

# Brendan Case

Infectious disease modeling • Bayesian statistics • experimental design

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## Summary

PhD student in Computer Science combining mechanistic modeling and Bayesian statistics for the study of epidemiology and ecology. I am particularly interested in using these tools for informing how data should be collected and for assessing control options from a decision-theoretic perspective.

## Education

- 2018– **Ph.D. Computer Science**, *University of Vermont*, Burlington, Vermont.
  - Co-advisors: Laurent Hébert-Dufresne and Jean-Gabriel Young
- 2017–2019 **MRes. Natural Computation**, *University of Birmingham*, Birmingham, UK.
  - Thesis: Self-adaptation in non-elitist evolutionary algorithms: a rigorous analysis on discrete problems with unknown structure
  - Committee: Per Kristian Lehre (advisor), Thomas Jansen, Ata Kaban
- 2013–2017 **B.A. Mathematics**, *Oberlin College*, Oberlin, Ohio.
  - Minor: Computer Science

## Publications

### Flowers as dirty doorknobs: Deformed wing virus transmitted between *Apis mellifera* and *Bombus impatiens* through shared flowers

Phillip Alexander Burnham, Samantha Alger, Brendan Case, Humberto Boncristiani, Laurent Hébert-Dufresne, Alison Brody

*Journal of Applied Ecology*. 2021. doi:10.1111/1365-2664.13962

### The unintended consequences of inconsistent pandemic control policies

Benjamin Althouse, Brendan Wallace, Brendan Case, Samuel Scarpino, Antoine Allard, Andrew Berdahl, Easton White, Laurent Hébert-Dufresne

*Preprint*. 2020. <https://www.medrxiv.org/content/10.1101/2020.08.21.20179473v2>

### Self-adaptation in nonelitist evolutionary algorithms on discrete problems with unknown structure

Brendan Case and Per Kristian Lehre

*IEEE Transactions on Evolutionary Computation*. 2020. doi:10.1109/TEVC.2020.2985450

## Presentations

- June 2019 **Hidden geometry of infestation in Chagas disease vectors: an approach from epidemiological network theory**, *Laboratorio de Entomología Aplicada y Parasitología Research Symposium*, Guatemala City, Guatemala.
- May 2019 **Modeling disease spillover using multipartite networks**, *NetSci 2019*, Burlington, VT.

April 2019 **Modeling disease spillover in bees: exploring dilution effects**, *UVM Student Research Conference*, Burlington, VT.

## Teaching

### Teaching Assistant

Spring 2020 **Computability and Complexity**, *University of Vermont*.

Fall 2019 **Modeling Complex Systems**, *University of Vermont*.

Spring 2018 **Software Workshop I**, *University of Birmingham*.

Fall 2017 **Data Structures and Algorithms**, *University of Birmingham*.

Spring 2017 **Foundations of Analysis**, *Oberlin College*.

Spring 2017 **Algorithms**, *Oberlin College*.

Fall 2016 **Discrete Mathematics**, *Oberlin College*.

### Workshops

8/16–8/23 2021 **QuEST Coding Workshop**, *University of Vermont*.

## Professional Service and Leadership

August 2021 *Reviewer*, *Swarm and Evolutionary Computation*

## Advanced Schools & Workshops

12/15–12/20 2019 **Complex Networks Winter Workshop**, *Université Laval*, Quebec City, Canada.

6/3–6/5 2019 **VectorBase Workshop**, *Universidad del Valle de Guatemala*, Guatemala City, Guatemala.

## Awards

2018–2021 **QuEST National Research Traineeship**, *National Science Foundation & University of Vermont Graduate College*.

2019–2020 **Graduate Teaching Assistantship Award**, *University of Vermont, department of Computer Science*.

2017–2018 **Postgraduate Teaching Assistantship Award**, *University of Birmingham, department of Computer Science*.

2013–2014 **Conservatory Dean's Scholarship**, *Oberlin College*.

## Skills & Expertise

Programming languages R (tidyverse, tidygraph, sf/rgdal, caret), Julia (DifferentialEquations), Python

Statistical programming Stan, R-INLA, nimble

Visualization ggplot2, ggraph, Inkscape