research Day 1st Place for Best Graduate Student Poster
- 2022 UNM Biology Research Day 3rd Place for Best Graduate Student Talk
- 2019 UNM Biology Research Day Honorable Mention for Best Graduate Student Talk
- 2013–2017 University of Rochester Dean's List (8 of 8 semesters)

FIELD EXPERIENCE

- 2023 **Texas:** Davis Mountains, targeted sampling (assistant, 3 days)
- 2019–2023 **New Mexico:** Rio Grande Valley, hunter salvage (co-planner, 10 total days)
- 2023 **New Mexico:** Southeast corner, collecting (co-planner, 2 days)
- 2021–2022 **New Mexico:** Rio Grande Valley, hunter salvage (lead organizer, 8 total days)
- 2020–2022 **New Mexico, Colorado, Utah, California, and Arizona:** Varied mountain ranges, collection of piñon pine genetic samples and museum vouchers (assistant, 5 trips)
- 2020–2021 **New Mexico:** Sevilleta Field Station, monitoring piñons, junipers, and oaks (assistant, 5 trips)
- 2020 **New Mexico:** Southwest corner, collecting (co-planner, 4 days)
- 2018 **New Mexico:** Mount Taylor, collecting (assistant, 2 days)
- 2018 **Michigan:** Upper peninsula, collecting (assistant, 1 week)
- 2015 **Michigan:** Central lower peninsula, nest surveys (assistant, 2 months)
- 2012–2016 **Illinois:** Chicago suburbs, point counts (volunteer, 5 summers)

REFERENCES

Dr. Michael J. Andersen (advisor)

Associate Professor, Department of Biology, University of New Mexico, Albuquerque, NM
 Curator of Genomic Resources & Assistant Curator of Birds, Museum of Southwestern Biology

Email: mjandersen@unm.edu — Phone: 505-277-8017

Dr. Christopher C. Witt (committee member and collaborator)

Professor, Department of Biology, University of New Mexico, Albuquerque, NM

Curator of Birds & Director, Museum of Southwestern Biology

Email: cwitt@unm.edu — Phone: 505-918-7199

Dr. John M. Bates (past mentor)

Curator of Birds and Section Head of Life Sciences, Field Museum of Natural History, Chicago, IL

Email: jbates@fieldmuseum.org — Phone: 312-665-7730