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Ethan Linck

NSF Postdoctoral Research Fellow in Biology
Department of Biology & Museum of Southwestern Biology
University of New Mexico
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Education

Ph.D. 2019. **University of Washington,** Seattle, WA

B.A. 2013. **Reed College,** Portland, OR

Professional Appointments

NSF Postdoctoral Research Fellow in Biology. 2020. Department of Biology & Museum of Southwestern Biology, University of New Mexico.

Research Affiliate. 2019-2021. Taylor Lab, Department Ecology and Evolutionary Biology, University of Colorado, Boulder.

Postdoctoral Research Associate. 2019-2020. Department of Ecology & Evolutionary Biology, University of Tennessee, Knoxville.

National Defense Science and Engineering Graduate Fellow. 2016 - 2019. US Department of Defense.

Relevant Research Experience

NSF Postdoctoral Research Fellow in Biology—University of New Mexico (40+ hrs/week).
Supervisor: Chris Witt (OK to contact)

As a NSF Postdoctoral Research Fellow in Biology at the University of New Mexico, I obtained independent funding to develop and execute a research program into the molecular genetics of elevational ranges in mountain birds, integrating landscape and functional genomic data with large-scale physiological trait measurements to address a variety of basic and applied research questions related to ecological and evolutionary responses to global change in complex landscapes (e.g., Linck et al. 2021, *Biol. Lett.*). This research involved both coordinating international collaborations with academic biologists and directing a community science initiative that is expanding to include local conservation and resource management partners. Significant findings to date include evidence of selection to optimize blood-oxygen carrying capacity at upper and lower range limits (Linck et al. 2021, *bioRxiv*). Additional duties included popular science writing, mentoring graduate and undergraduate students, scientific peer review, giving oral presentations to diverse audiences and contributing to programmatic goals at the Museum of Southwest Biology.

Postdoctoral Research Associate—University of Tennessee (40+ hrs/week)
Supervisor: Kimberly Sheldon (OK to contact)

As a Postdoctoral Research Associate at University of Tennessee, Knoxville, I contributed molecular genetic expertise to an interdisciplinary research program focused on describing ecological and evolutionary responses to global change. Work included analysis and modeling of landscape genomic data to understand patterns of gene flow and genetic diversity in insects, microclimate monitoring with dataloggers across elevational gradients, and analysis and modeling of temporal measurements of vertebrate trait data across large spatial scales (Sheldon et al. *In review*). I directly supported logistics and long-term planning of an international field program, helped build capacity in computational biology, and managed undergraduate and graduate students during data collection. Significant findings include describing panmixia across elevational ranges in

thermally sensitive dung beetles (Linck et al. 2020 *Ecol. Evol.*). Additional duties included popular science writing, mentoring graduate and undergraduate students, scientific peer review and giving oral presentations to diverse audiences.

National Defense Science and Engineering Graduate Fellow—University of Washington (40+ hrs/week)
Supervisor: John Klicka (OK to contact)

My Ph.D. research at the Department of Biology at the University of Washington asked how landscapes shape genetic diversity, divergence history, and patterns of gene flow in mountain birds. This work addressed basic questions in ecology and evolutionary biology and delimited populations of conservation importance. Projects involved generating DNA sequence data with multiple wet lab approaches, building reproducible bioinformatic pipelines, and performing analyses with tools such as clustering algorithms, coalescent and forward-time simulators, and species tree approaches. Significant findings include discovering paraphyly in western *Empidonax* flyctachers (Linck et al. 2019 *Syst. Biol.*), describing divergence and gene flow in montane kingfisher species (Linck et al. 2020 *J. Evol. Biol.*), and describing the influence of minor allele frequency filters on population genetic inference (Linck & Battey 2019 *Mol. Ecol. Res.*) Additional duties included scientific peer review, seeking and obtaining independent funding, mentoring undergraduate students, giving regular oral presentations to both scientist and nonscientist audiences, and contributing to programmatic goals at the Burke Museum of Natural History & Culture.

Publications

16) Pujolar, J.M., Blom, M.P.K., Reeve, A.H., Kennedy, J.D., Marki, P.M., Freeman, B.G., Sam, K., **Linck, E.**, Haryoko, T., Iova, B., Koane, B., Maia, G., Paul, L., Irestedt, M., Jønnson, K.A. *In press.* Barriers and gradients: the formation of montane diversity. *Nature Communications.*

15) **Linck, E.**, Freeman, B.G., Cadena, C.D., Ghalambor, C.K. 2021. Evolutionary conservatism will limit responses to climate change in the tropics. *Biology Letters* 17(10), 20210363.

14) Semenov, G.A., **Linck, E.**, Enbody, E.D., Harris, R.B., Khaydarov, D.R., Alström, P., Andersson, L., Taylor, S.A. 2021. Asymmetric introgression reveals the genetic architecture of a plumage trait. *Nature Communications* 12, 1019.

13) Mamantov, M.A., Gibson-Reinemer, D.K., **Linck, E.**, Sheldon, K.S. 2021. Climate-driven range shifts of montane species vary with elevation. *Global Ecology and Biogeography* 30(4), 784-794.

12) **Linck, E.**, Freeman, B.G., Dumbacher, J.P. 2020. Speciation and gene flow across an elevational gradient in New Guinea kingfishers. *Journal of Evolutionary Biology* 33(11), 1643-1652.

11) **Linck, E.**, Fricke, E., Rogers, H. 2020. Varied abundance and functional diversity in the surviving bird communities of the Mariana Islands. *The Wilson Journal of Ornithology* 132(1), 22-28.

10) **Linck, E.**, Celi, J.E., Sheldon, K.S. 2020. Panmixia across elevation in thermally sensitive Andean dung beetles. *Ecology and Evolution* 10(9), 4143-4155.

9) **Linck, E.**. 2020. Bird Species: How They Arise, Modify and Vanish. *The Auk* 137, 1-2.

8) **Linck, E.**, Epperly, K., van Els, P., Spellman, G.M., Bryson Jr., RW., Canales-del-Castillo, R., McCormack, J.E., Klicka, J. 2019. Dense geographic and genomic sampling reveals paraphyly and a cryptic lineage in a classic sibling species complex. *Systematic Biology* 68(6), 956-966.

7) **Linck, E.**, Battey, C.J. 2019. Minor allele frequency thresholds strongly affect population structure inference with genomic datasets. *Molecular Ecology Resources* 19(3), 639-647.

6) **Linck, E.**, Huber, H.C., Greeney, H.F., Sheldon, K.S. 2019. Nesting biology of the Blue-and-white Swallow (*Pygochelidon cyanoleuca*) in northeastern Ecuador. *Ornitología Neotropical* 30, 5-10.

5) Battey, C.J., **Linck, E.**, Epperly, K.L., French, C., Slager, D., Klicka, J. 2018. A Migratory Divide In The Painted Bunting (*Passerina ciris*). *The American Naturalist* 191(2), 259-268.

4) **Linck, E.**, Hanna, Zachary R., Sellas, A., Dumbacher, J.P. 2017. Evaluating hybridization capture with RAD probes as a tool for museum genomics with historical bird specimens. *Ecology and Evolution* 7(8).

3) **Linck, E.**, Bridge, E.S., Duckles, J., Navarro-Sigenza, A.G., Rohwer, S. 2016. Assessing migration patterns in Painted Buntings using the world's bird collections as an aggregated resource. *PeerJ* 4:e1871.

2) **Linck, E.**, Schaack, S., Dumbacher, J. 2015. Genetic differentiation within a widespread "supertramp" taxon: molecular phylogenetics of the Louisiade White-eye (*Zosterops griseotinctus*). *Molecular Phylogenetics and Evolution* 94(A), 113-121.

1) **Linck, E.** 2010. Notes on birds and logistics from the south side of Mount Giluwe, SHP. *Muruk* 10(1), 4-7.

In Review

Williamson, J.L., **Linck, E.B.**, Bautista, E., Smiley, A., McGuire, J.A., Dudley, R., Witt, C.C. *Submitted.* Oxygen availability drives blood-hemoglobin content and the cell number-size tradeoff across the Andean hummingbird radiation. *Nature Ecology & Evoltution.*

Linck, E.B., Williamson, J.L., Bautista, E., Beckman, E.J., Benham, P.M., DuBay, S.G., Flores, L.M., Gadek, C.R., Johnson, A.B., Jones, M.R., Núñez-Zapata, J., Quiñonez, A., Schmitt, C.J., Susanibar, D., Tiravanti, J., Verde-Guerra, K., Wright, N.A., Valqui, T., Storz, J.F., Witt, C.C. *In revision.* Blood variation implicates respiratory limits on elevational ranges of Andean birds. *The American Naturalist.*

Sheldon, K.S., **Linck, E.B.**, Giam, X., McGee, M.R., Arendt, W., Brawn, J.D., DeGroote, L.W., Humple, D.L., Jirinec, V., Rutt, C.L., Stouffer, P.C., Tarwater, C.E., Toms, J.D. *In revision.* Bird body size declines associated with climate warming are greatest in the tropics. *Nature Communications.*

Linck, E., Battey, C.J. *In revision.* On the relative ease of speciation with periodic gene flow. *The American Naturalist. bioRxiv* DOI: 10.1101/758664

Grants, Awards, & Fellowships

American Ornithological Society Kessel Fellowship (*declined*). 2019. $15,000.

NSF Postdoctoral Research Fellowship in Biology. 2019. $138,000.

John S. Edwards Endowed Fund in Biology. 2018. $1,500.

John S. Edwards Endowed Fund in Biology. 2018. $1,500.

Hoag Endowed Graduate Fellowship. 2018. $1,500.

American Museum of Natural History Chapman Grant. 2018. $2,000.

NSF Doctoral Dissertation Improvement Grant. 2017. $20,084.

NDSEG Fellowship. 2016. $172,000.

WRF-Hall Fellowship. 2016. $13,000.

WRF-Hall Supplemental Funds. 2016. $5,100.

Society of Systematic Biologists Graduate Student Research Award. 2015. $1,500

Reed College BURP Fund. 2012. $1,500.

Reed College Arch and Fran Diack Student Field Research Fund. 2010. $4,200.

Explorers Club Youth Activity Fund. 2009. $1,500.

Other Grantwriting Experience

Global Phenotypic Flexibility in House Sparrows: Are Climate and Metabolic Flexibility Correlated? Co-PI with D. Swanson and B. Wone. Full proposal submitted to **NSF Division of Integrative Organismal Systems** Not funded.

Teaching Experience

As Teaching Assistant:

Biology 472: Community Ecology. Fall 2015. Department of Biology, University of Washington.

Biology 452: Vertebrate Biology. Summer 2015. Department of Biology, University of Washington.

Biology 200: Introductory Biology II. Fall 2014. Department of Biology, University of Washington.

Biology 180: Introductory Biology I. Winter 2015, Spring 2015, Winter 2016. Department of Biology, University of Washington.

Biology 366: Population Ecology and Evolution. Spring 2013. Department of Biology, Reed College.

As Workshop Instructor:

BioFrontiers QED Supergroup: "Basic population genomic analysis in Python and R." 2019. University of Colorado, Boulder.

Pedagogical Tools:

Translated Darren Irwin's R program `HZAM` for simulating hybrid zones with assortative mating into an interactive Shiny App: https://elinck.shinyapps.io/hzam_shiny/

Honors

NSF GRFP Honorable Mention. 2016.

NSF GRFP Honorable Mention. 2015.

Commendation for Excellence, Reed College Junior Qualifying Exam. 2011.

Invited Presentations

Linck, E. 2020. Niche conservatism, speciation, and range limits on tropical mountainsides. Louisiana State University Museum of Natural Science Seminar Series, Baton Rouge, LA.

Linck, E. 2019. Niche conservatism, speciation, and range limits on tropical mountainsides. Louisiana State University Museum of Natual Science Seminar Series, Baton Rouge, LA.

Sheldon, K.S., **Linck, E.** (Joint presentation.) 2019. Fisiología térmica, distribuciones y especiación en los trópicos. Universidad Regional Amazónica Ikiam Seminar Series, Tena, Napo, EC.

Linck, E. 2019. Confronting the Recreation-Conservation Divide: A Dialogue (Stegner Lecture). University of Utah Law School Wallace Stegner Center 24th Annual Symposium - Recreation Challenges on Public Lands, Salt Lake City, UT.

Linck, E. 2019. Natural selection, gene flow, and complexity in avian speciation. Pacific Lutheran University Biology Seminar, Tacoma, WA.

Linck, E. 2018. Outdoor Recreation and Land Ethics for the 21st Century. Restoring the West: Multiple Use and Sustained Yield of Resources on Public Land: Is It Still Possible?, Logan, UT.

Linck, E., Freeman, B.G., Dumbacher, J., Klicka, J. 2018. What we talk about when we talk about speciation with gene flow in birds. University of New Mexico Brown Bag Seminar, Albuquerque, NM.

Linck, E., Freeman, B.G., Dumbacher, J., Klicka, J. 2017. Why are there so many bird species in tropical mountains? Insights from genomics and New Guinea kingfishers. University of the South Pacific PaCE-SD Seminar, Suva, Fiji.

Contributed Presentations

Linck, E.. 2021. Respiratory plasticity and elevational range breadth in Andean birds. American Ornithological Society Meeting.

Linck, E.. 2020. Early Professionals Mini-Talk Symposium. North American Ornithological Congress VII. Virtual.

Linck, E., Celi, J.E., Sheldon, K.S. 2019. Climate as a barrier to dispersal over mountain passes: is gene flow reduced across elevational gradients in tropical Andean beetles? Ecological Society of America Meeting, Louisville, KY.

Linck, E., Battey, C.J. 2019. Pleistocene glacial cycles and the relative ease of speciation with periodic gene flow. American Ornithological Society Meeting, Anchorage, AK.

Linck, E., Freeman, B.G., Dumbacher, J., Klicka, J. 2018. Ecological speciation across an elevational gradient in New Guinea Kingfishers? American Ornithological Society Meeting, Tucson, AZ.

Battey, C.J., **Linck, E.**, Epperly, K.L., French, C., Slager, D., Klicka, J. 2017. A Migratory Divide In The Painted Bunting (*Passerina ciris*). (Co-presented poster.) Evolution Meetings, Portland, OR.

Linck, E., Sellas, A., Hanna, Z., Dumbacher, J. 2016. hyRAD, museum genomics, and the phylogeography of a New Guinea forest kingfisher. Evolution Meetings, Austin, TX.

Other Academic Presentations

Linck, E. 2019. Humans, nature, and biodiversity conservation in Melanesia. Graduate Student Symposium, UW Biology, Seattle, WA.

Linck, E., Battey, C.J.. 2018. One weird trick to break *structure*: Derived allele frequencies and the accurate inference of ancestry. Graduate Student Symposium, UW Biology, Seattle, WA.

Battey, C.J., **Linck, E.**, Epperly, K.L., French, C., Slager, D., Klicka, J. 2017. A Migratory Divide In The Painted Bunting (*Passerina ciris*). (Presenting author.) Rocky Mountain Biology Laboratory Graduate Student Talks, Gothic, CO.

Linck, E. 2017. Phenotype, species limits, and adaptation in a New Guinea kingfisher. Graduate Student Symposium, UW Biology, Seattle, WA.

Linck, E., Bridge, E.S., Duckles, J., Navarro-Sigenza, A.G., Rohwer, S. 2016. Assessing migratory behavior in Painted Buntings with specimen collections and remote sensing data. Rocky Mountain Biology Laboratory Graduate Student Talks, Gothic, CO.

Linck, E., Klicka, J., Zarza, E., Bryson Jr., R., McCormack, J. 2016. Phylogenomic phylogeography of the Rufous-capped Brush Finch. Graduate Student Symposium, UW Biology, Seattle, WA.

Urquhart, G.R., Maes, J.M., **Linck, E.** 2015. Critical Uncertainties and Gaps in the Environmental and Social-Impact Assessment of the Proposed Interoceanic Canal through Nicaragua: Terrestrial Biodiversity. Second International Workshop on the Interoceanic Canal through Nicaragua, Managua, Nicaragua. (Panel presentation.)

Linck, E. 2015. Guest Lecture: Island Biogeography. Biology 472: Community Ecology, UW Biology, Seattle, WA.

Linck, E. 2013. Molecular Phylogenetics of the Louisiade White-eye (*Zosterops griseotinctus.*) California Academy of Sciences Summer Systematics Institute Symposium, San Francisco, CA.

Linck, E. 2013. Molecular Phylogenetics of the Louisiade White-eye (*Zosterops griseotinctus.*) Oral Thesis Defense, Reed College, Portland, OR.

Linck, E., Schaack, S., Dumbacher, J. 2013. Molecular Phylogenetics of the Louisiade White-eye (*Zosterops griseotinctus.*) Students Talking About thesis Research (STARs) Seminar Series, Reed College, Portland, OR.

Public Presentations

Linck, E. 2017. Natural history museums, DNA, and avian evolution. Trilogy Bird Club, Redmond, WA.

Linck, E. 2017. Natural history museums, DNA, and avian evolution. Eastside Audubon Society, Kirkland, WA.

Selected Popular Writing

Cataclysms to Desolate the World. 2021. *Hypocrite Reader* 96.

Throwing wolves to the vote. 2020. *High Country News.*

Your stoke won't save us. 2018. *High Country News.*

Darwinian Sexual Selection and the Politics of Beauty 2018. *Los Angeles Review of Books.*

Bidding a Woeful Farewell to NSF's Doctoral Dissertation Improvement Grant (DDIG) Program 2017. *Undark Magazine.*

Food Evolution (Review). 2017. *The Stranger.*

Keep it Public. 2017. *Jacobin Magazine.*

How Trump's War on Science Might Hurt the University of Washington. 2017. *The Stranger.*

El Oso Plateado. 2014. *Hypocrite Reader* 39.

Field Experience

New Mexico, USA 2020. Point count surveys breeding bird elevational ranges as part of the Mountain Bird Network.

Napo Province, Ecuador 2020. Collecting climate data for postdoctoral research with K. Sheldon.

Napo Province, Ecuador 2019. Collecting dung beetles for postdoctoral research with K. Sheldon.

Madang Province, Papua New Guinea. 2018. Collecting genetic material for dissertation research.

E Oregon, USA. 2018. General collecting for UWBM Ornithology.

Napo Province, Ecuador 2018. Collecting dung beetles for collaboration with K. Sheldon.

Chimbu Province, Papua New Guinea. 2017. Collecting genetic material for dissertation research.

E Oregon, USA. 2017. General collecting for UWBM Ornithology.

Idaho & SE Washington, USA. 2015. General collecting for UWBM Ornithology.

Colorado, USA. 2014. Managing Boechera garden plots along an elevational transect.

Colorado, USA. 2013-2014. Winter caretaker at snowbound Rocky Mountain Biological Laboratory field station.

Monteverde, Costa Rica. 2012. Bird surveys of pasture trees and pitfall trapping of dung beetles.

Northern Mariana Islands, USA. 2011. Point count bird surveys and forest ecology.

Sandaun Province, Papua New Guinea. 2010. Mist netting and point count bird surveys.

Oregon, USA. 2010. Bird banding assistant at a wetland molt migrant stopover site.

Michoacan, Mexico. 2010. Assistant naturalist, Expedition Travel / University of Florida group tour of Monarch butterfly colonies.

Southern Highlands Province, Papua New Guinea. 2009. Naturalist in residence, Ambua Lodge.

Gulf Province, Papua New Guinea. 2008. GIS mapping of clan boundaries, Crater Mountain Wildlife Management Area.

Outreach & Service

Natural History Museum Collections
- Periodic preparation of scientific bird specimens for UWBM collections
- Annual participation in UWBM collecting expeditions
- Tour guide for UW Introductory Biology field trips to UWBM specimen collections
- Regularly helped run the Burke Museum's "Members Night" and "Birds at the Burke" outreach events

Service
- Organizer for a graduate student seminar on phylogenetics (2015)
- Organizer of a remote reading group on Andean ornithology (2020)
- Host for prospective graduate students (2015, 2016, 2017, 2018)
- Committee member, Graduate-led Action on Diversity and Equity (2018)

Contributions to the field
- Multiple articles for the *The Molecular Ecologist*, a field-specific news, literature and methods tutorial website (http://www.molecularecologist.com/)
- Peer reviewer, *The Auk*, *Systematic Biology*, *Molecular Ecology*, *Evolution*, *Evolution Letters*, *The American Naturalist*, *Molecular Ecology Resources*, *Molecular Phylogenetics and Evolution*, *PeerJ*, *Axios Review*, *Ecological Applications*, *PLoS ONE*, *Conservation Genetics*, *Ecosphere*, *Heredity*, *Genes, Genomes, Genetics*, *Proceedings of the Royal Society B*, *The Wilson Journal of Ornithology*, *Journal of Biogeography*, *Bulletin of the British Ornithologists' Club*, *Ecological Entomology*, *Emu*, *Ecology and Evolution*, *Journal of Caribbean Ornithology*, *Biology Letters*, *Revista de Biología Tropical*, *Biotropica*, Society of Systematic Biology Graduate Student Research Award - Scripts publicly available on GitHub (http://github.com/elinck)
- Sequence data publicly available on GenBank / Dryad

Society Membership

The Society for the Study of Evolution, The American Society of Naturalists, The Society of Systematic Biologists, The American Ornithological Society

Graduate Committee

J. Klicka; J. Hille Ris Lambers; R. Olmstead; L. Hauser