

Kimberly J. Gilbert | CV

Computational and Molecular Population Genetics Lab
Institute of Ecology and Evolution – University of Bern
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Population geneticist & evolutionary biologist

Employment

EMBO Post-doctoral Fellow

University of Bern

Advisor: Prof. Dr. Laurent Excoffier

2017 – Present

Bern, Switzerland

EEB Post-doctoral Fellow

University of Toronto

Advisors: Dr. Aneil F. Agrawal, Dr. Stephen I. Wright

2016 – 2017

Toronto, Ontario

Education

Ph.D. Zoology

University of British Columbia

Advisor: Dr. Michael C. Whitlock

Dissertation title: Understanding local adaptation and effective population size in the face of complex demographic history

Sep 2011 – Oct 2016

Vancouver, British Columbia

B.Sc. Biology

University of Virginia

Graduated with Distinction

Specialization in environmental & biological conservation

2006 – 2010

Charlottesville, Virginia

Publications

Peischl S, **Gilbert KJ** (*Submitted*) Evolution of dispersal can rescue populations from expansion load. *The American Naturalist* #58906 & available on *BioRxiv*: <https://www.biorxiv.org/content/early/2018/11/30/483883>

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15. **Gilbert KJ**, Peischl S, Excoffier L (2018) Mutation load dynamics during environmentally-driven range shifts. *PLOS Genetics*, 14(9): e1007450. <https://doi.org/10.1371/journal.pgen.1007450>.
14. Antonovics J, Abbate J, Bruns E, Fields PD, Forrester N, **Gilbert KJ**, Hood M, Park T, Taylor DR (2018) Effect of the anther-smut fungus *Microbotryum* on the juvenile growth of its host *Silene latifolia*. *American Journal of Botany*, 105(6), 1088-1095.
13. Peischl S, Dupanloup I, Foucal A, Jomphe M, Bruat V, Grenier J-C, Gouy A, **Gilbert KJ**, Gbeha E, Bosshard L, Hip-Ki E, Agbessi M, Hodgkinson A, Vézina H, Awadalla P, Excoffier L (2018) Relaxed selection during a recent human expansion. *Genetics*, 208(2), 763-777.
12. **Gilbert KJ**, MC Whitlock. (2017) The genetics of adaptation to discrete heterogeneous environments: Frequent mutation or large effect alleles can allow range expansion. *Journal of Evolutionary Biology*, 30(3), 591-602. doi:10.1111/jeb.13029.

11. **Gilbert KJ**, NP Sharp, AL Angert, GL Conte, JA Draghi, F Guillaume, AL Hargreaves, R Matthey-Doret, MC Whitlock. (2017) Local maladaptation reduces expansion load during range expansion. *The American Naturalist*, 189(4), 368-380, doi:10.1086/690673.
10. **Gilbert KJ** (2016) Identifying the number of population clusters with STRUCTURE: Problems and solutions. *Molecular Ecology Resources*, 16(3), 601-603.
9. **Gilbert KJ**, MC Whitlock (2015) Evaluating methods for estimating local effective population size with and without migration. *Evolution*, 68(8), 2154-2166.
8. Santiso X, L Lopez, **KJ Gilbert**, R Barreiro, MC Whitlock, R Retuerto (2015) Patterns of genetic variation within and among populations in *Arbutus unedo* and its relation with selection and evolvability. *Perspectives in Plant Ecology, Evolution and Systematics*, 17(3), 185-192.
7. **Gilbert KJ**, MC Whitlock (2015) Q_{ST} - F_{ST} comparisons with unbalanced half-sib designs. *Molecular Ecology Resources*, 15(2), 262-267.
6. Caplins SA, **KJ Gilbert**, C Ciotir, J Roland, SF Matter, N Keyghobadi (2014) Landscape structure and the genetic effects of a population collapse. *Proceedings of the Royal Society B*. 281: 20141798; doi: 10.1098/rspb.2014.1798
5. Vines TH, AYK Albert, RL Andrew, F Débarre, DG Bock, MT Franklin, **KJ Gilbert**, J-S Moore, S Renaut, DJ Rennison (2014) The availability of research data declines rapidly with age. *Current Biology*, 24, 94-97.
4. Vines TH, RL Andrew, DG Bock, MT Franklin, **KJ Gilbert**, NC Kane, EJ Kleynhans, J-S Moore, BT Moyers, S Renaut, DJ Rennison, T Veen, S Yeaman (2013) Mandated archiving greatly improves access to research data. *FASEB Journal*, 27(4), 1304-1308.
3. **Gilbert KJ**, RL Andrew, DG Bock, MT Franklin, NC Kane, J-S Moore, BT Moyers, S Renaut, DJ Rennison, T Veen, TH Vines (2012) Recommendations for utilizing and reporting population genetic analyses: The reproducibility of genetic clustering using the program STRUCTURE. *Molecular Ecology*, 21(20), 4925-4930.
2. Keller SR, **KJ Gilbert**, PD Fields, DR Taylor (2012) Bayesian inference of a complex invasion history revealed by nuclear and chloroplast genetic diversity in the colonizing plant, *Silene latifolia*. *Molecular Ecology*, 21(19), 4721-4734.
1. Whitlock MC, **KJ Gilbert** (2012) Q_{ST} in a hierarchically structured population. *Molecular Ecology Resources*, 12(3), 481-483.

Awards & Funding

Honorable Mention – Best student paper, <i>The American Naturalist</i> <i>Gilbert et al. 2017</i>	2018
EMBO Long-term Post-doctoral Fellowship <i>143,400 CHF</i>	2017 – 2019
Ecology and Evolutionary Biology Post-doctoral Fellowship <i>University of Toronto \$40,500 CAD Accepted in part</i>	2016 – 2017
Declined – NSF Post-doctoral Research Fellowship <i>National Plant Genome Initiative \$210,000 USD</i>	2016 – 2019
Cordula and Gunter Paetzold Fellowship <i>University of British Columbia \$18,000 CAD</i>	2015 – 2016
Declined – Zoology Graduate Fellowship <i>University of British Columbia \$16,000 CAD</i>	2015 – 2016
Ann and William Messenger Graduate Fellowship <i>University of British Columbia \$700 CAD</i>	2015
Zoology Graduate Fellowship <i>University of British Columbia \$11,000 CAD</i>	2014 – 2015

Frieda Granot Graduate Scholarship in Interdisciplinary Research <i>University of British Columbia \$200 CAD</i>	2013 – 2014
Theodore E Arnold Fellowship <i>University of British Columbia \$7,750 CAD</i>	2013 – 2014
Patrick David Campbell Graduate Fellowship <i>University of British Columbia \$8,050 CAD</i>	2013 – 2014
Zoology Graduate Fellowship <i>University of British Columbia \$11,000 CAD</i>	2013 – 2014
Zoology Graduate Student Travel Award <i>University of British Columbia \$500; \$500; \$400 CAD</i>	2013, 2014, 2016
BRITE Fellowship <i>University of British Columbia \$21,000 CAD</i>	2011 – 2013

Presentations & Workshops

Invited.....

Mutation load dynamics during environmentally-driven range shifts <i>EAWAG Kastanienbaum - Aquatic ecology & macroevolution seminar series</i> <i>“Evolution on the edge: eco-evolutionary dynamics” ESEB symposium</i> <i>Institute of Science and Technology (IST) Austria</i>	Apr., Aug., Nov. 2018 <i>Luzern, Switzerland</i> <i>Montpellier, France</i> <i>Vienna, Austria</i>
Species range shifts and local adaptation <i>AndinA workshop</i> 35-member international working group combining ecological and evolutionary disciplines to further understanding of range expansions and local adaptation	January 2018 <i>Bariloche, Argentina</i>
Local adaptation, expansion load, and mutation load <i>University of Basel – Botanical Colloquium</i> <i>Uppsala University</i>	Sept., Oct. 2017 <i>Basel, Switzerland</i> <i>Uppsala, Sweden</i>
The genetics of adaptation during expansion across heterogeneous environments <i>University of Zürich; Behaviour, Ecology, Environment, and Evolution Seminar Series</i>	April 2017 <i>Zürich, Switzerland</i>
Local maladaptation reduces expansion load during species range expansion <i>CSEE “Theoretical ecology and evolutionary biology” symposium</i>	July 2016 <i>St. John’s, Newfoundland</i>
Data availability, archiving, and scientific reproducibility <i>American Society of Mammalogists Annual Conference</i> <i>“Big data meets mammalogy: how to find and share data” symposium</i>	June 2016 <i>Minneapolis, MN</i>
Population genetic inference in the face of demographic history <i>University of Bern</i>	August 2015 <i>Bern, Switzerland</i>
Estimating effective population size and the reproducibility of science <i>Monash University</i> <i>Duke University Pop Bio Seminar Series</i>	Feb. 2015, Dec. 2014 <i>Melbourne, VIC, Australia</i> <i>Durham, NC</i>
Reproducible Science Hackathon <i>NESCent Working Group</i> 21-member working group aiming to develop a curriculum and workflow for teaching reproducible science	December 2014 <i>Durham, NC</i>
SimBank <i>NESCent Catalysis Meeting</i> 25-member working group aiming to create a collection of openly available simulation results to facilitate testing of statistical population genetic and phylogeographic methods	November 2014 <i>Durham, NC</i>

Contributed

Recovery from expansion load is limited during species range shifts <i>CeMEB Assembly: Biological invasions & range expansions from an evolutionary perspective</i>	2017 Tjärno, Sweden
Mutation load across mating systems: how does load change and how is it best estimated <i>SMBE Meeting - talk</i> <i>Evolution Meeting - talk</i>	2017 Austin, TX Portland, OR
Local maladaptation reduces expansion load during species range expansion <i>Evolution Meeting - talk</i>	2016 Austin, TX
Local adaptation and range expansions <i>SFU-UBC-UVic-UW Ecology and Evolution Retreat - talk</i>	2015 Brackendale, BC
Validating SNP loci underlying local adaptation in lodgepole pine <i>15th ESEB Congress - poster</i>	2015 Lausanne, Switzerland
Evaluating methods to estimate effective population size in the presence of migration <i>Evolution Meeting - talk</i> <i>Evo-WIBO Conference (Evolutionary Biology in the Pacific Northwest) - talk</i>	2014 Raleigh, NC Port Townsend, WA
Estimating effective population size in natural populations <i>Evolution Meeting - talk</i> <i>SFU-UBC-UVic Ecology and Evolution Retreat - talk</i>	2013 Snowbird, UT Brackendale, BC
Effective population size estimates in a metapopulation of <i>Silene latifolia</i> <i>1st Joint Congress on Evolutionary Biology - poster</i>	2012 Ottawa, ON
Range expansion and adaptation across heterogeneous environments <i>Landscape Genetics Symposium, CIEE Graduate Mini-Course - talk</i> <i>Evo-WIBO Conference (Evolutionary Biology in the Pacific Northwest) - poster</i>	2012 Toronto, ON Port Townsend, WA
Inferred invasion history of <i>Silene latifolia</i> into North America <i>13th ESEB Congress - poster</i> <i>SFU-UBC-UVic Ecology and Evolution Retreat - poster</i>	2011 Tuebingen, Germany Brackendale, BC

Teaching Experience

Introduction to R Programming and Analyses <i>Teaching assistant for practicals in R for biology undergraduates</i>	Fall 2018 University of Bern
Molecular Population Genetics Practical <i>Teaching assistant for practicals in molecular data analysis for biology undergraduates</i>	Spring 2018 University of Bern
Statistics for Biology <i>Teaching assistant for practicals in statistics for biology undergraduates</i>	Spring 2017, 2018 University of Bern
Fundamentals of Biostatistics <i>BIOL 300</i> Statistical procedures for biological research; estimation, hypothesis testing, goodness of fit, analysis of variance and regression; use of computers for statistical analysis Two sections (70 students total) in 2013, one section (36 students) in 2014, one section (36 students) in 2015. Lab coordinator for 254 students enrolled in 2014 and for 275 students enrolled in 2015.	Fall 2013, 2014, 2015 UBC
Guest Lecture – Quantitative Methods in Ecology and Evolution <i>BIOL 548</i> Guest lecture on making maps in R	January 2013 UBC
Fundamentals of Evolutionary Biology <i>BIOL 336</i>	Fall 2012, Spring 2013 UBC

Discussion-based tutorial covers natural selection, population genetics, quantitative genetics, systematics, and classical and molecular approaches to the study of evolution
 Three discussion sections of 45 students total per semester

Volunteer & Outreach

- Subject Editor** **2018 – 2021**
Molecular Ecology, Molecular Ecology Resources
- Reviewer:** *American Naturalist, Evolution, Evolution Letters, New Phytologist, Molecular Ecology, Molecular Ecology Resources, Proceedings B, TREE, Heredity, Ecology and Evolution, Conservation Biology, Biological Invasions, PeerJ, Ecography, Tree Genetics & Genomes, Communications Biology, Frontiers in Plant Science*
- IEE Junior Staff Seminar Series** **2017 – Present**
One of six junior staff organizing the invited lecture series in ecology and evolution
- Symposium co-organizer** **2018**
Joint 2018 ESEB-SSE-ASN-SSB meeting in Montpellier, France
 Co-organized with Drs. Nathaniel Sharp, Frédéric Austerlitz, and Paul Verdu a symposium entitled "From theory to genome-wide data: inferring selection, demography, gene flow and admixture"
- Graduate Student Council Member** **2013 – 2016**
American Society of Naturalists
 Council Chair for 2015-2016 term
 Organized the student-mentor mixer at the 2016 Evolution Meeting in Austin, TX
 Organized the student-mentor mixer at the 2014 Evolution Meeting in Raleigh, NC
 Served on the workshops committee for ASN-sponsored workshops
- Journal club organizer**
UBC Evolution Discussion Group (EDG) weekly reading group **2014 – 2015**
Evolution discussion group at University of Bern, Institute of Ecology and Evolution **2017 – Present**
- Faculty Search Committee: Graduate Student Representative** **2014**
Evolutionary biology CRC2 job search for the Department of Zoology, University of British Columbia
- Volunteer mist-netting and bird banding** **2013 – 2016**
Wild Research *Iona Island Bird Observatory, Vancouver, BC*
 Participate in winter, spring migration, and fall migration bird monitoring
 Teach proper bird handling, aging, data collection, and mist net extraction techniques to new volunteers
 Assist in teaching other volunteers and visitors to the station about the species conservation and monitoring, and the general tasks of running a banding station

Previous Research Experience

- Independent Study & Research Technician** **Sep. 2009 – June 2011**
University of Virginia
 Genetic analysis of metapopulation processes in the *Silene-Micobotryum* host-pathogen system
 Supervisors: Dr. Douglas R. Taylor, Dr. Peter D. Fields, Dr. Janis Antonovics
- Field Technician & Research Assistant** **May 2009 – August 2009**
Blandy Experimental Farm, University of Virginia
 Field research on effects of tropospheric ozone on native vs. invasive tree species
 Supervisors: Dr. David E. Carr, Dr. Eric E. Elton
- MAPS Bird Banding Intern** **May 2008 – August 2008**
Monitoring Avian Productivity and Survivorship – The Institute for Bird Populations
 Mist-netting, banding, and processing passerines and near-passerines during summer breeding season to monitor populations of local species
 Supervisor: James Junda, M.Sc.