

Dr. Stephen J. Beckett



 Computational Ecology and Quantitative Viral Dynamics



About me

Computational ecologist with 10+ years of experience in scientific research spanning infectious disease dynamics, microbial ecology, and public health communication. I like interdisciplinary challenges, providing training and mentorship, and open-source coding practices. Current interests lie in investigating the ecology of aquatic microbial communities; and advancing the integration of infectious disease dynamics and human behaviour.

Areas of specialization

- mathematical modeling and simulation
 - network analysis
 - interactive data dashboards
 - timeseries analysis
 - Bayesian inference

Research Interests

- marine microbial ecology
 - virus-microbe ecology and evolution • biophysics
 - epidemic dynamics
 - network structure • dynamics of complex systems

Editorial Boards

- PLOS Computational Biology.
 - Mathematics in Medical and Life Sciences.



SHORT RESUMÉ

2023-	Associate Research Scientist DEPARTMENT OF BIOLOGY & INSTITUTE FOR HEALTH COMPUTING · University of Maryland, College Park  <ul style="list-style-type: none">Personalized COVID-19 vaccine recommendation website; cofounded the Chesapeake Aquatic Viral Ecology network, member of UMD Pandemic Readiness Initiative leading a wastewater surveillance and communication project.
2019–2023	Research Scientist I and II SCHOOL OF BIOLOGY · Georgia Tech., Atlanta  <ul style="list-style-type: none">Leadership for multiple COVID-19 response projects - including modeling transmission, risk, and prevalence: covid19risk website (>60M users); lead multi-trophic ecological model-data integration and data analysis (20 coauthors); multiple art-science collaborations inc. showings at Atlanta Science Festival.
2015–2019	Postdoctoral Fellow SCHOOL OF BIOLOGY · Georgia Tech., Atlanta  <ul style="list-style-type: none">Marine microbial ecology - with a special interest in viral-host interactions; as well as the interplay of bottom-up (primarily resource driven) and top-down controls (viruses, grazers) on marine microbial communities. Organized GT's 2017 Postdoctoral Research Symposium.

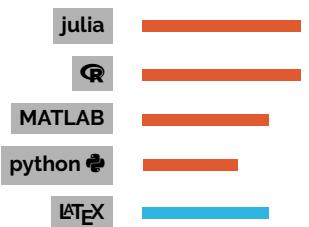


DEGREES

- 2015 **Biological Sciences**
PHD · University of Exeter 
- 2011 **Mathematics in the Living Environment**
MRes · University of York 
- 2010 **Geography and Mathematics**
BSc (Hons) · University of London



PROGRAMMING



FUNDING (TOTAL: >\$400,000)

- 2024** University of Maryland
Grand Challenges
- 2022** CDC
- 2021** Rockefeller Foundation

SELECT PUBLICATIONS

2024 Disentangling top-down drivers of mortality underlying diel population dynamics of *Prochlorococcus* in the North Pacific Subtropical Gyre. *Nat. Comm.*

2020 Real-time, interactive website for US-county-level COVID-19 event risk assessment. *Nat. Hum. Behav.*

2017 Lysis, lysogeny, and virus-microbe ratios. *Nature*.

2016 Improved community detection in weighted bipartite networks. *Roy. Soc. Op. Sci.*

SELECT CURRICULUM DEVELOPMENT

(MENTORED 4 UNDERGRADUATE AND 8 PHD STUDENT RESEARCHERS)

2026	Introduction to Python programming for life sciences LEAD · University of Maryland, College Park  Fundamentals of coding using Python with a focus on applications in the life sciences. Students will learn fundamental coding and apply their knowledge through projects.
2025	Infectious disease dynamics: a systems approach Co-LEAD · University of Maryland, College Park  Introduced systems thinking to understand complex disease interactions, and used interactive notebooks to run and analyze simulations of infectious disease models. 8 students.