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.

beckett@umd.edu
sjbeckett.github.io
0000-0002-4410-2960
p_YVeZ4AAAAJ
sjbeckett
stephen-beckett
Phage on toast

Download CV.pdf

Short Resumé

2023– **Associate Research Scientist**
Department of Biology & Institute for Health Computing · University of Maryland, College Park
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
Leadership for multiple COVID-19 response projects - including modeling transmission, risk, and prevalence: covid19risk website (>60M users); lead multitrophic 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
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 Leeds

Programming

julia
R
MATLAB
python
LaTeX

Funding (total: >$400,000)

2024 University of Maryland Grand Challenges
2022 CDC
2021 Rockefeller Foundation

Select Publications (>24 pubs, >2500 citations. Full list)

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

Last updated: September 22, 2025