

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.


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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



MATLAB



python



LATEX



FUNDING (TOTAL: >\$400,000)

2024

University of Maryland
Grand Challenges

2022

CDC

2021

Rockefeller Foundation

SELECT PUBLICATIONS (>24 PUBLS, >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: October 15, 2025