

Joshua R. Nahum

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Professional Preparation

- **Michigan State University** East Lansing, MI
Distinguished Postdoctoral Fellow in the NSF BEACON Center Oct. 2013 - Present
- **University of Washington** Seattle, WA
Ph.D. in Biology Sep. 2007 - Oct. 2013
- **University of Washington** Seattle, WA
Bachelors of Science, Biology Sep. 2005 - Sep. 2006

Teaching Appointments

- **Translation of Programming Languages** 2014 - Present
Co-Instructor
 - Taught (and am currently teaching) the undergraduate compilers course with Dr. Charles Ofria, utilizing C++ tooling (Flex and Bison).
 - Added Git integration (version control) to the course, allowing auto-grading (using continuous integration via Travis CI), collaboration, and experience with version control systems in a hands-on, practical manner.
- **Statistical Methods** Present
Co-Instructor
 - Teaching a graduate course centered on statistics theory and applications with the R programming language for the Department of Integrated Biology with Dr. Elise Zipkin.
 - I have integrated practical use of version control in addition to heavily restructuring the material covered in the course to include in and out-of-class programming assignments.
- **Foundations in Evolution and Systematics** 2011
Teaching Assistant
 - Taught a weekly, mid-division, undergraduate discussion section with a strong emphasis on reading and evaluating primary science literature.
 - Developed and implemented curricula to facilitate independent and collaborative scientific writing.
- **Experimental Evolutionary Ecology** 2007, 2009, 2010
Teaching Assistant
 - Taught a weekly, upper-division, undergraduate lab section demonstrating the use of experiments to observe evolutionary principles.
 - For each of the 3 years, I helped develop new modules/labs for the class from my current research projects.
 - Developed a lab teaching hypothesis testing using computational approaches and iterated over several years for continued improvement.

Publications

- [1] Joshua R. Nahum, Peter Godfrey-Smith, Brittany N. Harding, Joseph H. Marcus, Jared Carlson-Stevermer, and Benjamin Kerr. A tortoise hare pattern seen in adapting structured and unstructured populations suggests a rugged fitness landscape in bacteria. *Proceedings of the National Academy of Sciences*, 112(24):7530–7535, 2015.
- [2] Joshua R. Nahum, Brittany N. Harding, and Benjamin Kerr. Evolution of restraint in a structured rock-paper-scissors community. *Proceedings of the National Academy of Sciences*, 108:10831–10838, June 2011.
- [3] Benjamin Kerr and Joshua Nahum. The evolution of restraint in structured populations: Setting the stage for an egalitarian major transition. In Brett Calcott and Kim Sterelny, editors, *The Major Transitions in Evolution Revisited*, pages 127–140. MIT Press, April 2011.
- [4] Joshua Nahum and Benjamin Kerr. Optimal foraging: A bird in the hand released. *Current Biology*, 18(9):R385–R386, May 2008.

Synergistic Activities

- **Greenhouse Docent**
Voluntary Community Service *2007-2013*
 - I have led dozens of one-hour tours of the University of Washington’s extensive botanical collections, primarily field trips for students ranging from 2nd graders to undergraduate students. I’ve given many tours to English-as-a-second-language elementary classes and other under-represented groups.
- **Software Carpentry**
Formal Instructor *2014 - Present*
 - Taught lessons on basic UNIX commands, shell scripting, R, Python, and version control with git. Workshops are 16 hours long over the course of two or three days and are targeted towards practicing scientists with no prior programming experience.
- **Middle School Volunteer Tutoring**
Tutor to ESL students *2014-Present*
 - On a monthly basis, I volunteer my time as a tutor of middle and high school students (primarily who speak English-as-a-second-language) with their assignments.

Advisors

Postdoctoral Advisors: Charles Ofria (Michigan State University) and Richard Lenski (Michigan State University)

Graduate Advisor: Benjamin Kerr (University of Washington)

Undergraduate Advisees (by Project)

Effects of Changing Environments on Rates of Adaptation of Genetic Algorithms: Taught Python (first programming language) to **Riley Annis**. Also taught collaborative software development and software organization as it pertained to scientific research, and the use of Cython (a tool for integrating C and Python libraries). Research project is ongoing.

Effect of Costly Memory on Digital Organisms in Social Dilemmas: Taught Python (second programming language) to **Mikaela Leas**. In addition to software organization, I instructed her on statistical methods and relevant statistical programming libraries. Research project is ongoing.

Validating Sensor Network Analysis: Taught Python (first programming language) to **Rodny Perez** as well as basic software organization and collaboration techniques.

Effect of Spatial Structure on Adaptation in Digital (NK Model) and Bacterial Systems: Taught Python (first programming language) and software organization to **Joseph Marcus, Jared Carlson-Stevermer**, and **Brittany Harding**. Also covered the use of statistical programming languages and microbial techniques. Publications resulting from the work are cited above.

Effect of Host Density on Virus Pathogenicity: Taught microbial and laboratory skills to **Kelsea Laegreid**.