

## Tom R. Booker

---

CONTACT INFORMATION      University of British Columbia, Vancouver      778-751-4586 (Cell)  
booker@zoology.ubc.ca      <https://tbooker.github.io/>

EMPLOYMENT      **University of British Columbia**, Vancouver, Canada  
- Bioinformatics Postdoctoral Fellow (Oct 2021 - October 2023)  
**University of Calgary**, Calgary, Canada  
- Postdoctoral Research Fellow (March - October 2021)  
- Supervised by Professor Michael Whitlock and Associate Professor Sam Yeaman  
**University of British Columbia**, Vancouver, Canada  
- Postdoctoral Research Fellow (Sept 2018 - March 2021)  
- Supervised by Professor Michael Whitlock and Associate Professor Sam Yeaman

EDUCATION      **University of Edinburgh**, Edinburgh, Scotland  
  
PhD., [Evolutionary Genetics](#), October 2014 - October 2018  
- Thesis Title: UNDERSTANDING PATTERNS OF GENETIC DIVERSITY IN THE HOUSE MOUSE GENOME  
- Supervisors: Professor Peter Keightley and Professor Brian Charlesworth  
- Spring 2018: visiting student at UBC hosted by Professor Sarah Otto  
  
MSc., [Evolutionary Genetics](#), 2013 - 2014 (Distinction)  
- Thesis Title: SEARCHING FOR BALANCING SELECTION ON A MIMICRY SUPERGENE IN THE BATESIAN MIMIC *Papilio polytes*  
- Supervisors: Professor Deborah Charlesworth and Rob W. Ness (Now Assistant Professor at University of Toronto - Mississauga)  
  
**University of Stirling**, Stirling, Scotland  
  
BSc Hons, [Ecology](#), 2009 - 2013 (First Class)  
- Dissertation Title: AN INVESTIGATION INTO THE FITNESS AND DISTRIBUTION OF A NEWLY DISCOVERED ALLOPOLYPLOID SPECIES, *Mimulus peregrinus*  
- Supervisor: Dr Mario Vallejo-Marin  
- 2011-2012: Study abroad at Simon Fraser University, Vancouver, Canada.

---

PUBLICATIONS      **Submitted**  
  
**Booker, T. R.**, Payseur, B. A., & Tigano, A. (*Submitted*). "Background selection under evolving recombination rates".  
Preprint online at: <https://doi.org/10.1101/2021.12.20.473549>  
  
**Booker, T. R.**, Jackson, B., Craig, R., Charlesworth, B. & Keightley, P. D. (*In revision at Molecular Biology and Evolution*) "Patterns of genetic diversity around protein-coding exons and conserved non-coding elements are explained by strong selective sweeps in mice".  
Preprint online at: <https://doi.org/10.1101/2021.06.10.447924>

**Booker, T. R.**, Yeaman, S. & Whitlock, M. C. (*In revision at Molecular Ecology Resources*)  
 “The WZA: A window-based method for characterizing genotype-environment association”.  
 Preprint online at: <https://doi.org/10.1101/2021.06.25.449972>

Grummer, J.\* , Thomaz, A.\* **Booker, T. R.\***, Nietlisbach, P.\* , Matthey-Doret, R.\* , & Whitlock, M. C. (*Accepted at Conservation Biology*) “Assisted gene flow is nearly always eventually beneficial, especially when genes are moved in small pulses”.

\* *Joint first author*

Preprint online at: <https://doi.org/10.1101/2021.04.20.440707>

Exposito-Alonso, M., **Booker, T. R.**, Czech, L., Fukami, T., Gillespie, L., Hateley, S., ... & Zess, E. (*Under review at Science*). “Quantifying the scale of genetic diversity extinction in the Anthropocene.”

Preprint online at: <https://doi.org/10.1101/2021.10.13.464000>

## Published Papers

10. Lind, B. M., Lu, M., Vidakovic, D., Singh, P., **Booker, T. R.**, Yeaman, S., & Aitken, S. (2022). “Haploid, diploid, and pooled exome capture recapitulate features of biology and paralogy in two non-model tree species”. *Molecular Ecology Resources*, 22: 225238.
9. **Booker, T. R.**, Yeaman S. & Whitlock M. C. (2021). “Global adaptation complicates the search for local adaptation”. *Evolution Letters*, 5: 4-15.
8. **Booker, T. R.**, Yeaman S. & Whitlock M. C. (2020) “Variation in recombination rate affects detection of outliers in genome scans under neutrality”. *Molecular Ecology*, 29: 42744279. *Highlighted on the cover and accompanying perspective piece*
7. Byers K.A., **Booker T. R.**, Combs M., Himsworth C.G., Munshi-South J., Patrick D.M., Whitlock M.C.. (2020) “Using genetic relatedness to understand heterogeneous distributions of urban rat-associated pathogens“. *Evolutionary Applications* 00: 112.
6. **Booker, T. R.** (2020) “Inferring parameters of the distribution of fitness effects of new mutations when beneficial mutations are strongly advantageous and rare”. *G3: Genes, Genomes, Genetics*, 10(7) 2317-2326
5. **Booker, T. R.**, & Keightley, P. D. (2018). “Understanding the factors that shape patterns of nucleotide diversity in the house mouse genome”. *Molecular Biology and Evolution*, 35(12) 2971-2988
4. **Booker, T. R.**, Jackson, B. C., & Keightley, P. D. (2017). “Detecting positive selection in the genome”. *BMC Biology*, 15:98.
3. **Booker, T. R.**, Ness, R. W., & Keightley, P. D. (2017). “The recombination landscape in wild house mice inferred using population genomic data”. *Genetics*, 207(1) 297-309
2. Keightley, P. D., Campos, J. L., **Booker, T. R.**, & Charlesworth, B. (2016). “Inferring the frequency spectrum of derived variants to quantify adaptive molecular evolution in protein-coding genes of *Drosophila melanogaster*”. *Genetics*, 203(2), 975-984.
1. **Booker, T.**, Ness, R. W., & Charlesworth, D. (2015). “Molecular evolution: breakthroughs and mysteries in Batesian mimicry”. *Current Biology*, 25(12), R506-R508.

EQUITY, DIVERSITY & INCLUSION ACTIVITIES	2022-Present - Member of Zoology Equity, Diversity and Inclusion (ZEDI) Committee at UBC	
	2021 - Participant - <i>Indigenous Awareness</i> - Organised by Indigenous Corporate Training inc.	
	2021 - Participant - <i>pgEd Webinar Series: History of Eugenics</i> - Organised by the GSA	
TEACHING EXPERIENCE	<b>Course Coordination</b>	
	BIOL525D: Bioinformatics for Evolutionary Genetics <i>Upper division course at UBC on bioinformatics.</i> Website and course materials at: ( <a href="https://ubc-biol525d.github.io/">https://ubc-biol525d.github.io/</a> )	2020-2023
	<b>Teaching Assistance</b>	
STUDENT SUPERVISION	Statistics and Data Analysis, MSc course <i>Upper division course, part of the MSc QGGA program at the University of Edinburgh</i>	2014-2017
	Population and Quantitative Genetics, MSc course <i>Upper division course, part of the MSc QGGA program at the University of Edinburgh</i>	2015-2017
	Ecology and Evolutionary Genetics, BSc course <i>Undergraduate course, offered at the University of Edinburgh</i>	2014-2015
	C. Atkinson - Directed studies co-supervisor (2019-2020) - <i>Undergraduate student at UBC</i>	
	K.A. Byers - Bioinformatics/genomics mentor for PhD project (2018-2020) - <i>Now postdoctoral research fellow</i>	
	S-A. Xerri - Master's project co-supervisor (2018) - <i>Now PhD student at the Max Planck Institute</i>	
ACADEMIC HONOURS AND AWARDS	C. Barata - Master's project co-supervisor (2017) - <i>Now PhD student at the University of St. Andrews</i>	
	B. Lecher - Honour's project co-supervisor (2016-2017) - <i>Now Pre Doctoral Fellow at the European Bioinformatics Institute</i>	
	University of British Columbia - Bioinformatics Research Fellowship	2020
	Registration Award - Society of Molecular Biology and Evolution	2019
	<i>Runner up</i> Best student talk at Population Genetics Group 51	2018
	<i>Runner up</i> Best student poster at Population Genetics Group 50	2017
	Environment Yes! <i>Won regional heat - runner up at the national final</i>	Sept 2016
	EASTBIO Doctoral Training Partnership Studentship	2014-2018
	Genetics Society, Sir Kenneth Mather Memorial Prize	2013/2014

University of Edinburgh, Douglas Falconer Award, best MSc dissertation	2013/2014
Funding for Undergraduate Summer Project:	
Botanic Society of Scotland and the Society of Biology	Summer 2012
<i>Nominated</i> , Simon Fraser University Student Conservation Prize	May 2012

## SERVICE & OUTREACH

### Reviewing

*Science, PLoS Genetics, Molecular Biology and Evolution, Evolution, Molecular Ecology, Proceedings of the Royal Society B, Genome Biology and Evolution, Ecology and Evolution, Frontiers in Zoology, Peer Community in Evolutionary Biology, G3, BMC Biology*

### Academic Service

2021 - *Present* - Member of the Junior Editorial Board at [Molecular Ecology](#)  
 2019 & 2021 Undergraduate Student Mentor for Society for Molecular Biology and Evolution

### Departmental Service

2021 Postdoc representative on search committee for head of the Biodiversity Research Centre at UBC  
 2021 - *Present* - I organise  $\Delta$ -tea, an evolutionary genetics discussion group at UBC  
 2020 - *Present* - Bioinformatics office hours at UBC  
 2020-2021 I ran virtual trivia nights for my department at UBC during the COVID-19 pandemic  
 2020 Postdoc representative on department expansion committee for the Biodiversity Research Centre at UBC  
 2019 - 2020 I co-organised meetings of the Vancouver Evolution Group (VEG)  
*I stopped due to childcare out of work hours*  
 2017 - I started and organised a journal club on classic population genetic papers at the University of Edinburgh in 2017

### Outreach

2021 Skype a Scientist participant  
 2020-2021 Essay judge for Canadian Undergraduate Research Competition ([CURC](#))  
 2020 Mentor for high school students during the Summer of 2020 - organised through Teen Nerd Nite  
 2019 Poster Judge BIOL 310 Animal Behaviour  
 2018-2019 Poster and talk judge EcoEvo Retreat

## INVITED PRESENTATIONS

**February 2022** - University of British Columbia, Biodiversity Research Centre Seminar Series

*What we can learn about natural selection from patterns of diversity across the genomes of wild mice*

**November 2021** - Universidad del Rosario, Faculty of Natural Sciences, *Online*  
*Identifying the genetic basis of natural selection: The statistics and interpretation of genome*

*scans*

**August 2021** - Monash University, School of Biological Sciences, *Online*  
*Identifying the genetic basis of local adaptation and testing for convergent evolution across lineages*

**June 2021** - Virtual SMBE 2021 *Online*  
*Background selection under evolving recombination rates*

**May 2021** - Mooers lab group at Simon Fraser University, Canada, *Online*  
*The genetics of assisted gene flow*